

## 2022 IEPA Annual Report



### Background

For two decades now, 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 wide-spread 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), United States Geological Survey (USGS) and private consultants. The Fox River Study Group has been implementing its Fox River Implementation Plan (2015 FRIP) for the past seven years. A FRIP update (2022 FRIP), due to the IEPA at the end of 2022, was completed this year and a final draft was emailed to IEPA on December 30, 2022. Throughout 2022, the FRSG continued to meet on a monthly basis and the group's activities were supplemented by committee actions. All board meetings and an annual meeting were conducted virtually in 2022.

### 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. Updates of these models were completed by Geosyntec Consultants with the HSPF model update completed in 2018 and a QUAL2kw update, a dynamic version of QUAL2k, completed in 2019. The models were used to assess management scenarios to address the low dissolved oxygen and nuisance algae problems in the Fox River.

- Initial results ([presentation slide deck](#)) were presented at the January 28, 2021 FRSG board meeting.
- Combined actions reducing phosphorus inputs to the river along with the removal of dams from the Fox River mainstem were presented by Geosyntec's Rishab Mahajan at a [public webinar](#) on August 5, 2021.
- Mr. Mahajan again presented the results of the completed modeling of various management scenarios at the [FRSG's virtual annual meeting](#) on November 2, 2021.
- The FRSG and Geosyntec also met virtually with Illinois EPA staff on November 30, 2021 to go over the modeling results and to discuss the FRSG's plans for updating the results into the next FRIP.
- The results showed a reduction of phosphorus concentrations by major wastewater facilities in the study area beyond the 0.5 mg/L annual average geometric mean would not substantially improve water quality. (Per current NPDES permits, Fox River major wastewater facilities, those treating one million gallons per day or more, are required to meet this requirement by the year 2030.) However, this planned action combined with the removal of dams from the Fox River mainstem reduces algae levels and oxygen levels improve.

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VACANT, City of Elgin

- Mr. Mahajan presented an overview of the 2022 FRIP at the [FRSG's virtual annual meeting](#) on November 2, 2022.

## Monitoring

2022 was the 20th anniversary of all-volunteer water quality monitoring efforts of the FRSG. This 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 are 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 ongoing modeling efforts.

The Illinois State Water Survey (ISWS) updates the FoxDB for the FRSG, which is the publicly available, online water quality monitoring database. In 2022, the ISWS continued its work to update the FoxDB and complete a new water quality trends analysis. The project is due to be completed in November 2023. Work completed in 2022 under this contract included updating the FoxDB with newly collected data and submitting the data to the Illinois Environmental Protection Agency. The water quality trends analysis that is underway includes the analysis of trends in chloride, conductivity, turbidity, water temperature, pH, and chlorophyll levels in the watershed.

Additional monitoring is conducted in support of the modeling efforts. The FRSG currently has a three-year contract through September 30, 2024 with the USGS to collect more real-time data at the Stratton Dam. A new water quality monitoring station was installed by USGS in August 2018 at the Stratton Dam ([USGS Station #05549500](#)). During the growing season, continuous measurements of temperature, pH, conductivity, dissolved oxygen, chlorophyll a, blue-green algae and turbidity are collected at this 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. In August 2019, the FRSG asked the USGS to begin utilizing the blue green algae sensing capabilities of the chlorophyll sensor and to report the data at the station's website.

## Reports

2022 FRIP The FRSG was involved with three reports during 2022. First, the modeling work conducted by Geosyntec was used to update the Fox River Implementation Plan (2015 FRIP) to the Fox River Implementation Plan, Final Draft December 2022 (2022 FRIP). The FRSG worked with Geosyntec staff throughout 2022 to update the FRIP. The FRSG submitted the final draft 2022 FRIP to the IEPA on December 30, 2022.

- The Executive Summary of the 2022 FRIP can be found at [tinyurl.com/FRIP2022ExSum](https://tinyurl.com/FRIP2022ExSum).
- The full plan and its appendices are located at [tinyurl.com/2z9ksn63](https://tinyurl.com/2z9ksn63).

The plan's major findings for the Fox River Study Group and our watershed partners are—

- Major wastewater treatment plants should proceed with capital improvements to achieve a 0.5 mg/L annual geometric mean total phosphorus limit by 2030;
- FRSG should focus on collaborating with partners to support removal of dams along the mainstem river and monitor the resulting water quality impacts when the U.S. Army Corps of Engineers completes the Fox River Connectivity & Habitat Study in 2024;
- FRSG should encourage state-of-the-art watershed management practices that can mitigate the impact of projected population growth in the FRIP study area;
- FRSG should leverage statewide work on evaluation of streambank erosion and quantify its impact on phosphorus loads in the watershed;

- FRSG should partner with efforts to reduce nutrients entering the FRIP study area from Illinois and Wisconsin and should also partner with agricultural entities;
- FRSG should continue to engage, collaborate, and partner with other agencies and organizations, including those in Wisconsin, to progress towards the goal of eliminating the impairments in the river due to other pollutants besides nutrients and therefore removing the river from the Illinois EPA list of impaired waters.

Geosyntec's Rishab Mahajan presented an overview of the 2022 FRIP at the FRSG's virtual annual meeting on November 2, 2022. A final draft of the 2022 FRIP was emailed to IEPA on December 30, 2022 along with a draft Executive Summary and appendices. The final draft 2022 FRIP was also sent to NPDES permit holders with the Fox River Study Group requirement in their permits.

