



# Des Plaines River Watershed Workgroup Newsletter

**July 2019**



DES PLAINES RIVER  
WATERSHED  
WORKGROUP

# Inlet Monitoring Project Summary

## Overview

In 2018, the Des Plaines River Watershed Workgroup (DRWW) contracted with the Lake County Health Department (LCHD) to conduct monitoring of three lakes in the Des Plaines River watershed and their respective inlets/outlets. The purpose of the study was to understand the current state of water quality and determine pollutant loads of select nutrients (phosphorus and suspended sediments) and pollutants (chlorides). The three lakes studied included: Third, Druce and Gages lakes, which are all in relatively urban watersheds and are hydrologically connected (Figure 1). Samples were collected monthly from a set of inlets and outlets in addition to three storm event samples. With phosphorus, the data outputs were compared with model results from Northwater Consulting and the Wisconsin Lake Modeling software program (WiLMs). These model results helped determine if external or internal stressors were dominant for total phosphorus in each lake.

## Results

There was a decent agreement between the different calculations (WiLMs, LCHD, and Northwater Consulting) which gives confidence in the estimated percentages of internal vs. external loads generated by WiLMs. These are important findings as they will help direct water quality improvement priorities in the lakes' respective watersheds and allow WiLMs model projections to be used for other lakes in the Des Plaines River watershed with some confidence. The following are key results from the inlet monitoring study:

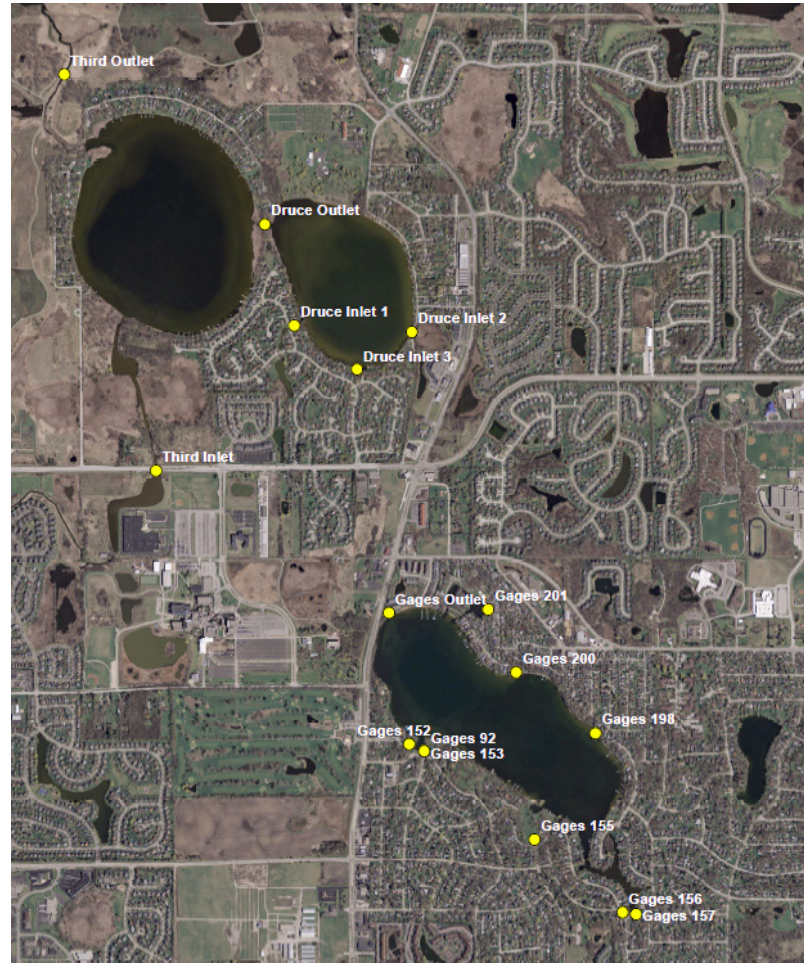


Figure 1: 2018 Sampling Locations for Gages, Druce and Third Lake

### 1. Gages Lake

Gages Lake is strongly influenced by external loads consisting of 88% of the total phosphorus loads. Given Gages Lake's small watershed and high external loading estimation, prioritization should focus on minimizing external sources in the watershed. The study indicated specific inlets (92, 153 and 200) to be contributing the largest loads (Figure 2). Further investigation in these drainage areas is recommended. For Gages Lake, watershed best management practices (BMPs) such as following best lawn care practices, reducing runoff, and homeowner education on BMPs can make an impact on the lake.

