

DuPage River/Salt Creek Special Conditions Report

March 31, 2024



DuPage River Salt Creek Workgroup

Table of Contents

Introduction and Participation DuPage/Salt Creek Special Conditions Report, March 30, 2024.	i
Chapter 1 Physical Projects	1-1
1.1 Oak Meadows Golf Course Dam Removal and Stream Restoration.....	1-1
1.1.1 Site Description	1-1
1.1.2 Design Characteristics	1-1
1.1.3 Permitting Requirements.....	1-1
1.1.4 Project Implementation	1-1
1.1.5 Project Impact Evaluation	1-1
1.2 Fawell Dam Modification.....	1-1
1.2.1 Site Description	1-2
1.2.2 Design Characteristics.....	1-2
1.2.3 Permitting Requirements.....	1-2
1.2.4 Design Progress Report.....	1-2
1.2.5 Project Impact Evaluation	1-3
1.3 Spring Brook Restoration and Dam Removal (Spring Brook Phase 2)	1-3
1.3.1 Site Description	1-4
1.3.2 Design Characteristics	1-4
1.3.3 Permitting Requirements.....	1-4
1.3.4 Project Implementation	1-4
1.3.5 Project Impact Evaluation	1-4
1.4 Fullersburg Woods Dam Modification Concept Plan Development	1-9
1.5 Fullersburg Woods Dam Modification and Stream Restoration	1-9
1.5.1 Site Description	1-9
1.5.2 Research and Public Outreach	1-9
1.5.3 Design Characteristics	1-9
1.5.4 Permitting Requirements	1-10
1.5.5 Design Progress Report.....	1-10
1.5.6 Project Implementation	1-11

1.5.7	Project Impact Evaluation	1-23
1.6	West Branch Physical Enhancement – Klein Creek Streambank Stabilization Project	1-25
1.6.1	Site Description	1-25
1.6.2	Design Characteristics	1-25
1.6.3	Permitting Requirements.....	1-25
1.6.4	Project Implementation.....	1-25
1.6.5	Project Impact Evaluation	1-35
1.7	Southern East Branch Stream Enhancement.....	1-35
1.7.1	Site Description	1-35
1.7.2	Design Characteristics.....	1-35
1.7.3	Permitting Requirements.....	1-35
1.7.4	Design Progress Report.....	1-35
1.7.5	Project Impact Evaluation	1-36
1.8	Hammel Woods Dam Modification	1-41
1.8.1	Site Description	1-41
1.8.2	Design Characteristics	1-41
1.8.3	Permitting Requirements.....	1-41
1.8.4	Project Implementation	1-41
1.8.5	Project Impact Evaluation	1-41
1.9	DuPage River Stream Enhancement.....	1-41
1.9.1	Site Description	1-42
1.9.2	Design Characteristics	1-42
1.9.3	Permitting Requirements.....	1-42
1.9.4	Design Progress Report.....	1-43
1.9.5	Project Impact Evaluation	1-46
Chapter 2 Chloride Reduction Program		1-1
2.1	Technical Workshops.....	2-1
2.2	Tracking BMP Adoption	2-3
2.2.1	Chloride Questionnaire.....	2-3
2.2.2	Ambient Impact Monitoring	2-4

2.3 Continuous Chloride Monitoring.....	2-4
Chapter 3 Nutrient Implementation Plan	3-1
3.1 NIP Summary and Next Steps.....	3-1

Attachments

- Attachment 1. Example of DRSCW Special Conditions
- Attachment 2. Example of LDRWC Special Conditions

List of Tables

Table 1. DRSCW Special Condition projects and activities per the 2022 NPDES Permit Special Condition.....	i
Table 2. Participation in the DRSCW Special Conditions permit 2023-2024	iii
Table 3. LDRWC Special Condition projects per Implementation Planning from 2016.....	iv
Table 4. LDRWC/DRSCW Joint Activities.....	iv
Table 5. Participation in the LDRWC Special Conditions Permit 2023-2024	v
Table 6. Pre- (2018) and Post-(2021, 2022, and 2023) Project Biological and Habitat Data collected at Spring Brook Phase 2	1-5
Table 7. Color Key to IBI Scores	1-6
Table 8. Color Code to QHEI Scores	1-6
Table 9. Project schedule for the Master Plan for Salt Creek at Fullersburg Woods	1-23
Table 10. Pre- (2014, 2019, 2021, and 2023) Project Biological and Habitat Data collected at Southern East Branch Stream Enhancement.....	1-37

List of Figures

Figure 1. Pre- (2018) and Post-Project (2021, 2022, and 2023) QHEI Scores at Spring Brook Phase 2	1-6
Figure 2. Pre- (2018) and Post-Project (2021, 2022, and 2023) mIBI Scores at Spring Brook Phase 2	1-7
Figure 3. Pre- (2018) and Post-Project (2021, 2022, and 2023) fIBI Scores at Spring Brook Phase 2	1-7
Figure 5. Pre- (2014, 2019, 2021, and 2023) Project QHEI at Southern East Branch Stream Enhancement	1-38
Figure 6. Pre- (2014, 2019, 2021, and 2023) Project mIBI at Southern East Branch Stream Enhancement	1-38
Figure 7. Pre- (2014, 2019, 2021, and 2023) Project fIBI at Southern East Branch Stream Enhancement	1-39
Figure 8. Calculated Chloride Concentrations - Winter Months (2020-2023) for the Lower DuPage River at Shorewood	2-6

Figure 9. Calculated Chloride Concentrations - Winter Months (2007-2023) for Salt Creek at Busse Woods Main Dam. Data was not collected in 2021.	2-7
Figure 10. Calculated Chloride Concentrations - Winter Months (2007-2023) for Salt Creek at Wolf Road.....	2-7
Figure 11. Calculated Chloride Concentrations - Winter Months (2007-2023) for the East Branch DuPage River at Army Trail Road.....	2-8
Figure 12. Calculated Chloride Concentrations - Winter Months (2008-2023) for the East Branch DuPage River at Hobson Road	2-8
Figure 13. Calculated Chloride Concentrations - Winter Months (2007-2023) for the West Branch DuPage River at Arlington Drive	2-9
Figure 14. Calculated Chloride Concentrations - Winter Months (2018-2023) for the West Branch DuPage River at Bailey Road.....	2-9

List of Maps

Map 1. Map of DRSCW Physical Projects set out in the Special Conditions.....	vi
Map 2. Map of LDRWC Physical Projects set out in the Special Conditions.....	vii
Map 3. Pre-and Post-Project Monitoring Sites at Spring Brook Phase 2.....	8
Map 4. Pre-Project Monitoring Sites at the Southern East Branch Stream Enhancement Project	40

List of Plates

Plate 1. Photograph of the Master Plan for Fullersburg Woods construction sign.....	1-11
Plate 2. Photograph of the construction staging area at Fullersburg Woods (November 2023).	1-12
Plate 3. Photograph of the instream work area at the completion of day 1 (November 27, 2023).	1-13
Plate 4. Photograph of the installation of the causeway upstream of the dam (November 29, 2023).	1-13
Plate 5. Photograph of one of the silt curtains utilized in the instream work (November 27, 2023).	1-14
Plate 6. Photograph of the completed causeway upstream of the Graue Mill dam (November 30, 2023).	1-15
Plate 7. Photograph of the Graue Mill dam during removal (November 30, 2023).....	1-15
Plate 8. Photograph of the Graue Mill dam at the end of the initial day of removal (November 30, 2023).	1-16
Plate 9. Photograph of the Graue Mill dam at the end of the day on December 8, 2023.	1-16
Plate 10. Photograph of the demolition of the dewatering structure (December 11, 2023). .	1-17
Plate 11. Photograph of the construction of Riffle #1 at Fullersburg Woods (December 15, 2023)	1-18
Plate 12. Photograph of the installation of a boulder in Riffle #1 (December 15, 2023).....	1-18

Plate 13. Photograph of Riffle #1 at Fullersburg Woods at the end of the day on December 15, 2023	1-19
Plate 14. Photograph of Riffle #1 (former dam location) at Fullersburg Woods on December 19, 2023	1-19
Plate 15. Photograph of selective clearing on Willow Island at Fullersburg Woods (February 14, 2023)	1-20
Plate 16. Photograph of brush pile burning at Fullersburg Woods (February 22, 2023)	1-21
Plate 17. Public amenities included in the Master Plan for Salt Creek at Fullersburg Woods .	1-22
Plate 18. Stream Restoration Practices included in the Master Plan at Fullersburg Woods ...	1-24
Plate 19. Aerial photograph of Klein Creek Streambank Stabilization Project (October 2022)	1-27
Plate 20. Aerial photograph Looking upstream (east) on Klein Creek from Kuhn Road (September 16, 2022).	1-28
Plate 21. Photograph of vegetation management at the Klein Creek Streambank Stabilization Project	1-28
Plate 22. Photograph of seeding and stabilization at the Klein Creek Streambank Stabilization Project	1-29
Plate 23. Photograph of streambank construction at the Klein Creek Streambank Stabilization Project	1-29
Plate 24. Photograph of toe wood installation at the Klein Creek Streambank Stabilization Project	1-30
Plate 25. Photograph looking upstream on Klein Creek from Kuhn Road (October 12, 2022) .	1-30
Plate 26. Photograph of a rock substrate area at the Klein Creek Streambank Stabilization Project	1-31
Plate 27. Looking downstream (west) on Klein Creek at the Kuhn Road culverts.	1-32
Plate 28. Aerial photo upstream view on Klein Creek from Kuhn Road (December 1, 2022)...	1-32
Plate 29. Aerial photograph of looking downstream on Klein Creek from Section 1-A (December 1, 2022).	1-33
Plate 30. Looking downstream at one of the rock weirs constructed for controlling the overflow into a wetland.	1-33
Plate 31. Looking downstream at a constructed oxbow in the previous streambed location.	1-34
Plate 32. Looking downstream at the recently planted plugs within the vegetated rock toe.	1-34
Plate 33. Concept Plan for the DuPage River Stream Enhancement.....	1-44
Plate 34. PowerPoint Slide from October 4, 2023 Public Roads Workshop.....	2-1
Plate 35. PowerPoint Slide from Oct. 2, 2023 Parking Lots & Sidewalks Workshop.....	2-1
Plate 36. Outreach graphic for social media platforms, 2023	2-3

Introduction and Participation DuPage/Salt Creek Special Conditions Report, March 30, 2024.

This report fulfills certain reporting requirements contained in DuPage River Salt Creek Workgroup's (DRSCW) and Lower DuPage River Watershed Coalition's (LDRWC) NPDES permits. The specific reporting requirements addressed herein include annual reporting on the progress of the projects listed in the Special Conditions, and certain baseline condition reporting for the Chloride Reduction Program.

Background – DuPage River Salt Creek Workgroup (DRSCW)

In 2015, the DRSCW submitted its Implementation Plan to the Illinois Environmental Protection Agency (IEPA). The adaptive management approach is based on high-resolution, comprehensive monitoring of chemical, biological, and physical characteristics of the watersheds. This monitoring provides the data needed to execute the “Plan-Do-Check-Act” methodology inherent to adaptive management. Analysis of the monitoring data provides insight into the highest-priority stressors that affect stream health and allows identification of projects or initiatives with the greatest potential to attain stream use goals. Monitoring also provides the feedback needed to properly assess the impacts of stream restoration projects and water quality initiatives to better formulate future activities.

The 2015 Implementation Plan was used to negotiate a Special Condition in the National Pollutant Discharge Elimination System (NPDES) permit for the watershed's major municipal WWTPs. The Special Condition covered two five-year permit cycles (10 years total); it set an effluent total phosphorus (TP) limit for WWTPs at 1.0 milligrams per liter (mg/L) required 10 years after the effective date of the initial permit for WWTPs using chemical treatment and 11 years after the effective date of the initial permit for WWTPs using biological treatment. Additionally, the Special Condition includes projects and activities as set out in the 2015 DRSCW Implementation Plan (Table 1 and Map 1).

Table 1. DRSCW Special Condition projects and activities per the 2022 NPDES Permit Special Condition

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Oak Meadows Golf Course Dam Removal	December 31, 2016 (Completed)	Improve dissolved oxygen (DO)	Improve fish passage
Oak Meadows Golf Course Stream Restoration	December 31, 2017 (Completed)	Improve aquatic habitat (Qualitative Habitat Evaluation Index (QHEI)), reduce inputs of nutrients and sediment	Raise macroinvertebrate Index of Biotic Integrity (mIBI)
Fawell Dam Modification	December 31, 2024	Modify dam to allow fish passage	Raise fish Index of Biotic Integrity (fIBI) upstream of structure

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Spring Brook Restoration and Dam Removal	December 31, 2020 (Completed)	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI
Fullersburg Woods Dam Modification Concept Plan Development	December 31, 2016 (Completed)	Identify conceptual plan for dam modification and stream restoration	Build consensus among plan stakeholders
Fullersburg Woods Dam Modification	December 31, 2024 (Completed)	Improve DO, improve aquatic habitat (QHEI)	Raise mIBI and fIBI
Fullersburg Woods Dam Modification Area Stream Restoration	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI
West Branch Physical Enhancement	December 31, 2023 (Completed)	Improve aquatic habitat (QHEI)	Raise mIBI and fIBI
Southern East Branch Stream Enhancement	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI
QUAL2Kw Modeling for West Branch, East Branch, and Salt Creek	December 31, 2023 (Completed)	Collect new baseline data and update model	Quantify improvements in watershed. Prioritize DO improvement projects for years beyond 2024
Nonpoint Source (NPS) Phosphorus Feasibility Analysis	December 31, 2021 (Completed)	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels
East Branch Phase II	December 31, 2028	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise mIBI and fIBI
Lower Salt Creek Phase II	December 31, 2028	Improve aquatic habitat (QHEI), Remove fish barrier, reduce inputs of nutrients and sediment	Raise mIBI and fIBI
West Branch Restoration Project ^a	December 31, 2028	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI

Another requirement of the Special Conditions is that the included WWTPs participate in a watershed Chloride Reduction Program with the objective of optimizing public agency winter chloride compound application rates to decrease watershed wide chloride loading.

In 2022, the Special Conditions were extended for an additional five-year permit cycle and provided additional funding from participating members for projects identified in the 2020 Implementation Plan. The 2022 Special Condition also extended the effective date of the effluent TP limit for WWTPs at 1.0 mg/L for an additional three years. Four DRSCW members chose to retain the original NPDES permit language and will be implementing a TP limit of 1.0 mg/L monthly average starting between 10/01/2025 and 08/02/2026. Twelve agencies operating 16 WWTPs have adopted the new conditions. An additional two WWTPs are already treating to 1.0 mg/L TP due to earlier plant expansions. The assessments between 2023 and

2025 (valued at \$6,043,773) will be used to fund an expansion of the Fullersburg Woods Dam removal and stream restoration (Section 1.5) , the lower East Branch Stream Enhancement (Section 1.7), and an as yet unidentified project on the West Branch of the DuPage River.

Table 2 includes a list of all DRSCW members and identifies their participation in both the 2015 Special Condition and the 2022 Special Conditions. A copy of the 2022 DRSCW Special Conditions permit is included in Attachment 1.

Table 2. Participation in the DRSCW Special Conditions permit 2023-2024

Agency Name	Facility Name	NPDES Permit Number	Membership Dues Paid 2023-24	Member Included in the 2015 Special Conditions	Assessment Paid for Paragraph 2 Table Project Funding for the 2022 Special Condition
Addison, Village of	A. J. LaRocca WTF	IL0027367	YES	YES	YES
Addison, Village of	Addison - North STP	IL0033812	YES	YES	YES
Bartlett, Village of	Bartlett WWTP	IL0027618	YES	YES	N/A
Bensenville, Village of	South STP	IL0021849	YES	YES*	N/A
Bloomington, Village of	Reeves WRF	IL0021130	YES	YES	YES
Bolingbrook, Village of	Bolingbrook #1	IL0032689	YES	YES	YES
Bolingbrook, Village of	Bolingbrook #2	IL0032735	YES	YES	YES
Carol Stream, Village of	Carol Stream WRC	IL0026352	YES	YES	YES
Downers Grove Sanitary District	Downers Grove S.D. – Wastewater Treatment Center	IL0028380	YES	YES	YES
DuPage County	Green Valley	IL0031844	YES	YES	YES
Elmhurst, City of	Elmhurst WRF	IL0028746	YES	YES	YES
Glenbard Wastewater Authority	Glenbard WWTP	IL0021547	YES	YES	YES
Glendale Heights, Village of	Glendale Heights WWTP	IL0028967	YES	YES	N/A
Hanover Park, Village of	Hanover Park STP	IL0034479	YES	YES	YES
Itasca, Village of	Itasca STP	IL0079073	YES	YES*	N/A
Metropolitan Water Reclamation District of Greater Chicago	Egan WRP	IL0036340	YES	YES	YES
Metropolitan Water Reclamation District of Greater Chicago	Hanover WRP	IL0036137	YES	YES	YES
Roselle, Village of	J. Botterman WWTP	IL0048721	YES	YES	YES
Roselle, Village of	J. L. Devlin WWTP	IL0030813	YES	YES	YES

Agency Name	Facility Name	NPDES Permit Number	Membership Dues Paid 2023-24	Member Included in the 2015 Special Conditions	Assessment Paid for Paragraph 2 Table Project Funding for the 2022 Special Condition
Salt Creek Sanitary District	Salt Creek Sanitary District STP	IL0030953	YES	YES	YES
West Chicago, City of and Winfield, Village of	West Chicago/Winfield Wastewater Authority Regional WWTP	IL0023469	YES	YES	N/A
Wheaton Sanitary District	Wheaton Sanitary District WWTF	IL0031739	YES	YES	N/A
Wood Dale, City of	City of Wood Dale - North STP	IL0020061	YES	YES	YES
Wood Dale, City of	Wood Dale - South STP	IL0034274	YES	YES	YES

*The Bensenville South STP and Itasca STP only contributed funds to the Chloride/NIP/QUAL 2K/Trading Program (also known as the “studies” portion) of the 2015 Special Condition funds as both facilities NPDES permits already included a 1 mg/L for TP.

