ILLINOIS POLLUTION CONTROL BOARD

Docket Numbers: PCB 2016-14, PCB 2016-15, PCB 2016-16, PCB 2016-17, PCB 2016-18, PCB 2016-20, PCB 2016-21, PCB 2016-22, PCB 2016-23, PCB 2016-25, PCB 2016-26, PCB 2016-27, PCB 2016-29, PCB 2016-30, PCB 2016-31, PCB 2016-33
(Time-Limited Water Quality Standard) (Consolidated)

Watershed, Waterbody, Waterbody Segment Time Limited Water Quality Standard (TLWQS)
Individual Submittal

This Individual Submittal supplements the Joint Submittal in Support of Petition for Chloride Time-Limited Water Quality Standard for the Defined Chicago Area Waterway System/Des Plaines River Watershed (Joint Submittal), submitted in the above-referenced docket numbers. The Joint Submittal incorporated by reference, together with this Individual Submittal, satisfies the requirements of 35 IAC Part 014, Subpart E for each Facility.

An Individual Submittal must be made for each Facility discharging to either the Chicago Area Waterway System or Lower Des Plaines River that seeks to be covered by the TLWQS in this Docket.

This Individual Submittal must be made no later than July 26, 2018 for continued coverage (or initial coverage for new petitioners) under the current stay of effectiveness of the chlorides standards, found in 35 IAC 302.407(g)(2) and (g)(3).

Individual Discharger Information

1. Facility Name of Individual Discharger: Village of Elwood - Deer Run STP
2. Owner/Operator of Facility: Village of Elwood
3. Address of Facility: 26550 Elwood International Port Road, Elwood, IL 60421
4. Contact Information for Facility's Responsible Official:
   Name: Steve Amann Title: Village Engineer
   Mailing Address: 401 E. Mississippi Avenue, Elwood, IL 60421
   Phone Number: 815-423-5011 Email: engineering@villageofelwood.com
5. Permit Number of Facility (include both NPDES Permits and MS4 Permits that may be affected by the TLWQS): IL0074713
6. Are there any pending permit applications filed with Illinois Environmental Protection Agency that do not appear as part of the Joint Submittal's Appendices 5 and 6?
   ____ Yes __✔__ No

   If Yes, provide the application number for the pending permit(s): ____________

7. Facility discharges to the: ____ Chicago Area Waterway System (CAWS)
   _✔_ Lower Des Plaines River (LDPR)

8. Select Category of Facility:

   _✔_ POTW ____ Community with CSO Outfalls ____ Industrial Source ____ MS4

   ____ Illinois Department of Transportation/Tollway ____ Salt Storage Facility

Location of Individual Discharger

9. Each Individual Submittal must provide the specific location information for the facility seeking coverage under the TLWQS. Select the location of the discharge from the facility from the list below:

   The CAWS includes the following reaches:

   ____ Chicago River, ____ North Branch of the Chicago River,

   ____ South Branch of the Chicago River, ____ Chicago Sanitary and Ship Canal,

   ____ Cal-Sag Channel, ____ Grand Calumet River, ____ Lake Calumet,

   ____ Lake Calumet Connecting Channel, ____ Calumet and Little Calumet Rivers, and

   ____ North Shore Channel

   The LDPR includes the following areas:

   _✔_ Des Plaines River from the Kankakee River to the Will County Line,

   ____ Hickory Creek, ____ Union Ditch, ____ Spring Creek, ____ Marley Creek, and

   ____ East Branch of Marley Creek

10. The specific discharge locations for the Facility are:

    a. Outfall number(s): STP Outfall 001

    b. General description of outfall location:
    Des Plaines River; south bank approximately 0.5 miles upstream of Interstate 55

    c. Outfall(s) appears on CAWS or LDPR list of Discharge Points (Joint Submittal Appendices 5 and 6): ____ Yes ____ No

TLWQS Requirements

11. Can the Facility achieve compliance with the chlorides standard by the compliance date? *(Only facilities that cannot achieve compliance are eligible for coverage by the TQLWS.)*

    ____ Yes _✔_ No

12. (*Optional)* As referenced in Chapter 2 of the Joint Submittal, an Individual Discharger may provide supplemental information regarding any circumstances unique to the Facility regarding its inability to comply with the chlorides standard by the compliance date, including the nature and extent of the present or anticipated failure to meet the water quality standards and facts supporting that compliance with the water quality standards regulation cannot be achieved by any required compliance date.

____

____

____

____

13. Has any prior variance applied to the discharge from this Facility? ____ Yes ✔ No

    If yes, please identify the variance providing similar relief, including any Illinois Pollution Control Board docket number issued to the Individual Discharger, watershed, water body, waterbody segment, and if known, the Individual Discharger's predecessors.

____

____

Facility-Specific TLQWS Requirements

14. The Facility agrees to implement all of the BMPs included for the POTW Category (from #8, above) for the Facility that are specified for implementation in snow/deicing practices in Chapter 2 of the Joint Submittal.

15. Identify any past or currently in-use Best Management Practice(s) (BMPs) at the Facility for minimizing the discharge of chlorides.

    Road salts are spread using calibrated equipment based on pavement temperatures, which are read in the field. Spreading rates are controlled remotely from a central location to ensure consistent and appropriate amounts of salts are used.

16. Will any additional BMPs, beyond those included for the Category of the Facility for implementation in snow/deicing practices in Chapter 2 of the Joint Submittal, be implemented? ____ Yes ✔ No

    If Yes, describe any additional BMPs:

____

____

17. By six (6) months after the effective date of the TLWQS, each Facility covered by the TLWQS must have a Pollutant Minimization Plan (PMP) that contains specific details as to how the BMPs will be implemented and include measurements and sampling protocols, frequency, and recordkeeping and reporting obligations, including appropriate elements from the documentation procedures identified in Appendix 54 of the Joint Submittal. Chapter 9 of the Joint Submittal describes these requirements in more detail.

    Has the Facility already developed a PMP to address its discharge of chlorides?
    ____ Yes _✔__ No

    If Yes, what is the date of the Pollutant Minimization Plan (PMP)? ____________________

    If the Facility has not already developed the described PMP, does the Facility agree to develop the described PMP no later than six (6) months after the effective date of the TLWQS? _✔__ Yes ____ No

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name & Official Title (*Type or Print*) Stephen R. Amann, Village Engineer

Signature ____________________

Date Signed July 26, 2018

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

THE VILLAGE OF ELWOOD, IL,	)	
	)	
	)	
Petitioner,	)	
	)	
v.	)	**PCB No. [INSERT NUMBER]**
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
	)	
Respondent.	)	

NOTICE OF FILING

To: See Attached Service List

PLEASE TAKE NOTICE that on July 26, 2018, the THE VILLAGE OF ELWOOD, IL electronically filed with the Office of the Clerk of the Illinois Pollution Control Board an **Individual Submittal in Support of Petition for Chloride Time-Limited Water Quality Standard for the Defined Chicago Area Water System / Des Plaines River Watershed**, a copy of which is hereby served upon you.

Dated: July 26, 2018

[THE VILLAGE OF ELWOOD, IL]

By: ______________________
One of Its Attorneys

David J. Silverman
Mahoney, Silverman & Cross, LLC
822 Infantry Drive, Suite 100
Joliet, IL 60435
(815) 730-9500
dsilverman@msclawfirm.com
ATTY NO: 06198661

PROOF OF SERVICE

The undersigned attorney certifies, under penalties of perjury pursuant to 735 ILCS 5/1-109, that a copy of the foregoing **Individual Submittal in Support of Petition for Chloride Time-Limited Water Quality Standard for the Defined Chicago Area Water System / Des Plaines River Watershed**, was served via electronic mail on the 26th day of July, 2018 to:

See Attached Service List

One of Its Attorneys

DMS 12899894v1

SERVICE LIST

Bradley P. Halloran
Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center, Suite 11-500
100 W. Randolph Street
Chicago, IL 60601
Brad.Halloran@illinois.gov

PCB 2016-014@
Sara Terranova
IEPA
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276
sara.terranova@illinois.gov

PCB 2016-014@
Christopher J. Cummings
Christopher J. Cummings, P.C.
2014 Hickory Road
Suite 205
Homewood, IL 60430
chris@CJCummingsLaw.com

PCB 2016-014@
Stefanie N. Diers
IEPA
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276
Stefanie.diers@illinois.gov

PCB 2016-014@
Albert Ettinger
Law Firm of Albert Ettinger
53 W. Jackson
Suite 1664
Chicago, IL 60604
ettinger.albert@gmail.com

PCB 2016-015@
Dennis Walsh
Klein, Thorpe & Jenkins
15010 S. Ravinia Avenue
Suite 17
Orland Park, IL 60477

PCB 2016-015@
E. Kenneth Friker
Klein, Thorpe & Jenkins
15010 S. Ravinia Avenue
Suite 17
Orland Park, IL 60477

dgwalsh@ktjlaw.com eklinker@ktjlaw.com

PCB 2016-016@
David J. Freeman
Robbins, Schwartz, Nicholas,
Lifton & Taylor, Ltd
631 E. Boughton Road
Suite 200
Bolingbrook, IL 60440

PCB 2016-016@
Peter Murphy
11800 S. 75th Avenue
Suite 101
Palos Heights, IL 60463
pmmlawyer@aol.com

PCB 2016-017@
Dennis Walsh
Klein, Thorpe & Jenkins
15010 S. Ravinia Avenue
Suite 17
Orland Park, IL 60477
dgwalsh@ktjlaw.com

PCB 2016-018@
Katherine D. Hodge
Heplerbroom, LLC
4340 Acer Grove Drive
Springfield, IL 62711
Katherine.Hodge@heplerbroom.com
Joshua.Houser@heplerbroom.com

PCB 2016-020@
Dennis Walsh
Tressler, LLP
233 S. Wacker Drive
22nd Floor
Chicago, IL 60606
dgwalsh@ktjlaw.com
eklavery@ktjlaw.com

PCB 2016-021@
Amber M. Samuelson
Rosenthal, Murphey, Coblentz
& Donahue
30 N. LaSalle Street, Suite 1624
Chicago, IL 60602
ASamuelson@rmcj.com

PCB 2016-021@
Peter D. Coblentz
Rosenthal, Murphey, Coblentz
& Donahue
30 N. LaSalle Street, Suite 1624
Chicago, IL 60602
pcoblentz@rmcj.com

PCB 2016-022@
John P. Antonopoulos
Antonopoulos & Virtel, PC
15419 127th Street
Suite 100
Lemont, IL 60439
john@avlawoffice.net

PCB 2016-023@
Katherine D. Hodge
Heplerbroom, LLC
4340 Acer Grove Drive
Springfield, IL 62711
Katherine.Hodge@heplerbroom.com

PCB 2016-023@
Joshua Houser
Heplerbroom, LLC
4340 Acer Grove Drive
Springfield, IL 62711
Joshua.Houser@heplerbroom.com

PCB 2016-025@
David Stoneback, Director
City of Evanston
555 Lincoln St.
Evanston, IL 60201
dstoneback@cityofevanston.org

PCB 2016-025@
Mario Treto
Corporation Counsel
City of Evanston Law Department
2100 Ridge Road
Evanston, IL 60201
gfarrar@cityofevanston.org

PCB 2016-025@
Lindsey Ott
City of Evanston
555 Lincoln St.
Evanston, IL 60201
Lott@cityofevanston.org

PCB 2016-026@
James G. McCarthy
Village of Skokie
5127 Oakton Street
Skokie, IL 60077
james.mccarthy@skokie.org

PCB 2016-026@
Melanie Pettway
Village of Skokie
5127 Oakton Street
Skokie, IL 60077
melanie.pettway@skokie.org

PCB 2016-026@
Michael M. Lorge
Village of Skokie
5127 Oakton Street
Skokie, IL 60077

PCB 2016-027@
Matthew D. Dougherty
Special Assistant Attorney General
Illinois Dept. of Transportation
2300 S. Dirksen Parkway
Springfield, IL 62764
Matthew.Dougherty@illinois.gov

PCB 2016-029@
Margaret T. Conway
Metropolitan Water Reclamation
District
100 E. Erie Street
Chicago, IL 60611

PCB 2016-029@
Fredric P. Andes
Barnes & Thornburg
1 N. Wacker Drive
Suite 4400
Chicago, IL 60606
fandes@btlaw.com

PCB 2016-030@
Amber M. Samuelson
Rosenthal, Murphey, Coblentz
& Donahue
30 N. LaSalle Street, Suite 1624
Chicago, IL 60602
ASamuelson@rmcj.com

PCB 2016-030@
Peter D. Coblentz
Rosenthal, Murphey Coblentz
& Donahue
30 N. LaSalle Street, Suite 1624
Chicago, IL 60602
pcoblentz@rmcj.com

PCB 2016-031@
Andrew N. Fiske
Holland & Knight LLC
131 S. Dearborn Street
30th floor
Chicago, IL 60603
andrew.fiske@hklaw.com

PCB 2016-031@
Hart M. Passman
Holland & Knight LLC
131 S. Dearborn Street
30th Floor
Chicago, IL 60603
hart.passman@hklaw.com

PCB 2016-031@
Steven M. Elrod
Holland & Knight LLC
131 S. Dearborn Street
30th Floor
Chicago, IL 60603
steven.elrod@hklaw.com

PCB 2016-033@
Richard Rinchich
Director of Public Works
City of Oak Forest
15440 S. Central Avenue
Oak Forest, IL 60452
rrinchich@oak-forest.org

PCB 2016-033@
Dennis G. Walsh
Klein, Thorpe & Jenkins, Ltd.
20 N. Wacker Drive
Suite 1660
Chicago, IL 60606
dgwalsh@ktjlaw.com

PCB 2016-033@
Erin K. Lavery
Klein, Thorpe & Jenkins, Ltd.
20 N. Wacker Drive
Suite 1660
Chicago, IL 60606
eklavery@ktjlaw.com

PCB 2016-033@
Scott F. Uhler
Klein, Thorpe & Jenkins, Ltd.
20 N. Wacker Drive
Suite 1660
Chicago, IL 60606
suhler@ktjlaw.com

Joint Submittal in Support of Petition for Chloride Time-Limited Water Quality Standard for the Defined Chicago Area Waterway System/Des Plaines River Watershed[1]

[1] By Interim Order of the Board in Consolidated Dockets PCB 16-14, 16-15, 16-16, 16-17, 16-18, 16-20, 16-21, 16-22, 16-23, 16-25, 16-26, 16-27, 16-29, 16-30, 16-31 and 16-33 (Jun. 8, 2017), the Illinois Pollution Control Board ("Board") clarified dischargers subject to the chlorides time-limited water quality standard ("TLWQS") are those within portions of the Des Plaines River watershed and portions of the Chicago Area Waterway System ("CAWS") watershed.