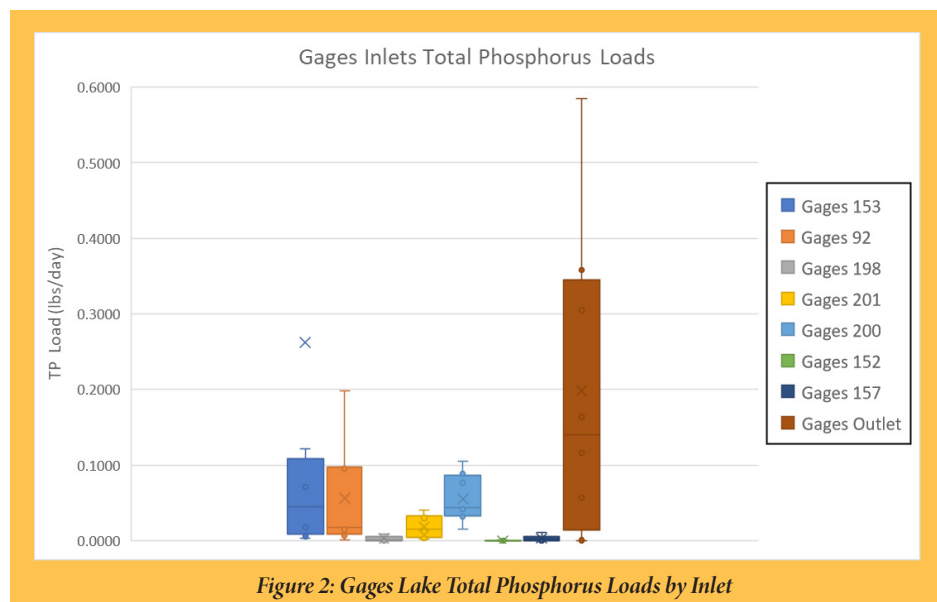


Figure 2: Gages Lake Total Phosphorus Loads by Inlet

# Inlet Monitoring Project Summary

## 2. Druce Lake

Similar to Gages Lake, Druce Lake is strongly influenced by external loads with 96% of the total phosphorus loads coming from external sources. Druce Inlet 1 was the highest contributor of total phosphorus loads (Figure 3) and Druce Inlet 2 was the highest contributor for total suspended solids and chlorides. Druce Inlet 3 could not create a load calculation; however, it is a likely a major contributor since it drains an urban area and the outlet from Gages Lake. Watershed best management practices to reduce nutrient and pollutant loading to the lake should be a focus for Druce Lake.

## 3. Third Lake

The findings from Third Lake show that most of the total phosphorus load is coming from internal loading (67%) with only 33% coming from external sources (Figure 4). Given the strong influence of internal loading in Third Lake, a high priority should be to continue to implement, and even seek to improve, the layered aeration system that has been in operation since 1999. For external sources, Inlet 1, also known as the Avont-Fremont Drainage Ditch is a large contributor for nutrients and chlorides to the lake.