N/A means the agency does not have the condition included in its permit.

Background – Lower DuPage River Watershed Coalition (LDRWC)

Similarly, to the DRSCW, the LDRWC has negotiated a Special Condition with the IEPA that includes projects and activities that are the sole responsibility of the LDRWC (*Table 3*) as well as those that are the joint responsibility of the LDRWC and DRSCW (*Table 4*). *Map 2* depicts the location of the physical projects in the LDRWC’s Special Conditions.

Table 3. LDRWC Special Condition projects per Implementation Planning from 2016

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Hammel Woods Dam Removal	December 31, 2022(Completed)	Improve DO, reduce nuisance algae	Improve fish passage
DuPage River Stream enhancement South of 119 th Street in Plainfield	December 31, 2022	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise mIBI and fIBI

Table 4. LDRWC/DRSCW Joint Activities

Project Name	Completion Date	Short-Term Objectives	Long-Term Objectives
Nonpoint Source (NPS) Phosphorus Feasibility Analysis	December 31, 2021 (Completed)	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels

In the LDRWC, three (3) WWTPs are already at 1 mg/l monthly average and two (2) WWTPs, Bolingbrook #3 and Naperville, will be moving to the 1 mg/l limit by 6/30/2026 and 12/31/2028 respectively. Crest Hill's TP schedule is being negotiated as part of their proposed plant expansion. *Table 5* includes a list of all LDRWC members and identifies their participation in both the Special Conditions. A copy of the LDRWC Special Conditions permit is included in Attachment 2. Note: As the LDRWC Special Conditions differ between permit holders, the Special Conditions for Bolingbrook STP#3 is included in the Attachment as a representation of the LDRWC's Special Conditions Language.

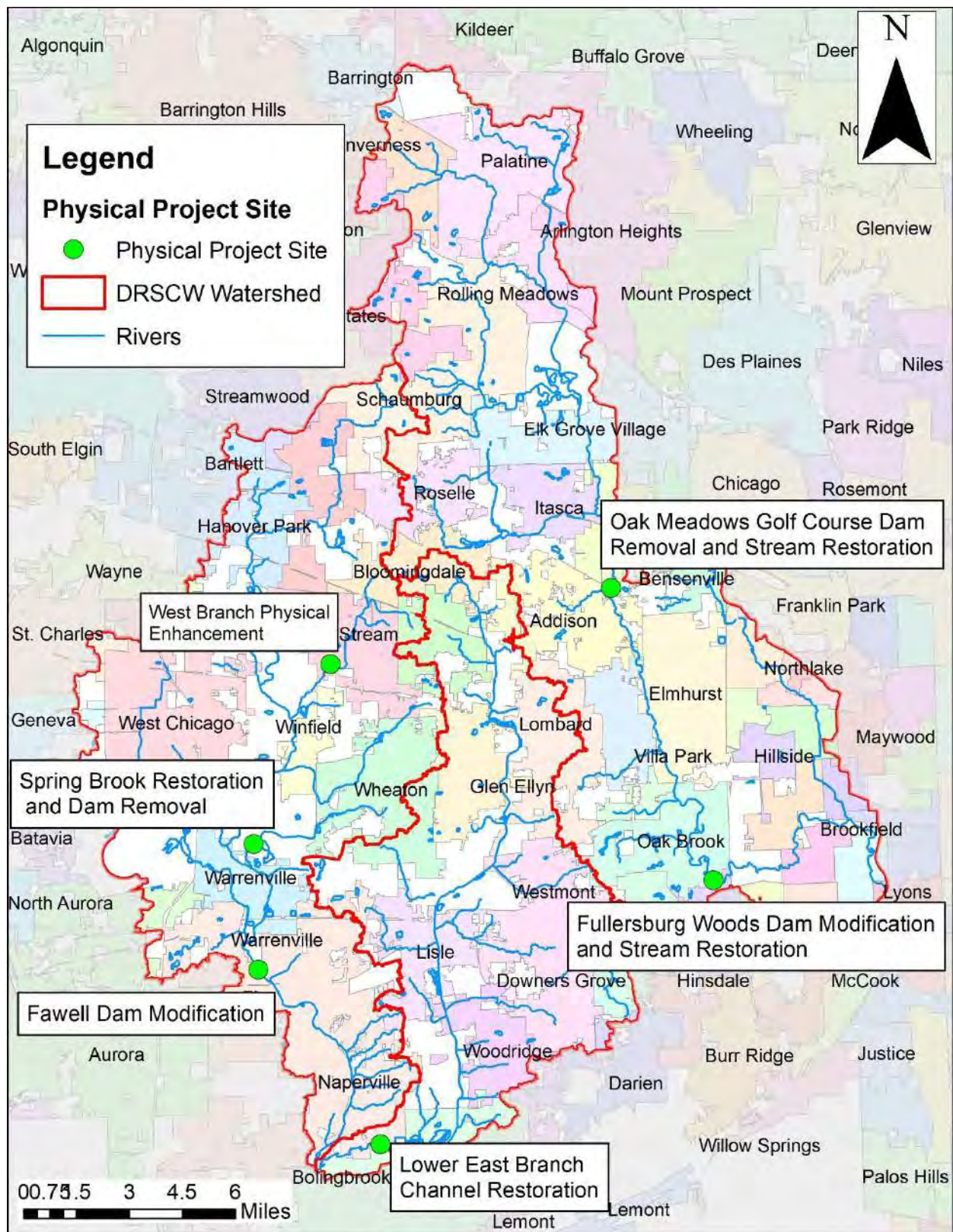
Table 5. Participation in the LDRWC Special Conditions Permit 2023-2024

Agency Name	Facility Name	NPDES Permit Number	Membership Dues Paid 2023-24	Assessment Paid for Paragraph 2 Table Project Funding*	Assessment Paid for the Chloride Reduction/NIP/QUAL 2k/Trading Program
Bolingbrook, Village of	Bolingbrook #3	IL0069744	YES	YES	YES
Crest Hill, City of	Crest Hill STP	IL0021121	YES	N/A*	YES
Joliet, City of	Aux Sable WWTP	IL0076414	YES	N/A	YES
Minooka, Village of	Minooka STP	IL0055913	YES	N/A	YES
Naperville, City of	Springbrook WRP	IL0034061	YES	YES	YES
Plainfield, Village of	Plainfield STP	IL0074373	YES	N/A	YES

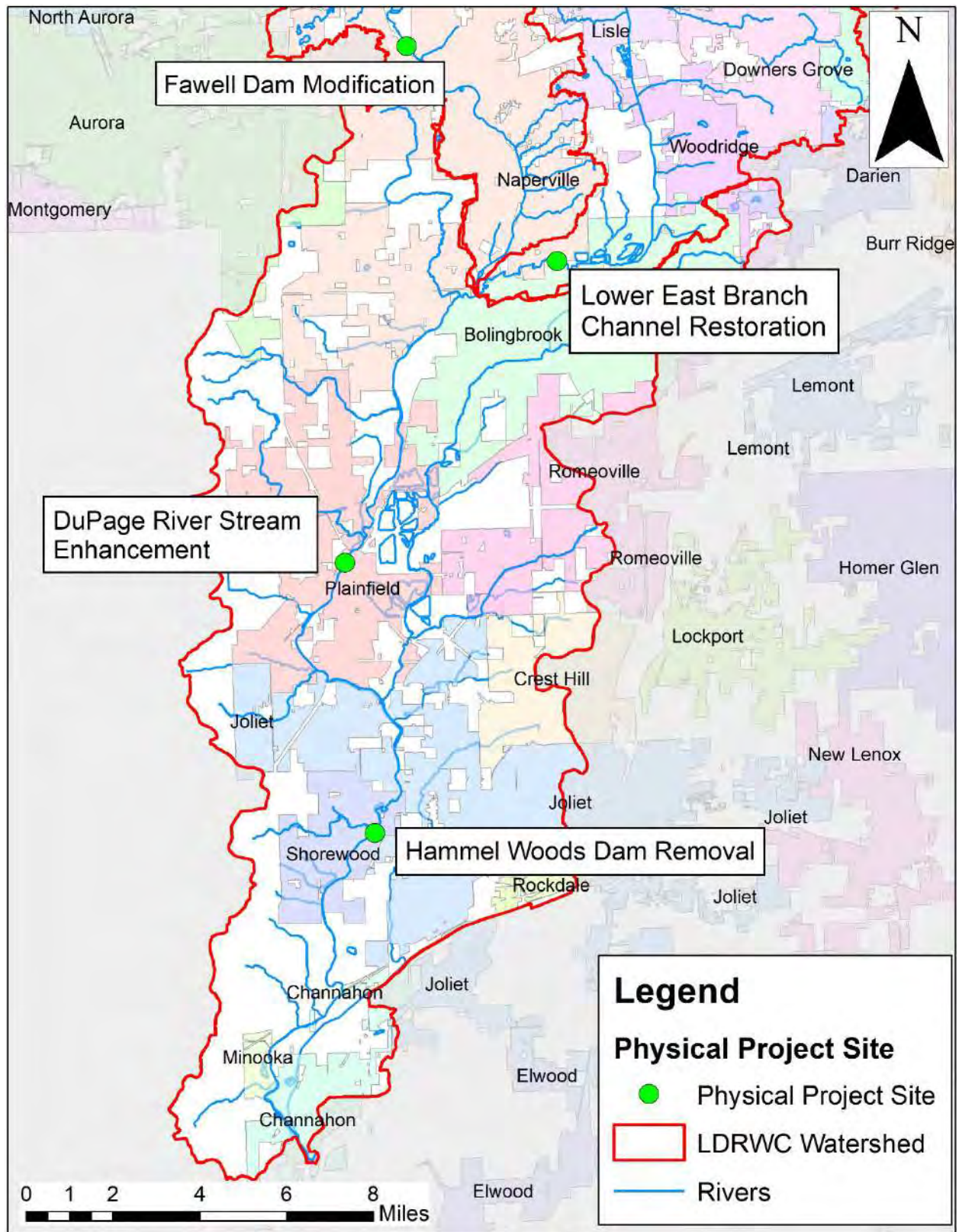
*N/A means that the agency does not have that condition in its permit.

Special Conditions Permit Holder Forum

Due to the completion of the Nutrient Implementation Plan (NIP) (Section 3.0), several meetings of the DRSCW and LDRWC Special Condition permit holders were held during this reporting year: May 3, 2023, June 6, 2023, and November 6, 2023. Additionally, the October 25, 2023 DRSCW General Membership Meeting and the November 16, 2023 LDRWC General Membership Meetings included discussions on the NIP. The core of the discussion at the meetings was the adoption of the 0.11 to 0.28 mg/l TP IPS threshold as a warm weather watershed goal (equivalent to approximately a 0.35 mg/l TP effluent standard in DRSCW watersheds and 0.5 mg/l in the Lower DuPage). Other topics discussed at the SC Permit Holders meetings included the reporting limits for the TP effluent limits (seasonal, monthly average, geometric mean, or a combination), timeline/ implementation schedule for TP effluent limits, and proposed special assessments.



Map 1. Map of DRSCW Physical Projects set out in the Special Conditions



Map 2. Map of LDRWC Physical Projects set out in the Special Conditions

Chapter 1 Physical Projects

The Special Conditions Paragraph 2 identifies stream restoration and dam modification projects that must be completed by the DRSCW and/or LDRWC. The current DRSCW 2024-25 Budget and Four-Year Financial Plan and the LDRWC Three-Year Financial Plan identifies project expenses and funds allocated for each of the physical projects. Map 1 shows the DRSCW physical projects covered in this section; and Map 2 shows the LDRWC physical projects covered in this section.

1.1 Oak Meadows Golf Course Dam Removal and Stream Restoration

- Special Conditions Completion Date – December 31, 2016 (dam removal), December 31, 2017 (stream restoration)
- Project Status – Dam removal and stream restoration are complete. The post-project monitoring phase was completed in 2019. Future monitoring of the project area will be completed in conjunction with the bioassessment program. Salt Creek’s next bioassessment is scheduled for the Summer of 2027.

1.1.1 Site Description

The 2016 Annual Report provided a site description.

1.1.2 Design Characteristics

The 2016 Annual Report described the Project’s design characteristics.

1.1.3 Permitting Requirements

The 2016 Annual Report includes details on the Project’s permitting requirements.

1.1.4 Project Implementation

The 2017 Annual Report details the project implementation.

1.1.5 Project Impact Evaluation

The 2021 Annual Report details the post project sampling completed to date. The next post-project sampling is scheduled to be conducted in conjunction with the Salt Creek bioassessment schedule for the summer of 2027.

1.2 Fawell Dam Modification

- Special Conditions Listed Completion Date – December 31, 2024
- Status – In permitting and fabrication phase

The objective of the project is to allow fish passage for twelve (12) target species through the Fawell dam. The DRSCW has been collaborating with Forest Preserve District of DuPage County

(FPDDC) and DuPage County Stormwater Management (DC SWM) on this project. DRSCW has budgeted \$1,275,559 for design, construction and monitoring of this project.

1.2.1 Site Description

The 2017 Annual Report provided a site description.

1.2.2 Design Characteristics

A detail of the core design was provided in the 2020, 2021, and 2022 Annual Reports.

1.2.3 Permitting Requirements

The listed permits below are required for the Fawell Dam Modification. Status as of March 15, 2024 is included.

- U.S. Army Corps of Engineers (US ACOE) Nationwide Permit (LRC-2024-169)
 - Application submittal in March 2024 – Pending
 - Illinois Historic Preservation Agency Section 106 Clearance – Not Applicable
 - U.S. Fish & Wildlife Service Section 7 Consultation – Completed USFWS self-documenting Section 7 Consultation in Summer 2021
 - Verification of need for review by Kane DuPage Soil & Water Conservation District (depending on US ACOE determination).
- Illinois Department of Natural Resources
 - EcoCat Request – Signoff received (submitted in summer 2021 expires in 2023, under review to see if it needs to be updated)
 - Major Modification of Existing Dam Permit Application submittal – Plans were submitted to IDNR in March 2024 who confirmed that the project is considered a Dam Modification as opposed to Floodway Construction project. Based on that feedback, additional supporting documentation and the official permit application will be submitted by the end of March 2024.
 - Floodway Construction Permit – Separate Floodway Construction Permit not anticipated to be required based on IDNR feedback.
- DuPage County Stormwater Management Certification and Building Permit
 - Application submittal – DuPage County submittal will combine the components of the US ACOE and the IDNR-OWR dam modifications submittal. It will also incorporate final MOU with DuPage County and the FPDDC. Application will be submittal by the end of March 2024 along with IDNR-OWR supporting documentation.

1.2.4 Design Progress Report

The DRSCW has negotiated a memorandum of understanding (MOU) with DC SWM and the FPDDC. The MOU sets out the responsibilities for each party at each stage, including construction, transport installation, monitoring and maintenance. DC SWM is the owner of the

dam and the land parcel it sits on. The FPDDC owns the property surrounding the dam parcel, including the area under the downstream riprap. The MOU covers:

- Fabrication and transport of ladder
- Permitting of the ladder
- Issuing of request for proposals for ladder placement
- Project oversight for ladder placement and “riffle grading”
- Maintenance of the structure (debris management and inspection of joins and anchors)
- Seasonal operation of the removable section where the ladder exits the upstream end of the culvert (winter removal and spring placement). This allows the ladder to be opened if the gate needs to be closed.
- Ad hoc operation of removable section
- Placement of winter debris screens
- Maintenance of instream elevation of the downstream riffle

The MOU was signed by all parties in November 2023. The next steps are obtaining all project permits and placing the order for the fabrication of the ladder (a fabricator has been identified). DC SWM will be the lead agency for the bidding of the placement of the ladder in the structure and will oversee the installation of the ladder. It is the objective to have the ladder installed in the Fawell Dam in the Fall 2024.

1.2.5 Project Impact Evaluation

Post project, both fIBI and fish taxa will be sampled upstream of the site and compared to historical data. The upstream and downstream sites were sampled in 2020 as part of the DRSCW’s rolling basin assessment.

There are several possibilities for additional direct instream monitoring for fish movement through the system which are being evaluated based on the final design. Monitoring will likely involve both intensive monitoring at the ladder’s exit and extensive monitoring of the upstream basin.

1.3 Spring Brook Restoration and Dam Removal (Spring Brook Phase 2)

- Special Conditions Listed Completion Date – December 2019
- Status – Construction is complete. Post-project monitoring is on-going. Year 3 of post-project monitoring was completed in 2023. Year 4 of post-project monitoring is scheduled for 2024.

