

Des Plaines River Watershed Workgroup Newsletter

May 2020



DES PLAINES RIVER
WATERSHED
WORKGROUP

Annual Monitoring Updates

2019 Annual Monitoring Report

The DRWW 2019 Annual Monitoring Report was submitted to the Illinois EPA on March 26, 2020 to meet the DRWW Member Agencies Publicly Owned Treatment Works (POTW) requirement for the National Pollutant Discharge Elimination System (NPDES) Permit Special Condition related to monitoring of receiving streams and to meet the monitoring component for its Member Agencies Municipal Separate Storm Sewer Systems (MS4) Permits. Midwest Biodiversity Institute (MBI), Suburban Laboratories and North Shore Water Reclamation District (NSWRD) have started the 2020 water quality monitoring efforts.

DRWW 2020 Monitoring Strategy

Water Column Sampling

- » 73 Monitoring locations x5 collections, x4 summer collections for nutrients
- » Add dissolved reactive phosphorus & ammonia nitrogen parameters
- » Remove metals & organics
- » Reduce *E.coli*, conductivity, chloride, sulfate to x2 collections

Sediment Sampling (6-year rotation)

- » Tier 1 & 2 Sites - focusing on metals and organic chemical analysis

Bioassessment Monitoring Program (6-year rotation)

- » Starting in 2020 - Biannual collection on 14 core sites & 6 Des Plaines River main stem sites

Continuous Monitoring & Chlorophyll *a* Sampling

- » Data sondes at 3 sites (13-6, 13-1, 16-4) for year round collection of dissolved oxygen (DO), water temperature, total suspended solids (TSS), pH, chlorophyll *a* and conductivity
- » 14 core sites: annual collection of benthic chlorophyll *a*, and 4 summer samples of sestonic chlorophyll

IPS Model & NARP

The Integrated Prioritization System (IPS) model version 1.2 was released by the Midwest Biodiversity Institute (MBI) in February 2020. IPS model future users (including the DRWW) are currently reviewing the model and user manual and providing feedback. MBI is currently compiling additional regional monitoring data to add into the model. The IPS model is anticipated to be released to the local workgroups in 2020.

In April 2020, Geosyntec completed a Preliminary Nutrient Assessment Reduction Plan (NARP) Workplan to assist the DRWW in identifying the scope, schedule and budget for the significant effort that will be required to develop the NARP. DRWW submitted a copy of the Preliminary NARP Workplan to the Illinois EPA, with a request to consider extending the NARP submittal by one year, to December 31, 2024, or alternately for the Illinois EPA to assist in defining methods and resulting products that could allow for a less costly approach to achieve the same result.

Year 2 Biological & Water Quality Assessment of Upper Des Plaines River

In 2018, the DRWW contracted with the MBI to conduct chemical, physical and biological monitoring at 19 locations on the Des Plaines River and tributaries (Figure 1). This is part of an ongoing yearly monitoring effort which focuses on identifying the presence, extent and severity of aquatic life impairments, and identifying stressors for identified impairments and limitations to general use attainment. The report identified 13 causes of non-attainment; the most common causes were organic enrichment/low dissolved oxygen, siltation and embeddedness, macroinvertebrate habitat, and PAH/metals/toxicity. Five of the 19 sites were identified as fully supporting aquatic life. **This is the first time full support of aquatic life has been observed in the Des Plaines River study area!**

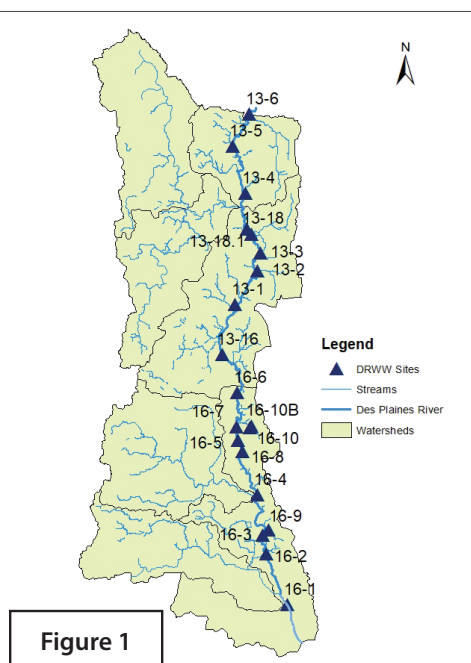


Figure 1

This is the first time full support of aquatic life has been observed in the Des Plaines River study area!