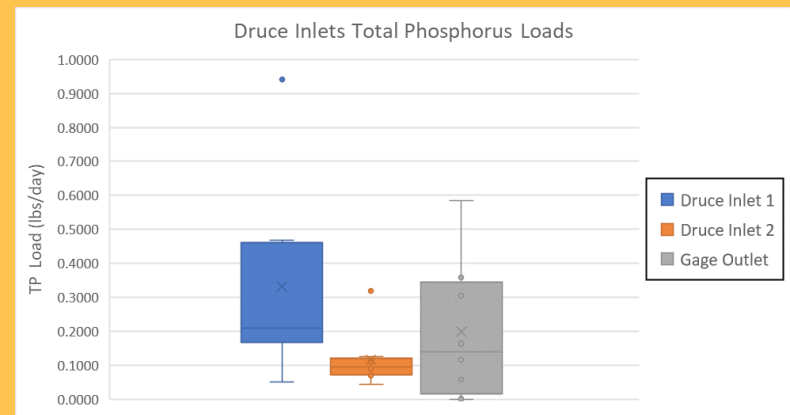


Figure 3: Druce Lake Total Phosphorus Loads by Inlet

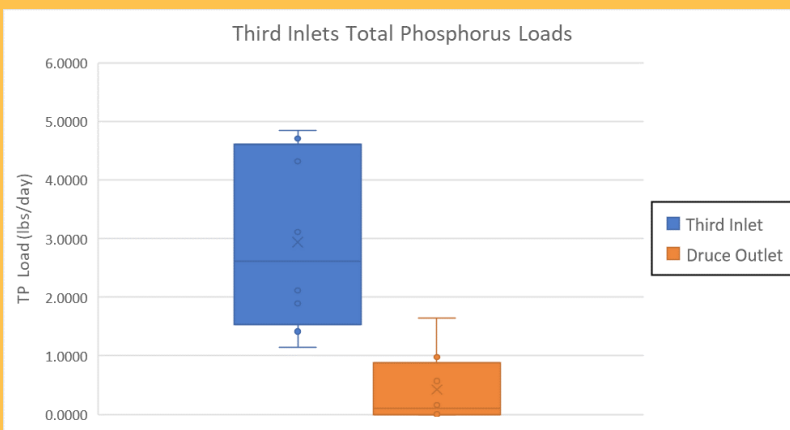


Figure 4: Third Lake Total Phosphorus Loads by Inlet

## Next Steps:

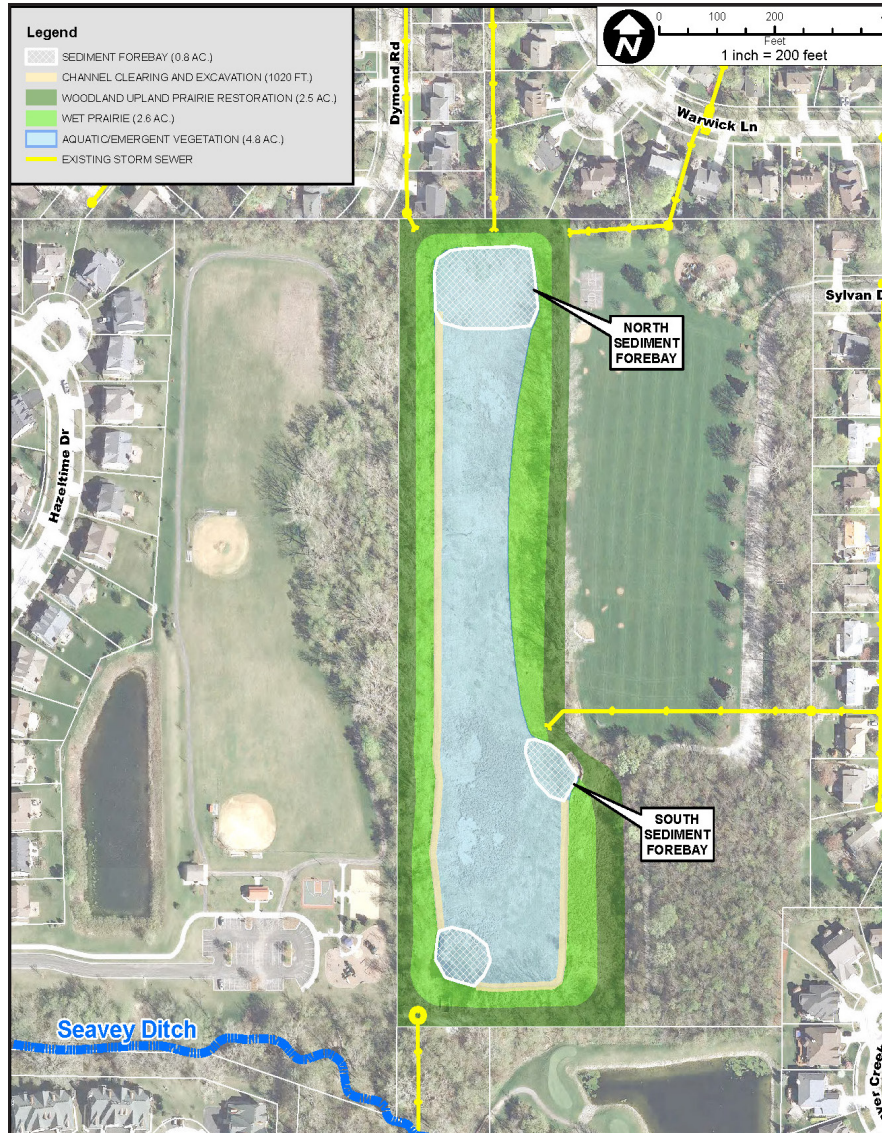
The results of this project have identified inlets that contribute high nutrient or pollutant concentration loads into the three lakes studied. Additional investigations and surveys are recommended to further identify sources. In some cases, an integrated approach will be necessary as a specific point source may not be found. For example, in Gages Lake the inlets drain a relatively small area which should be investigated. Best Management Practices, such as bioswales, lawn care, street maintenance, and both dog and goose fecal management may help reduce these sources. In other areas, such as the inlet of Third Lake, there will need to be larger, watershed-based efforts made due to a higher number of possible sources. Watershed planning documents, such as the [Des Plaines River Watershed Plan](#), are a great source of information. This document identifies and prioritizes areas upstream of Third Lake that are making contributions.

