

FOX RIVER CONNECTIVITY & HABITAT STUDY ILLINOIS RIVER BASIN RESTORATION SECTION 519

NEPA Public Meetings

18-20 September 2023

Chicago District
U.S. Army Corps of Engineers



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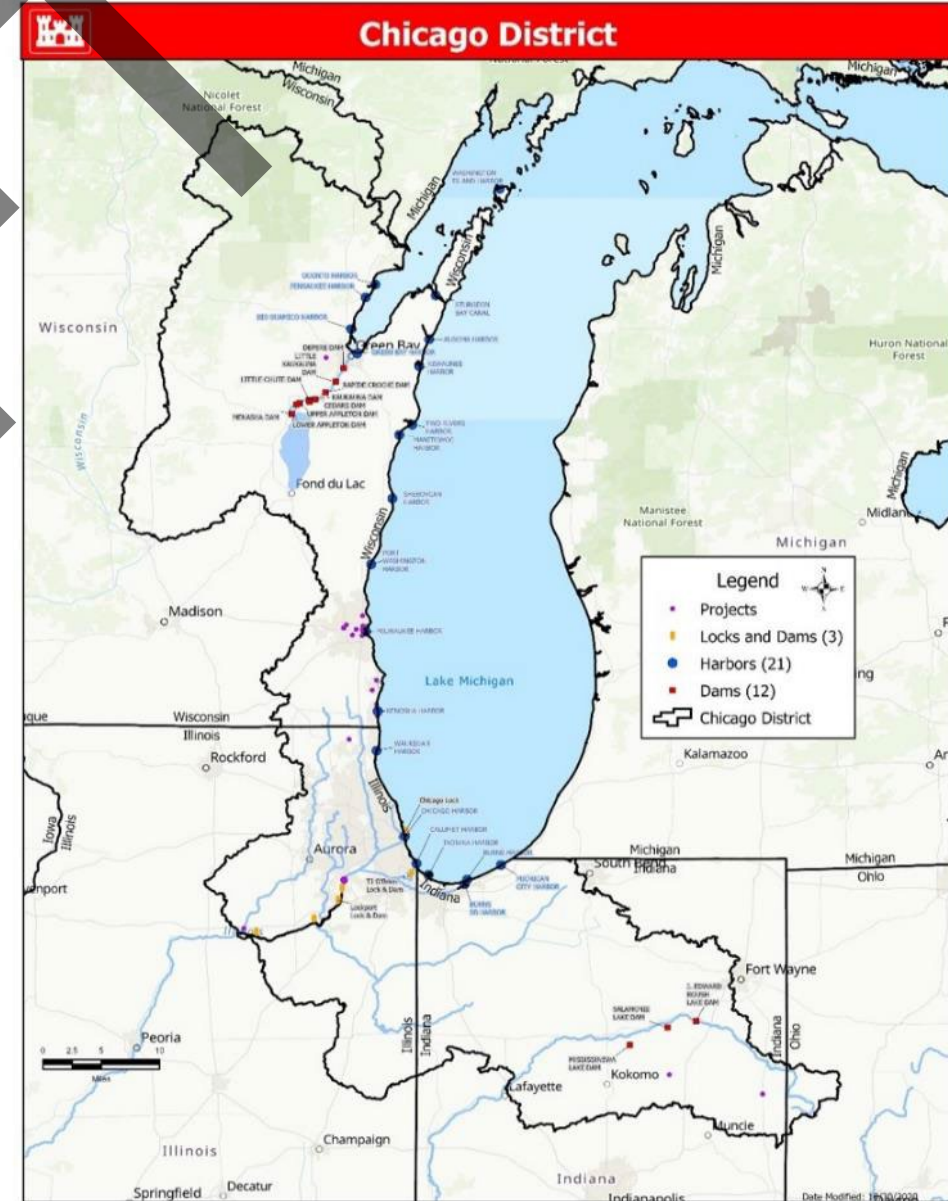
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CHICAGO DISTRICT

Area of Responsibility

- Covers portions of 3 states (WI, IL, IN)
- 31,500 square miles
- Key Civil Works Missions:
 - Flood Risk Management
 - Navigation
 - **Aquatic Ecosystem Restoration**
 - Regulatory