The project is being managed by the Forest Preserve District of DuPage County (FPDDC); construction, permitting, and long-term monitoring is being funded by the FPDDC, the Illinois State Toll Highway Authority (ISTHA), and the DRSCW.

Post project survey results: After three (3) years of post-project monitoring, Spring Brook Phase 2 has met its post-project targets for QHEI and fIBI both within the project footprint and at sites monitored as part of the post-project impact evaluation.

1.3.1 Site Description

The 2020 Annual Report provided a site description.

1.3.2 Design Characteristics

The 2020 Annual Report provided the Project's design characteristics.

1.3.3 Permitting Requirements

The 2020 Annual Report includes details on the Project's permitting requirements.

1.3.4 Project Implementation

The 2020 Annual Report details the project implementation.

1.3.5 Project Impact Evaluation

The DRSCW, MBI, and the FPDDC developed a monitoring plan to assess the restoration work conducted by the FPDDC, ISTHA, and DRSCW contractors at the Spring Brook Phase 2. Pre- and post-project monitoring includes five (5) sites. Three (3) of the sites (WB10, WB10C, and WB10D) are located within the project footprint with the remaining two (2) sites (10A and 10B) being located downstream of the project. The downstream sites serve as control sites that share the same annual water quality and flow variation as the upstream (restored) sites. It should also be noted that the location of WB10 has moved between the pre- and post-project sampling. As part of the project, a new stream channel was constructed for the portion of Spring Brook situated downstream of the former location of the Arrow Road dam and the former channel was converted to wetlands. Since prior to 2020, WB10 was located on the original channel, as part of the post-project monitoring, WB10 was relocated to the newly constructed channel immediately upstream of the pedestrian bridge. Table 6 is a summary of pre- and post- project biological and habitat data collected at Spring Brook Phase 2 in 2018, 2021, 2022, and 2023. Table 7 and Table 8 include the color codes to IBI and habitat scores. Figure 1 to Figure 3 depict the pre- and post-project QHEI; mIBI scores (Figure 2); and fIBI scores (Figure 3). A map of sampling locations is included in Map 3.

Table 6. Pre- (2018) and Post- (2021, 2022, and 2023) Project Biological and Habitat Data collected at Spring Brook Phase 2

Site ID	River Mile	Drainage Area (sq mi.)	fIBI	mIBI	QHEI	Attainment Status
Spring Brook 2023						
WB10D*	1.51	6.00	29	38.2	75.0	Non-Fair
WB10C*	1.12	6.30	30	32.2	40.0	Non-Fair
WB10*	0.71	6.80	26	40.9	73.5	Non-Fair
WB10B	0.30	6.90	35	47.6	60.0	PARTIAL
WB10A	0.10	7.00	32	44.8	67.5	PARTIAL
Spring Brook 2022						
WB10D*	1.51	6.00	30	45.3	70.3	PARTIAL
WB10C*	1.12	6.30	26	27.2	36.0	Non-Fair
WB10*	0.71	6.80	31	39.1	73.5	Non-Fair
WB10B	0.30	6.90	19	49.5	50.5	Non-Poor
WB10A	0.10	7.00	31	52.6	65.0	PARTIAL
Spring Brook 2021						
WB10D*	1.51	6.00	30	33.2	78.5	Non-Fair
WB10C*	1.12	6.30	24	23.3	48.0	Non-Fair
WB10*	0.71	6.80	22	33.1	81.0	Non-Fair
WB10B	0.30	6.90	27	44.6	64.0	PARTIAL
WB10A	0.10	7.00	27	52.3	68.0	PARTIAL
Spring Brook 2018						
WB10D*	1.51	6.00	28	29.5	54.0	Non-Fair
WB10C*	1.12	6.30	18	29.1	34.0	Non-Poor
WB10*	0.71	6.80	25	42.8	69.5	PARTIAL
WB10B	0.30	6.90	11	51.6	51.7	Non-Poor
WB10A	0.10	7.00	15	56.0	56.0	Non-Poor

*Sites are located within the project footprint.

See Tables 4 and 5 for the color key to IBI and QHEI scores.

Table 7. Color Key to IBI Scores

Legend: Biological Indicators	
Green	Good
Yellow	Fair
Red	Poor
*	Significant departure from biocriterion
NS	Nonsignificant departure from biocriterion

Table 8. Color Code to QHEI Scores

Legend: QHEI	
Excellent	
Good	
Fair	
Poor	
Very Poor	

Figure 1. Pre- (2018) and Post-Project (2021, 2022, and 2023) QHEI Scores at Spring Brook Phase 2

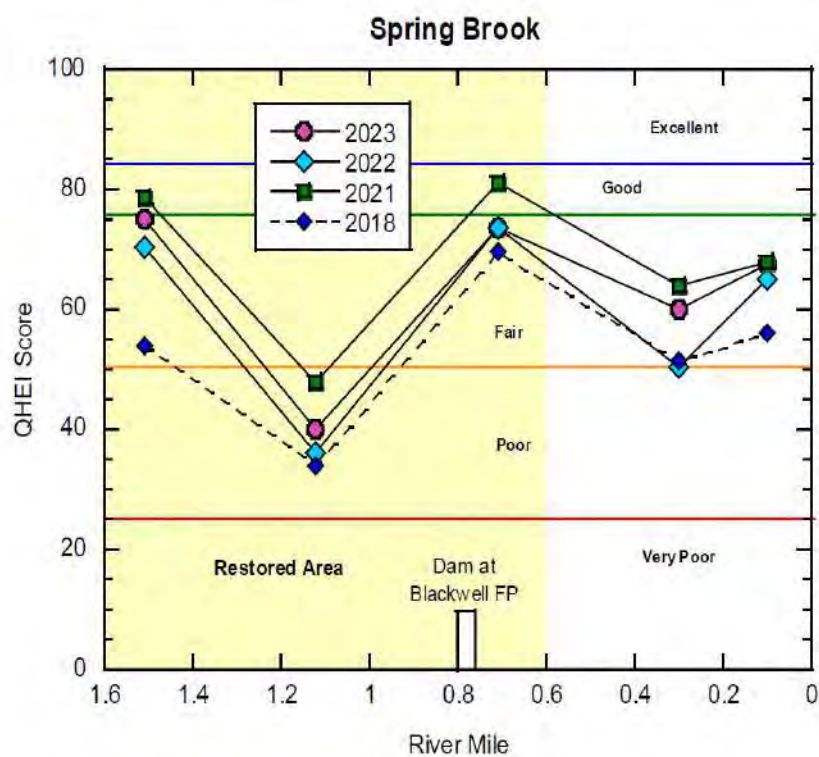


Figure 2. Pre- (2018) and Post-Project (2021, 2022, and 2023) mIBI Scores at Spring Brook Phase 2

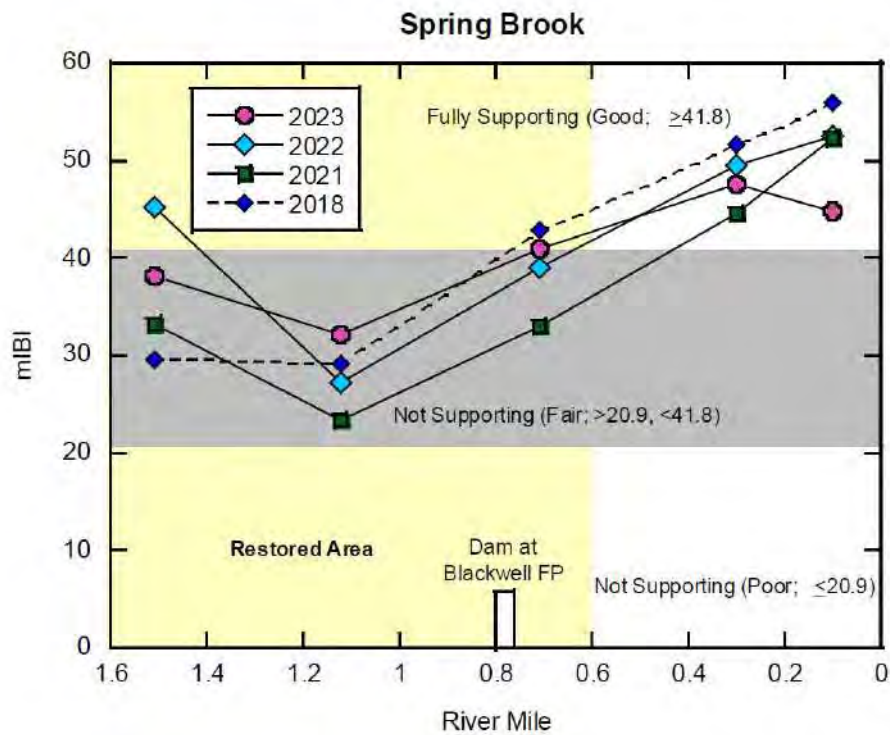
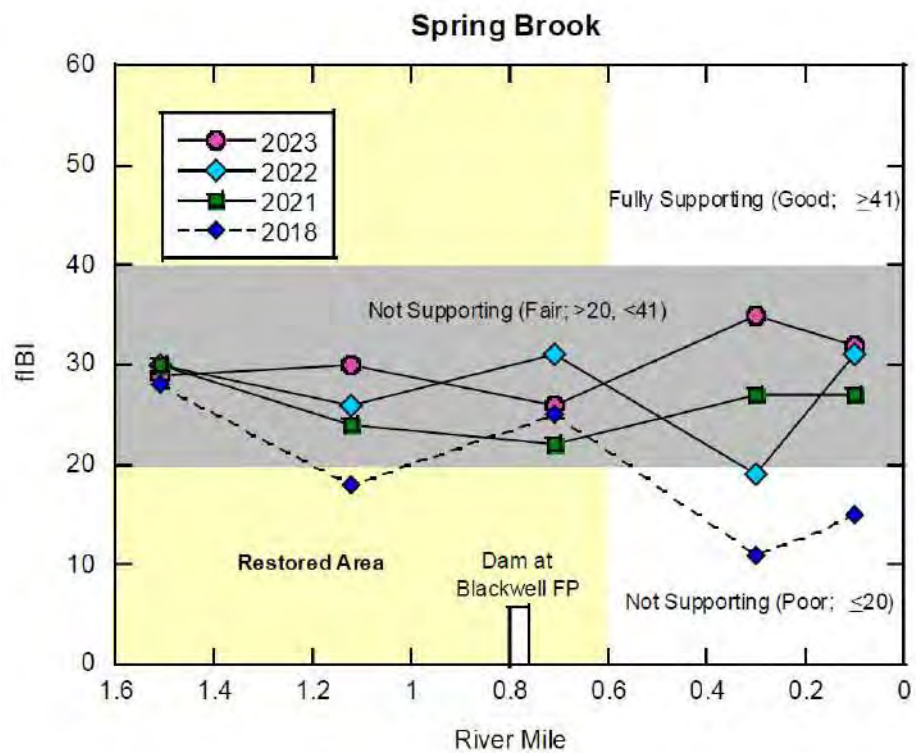


Figure 3. Pre- (2018) and Post-Project (2021, 2022, and 2023) fIBI Scores at Spring Brook Phase 2





Map 3. Pre-and Post-Project Monitoring Sites at Spring Brook Phase 2

1.4 Fullersburg Woods Dam Modification Concept Plan Development

- Special Conditions Listed Completion Date – December 2016
- Status – Complete (December 2016)

The DRSCW submitted the Fullersburg Woods Dam Modification Concept Plan to the IEPA on December 2016. The 2017 Annual Report included details on the findings of the Fullersburg Woods Dam Modification Concept Plan.

1.5 Fullersburg Woods Dam Modification and Stream Restoration

- Special Conditions Listed Completion Date – December 31, 2024 (dam removal) and December 31, 2024 (stream restoration)
- Status – Outreach and Education Campaign is ongoing (started 2017). Master Planning process was completed in 2020. Final Design/Permitting/Preparation of Contract Bid Documents Construction is complete. Construction of the project started on November 8, 2023. The Fullersburg Woods dam has been removed and riffle #1 has been constructed. Stream restoration and vegetation management activities are on-going.

The Fullersburg Woods Dam Modification and Stream Restoration Project is located on the Salt Creek within the Fullersburg Woods Forest Preserve, Village of Oak Brook, DuPage County, Illinois. The Project's objectives are to raise QHEI above its current average of 47.45, raise fIBI at the sites upstream of the dam above its current average score of 14.0, raise mIBI above its current average score of 25.5 for approximately 1.25 river miles and to improve dissolved oxygen (DO) in the impoundment, as compared to the 2007-2018 data set. The DRSCW has been collaborating with FPDDC and the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) on this project. DRSCW has budgeted \$10,280,722 for design, construction and monitoring of this project.

1.5.1 Site Description

The 2018 Annual Report provide details on the Project's site description.

1.5.2 Research and Public Outreach

The 2021 Annual Report provided details on the Research and Public Outreach activities conducted between 2016 and 2021. All reports and materials developed as part of the research and public outreach phase of the Fullersburg Woods Dam Modification and Stream Restoration Project can be found at RestoreSaltCreek.org.

1.5.3 Design Characteristics

The 2020 Annual Report provided the Project's design characteristics.

1.5.4 Permitting Requirements

All permits listed below are obtained for the Fullersburg Dam Removal and Stream Restoration Project in 2023. Details for each are included below.

- U.S. Army Corps of Engineers Individual Permit (LRC-2021-977)
 - Permit received on October 17, 2023
 - Illinois Historic Preservation Agency Section 106 Clearance – Consolation was closed in June 2023
- U.S. Fish & Wildlife Service Section 7 Consultation – No effects determination received on May 12, 2023. Illinois Department of Natural Resources
 - EcoCat Request – Signoff received
 - Dam Removal Permit – Permit received on September 29, 2023
 - Floodway Construction Permit
 - Delegated to DuPage County Stormwater
 - Permit received on May 25, 2023
- Illinois Environmental Protection Agency
 - 401 Water Certification (C-0192-22) – Certificate received on May 8, 2023
 - NPDES Permit for Construction (ILR10)
 - Notice of Intent – Issued on November 10, 2023
- Kane DuPage Soil and Water Conservation
 - Soil erosion and sediment control (SESC) review submittal – Signoff received on June 20, 2023
- DuPage County Stormwater Management Certification and Building Permit
 - Certificate received on May 25, 2023
- DuPage County Highway Access Permit
 - Permit received on November 21, 2023

1.5.5 Design Progress Report

1.5.5.1. *Phase 1: Development of the Concept Master Plan for Salt Creek at Fullersburg Woods*

The 2021 Annual Report describes all work conducted as part of the development of a Concept Master Plan for Salt Creek at Fullersburg Woods. The Concept Master Plan was completed in September 2021 and can be found at

http://restoresaltcreek.org/wp-content/uploads/2020/09/concept-master-plan_09.17.20-final.pdf

1.5.5.2 *Phase 2: Concept Master Plan for Salt Creek at Fullersburg Woods Final Design and Preparation of Contract Bid Documents*

In early January 2021, the DRSCW entered into a contract with Hey and Associates, Inc. for the final design engineering and preparation of contract bid documents for the Concept Master Plan for Salt Creek at Fullersburg Woods. Work on this task in 2023-2024 focused on

coordination with permitting agencies, preparation of construction bid documents, and the public bidding of the project.

As discussed in section 1.5.4 Permitting Requirements, all project permits were obtained in 2023.

The Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) lead the bid process with the bid advertisement posted on June 21, 2023. A mandatory pre-bid site walk through for contractors was held on July 11, 2023 followed by a mandatory pre-bid meeting on June 12, 2023. Bids were opened on July 25, 2023. Two valid bids were received with V3 Companies submitting the low bid of \$9,375,745.00. The MWRDGC Board of Commissioners awarded V3 the contract for the construction of the Master Plan for Fullersburg Woods at their September 7, 2023 meeting.

1.5.6 Project Implementation

Site mobilization began in early November 2023. Initial activities included the installation of construction fencing, construction signage, and the setup of a construction staging area near the intersection of York and Spring Roads (Plate 1 and Plate 2).

Plate 1. Photograph of the Master Plan for Fullersburg Woods construction sign



Plate 2. Photograph of the construction staging area at Fullersburg Woods (November 2023).



On November 27, 2023, instream work for the removal of the Graue Mill (also known as the Fullersburg Woods) dam began with the installation of a causeway upstream of the dam. Kane DuPage Soil and Water Conservation District (KD SWCD) and the US Army Corps of Engineers (US ACOE) also conducted an inspection of the instream work area on November 27, 2023. Photographs of the instream work including the installation of the causeway are included in Plate 3 to Plate 5.

Plate 3. Photograph of the instream work area at the completion of day 1 (November 27, 2023).



Plate 4. Photograph of the installation of the causeway upstream of the dam (November 29, 2023).



Plate 5. Photograph of one of the silt curtains utilized in the instream work (November 27, 2023).



On November 30, 2023, the causeway was completed and work began on the demolition of the dam. By the end of the day on November 30, 2023, the majority of the dam visible above the water line had been removed. Rainfall on December 1, 2023 caused a pause in instream work until December 6, 2023. Work conducted between December 6, 2023 and December 13, 2023 focused on the removal of the dam to its spread footing and the removal of the dewatering structure that was located on the north bank of Salt Creek. Plate 6 to Plate 10 depict the construction activities conducted between November 30, 2023 and December 14, 2023.