Chapter Contents

Petitions for all time-limited water quality standard ("TLWQS") must include all of the elements specified in 35 IAC 104.530(a)(1)-(17). Petitions for watershed, water body, or water body segment time-limited water quality standards must also include the mandatory elements in 35 IAC 104.530(b). Each applicable element is addressed within this Joint Submittal; the location of the elements in this Joint Submittal is identified below.

Chapter 1: Description of Petitioners, Watershed, and Time-Limited Water Quality Standard Being Sought

1.1 *A statement indicating the type of time-limited water quality standard sought.* 35 IAC 104.530(a)(1).

1.2 *Identification of the currently-applicable water quality standard for the pollutants or parameter for which a time-limited water quality standard is sought.* 35 IAC 104.530(a)(2).

1.3 *The location of the petitioner's activity and the location of the points of its discharge.* 35 IAC 104.530(a)(3).

1.4 *A map of the proposed watershed, water body, or waterbody segment to which the time-limited water quality standard will apply, including a written description of the watershed, water body, and/or waterbody segment including the associated segment code.* 35 IAC 104.530(a)(4).

1.5 *Designated uses of the waterbody or waterbody segment identified above.* 35 IAC 104.530(a)(5).

Chapter 2: Compliance with the Regulation Cannot Be Achieved by the Compliance Date

Data describing the nature and extent of the present or anticipated failure to meet the water quality standards and facts that support Petitioner's argument that compliance with the water quality standards regulation cannot be achieved by any required compliance date. 35 IAC 104.530(a)(6).

Chapter 3: Social and Economic Impacts Demonstrate that Attainment of the Designated Uses Are Not Feasible

Demonstration that attainment of the designated use(s) and criteria are not feasible throughout the term of the time-limited water quality standard because, as described by 35 IAC 104.560(a):

a. Human caused conditions or sources of pollution prevent the attainment of the designated use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

b. *Controls more stringent than those required by CWA Sections 301(b) and 306 would result in substantial and widespread economic and social impact.*

35 IAC 104.530(a)(7).

Chapter 4: No Prior Water Quality Standards Variances or Time-Limited Water Quality Standards Have Been Issued to the Petitioner

Identification, including any Board docket number, of any prior variances or time-limited water quality standards issued to the Petitioner, watershed, water body, waterbody segment, and if known, the petitioner's predecessors, concerning similar relief. 35 IAC 104.530(a)(8).

Chapter 5: Identification of Permits Held by Dischargers That May Be Affected By the Adoption of the Time-Limited Water Quality Standard

Identification, by name, of the permit holder and permit number of the permits held by dischargers which may be affected by the adoption of the time-limited water quality standard. 35 IAC 104.530(a)(9).

Chapter 6: Activity of the Dischargers

Identification and description of any process, activity, or source that contributes to a violation of a water quality standard, including the material used in that process or activity. 35 IAC 104.530(a)(10).

Chapter 7: Current and Past Pollutant Minimization Programs

Description and copy of all Pollutant Minimization Programs that are relevant to the relief requested and are currently being implemented or were implemented in the past. 35 IAC 104.530(a)(11).

Chapter 8: Proposed Highest Attainable Condition of the Watershed and Demonstration of No Conflict with Attainment of Downstream Water Quality Standards

Identification of the proposed highest attainable condition of the watershed, water body, or waterbody segment identified in Chapter 1.4, expressed as set forth in 35 IAC 104.565(d)(4), including projected changes in the highest attainable condition throughout the proposed term of the time-limited water quality standard. 35 IAC 104.530(a)(12).

Demonstration to assure that the highest attainable condition does not conflict with the attainment of any downstream water quality standard for the pollutant or parameter for which the TLWQS is sought. 35 IAC 104.530(a)(17).

Chapter 9: Demonstration of Pollutant Control Activities

Demonstration of the pollutant control activities proposed to achieve the highest attainable condition, including those activities identified through a Pollutant Minimization Program. 35 IAC 104.530(a)(13).

Chapter 10: Beginning and End Dates of the Time-Limited Water Quality Standard

The proposed term of the time-limited water quality standard and justification that it is only as long as necessary to achieve the highest attainable condition, which includes a description of the relationship between the proposed pollution control activities and the proposed term. 35 IAC 104.530(a)(14).

If the proposed term is longer than five years, a proposed reevaluation schedule to reevaluate the highest attainable condition during the term of the time-limited water quality standard, pursuant to 35 IAC 104.580. 35 IAC 104.530(a)(15).

Chapter 11: Citation to Supporting Documents or Legal Authorities

Any other documentation necessary to support the Petitioner's demonstration as specified in 35 IAC 104.560 (and used in Chapter 3). 35 IAC 104.530(a)(16).

Chapter 12: Best Management Practices

Identification and documentation of any cost-effective and reasonable best management practices for non-point source controls related to the pollutant or water quality parameter and watershed, water body, or waterbody segment specified in the time-limited water quality standard petition that could be implemented to make progress towards attaining the underlying designated use and criterion. 35 IAC 104.530(b)(1).

Chapter 13: Compliance with 40 CFR 131.14 Requirements

Chapter 14: Request for Hearing

Chapter 1

Description of Petitioners, Watershed, and Time-Limited Water Quality Standard Being Sought

This Joint Submittal supplements the individual submittals of sources discharging to the Chicago Area Waterway System ("CAWS") and the Lower Des Plaines River (LDPR) watersheds defined by the Illinois Pollution Control Board ("IPCB" or "Board") and the Illinois Environmental Protection Agency ("IEPA") in PCB No. 2016-033 that seek a time-limited water quality standard ("TLWQS") from the chlorides standards adopted by the Board. This Joint Submittal sets forth the required regulatory structure established by 35 IAC 104, Subpart E, that is broadly applicable to dischargers that may be covered by the TLWQS from the chlorides standards for the defined watersheds ("the Watershed").

This Joint Submittal will supplement discharger-specific information that will be filed with the Board by individual dischargers pursuant to 35 IAC 104.530(d) in their Individual Submittals. Dischargers will file Individual Submittals for coverage by the TLWQS from the chlorides standards for the Watersheds for their specific facilities or operations, and, where appropriate, the Individual Submittals will refer to this Joint Submittal for information that is broadly applicable to the Watershed, individual reaches within the Watershed, or particular source categories of dischargers to the Watershed. Additionally, this Joint Submittal includes conditions and best management practices ("BMPs") for the Watershed that Individual Submittals will incorporate to reduce discharges of chlorides into the Watershed.

Based on the Individual Submittals filed by dischargers and reliance on this Joint Submittal where appropriate, the Board will have the necessary information to evaluate the granting of and coverage under the chlorides TLWQS in the Watershed.

1.1 A statement indicating the type of TLWQS sought.

The Petitioners in this matter[2] seek a watershed TLWQS for the Watershed. Several of the Petitioners in this matter participated in the Board's rulemaking action establishing chlorides standards for the Watershed described in Chapters 1.2 and 1.3, below. The Board provided an opportunity to convene a group that would develop options for addressing concerns with the chlorides standards while making progress in reducing chloride levels in the Watershed. The goal of the Petitioners, since that Board action, has been to develop materials necessary to support a chlorides TLWQS for dischargers to the Watershed. This Joint Submittal is intended to serve that purpose.[3]

1.2 Identification of the currently-applicable water quality standard for the pollutants or parameter for which a TLWQS is sought.

In PCB No. R2008-09, the Board engaged in an extensive rulemaking process regarding designated uses, effluent limitations, and water quality standards for the CAWS and LDPR. Subdocket D involved the setting of water quality standards for the protection of aquatic life in the CAWS and LDPR, including standards for chlorides. These standards were adopted by an Opinion and Order of the Board dated June 18, 2015. The final rules appeared in the Illinois Register on July 10, 2015 (30 Ill. Reg. 9388, 9423, 9433). The winter chlorides standard, found

[2] By "Petitioners," we mean all parties who file an Individual Submittal in this matter that incorporates by reference this Joint Submittal. That group includes entities who have previously filed petitions that have been incorporated into the watershed TLWQS petition, as well as other entities that did not file petitions earlier but who are now filing Individual Submittals. The Petition (consisting of this Joint Submittal and the respective Individual Submittals) constitutes an Amended Petition for the previous filers, and an initial Petition for the new filers.

[3] Since the TLWQS being sought is a watershed TLWQS, Petitioners may present proposed eligibility criteria for determining whether other dischargers, who do not choose to join the petition at this time, may later ask to be covered. Petitioners believe that all, or almost all, of the dischargers in the source categories listed in this Joint Submittal have chlorides present in their discharges during the winter months. Therefore, the potential liability issues faced by Petitioners would exist for any of these dischargers, and any discharger to the Watershed who wants to be covered by the TLWQS should be eligible, as long as they agree to comply with the BMPs and other requirements set forth in this Joint Submittal and file an Individual Submittal.

in 35 IAC 302.407(g)(3), is not currently met on a consistent basis and cannot be met on a consistent basis in the Watershed during the term of the TLWQS that is being requested.

During the rulemaking, the Board received evidence that most reaches of the CAWS and LDPR were not currently meeting the new chlorides standards. This situation continues to exist. Data provided by the Metropolitan Water Reclamation District of Greater Chicago ("the District" or "the MWRD") show that for the period of January 2006 through April 2017, the exceedance rate of the 500 mg/L standard, at 14 locations on the CAWS, varied from 0.0% in the Grand Calumet River[4] up to 14.3% in the lower North Shore Channel. (Appendix 1.) The magnitude of the exceedance varied from sample to sample. In addition, data from 2006 through 2017 show that there were no exceedances in the months of April through November, with exceedances first occurring in December and then increasing to a peak in February, and last occurring in March. (Appendix 2.) Data for the LDPR, including Hickory Creek and its tributaries, show that for the period of February 2003 through February 2018, the exceedance rate of a 500 mg/L chloride concentration at 14 locations on the LDPR portion of the Watershed, varied from 0.0% in the Des Plaines River, unnamed tributary to the Des Plaines River, and Salt Creek, up to 21% in East Branch of Marley Creek (Appendix 3). The timing of these exceedances is coincident with the occurrence of cold and/or snowy weather. During the Board rulemaking proceeding, regulated parties raised concerns that effluent limits based on the new chlorides standards may be difficult or impossible to meet, and installing technological controls at their facilities would be infeasible (both technically and economically). The Board determined that the new chlorides standards

[4] While there are no measured exceedances in the Grand Calumet River, that reach still needs to be included in the TLWQS, for several reasons. First, the level of chloride loadings in any given year depends substantially on the weather (and resulting need to apply road salt). Because the weather is unpredictable, there could be exceedances in that reach in the future, causing potential liability to dischargers. Also, loadings in one reach can affect chloride levels in another reach of the Watershed. These same issues apply with respect to some reaches in the LDPR portion of the Watershed. To ensure that dischargers covered by the TLWQS are not subjected to liability if they are complying with the TLWQS conditions, the entire Watershed needs to be included.

would not apply until July 1, 2018, to allow the stakeholders to develop options for addressing these concerns while making progress in reducing chloride levels in the Watershed.

1.3 The location of the petitioner's activity and the location of the points of its discharge.

The CAWS portion of the Watershed consists of almost 100 miles of canals and waterways, including the following reaches: the Chicago River, a portion of the North Branch of the Chicago River, the South Branch of the Chicago River, the Chicago Sanitary and Ship Canal ("CSSC"), the Cal-Sag Channel, the Grand Calumet River, Lake Calumet, the Lake Calumet Connecting Channel, portions of the Calumet and Little Calumet Rivers, and the North Shore Channel.[5] *See also*, fn. 1, above. The LDPR portion of the Watershed extends from the Kankakee River up to the Will County Line, except for the DuPage River watershed, includes over 90 miles of waterway, including the Des Plaines River from the Kankakee River to the Will County Line, Hickory Creek, Union Ditch, Spring Creek, Marley Creek, and East Branch of Marley Creek.[6] The LDPR receives some flow from the upper portion of the Des Plaines River, but most flow comes from Chicago River, CSSC, and Illinois and Michigan (I&M) Canal.

It is estimated that there are 297 individual point source discharge permits for ongoing discharges that flow into the CAWS and 316 individual point source discharge permits that flow into the LDPR.[7] Each Individual Submittal will provide the specific location information for the facility seeking coverage under the TLWQS.

---

[5] The South Fork of the South Branch of the Chicago River, also known as Bubbly Creek, is also part of the CAWS, but it is not subject to the new chlorides standards at issue in this Joint Submittal. The Chicago River is also not subject to the new chlorides standards, but it is subject to the General Use standards, which include the winter chloride standard of 500 mg/L.

[6] Note that this is the LDPR scope as defined by IEPA and the Board for this TLWQS. It includes some areas that are not covered by the Board's CAWS/LDPR water quality standards. Those areas are covered by the General Use standards, which include the winter chloride standard of 500 mg/L.

[7] While there are additional permits for temporary or construction activities that discharge to the CAWS, this Joint Submittal refers to only ongoing discharges under a valid permit.

Each Individual Submittal will also specify which outfalls (among the list of CAWS discharge points) are to be covered in the TLWQS.

1.4 A map of the proposed watershed, water body, or waterbody segment to which the TLWQS will apply, including a written description of the watershed, water body, and/or waterbody segment including the associated segment code.

A map of the Watershed (previously filed with the Board by IEPA) is included as Appendix 4 to this Joint Submittal. Attached as Appendices 5 and 6 are lists of all permit holders discharging to the CAWS and LDPR respectively, which specify the receiving waterway for each permit holder.[8] A written description of the watershed is provided in Chapter 1.3, above.

The information required to satisfy this element for a TLWQS Petition will be provided in this Joint Submittal as supplemented by the Individual Submittals filed with the Board that rely on this Joint Submittal. Each Individual Submittal will provide the specific location information for the facility seeking coverage under the TLWQS.

1.5 Designated uses of the waterbody or waterbody segment identified above.

35 IAC 303, Subparts B and C define the designated uses of the Watershed. Specifically, the designated aquatic life uses for CAWS and LDPR waters (which are the relevant uses for purposes of the TLWQS) are specified in 35 IAC 303.230, 303.235, and 303.240. Those reaches included in the Watershed, for purposes of the TLWQS, that are not covered by any of those regulations are General Use waters, as provided in 303.201.