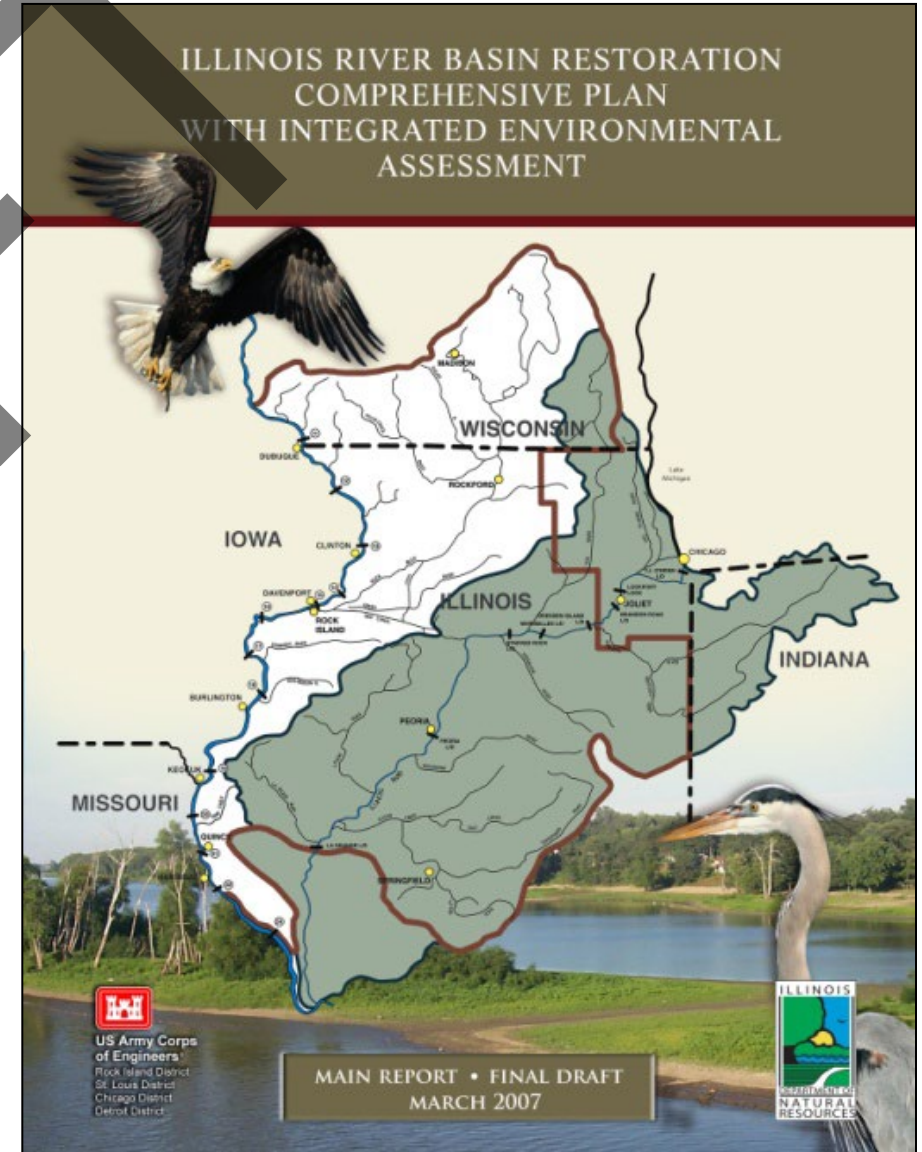
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Illinois River Basin Restoration Program Overview



Authority: Section 519, Water Resources Development Act (WRDA) of 2000, as amended:

- Development of a Comprehensive Plan
 - Completed 2007 --> see right
- Construction of Critical Restoration Projects (CRP)
 - Fox River identified as a CRP
- Cost shared 65% fed /35% non-fed
 - IDNR & FRSG are non-Federal cost sharing sponsors for the Fox River study





Illinois River Basin Restoration Program

Significance of the Illinois River



- WRDA 1986 recognized the Illinois River as a Nationally Significant Ecosystem
- Identified nationally as a river with large restoration potential by the National Research Council
- One of the Nation's busiest inland waterways linking the Great Lakes to the Gulf of Mexico – year around traffic
- Utilized by 40% of all North American waterfowl
- 81% of waterfowl in the Mississippi flyway utilized the Illinois River system
- Utilized by 326 bird species, 115 fish species, 35 mussel species





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Illinois River Basin Restoration Program Program Goals



- Reducing sedimentation
- Restoring side channels and backwaters
- Increasing fish passage

- Restoring floodplain, riparian, and aquatic habitat and function
- Naturalizing hydrology and water levels
- Improving water & sediment quality