The monitoring data indicates that biological impairments in the upper 10 miles of the study area are primarily influenced by legacy hydraulic and habitat alterations from agricultural land uses causing slow flows, excessive siltation, and nuisance algal/aquatic plant growth. The four uppermost monitoring sites will likely never achieve attainment of the Aquatic Life General Use through water quality improvements alone; habitat improvements would also be needed. The effects of the hydraulic and habitat alterations in the upper main stem are mitigated by the addition of large volumes of treated wastewater downstream of Mill Creek, as shown by the attainment of the aquatic life general use for four consecutive sites downstream of the NSWRD Gurnee Water Reclamation Facility and the improvement of multiple chemical, habitat, and biological indicators. The biological impairments in the lower portions of the study area are primarily influenced by suburban and urban land uses resulting in high concentrations of PAHs/metals/toxicity in sediment. Water quality has substantially improved since the 1980's and the new attainment of aquatic life general use indicates conditions are continuing to improve.

2019 Lake Monitoring Summary

The DRWW contracted with the Lake County Health Department (LCHD) to conduct monitoring of the lakes and respective inlets/outlets to assess the current state of water quality and to determine inlet sources of nutrients and pollutants. This monitoring effort focused on man-made/impoundment lakes (Big Bear, Little Bear and Charles Lake) and was a continuation of the 2018 lake monitoring which focused on glacial stratified lakes (Gages, Druce and Third Lake). The two-year study provides a good representation of lakes within the Des Plaines River watershed.

The lakes monitored in 2019 are all hydrologically connected. Lake Charles is at the top of the watershed and flows into Big Bear, which subsequently flows into Little Bear. The water then flows into the Seavy Drainage Ditch – Indian Creek and ultimately the Des Plaines River. Monthly water samples (May – Sept.), and three additional storm event samples, were collected at each monitoring site during 2019. If feasible, flow rates were measured during sampling. Inlet/outlet samples were analyzed for 7 water quality parameters. Additionally, in-lake epilimnetic and when applicable hypolimnetic water samples were collected, along with a depth profile analysis during each monthly visit which were then used to calculate anoxic volumes. Additional water chemistry parameters were analyzed for the in-lake samples. The complete dataset and full report for the lake monitoring will be available on DRWW's website in June 2020.

Lake Charles

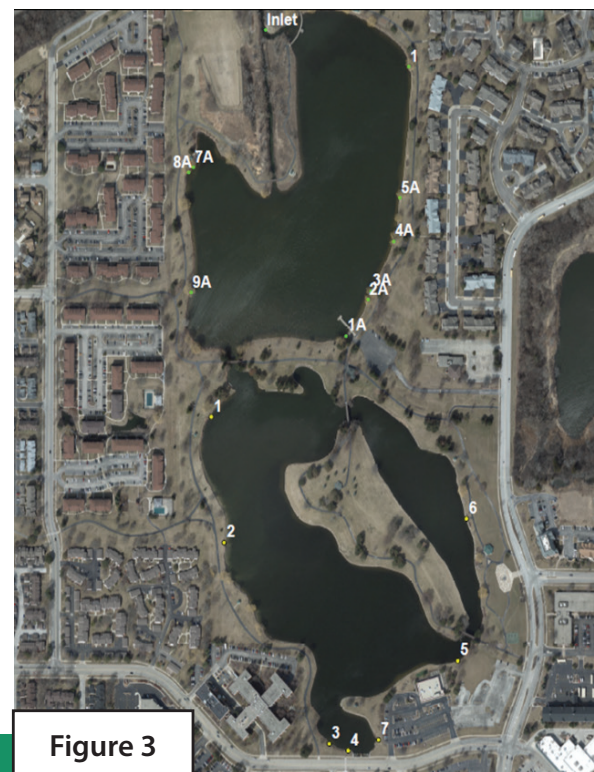
LCHD monitored 3 lake inlets on Lake Charles, one on north side and two on the central east and west boundary, as well as a south end outlet structure (Figure 2). Inlet 1 had the highest concentration of total suspended solids (TSS). During major precipitation events murky brown stormwater was observed entering the lake and carp found stirring up sediment in that inlet area. Inlet 2 had the highest total phosphorus (TP). Upstream of this inlet is an intermittent flashy stream, which flows through a golf course property prior to discharging into the inlet, which may be a major contributor of total phosphorus to this inlet.

Big Bear Lake

LCHD monitored 7 inlets including Seavey Ditch (Inlet) on Big Bear Lake (Figure 3). The surrounding inlets in the Bear Lakes have an intermittent flow that can only be sampled after a significant rain event. Seavey Ditch (flows out of Lake Charles) sampling had the highest flow rate and largest range for pollutant concentrations. For example, TSS (4.7 mg/L) and TP (0.038 mg/L) concentrations were relatively low in the June samples; whereas, TSS (28 mg/L) and TP (0.148 mg/L) concentrations in the July post storm event samples were substantially higher. Comparatively, the Lake Charles outlet has a lower TP (.067 mg/L), TSS (9.0 mg/L), and chloride (Cl^-) (100.0 mg/L) than the concentrations at Big Bear Inlet. There are several detention basins that flow into Seavey Ditch before it reaches Big Bear Lake where there are slight increases in TP (0.072 mg/L), TSS (10.9 mg/L), and Cl^- (99.4 mg/L).