[8] In addition to these permitted discharges, Illinois Department of Transportation ("IDOT") and Illinois Tollway are covered in this Petition as to their discharges into the Watershed. Both of those entities are covered by NPDES General Permit No. ILR40 as to discharges throughout the State. The TLWQS would cover only their discharges under that Permit that are into reaches within the CAWS or LDPR.

Chapter 2

Compliance with the Regulation Cannot Be Achieved by the Compliance Date

Data describing the nature and extent of the present or anticipated failure to meet the water quality standards and facts that support Petitioner's argument that compliance with the water quality standards regulation cannot be achieved by any required compliance date.

The information required to satisfy this element of the TLWQS petition may be supplemented by Individual Submittals if circumstances unique to the individual petitioner warrant. However, as a general matter and as demonstrated herein, compliance with the chlorides standards cannot be attained.

The data and discussion below make clear that the reaches of the Watershed, which are the individual petitioners' receiving waters, do not currently meet the levels allowed by the standards on a consistent basis. Also, this Chapter discusses measures that have been considered to reduce chloride loadings. There are no feasible options to achieve standards compliance. There are some feasible measures that will reduce loadings, which are discussed below. In later Chapters of this Submittal, those measures are identified as best management practices ("BMPs") that each discharger will be required to implement.

2.1 Data regarding the present and anticipated failure to meet the chlorides standards.

The monitoring results for chloride levels in the Watershed during the period of January 2006 through April 2017 indicate that many of the reaches do not consistently meet the water quality standards in the winter. (Appendix 2.) Daily effluent chloride concentrations during winter months between December 2014 and April 2017 from the MWRD's four water reclamation plants that discharge into the Watershed are summarized in Appendix 7 and shown in a box and whisker plot in Appendix 8. The horizontal lines of the box and whisker plot indicate 25th, 50th (median), and 75th percentile of the effluent data, while the minimum and maximum are shown by the capped vertical lines. The complete effluent data set is found in Appendix 9. Exceedance rates of 500 mg/L chlorides in MWRD effluent during winter months (December – April) between December 2014 – April 2017 range from 2.4% at the Calumet Water Reclamation Plant ("WRP"), which discharges into the Little Calumet River, to 12.1% at the Lemont WRP, which discharges into the CSSC. None of the daily effluent chloride concentrations at Lemont WRP exceeded the CSSC acute standard of 990 mg/L, but 3.5% exceeded the chronic standard of 620 mg/L

Chloride exceedances during the winter months in the CAWS are summarized for January 1, 2006 – April 30, 2017 in Appendix 1, based on monthly Ambient Water Quality Monitoring by the MWRD. (Appendix 10 shows a map of sampling stations in the CAWS.) Winter exceedances of the 500 mg/L chloride standard were most frequent at Touhy Avenue in the North Shore Channel (14.3%).[9] Appendix 2 contains all of the CAWS chloride data collected between January 1, 2006 and April 30, 2017.[10]

Appendix 11 shows the percent magnitude of the water quality standard exceedances that were measured in each waterway from January 2006 to April 2017. CAWS-wide, just over half of the exceedances were less than 20 percent greater than 500 mg/L, or between 501-600 mg/L. (Appendix 11.) However, chloride concentrations were occasionally more than double the water quality standard (darkest blue segment in Appendix 11; >1,000 mg/L).

[9] While there are not many exceedances of the applicable standards in the CSSC or in the Calumet River System, these reaches still need to be included in the TLWQS for the Watershed, for the reasons discussed above as to the Grand Calumet River. In addition, as to the CSSC, it is not yet known whether the site-specific criteria for that reach that were adopted by the Board will be approved by U.S. EPA. If not, then the 500 mg/L standards for the rest of the Watershed would apply.

[10] Questions have been raised by stakeholders concerning the possibility of impacts on aquatic life during the month of April. It should be noted that chlorides concentrations are generally lower in April than in other months of the winter period, and there are fewer exceedances of the chloride standard during that month.

Using linear regression models, relationships were established between chloride concentrations measured monthly and simultaneously recorded hourly conductivity readings at proximate locations in the CAWS. Linear equations were then used to estimate potential exceedances of 500 mg/L during winter months between January, 2011 and April, 2017. (Appendix 12.) Similar to the Ambient Water Quality Monitoring chloride results, these estimates suggest that chloride water quality exceedances are less frequent in the Calumet River System than in the Chicago River System. There were few exceedances of the site specific winter acute water quality standard (990 mg/L) or chronic water quality standard (620 mg/L 4-day average) in the Chicago Sanitary and Ship Canal, according to conductivity-based chloride estimates. (Appendix 12.)

Chloride exceedances in the LDPR watershed during the winter months between February 2003 and February 2018 are summarized in Appendix 13, based on monthly instream water quality monitoring. Winter exceedances of the 500 mg/L chloride standard are most frequent in the upstream part of the Hickory Creek watershed. The LDPR sampling stations exhibited exceedance of 500 mg/L at Ruby St. in Joliet IL during the winter months between December 2005 and March 2006 (sampling ID G-23) and during the month of February 2018 (sampling ID LDPRCW_01). Appendix 14 contains all of the LDPR chloride data collected between February 2003 and February 2018.

Appendix 15 shows the magnitude of the water quality standard exceedances that were measured in each waterway during 2003-2017. For the LDPR portion of the Watershed, half of the exceedances are less than 30 percent greater than 500 mg/L; however, chloride concentrations occasionally exceeded 1,000 mg/L in the LDPR portion of the Watershed.

Using linear regression models, relationships were established between chloride concentrations measured weekly and simultaneously recorded hourly conductivity readings at the Channahon location in the LDPR (USGS 05539670), downstream of the confluence of Lower DuPage River and the Des Plaines River. Linear equations were then used to estimate potential daily exceedances of 500 mg/L January 2017 to February 2018. (Appendix 16.) Similar to the modeled chloride results for CAWS, these data suggest that chloride water quality exceedances in the LDPR are a function of specific conductance. There were daily exceedances of the 500 mg/L standard 3% of the time in the Des Plaines River.

2.2 Discussion of alternatives that would be necessary to obtain immediate compliance with the chlorides standards, which support Petitioners' argument that compliance with the chloride water quality standard cannot be achieved by the required compliance date.

In this section, a number of options are discussed that could result in chloride reductions. However, there is no feasible alternative that, within the confines of providing adequate public safety, allows for compliance with the chlorides standards in the Watershed.

The suite of BMPs identified below, which can be reasonably implemented by dischargers to the Watershed, should lead, over the long term, to significant progress toward compliance with the chlorides standards for the Watershed. The efficacy of the BMPs in the discussion below have been suggested by studies and discussed in literature. However, the actual effectiveness of these BMPs in the Watershed can only be determined through implementation of the BMPs and general monitoring of the Watershed. Implementation of a combination of the BMPs described below should reduce the discharge of chlorides to the Watershed. Implementation of the suite of BMPs is not expected to result in compliance with the standards – certainly not at any point in the near future.

2.2.1 Publicly Owned Treatment Works ("POTWs")

Most of the chlorides that flow through POTW treatment plant facilities are present in the runoff from municipalities and industries that discharge into the tributary sewer system. Chlorides from snow removal and deicing activities at the POTW itself also may end up in the sewer system and flow through the plant. The primary and secondary treatment processes utilized at POTWs cannot remove chlorides. Therefore, any reductions can only be achieved from both the tributary and on-site snow removal and deicing activities, prior to entry to the treatment processes.

A. End-of-Pipe Controls.

End-of-pipe controls would likely involve installation of reverse osmosis ("RO") units at every POTW. There are several problems with use of RO for this application. Most importantly, the systems would require a large amount of land – more than is available on the urban-located sites of most of the POTWs. Several of the POTWs, including the MWRD's plants, are very large, and treat an enormous amount of flow. As a result, the land requirements to implement RO at these facilities would also be enormous. For the three major MWRD plants, RO would require the following amounts of land: (1) for Stickney, 298 acres (at a plant with a total land area of 570 acres); (2) for O'Brien, 93 acres (at a plant with a total land area of 97 acres); and (3) for Calumet, 89 acres (at a plant with a total land area of 470 acres). (See Appendix 17.) These facilities are all surrounded by other developed properties, with other uses, so acquisition of the additional land needed for installation of large RO systems would not be feasible. Therefore, RO would simply not be feasible for these facilities.[11] And since those three

[11] The calculations of land area needs set forth here and in Appendix 17, as well as the cost estimates laid out below and in Appendix 22 for application of RO at the MWRD facilities, are based on extrapolation from the analyses set forth for application of RO to a treatment plant in Madison, Wisconsin, as set forth in the following document:

plants contribute most of the chloride loadings from the POTW category, RO is not a feasible option to reduce loadings from the category by any significant amount.

It is also worth noting that even if RO was a feasible option, the costs would be tremendous. Data on other RO installations show capital costs ranging between $4 million and $18 million per 1 million gallons a day (mgd).[12] Costs (including capital O&M, and brine disposal) have been estimated for the three major MWRD facilities (see Appendix 22), and those costs, in current dollars, would be as follows: $275 billion for Stickney, $70 billion for O'Brien, and $67 billion for Calumet. The resulting costs of over $350 billion are clearly beyond the financial capacity of the MWRD and of the user community.

Beyond those simple land availability and financial issues, there are other problems with implementing RO for POTWs, including: (1) the high energy requirements for RO facilities, which would impose large operational costs – and would increase the carbon footprint of the plants significantly; (2) lack of available disposal options for the large amounts of brine that would be generated; (3) the extended time schedules that would be required to design, construct and install the necessary RO systems; and (4) the fact that RO systems have never been successfully designed and implemented at the size that would be needed to address the large POTWs in the Watershed.

For all those reasons, applying RO controls to the POTW's effluents, to meet the new chloride standards, is not an option that can be applied.

AECOM, *Chloride Compliance Study Nine Springs Wastewater Treatment Plant Final Report*, June 2015 (Appendix 18).

[12] Examples are as follows: (1) a drinking water project for Western Springs, IL, to treat 1.7 mgd, cost $6,627,820 ; (2) a plant for Tampa Bay, FL, to treat 24 mgd, cost $110 million ; (3) a plant for San Diego County, to treat 54 mgd, cost $1 billion . (Supporting documents are attached as Appendices 19, 20 and 21.)

B. Reduction of Chlorides Discharged to Sewer System.

The other compliance option for the POTWs (and for other dischargers as well) would be to reduce the level of chlorides entering the sewer system. This would be done primarily through implementation of practices that reduce use of road salt during the winter, including, where appropriate, substitution of other materials to manage ice and snow on the roads. A number of communities in the Northern U.S and Canada have been researching and applying these types of practices to address chloride water quality concerns.[13]

The effectiveness of such a program is not guaranteed and depends greatly on the development and implementation of the programs. The effectiveness of the practices developed for a program aimed at reducing chloride loadings to waterways, and reducing ambient chloride levels in those waterways, has varied significantly across the range of communities and programs.[14] Reviewing the available studies (including those listed in footnotes 11, 12 and 13), it appears that the reductions obtained generally fall in a range of 10% to 25%; these reduction levels can take years to be fully realized. Many factors affect the success of these programs, and in order to be effective, a program needs to be developed on a watershed-specific basis, taking into account the unique factors that are present in that situation—including consideration of any public safety issues that could result from reducing use of road salt for deicing operations. This Joint Submittal represents a plan that Petitioners believe has a high likelihood of success in reducing chloride loadings and concentrations.

---

[13] See, for example, Kilgour, Gharabaghi, Perera, *Ecological benefit of the road salt code of practice* (2014); Transportation Association of Canada, *Syntheses of Best Practices – Road Salt Management, Chapter 11 – Successes in Road Salt Management: Case Studies* (2013); DuPage River Salt Creek Workgroup/CDM, *Chloride Usage Education and Reduction Program Study: Final Report* (2007); New Hampshire Department of Environmental Services, *Chloride Reduction Implementation Plan for Dinsmore Brook Watershed, Windham, NH* (2011); Local Research Board, Minnesota Department of Transportation, *Transportation Research Synthesis: Chloride Free Snow and Ice Control Material*, TRS 1411 (2014) (attached as Appendices 23, 24, 25, 26 and 27).

[14] See Stone, Emelko, Marsalek, Price, Rudolph,Saini, Tighe, *Assessing the Efficacy of Current Road Salt Management Programs* (July 26, 2010), for University of Waterloo and National Water Research Institute (attached as Appendix 28).

However, even if such a program is well tailored and poised for success, there is often a significant lag time between implementation of the program and seeing a significant improvement in water quality.[15] Therefore, it is critical to include, as a component of the program, an adaptive management element, so that as results are seen (or not seen), the program can be adjusted to improve the long-term situation. A mix of chlorides BMPs for the Watershed has been developed, in consultation with the Salt Institute. This set of BMPs is proposed here for implementation under the TLWQS, but it important to recognize that implementation of those BMPs is not expected to achieve compliance with the standards – certainly not at any point in the near future.

The BMPs that POTWs will implement to reduce chloride runoff from their own onsite snow removal/deicing practices are:

1. All salt will be stored on an impermeable pad.
2. Pads must be constructed to avoid drainage onto the pad, and a collection point must be constructed for drainage.
3. Salt piles shall be covered at all times except when in active use, unless stored indoors.
4. Good housekeeping practices must be implemented at salt piles and during salt loading/unloading operations.
5. All salt spreading equipment must be calibrated at least annually. Records of the calibration results must be maintained for each piece of spreading equipment.
6. Road salt will be pre-wetted 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.
7. Equipment will be purchased and utilized to measure the pavement temperature.
8. Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.
9. Salt quantity used and storm conditions will be tracked during each storm and recorded.

[15] Meals, Dressing, Davenport, *Lag Time in Water Quality Response to Best Management Practices: A Review*, J. Environ. Qual. 39:85-96 (2010) (attached as Appendix 29).

10. A plan must be developed for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products).
11. Employees involved in winter maintenance operations must undergo annual training in best practices in the use of road salt in such operations (including the practice of plowing first, and applying salt only after snow has been cleared).
12. Where deicing practices are contracted out, contractors will be managed appropriately, including holding them to compliance with the permittee's own BMPs and training programs.
13. An annual report must be completed, as required by Chapter 9.2.

