

# Session 1D: Fullersburg Dam Removal and Salt Creek Restoration

Deanna Doohaluk The Conservation Foundation

Tim Pollowy Hey and Associates, Inc.





Agency Members (white)/ Associate Members (gray)

Village of Addison · AECOM · Village of Arlington Heights · City of Aurora · Baxter & Woodman · Village of Bartlett Village of Bensenville · Black & Veatch · Village of Bloomingdale · Village of Bolingbrook · Cardno · Village of Carol Stream · Christopher B. Burke Engineering · Village of Clarendon Hills · Clark-Dietz · The Conservation Foundation **Deuchler Engineering** · **Donohue & Associates** · **Village of Downers Grove** · **Downers Grove Sanitary District** · **DuPage** County · City of Elmhurst · Elmhurst-Chicago Stone Company · Engineering Resource Associates · Forest Preserves of Cook County · Forest Preserve District of DuPage County · Geosyntec Consultants · Glenbard Wastewater Authority · Village of Glen Ellyn · Village of Glendale Heights · Village of Hanover Park · Hey & Associates · Village of Hinsdale · Village of Hoffman Estates · Huff & Huff · Illinois Department of Transportation · Illinois State Toll Highway Authority · Village of Itasca · K-Tech Specialty Coatings · Village of Lisle · Lisle Township Highway Dept. · Village of Lombard · Metropolitan Water Reclamation District of Greater Chicago · Metro Strategies · Morris Engineering · The Morton Arboretum · City of Naperville · Naperville Park District · Naperville Township Road Dist. City of Northlake · Village of Oakbrook · City of Oakbrook Terrace · Village of Palatine · Prairie Rivers Network · Robinson Engineering · Village of **Roselle** · Salt Creek Sanitary District · Salt Creek Watershed Network · Village of Schaumburg · Sierra Club, River Prairie Group · Strand Associates · Village of Streamwood · Trotter & Associates · V3 Companies · Village of Villa Park · City of Warrenville · City of West Chicago · West Chicago Winfield Wastewater Authority · Village of Westchester · Village of Western Springs · Village of Westmont · City of Wheaton · Wheaton Sanitary District · Village of Winfield · City of Wood **Dale** · Village of Woodridge · York Township Highway Department.



#### **Program Area At A Glance**

- 360 square miles
- 3 Sub-watersheds
  - West Branch DuPage
  - East Branch DuPage
  - Salt Creek
- 100 miles of main stem stream
- 156 MGD of effluent (DAF) from 25 POTWs
- 55 municipal entities
  - DuPage and Cook Counties
- Urban to suburban with 48.7% being classified as residential

# **DRSCW NPDES Special Condition**

- Negotiated with IEPA, US EPA, and Environmental Advocacy Groups (EAGs) in 2015 and 2020
- Includes Dam Removals and Stream Restoration Projects
  - Preserve at Oak Meadows
  - Lower East Branch Stream Enhancement
  - Spring Brook Phase #2
- Includes 3 studies
  - Nutrient Implementation Plan
  - Non-point Source Phosphorus Feasibility Study
  - QUAL2Kw Models
- Generated \$19 million in project funds

- -- Fullersburg Woods Dam Removal
- -- Klein Creek Streambank Stabilization
- -- Fawell Dam Modification (fish passage)

# Fullersburg Woods & Graue Mill Dam

- Owned by the Forest Preserve District of DuPage County
- Located along Salt Creek in the Village of Oak Brook, DuPage County, Illinois
- Graue Mill (1862)
  - Series of failed/washed out dams
- Current Graue Mill Dam
  - Constructed 1930s by CCC
  - Dewatering gates added in 1990
- Impoundment
  - 16 acres
  - 3,900 LF in length





# **River Remodel**



### CCC at Fullersburg Woods

n 1936 here at Fullersburg Woods Forest Preserve, the Civilian Conservation Corps completed work on a limestone and timber boathouse, today's visitor center. Until the late 1960s, people stopped there to rent boats, grab a snack or warm up after skating.

Original Salt Creek Salt Creek After 1936

GENERAL DEVELOPMEN

But the CCC did more than build a boathouse to attract visitors. It built a new Salt Creek, too.

As one paper reported in 1935, to many people Salt Creek was "a mongrel as a body of water [that] wandered across DuPage County helter skelter," meandering "like some vagrant, bound willy nilly for no place in particular."

To create a "greatly improved" Salt Creek, the CCC deepened and widened the channel for boating, fishing and skating and built new islands for trails and picnics. You can still explore "Island 3," one of the lasting results of the CCC's work, along the North Island Loop Trail.

Century Trail This sign is one in a special series of 11 installed along the commemorative Preserves Century Trail. For maps and more great forest preserve stories, v The Men of V-1668

Forest Preserve District of DuPage County

Between 1934 and 1938 Fullersburg Woods Forest Preserve was home to the men of Company V-1668 of the Civilian Conservation Corps.

Most of the men were veterans of World War I. Their first job was to construct the camp's temporary barracks, which housed up to 200 enlistees. They built the boathouse in front of you (today's visitor center) and many of the bridges and shelters you pass along the trail. They worked at other forest preserves, too, constructing a picnic shelter at York Woods and shelters, a dam and fire rings at Waterfall Glen.

During the Great Depression the corps provided much-needed work for over 3 million unemployed men nationwide.

## Water Quality Issues at Fullersburg Woods

Salt Creek is listed as impaired by the Illinois Environmental Protection Agency and is not meeting Clean Water Act requirements.