Little Bear Lake

LCHD monitored 4 inlets on Little Bear Lake (Figure 3). Inlet 5 on the southeast side of the lake was only sampled twice after storm events but had the highest TSS concentration (avg. 19.3 mg/L) and TP concentration (avg. 0.109 mg/L). During major precipitation events murky brown stormwater was observed entering the lake in that inlet area. Since the focus of these lakes were on shallow impoundment lakes, the only lake that was stratified, and therefore was able to run a WiLMs model for TP loading was Little Bear Lake.



Education & Outreach

Charles Brown Detention Basin Enhancements & Sediment Forebays



The Village of Libertyville was awarded an Illinois EPA Section 319 project grant in January 2019 for Charles Brown Detention Basin Enhancements and Sediment Forebays. Prior to project implementation, the site conditions were extremely poor with sediment accumulation, degraded habitat, and deteriorated shoreline along the basin edges. Lake Charles is currently identified as an impaired water body on the Illinois EPA's 2018 303(d) list for TSS, TP and Aquatic Plants (Macrophytes).

The DRWW provided a letter of support with education and outreach cost-share match towards that grant, including newsletter project updates and providing project information at DRWW General Membership meetings. Currently, the earthwork has been completed, three

sediments forebays totaling 0.8 acres (2 at inlet points and 1 near the outlet) and storm sewers have been installed and the urban stormwater restoration (7.32 acres) is underway (See Figure 4). The wetland enhancement and sediment forebays will provide substantial water quality benefits to downstream waters such as: Lake Charles, Big Bear Lake, Little Bear lake, Indian Creek and the Des Plaines River. The estimated project completion is Summer 2020.

DRWW Encourages Municipalities to Adopt Coal-Tar -Sealant Ban

The DRWW has found elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) within Des Plaines River and other tributary sediment samples. Concentrations of total PAH compounds up to 70,000 mg/kg (dry wt. basis) were found in both the highly populated Indian Creek and Bull Creek subwatersheds. Common sources of these chemical compounds are the use of coal-tar-sealants on driveways and parking lots, where precipitation runs off these surfaces carrying PAHs into the waterways. Studies conducted by the USGS indicate that PAH's found in coal-tar sealants increase the risk of multiple types of cancers (lung, skin, bladder, and respiratory) for humans and cause DNA damage or death to fish.

In response to the increasing PAH concentrations in the Des Plaines River, communities are passing coal-tar-sealant bans. In Lake County, Highland Park, Deerfield, North Barrington, Third Lake and Vernon Hills have passed such bans, joining other Illinois communities such as Glenview, Winnetka, Wilmette, Evanston, South Barrington, and Port Barrington. The Lake County Board's newly adopted Legislative Agenda for Fiscal Year 2020 supports state legislation that bans the use and sale of toxic pavement sealants. In addition to enacting community bans, there is broad support among local governments for state legislation that bans the use and sale of toxic pavement sealants in support of safer, effective alternatives, like asphalt, which have fewer toxic chemicals. On average, PAH levels in asphalt-based sealants are 1,000 times lower than in coal tar sealant.

The DRWW urges municipalities to adopt a coal-tar-sealant ban! To see a sample of what other communities have implemented, the Deerfield ordinance, a vendor license application, and supplemental information can be found on the website of The Village of Deerfield here: <https://www.deerfield.il.us/708/Coal-Tar-Sealant-Ban>.

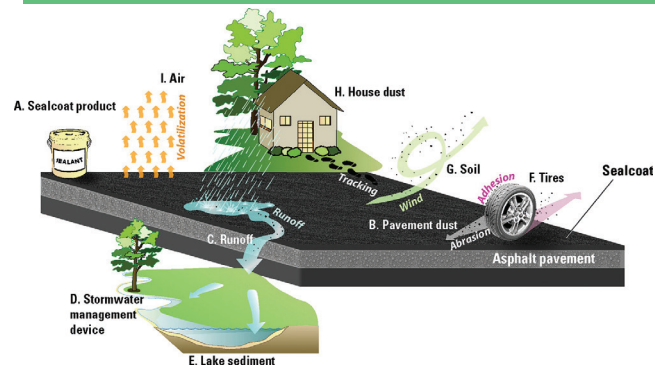


Figure 5: USGS Coal-Tar-Based Pavement Sealcoat and PAHs (2012)

DRWW Executive Board Members

- President: Al Giertych, LCDOT
- Vice President: Vacant
- Treasurer: Michael Talbett, Village of Kildeer
- Secretary: Paul Kendzior, Village of Libertyville
- Member at Large: Jim Anderson, LCFPD
- Member at Large: Dave Miller, NSWRD
- Monitoring/Water Quality Improvements Committee Chair: Joe Robinson, NSWRD
- Lakes Committee Chair: Mike Adam, LCHD