Plate 6. Photograph of the completed causeway upstream of the Graue Mill dam (November 30, 2023).



Plate 7. Photograph of the Graue Mill dam during removal (November 30, 2023).



Plate 8. Photograph of the Graue Mill dam at the end of the initial day of removal (November 30, 2023).



Plate 9. Photograph of the Graue Mill dam at the end of the day on December 8, 2023.



Plate 10. Photograph of the demolition of the dewatering structure (December 11, 2023).



On December 15, 2023, the construction of Riffle #1 at the former location of the dam began. The installation of Riffle #1 was completed by December 19, 2023. The completion of Riffle #1 was required to be completed by December 31, 2023 so the contractor has sufficiently fulfilled their contractual obligations in regard to this milestone. Plate 11 to Plate 14 depict the construction of Riffle #1 in the location of the former Graue Mill dam.

Plate 11. Photograph of the construction of Riffle #1 at Fullersburg Woods (December 15, 2023)



Plate 12. Photograph of the installation of a boulder in Riffle #1 (December 15, 2023)



Plate 13. Photograph of Riffle #1 at Fullersburg Woods at the end of the day on December 15, 2023



Plate 14. Photograph of Riffle #1 (former dam location) at Fullersburg Woods on December 19, 2023



Winter 2024 activities have focused on upland vegetation management including selective clearing and tree removal. Selective clearing will be completed by March 30, 2024. Temporary seeding of wetland conversion areas has also been conducted. Plate 15 and Plate 16 depict the vegetation management activities being conducted at Fullersburg Woods during the winter of 2024.

Plate 15. Photograph of selective clearing on Willow Island at Fullersburg Woods (February 14, 2023)



Plate 16. Photograph of brush pile burning at Fullersburg Woods (February 22, 2023)



Activities for the remainder of 2024 will focus on two areas: 1) completion of the public amenities around the Graue Mill and 2) completion of the Salt Creek stream restoration. The public amenities included in the Master Plan for Salt Creek at Fullersburg Woods include the construction of a new overlook and paved trail and the installation of a motor to turn the Graue Mill's waterwheel, and a water feature in the Graue Mill's raceway (Plate 17). The amenities will be completed by May 15, 2024.

Plate 17. Public amenities included in the Master Plan for Salt Creek at Fullersburg Woods



The contractor, V3 Companies, also plans on starting the Salt Creek stream restoration work in late May/early June 2024. The stream restoration work includes the construction and/or enhancements of eight (8) pool and riffles from the former dam location to Rainbow bridge within the Fullersburg Woods Forest Preserve. Also included in the stream restoration work is naturalized streambank restoration at numerous areas along the channel. Vegetation management includes seeding and plantings of riparian wetland and uplands areas. The stream restoration activities are required by the contract to be completed by December 31, 2024. Plate 18 depicts the stream restoration practices included in the Master Plan at Fullersburg Woods.

A complete project schedule is included in Table 9.

Table 9. Project schedule for the Master Plan for Salt Creek at Fullersburg Woods

Date	Activity
December 31, 2023	Dam Removal Complete and Construction of Riffle #1
March 30, 2024	Completion of Selective Clearing
May 15, 2024	Completion of all work around the Graue Mill including the installation of the water wheel motor, mill race pump system, and overlooks
December 31, 2024	Substantial Completion – Completion of all stream restoration activities (pools/riffles, streambank stabilization, etc.)
May 15, 2027	Installation of Trees and Shrubs
June 30, 2030	Regulatory Sign-Off of Natural Areas Management, Monitoring, and Reporting

1.5.7 Project Impact Evaluation

The 2021 Annual Report details the pre-project sampling completed to date. Post-project sampling will be conducted for a minimum of three (3) consecutive years upon completion of construction and stabilization activities.

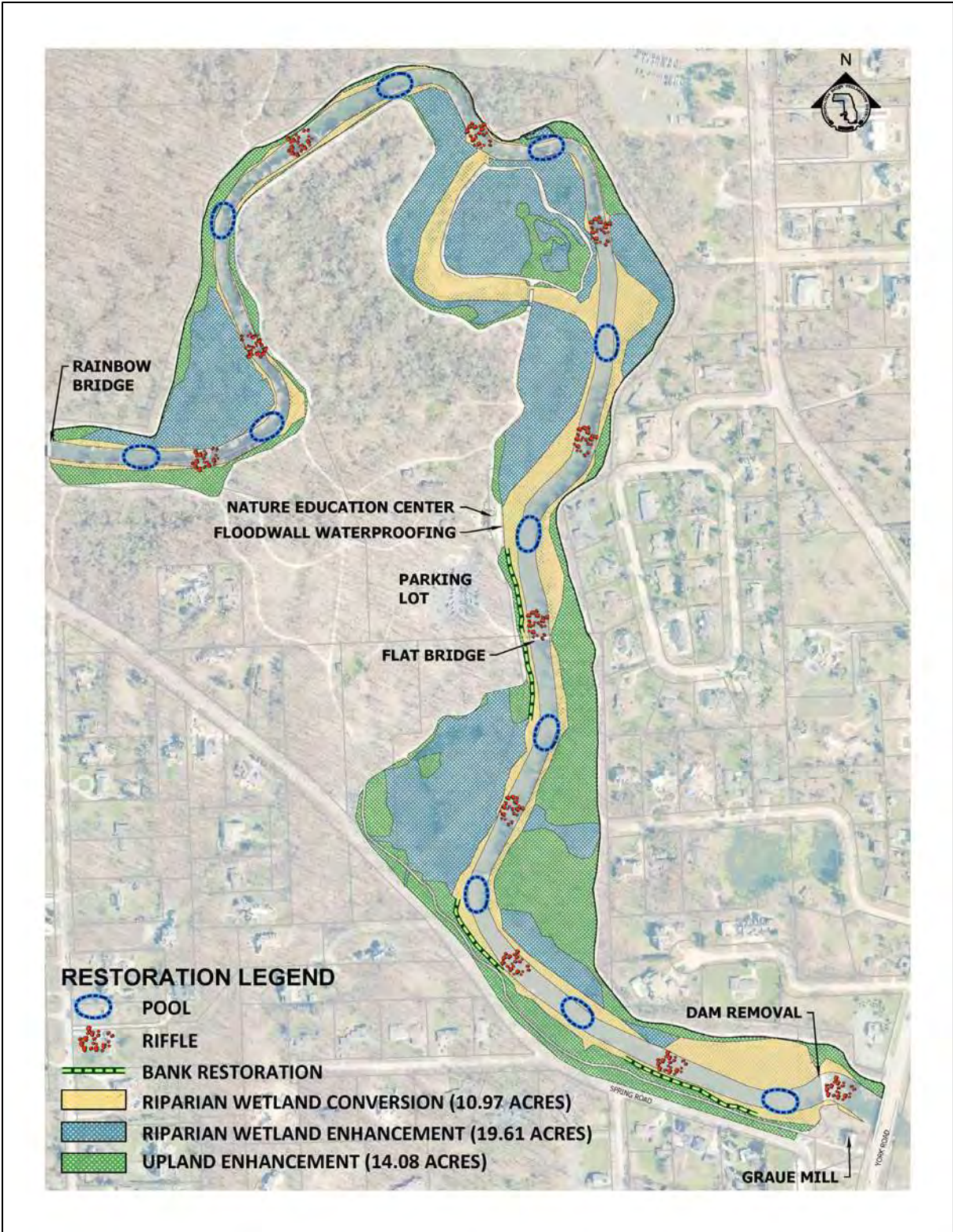


Plate 18. Stream Restoration Practices included in the Master Plan at Fullersburg Woods

1.6 West Branch Physical Enhancement – Klein Creek Streambank Stabilization Project

- Special Conditions Listed Completion Date – December 31, 2023
- Status — Construction was completed in 2022. Plugs, trees, and shrubs were installed in 2023. Post-project monitoring is scheduled to begin in 2024.

The DRSCW has entered in a Memorandum of Understanding (MOU) with the Village of Carol Stream to fund the river resource improvement elements of the Klein Creek Streambank Stabilization -- Section I. Klein Creek is a tributary to the West Branch of the DuPage River. The objectives of the Project are to raise QHEI above its current score of 41.25 and to raise fIBI and mIBI scores in Klein Creek. The DRSCW budgeted \$1,249,623 for the Project's construction and three years of post-project monitoring. Construction funding was also provided by the Village of Carol Stream.

1.6.1 Site Description

The 2021 Annual Report provides a site description.

1.6.2 Design Characteristics

The 2021 Annual Report provided the Project's design characteristics.

1.6.3 Permitting Requirements

The 2021 Annual Report included details on the Project's permitting requirements. All required permits for the projects were obtained prior to the start of construction in 2022.

1.6.4 Project Implementation

The contract was awarded on May 2, 2022, but the contractor did not mobilize to the site until mid-August 2022. The work began with a few weeks for tree removal and clearing and grubbing throughout the entire project limits of Section I.

A temporary diversion channel was constructed on each end of an existing compensatory storage basin. A sheet pile cofferdam was placed a few hundred feet downstream of the wastewater treatment plant's outfall and began diverting the flow into the diversion channel on September 20th.

Excavation of the new channel proceeded from upstream to downstream. The streambed and rock toe installation occurred in parallel and just behind the excavation. Gaps were left for later installation of the toe wood. The upstream rock substrate area and associated boulder weir were installed "in-the-dry", while the boulder weir for the downstream rock substrate area was installed after streamflow was introduced into the new channel.

The flow was temporarily stored in the compensatory storage basin while the downstream end of the diversion channel was removed and the last stretch of streambank stabilized. Flow was officially re-introduced into the newly constructed channel on October 14th.

Work continued on the rock toe, as well as backfilling the toe wood areas with the same rock.

The handful of stream barbs at the downstream end were installed “in-the-wet”. The habitat boulders and habitat wood were also placed “in-the-wet” as directed by the designer-of-record in the field.

Except for the “Economy Prairie” seed mix, which was installed with a rangeland seed drill, the other seed mixes were hand-broadcast and covered with an erosion control blanket. Work was substantially completed by mid-November 2022. Trees and shrubs were planted in late Spring 2023. Despite near drought conditions after planting, less than 10% had to be replaced in late Fall 2023. Those same drought conditions delayed planting the plugs until early Fall 2023. Supplemental plugs are available if the coverage of the initial plugs is insufficient (for non-workmanship reasons). If needed, they will be planted in Fall 2024. Monitoring and management of the native plants will occur through 2025.

Photographs of the Klein Creek Streambank Stabilization Project with detailed descriptions are provided in Plate 19 to Plate 32.

Plate 19. Aerial photograph of Klein Creek Streambank Stabilization Project (October 2022)

By mid-October 2022 approximately $\frac{2}{3}$ of the new channel had been excavated, with about $\frac{1}{2}$ having also been filled with the new streambed material. Construction proceeded from upstream to downstream (east-to-west; right-to-left). The temporary diversion channel is to the south and partially cuts through an existing compensatory storage basin to save costs.



Plate 20. Aerial photograph Looking upstream (east) on Klein Creek from Kuhn Road (September 16, 2022).

Most of the undesirable woody species have been removed. Most of the trees in the foreground will be used later for creating the toe wood. A dump truck uses the temporary bridge on its way towards an excavator constructing the temporary diversion channel.



Plate 21. Photograph of vegetation management at the Klein Creek Streambank Stabilization Project. Good weather in early November allowed for additional herbiciding to the numerous teasel (*Dipsacus*) rosettes.



Plate 22. Photograph of seeding and stabilization at the Klein Creek Streambank Stabilization Project. Seeding and blanketing began after completion of the earthwork in mid-October and continued through mid-November. A rangeland seed drill was used for the larger areas planted with an “Economy Prairie” seed mix.



Plate 23. Photograph of streambank construction at the Klein Creek Streambank Stabilization Project. The streambank is lined with sandy-cobble up to the estimated bankfull elevation. The streambed is constructed with a 12-inch-thick layer of a cobbly-sand mixture. The contractor imported river run material sourced from a local quarry.



Plate 24. Photograph of toe wood installation at the Klein Creek Streambank Stabilization Project. The areas for toe wood were excavated before the rootwads were placed; then they were backfilled with the same sandy-cobble mixture used on the rock toe. All rootwads used in the toe wood were harvested from onsite. Sand has also been added to the rock toe along the streambank in order to provide the growing medium for the plugs.



Plate 25. Photograph looking upstream on Klein Creek from Kuhn Road (October 12, 2022). Photograph looking upstream (east) from Kuhn Road at the downstream end of the temporary diversion channel. The temporary channel was filled and flow was diverted into the new channel on October 14, 2022.



Plate 26. Photograph of a rock substrate area at the Klein Creek Streambank Stabilization Project. The rock substrate areas were designed to mimic a rock riffle by placing a weir of large boulders followed by a downstream stretch (photo left) of cobbled substrate. Due to the flat gradient, this boulder weir was installed “in-the-wet” to ensure that their tops were above the normal water level.



Plate 27. Looking downstream (west) on Klein Creek at the Kuhn Road culverts.

Stream barbs were placed to maintain the thalweg near the center of the stream before reaching the culverts. They were constructed out of a line of large boulders set at a shallow angle to the bank and gradually dropping below the water line. In the foreground is the overflow weir for a constructed wetland.



Plate 28. Aerial photo upstream view on Klein Creek from Kuhn Road (December 1, 2022).

Aerial photograph taken looking upstream (east) from Kuhn Road. Section I-A extends to the Village of Carol Stream Water Reclamation Center's outfall, which is a few hundred feet upstream of the first constructed meander.



Plate 29. Aerial photograph of looking downstream on Klein Creek from Section 1-A (December 1, 2022).

Aerial photograph taken looking downstream (west) from the upstream end of Section I-A. A couple of the constructed wetlands are holding water after a ¼" rain event earlier in the week.



Plate 30. Looking downstream at one of the rock weirs constructed for controlling the overflow into a wetland.

The recently planted plugs are visible in both the wetland (on the left) and the vegetated rock toe (on the right).



Plate 31. Looking downstream at a constructed oxbow in the previous streambed location. Wood harvested onsite and stabilized in place with boulders. Plugs are visible in the foreground during abnormally low flow conditions.



Plate 32. Looking downstream at the recently planted plugs within the vegetated rock toe.



1.6.5 Project Impact Evaluation

As the Project was under construction during the 2022 sampling season, so no pre- or post-project sampling was conducted for that year. Post-project sampling is scheduled to begin in the Summer of 2024.

1.7 Southern East Branch Stream Enhancement

- Special Conditions Listed Completion Date – December 31, 2027
- Status – Final Design/Construction is in progress and is scheduled for completion in 2023-2024.

The Southern East Branch Stream Enhancement Project is located on the East Branch DuPage River between its intersection with Royce Road and its intersection with Washington Street in the Village of Bolingbrook and City of Naperville, Will County, Illinois. The Project's objectives are to raise QHEI above its current score of 65, raise fIBI above its current score of 29.0, and raise mIBI above its current score of 38 throughout the length of the project. The DRSCW will be collaborating with the Forest Preserve District of Will County (FPDWC), the Village of Bolingbrook and City of Naperville, and the Bolingbrook and Naperville Park Districts for this project (referred to collectively as the partners). The DRSCW has budgeted \$4,196,436 for design, construction, and monitoring of this project.

1.7.1 Site Description

The 2021 Annual Report provided a site description.

1.7.2 Design Characteristics

The 2021 Annual Report described the Project's design characteristics.

1.7.3 Permitting Requirements

Permit coordination for the Project has not yet started. At a minimum, it is anticipated coordination with the following agencies will be required:

- US Army Corps of Engineers (US ACOE)
- United States Fish and Wildlife Service
- Illinois Department of Natural Resources (IDNR)
- Illinois Environmental Protection Agency (IEPA)
- Will County Stormwater Commission
- Will-Cook Soil and Water Conservation District

1.7.4 Design Progress Report

The 2021 Annual Report provides details on the "Lower East Branch River Stream Restoration Project, DuPage & Will Counties, IL Conceptual Design Report". In early 2022, the ACOE notified the DRSCW that reaches 2-4 of the Lower East Branch Stream Enhancement Project

was eligible for funding under the Section 206 Aquatic Restoration Program for FY23. The project had been on hold until the federal funding is available to the DRSCW. The DRSCW plans on proceeding with the final design and preparation of bid documents for the project during the 2024-2025 reporting year.

1.7.5 Project Impact Evaluation

The DRSCW and MBI developed a monitoring plan to assess the pre- project conditions at the Southern East Branch Stream Enhancement Project. Pre-project biological and habitat data was collected at six (6) sites (EB33, EB43, EB35, EB34, EB39, and EB38) that have been included in previous watershed surveys conducted as part of the bioassessment program in 2008, 2011, 2014, and 2019. In 2019, one (1) additional site (EB47) was added to the bioassessment sites so that additional biological and habitat data could be collected from within the project corridor for a total of eight (8) pre-project sampling sites. Furthermore in 2021 and 2023, three (3) additional pre-project sites (EB44, EB45, and EB46) were added for a total of eleven (11) pre-project sampling sites. EB40 is a bioassessment site that is located downstream of the proposed project limits and was sampled in 2014, 2019, 2021, and 2023 to serve as a control site.

Table 10 includes the results of the pre-project 2014, 2019, 2021, and 2023 surveys collected by the DRSCW. Figure 4 to Figure 6 depict the pre-project QHEI (Figure 4); mIBI scores (Figure 5); and fIBI scores (Figure 6). Map 4 depicts the pre-project monitoring sites at the Southern East Branch Stream Enhancement Project.