2.2.2 Communities with Combined Sewer Overflow ("CSO") Outfalls

The chlorides that run off from communities with CSO outfalls into the combined sewer system have the potential to reach the waterways via the tributary POTW or a direct CSO discharge. As with POTWs, reductions must be achieved from CSO communities' snow and ice removal activities prior to entry into the combined sewer system.

A. End of Pipe Controls (Reverse Osmosis)

See general discussion of RO, above, at Chapter 2.2.1(A). Beyond the reasons discussed above, there are additional reasons why RO would not be feasible to address chloride discharges from CSOs. In the Watershed, there are hundreds of individual CSO outfalls. For most, there is very little excess land available near the outfall points – and certainly not enough to install RO facilities at each location. Further, the cost of installing hundreds of RO facilities would be more than even the billions of dollars estimated for the POTWs. And, RO has not previously been applied to intermittent, infrequent wet-weather discharges such as CSOs.

B. Reduction of Chlorides Discharged

The snow removal/deicing activities that are implemented each year by the municipalities contribute to chlorides in the Watershed's waterways. As discussed in Chapter 3, immediate reductions in these activities, to attempt to achieve compliance with the standard, would be impractical and dangerous.

The BMPs that CSO Communities will implement for their snow/deicing practices would be the same set as are identified above for POTWs, plus several additional requirements that would apply to the maintenance fleets of the communities. The BMPs are:

1) All salt will be stored on an impermeable pad.
2) Pads must be constructed to avoid drainage onto the pad, and a collection point must be constructed for drainage.
3) Salt piles shall be covered at all times except when in active use, unless stored indoors.
4) Good housekeeping practices must be implemented at salt piles and during salt loading/unloading operations.
5) All salt spreading equipment must be calibrated at least annually. Records of the calibration results must be maintained for each piece of spreading equipment.
6) Road salt will be pre-wetted 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.
7) Equipment will be purchased and utilized to measure the pavement temperature.
8) Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.
9) Salt quantity used and storm conditions will be tracked during each storm and recorded.
10) A plan must be developed for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products).

11) Employees involved in winter maintenance operations must undergo annual training in best practices in the use of road salt in such operations (including the practice of plowing first, and applying salt only after snow has been cleared)..

12) Where deicing practices are contracted out, contractors will be managed appropriately, including holding them to compliance with the permittee's own BMPs and training programs.

13) An annual report must be completed, as required by Chapter 9.2.

14) Equipment to measure the pavement temperature will be installed on the winter maintenance fleet for a sufficient number of vehicles to provide sufficient information to adjust application rates for the most efficient levels. A plan to equip the winter maintenance fleet must be developed, and must be completely implemented by the end of the initial TLWQS period.

15) By the end of the initial TLWQS period, a method must be developed to determine whether each truck in fleet applied salt at the recommended rate, why any variations occurred, and ensure that a variation occurs only when strictly necessary.

2.2.3 Industrial Sources

The primary sources of chloride discharges associated with industrial activities and facilities that contribute chlorides to the Watershed during the winter season are de-icing practices, similar to municipalities and transportation agencies, and water softening operations.

<u>A. End of Pipe Controls (Reverse Osmosis)</u>

See general discussion of RO, above, at Chapter 2.2.1(A). RO application to a treated industrial effluent poses even more challenges than described in Chapter 2.2.1(A) above for POTW effluents. Because many industrial process wastewaters contain higher concentrations of organic constituents (e.g., as typically characterized as total organic carbon ("TOC") and chemical oxygen demand ("COD")), their treated effluents will contain higher effluent concentrations of TOC and COD that consist of polymeric byproducts of the bacteria used in a biological treatment system. These TOC and COD components will foul RO membranes, rendering the system non-functional, and thus must be removed upstream of the RO units by the application of multiple treatment technologies. At a minimum, these pretreatment technologies will typically include granular media filtration, activated carbon adsorption, and micro- or ultrafiltration, all of which are difficult to operate and have high capital and operating costs. Furthermore, each of these pretreatment processes generate wastes (residuals) that require management and disposal. With respect to cost, in testimony for the water quality standards, one refinery estimated the capital cost of such a system at $42M[16]. It is likely that for all industrial dischargers, the costs and operation requirements of an end-of-pipe RO system will be technically infeasible and economically prohibitive. Moreover, contributions of chlorides from industrial sources are not substantial in relation to other loadings, so reductions from applying RO to those sources would not make a significant difference in the extent to which the Watershed attains the winter chloride standards.

B. Reduction of Chlorides Discharged

There are two primary sources of chloride associated with industrial activities and facilities that contribute chlorides to the Watershed during the winter season: (1) de-icing practices, which are similar to practices used by municipalities and transportation agencies; and (2) water softening operations (commonly required for boiler feedwater and other commercial and industrial purposes), where sodium chloride is used to regenerate the ion exchange resins.

[16] PCB No. R2008-09(D), Pre-Filed Testimony of James E. Huff for Citgo Petroleum Corporation, at 9 (attached as Appendix 30).

The water softening practice is conducted continuously and year round and, by itself does not result in water quality chloride concentrations above 500 mg/L in the Watershed. Nevertheless, during the seasonal periods of concern, industrial ion-exchanger regeneration discharges may contribute to effluent chloride concentrations that exceed 500 mg/L.

A BMP alternative for water softening is to increase the usage of RO for the production of boiler feed water, which eliminates the use of sodium chloride for regeneration. This switch can cost millions of dollars for each facility, and again, this chlorides source is not a significant contributing cause of winter chloride water quality standard exceedances in the Watershed. Furthermore, RO cannot provide demineralized water of sufficient quality for all steam generation systems. Therefore, ion exchange units, that may require chloride-containing chemicals for regeneration, will still be necessary to operate some manufacturing plants. In addition, where RO is used, phosphoric acid is used to de-scale the membranes, so some increase in phosphorus discharge can occur when RO is implemented.

Each facility that uses chlorides in its water softening operations, should evaluate chloride uses including water softening practices, and determine if opportunities exist to minimize chloride usage, including optimization of water softening operations, reducing water use, and reducing the need for softened water. This evaluation should be completed by the end of the initial TLWQS period.

If chemical usage at an industrial facility results in substantial chloride discharges, the facility should evaluate and determine if chemical substitutions are available that could result in significant chloride reductions. This evaluation should be completed by the end of the initial TLWQS period.

For the de-icing practices, the BMPs are the same as the BMPs for POTWs[17]:

1) All salt will be stored on an impermeable pad.
2) Pads must be constructed to avoid drainage onto the pad, and a collection point must be constructed for drainage.
3) Salt piles shall be covered at all times except when in active use, unless stored indoors.
4) Good housekeeping practices must be implemented at salt piles and during salt loading/unloading operations.
5) All salt spreading equipment must be calibrated at least annually. Records of the calibration results must be maintained for each piece of spreading equipment.
6) Road salt will be pre-wetted 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.
7) Equipment will be purchased and utilized to measure the pavement temperature.
8) Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.
9) Salt quantity used and storm conditions will be tracked during each storm and recorded.
10) A plan must be developed for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products).
11) Employees involved in winter maintenance operations must undergo annual training in best practices in the use of road salt in such operations (including the practice of plowing first, and applying salt only after snow has been cleared)..

[17] In addition to the proposed requirements set forth here, some industrial discharges are subject to conditions on the storage of de-icing material that are provided in their individual permits or in IEPA's General NPDES Permit for Storm Water Discharges from Industrial Activities (General Permit No. ILR00). This permit is located at http://www.epa.state.il.us/water/permits/storm-water/general-industrial-permit.pdf .

12) Where deicing practices are contracted out, contractors will be managed appropriately, including holding them to compliance with the permittee's own BMPs and training programs.

13) An annual report must be completed, as required by Chapter 9.2.

For industrial facilities, salt use tends to be smaller in overall tons applied as compared to municipalities and transportation agencies, and therefore capital investment in expensive technology would –provide little benefit for the large cost. In addition, the snow removal is often contracted out, and the contractor's ability to retain a customer has historically been based on dry pavement, not the least amount of salt that needs to be applied. Thus, training of contractors will be a primary BMP emphasis at each industrial facility.

2.2.4 Municipal Separate Storm Sewer Systems ("MS4s")

The snow removal/deicing activities of MS4 municipalities contribute to chlorides in the waterways via runoff into storm sewers which discharge directly to the waterways. As explained elsewhere, immediate reductions in these activities to achieve compliance with the standard is impractical and dangerous.

The BMPs that MS4 Communities will implement for their snow/deicing practices are the same as for the CSO Communities[18]:

1) All salt will be stored on an impermeable pad.
2) Pads must be constructed to avoid drainage onto the pad, and a collection point must be constructed for drainage.
3) Salt piles shall be covered at all times except when in active use, unless stored indoors.

---

[18] In addition to the requirements proposed here, some MS4 communities are subject to requirements as to storage of de-icing material, and as to participation in watershed groups as to chloride reductions, that are set forth in IEPA's General NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems, which is located at http://www.epa.illinois.gov/Assets/iepa/water-quality/surface-water/storm-water/ms4/general-ms4-permit.pdf .

4) Good housekeeping practices must be implemented at salt piles and during salt loading/unloading operations.

5) All salt spreading equipment must be calibrated at least annually. Records of the calibration results must be maintained for each piece of spreading equipment.

6) Road salt will be pre-wetted 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.

7) Equipment will be purchased and utilized to measure the pavement temperature.

8) Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.

9) Salt quantity used and storm conditions will be tracked during each storm and recorded.

10) A plan must be developed for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products).

11) Employees involved in winter maintenance operations must undergo annual training in best practices in the use of road salt in such operations (including the practice of plowing first, and applying salt only after snow has been cleared)..

12) Where deicing practices are contracted out, contractors will be managed appropriately, including holding them to compliance with the permittee’s own BMPs and training programs.

13) An annual report must be completed, as required by Chapter 9.2.

14) Equipment to measure the pavement temperature will be installed on the winter maintenance fleet for a sufficient number of vehicles to provide sufficient information to adjust application rates for the most efficient levels. A plan to equip the winter

maintenance fleet must be developed, and must be completely implemented by the end of the initial TLWQS period.

15) By the end of the initial TLWQS period, a method must be developed to determine whether each truck in fleet applied salt at the recommended rate, why any variations occurred, and ensure that a variation occurs only when strictly necessary.

2.2.5 Illinois Department of Transportation ("IDOT") / Illinois Tollway

The snow removal/deicing activities that are implemented each year by IDOT and the Illinois Tollway ("Tollway") contribute to chlorides in the waterways. Immediate reduction in these activities, to attempt to achieve timely compliance with the standard, would be impractical and dangerous. *See* Chapter 3 for more information.

The BMPs that IDOT/Tollway will implement for their snow/deicing practices are the same as for the CSO Communities and MS4 Communities:

1. All salt will be stored on an impermeable pad.
2. Pads must be constructed to avoid drainage onto the pad, and a collection point must be constructed for drainage.
3. Salt piles shall be covered at all times except when in active use, unless stored indoors.
4. Good housekeeping practices must be implemented at salt piles and during salt loading/unloading operations.
5. All salt spreading equipment must be calibrated at least annually. Records of the calibration results must be maintained for each piece of spreading equipment.
6. Road salt will be pre-wetted 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.

7. Equipment will be purchased and utilized to measure the pavement temperature.
8. Develop and implement a protocol to vary the salt application rate based on pavement temperature, existing weather conditions, and forecasted weather conditions.
9. Salt quantity used and storm conditions will be tracked during each storm and recorded.
10. A plan must be developed for implementation of anti-icing, with milestones. The plan should consider increased use of liquids (e.g., carbohydrate products).
11. Employees involved in winter maintenance operations must undergo annual training in best practices in the use of road salt in such operations (including the practice of plowing first, and applying salt only after snow has been cleared)..
12. Where deicing practices are contracted out, contractors will be managed appropriately, including holding them to compliance with the permittee's own BMPs and training programs.
13. An annual report must be completed, as required by Chapter 9.2.
14. Equipment to measure the pavement temperature will be installed on the winter maintenance fleet for a sufficient number of vehicles to provide sufficient information to adjust application rates for the most efficient levels. A plan to equip the winter maintenance fleet must be developed, and must be completely implemented by the end of the initial TLWQS period.
15. By the end of the initial TLWQS period, a method must be developed to determine whether each truck in fleet applied salt at the recommended rate, why any variations occurred, and ensure that a variation occurs only when strictly necessary.

2.2.6 Salt Storage Facilities

Salt storage can contribute chlorides to the aquatic environment when precipitation reaches the stockpile causing runoff to a waterway or to a drainage system, or by infiltrating into the soil on which it rests and reaching the water table.

The BMPs that salt storage facilities will implement that may result in reductions of chlorides discharged are:

a) Salt must be stored on an impermeable pad at all times; temporary storage on permeable surfaces is not allowed.

b) Pads must be constructed so that rain water or other precipitation does not drain onto the pad; any rain that falls on the pad must be drained to a collection point.

c) Outdoor salt piles not stored under permanent cover must be covered by well-secured tarp at all times except when in active use.

d) Good housekeeping practices must be in place for when salt is being placed into storage and moved from storage into trucks. Any spilled salt shall be swept up and returned to storage in a timely manner.

e) Annual training must be conducted for employees.

f) An annual report must be completed, as required by Chapter 9.2.

Chapter 3

Attainment of the Designated Uses Is Not Feasible

Demonstration that attainment of the designated use(s) and criteria are not feasible throughout the term of the time-limited water quality standard because, as described by 35 IAC 104.560(a):

a. Human caused conditions or sources of pollution prevent the attainment of the designated use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

b. Widespread economic and social impact would result from controls more stringent than those required by CWA Sections 301(b) and 306.

The challenges that are involved in making progress toward compliance with the winter chlorides standards in the Watershed have been discussed in Chapter 2 of this Joint Submittal. The Petitioners expended considerable time and resources in studying, evaluating, and providing supporting information for each of the alternatives discussed in Chapter 2. The Petitioners also consulted with Illinois EPA and the U.S. EPA in developing and addressing the compliance alternatives.

As explained in Chapter 2 and in this Chapter, no feasible alternatives exist that would allow for compliance with the standards. Reverse osmosis is not feasible. Stopping the use of salt for de-icing roadways and sidewalks would have major adverse implications for public safety and health. And BMPs will achieve some reductions in chloride loadings, but will not result in compliance with the standards.

