

Fox River Study Group

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2019 IEPA Annual Report

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Background

For nearly two decades, a diverse coalition of stakeholders (see Directors sidebar and Supporters list) has been leading a watershed-wide effort to understand and improve the water quality of the Fox River and its tributaries for the Fox River Study Group (FRSG). This undertaking has received widespread financial and in-kind support from watershed communities, water reclamation districts, environmental organizations and foundations. Our efforts have been backed by the USEPA, IEPA, Chicago Metropolitan Agency for Planning and engaged the scientific expertise of the Illinois State Water Survey (ISWS) and private consultants. Throughout 2019, the FRSG continued to meet on a monthly basis and the group's activities were supplemented by committee actions.

Modeling

To make informed decisions about how best to maintain and improve the quality of the Fox River in our urbanizing watershed, the FRSG has developed two computer models of the Fox River watershed – an HSPF model and a QUAL2K model. These models are currently being updated by Geosyntec Consultants to assess management scenarios to address the low dissolved oxygen and nuisance algae problems in the Fox River. Geosyntec's work was greatly assisted by Sierra Club volunteers to format the data for input into the HSPF model. Accordingly, the HSPF model update was substantially complete in 2018.

The QUAL2k model relies on the HSPF model inputs. Geosyntec began calibration of QUAL2k model in October 2018. The QUAL2k model for the was updated to QUAL2kw, a dynamic version of QUAL2k. The model update was delayed due to inconsistencies in the data set, but was completed in December 2019. Model results will be used to help evaluate and determine the most cost-effective measures to improve the overall health of the river with respect to these impairments.

Monitoring

2019 concluded the 17th year of all-volunteer water quality monitoring efforts of the FRSG. The data collection includes monthly monitoring of 7 mainstem locations and 7 tributary locations along an 80-mile stretch of the Fox River from McHenry to Yorkville. Laboratory analysis and data

management is donated as in-kind services by the City of Elgin, the Fox River Water Reclamation District, and the Fox Metro Water Reclamation District. These data have been utilized to support the modeling efforts over the years. The Illinois State Water Survey (ISWS) updates the FoxDB for the FRSG, which is the publicly available, online water quality monitoring database. ISWS completed a full update in 2019.

Additional monitoring is conducted in support of the modeling efforts. In 2016, the FRSG contracted the United States Geological Survey (USGS) to install and maintain a water quality monitoring station at the existing Algonquin gaging station ([USGS Station #05550001](#)) from spring through fall for three years. Dissolved oxygen, temperature, specific conductance, and pH were added to the existing stage and discharge measurements and provided real-time, publicly available data. The USGS contract ended in October 2018. After discussions with Geosyntec on data needed for their modeling updates, a new water quality monitoring station was installed by USGS in August 2018 at the Stratton Dam ([USGS Station #05549500](#)). All of the same parameters listed above plus chlorophyll *a* and turbidity are collected at the new station. The USGS is also collecting *in-situ* measurements at the Stratton Dam to characterize the upstream boundary condition. The discrete samples are collected on a monthly basis during station equipment calibration and are analyzed for chlorophyll *a*, Nitrogen-Ammonia, Nitrogen Nitrate + Nitrite, Total Nitrogen (includes filtered organics), Phosphate-Orthophosphate, and Total Phosphorus. This contract is for another spring through fall sampling and will conclude in September 2021.

Reports

The FRSG was involved with three reports during 2019. First, the modeling work being conducted by Geosyntec will be utilized to amend the Fox River Implementation Plan (FRIP). This work is proceeding.

Second, the FRSG continued to work with the U.S. Army Corps of Engineers (Corps) to resume the Fox River Habitat & Connectivity Study that was placed on hold in August 2015 due to the lack of a State of Illinois budget. The FRSG has continued to communicate with the Corps and Illinois Department of Natural Resources (IDNR) to discuss the best path forward and remind the agencies of the FRSG's prioritization of the project. A new IDNR project liaison was hired in 2019 and it is anticipated that the project will restart soon. Once the project is restarted, the timeline is one year to complete the original study, one year to complete the public outreach associated with the study, and one year to finalize the study and issue the final report.

Finally, the ISWS issued the Fox River Water Quality Trends report in February 2019. This report evaluated the water quality trends on the Fox River mainstem and a number of tributaries for the group. Based on all of the available data collected by the FRSG and other agencies since 1998, the purpose of this report is to assess if progress has been made to improve ambient conditions in the Fox River and to inform the public on the state of the Fox River. The Fox River Water Quality Trends report is a follow-up to the FRSG Phase I Report prepared by the ISWS in 2004 and is available online at <http://hdl.handle.net/2142/103009>. Over the last decade, the ISWS analysis found that most nutrient-related pollutants levels are declining or show no trend in the Fox River.