Table 10. Pre- (2014, 2019, 2021, and 2023) Project Biological and Habitat Data collected at Southern East Branch Stream Enhancement

Site ID	River Mile	Drainage Area (sq mi.)	fIBI	mIBI	QHEI	Attainment Status
East Branch DuPage River 2023						
EB40	7.60	68.60	26	48.9	62.0	PARTIAL
EB33	7.00	70.90	30	39.9	69.0	NON-Fair
EB43	6.60	71.60	29	48.3	72.0	PARTIAL
EB43A	6.30	71.70	23	NA	63.0	NA
EB35	6.00	76.40	24	44.3	52.0	PARTIAL
EB46	5.67	73.35	33	44.5	68.0	PARTIAL
EB45	5.40	73.59	31	42.1	63.0	PARTIAL
EB34	5.00	76.40	32	43.0	68.0	PARTIAL
EB39	4.00	78.00	28	36.8	54.8	NON-Fair
EB44	3.66	76.05	27	41.9	56.3	PARTIAL
EB38	3.00	81.00	31	39.8	70.0	NON-Fair
East Branch DuPage River 2021						
EB40	7.60	68.60	26	37.6	68.8	NON-Fair
EB33	7.00	70.90	24	47.1	72.0	PARTIAL
EB43	6.60	71.60	30	45.9	76.5	PARTIAL
EB35	6.00	76.40	22	39.8	57.0	NON-Fair
EB46	5.67	73.35	32	36.6	64.3	NON-Fair
EB45	5.40	73.59	28	36.1	70.0	NON-Fair
EB34	5.00	76.40	28	28.1	72.5	NON-Fair
EB39	4.00	78.00	30	39.7	57.0	NON-Fair
EB44	3.66	76.05	30	36.5	58.5	NON-Fair
EB38	3.00	81.00	34	49.2	75.5	PARTIAL
East Branch DuPage River 2019						
EB40	7.60	63.00	18	27.9	62.5	NON-
EB33	7.00	64.00	23	31.2	69.0	NON-Fair
EB43	6.60	64.00	24	-	72.0	NON-Fair
EB43A	6.30	71.70	21	-	64.0	NON-Fair
EB35	6.00	72.40	26	40.4	52.8	NON-Fair
EB34	5.00	78.00	23	40.4	67.3	NON-Fair
EB39	4.00	78.00	23	42.0	50.5	NON-Fair
EB38	3.00	81.00	30	40.8	77.0	NON-Fair
East Branch DuPage River 2014						
EB40	7.60	63.00	29	31.6	62.0	NON-Fair
EB33	7.00	64.00	36	21.9	66.0	NON-Fair
EB43	6.60	64.00	34	33.0	61.5	NON-Fair
EB35	6.00	72.40	25	34.9	50.0	NON-Fair
EB34	5.00	78.00	25	36.0	65.0	NON-Fair
EB39	4.00	78.00	28	32.2	58.8	NON-Fair
EB38	3.00	81.00	32	31.5	68.0	NON-Fair

Figure 4. Pre- (2014, 2019, 2021, and 2023) Project QHEI at Southern East Branch Stream Enhancement

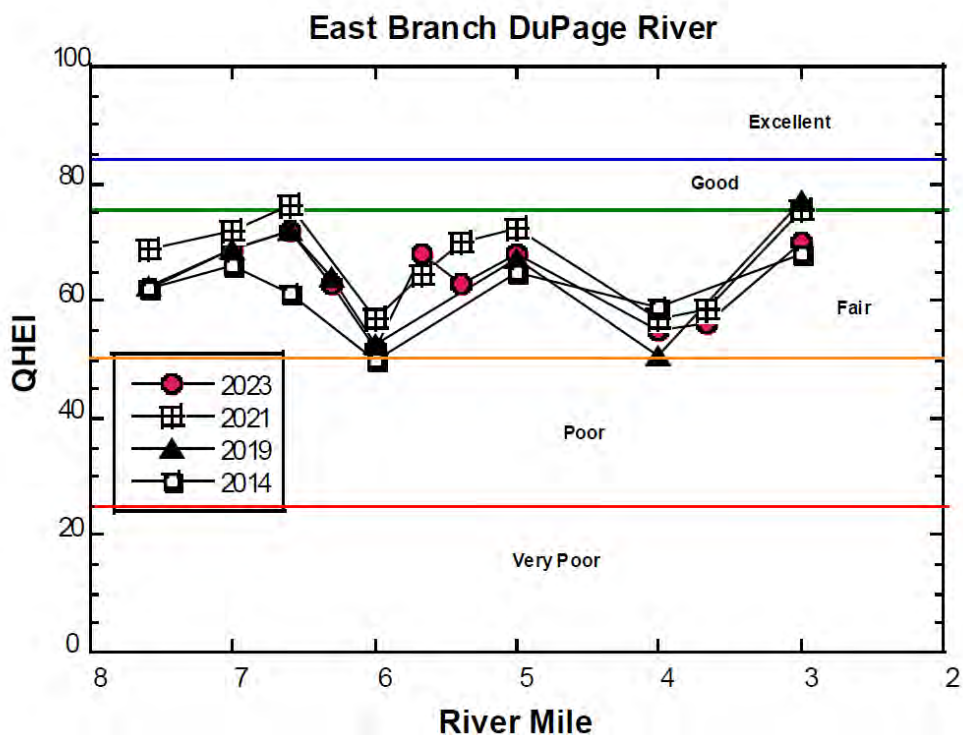


Figure 5. Pre- (2014, 2019, 2021, and 2023) Project mIBI at Southern East Branch Stream Enhancement

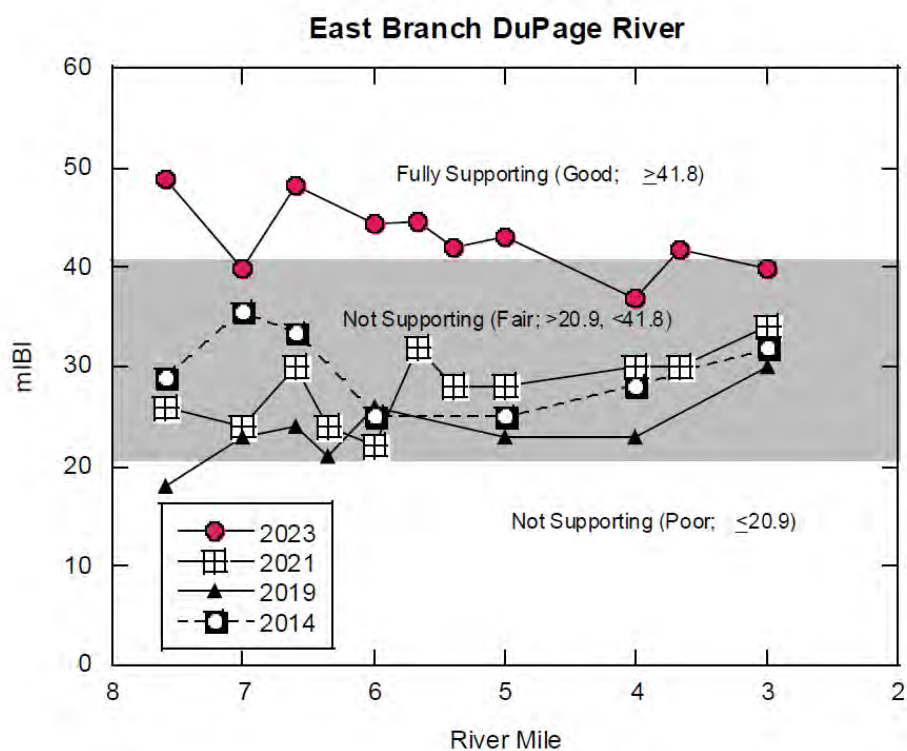
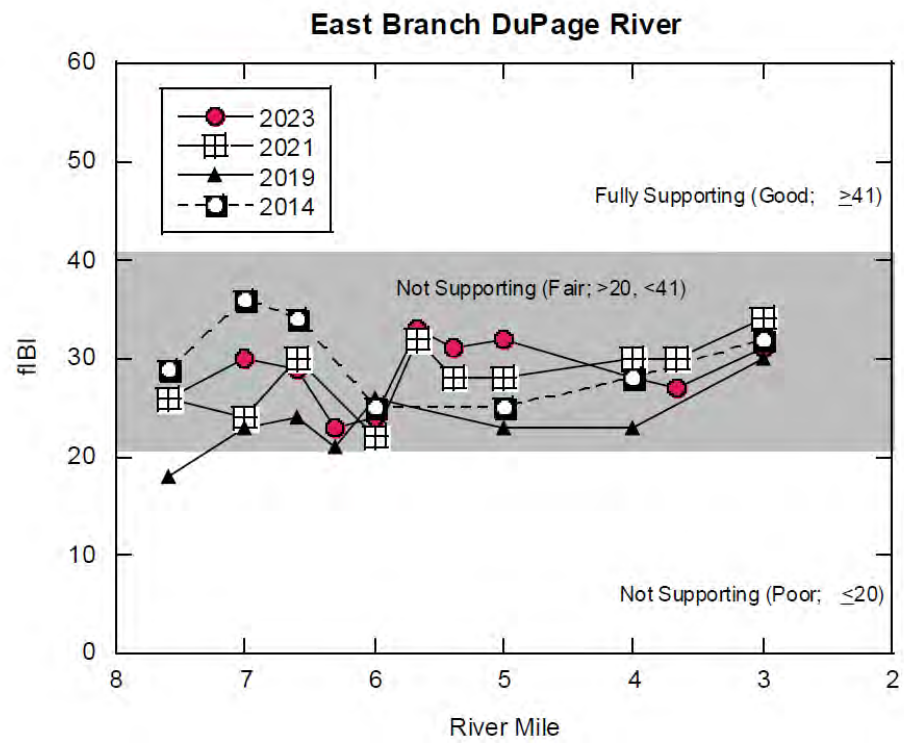


Figure 6. Pre- (2014, 2019, 2021, and 2023) Project fIBI at Southern East Branch Stream Enhancement





Map 4. Pre-Project Monitoring Sites at the Southern East Branch Stream Enhancement Project

1.8 Hammel Woods Dam Modification

- Special Conditions Listed Completion Date – December 31, 2022
- Status – Complete. The Hammel Woods dam was removed in Summer 2021 and the Project is complete. Post-project monitoring is on-going. Year 1 of post-project monitoring was completed in 2021 and Year 2 of post-project monitoring was completed in 2022. Year 3 of post-project monitoring is scheduled for 2023.

The Hammel Woods dam was located on the Lower DuPage River within the Hammel Woods Forest Preserve, Shorewood, Will County, Illinois. The objective of the Project was to increase fIBI at sites located upstream of the dam. Fish sampling conducted both upstream and downstream of the dam in 2012-2018 indicated that the Hammel Wood dam blocked eight species, including Central Mudminnow, Grass Pickerel, Mimic Shiner, Yellow Bass, Northern Sunfish, Slenderhead Darter, Pumpkinseed Sunfish, and Log Perch, from accessing the DuPage River watershed upstream of the dam. The LDRWC collaborated with the Forest Preserve District of DuPage County on the Hammel Woods Dam Modification Project. The LDRWC spent \$611,270.76 on the project design and construction and has \$15,000 budgeted for post-project monitoring.

1.8.1 Site Description

The 2017 Annual Report provided a site description.

1.8.2 Design Characteristics

The 2017 Annual Report provided the Project's design characteristics.

1.8.3 Permitting Requirements

The 2020 Annual Report includes details on the Project's permitting requirements.

1.8.4 Project Implementation

The 2021 Annual Report details the Project's implementation.

1.8.5 Project Impact Evaluation

The LDRWC and Midwest Biodiversity Institute (MBI) developed a monitoring plan to assess the removal of the Hammel Woods dam. Fish and habitat pre- and post-project monitoring were completed at four (4) sites in 2019, 2021, and 2022 and is detailed in the 2022 Annual Report. No post-project sampling was conducted in 2023. Additional post-project sampling is scheduled for 2025.

1.9 DuPage River Stream Enhancement

- Special Conditions Listed Completion Date – December 31, 2022

- Status – Final Design and Preparation of Contract Bid Documents is on-going. Construction is expected to begin in Winter 2023.

The Lower DuPage River Stream Restoration Project is located on the mainstem of the DuPage River between Route 126 and Renwick Road, Village of Plainfield, Will County, Illinois. The objectives of the Project are to raise QHEI, fIBI and mIBI scores in Lower DuPage River. The LDRWC budgeted \$2,250,000 for the construction of the Project.

1.9.1 Site Description

The 2021 Annual Report provided a site description.

1.9.2 Design Characteristics

Preliminary concept plans and associated hydraulic modeling are under review by the Project Committee. Plate 33 is the draft concept plan prepared by Hey and Associates for the DuPage River Stream Enhancement Project. Once concept plans are approved final engineering and permit applications will be completed. Project will be bid and managed by the Village of Plainfield.

1.9.3 Permitting Requirements

The permits listed below are required for the DuPage River Stream Enhancement Project. Status as of March 1, 2024 is included.

- US Army Corps of Engineers (US ACOE) Nationwide Permits 27 (and maybe 13 and 42) (LRC-2023-0742)
 - Application submitted in November 2023 – Pending
 - Illinois Historic Preservation Agency Section 106 Clearance – Pending
 - U.S. Fish & Wildlife Service Section 7 Consultation – Completed USFWS self-documenting Section 7 Consultation in 2022
- Illinois Department of Natural Resources (IDNR)
 - EcoCat Request – Signoff Received
 - Floodway Constriction Permit submitted on November 22, 2023 – Pending
- Illinois Environmental Protection Agency (IEPA)
 - NPDES Permit for Construction (ILR10)
 - Notice of Intent – Will be submitted by contractor upon award
- Will County Stormwater Commission
 - Delegated to Village of Plainfield
- Village of Plainfield Building and Stormwater Permits
 - Application submitted on January 18, 2024 – Pending
- Will-Cook Soil and Water Conservation District
 - Soil erosion and sediment control (SESC) review submittal – Pending

1.9.4 Design Progress Report

In late 2021, the LDRWC initiated a qualifications-based selection process to select a consultant to assist with the final design and preparation of contract bid documents for the Lower DuPage River Stream Restoration Project. In mid-January 2022, the LDRWC entered into a contract with Hey and Associates, Inc. for the final design engineering and preparation of contract bid documents for the Lower DuPage River Stream Restoration Project. The scope of work included in this contract is discussed below. Preliminary work on the contract began in early 2022.



Plate 33. Concept Plan for the DuPage River Stream Enhancement

Task 1 – Site Survey

Task 1 includes a site survey of the proposed project area and was completed in 2022.

Task 2- Wetlands/Waters of the United States Assessment

Task 2 includes a site survey of the delineation wetlands and Waters of the United States and Will County jurisdictional wetlands. Task 2 was completed in 2022.

Task 3 –Final Design Engineering

Task 3 includes the final design engineering of all project components, including but not limited to stream restoration practices and amenities as included in the Village of Plainfield’s Riverfront Master Plan. Task 3 was completed in late 2023 but may be revised based on permit comments/questions.

Task 4 – Hydraulic and Hydrologic Modeling

Task 4 includes the development of a hydrology/hydraulic model(s) necessary for design, permitting, and construction. Modeling will ensure that the design of the in-stream features meet the enhancement goals of the project, are sustainable for the long-term, and do not negatively impact downstream or upstream properties. Task 4 was completed in 2023.

Task 5 – Procure Local, State, and Federal Permits for the Master Plan

Task 5 includes the preparation of all permit applications needed to procure all local, state and federal permits. At a minimum, it is anticipated coordination with the following agencies will be required:

- US Army Corps of Engineers (US ACOE)
- United States Fish and Wildlife Service
- Illinois Department of Natural Resources (IDNR)
- Illinois Environmental Protection Agency (IEPA)
- Will County Stormwater Commission

Task 6 –Preparation of Cost Estimate and Contract Bid Documents

Task 6 includes the preparation of contract bid documents and cost estimates. Hey and Associates, Inc. will also provide Bid Assistance by addressing contractor questions during the public bid process. Task 6 is ongoing.

Task 7 – Coordination Meetings

Task 7 includes six (6) meetings with Hey and Associates, Inc, LDRWC, and project stakeholders. These meetings will include: project kick off meeting, two (2) stream restoration design alternatives selection meeting, and design review meetings at 50%, 75% and 100% of completion. Task 7 is ongoing.

1.9.5 Project Impact Evaluation

The LDRWC and Midwest Biodiversity Institute (MBI) developed a monitoring plan to assess the DuPage River Stream Enhancement Project. Macroinvertebrates, fish and habitat monitoring were completed at four (4) sites in 2022 as part of pre-project monitoring and is detailed in the 2022 Annual Report. No pre-project sampling was conducted in 2023. Post-project sampling is scheduled for 2025.

Chapter 2 Chloride Reduction Program

The Special Conditions Paragraph 3 requires NPDES holder participation in a watershed Chloride Reduction Program either directly or through the DRSCW and/or LDRWC. This section summarizes the DRSCW and LDRWC Chloride Reduction Program activities in 2023-2024.