In addition to other investigations and watershed planning, a significant effort should be made across all lakes communities to engage in public education about lakes, watersheds, and sources of pollution. Since many of these inputs are likely from non-point sources, having an educated public will help in reducing those inputs.

The WiLMs model can be used in other stratified lakes for an estimation of internal versus external phosphorus loading. In non-stratified lakes, it is recommended that some field investigations take place to assess the degree to which stormwater inlets contribute to pollutant loads into other lakes in the Des Plaines River Watershed. For a full report on the Inlet Monitoring study, contact the DRWW.

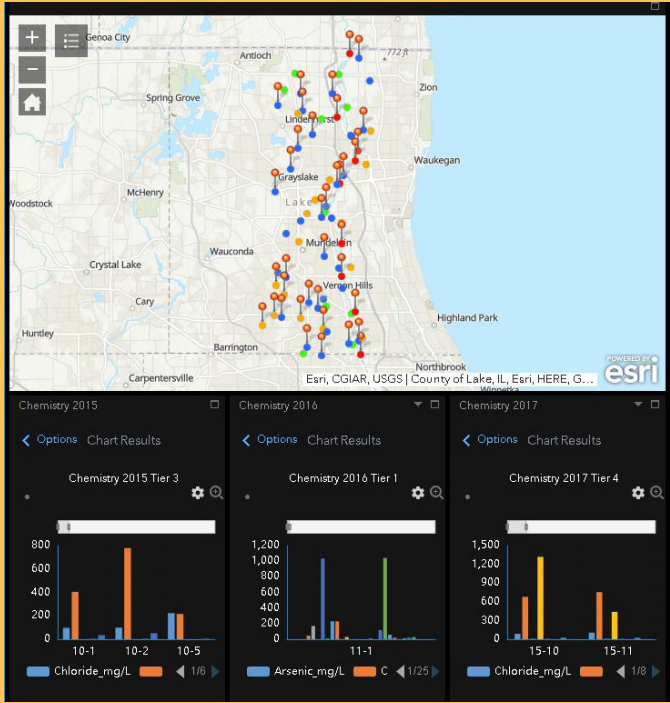
## PROJECTS

### Charles Brown Reservoir Restoration



### Web Application

The DRWW is excited to announce the release of a new interactive Monitoring Data Web Application. This online tool lets users graphically interface with DRWW monitoring data based on Year, Tier, and Location with data presented as yearly averages at a given site. This allows for monitoring data to be visually represented across years within and across sites throughout the watershed. For more information or to use the DRWW Interactive Monitoring Data web app, visit the app [web page](#).



The Charles Brown Reservoir, which serves as the outfall for the flood-prone Highlands Subdivision in Libertyville, has naturally become overgrown with vegetation and silt. This condition has caused the silt and debris to back-up into the storm sewer systems that discharge into the pond, thereby reducing their conveyance capacity. In addition, the reservoir will be an important piece of a future, more comprehensive proposed flood reduction project for this area that is contained in the Village's new Master Stormwater Management Plan. The reservoir currently provides approximately 80 acre-feet (ac-ft) of detention. The restoration project will increase the provided detention volume to 84.3 ac-ft.

In order to improve the current condition of the reservoir, it is proposed to remove the invasive vegetation and silt, create low flow channels in the bottom along with forebays, install maintenance free wetland plantings, and repair the inlet and outlet storm sewer lines. The estimated construction cost for this work is \$1,275,000. Because the proposed work includes water quality improvements, the Village was able to secure an Illinois EPA Section 319 reimbursable grant in the amount of \$135,987.50. The DRWW is providing a portion of the cost-share match in the form of education and outreach on the project. Construction will begin in October 2019 and will be completed by summer of 2020.