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STUDY OVERVIEW



Basin – Mississippi / Illinois River

Watershed – Fox River

Watershed Type – Agricultural / Urban

State – Illinois

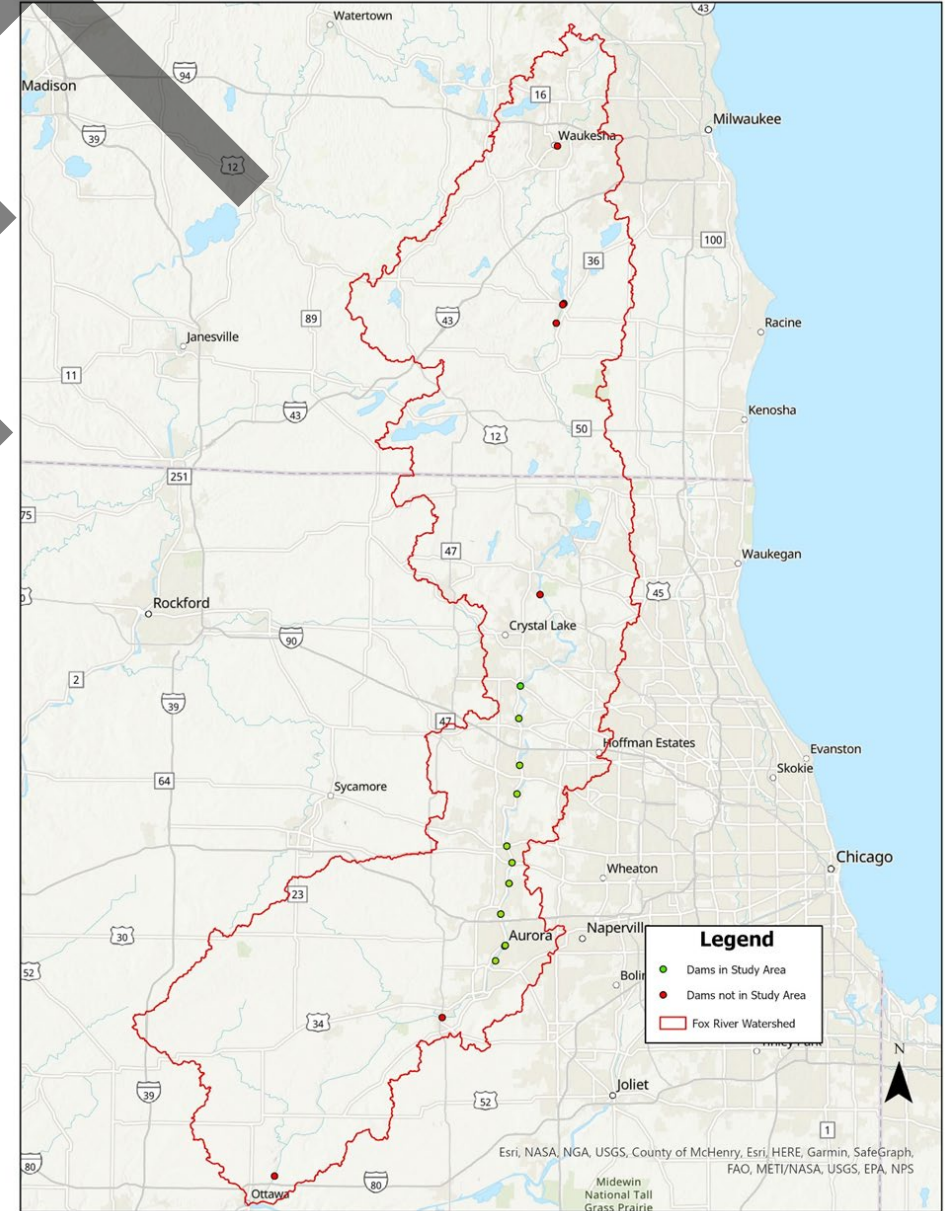
Counties – McHenry, Kane

Municipalities – Algonquin, Carpentersville, Elgin, South Elgin, St. Charles, Geneva, Batavia, North Aurora, Aurora, Montgomery

Study Area Target – Algonquin to Montgomery Dams

River Miles – 52.1

DRAG





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STUDY OVERVIEW



Tentatively Selected Plan: Alternative 2 - Remove All Study Area Dams Except Algonquin Dam

Habitat Units Gained – 298 NAAHUs

River Miles Habitat Restored – 21 miles

River Miles Reconnected – 34 miles

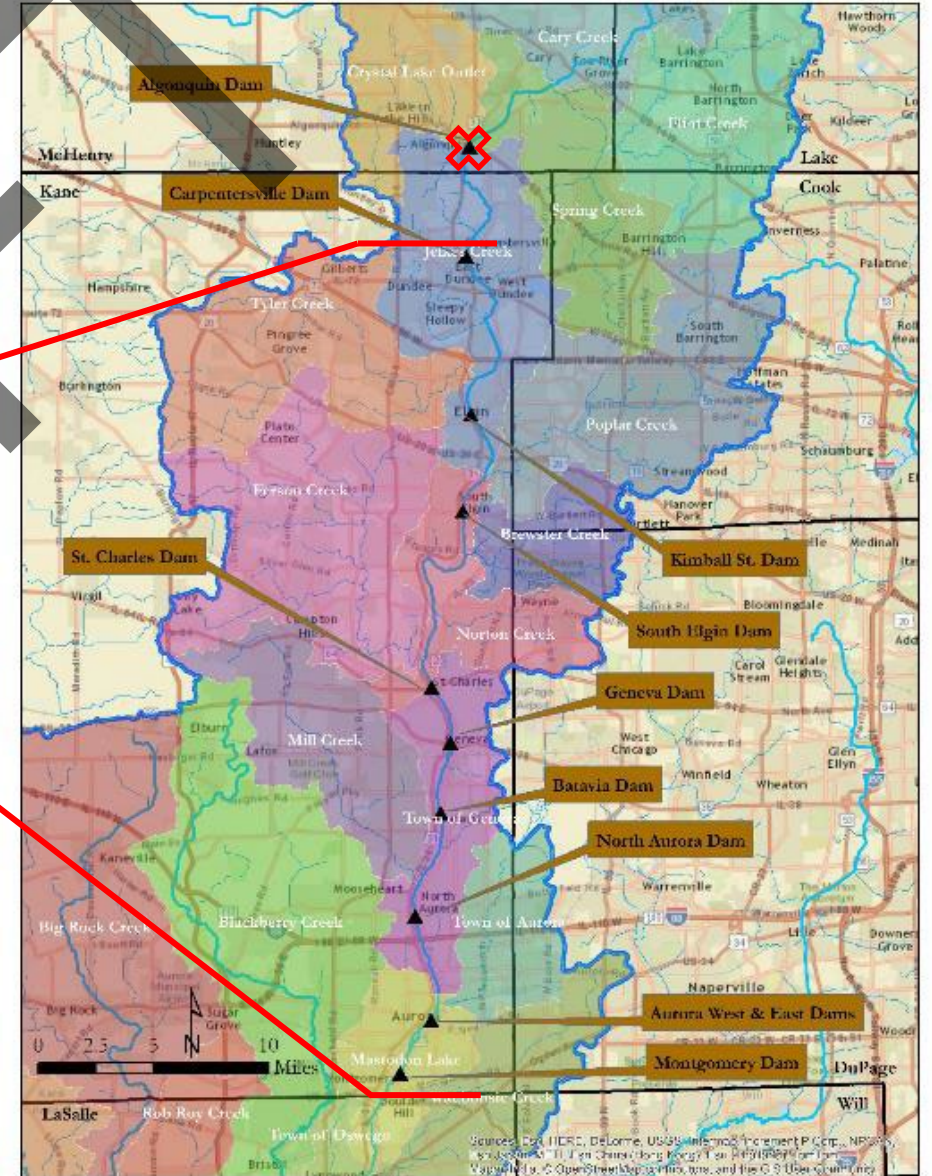
Preliminary Construction Cost – \$14,135,000

4 Accounts – Net Positive Effects Anticipated

Feature Type – Natural

Sustainability – Fully/No O&M

Recommended Plan may include removal of a subset of study area dams based on results of public & agency review and dam owner concurrence