- The dam blocks 16 native fish species from populating the watershed upstream of the dam.
- Lowest dissolved oxygen levels on Salt Creek are found behind the dam.
- Poor in-stream and riparian habitat conditions due to accumulated sediment are found in the impoundment.

#### **Intervention Cost Benefit Summary**

Options	Cost (2020 values)	Fix DO Conditions	Improve Fish Scores (create fish passage )	Improve Insect Scores	Improve Habitat
Stream Enhancement & Dam Modification/removal	\$4,200,000	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
WWTP Upgrades to reduce oxygen demanding point source pollutants (capital)	\$213,000,000	✓			
Air based in-stream aeration [2]	\$3,300,000	V			
High purity oxygen addition	\$2,500,000	$\checkmark$			
Dredging impoundment	\$8,300,000	Not modeled			
Fish Ladder	\$250,000		$\checkmark$		
Dam Crest Reduction, ramping	Not Calculated				

### Master Plan for Salt Creek at Fullersburg Woods

- Improve environment in Salt Creek by establishing fish passage, improving aquatic habitat, and improving the water quality of Salt Creek
- Protect taxpayers through adopting cost-effective and environmentally effective solutions
- Increase access to recreation and education opportunities along Salt Creek
- Preserve the historic Graue Mill and operation of the grist mill

### **Alternative Analysis – Phase 2 Dam Modification Alternatives**

Options	Cost (2020 values)	Fix DO Conditions	Improve Fish Scores (create fish passage )	Improve Insect Scores	Improve Habitat
Stream enhancement & Dam removal	\$4,200,000	✓	✓	✓	✓
Dam crest reduction & ramping	Not Calculated				
Partial dam removal	Not Calculated				











Root Wads



Stream Bank Stabilization



**Riffles and Pools** 





Creek Bed Substrate



Backwater Habitat



Reconnection of Floodplain



Floodplain Vegetation



### **2018-19 Public Opinion Research**

- 2018-19 Telephone and Online Survey (615 responses)
  - Additional In-depth Interviews & a Focus Group





### **Advertising Tactics for the Concept Master Plan**

Awareness	Education	Engagement
Public Notice	RestoreSaltCreek.org	Virtual Open Houses
News coverage	Background videos	Stakeholder follow up
Newsletters	Fact sheets	Public comment form
Social Media	Stakeholder meetings	
Email campaigns		

### **Public Comment Results**

- 91% of commenters support the Master Plan, (86% strongly support)
- Matches FPDDC 2019 Master Plan findings- "90% of respondents believe the protection of natural areas is the most important purpose of the Forest Preserve District".



### **Implementing the Master Plan**

- October 2020 FPPDC approves a 5-Year Lease Agreement with the DRSCW to implement the Master Plan
- February 2021 DRSCW enters into a contract with Hey and Associates for final design, permitting, and preparation of contract bid documents
- June 2021 DRSCW amends MOU (originally signed May 2019) with the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) to include contract and construction management services for the project



### Salt Creek at Fullersburg Woods





### **River restoration**

- Dam and bypass removal
- Geomorphology
- Convert WOTUS to wetland
- Wetland enhancement/mitigation
- Buffer restoration
- Bank stabilization
- Fish passage

### Site amenities

- Motorize waterwheel
- Pump system
- Overlooks and trail
- River access
- Interpretive signage
- Waterproof floodwall



### Dam Removal

- Open bypass structure to lower water level and allow sediment to dewater and consolidate
- Limestone cladding on face of dam can be reused
- Concrete, metal, etc. to be removed and disposed
- Spread footing to remain





### Dam Removal

- Dam to be removed above riverbed
- Bypass structure to be removed
- Removing upper 25% +/- of raceway to provide improved access to island for maintenance and visitors
- No "wall of sediment" above dam
- Existing riffles to be enhanced
- Pools to be excavated



## Fluvial Geomorphology Riffles

- Shallow
- Wide
- Coarse bed (sand, gravel & cobble)
- Higher velocity/higher energy resulting in turbulence during lower flows
- Flow inversion: lower velocity/lower energy (vs. pools) during high flows

### Pools

- Deeper
- Narrower
- Fine bed material
- Lower velocity/lower energy during lower flows
- Flow inversion: higher velocity/higher energy (vs. riffles) resulting in turbulence during higher flows

### Spacing

- 5-7x bankfull width

#### Recommended: 'A View of the River' by Luna Leopold

### Geomorphic Basis of Stream Restoration Design





### Conversion: Waters to Wetlands







### Upland Enhancement/Buffers





### Motorize Waterwheel

- River flows not adequate to turn waterwheel
- Debris jams in raceway
- Water wheel is not connected to grinding wheels in the mill
- Existing motor in basement of mill turns grinding wheels



#### Raceway Pump System & Waterfeature



### Floodwall at Nature Center



### Permitting

- USACE 404 (started NWP but went IP due to political pressure from dam preservation interests)
- IEPA 401 Water Quality Certification
- KDSWCD soil erosion and sediment control
- DuPage County SW, B&Z, and DOT
- IDNR-OWR Floodway delegated to DuPage County
- IDNR-OWR dam safety

### **Bidding & Construction**

- Construction to be bid and managed by MWRD in cooperation with DRSCW
- Advertise May 2023
- Construction scheduled to start fall 2023
- Dam to be removed by December 31, 2023
- Remaining restoration and amenities to be completed within 480 calendar days of contract execution
- 5 years of post construction monitoring and management

#### Incentivize Nature-Based Infrastructure Solutions





#### DuPage River Salt Creek Workgroup

# Thank you!

Deanna Doohaluk The Conservation Foundation

Tim Pollowy Hey and Associates, Inc.