The primary basis for the TLWQS sought is that human caused conditions (i.e., reliance on salt for de-icing of roadways and thoroughfares) that cannot be remedied prevent the attainment of the water quality standards. Secondarily, since RO, even if feasible, would cost hundreds of billions of dollars, and stopping the use of salt would result in substantial increases in deaths and injuries due to ice-related accidents, it is clear that efforts necessary to comply with the standards are more stringent than those required by the Clean Water Act §§ 301(b) and 306 and would result in widespread economic and social impact. Therefore, the TLWQS is justified pursuant to 35 IAC 104.560(a)(3) primarily, and 104.560(a)(6) secondarily.

As discussed in Chapter 2, the inability of the dischargers to the Watershed to comply with the chlorides standards established by the Board for the Watershed is driven largely by the need to maintain safe roadway conditions for travelers and safe walking surfaces for pedestrians. As explained in that chapter, application of reverse osmosis to reduce chloride loadings is not feasible. The only other option, stopping the use of road salt, might be feasible, but would be very dangerous to the public. This chapter explains the severe social and economic impacts that would result from efforts to implement that option.

3.1 The Social and Economic Impacts of Reducing Salt Usage in Deicing Are Untenable

The greatest concern with applying aggressive measures in an attempt to meet the chlorides standards as quickly as possible is that the seasonal largest contributor to levels of chlorides in the Watershed is the use of salt to de-ice roadways, thoroughfares, and industrial/commercial/public parking lots, walkways and working surfaces during winter months.[19] Reduction in the salt used for this critical purpose presents public safety threats that cannot be ignored.

Failure to properly salt the roads presents multiple negative and grave social impacts, including increased likelihood of accidents involving vehicles traveling on roadways as well as pedestrians traveling on roadways or maintained sidewalks. Allegations of failure to properly

[19] Providing this service to constituents is a costly endeavor. According to the Federal Highway Administration ("FHA") , state Departments of Transportation expend roughly 20% of their budgets on snow removal and deicing activities with a direct cost of $2.3 billion and an indirect cost (infrastructure and environmental cost of $5 billion annually. Benefit-Cost of Various Winter Maintenance Strategies, Project 99006/CR13-03, Western Transportation Institute, September 2015 (Appendix 31.)

maintain these thoroughfares could easily result in liability for municipal, governmental, or private entities responsible for their maintenance.

Although extreme weather events may result in road closures or travel emergencies being declared, such declarations do not obviate the need for everyone to avoid travel in such conditions. The area served by the CAWS, as represented by Cook County, encompasses some 2.3 million commuters, who drive, bike, walk or take mass transit to work. (See Appendix 32.) This population demands and deserves safe avenues of travel be provided to accommodate their personal and professional needs. Those employees who can least afford to skip a day of work or whose employers do not provide for days off or accept travel delays for late arrivals may be especially affected by any increase in travel restrictions to accommodate less effective de-icing measures.

3.2.1 Risks to Public Safety

The use of aggressive measures to meet chlorides standards would likely result in a reduction in deicing roadways and thoroughfares by municipal and public agencies during winter months. According to the Federal Highway Administration ("FHA"), even with existing deicing practices and frequency, over 1,300 people are killed and more than 116,800 people injured annually in vehicular accidents on snowy or icy pavement.[20] The FHA also tracked the number of accidents, fatalities, and injuries due to road weather conditions over the past 10 years (Table 3-1).[21] There are hundreds of thousands of vehicular accidents every year that result from adverse road conditions due to snow and ice.

Drastic reductions in the amount of salt used for this critical purpose would present public safety considerations and demands that other alternative plans be devised to move toward

[20] FHA. Snow and Ice. Accessed June 2017. (Appendix 33.)
[21] FHA. How Do Weather Events Impact Roads? Accessed March 2018. (Appendix 34.)

compliance with the Board's chlorides standards while not endangering public safety. Safety and mobility are the primary reasons for winter road maintenance. Currently there are no other environmentally safe and cost-effective alternatives that work as effectively; therefore, the continued use of salt by major metropolitan regions is expected to continue as the predominant deicing agent for public safety.[22]

TABLE 3-1 WEATHER-RELATED CRASH STATISTICS [a]

Road Weather Conditions	**Crashes/Injuries/Fatalities (Annual Averages)**		**10-Year Percentages**
Snow/Sleet	210,341 crashes	4% of vehicle crashes	17% of weather-related crashes
	55,942 persons injured	3% of crash injuries	13% of weather-related injuries
	739 persons killed	2% of crash fatalities	13% of weather-related fatalities
Icy Pavement	151,944 crashes	3% of vehicle crashes	13% of weather-related crashes
	38,770 persons injured	2% of crash injuries	9% of weather-related injuries
	559 persons killed	2% of crash fatalities	10% of weather-related fatalities
Snow/ Slushy Pavement	174,446 crashes	4% of vehicle crashes	14% of weather-related crashes
	41,597 persons injured	2% of crash injuries	10% of weather-related injuries
	538 persons killed	2% of crash fatalities	10% of weather-related fatalities

[a] Adapted from Appendix 34. "Weather-related" crashes are those that occur in the presence of adverse weather and/or slick pavement conditions.

There are numerous studies that document the substantial (and obvious) impact of snow in causing slippery roads, as well as the beneficial impact of salt application as a mitigating measure. Some key studies on these issues are summarized below.

[22] Minnesota Pollution Control Agency. 2016. Twin Cities Metropolitan Area chloride management plan. (Appendix 35.)

Rubin et al. (2010), in cooperation with the Maine Department of Transportation ("Maine DOT"), examined the winter maintenance of Maine's roads between 1989 and 2008 and found a decrease in fatalities from vehicular accidents on state highways that coincided with the same timeframe that the Maine DOT implemented an anti-icing policy. It is unknown, however, to what extent that policy or other factors contributed to the decrease in fatalities.[23] Rubin et al. (2010) also found that colder temperatures with snowfall led to large increases in vehicular accidents. On days with temperatures below 25 degrees F and snowfall greater than one inch, there were 127 more accidents than the average daily rate of 82 accidents. According to the Handbook of Road Safety Measures (2004), the introduction of salting throughout the winter season could have as much as a 22 percent decrease in injury while the cessation of salting could have as much as a 12 percent increase in injury. (See Appendix 36.)

Mahoney et al. (2017) compared vehicular accidents with nonfatal injuries between seven winters (1999/2000-2005/2006) in which a sand–salt (7:2) mix was used and seven winters (2006/2007-2012/2013) in which only salt was used, following a 2005 decision by the Connecticut DOT to convert from deicing to anti-icing policies.[24] Nonfatal injuries declined by 19 percent between the seven winters the sand–salt mix was used and the seven winters in which only salt was used. The same types of vehicular accidents that occurred when roads were snow, slush, or ice covered declined by 33 percent with the use of salt alone (Figure 3-1, adapted from Appendix 34).

[23] Rubin, J., P.E. Garder, K.L. Nichols, J.M. Peckenham, P. McKee, A. Stern, and T.O. Johnson. 2010. *Maine winter roads: salt, safety, environment and cost*. Margaret Chase Smith Policy Center, University of Maine, Orono, ME. (Appendix 36.)

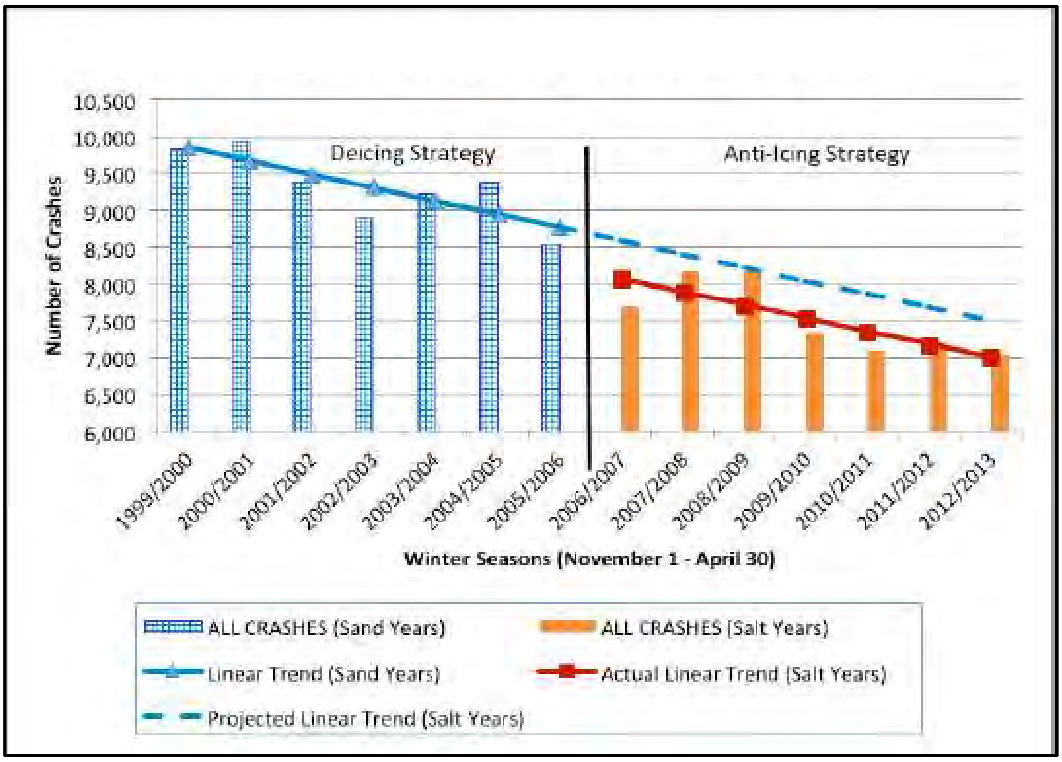
[24] Mahoney, J., D.A. Larson, and E. Jackson. Reduction in nonfatal injury crashes after implementation of anti-icing technology. Transportation Research Record: *Journal of the Transportation Research Board*, No. 2613. Transportation Research Board of the National Academies, Washington, D.C., 2017, pp. 79-86. (Appendix 37.)

Qiu and Nixon (2008) conducted a meta-analysis of 34 studies between 1967 and 2005 that examined the interaction of weather and traffic safety and found on average an 84 percent increase in overall vehicular accident rates during snowfall.[25] Qiu and Nixon (2009) evaluated three stepwise models to understand the direct and indirect influence of weather, maintenance and road surface conditions on crash probabilities.[26] Their 2009 analysis included weather conditions (snow, wind, low visibility, and low temperature), maintenance (plowing, sanding, and salting), road conditions (wet, dry, snow/ice, slush), and speed using four years of data from the Road Weather Information Systems ("RWIS"), transportation department records, and automated traffic recorders. The authors found that roads with a salt treatment were significantly more likely to have slush conditions than snow/ice conditions and thus improved road conditions. Overall, the authors concluded that road surface conditions have a strong effect on crash probability, and that salt addition significantly improves road surface conditions and safety outcomes.

[25] Qiu, L., and W. Nixon. Effects of adverse weather on traffic crashes: Systematic Review and Meta-Analysis. Transportation Research Record: *Journal of the Transportation Research Board*, No. 2055. Transportation Research Board of the National Academies, Washington, D.C., 2008, pp. 139-146. (Appendix 38.)

[26] Qiu, L., and W. Nixon. *Performance Measurement for Highway Winter Maintenance Operations*. Final Report. Iowa Highway Research Board, Iowa City, IA, 2009. (Appendix 39.)

FIGURE 3-1 NUMBER OF WINTER SEASON VEHICULAR ACCIDENTS INVOLVING INJURIES



Norman et al. (2000) classified 10 different types of slipperiness for Swedish roads along with their associated variables (e.g., temperature, humidity, wind speed), using data from the Swedish RWIS for three winter periods.[27] The Swedish RWIS has more than 600 roadside stations that measure several meteorological variables and takes measurements twice an hour, resulting in a data set with highly temporal and high spatial resolution. Vehicular accident data was taken from the Swedish National Road Administration. Vehicular accident rates associated with the different types of slipperiness were then compared. The authors found that the largest number of traffic accidents occurred during snow or rain/sleet on a frozen road surface (Table 3-2). Slipperiness due to rain/sleet on a frozen road surface had the highest accident risk. The

[27] Norman, J., M. Eriksson, and S. Lindquist. 2000. Relationships between road slipperiness, traffic accident risk and winter road maintenance activity. *Climate Research*, 15(3), 185-193.(Appendix 40.)

second most hazardous road condition was with snowfall together with hoarfrost. There was also a decrease in accidents with an increase in road maintenance during slippery conditions; of course, even with full maintenance activity deployed, some traffic accidents still occurred.

TABLE 3-2 VEHICULAR ACCIDENT DISTRIBUTION ON SLIPPERY ROAD CONDITIONS AND ACCIDENT RISK FOR EACH SLIPPERINESS CLASSIFICATION [a]

Slipperiness Classification	**Accident Distribution (%)**	**Accident Risk** [b]
(1) Precipitation (rain/sleet) on a frozen road surface	13	11.6
(2) Precipitation (snow) on a frozen road surface	36	6.1
(3) Precipitation (snow/sleet) on a warm road surface	6	3.4
(4) Snowfall together with hoarfrost	6	6.4
(5) Hoarfrost and low visibility	8	1.5
(6) Freezing dew followed by hoarfrost	2	3.2
(7) Strong formation of hoarfrost	12	2.5
(8) Weak formation of hoarfrost	11	4.5
(9) Drifting snow	5	1.5
(10) Watercover which freezes	1	2.6
Non-slippery		0.7

[a] Adapted from Norman et al. 2000. Based on 246 accidents.
[b] For accident risk < 1, the number of traffic accidents occurring during that type of slipperiness is the same as the expected number of accidents. For risk > 1, more traffic accidents occur than expected.

Usman et al. (2010) determined a relationship between road surface conditions and collision frequency using traffic volume, traffic accident, road condition weather information system ("RCWIS"), RWIS, and environmental data from a number of Ontario and Canadian agencies.[28] The authors developed a Road Surface Index ("RSI") by establishing seven classes of road surface conditions and applying friction measurements from literature reviews. The road surface friction ranged from 0.1 (poorest, e.g., ice covered-conditions) to 1.0 (best, e.g., dry conditions). Each class of road surface condition was then assigned an RSI value. (Figure 3-2,

[28] Usman, T., Fu, L., and Miranda-Moreno, L. 2010. Quantifying safety benefits of winter road maintenance: Accident frequency modeling. *Accident Analysis and Prevention* 42 (2010) 1878-1887. (Appendix 41.)

from that study, shows the authors' findings.) The authors developed a model, calibrated using data sets developed from four different stretches of highways in Ontario, Canada, and applied it to assessing the safety benefit of alternative winter road maintenance goals for a specific maintenance route under a specific snowstorm event (Figure 3-3 shows the study's results.) There was a decrease in the number of accidents expected to occur with an increase in average road surface condition over an assumed snow storm.