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FOX RIVER STUDY AREA DAMS

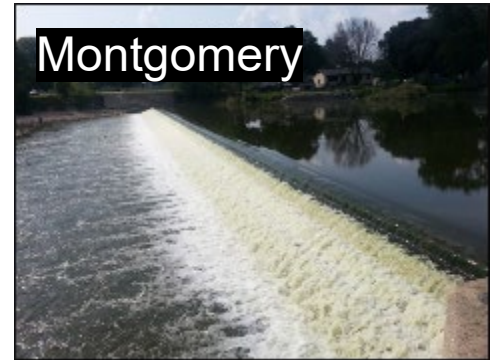


Dam	Owner	River Mile	Length (ft)	Height (ft)	Crest Elevation (ft NGVD)	Original Function	Current Function
Stratton*	State of Illinois	98.9	275	7.0	736.8	Navigation	Recreation
Algonquin	State of Illinois	82.6	308	10.5	730.3	Recreation	Recreation
Carpentersville	Kane County	78.2	378	9.0	720.7	Milldam/ Hydropower	Recreation
Kimball Street	City of Elgin	71.9	325	13.0	708.4	Milldam	Recreation/ Drinking Water
South Elgin	State of Illinois	68.2	357	8.3	700.0	Milldam	Recreation
St. Charles	State of Illinois	60.6	294	10.3	684.6	Recreation/ Hydropower	Recreation
Geneva	State of Illinois	58.7	441	13.0	675.4	Milldam	Recreation
Batavia	City of Batavia	56.3	244	12.0	665.1	Milldam	Recreation
North Aurora	State of Illinois	52.6	375	9.0	646.0	Milldam	Recreation
Aurora East	City of Aurora	48.9	E 177	11.0	628.4	Milldam	Recreation
Aurora West	State of Illinois		W 170	15.0	628.4		
Montgomery	State of Illinois	46.8	325	8.0	614.0	Navigation	Recreation
Yorkville*	State of Illinois	36.5	530	7.0	575.0	Recreation	Recreation
Dayton*	North American Hydro	5.7	600	29.6	498.8	Hydropower	Hydropower



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FOX RIVER STUDY AREA DAMS





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EXISTING PHYSICAL CONDITIONS

Riverine System

- Agricultural & urban watershed
- Wetland draining & filling
- Infrastructure intrusion
- Fragmentation

Upstream of Dams

- Lake conditions, or lentic
- Poor physical substrate quality
- Poor water quality

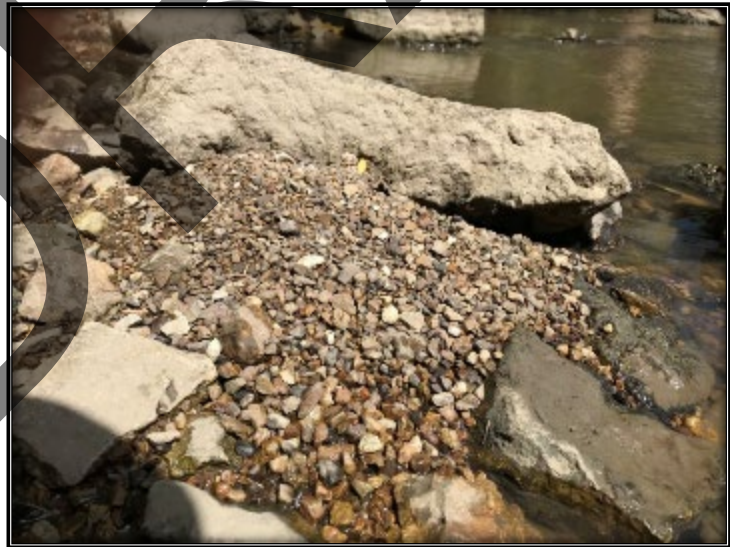
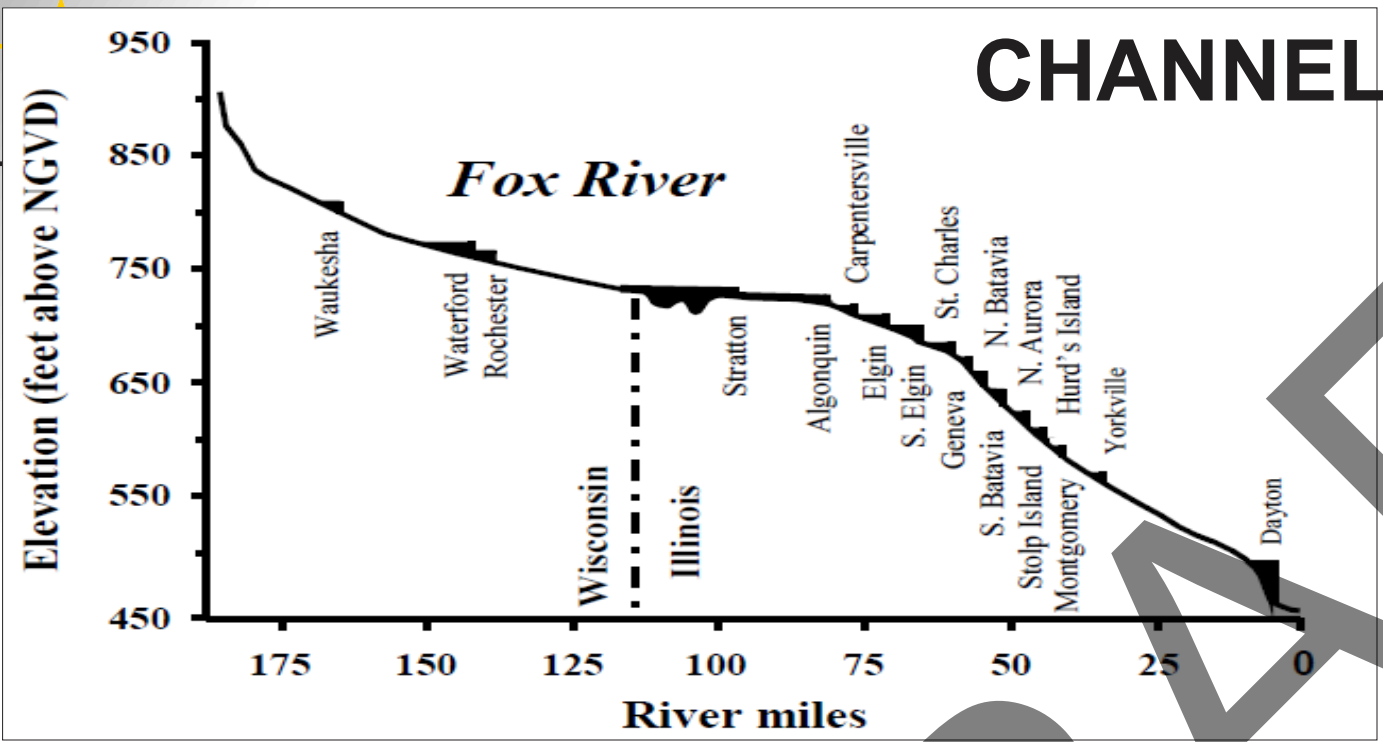
Downstream of Dams