2.1 Technical Workshops

In 2007, the DRSCW held its first deicing workshop to highlight new deicing methods, NPDES water quality goals, and best management practices in order to reduce chlorides and costs. In the following years, the DRSCW offered an additional workshop that targeted contractors responsible for snow and ice management of parking lots and sidewalks. Since 2007 the DRSCW has executed workshops every year targeting personnel responsible for 1) public roads and 2) parking lots and sidewalks. The programs have provided training and resources for numerous attendees at various agencies (Plate 34).



Plate 34. PowerPoint Slide from October 4, 2023 Public Roads Workshop

In 2023 the deicing workshops were held again as webinars. The workgroup staff for the DRSCW, LDRWC, Lower Des Plaines Watershed Group (LDWG), and Chicago Area Waterways Chloride Workgroup (CAWCW) collaborated with staff from Lake County DOT and Health Dept. to coordinate the workshops.

Registration was made available to agencies over a wide area of northeastern Illinois resulting in staff attending from Cook, DuPage, Kane, Lake, McHenry and Will Counties. Public Roads Deicing Workshops were held on September 26, October 4, and October 10, 2023. Staff from Bolton-Menk, Inc. from Minnesota were engaged to present the material. A registration fee was required per agency in order to view the webinar. The links were shareable within an agency. A survey was provided at the end of each webinar to those who had signed

Plate 35. PowerPoint Slide from Oct. 2, 2023 Parking Lots & Sidewalks Workshop in asking for the number of attendees from each agency and for an evaluation of the workshop.



The survey results indicated that a minimum of 690 persons attended the three 2023 Public Roads workshops. Certificates of attendance were provided to those who requested them. A link to the *Minnesota Snow and Ice Control: Field Book for Snowplow Operators* was provided to each registrant.

The Parking Lot and Sidewalk Deicing Workshop webinars were held on October 3 (Plate 35) and October 17, 2023 and presented by staff from The Conservation Foundation through the Salt Smart Collaborative. The survey results indicated that there was a minimum of 330 persons who viewed the webinars. Certificates of attendance were provided to those who requested them. The surveys provided an opportunity to provide an evaluation on the webinars. A link was sent to each registrant for the *Illinois Winter Maintenance Manual for Parking Lots and Sidewalks* developed by the Salt Smart Collaborative (developed in part by a Section 319 Grant issued by IEPA).

Plate 15. Photo from the Northeast Illinois Salt Conference on Sept. 12, 2023.



In addition, an in-person Northeast Illinois Salt Conference was held on Sept. 12, 2023 at Medinah Shriners in Addison (Plate 15). Three speakers represented Evanston, Niles, and Carol Stream. Their presentations covered Weather and Pavement Temperature, Route Management, and Liquids. A representative from NIPSTA discussed Plow Driver training. The Conservation Foundation staff presented on the new Salt Smart Certified program for parking lots and sidewalks. The workshop was attended by 101 public works directors and supervisors. The Conference was supported by The

Conservation Foundation staff, the DuPage River Salt Creek Workgroup, Lower DuPage River Watershed Coalition, Lower Des Plaines Watershed Group, Chicago Area Waterways Chloride Workgroup, and the Salt Smart Collaborative. Exhibitors in attendance were Henderson Products and Kueper Blades.

Illinois RiverWatch Chloride Watchers Program

The Conservation Foundation partnered with the Illinois RiverWatch Network (RiverWatch) to expand RiverWatch's Winter Chloride Watchers program in Northeast Illinois for the 2023-2024 winter season. RiverWatch is a statewide biological monitoring program that provides volunteers a hands-on opportunity to become stewards of our local waterways by monitoring stream habitat and water quality. Winter Chloride Watcher volunteers collect and test water samples from local waterways for chloride on a monthly basis between November and May. The Winter Chloride Watchers program provides volunteers with training on the impact of chlorides on the environment, use of their test kits, listing of their reports online, and information on what Illinois communities are doing to reduce their impact from chlorides.

LDRWC's Seasonal Educational Materials

During this reporting period, the LDRWC shared seasonal educational materials for members to use in residential outreach efforts (Plate 36). The materials were made available through their

website <https://ldpwatersheds.org/outreach/salt-smart/> and through the Salt Smart Collaborative website at www.saltsmart.org. The LDRWC is one of the lead collaborators for SaltSmart.org. Materials included blog posts, newsletter articles, supporting social media graphics, posters/handouts, plastic cups for spreading salt correctly and a bookmark with information for residents. A winter checklist was also included to assist communities in tracking the use of outreach materials for MS4 reporting. Both websites also advertise the winter deicing workshops.

Plate 36. Outreach graphic for social media platforms, 2023



2.2 Tracking BMP Adoption

2.2.1 Chloride Questionnaire

The DRSCW has attempted to track adoption of sensible salting BMPs in the program area since 2007. This is done as ambient chloride concentration monitoring; and while the ultimate indicator of success, it has proven an imperfect metric for tracking efficiency trends in winter salt use. Tracking target BMP adoption in the program area allows the DRSCW to evaluate the success of the chloride management workshops. Historically the public roads and parking lots/sidewalks workshops have covered the following practices:

- Winter Weather tracking and planning
- Behavior of commonly used deicing compounds
- Product and chemical alternatives
- Equipment calibration training
- Application Rates
- Equipment and salt application advancements
- Salt usage, storage and deicing best management practices
- Example salt use policies and management plans

The questionnaires also help identify topics for future workshops, and form suppositions about salt use per unit of service expended inside the program area relative to 2006 levels. Questionnaires were distributed in 2007, 2010, 2012, 2014, 2016, and 2018. They were sent to approximately 80 municipal highway operations and public works agencies. A new questionnaire was due to be distributed in 2022 but was not completed due to a need to rework elements of the questionnaire. It is now due to be issued in March/April 2024.

2.2.2 Ambient Impact Monitoring

DRSCW's Chloride Education and Reduction Program has performed an in-depth analysis to detect trends in chloride loading within the water quality data collected since the beginning of program efforts.

The goal of the analysis is to gauge the impact, if any, of the chloride education program on chloride loadings and concentrations generated from DRSCW water quality data collected from 2009 to present. Such an analysis is challenging due to the influences of other variables that dictate the magnitude of chloride impact on water quality data, principally winter weather (see Figure 7 to Figure 13). The analysis is needed to account for this inherent variability to as great a degree as possible. To help accomplish this the DRSCW purchased 10 years of weather data (snow and ice precipitation data for numerous locations) from Weather Command / Murray and Trettel, Inc. The analysis steps for each site where winter chloride concentration data was available was:

- Calculation of estimated chloride concentration from winter conductivity data
- Calculation of a warm weather regression value from summer concentration data and summer conductivity measures
- Calculation of estimated chloride summer concentrations
- Creation of loading data (in pounds per day) from the estimated concentration data using USGS flow data
- Identification of ice events from the weather command data and "replacement" of such events with loadings observed under snow events with the same accumulation
- Graphing of loading and concentration data for each site

This analysis has been completed and phase one results have been produced. The report is being finalized and will be complete by April 2024.

2.3 Continuous Chloride Monitoring

When chlorides are present in elevated concentrations in rivers, they harm aquatic invertebrates, fish, and aquatic and terrestrial plants. High chloride concentrations also corrode structures like bridges, increasing maintenance costs; and chlorides are very difficult to remove from water through treatment. In the DRSCW and LDRWC watersheds, the main source of

elevated chlorides in the rivers is from winter deicing applications. In an effort to understand and track chloride levels in the watershed, year-round conductivity monitoring is carried out.

Ambient monitoring of conductivity is carried out at seven (7) locations. All conductivity sites were originally installed to collect continuous DO and are situated for that rather than chlorides. Six (6) locations are in the DRSCW program area (5 sites monitored by the DRSCW and 1 site monitored by MWRD), and one (1) site in the LDRWC program area (monitored by the LDRWC). DRSCW chloride sites are positioned in the upper and lower sections of each watershed. The LDRWC site is located near the confluence of the Lower DuPage and the Des Plaines.

The upstream Salt Creek chloride site (Busse Woods) is at the upstream most point of the Lower Salt Creek watershed (this site isn't placed further upstream as it was selected to measure DO upstream of the watersheds POTWs). MWRD did not conduct ambient winter conductivity monitoring at the Salt Creek at Busse Woods site in 2021. The site was taken over by DRSCW for conductivity monitoring during the winter of 2022.

In the LDRWC watershed, conductivity data was only recently collected as of Winter 2021 (Fall 2020 to Winter 2021) at Shorewood. For the site at Shorewood, conductivity concentrations are used to calculate chloride concentrations based on a linear relationship established by the LDRWC. It should be noted that only limited chloride grab samples were available to develop the linear relationship and the LDRWC is collecting additional chloride grab samples to further refine this relationship. Calculated Annual chloride concentrations at Shorewood for the winter months from 2020 to 2023 are presented in Figure 7.

For the sites located within the DRSCW watersheds, conductivity concentrations are used to calculate chloride concentrations based on a linear relationship established by the DRSCW. Calculated Annual chloride concentrations for the winter months from 2007-2023 for six (6) sites are depicted in Figure 8 to Figure 13. The Daily Max represents the highest chloride daily value calculated from that year's winter season. The Winter Average is the average of all measurements from the winter season. The Four-Day Average is the maximum value of the year's four-day averages. Also shown are seasonal totals for winter snow and ice data. This data is generated from data supplied by a contract with Weather Command/ Murray and Trettel, Inc. The data is specific to the areas proximate to the relative conductivity monitoring site.

Figure 7. Calculated Chloride Concentrations - Winter Months (2020-2023) for the Lower DuPage River at Shorewood

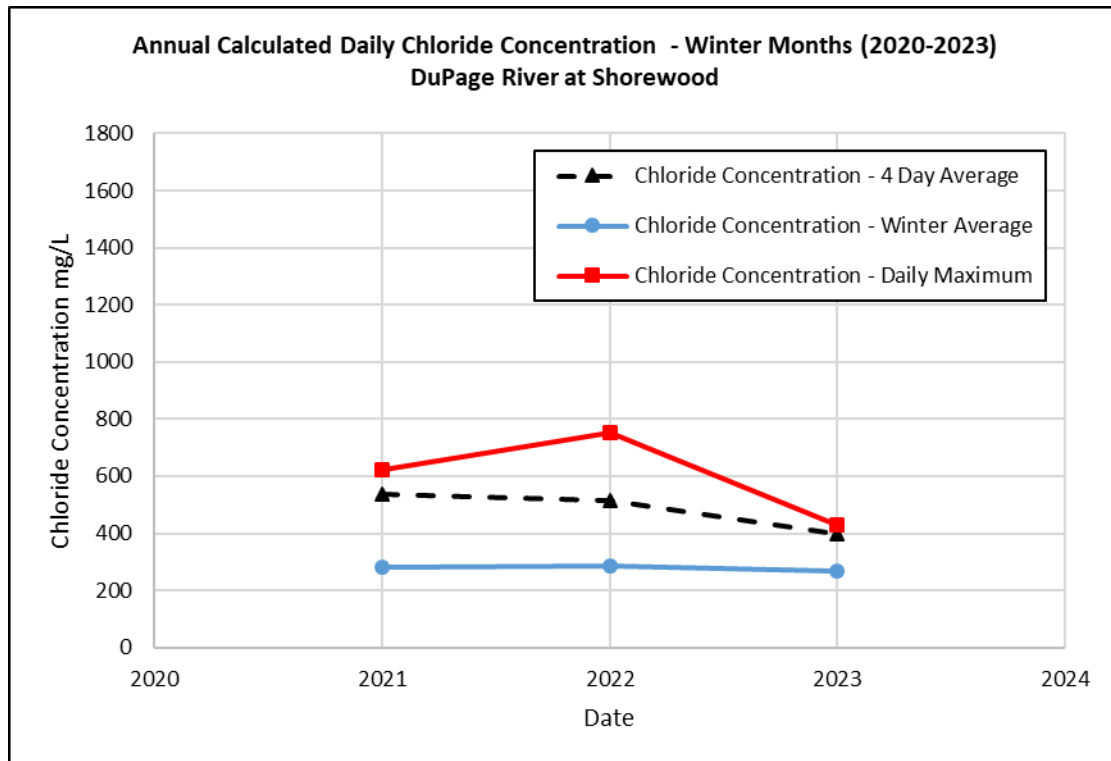


Figure 8. Calculated Chloride Concentrations - Winter Months (2007-2023) for Salt Creek at Busse Woods Main Dam. Data was not collected in 2021.

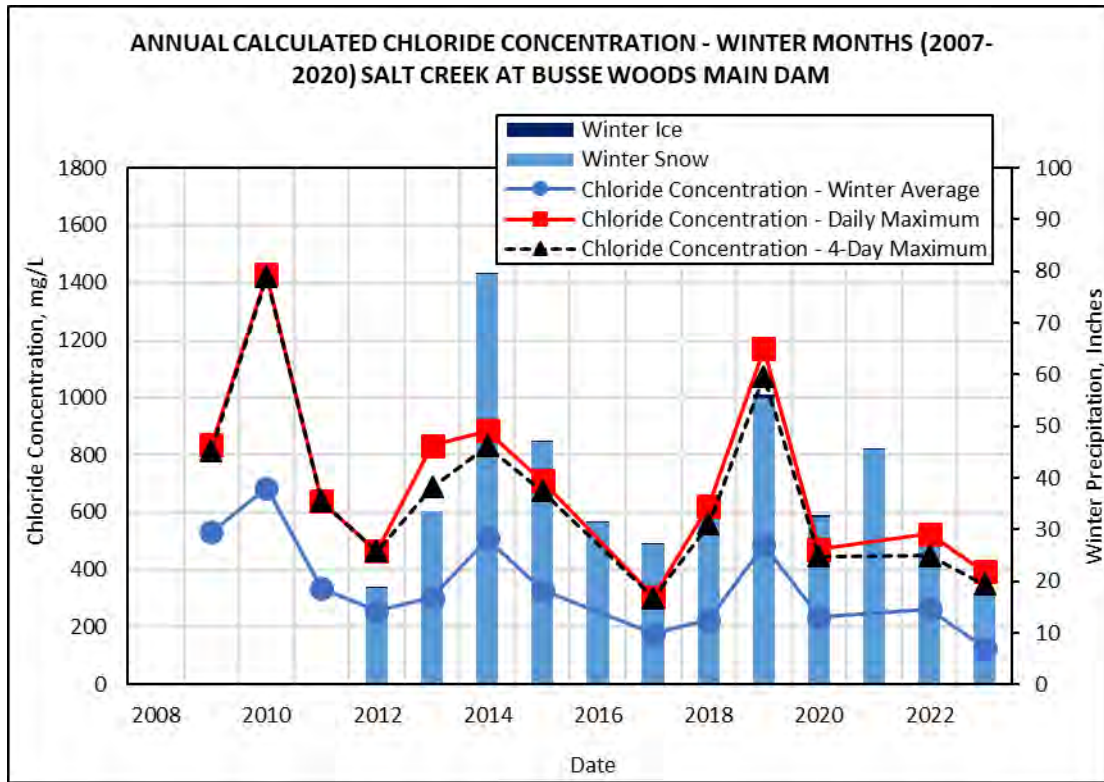


Figure 9. Calculated Chloride Concentrations - Winter Months (2007-2023) for Salt Creek at Wolf Road

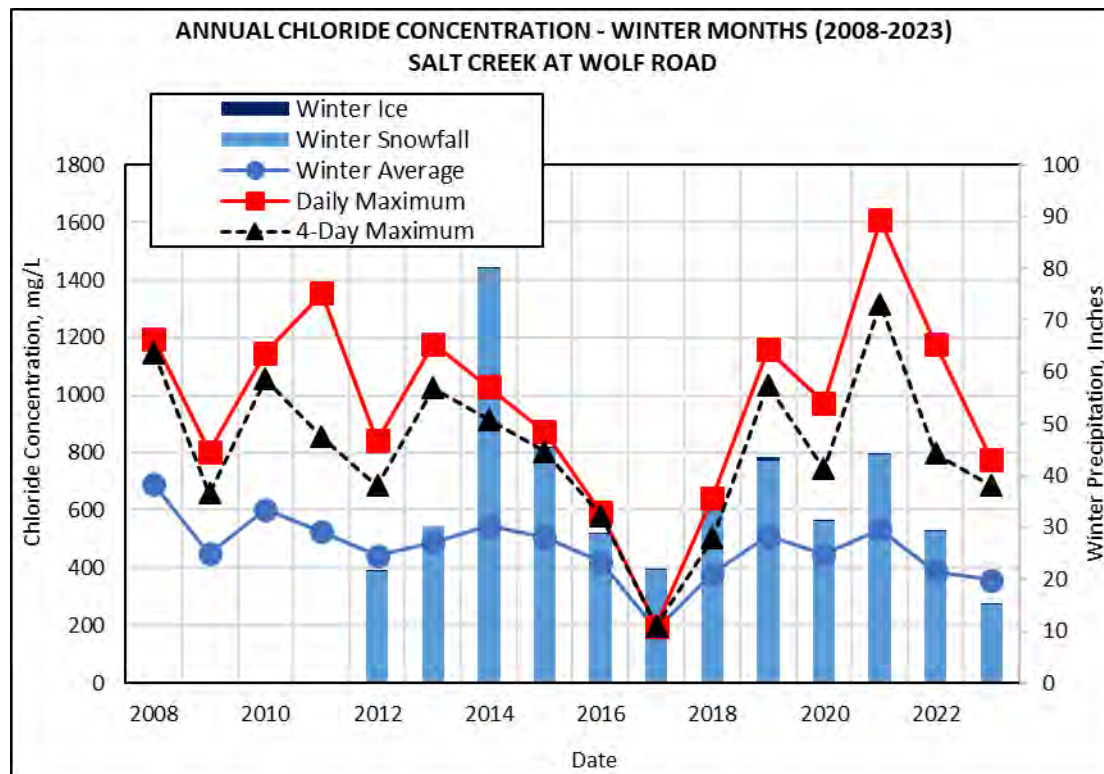


Figure 10. Calculated Chloride Concentrations - Winter Months (2007-2023) for the East Branch DuPage River at Army Trail Road