Fox River Connectivity & Habitat Study Second, the FRSG continued to work in 2022 with the U.S. Army Corps of Engineers (Corps) to resume the Fox River Connectivity & Habitat Study (Study) that was placed on hold in August 2015 due to the lack of a State of Illinois budget. The FRSG and many of its member organizations reached out over the last three years to the leadership at the Corps and to members of Congress from the Fox River Valley to advocate for the restart of the Study. Since November 2021, the FRSG has had a Joint Funding Agreement with the IDNR to cover the local cost share needed to complete the study

As of March 11, 2022 Illinois Senators Durbin and Duckworth report that \$250,000 in funding for completion of the Study has been included in the Corps' 2022 budget. A project restart kickoff meeting was held by the Corps on June 9, with the Corps hosting roughly monthly meetings with their IDNR and FRSG partners since then. The FRSG made one local cost-share payment of \$70,000 to IDNR in 2022. The Corps plans to have the study completed by mid-2024, with plans for the draft report to be out for public review by the fall of 2023.

Indian Creek Watershed Based Plan Last, the FRSG continues to collaborate with the Chicago Metropolitan Agency for Planning and other watershed stakeholders on the development for a watershed-based plan for the Indian Creek watershed in Kane and DuPage counties. The HSPF model for the Indian Creek watershed is being updated as part of this effort, with funding provided by the FRSG.

### **Public Outreach**

The FRSG, Geosyntec and the Army Corps of Engineers continued public outreach as work has been completed to update the Fox River Implementation Plan (FRIP) and on the Fox River Connectivity and Habitat Study. 2022 outreach efforts included:

#### Presentations- Fox River Summit March 17

- Brief Fox River Study Group Update- Cindy Skrukrud, FRSG Chair
- US Army Corps of Engineers Ecosystem Restoration Programs & Partnership Opportunities- Frank Veraldi, Restoration Ecologist, US Army Corps of Engineers, Chicago District [video](#)

#### Presentation- Nutrient Loss Reduction Strategy Workshop November 1 [slides](#)

The FRSG was one of 5 case studies in a presentation Perspectives on Nutrient Assessment Reduction Plans- Karoline Qasem and Rishab Mahajan, Geosyntec

#### Two Presentations - Fox River Study Group Annual Meeting, November 2

- FRIP 2022 Overview-Findings and Next Steps- Rishab Mahajan, Geosyntec
- Status Update on the Fox River Connectivity and Habitat Study- Bridget Bentley, Army Corps of Engineers
- [Meeting recording available online.](#)

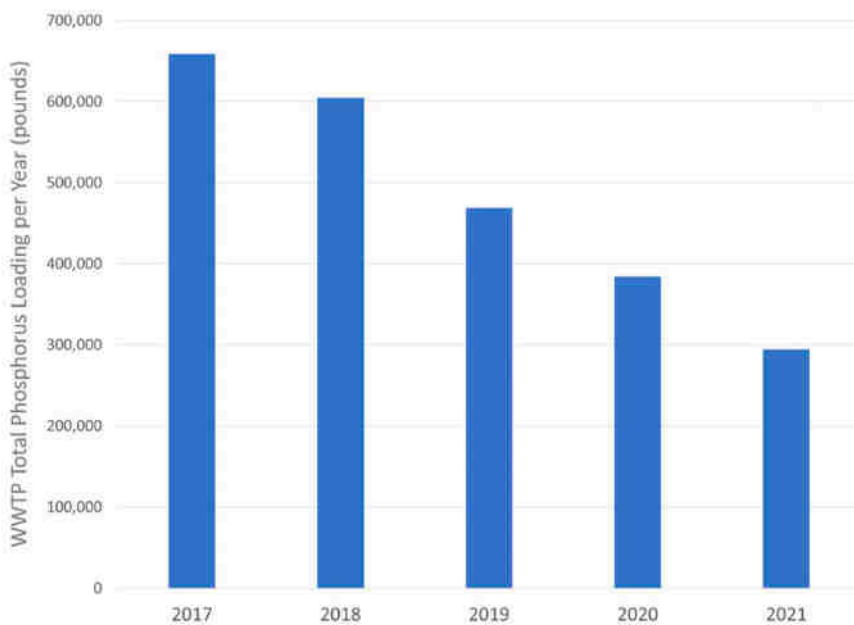
The draft 2022 FRIP was made available to watershed stakeholders for their input on November 10, 2022 through December 1, 2022, and final edits were made to the draft plan based on the input received. The FRSG board and membership has continued to work with entities throughout the Fox River watershed 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 through 2023.

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 mostly complete for major permittees watershed-wide.

Trevor Sample of IEPA provided the FRSG with data for Fox River watershed dischargers from the dataset that he now compiles on annually for the Illinois Nutrient Loss Reduction Strategy. These data show the progress being made in the Fox watershed in reducing phosphorus inputs by the wastewater sector.



### 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 most recent 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. 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. In 2021, the group also updated our budget and long-term financial plan.

## 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 Reclamation 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  
Yorkville-Bristol Sanitary District  
Village of Wauconda  
City of Yorkville

### In-Kind Support

Village of Algonquin  
City of Crystal Lake  
City of Elgin  
Environmental Defenders of McHenry County  
Fox Metro Water Reclamation District  
Fox River Water Reclamation District  
Friends of the Fox River  
Northern Moraine Water Reclamation District  
Illinois EPA  
Illinois Department of Natural Resources  
Illinois State Water Survey  
City of St. Charles  
Sierra Club  
Yorkville-Bristol Sanitary District