- River conditions, or lotic
- High substrate quality
- Improved water quality





CHANNEL CHARACTERISTICS





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SEDIMENT CHARACTERISTICS

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- Impounded bedload of cobble, gravel and sand, and to a lesser extent silt
- Fine layer of silt within impoundments but transports as wash load
- 32 core and 52 surface samples were analyzed for metals, pesticides, etc.
- Sediment pollution is low; within residential remedial standards and near background levels





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EXISTING BIOLOGICAL COMMUNITIES - UPSTREAM

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Impoundment or Man-Made Lake

- Open Water
- Fringe Marsh (sparse)
- Aquatic Bed
- Large Woody Debris
- Common Carp, Bluegill, Golden Shiner, LM Bass
- Waterfowl (ducks & geese)
- Waterbirds (herons & kingfisher)
- Turtles





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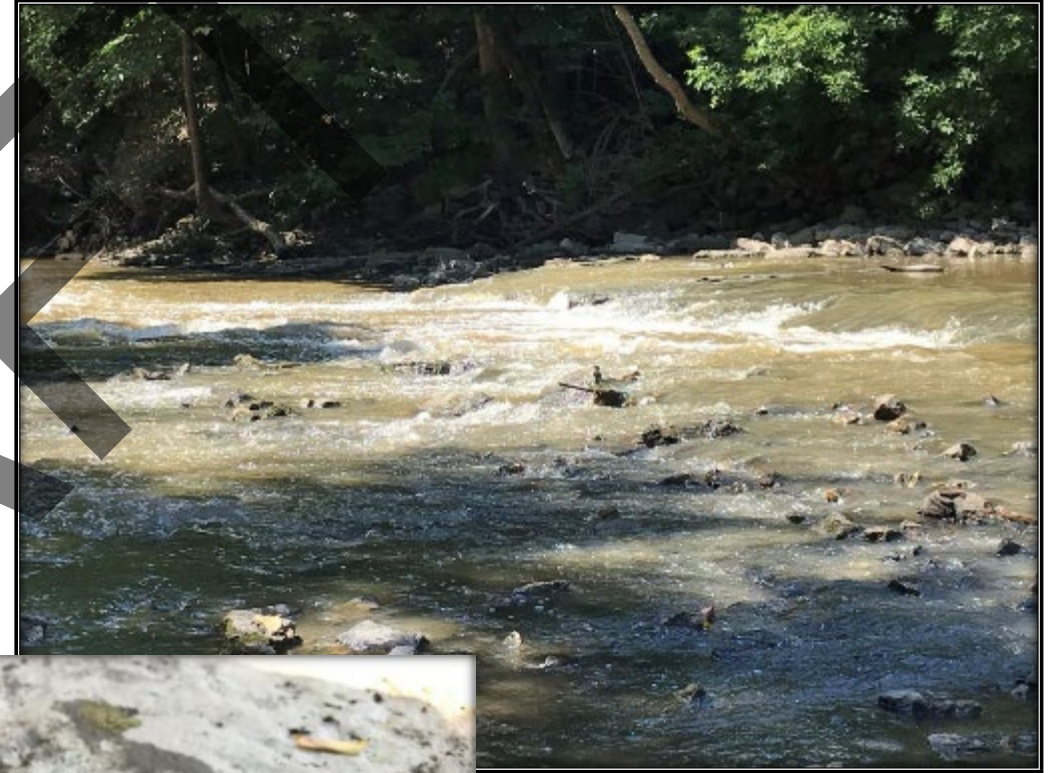
EXISTING BIOLOGICAL COMMUNITIES - DOWNSTREAM

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Riverine – Small River / Large Stream

- Bedrock
- Riffle / Run / Pool / Glide
 - Substrates scoured within ~500 ft downstream of dam
 - Diverse substrates >500 ft to next pool
- Large Woody Debris
- Stonecat, Slenderhead Darter, River Redhorse
- Waterbirds (herons & kingfisher)
- Freshwater Mussels





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PROBLEMS & OPPORTUNITIES

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Riverine Fragmentation

- Prevents fish/mussel migration during all flows
- Limits tributary accessibility in some reaches

Altered Riverine Process

- Alters hydraulics, creating lentic (lake) conditions
- Alters sediment transport by trapping cobble, gravel and sand
- Lost ability to sort, clean, and remove embeddedness
- Scours habitat and substrates ~500-feet below dam
- Promotes unsustainable wetlands within impoundment
- Lost ability to absorb flood pulses

Riparian Plant Communities

Water Quality Degradation

Human Safety

Aesthetics



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STUDY OBJECTIVES

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Objective 1 – Reestablish Fluvialgeomorphic Processes to Support Riverine Habitat

Existing run-of-the-river dams alter riverine conditions limiting natural recovery. Improvement is measured via the predicted increase in quality of riverine habitat (FWP HSI (QHEI)).