Specifically, the ISWS found that over the decade 2006-2016 flow-normalized loads decreased for all parameters, by 11% for organic nitrogen, 14% for ammonia, 16% for nitrate, 7.8% for total Kjeldahl nitrogen (TKN), 21% for total phosphorus, 25% for dissolved phosphorus, and 6.3% for suspended solids on an annual basis. Loads of chlorophyll *a*, a measure of the amount of algae in the water column, dropped by 8.8% on an annual basis.

Public Outreach

The FRSG has continued public outreach and participation as work has been completed to update the Fox River Implementation Plan (FRIP). The FRIP will detail specific steps to be taken to improve the quality of the Fox River. The outreach focuses on the direct impacts of Fox River water quality on the members of the public, specifically on adverse impacts of high algae levels on drinking water, and on the efforts that the FRSG and wastewater treatment facilities are taking to reduce nuisance algae blooms. 2019 outreach efforts included:

- Nutrient Panel Discussion and Presentation – Illinois Wastewater Professionals Conference, Springfield, February 13
- Display and FRSG Board Volunteers Outreach – One Earth Film Festival, Waubensee Community College, Aurora Downtown Campus, March 4
- Display – Fox River Summit, Burlington, March 22
- Soil Erosion & Sediment Control Workshop-March 22
- Nutrient Workshop – Illinois Water Environment Association, Itasca, March 6
- Technical Session Presentation – WEFTEC, Chicago, September 24
- [Three presentations](#) - Fox River Study Group Annual Meeting, October 24

Based on preliminary information received from the U.S. Army Corps of Engineers from the Fox River Habitat & Connectivity Study of the river's dams, a focus group was completed in December 2018 by Bluestem Communications to assess public opinion on dam removal. In 2019, the group wanted to prioritize public outreach efforts by using professional services, so a Request for Qualifications was issued to evaluate local communication firms. Aileron was ultimately selected to perform public outreach messaging, branding, and a survey. Aileron's work began in January 2020.

The FRSG board and membership has continued to work with entities throughout the Fox River watershed to build community support and to find the resources needed to implement the identified projects.

Point Source Nutrient Reductions

The major (discharge > 1 mgd) wastewater treatment facilities were issued permits with phosphorus reduction requirements during the previous permit cycle. In late 2018 and extending into 2019, the Fox River permits were issued with updated phosphorus compliance schedules. Most wastewater treatment facilities are on schedule to meet their phosphorus limit of 1.0 mg/l annual average by various dates in 2019 to 2022.

Phosphorus discharge optimization plan (PDOP) requirements were added to most major permits during this permit cycle, requiring a comprehensive study of potential phosphorus input reductions and operational improvements at the wastewater treatment plants. These PDOPs are proceeding.

Financial Solvency

The FRSG is a 501c3 not for profit organization. Independent audits are performed annually to ensure proper financial management and a copy of the 2018 audit is available upon request. FRSG continues to be funded by member agencies in the watershed at the rate of 25¢ per capita. At the beginning of each year, a contribution request is sent to communities. The FRSG currently has two grants from the Kane County Riverboard Fund that help fund group activities. FRSG maintains a sufficient balance to fund activities and these funds are allocated to completing the action items described above: modeling, monitoring, public outreach, and the U.S. Army Corps of Engineers Fox River Habitat & Connectivity Study.

Financial and In-Kind Supporters

The Fox River Study Group greatly appreciates the continued support from:

Financial Support

Village of Algonquin
City of Aurora
Village of Barrington
City of Batavia
Village of Cary
Village of East Dundee
Village of Elburn
City of Elgin
Fox River Water Rec. District
City of Geneva
Village of Gilberts
Kane County

Lake in the Hills Sanitary District
City of Plano
Village of Sandwich
City of St. Charles
Illinois EPA
USEPA
Village of Wauconda
City of Yorkville
Yorkville-Bristol Sanitary District

In-Kind Support

Village of Algonquin
City of Crystal Lake

City of Elgin
Deuchler Engineering Corporation
Environmental Defenders of McHenry
County
Fox Metro Water Reclamation District
Fox River Water Reclamation District
Friends of the Fox River
Gardner Carton & Douglas
Illinois EPA
Illinois State Water Survey
Northern Moraine Water Reclamation
District
Sierra Club