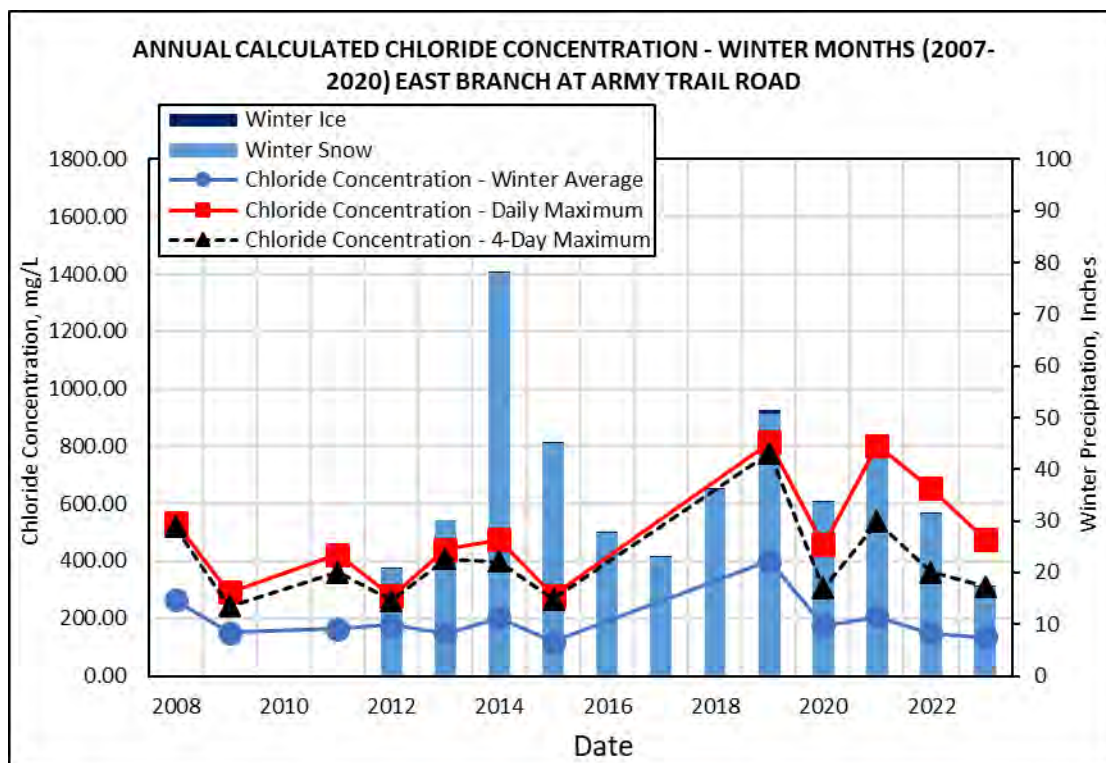


Figure 11. Calculated Chloride Concentrations - Winter Months (2008-2023) for the East Branch DuPage River at Hobson Road

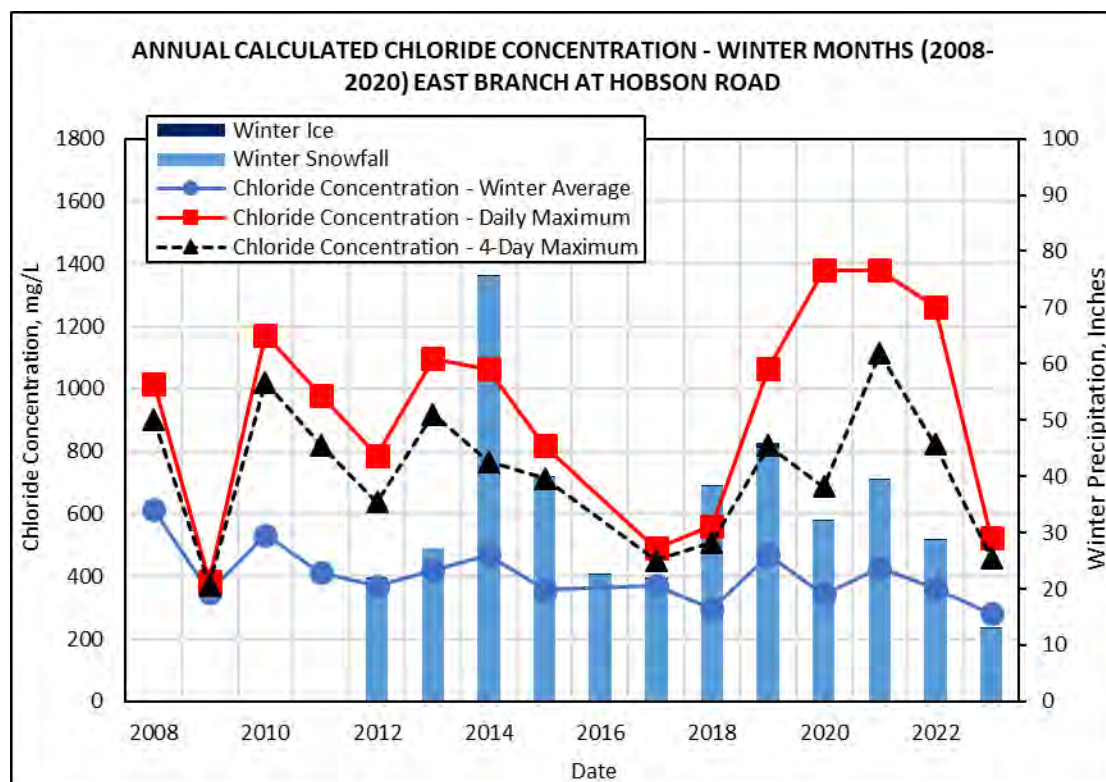


Figure 12. Calculated Chloride Concentrations - Winter Months (2007-2023) for the West Branch DuPage River at Arlington Drive

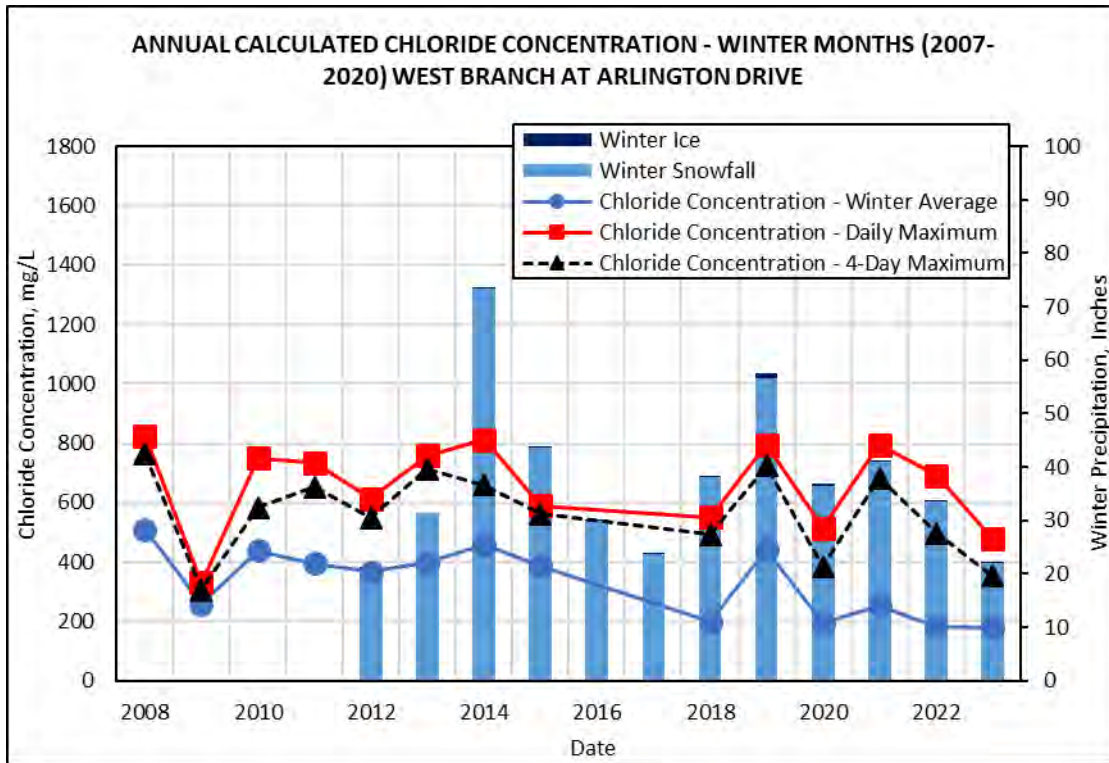
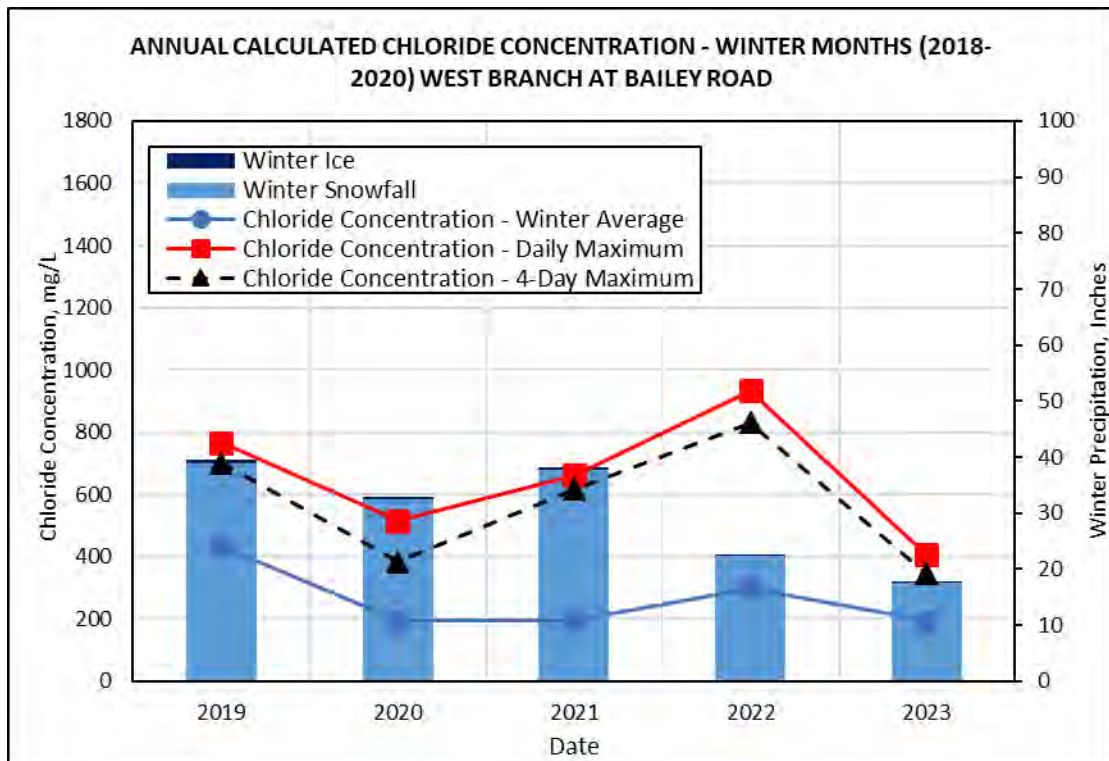


Figure 13. Calculated Chloride Concentrations - Winter Months (2018-2023) for the West Branch DuPage River at Bailey Road



Chapter 3 Nutrient Implementation Plan

The Special Conditions Paragraph 10 requires NPDES holders in the DRSCW and LDRWC to develop a Nutrient Implementation Plan (NIP) for the watershed that identifies phosphorus input reductions by point source discharges, non-point source discharges, and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 IL Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 IL Adm. Code 302.203. Special Conditions Paragraph 2 and Special Conditions Paragraph 8.c. identify additional studies to be completed by the watershed workgroups. The NIP was submitted to the Illinois Environmental Protection Agency (IEPA) on December 28, 2023 and can be found at <https://drscw.org/activities/project-identification-and-prioritization-system/> and <https://ldpwatersheds.org/about-us/lower-dupage-river-watershed-coalition/our-work/narp/>

3.1 NIP Summary and Next Steps

The NIP submitted to the IEPA by the DRSCW and the LDRWC on December 28, 2023 identified an instream watershed threshold concentration for TP that is protective of aquatic life. A relationship between TP concentrations and fish species and macroinvertebrate taxa and their indices of biotic integrity was established by a multivariate analysis published in 2023 by the watershed groups. The analysis, which drew on paired biological, chemical, and physical data from 640 sites in Northeast Illinois, found fish species and the Fish Index of Biotic Integrity (fIBI) were more sensitive to TP concentration variation than the macroinvertebrate taxa and the Macroinvertebrate Index of Biotic Integrity. The 75th percentile of sites in the fIBI range of 41 and 49 (meeting and exceeding the General Use standard for aquatic life) was found to correspond to a TP concentration of 0.277 milligrams per liter (mg/L).

Modeling was conducted using the QUAL2Kw platform to identify potential management scenarios that would decrease ambient instream TP concentrations below the identified TP watershed threshold. Ultimately, the suite of scenarios modeled demonstrated that an effluent TP permit limit of 0.35 mg/L (for an effective effluent concentration of 0.28 mg/L) for wastewater treatment plants (WWTPs) along Salt Creek and the West and East Branches of the DuPage River and an effluent TP permit limit of 0.5 mg/L (for an effective effluent concentration of 0.4 mg/L) for WWTPs along the Lower DuPage River would be sufficient to achieve the local threshold value satisfactorily. The NIP recommended that following effluent limits be adopted:

- WWTPs discharging to Salt Creek and the East and West Branches of the DuPage River adopt an effluent limit of 0.35 mg/L TP (leading to an effective mean effluent concentration of 0.28 mg/L, assuming a 20% margin of safety) seasonal geometric mean for warm weather months (May–October) as part of an annual 0.50 mg/L TP geometric mean;

- WWTPs discharging to the mainstem of the Lower DuPage River adopt an effluent limit of 0.50 mg/L TP (leading to an effective mean effluent concentration of 0.4 mg/L, assuming a 20% margin of safety) for warm weather months as an annual geometric mean, rolling 12-month basis; and (3) the Crest Hill STP, which discharges to a tributary on the Lower DuPage River, adopt the 0.35 mg/L TP limit.

Additionally, as the modeled reductions of effluent TP concentrations did not show meaningful improvements in predicted minimum and mean DO concentrations due in part to localized persistence of low gradients or flow restrictions which also factor into existing DO impairments, the NIP also recommends that targeted physical projects focused on eliminating DO sags and improving instream habitat continue to be implemented in the DuPage River and Salt Creek watersheds.

A schedule for the implementation of TP removal at each of WWTPs is included in the NIP. A schedule of special assessments to fund the physical projects is also included in the NIP.

In the fourth quarter of 2023 and the first quarter of 2024, the DRSCW and LDRWC initiated discussions with the IEPA and environmental advocacy groups (EAGs), including the Sierra Club and the Mississippi River Collaborative, on integrating the NIP recommendation into member WWTP's NPDES permits. Additional discussions with the IEPA, US EPA, and the EAGs are scheduled for later in 2024. It is the goal of the DRSCW and the LDRWC to have the NIP recommendation included in member NPDES permits by the end of second quarter 2024.