Objective 2 – Reestablish Connectivity for Riverine Animal Assemblages

Currently 70% of the river is impounded by run-of-the-river dams blocking passage for riverine organisms. Improvement is measured via the predicted increase in distribution in species richness.



Constraints

- Avoid flooding impacts to offsite landowners and public roads

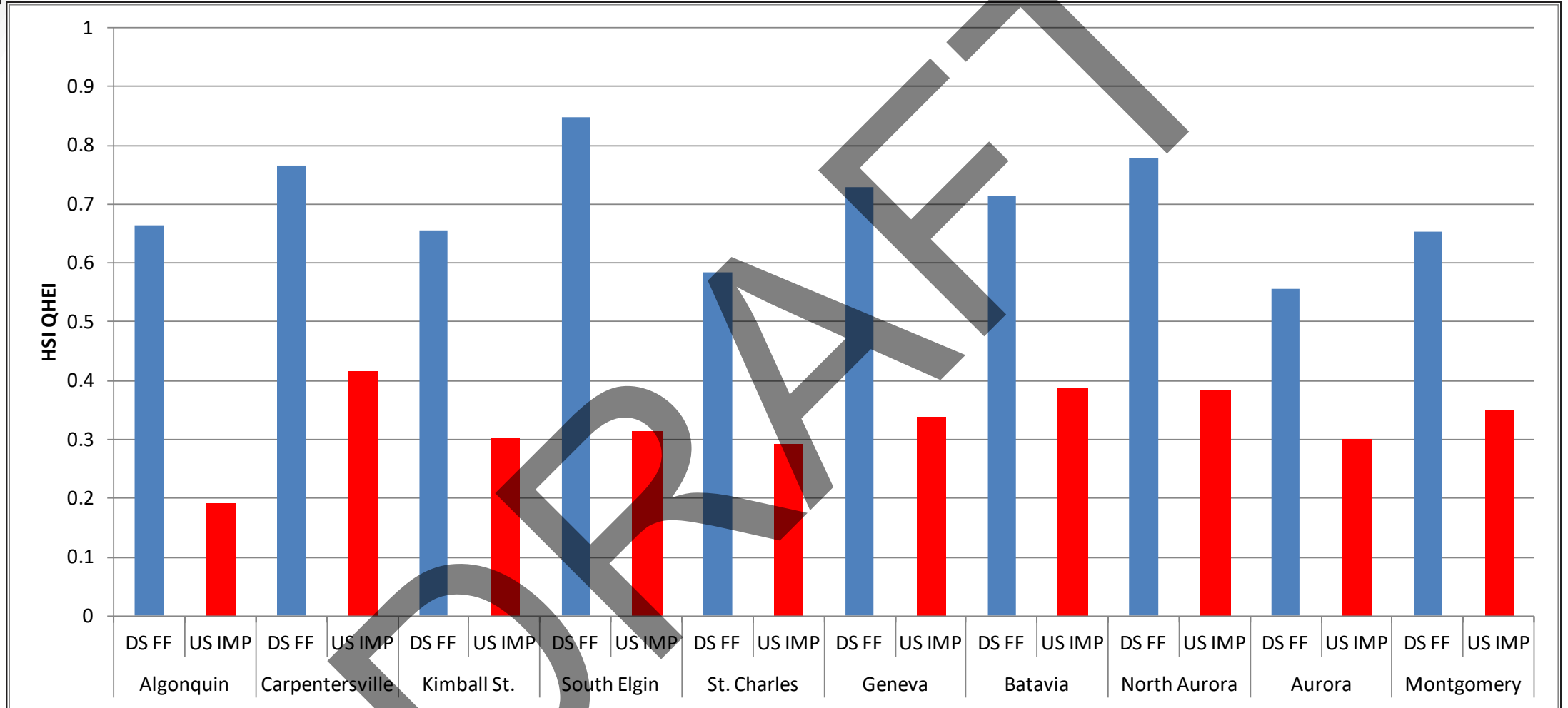
Planning Considerations

- Avoid adverse effects to existing mussel beds in free-flowing segments of the river
- Avoid construction disturbance during spawning season of endangered & rare fishes
- Minimize adverse short-term effects to water quality
- Minimize adverse effects to human recreational uses of the river
- Avoid and minimize adverse effects to municipal infrastructure such as water intake structures, transportation, reclamation facilities, utilities, etc.