FIGURE 3-2 ROAD SURFACE INDEX (RSI) VALUES FOR DIFFERENT ROAD SURFACE CLASSES.

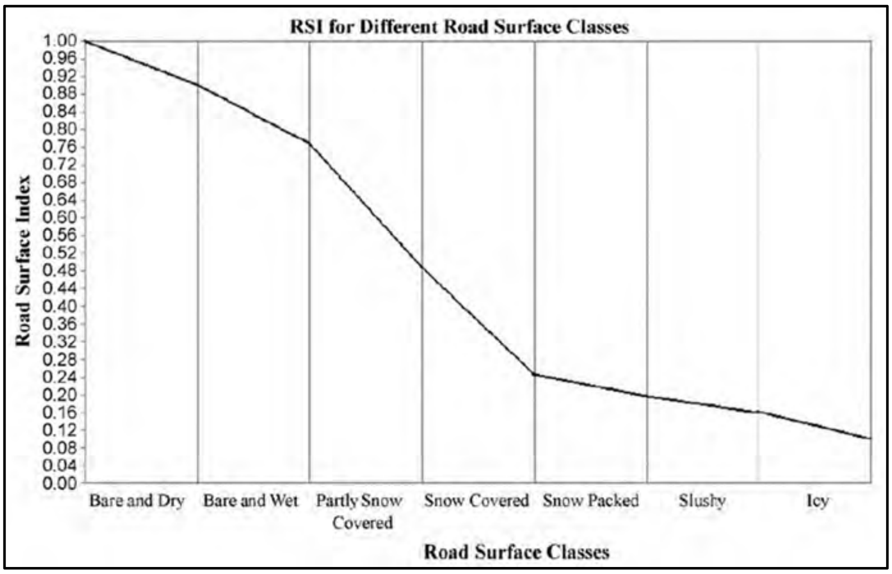
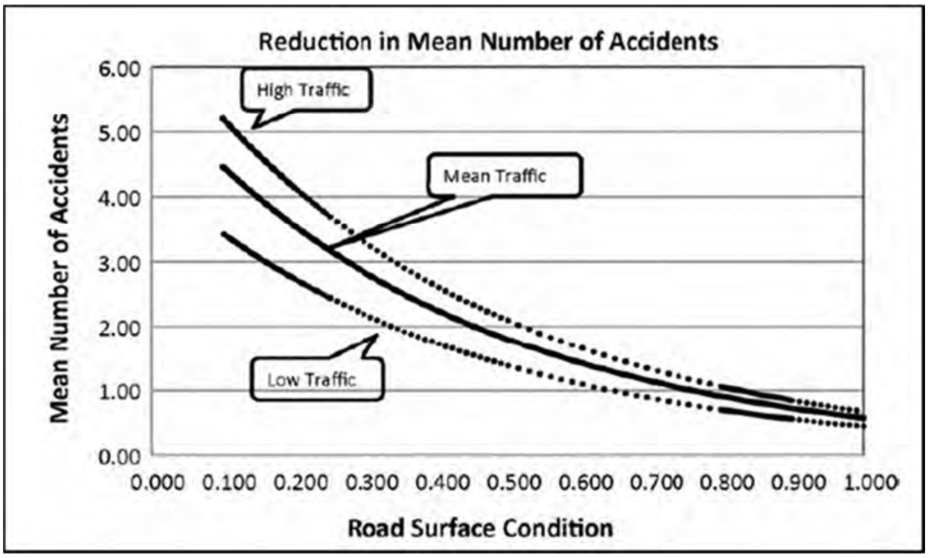


FIGURE 3-3 ACCIDENT FREQUENCY AS A FUNCTION OF ROAD SURFACE INDEX (RSI).



3.2.2 Economic Impact of Safety Risks

Public agencies, hospitals, and first responders all require passable sidewalks and roads during snowfall events and the public has high expectations for this maintenance. Many communities set a goal of clearing snow cover within just 24 hours.[29] Communities put significant effort into determining and meeting the level of service expectations of their constituents; the public generally expects expressways and arterial roads to be passable and safe.[30] Although transportation agencies often warn against driving in inclement conditions, people expect to safely travel on the roadways regardless of weather. Public agencies responsible for maintaining sidewalks and roadways not only must protect the health and safety of the public, but also protect taxpayers from lawsuits. This does not mean that communities can do nothing to reduce salt use, but it does counsel caution, and dictates against any possibility of eliminating or drastically reducing salt use.

[29] City of Cincinnati. *Winter Operations Goals and Methods*. Accessed June 2017. (Appendix 42).
[30] Gutherie, D. 2010. *Winter Maintenance Operations Level of Service. A Toronto Experience*. Presentation at APWA North American Snow Conference. Accessed June 2017. (Appendix 43.)

Faley and Pitcoff (2011) describe a court case that may put municipalities at higher risk of liability suits for not maintaining sidewalks and roads to the public's expectations.[31] Typically municipalities cannot be liable for injuries stemming from an allegedly dangerous and/or defective street or sidewalk condition when there is no prior written notice of that condition; however, an exception to this rule is when a municipality created the defect or hazard through an affirmative act of negligence. Although this rule has generally been challenged with suits involving potholes and poor sidewalk conditions, the authors summarize a recent suit won by the plaintiff who slipped on black ice allegedly created when the municipality piled snow in a parking lot the day prior to the incident.

Attorneys also actively advertise for clients seeking compensation for winter road accidents.[32] They encourage clients to file suit based not only on road conditions, but also on the timeliness of corrective actions.[33] Although some states, such as Connecticut, have written laws to try to limit the liability for municipalities for icy sidewalks,[34] they are still likely to be challenged and possibly held liable for snowy or icy conditions.[35] Eliminating the use of salt to clear sidewalks and roads would drastically increase local governments' vulnerability to winter-weather related lawsuits.

[31] Faley, K.G. and K.E. Pitcoff. 2011. Court of Appeals Holds That Conditions Involving Snow or Ice Need Not Be Immediately Created in Order to Hold a Municipality Liable Under the Affirmative Creation Exception to the Prior Written Notice Rule. *NYSBA Torts, Insurance & Compensation Law Section Journal*, 40(2). (Appendix 44).
[32] Botto Gilbert Lancaster Attorneys at Law. *Winter Driving Safety And Car Accident Prevention On Illinois Roads.* Accessed: June 2017. (Appendix 45); Rosenfeld Injury Lawyers. *Attorneys for People Injured in Illinois Winter Car Accidents*. (Appendix 46); The Sanders Firm. *Winter Havoc on NY Roads Causes Hundreds of Crashes*. (Appendix 47).
[33] Warshafsky Law, *Suing for Car Accidents Involving Ice on the Road in Wisconsin*. (Appendix 48.)
[34] Connecticut Conference of Municipalities, 2004. *Connecticut Municipal Snow Removal: A CCM Research and Information Municipal Tool Kit.* (Appendix 49.)
[35] Illinois has recently passed a law regarding liability for snowy or icy conditions, but that statute (the Snow Removal Service Liability Limitation Act, 815 ILCS 875) only limits the ability of private parties to pass liability to snow removal and ice control service providers, so does not affect the need for this TLWQS.

As noted in the discussion of negative social impacts from reduced application of salt compounds to de-ice thoroughfares, failure to provide these safe avenues of travel could result in increased potential liability for those responsible for maintaining the roadways. Additionally, failing to provide lanes of travel that instill confidence in the driving and commuting public could result in fewer commuters and travelers in the area, which would have a negative economic impact through lost wages and lost business revenue. According to IHS Global Insight, immobilization, if it occurred in all snowbelt states for just one day due to a winter weather event, would result in approximately $2.6 billion in lost wages alone and a one day loss of retail sales in the amount of $870 million. (See Appendix 31.)

Additionally, alternatives to using salt to de-ice roads are limited and are expensive, as described in the studies that are cited in Chapter 2 of this document. Accordingly, failure to provide the regulated community with time to adapt to implementation of alternatives could result in untenable costs and safety risks. Another concern with these alternatives is that some of the alternatives may involve increasing budgets for personnel to implement them (e.g., more frequent application) or may produce unanticipated wear to roadways and thoroughfares. All of these problems lead to additional expenses that even the best-situated communities require time to absorb, and that could prove financially devastating to the least-well-suited.

Chapter 4

No Prior Water Quality Standards Variances or TLWQSs Have Been Issued to the Petitioner

Identification, including any Board docket number, of any prior variances or time-limited water quality standards issued to the Petitioner, watershed, water body, waterbody segment, and if known, the petitioner's predecessors, concerning similar relief.

The Petitioners are unaware of any TLWQS issued to potential petitioners within the Watershed concerning similar relief. However, the Individual Submittals will specify whether any prior variances have been issued to the petitioner concerning similar relief.

Chapter 5

Identification of Permits Held by Dischargers That May Be Affected By the Adoption of the Time-Limited Water Quality Standard

Identification, by name, of the permit holder and permit number of the permits held by dischargers which may be affected by the adoption of the time-limited water quality standard.

The Individual Submittals under this Petition will specify the permits held by the petitioner, including any NPDES permits that may be affected by the grant of the TLWQS. Lists of all of the individual permits held for discharges to the CAWS and the LDPR are attached as Appendices 5 and 6 to this Joint Submittal, respectively. Individual petitioners will specify which of these permits are theirs; the Individual Submittals also will identify any pending permit applications filed with Illinois EPA that do not appear as part of Appendices 5 or 6.

Chapter 6

Activity of the Dischargers

Identification and description of any process, activity, or source that contributes to a violation of a water quality standard, including the material used in that process or activity.

The chloride loadings contributed by all sources into the Watershed are generally described below. As to each category of sources covered by this TLWQS, Chapter 2 describes the processes, activities and sources that contribute to chloride loadings, including the materials used (primarily road salt).

The average annual chloride loading during winter months to the CAWS portion of the Watershed was approximately 230,824 metric tons during 2015-2017, based on estimated daily chloride concentrations and flows through Lockport in the CSSC (Appendix 50.)

On average, permitted POTWs discharge approximately 161,688 metric tons/winter of chlorides to the CAWS portion of the Watershed.[36] Chloride discharges from all other sources including upstream tributaries, permitted MS4 communities, industrial sources, and CSOs, are estimated at 69,136 metric tons/winter, on average.[37]

The chloride loadings contributed by all sources into the LDPR portion of the Watershed are generally described below.

The average annual chloride loading during winter months to the LDPR was approximately 2,089 metric tons during 2016-2017, based on estimated daily chloride

[36] Based on daily plant flow and chloride concentrations during winter months (December – April) for two seasons (2015-16 and 2016-17). (Appendix 51.)

[37] Based on difference between total effluent chloride loading (Appendix 51) and total chloride loading exiting the system through Lockport during two winter seasons (2015-16 and 2016-17). (Appendix 50.) Note that the loadings attributed to these non-POTW sources would not be addressed by application of RO to POTWs, further supporting the conclusion, above, that application of RO to POTWs, in addition to being not feasible (for several reasons), and costing hundreds of billions of dollars, would not be expected to lead to consistent attainment of the chloride standards throughout the Watershed.

concentrations[38] and harmonic mean flow[39] through the LDPR at Channahon. The difference in average annual winter chloride load and average annual summer chloride load through Channahon is 713 metric tons.

---

[38] Based on daily specific conductance in Des Plaines River at Channahon (USGS 05539670) from 1/23/2017 to 4/27/2017 and MWRD's linear regression model to estimate average chloride concentrations. (Appendix 52.)
[39] Based on the harmonic mean flow in the Des Plaines River, downstream of Chicago Sanitary and Ship Canal (Singh and Ramamurthy (1991), "Harmonic Mean Flows for Illinois Streams," pp. 12-14. (Appendix 53.)

Chapter 7

Current and Past Pollutant Minimization Programs

Description and copy of all Pollutant Minimization Programs that are relevant to the relief requested and are currently being implemented or were implemented in the past.

The most prevalent means of controlling the discharge of chlorides is through the use of BMPs). BMPs that are available for implementation have been shown to achieve significant reductions to the chloride loading to the waterways. An extensive discussion of BMPs related to deicing and snow removal for each source category, which have been developed in consultation with the Salt Institute, is found in Chapter 2.

Each discharger covered by the chloride TLWQS will implement the BMPs that are specified for its source category in Chapter 2. By six months after the effective date of the TLWQS, each covered discharger will develop a Pollutant Minimization Plan (PMP) that contains specific details as to how those BMPs will be implemented at its sites. The PMP will also include appropriate elements from the BMP documentation procedures identified in Appendix 54. The PMP will be retained on site, and will be available for review by IEPA, USEPA and the public upon request. If a particular discharger has a PMP that is or has been implemented, information as to that PMP will be provided in its Individual Submittal.

Chapter 8

Proposed Highest Attainable Condition of the Watershed

Identification of the proposed highest attainable condition of the watershed, water body, or waterbody segment identified in Chapter 1.4, expressed as set forth in 35 IAC 104.565(d)(4), including projected changes in the highest attainable condition throughout the proposed term of the time-limited water quality standard.

A demonstration to assure that the proposed highest attainable condition does not conflict with the attainment of downstream water quality standard for the pollutant or parameter for which the time-limited water quality standard is sought. 35 IAC 104.530(17).

Levels of chlorides in the Watershed vary widely. Concentrations found throughout the Watershed depend on a multitude of factors and are very difficult to predict. As a result, the best indicator of progress in reducing chloride loading to the Watershed is going to be the long-term trend, looking at chloride levels at representative locations in the Watershed on an annual basis. The seasonal average concentration during the winter at the most downstream sampling point in the CAWS (Lockport, on the CSSC) will be monitored. The seasonal average at Lockport, averaged over the last five years, has been 289 mg/l. (Appendix 55.) The seasonal average chloride concentration in the LDPR at Ruby St. Bridge in Joliet from December 2015 to April 2017 is 255 mg/L. The estimated seasonal average chloride concentration in the LDPR at Channahon over the last year is 199 mg/l. The specific conductance probe was installed at the United States Geologic Survey ("USGS") gauge at Channahon in January of 2017, which results in one winter season of continuous conductivity data collected at the downstream of LDPR watershed and correlation with instream chloride concentrations to develop a linear regression model (Huff & Huff, Inc., 2017.) (Appendix 56). The seasonal average at Channahon for 2017 (199 mg/l) is very close to the seasonal average for that year at Lockport (208 mg/l). Therefore, it is reasonable to conclude that a five-year average at Channahon would probably be very similar to the five-year average at Lockport. Therefore, that Lockport five-year average (289 mg/l) as the baseline for both locations.