ATTACHMENT 1

DRSCW Special Condition

SPECIAL CONDITION 17. DuPage River/Salt Creek Special Requirements

- A. The Permittee shall participate in the DuPage River Salt Creek Workgroup (DRSCW). The Permittee shall work with other watershed members of the DRSCW to determine the most cost-effective means to remove dissolved oxygen (DO) and offensive condition impairments in the DRSCW watersheds.
- B. The Permittee shall ensure that the following projects and activities set out in the Revised DRSCW Implementation Plan (June, 2021), are completed (either by the permittee or through the DRSCW) by the scheduled dates set forth below; and that the short term objectives are achieved for each by the time frames identified below:

Project Name	Completion Date	Short Term Objectives	Long Term Objectives
Oak Meadows Golf Course dam removal	December 31, 2016 (Completed)	Improve DO	Improve fish passage
Oak Meadows Golf Course stream restoration	December 31, 2017 (Completed)	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise miBi
Fawell dam Modification	December 31, 2024	Modify dam to allow fish passage	Raise fiBi upstream of structure
Spring Brook Restoration and dam removal	December 31, 2020 (Completed)	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
Fullersburg Woods Dam modification concept plan development	December 31, 2016 {Completed}	Identify conceptual plan for dam modification and stream restoration	Build consensus among plan stakeholders
Fullersburg Woods Dam modification	December 31, 2024	Improve DO, improve aquatic habitat (QHEI)	Raise miBi and fiBi
Fullersburg Woods area stream restoration	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
West Branch Physical Enhancement (Klein Creek)	December 31, 2023 {Completed}	Improve aquatic habitat (QHEI)	Raise miBi and fiBi
Southern East Branch Stream Enhancement	December 31, 2024	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
QUAL 2w West Branch, East Branch and Salt Creek	December 31, 2023	Collect new baseline data and update model	Quantify improvements in watershed. Prioritize DO Improvement projects for years beyond 2024.
NPS Phosphorus Feasibility Analysis	December 31, 2021 (Complete)	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels
East Branch Phase II	December 31, 2028	Improve aquatic habitat (QHEI), reduce Inputs of nutrients and sediment	Raise miBi and FiBi
Lower Salt Creek Phase 2	December 31, 2028	Improve aquatic habitat (QHEI), Remove fish barrier, reduce inputs of nutrients and sediment	Raise miBi and fiBi
West Branch Restoration Project	December 31, 2028	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi

- C. The Permittee shall participate in implementation of a watershed Chloride Reduction Program, either directly or through the DRSCW. The program shall work to decrease DRSCW watershed public agency chloride application rates used for winter road safety, with the objective of decreasing watershed chloride loading. An annual report on the annual implementation of the program identifying the practices deployed, chloride application rates, estimated reductions achieved, analyses of watershed chloride loads, precipitation, air temperature conditions and relative performance compared to a baseline condition shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "IL0028380 Special Condition 17.C" as the subject of the email and posted to the DRSCW's website by March 31 of each year. The annual report shall reflect the Chloride Abatement Program performance for the preceding year (example: 2019-20 winter season report shall be submitted no later than March 31, 2021). The Permittee may work cooperatively with the DRSCW to prepare a single annual progress report that is common among DRSCW permittees and may be submitted as part of a combined annual report with paragraph D below.
- D. The Permittee shall submit an annual progress report on the projects listed in the table of paragraph B above. The report shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "IL0028380 Special Condition 17.D" as the subject of the email and posted to the DRSCW's website by March 31 of each year. The report shall include project implementation progress. The Permittee may work cooperatively with the DRSCW to prepare a single annual progress report that is common among DRSCW permittees.
- E. The Permittee shall maintain and implement any recommendations from its Phosphorus Discharge Optimization Plan in accordance with the schedule set forth in the Plan. Annual progress reports on the optimization of the existing treatment facilities shall be submitted electronically to EPA.PrmtSpecCondtns@illinois.gov with "IL0028380 Special Condition 17.E" as the subject of the email and posted to the permittees website by March 31 of each year. If the permittee's plan does not already include a schedule, the permittee shall include a schedule for the implementation of any optimization measures recommended by the plan in the permittee's annual progress report due the March 31 one year after the permit becomes effective. As part of the plan, the Permittee shall continue to evaluate a range of measures for reducing phosphorus discharges from the treatment plant, including possible source reduction measures, operational improvements, and minor facility modifications that will optimize reductions in phosphorus discharges from the wastewater treatment facility. The Permittee's evaluation shall include, but not be limited to, an evaluation of the following optimization measures:
1. WWTF influent reduction measures.
 - a. Evaluate the phosphorus reduction potential of users.
 - b. Determine which sources have the greatest opportunity for reducing phosphorus (i.e., industrial, commercial, institutional, municipal and others).
 - i. Determine whether known sources (i.e., restaurant and food preparation) can adopt phosphorus minimization and water conservation plans.
 - ii. Evaluate implementation of local limits on influent sources of excessive phosphorus.
 2. WWTF effluent reduction measures.
 - a. Reduce phosphorus discharges by optimizing existing treatment processes without causing non-compliance with permit effluent limitations or adversely impacting stream health.
 - i. Adjust the solids retention time for biological phosphorus removal.
 - ii. Adjust aeration rates to reduce dissolved oxygen and promote biological phosphorus removal.
 - iii. Change aeration settings in plug flow basins by turning off air or mixers at the inlet side of the basin system.
 - iv. Minimize impact on recycle streams by improving aeration within holding tanks.
 - v. Adjust flow through existing basins to enhance biological nutrient removal.
 - vi. Increase volatile fatty acids for biological phosphorus removal.
- F. Total phosphorus in the effluent shall be limited as follows:
1. If the Permittee will use chemical precipitation to achieve the limit, the effluent limitation shall be 1.0 mg/L on a monthly average basis, effective XXXX, or in accordance with the implementation schedule included in the Nutrient Implementation Plan unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program or limit pursuant to paragraphs F.3 thru F.8 below.
 2. If the Permittee will primarily use biological phosphorus removal to achieve the limit, the effluent limitation shall be 1.0 mg/L monthly average to be effective XXXX, or in accordance with the implementation schedule included in the Nutrient Implementation Plan unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program or limit pursuant to paragraphs F.3 thru F.8 below.
 3. The Permittee demonstrates that the Limit is not technologically feasible; or
 4. The Permittee demonstrates the Limit would result in substantial and widespread economic or social impact. Substantial and widespread economic impacts must be demonstrated using applicable USEPA guidance, including but not limited to any of the following documents: 1. Interim Economic Guidance for Water Quality Standards, March 1995, EPA-823-95-002; 2. Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development, February 1997, EPA-832—97-004; 3. Financial Capability Assessment Framework for Municipal Clean Water Act Requirements, November 24, 2014; or

5. If the Nutrient Implementation Plan determines that a greater phosphorus reduction is necessary, then the Permittee shall meet the phosphorus limit identified in the Nutrient Implementation Plan in accordance with the schedule set out therein, prioritized among all watershed needs; or
 6. If the DRSCW has developed and implemented a trading program for POTWs in the DRSCW watersheds, providing for reallocation of allowed phosphorus loadings between two or more POTWs in the DRSCW and Lower DuPage Watershed Coalition watersheds, that delivers the same results of overall watershed phosphorus point-source reduction and loading anticipated from the uniform application of the applicable 1.0 mg/L monthly average effluent limitation, or other allocation identified in the Nutrient Implementation Plan, whichever is more stringent, among the POTW permits in the DRSCW watersheds and removes DO and offensive condition impairments and meets the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 Ill. Adm. Code 302.203.; or
 7. If the DRSCW has demonstrated and implemented an alternate means of reducing watershed phosphorus loading to a comparable result that removes DO and offensive condition impairments and meets the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 Ill. Adm. Code 302.203.; or
 8. If the Limit is demonstrated not to be technologically (e.g., no space available) or economically feasible, which shall be determined by an economic feasibility analysis by the date herein stipulated, but is feasible within a long timeline, then the permit shall include a compliance schedule requiring the discharger to comply with the phosphorus effluent limit as soon as possible, consistent with 40 C.F.R. § 122.47 (1), made applicable to Illinois at 40 C.F.R. § 123.25 (a)(18).
- G. The Permittee shall monitor the wastewater effluent, consistent with the monitoring requirements on Page 2 of this permit, for total phosphorus, dissolved phosphorus, nitrate/nitrite, total Kjeldahl nitrogen (TKN), ammonia, total nitrogen (calculated), alkalinity and temperature at least once a month. The Permittee shall monitor the wastewater influent for total phosphorus and total nitrogen at least once a month. The results shall be submitted on electronic DMRs (NetDMRs) to the Agency unless otherwise specified by the Agency.
- H. The Permittee shall submit electronically to EPA.PrmtSpecCondtns@illinois.gov with "IL0028380 Special Condition 17.H" as the subject of the email and post to the DRSCWs website by December 31, 2023 a Nutrient Implementation Plan (NIP) for the DRSCW watersheds that identifies phosphorus input reductions by point source discharges, non-point source discharges and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 Ill. Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 Ill. Adm. Code 302.203. The NIP shall also include a schedule for implementation of the phosphorus input reductions and other measures. The Permittee may work cooperatively with the DRSCW to prepare a single NIP that is common among DRSCW permittees. Progress reports shall be submitted every year until completion and submission of the NIP. The DRSCW may prepare a single progress report for all DRSCW permittees and may be submitted as part of a combined annual report with paragraph D above. The Agency will renew or modify the NPDES permit as necessary to incorporate NIP requirements.

ATTACHMENT 2

LDRWC Special Conditions

Bolingbrook STP#3 Special Condition XX.

1. The Permittee shall participate in the DuPage River Salt Creek Workgroup (DRSCW) and the Lower DuPage River Watershed Coalition (LDRWC). The Permittee shall work with other watershed members of the DRSCW and LDRWC to determine the most cost effective means to remove dissolved oxygen (DO) and offensive condition impairments in the DuPage River Salt Creek watershed.
2. The Permittee shall ensure that the following projects and activities set out in the DRSCW and LDRWC Implementation Plan (April 16, 2015), are completed (either by the permittee or through the DRSCW/LDRWC) by the schedule dates set forth below; and that the short term objectives are achieved for each by the time frames identified below. This condition may be modified to include additional projects due to participation in the Lower DuPage River Watershed Coalition.

Project Name	Completion Date	Short Term Objectives	Long Term Objectives
Oak Meadows Golf Course dam removal	December 31, 2016	Improve DO	Improve fish passage
IPS Tool/Project Identification Study	December 31, 2017	Improve DO	Improve fish passage
Oak Meadows Golf Course stream restoration	December 31, 2017	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi
Fawell Dam Modification	December 31, 2018	Modify dam to allow fish passage	Raise fiBi upstream
Hammel Woods Dam removal	December 31, 2019	Improve DO, reduce nuisance algae	Raise miBi and fiBi
Spring Brook Restoration and dam removal	December 31, 2019	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
Fullersburg Woods dam modification concept plan development	December 31, 2016	Identify conceptual plan for dam modification and stream restoration	Build consensus among plan
Fullersburg Woods dam modification	December 31, 2021	Improve DO, improve aquatic habitat (QHEI)	Raise miBi and fiBi
Fullersburg Woods dam modification area stream restoration	December 31, 2022	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
Southern West Branch Physical Enhancement	December 31, 2022	Improve aquatic habitat (QHEI)	Raise miBi and fiBi

Southern East Branch Stream Enhancement	December 31, 2023	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
Hammel Woods Dam to 119 th Street in Plainfield Stream Enhancement	December 31, 2023	Improve aquatic habitat (QHEI), reduce inputs of nutrients and sediment	Raise miBi and fiBi
QUAL 2K East Branch and Salt Creek	December 31, 2023	Collect new baseline data and update model	Quantify improvements in watershed. Identify next round of projects for
NPS Phosphorus Feasibility Analysis	December 31, 2021	Assess NPS performance from reductions leaf litter and street sweeping	Reduce NPS contributions to lowest practical levels

3. The Permittee shall participate in implementation of a watershed Chloride Reduction Program, either directly or through the DRSCW/LDRWC. The program shall work to decrease DRSCW/LDRWC watershed public agency chloride application rates used for winter road safety, with the objective of decreasing watershed chloride loading. The Permittee shall submit an annual report on the annual implementation of the program identifying the practices deployed, chloride application rates, estimated reductions achieved, analyses of watershed chloride loads, precipitation, air temperature conditions and relative performance compared to a baseline condition. The report shall be provided to the Agency by March 31 of each year reflecting the Chloride Abatement Program performance for the preceding year (example: 2015-16 winter season report shall be submitted no later than March 31, 2017). The Permittee may work cooperatively with the DRSCW/LDRWC to prepare a single annual progress report that is common among DRSCW/LDRWC permittees.
4. The Permittee shall submit an annual progress report on the projects listed in the table of paragraph 2 above to the Agency by March 31 of each year. The report shall include project implementation progress. The Permittee may work cooperatively with the DRSCW/LDRWC to prepare a single annual progress report that is common among DRSCW/LDRWC permittees.
5. The Permittee shall develop a written Phosphorus Discharge Optimization Plan. In developing the plan, the Permittee shall evaluate a range of measures for reducing phosphorus discharges from the treatment plant, including possible source reduction measures, operational improvements, and minor low cost facility modifications that will optimize reductions in phosphorus discharges from the wastewater treatment facility. The permittee's evaluation shall

include, but not necessarily be limited to, an evaluation of the following optimization measures:

- a. WWTF influent reduction measures.
 - i. Evaluate the phosphorus reduction potential of users.
 - ii. Determine which sources have the greatest opportunity for reducing phosphorus (e.g., industrial, commercial, institutional, municipal, and others).
 1. Determine whether known sources (e.g., restaurant and food preparation) can adopt phosphorus minimization and water conservation plans.
 2. Evaluate implementation of local limits on influent sources of excessive phosphorus.
- b. WWTF effluent reduction measures.
 - i. Reduce phosphorus discharges by optimizing existing treatment processes without causing non-compliance with permit effluent limitations or adversely impacting stream health.
 1. Adjust the solids retention time for biological phosphorus removal.
 2. Adjust aeration rates to reduce DO and promote biological phosphorus removal.
 3. Change aeration settings in plug flow basins by turning off air or mixers at the inlet side of the basin system.
 4. Minimize impact on recycle streams by improving aeration within holding tanks.
 5. Adjust flow through existing basins to enhance biological nutrient removal.
 6. Increase volatile fatty acids for biological phosphorus removal.

6. Within 24 months of the effective date of this permit, the Permittee shall finalize the written Phosphorus Discharge Optimization Evaluation Plan and submit it to IEPA. The plan shall include a schedule for implementing all of the evaluated optimization measures that can practically be implemented and include a report that explains the basis for rejecting any measure that was deemed impractical. The schedule for implementing all practical measures shall be no longer than 36 months after the effective date of this permit. The Permittee shall implement the measures set forth in the Phosphorus Discharge Optimization Plan in accordance with the schedule set forth in that Plan. The Permittee shall modify the Plan to address any comments that it receives from IEPA and shall implement the modified plan in accordance with the schedule therein.

Annual progress reports on the optimization of the existing treatment facilities shall be submitted to the Agency by March 31 of each year beginning 24 months from the effective date of the permit.

7. The Permittee shall, within 24 months of the effective date of this permit, complete a feasibility study that evaluates the timeframe, and construction and O & M costs of reducing phosphorus levels in its discharge to a level consistently meeting a limit of 1 mg/L, 0.5 mg/L and 0.1 mg/L utilizing a range of treatment technologies including, but not necessarily limited to, biological phosphorus removal, chemical precipitation, or a combination of the two. The study shall evaluate the construction and O & M costs of the different treatment technologies for these limits on a

monthly, seasonal, and annual average basis. For each technology and each phosphorus discharge level evaluated, the study shall also evaluate the amount by which the Permittee's typical household annual sewer rates would increase if the Permittee constructed and operated the specific type of technology to achieve the specific phosphorus discharge level. Within 24 months of the effective date of this Permit, the Permittee shall submit to the Agency and the DRSCW/LDRWC a written report summarizing the results of the study.

8. Total phosphorus in the effluent shall be limited as follows:

- a. If the Permittee will use chemical precipitation to achieve the limit, the effluent limitation shall be 1.0 mg/L on a monthly average basis, effective 10 years after the effective date of this permit unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program pursuant to paragraph c or d below that is fully implemented within 10 years of the effective date of this permit.
- b. If the Permittee will primarily use biological phosphorus removal to achieve the limit, the effluent limitation shall be 1.0 mg/L monthly average to be effective 11 years after the effective date of this permit unless the Agency approves and reissues or modifies the permit to include an alternate phosphorus reduction program pursuant to paragraph c or d below that is fully implemented within 11 years of the effective date of this permit.
- c. The Agency may modify this permit if the DRSCW has developed and implemented a trading program for POTWs in the DRSCW/LDRWC watersheds, providing for reallocation of allowed phosphorus loadings between two or more POTWs in the DRSCW/LDRWC watersheds, that delivers the same results of overall watershed phosphorus point-source reduction and loading anticipated from the uniform application of the applicable 1.0 mg/L monthly average effluent limitation among the POTW permits in the DRSCW watersheds and removes DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 IL Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 IL Adm. Code 302.203.
- d. The Agency may modify this permit if the DRSCW/LDRWC has demonstrated and implemented an alternate means of reducing watershed phosphorus loading to a comparable result within the timeframe of the schedule of this condition and removes DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 IL Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 IL Adm. Code 302.203.

9. The Permittee shall monitor the wastewater effluent, consistent with the monitoring requirements on Page 2 of this permit, for total phosphorus, dissolved phosphorus, nitrate/nitrite, total Kjeldahl nitrogen (TKN), ammonia, total nitrogen (calculated), alkalinity and temperature at least once a month. The Permittee shall monitor the wastewater influent for total phosphorus and total nitrogen at least once a month. The results shall be submitted on NetDMRs to the Agency unless otherwise specified by the Agency.

10. The Permittee shall submit a Nutrient Implementation Plan (NIP) for the DRSCW watersheds that identifies phosphorus input reductions by point source discharges, non-point source discharges and other measures necessary to remove DO and offensive condition impairments and meet the applicable dissolved oxygen criteria in 35 IL Adm. Code 302.206 and the narrative offensive aquatic algae criteria in 35 IL Adm. Code 302.203. The NIP shall also include a schedule for implementation of the phosphorus input reductions and other measures. The Permittee may work cooperatively with the DRSCW to prepare a single NIP that is common among DRSCW and LDRWC permittees. The NIP shall be submitted to the Agency by December 31, 2023.