# DRWW Initiatives

## PRESENTATIONS:

### Stormwater Management Commission Hosts Flood Tour

On Saturday May 25, Lake County Stormwater Management Commission (SMC) hosted a tour for U.S. Representative Sean Casten to discuss flood problem areas and environmental mitigation efforts. The tour began at a Federal Emergency Management Agency (FEMA)/SMC floodplain buyout area in unincorporated Lake County where SMC staff gave an overview of the FEMA sponsored mitigation grant program. The next stop was at the Cuba Marsh Forest Preserve where Lake County Forest Preserve District staff member Jim Anderson talked about wetland restoration and hydrologic modifications they are implementing. The tour concluded at the Village of Kildeer Village Hall where DRWW Technical Coordinator Joe Marencik discussed an overview of the recent water quality improvement efforts of the DRWW.



*Mike Warner, SMC Executive Director, discusses flooding issues with Representative Casten and Karen Daulton Lange, Village Administrator, Village of Lake Barrington.*

SMC and the DRWW appreciate the government and community leaders who spent their Saturday learning more about flood mitigation and water quality improvement initiatives.

## Sponsorship:

### Lake County Deicing Leadership Summit

On April 17, 2019, the DRWW co-sponsored the Lake County Deicing Leadership Summit, which was hosted by Lake County Division of Transportation (LCDOT). Other co-sponsors included the Lake County Health Department – Lakes Management Unit, North Branch Chicago River Watershed Workgroup, and the American Public Works Association-Chicago Metro Chapter. Leaders in snow and ice removal from across Northern Illinois convened to share strategies for effective and environmentally-sound winter maintenance. There were approximately 50 people in attendance representing a broad range of service providers – from state/municipal/townships to



*Shane Schneider, LCDOT Director, addresses attendees.*

school districts and private firms. Shane Schneider, Director of LCDOT, moderated the discussions, which consisted of three open forum panels. Speaking on level of service and expectations for winter road maintenance were Paul Kendzior (Village of Libertyville), Kevin Kerrigan (LCDOT), Kim Kiesgen (Grant Township Highway Department), and Mark Koopman (Libertyville High School District). Discussing current and emerging technologies were Scott Fontenez (Village of Buffalo Grove), Kevin Kerrigan (LCDOT), Tom Rigwood (Village of Gurnee), and Herb Riedel (Fremont Township Highway Department). Lastly, Joe Dragovich (Illinois Tollway), Mike Adam (Lake County Health Department), Michael Talbett (Village of Kildeer), and Dave Brown (Village of Vernon Hills) discussed impacts of winter maintenance on water quality. After each panel, attendees shared their own expertise and worked collectively to address shortcomings in current training and implementation strategies. The summit concluded with a tour of the LCDOT's salt loading facility.