Based on the studies referred to above, which show a usual range of chloride reduction, from community road salt reduction programs, of between 10% and 25%, it is expected that the implementation of BMPs through Pollutant Minimization Programs should conservatively result in at least ten percent reduction in the chlorides loadings to the Watershed. However, this may take an extended period of time to achieve, especially given that the first few years of coverage under the TLWQS will be focused on efforts to begin implementation of the BMPs. Also, the actual loadings will be affected by factors beyond the control of the Petitioners, such as the severity of weather and need for de-icing. Additionally, other factors may affect the sampled concentrations of chlorides within the Watershed, such as flow. Therefore, the Petitioners' best efforts to reduce salt usage will be monitored to ensure progress under the TLWQS. However, the TLWQS procedure requires an estimate of the HAC. To determine a HAC for the first five-year period of the TLWQS, Petitioners project that a reduction in loadings, over the Watershed, of between three and seven percent for the first five years is a reasonable range. For these purposes, it is assumed that the reduction in loadings would yield a similar reduction in the concentrations monitored. Therefore, at the end of five years of the TLWQS, the goal seasonal average concentration in the winter at Lockport and at Channahon, assessed as a five-year average of the prior five winters, would be between 269 and 280 mg/L. This reflects a 3 to 7 percent reduction from the seasonal average concentrations over the last five winters.[40] If that goal is not met, then the dischargers covered by the TLWQS would evaluate the feasibility of

[40] If a single number is required for HAC purposes, then Petitioners would propose a goal for the first five-year period of 275 mg/L, which represents a five percent reduction from baseline levels – the midpoint of the range described here.

implementing additional measures, beyond those identified in this Joint Submittal (and incorporated into their NPDES permits), to reduce ambient chloride levels in the Watershed.

The proposed HAC would not conflict with the attainment of downstream water quality standards for chlorides. Due to the imposition of management practices under the TLWQS, it is expected that the discharges that are the subject of the Joint Submittal should, on the average, contain a lower concentration of chlorides than either has been the case in years prior to the TLWQS or which would be expected absent the management practices required in the TLWQS. Of course, the occurrence of weather events that lead to higher use of chlorides in those specific situations remains beyond the control of Petitioners. Nonetheless, the series of conditions and interim measures that will apply to dischargers during the term of the TLWQS will help to minimize chloride exceedances and reduce any possible impacts from those exceedances, including in downstream areas not covered by the Joint Submittal. Further, any downstream impacts are expected to be significantly less than impacts in the CAWS and LDPR, due to attenuation and dilution effects.

The Upper Illinois River watershed downstream of the CAWS and LDPR receives waters from both the Des Plaines watershed and the Kankakee watershed, a large portion of which is located in Indiana. ***See*** U.S EPA "Surf Your Watershed" web site, ***at*** https://cfpub.epa.gov/surf/huc.cfm?huc_code=07120005. None of the impairments of the Upper Illinois River watershed are based on chloride loadings, nor are there total maximum daily loads ("TMDLs") for chlorides. There is no expectation that any of the waterbodies in the Upper Illinois River watershed will have their attainment status for water quality standards for chlorides adversely affected by the TLWQS requested in this Joint Submittal.

.

Chapter 9

Demonstration of Pollutant Control Activities

Demonstration of the pollutant control activities proposed to achieve the highest attainable condition, including those activities identified through a Pollutant Minimization Program.

The pollution control activities proposed in this Joint Submittal for the TLWQS Petition are the BMPs discussed in Chapter 2. These BMPs were considered for their potential to control chlorides discharges associated with the different source categories affected by the TLWQS.

Because the BMPs' effectiveness needs to be monitored and reported on, each of the petitioners is required to prepare a Pollutant Minimization Plan that will identify the BMPs and the implementation deadlines for monitoring, recordkeeping, and reporting associated with the TLWQS, including appropriate documentation procedures from Appendix 54. Additionally, progress reports for each petitioner will be required in an annual report that will be submitted to Illinois EPA. These requirements are described in Chapter 9.2, below.

Finally, the proposed implementation schedules that will be contained in the Pollutant Minimization Plans are described below in Chapter 9.3. Those schedules, along with the BMPs and the monitoring, recordkeeping and reporting requirements applicable to the discharger's source category, will be incorporated into the NPDES permit for that covered discharger.

9.1 Purpose of the BMPs Associated with Deicing and Snow Removal

The purpose of the BMPs selected by each petitioner for deicing and snow removal is to ensure that only as much salt as needed is placed upon the road during winter maintenance operations. It has generally been the conclusion and practice that the more salt applied, the better at removing ice and snow. This is not true. The purpose of road salt in such operations is not to melt snow or ice, but rather to prevent the bonding of snow or ice to the pavement. If snow or ice has already bonded to the pavement, then the purpose of the salt is to break the bond.

As a strategy, the best practice in winter maintenance is to anti-ice, i.e., to place road salt (in either liquid or solid form, but more often as a liquid brine) on the road surface prior to the start of a winter event, thus providing a protective layer that prevents snow and ice bonding to the road surface. However, the reports on road salt reduction programs referenced in this Joint Submittal indicate that it takes several years for an agency to transition from more traditional winter maintenance operational strategies to anti-icing, so a series of actions leading toward anti-icing are presented here as best practices.

9.2 General Conditions for TLWQS

The specific conditions discussed in Chapter 2 apply to individual petitioners based on their particular source category.

However, regardless of source category, each individual petitioner must comply with the following TLWQS conditions. Each facility for which a TLWQS is granted must:

A. File an annual report with Illinois EPA no later than July 1, which would focus on the previous winter time period of December through April. This report will also be made publicly available.[41] The annual report must document progress made in the last year on chlorides usage in comparison to a baseline understanding of chlorides usage. Specifically, the report must include: (1) whether and to what extent cost-effective and reasonable BMPs have been implemented, (2) availability of alternative treatments, (3) any changes to a facility's

[41] The procedures by which the reports will be made available are being developed. Some of the information, such as instream chloride data, may be gathered by the groups of covered dischargers in the CAWS and in the LDPR, while other information will be more specific to each discharger. The groups of dischargers in the CAWS and in the LDPR expect to work with IEPA to develop a common method to submit the annual reports to the Agency and to make them publicly available. As a condition of the TLWQS, dischargers covered by the TLWQS would be required to participate in these group efforts.

NPDES treatment technologies, (4) effluent data if any exist, (5) amount of salt used, (6) proposed steps for coming year, (7) any issues encountered implementing BMPs, (8) a summary of relevant, available instream chloride monitoring data (which may reference data gathered by State or Federal agencies or other parties), and (9) a summary of relevant, available snowfall data.

B. By six months after the effective date of the TLWQS, the facility must prepare a Pollutant Minimization Program for its operations that identifies the specific BMPs that it will implement (i.e., the BMPs listed in Chapter 2 for its source category), along with the applicable monitoring, recordkeeping and reporting procedures and the relevant schedule for implementation (as provided below). The PMP will contain the specific details as to how each of those requirements will be implemented for that individual site.

9.3 Schedule for Implementation of All Phases of Control Program

Below are timetables indicating the schedules for implementation of the control program discussed above for each source category identified. These timetables include the times that facilities in the differing source categories will be required to initiate and/or complete the various elements of the control program. The applicable milestones will be incorporated into each discharger's PMP. To the extent that a particular discharger is already implementing a particular BMP, or plans on completing implementation before the specified milestone, the PMP will note the date on which implementation is complete or expected to be complete.

9.3.1 POTWs

The schedule/milestones for the POTW category are:

1. 6 MONTHS AFTER EFFECTIVE DATE: Establish a mechanism for tracking of de-icing salt usage for each facility.
2. July 1 OF YEAR AFTER YEAR IN WHICH TLWQS IS EFFECTIVE (YEAR 2): Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make report publicly available.
3. December 31 OF YEAR 2: Complete training of all salt applicator personnel, including both employees and contractors.
4. July 1 OF YEAR 3: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available.
5. July 1 OF YEAR 3: Identify capital purchases necessary over the next three years to reduce de-icing salt applications, focused on increased use of liquids and reducing dry salt application rates and cleaning up salt piles. Begin implementation of capital purchase program.
6. December 31 OF YEAR 3: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
7. July 1 OF YEAR 4: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

8. December 31 OF YEAR 4: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
9. July 1 OF YEAR 5: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

9.3.2 Communities with CSO Outfalls

The schedule/milestones for the CSO Community category are:

1. 6 MONTHS AFTER EFFECTIVE DATE: Establish a mechanism for tracking of de-icing salt usage for each facility.
2. July 1 OF YEAR AFTER YEAR IN WHICH TLWQS IS EFFECTIVE (YEAR 2): Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make report publicly available.
3. December 31 OF YEAR 2: Complete training of all salt applicator personnel, including both employees and contractors.
4. July 1 OF YEAR 3: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available.
5. July 1 OF YEAR 3: Identify capital purchases necessary over the next three years to reduce de-icing salt applications, focused on increased use of liquids and reducing dry salt application rates and cleaning up salt piles. Begin implementation of capital purchase program.

6. December 31 OF YEAR 3: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
7. July 1 OF YEAR 4: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).
8. December 31 OF YEAR 4: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
9. July 1 OF YEAR 5: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

9.3.3 Industrial Sources

The schedule/milestones for the Industrial category are:

1. 6 MONTHS AFTER EFFECTIVE DATE: Establish a mechanism for tracking of de-icing salt usage for each facility. Also establish a plan to study water softening alternatives and, if chemical usage results in substantial chloride discharges, to study chemical substitution options.
2. July 1 OF YEAR AFTER YEAR IN WHICH TLWQS IS EFFECTIVE (YEAR 2): Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make report publicly available. Also submit progress report on evaluation of water softening and chemical substitution options.

3. December 31 OF YEAR 2: Complete training of all salt applicator personnel, including both employees and contractors.
4. July 1 OF YEAR 3: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Also submit progress report on evaluation of water softening and chemical substitution options.
5. July 1 OF YEAR 3: Identify capital purchases necessary over the next three years to reduce de-icing salt applications, focused on increased use of liquids and reducing dry salt application rates and cleaning up salt piles. Begin implementation of capital purchase program.
6. December 31 OF YEAR 3: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
7. July 1 OF YEAR 4: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage). Also submit progress report on evaluation of water softening and chemical substitution options.
8. December 31 OF YEAR 4: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
9. July 1 OF YEAR 5: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage). Also submit results of evaluation of water softening and chemical substitution options.

9.3.4 MS4s

The schedule/milestones for the MS4 Community category are:

1. 6 MONTHS AFTER EFFECTIVE DATE: Establish a mechanism for tracking of de-icing salt usage for each facility.
2. July 1 OF YEAR AFTER YEAR IN WHICH TLWQS IS EFFECTIVE (YEAR 2): Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make report publicly available.
3. December 31 OF YEAR 2: Complete training of all salt applicator personnel, including both employees and contractors.
4. July 1 OF YEAR 3: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available.
5. July 1 OF YEAR 3: Identify capital purchases necessary over the next three years to reduce de-icing salt applications, focused on increased use of liquids and reducing dry salt application rates and cleaning up salt piles. Begin implementation of capital purchase program.
6. December 31 OF YEAR 3: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
7. July 1 OF YEAR 4: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

8. December 31 OF YEAR 4: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
9. July 1 OF YEAR 5: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

9.3.5 Illinois Department of Transportation / Illinois Tollway

The schedule/milestones for the IDO/Tollway category are:

1. 6 MONTHS AFTER EFFECTIVE DATE: Establish a mechanism for tracking of de-icing salt usage for each facility.
2. July 1 OF YEAR AFTER YEAR IN WHICH TLWQS IS EFFECTIVE (YEAR 2): Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make report publicly available.
3. December 31 OF YEAR 2: Complete training of all salt applicator personnel, including both employees and contractors.
4. July 1 OF YEAR 3: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available.
5. July 1 OF YEAR 3: Identify capital purchases necessary over the next three years to reduce de-icing salt applications, focused on increased use of liquids and reducing dry salt application rates and cleaning up salt piles. Begin implementation of capital purchase program.

6. December 31 OF YEAR 3: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
7. July 1 OF YEAR 4: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).
8. December 31 OF YEAR 4: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
9. July 1 OF YEAR 5: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

9.3.6 Salt Storage Facilities

The schedule/milestones for the Salt Storage Facility category are:

1. 6 MONTHS AFTER EFFECTIVE DATE: Establish a mechanism for tracking of de-icing salt usage for each facility.
2. July 1 OF YEAR AFTER YEAR IN WHICH TLWQS IS EFFECTIVE (YEAR 2): Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make report publicly available.
3. December 31 OF YEAR 2: Complete training of all salt applicator personnel, including both employees and contractors.
4. July 1 OF YEAR 3: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize and make publicly available.

5. July 1 OF YEAR 3: Identify capital purchases necessary over the next three years to reduce de-icing salt applications, focused on increased use of liquids and reducing dry salt application rates and cleaning up salt piles. Begin implementation of capital purchase program.
6. December 31 OF YEAR 3: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
7. July 1 OF YEAR 4: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).
8. December 31 OF YEAR 4: Complete training of all salt applicator personnel, whether employees or contractors, with a review of the previous year and what will be implemented in the coming winter.
9. July 1 OF YEAR 5: Submit annual report to IEPA on salt usage for deicing and steps taken to minimize salt and make publicly available. Identify additional BMPs implemented and quantify effectiveness (salt usage).

Chapter 10

Beginning and End Dates of the Time-Limited Water Quality Standard

The proposed term of the time-limited water quality standard and justification that it is only as long as necessary to achieve the highest attainable condition, which includes a description of the relationship between the proposed pollution control activities and the proposed term.

If the proposed term is longer than five years, a proposed reevaluation schedule to reevaluate the highest attainable condition during the term of the time-limited water quality standard, pursuant to 35 IAC 104.580.