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FUTURE WITHOUT PROJECT CONDITIONS



- DS FF – Downstream free-flowing
- US IMP – Upstream impoundment



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MEASURES CONSIDERED

Dam Removal Demolition

- Full Removal of dam, spill way, aprons
- Partial Removal; notching if necessary

By-Pass Channel

- Excavation/grading
- Rock placement

Rock Ramp

- Rock placement

Fish Ladders

- Metal, concrete or combination





MEASURE SCREENING

	1	2	3	4	5	6	7	8
Measure	Obj #1 Habitat	Obj #2 Connectivity	Const. Cost	O&M Activity	O&M Cost	WQ	Safety	Retained
Rock Ramp	No	Partial	High	High	High	No	Yes	No
Fish Ladder	No	Partial	Low	High	High	No	No	No
Bypass Channel	No	Partial	High	High	High	No	No	No
Full Removal	Yes	Yes	Mid	Low	Low	Yes	Yes	Yes
Partial Removal	Yes	Yes	Mid	Low	Med	Yes	Yes	No



MEASURE PLANNING LEVEL COSTS



Code	Measure	Total Measure	Habitat Units	Length*
CD	Carpentersville Dam	\$ 1,351,000	18	51
KD	Kimball St. Dam	\$ 1,423,000	47	131
ED	South Elgin Dam	\$ 1,366,000	62	116
SD	St. Charles Dam	\$ 1,293,000	43	142
GD	Geneva Dam	\$ 1,469,000	13	33
BD	Batavia Dam	\$ 1,450,000	42	131
ND	North Aurora Dam	\$ 1,291,000	41	102
AD	Aurora Dam(s)	\$ 1,917,000	10	40
MD	Montgomery Dam	\$ 1,282,000	22	73
	Total	\$ 14,135,000		

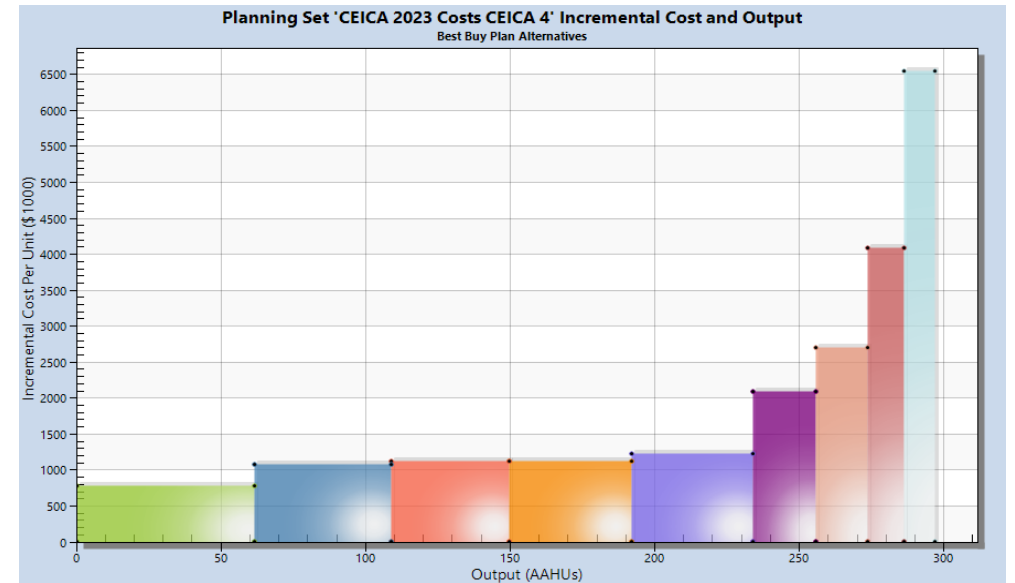
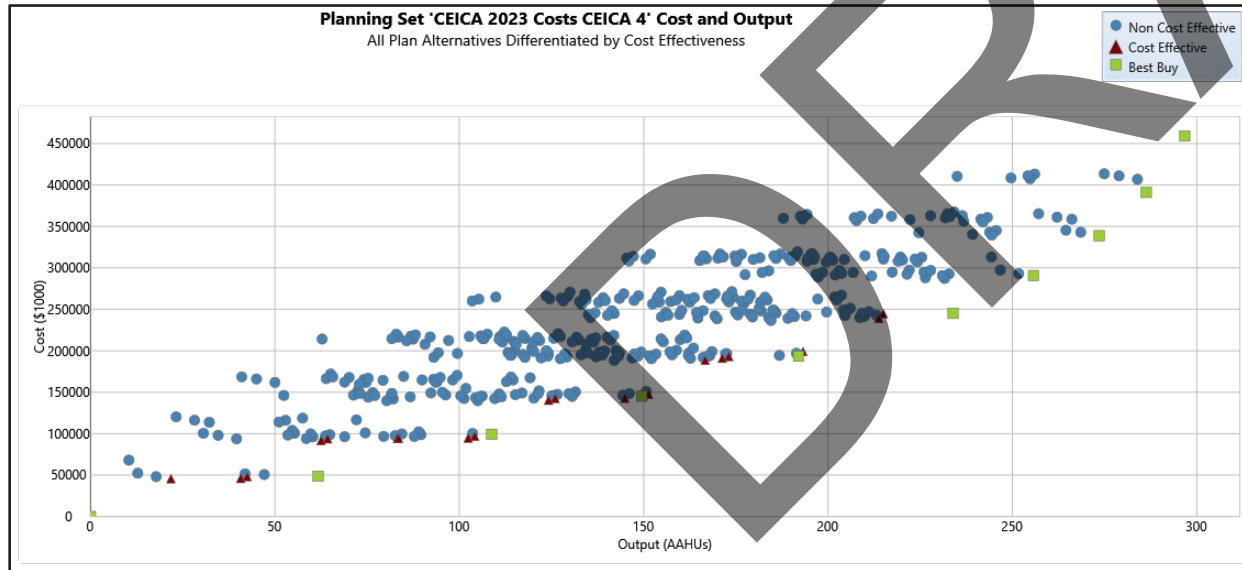
*Derived Length Units