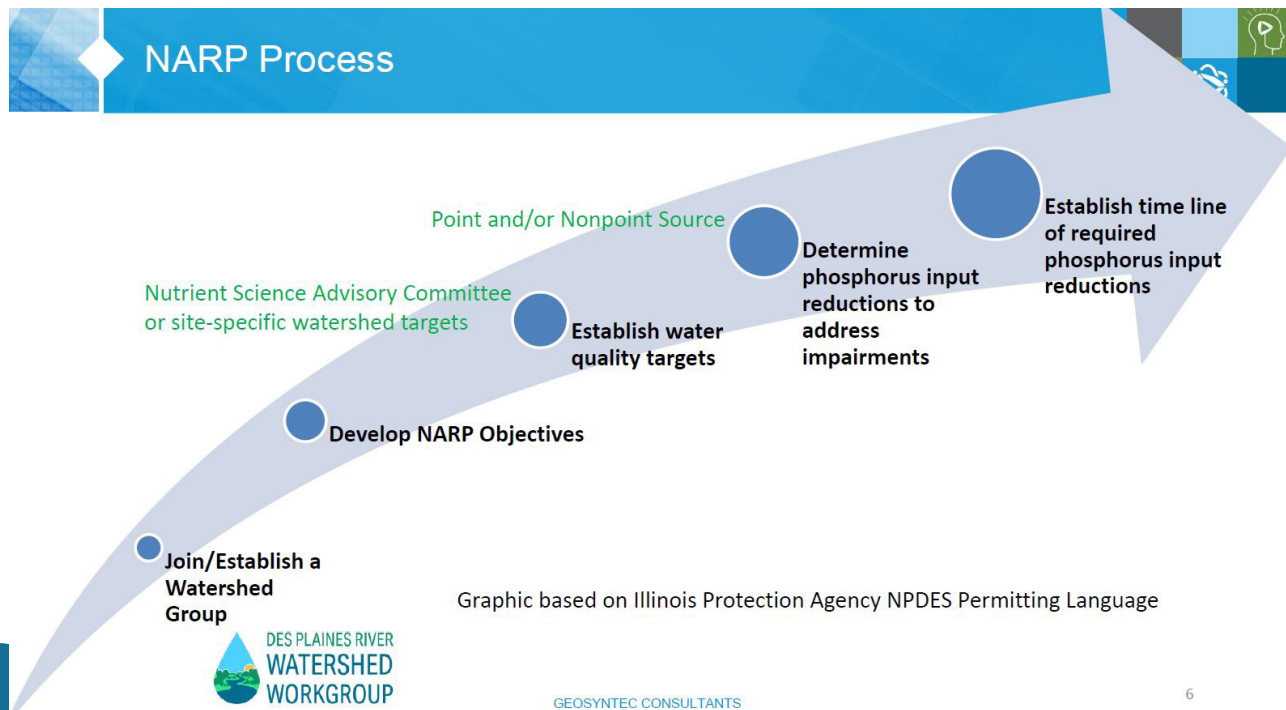
# Monitoring Updates

## Integrated Prioritization System

In early 2018, the DRWW contracted with Midwest Biodiversity Institute (MBI) to develop an Integrated Prioritization System (IPS) for addressing multiple point and nonpoint source impacts in the Des Plaines River watershed. The IPS was developed using baseline monitoring data (water chemistry, biological, physical/habitat) collected by the DRWW as part of its ongoing, comprehensive monitoring program which started in 2015. The IPS will utilize this baseline monitoring data and look at how stressors in the watershed impact aquatic life and in turn, use attainment based on Illinois EPA assessment criteria. The IPS will enable the DRWW to make management decisions based on stressors in the watershed on a site/reach specific basis. Once completed, the IPS will allow for scientifically based decision making and allow the DRWW to prioritize projects based on where they will bring about the highest likelihood of improvement to water quality and habitat. This will allow for the DRWW to maximize the effectiveness of future projects from both an ecological as well as financial standpoint. A draft version of the IPS is expected to be ready by mid-June 2019 with a final version to follow. MBI will be presenting the results of its IPS work as well as an overview of their biological monitoring efforts within the Des Plaines River watershed at the DRWW General Membership meeting on August 15.

## Nutrient Assessment Reduction Plan

Driven by efforts to address Gulf Hypoxia, the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force developed a Gulf Hypoxia Action plan in 2008 which requires each of the 12 states along the Mississippi River to develop its own nutrient reduction strategy. As a result, the Illinois EPA has included a Special Condition in Publicly Owned Treatment Works (POTW's) National Pollutant Discharge Elimination System (NPDES) permits that now requires the development of a Nutrient Assessment Reduction Plan (NARP) by 2023 or be subject to statewide nutrient standards set forth by the Illinois EPA. In recognition of this requirement, the DRWW has contracted with Geosyntec to develop a workplan, which will outline the most effective way for the DRWW to develop a NARP. This workplan is the first step in this process, and will identify the scope, schedule, and budget for subsequent work that is required to produce the NARP over the next four and a half years. Once developed, this NARP will define on a site-specific basis, the nutrient reductions needed to help to improve aquatic conditions and ultimately meet Illinois EPA numeric and narrative criteria. Illinois EPA encourages MS4s to participate in the NARP development process as there is potential for NARP requirements in the new MS4 permit that will be issued in 2022. This collaborative effort allows members of the DRWW to cost share this process and reduce the duplication of efforts.



# Upcoming Meetings & Workshops



## **DRWW General Membership Meeting:**

August 15, 2019

1:30 p.m. - 3:30 p.m.

Lake County SMC Office

500 W Winchester Road

Libertyville, IL 60048

## **DRWW Monitoring/ Water Quality Improvement Committee:**

September 19, 2019

1 p.m. - 2 p.m.

Lake County SMC Office

500 W Winchester Road

Libertyville, IL 60048

## **DRWW Executive Board Meeting:**

September 19, 2019

2 p.m. - 4 p.m.

Lake County SMC Office

500 W Winchester Road

Libertyville, IL 60048



## **Lake County Deicing Workshops:**

Monday, Sept. 30-Wednesday, Oct. 2

Lake County Central Permit Facility

500 W Winchester Road

Libertyville, IL 60048

[More information coming soon](#)