The requested term of the TLWQS that is the subject of this Petition is fifteen (15) years. There are several reasons why time period is proposed. First, review of the various studies cited above concerning salt reduction programs shows that implementation of those programs, and demonstration of resulting progress in reducing chloride levels in waterbodies, takes many years. Second, under the schedule called for in this Joint Submittal – which Petitioners believe is aggressive but doable, much of the first five-year term of the TLWQS would be spent putting BMPs into effect in the Petitioners' facilities and operations. Progress cannot be accurately assessed until those BMPs have been fully put into operation and then implemented over a period of years – particularly given that chloride usage, and resulting discharges, will vary from year to year based on weather differences. Finally, it is important to note that even with full implementation of the proposed BMP programs, the conditions that are the subject of this TLWQS – ambient chloride levels that exceed the winter water quality standards – are likely to continue to occur throughout this entire 15-year time period in most, if not all, of the reaches in the Watershed.

The Petitioners propose that dischargers covered by the TLWQS would be required to submit an initial reevaluation of the HAC no later than six months before the end of the first five-year period under the TLWQS, so that reevaluation can be approved by the Board and sent to

USEPA before the end of that five-year period.[42] The same would occur before the end of the second five-year period in the TLWQS term. This review would ensure that the term of the TLWQS granted for chlorides is only as long as necessary to achieve the highest attainable condition. Additionally, as described in Chapter 9, individual petitioners' annual reports will provide information that can be used to assess progress under the TLWQS.

[42] As a condition of the TLWQS, dischargers covered by the TLWQS would be required to participate in the group that conducts and submits this reevaluation. As noted above, the group structures will be developed, so that Petitioners can work collectively on activities under the TLWQS that require group effort.

Chapter 11

Citation to Supporting Documents or Legal Authorities

Any other documentation necessary to support the Petitioner's demonstration as specified in 35 IAC 104.560 (and used in Chapter 3).[43]

Appendix Number	Appendix Description
1	CAWS Chloride Concentrations to 500 mgL and 990 mgL (Jan 2006-Apr 2017)
2	CAWS Chloride Data Jan 2006-Apr 2017
3	LDPR Chloride Exceedance Rate Data (2003-2017
4	Pollution Control Board Map
5	CAWS Dischargers Only January, 2018
6	Facilities Within Lower Des Plaines
7	Summary of Exceedance Data
8	CAWS Box and Whisker Plot
9	CAWS Supporting Data for Box and Whisker Plot
10	CAWS sampling station map
11	CAWS Graph of Magnitude of Chloride Exceedances Jan 2006 - Apr 2017
12	CAWS Estimate of Hourly Exceedances Jan 2011-Apr 2017
13	LDPR Summary of Statistics of Chloride Concentration Feb 2003 - Feb 2018
14	Raw Data (Feb 2003 - Feb 2018)
15	LDPR Graph of Magnitude of Chloride Exceedances 2003 - 2017
16	LDPR Estimated Percent Exceedances of 500 mgL Jan 2017-APr 2017
17	Land Calculations
18	Chloride Compliance Study
19	Western Springs Water Service and Billing
20	Tampa Bay Seawater Desalination
21	San Diego County - Carlsbad Desalination Project
22	Costs Calculations
23	Ecological Benefit of the road salt code of practice
24	Syntheses of Best Practices Road Salt Management
25	DuPage River Salt Creek Workgroup – Chloride Usage Education and Reduction Program Study (August 16, 2007)
26	Chloride Reduction Implementation Plan for Dinsmore Brook Watershed (Windham, NH)

[43] Citation to supporting documents or legal authorities whenever they are used as a basis for the petition. Relevant portions of the documents and legal authorities other than Board decisions, reported state and federal court decisions, or state and federal regulations and statutes must be appended to the petition.

Appendix Number	**Appendix Description**
27	Chloride Free Snow and Ice Control Material (Minnesota Department of Transportation)
28	Assessing the Efficacy of Current Road Salt Management Programs, July 26, 2010
29	Lag Time in Water Quality Response to Best Management Practices (January, 2010)
30	Testimony of James E. Huff for Citgo Petroleum Corporation
31	Benefit-Cost of Various Winter Maintenance Strategies (Western Transportation Institute)
32	Community Data Snapshot - Cook County, Illinois
33	USDOT-FHA Snow & Ice – Road Weather Management Program
34	USDOT-FHA Weather Related Road Impacts – Road Weather Management Program
35	Twin Cities Metropolitan Area Chloride Management Plan (2016)
36	Maine Winter Roads: Salt, Safety, Environment and Costs (February 2010) by Jonathan Rubin
37	A Reduction in Nonfatal-Injury Motor Vehicle Crashes with Anti-Icing Technology by James Mahoney
38	Effects of Adverse Weather on Traffic Crashes (Weather Meta-Analysis 2008) by Lin Qiu and Wilfrid A. Nixon
39	Performance Measurement of Highway Winter Maintenance Operations (June 2009) by Lin Qiu and Wilfrid A. Nixon
40	Relationships between road slipperiness, traffic accident risk and winter road maintenance activity by Jonas Norman (2000)
41	Accident Analysis and Prevention (2010)
42	Cincinnati Winter Operations Goals & Method
43	Guthrie Presentation - Winter Maintenance Operations Levels of Service, A Toronto Example (2010 APWA)
44	Court of Appeals Holds that Conditions Involving Snow or Ice Need Not Be Immediately Created in Order to Hold a Municipality Liable Under the Affirmative Creation Exception to the Prior Written Notice by Kevin Faley and Kenneth Pitcoff (NYSBA Torts, Insurance and Compensation Law Section Journal, Winter 2011)
45	Winter Driving Safety and Car Accident Prevention on Illinois Roads by Botto Gilbert Lancaster
46	Attorneys for People injured in Illinois Winter Car Accidents by Rosenfeld Injury Lawyers
47	Winter Havoc on NY Roads by The Sanders Law Firm
48	Suing for Car Accidents Involving Ice on the Road in Wisconsin by Warshafsky Law
49	Connecticut Conference of Municipalities (2014)
50	CAWS Estimated Chloride Loading Based on Conductivity Readings – Lockport
51	CAWS Average Winter Effluent Chloride Loading

Appendix Number	Appendix Description
52	LDPRW Average Winter Effluent Chloride Concentrations
53	Harmonic Mean Flows for Illinois Streams (1991)
54	Documentation for Best Management Practices for Snow and Ice Removal
55	MWRDGC – Winter Chloride Concentrations in Lockport – December 2012 – April 2017
56	Lower Des Plaines River Winter 2016-2017 Water Quality Report – by Huff & Huff (2017)

Chapter 12

Best Management Practices

Identification and documentation of any cost-effective and reasonable best management practices for non-point source controls related to the pollutant or water quality parameter and watershed, water body, or waterbody segment specified in the time-limited water quality standard petition that could be implemented to make progress towards attaining the underlying designated use and criterion.

Salt runoff from nonpoint sources (i.e., runoff from land areas that is not directed into discrete conveyances that discharge into reaches in the Watershed) can be reduced through the same types of BMPs that are identified and documented in this Joint Submittal as to point sources. Implementation of these BMPs by the classes of regulated dischargers identified in this Joint Submittal, including municipal entities, would be expected to result in reductions in salt levels going into streams from sheet runoff, as well as the chloride discharges going through regulated NPDES outfalls.

CHAPTER 13

40 C.F.R. § 131.14 REQUIREMENTS

Pursuant to 35 IAC 104.545, the Board must determine whether the Petition is in substantial compliance with not only 35 IAC 104.530. It must also determine the Petition's compliance with 40 C.F.R. 131.14. The demonstrations required by a discharger under 40 C.F.R. § 131.14 are found in 40 C.F.R. § 131.14(b). As an overall matter, the Petitioners are satisfying the Federal requirements by complying with the requirements set forth in the Board's TLWQS regulations, since those Board regulations were specifically designed to satisfy the EPA requirements in 40 CFR 131. 14. In this Part of the Joint Submittal, the Petitioners, seeking a watershed TLWQS, describe how this Joint Submittal, along with the Individual Submittals, satisfy the specific requirements of 40 C.F.R. § 131.14.[44]

A. Identification of the pollutant(s) or water quality parameter(s), and the water body/waterbody segment(s) to which the WQS variance applies. Discharger(s)-specific WQS variances must also identify the permittee(s) subject to the WQS variance. 40 C.F.R. § 131.14(b)(1)(i).

Chapter 1 provides this requested information regarding the identification of the pollutant and water body/waterbody segments to which the TLWQS applies. This is not a discharger-specific TLWQS.

[44] The demonstrations required by a discharger under 40 C.F.R. § 131.14 are found in 40 C.F.R. § 131.14(b); 40 C.F.R. § 131.14 refers to a water quality standard variance ("WQS variance") instead of a TLWQS, as used by the Board.

B. The requirements that apply throughout the term of the WQS variance. The requirements shall represent the highest attainable condition of the water body or waterbody segment applicable throughout the term of the WQS variance based on the documentation required in [40 C.F.R. § 131.14(b)(2)]. The requirements shall not result in any lowering of the currently attained ambient water quality, unless a WQS variance is necessary for restoration activities…. The State must specify the highest attainable condition of the water body or waterbody segment as a quantifiable expression that is one of the following: (B) For WQS variances applicable to a water body or waterbody segment: (1) The highest attainable interim use and interim criterion; or (2) If no additional feasible pollutant control technology can be identified, the interim use and interim criterion that reflect the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the State adopts the WQS variance, and the adoption and implementation of a Pollutant Minimization Program. 40 C.F.R. § 131.14(b)(1)(ii)(B).

Chapters 2 and 9 describe the requirements that will apply throughout the term of the TLWQS. Chapter 2 identifies the BMPs to be followed by the Joint Submittal's Petitioners. Chapter 9 explains the generally-applicable requirements for Petitioners under this Joint Submittal and the schedule for implementing the BMPs, developing PMPs, and completing associated additional requirements throughout the term of the TLQWS.

As described in Chapter 8, these requirements represent the highest attainable condition of the Watershed and reflect the "greatest pollutant reduction achievable." Documentation supporting this determination is found in subparts G and H, of this Chapter. The requested TLWQS shall not result in any lowering of the currently attained ambient water quality, as the conditions proposed in this Joint Submittal are expected to result in reductions in chlorides discharges to the Watershed.

C. A statement providing that the requirements of the WQS variance are either the highest attainable condition identified at the time of the adoption of the WQS variance, or the highest attainable condition later identified during any reevaluation consistent with paragraph (b)(1)(v) of [40 CFR 131.14], whichever is more stringent. 40 C.F.R. § 131.14(b)(1)(iii).

As discussed in Chapter 8, the TLWQS as requested, including the conditions contained in Chapter 9, will ensure the highest attainable condition for the Watershed at the time the TLWQS is adopted. As this is the initial TLWQS, and not a reevaluation of the TLWQS, there are no more stringent conditions that apply.

D. The term of the WQS variance, expressed as an interval of time from the date of EPA approval or a specific date. The term of the WQS variance must only be as long as necessary to achieve the highest attainable condition and consistent with the demonstration provided in paragraph (b)(2) of [40 C.F.R. § 131.14]. The State may adopt a subsequent WQS variance consistent with this section. 40 C.F.R. § 131.14(b)(1)(iv).

Chapter 10 responds to this requirement.

E. For a WQS variance with a term greater than five years, a specified frequency to reevaluate the highest attainable condition using all existing and readily available information and a provision specifying how the State intends to obtain public input on the reevaluation. Such reevaluations must occur no less frequently than every five years after EPA approval of the WQS variance and the results of such reevaluation must be submitted to EPA within 30 days of completion of the reevaluation. 40 C.F.R. § 131.14(b)(1)(v).

As described in Chapter 10 of the Joint Submittal, the Petitioners propose a re-evaluation of the HAC six months before the conclusion of every five year period following the approval of the TLWQS. This timeframe will assist the State in complying with the requirements specified in this subpart of 40 C.F.R. § 131.14(b).

F. A provision that the WQS variance will no longer be the applicable water quality standard for purposes of the Act if the State does not conduct a reevaluation consistent with the frequency specified in the WQS variance or the results are not submitted to EPA as required by (b)(1)(v) of this section. 40 C.F.R. § 131.14(b)(1)(vi).

The terms proposed in this Joint Submittal are designed to facilitate the State's required reevaluation of the TLWQS. The Petitioners will make their best efforts to assist the State in its timely reevaluation, and understand that failure to conduct the required reevaluation as specified in 35 IAC 104.580 will result in the TLWQS no longer being applicable, as specified in the federal regulation and 35 IAC 104.580(d).

G. Supporting documentation …demonstrating the need for a WQS variance. 40 C.F.R. § 131.14(b)(2)(i).

The requested TLWQS is to "a use specified in section 101(a)(2) of the Act or a sub-category of such a use[.]" Id. Chapter 3 of the Joint Submittal explains how several of the factors listed in 40 C.F.R. § 131.10(g) (and 35 IAC 104.560(a)) are met. Specifically, Chapter 3 shows that attaining the designated use and criterion is not feasible throughout the term of the TLWQS, primarily because human caused conditions or sources of pollution prevent the attainment of the designated use and cannot be remedied or would cause more environmental damage to correct than to leave in place. Chapter 3 also shows, secondarily, that widespread economic and social impact would result from controls more stringent than those required by CWA Sections 301(b) and 306. Demonstration of these circumstances is consistent with the factors found in 40 C.F.R. § 131.10(g)(3) and (6). Additional documentation in support of these conditions found in the Watershed appears in the Appendices referenced in Chapter 3.

H. Supporting documentation …demonstrating that the term of the WQS variance is only as long as necessary to achieve the highest attainable condition. Such documentation must justify the term of the WQS variance by describing the pollutant control activities to achieve the highest attainable condition, including those activities identified through a Pollutant Minimization Program, which serve as milestones for the WQS variance. 40 C.F.R. § 131.14(b)(2)(ii).

Chapter 10 addresses the term of the TLWQS requested. Chapter 9 explains the pollutant control activities (BMPs) that will achieve the reductions expected in this TLQWS. Additional documentation in support of the selected BMPs is found in the Appendices referenced in Chapters 2 and 9.

I. For a WQS variance that applies to a water body or waterbody segment: (A) Identification and documentation of any cost-effective and reasonable best management practices for nonpoint source controls related to the pollutant(s) or water quality parameter(s) and water body or waterbody segment(s) specified in the WQS variance that could be implemented to make progress towards attaining the underlying designated use and criterion. A State must provide public notice and comment for any such documentation. 40 C.F.R. § 131.14(b)(2)(iii).

Chapter 2 and its Appendices, along with Chapter 12, provide this information and documentation.

CHAPTER 14

REQUEST FOR HEARING

The Petitioners request a hearing be held in this matter.