

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD  
IN THE MATTER OF: )  
 )  
AMENDMENTS TO THE GENERAL USE ) R18-32  
WATER QUALITY STANDARDS ) Rulemaking – Water  
FOR CHLORIDE )

**NOTICE OF FILING**

To: Don Brown, Clerk  
Illinois Pollution Control Board  
James R. Thompson Center  
100 West Randolph Street, Suite 11-500  
Chicago, IL 60601

PLEASE TAKE NOTICE that I have today electronically filed with the Illinois Pollution Control Board, the **DUPAGE RIVER/SALT CREEK WORKGROUP** written comments in support of the Petition in R18-32, a copy of which is herewith served upon you.

Dated: December 21, 2018

Respectfully Submitted

DuPage River/Salt Creek Workgroup

By: /s/ Stephen McCracken

Stephen McCracken  
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**SERVICE LIST R18-32**

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**DUPAGE RIVER/SALT CREEK WORKGROUP COMMENTS ON PROPOSED  
RULEMAKING**

**Introduction**

The DuPage River Salt Creek Workgroup (DRSCW) is a non-profit organization made up of regulated agencies, private companies and environmental non-profits working on cost effective compliance with the mandates of the Clean Water Act. The DRSCW has worked on the monitoring, management and evaluation of chloride impacts on aquatic biological communities for 14 years, including implementing the first chloride Total Maximum Daily Load (TMDL) in the State of Illinois.

DRSCW has an extensive river monitoring system in the basins of the West Branch DuPage River, East Branch DuPage River and Salt Creek. These basins lie in DuPage County and western Cook County. The DRSCW collects comprehensive data on water quality parameters, physical habitat and biological communities (fish and macroinvertebrates) in each of these basins as part of a rolling watershed assessment. Sampling is carried out at approximately 140 locations across the three basins. Ambient chloride monitoring is an important part of that assessment. During the basin assessments between 2 and 12 grab samples are collected at each sample site during warm weather months (May –October).

The DRSCW also conducts continuous conductivity monitoring during cold weather months (December – March) in order to assess the trends and the effectiveness of its chloride reduction activities. The continuous monitoring is carried out at a limited number of sites at the downstream end of each of the basins to allow data on chloride loadings in the basin as a whole to be gathered. Conductivity is widely accepted as an excellent proxy for dissolved ionic loading in ambient conditions and that relationship has been calibrated to local conditions (CDM,

2008). The winter conductivity data is used to assess the success of chloride reduction efforts in the basin.

Chlorides show a regular and consistent pattern in the river systems monitored by the DRSCW. Cold weather months (December –March inclusive) are characterized by high averages. The eight-year cold weather average for the three basins between 2007 and 2015 was 452 mg/L and 30 percent of winter concentrations were above the State of Illinois chloride water quality standard of 500 mg/L. Additionally, 5 percent of the winter samples collected in the Salt Creek basin, for example, were above the chronic standard in National Aquatic Life Criteria for Chloride of 860 mg/L. Warm weather months are characterized by a gradual fall in chloride concentrations with concentrations typically being in the region of 250 mg/l in May/June and declining to 100-150 mg/l in September/October (MBI 2018). This annual summer/winter pattern is highly indicative of a system-dominated by the application of winter de-icing compounds.

Summer biological assessments of the reaches downstream of the winter chloride monitoring sites show achievement (or achievement in the case of the East Branch, close to) with the Illinois EPA goal for macroinvertebrate life quality (Macro Invertebrate Index of Biotic integrity or MIBI  $\geq$  41). Averaging the MIBI scores for the sample sites downstream and therefore comparable to, the winter chloride monitoring sites gives yields the following mean MIBI scores:

- 2014 East Branch DuPage River 33.3 (n  $\approx$  4) (MBI 2016)
- 2015 West Branch DuPage River 47.15 (n  $\approx$  4) (MBI 2017); and
- 2016 Salt Creek 43.47 (n  $\approx$  5). (MBI 2018-draft).

Watershed-wide fish IBI scores follow a similar pattern to those observed in MIBI (declining in quality as we move upstream) but they are heavily distorted by the presence of low head dams throughout the area making comparisons difficult so they are not discussed further here.

This empirical data showed reaches with either *non-impaired* aquatic life (West Branch and Salt Creek) or *fair* status (East Branch) based on MIBI in river reaches subject to frequent

exceedances of the State chloride water quality standard during winter months in 2013-to 2016. Similar results were found for two additional sample years for each waterway during the period 2006-2012.

Given the incongruity of frequent winter exceedances of the State (500 mg/L) and Federal (230 mg/L chronic, 860 mg/L acute) chloride water quality standards in MIBI supporting reaches, the hypothesis was formed that toxicity of chlorides to macroinvertebrates making up the MIBI was lower during cold weather months than it was in warm weather months. As a mean of testing this hypothesis, the DRSCW decided to contribute funds to look at chloride toxicity at lower temperatures in a study led by James Huff. The findings from the toxicity studies led by Mr. Huff are consistent with what we have observed in our streams, that is, winter chloride concentrations are not as toxic to the aquatic biota. We believe that such studies are needed to understand the differing seasonal effects of chlorides on aquatic life stages and, in turn, to consider more precise chloride water quality standards.

From our own work in from 2010-13 the DRSCW ran a series of statistical analysis that confirmed that summer chloride concentrations were strongly negatively correlated with aquatic life in the program area, supporting the case for the DRSCW to continue its chloride reduction activities. This analysis of summer data also indicated that the current Illinois water quality standard for chloride (500 mg/L) was not protective enough for aquatic life during the summer months.

CDM (2008): Conductivity and Chloride Monitoring Summary 2007/2008 (DRSCW Technical Document)

MBI (2016) Biological and Water Quality Study of the E. Branch DuPage River Watershed, 2014, DuPage and Will Counties, Illinois Midwest Biodiversity Institute Center for Applied Bioassessment & Biocriteria

MBI (2018) Biological and Water Quality Study of the West Branch DuPage River Watershed 2015, Cook and DuPage Counties, Illinois, Midwest Biodiversity Institute Center for Applied Bioassessment & Biocriteria

MBI (draft) Biological and Water Quality Study of the Salt Creek Watershed 2013-16, DuPage, Cook and Will Counties, Illinois, Midwest Biodiversity Institute Center for Applied Bioassessment & Biocriteria