COST EFFECTIVENESS / INCREMENTAL COST

#	Plan Alternative	HU	AA Cost	AA Cost/HU	Inc. Cost	Inc. HU	Inc. Cost/HU
1	No Action Plan	0.0	\$ -	\$ -	\$ -	0	\$ -
2	ED	61.7	\$ 48,670	\$ 789	\$ 48,670	62	\$ 789
3	KD, ED	108.8	\$ 99,332	\$ 913	\$ 50,662	47	\$ 1,076
4	KD,ED,ND	149.5	\$145,340	\$ 972	\$ 46,008	41	\$ 1,130
5	KD,ED,SD,ND	192.0	\$193,428	\$ 1,007	\$ 48,088	43	\$ 1,131
6	KD,ED,SD,BD,ND	233.9	\$245,038	\$ 1,048	\$ 51,610	42	\$ 1,232
7	KD,ED,SD,BD,ND,MD	255.7	\$290,701	\$ 1,137	\$ 45,663	22	\$ 2,095
8	CD,KD,ED,SD,BD,ND,MD	273.5	\$338,824	\$ 1,239	\$ 48,123	18	\$ 2,704
9	CD,KD,ED,SD,GD,BD,ND,MD	286.3	\$391,146	\$ 1,366	\$ 52,322	13	\$ 4,088
10	CD,KD,ED,SD,GD,BD,ND,AD,MD	296.7	\$459,191	\$ 1,548	\$ 68,045	10	\$ 6,543





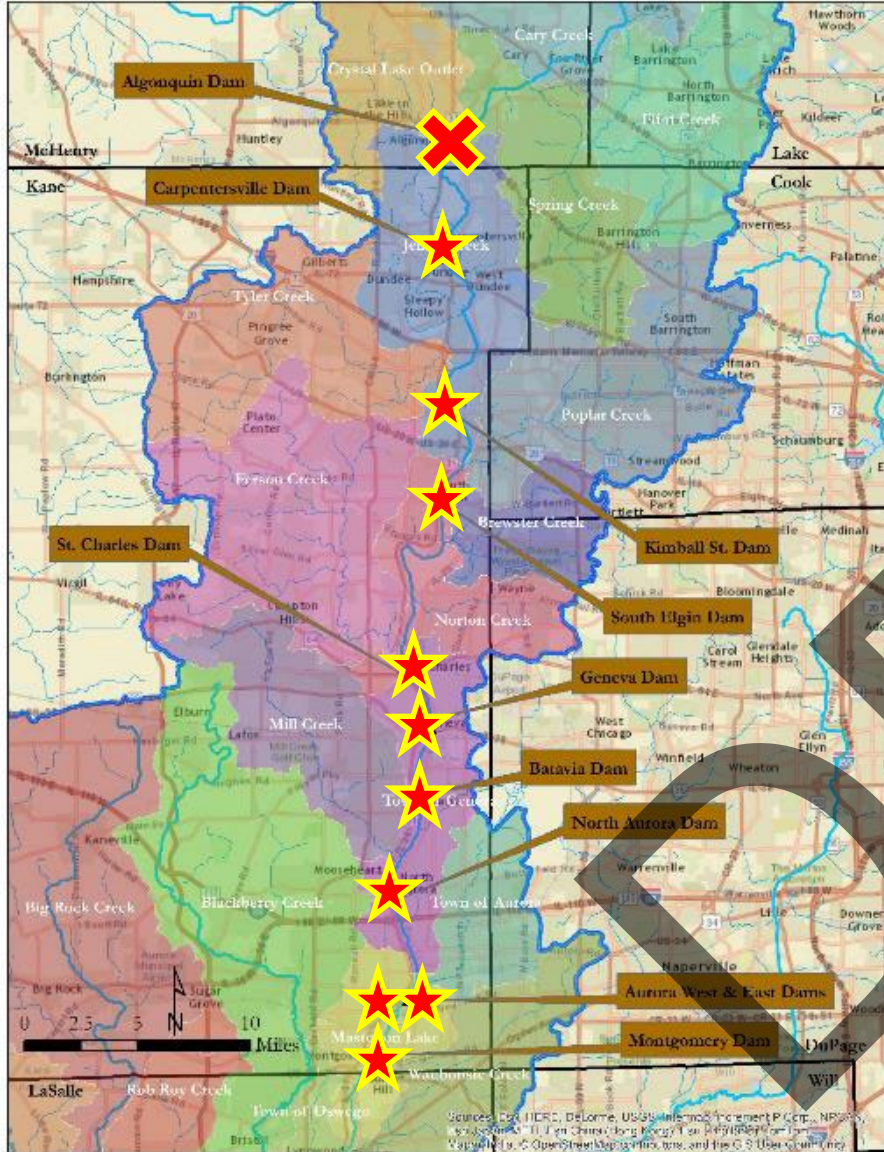
NEPA ANALYSIS

- No significant adverse impacts on natural or cultural resources
- No Environmental Impact Statement (EIS) required
- Finding of no significant impact (FONSI)

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hazardous, toxic & radioactive waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hydrology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Noise levels	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socio-economics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental justice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tribal trust resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



TENTATIVELY SELECTED PLAN



MEASURES:

- Full Dam Removal
- 9 Dams

Construction Methods

- **Demolition**
 - Full demolition
 - Spillway or notch for dewatering
 - Remove and recycle/dispose all materials generated from demolition
- **Grading**
 - Post demolition clean up and restoration
- **BMPs**
 - Temp erosion control
 - Water runoff control
- **Adaptive Management**
- **Monitoring**
 - Habitat quality
 - Sediment transport
 - Fish / mussel migration
 - Native fish species richness & abundance
 - Water quality

BENEFITS OF DAM REMOVAL

- Ecosystem Restoration
- Increase Fish Passage
- Increase Water Quality
- Reduce Flood Risk
- Long-term Cost Savings
- Improve Life Safety





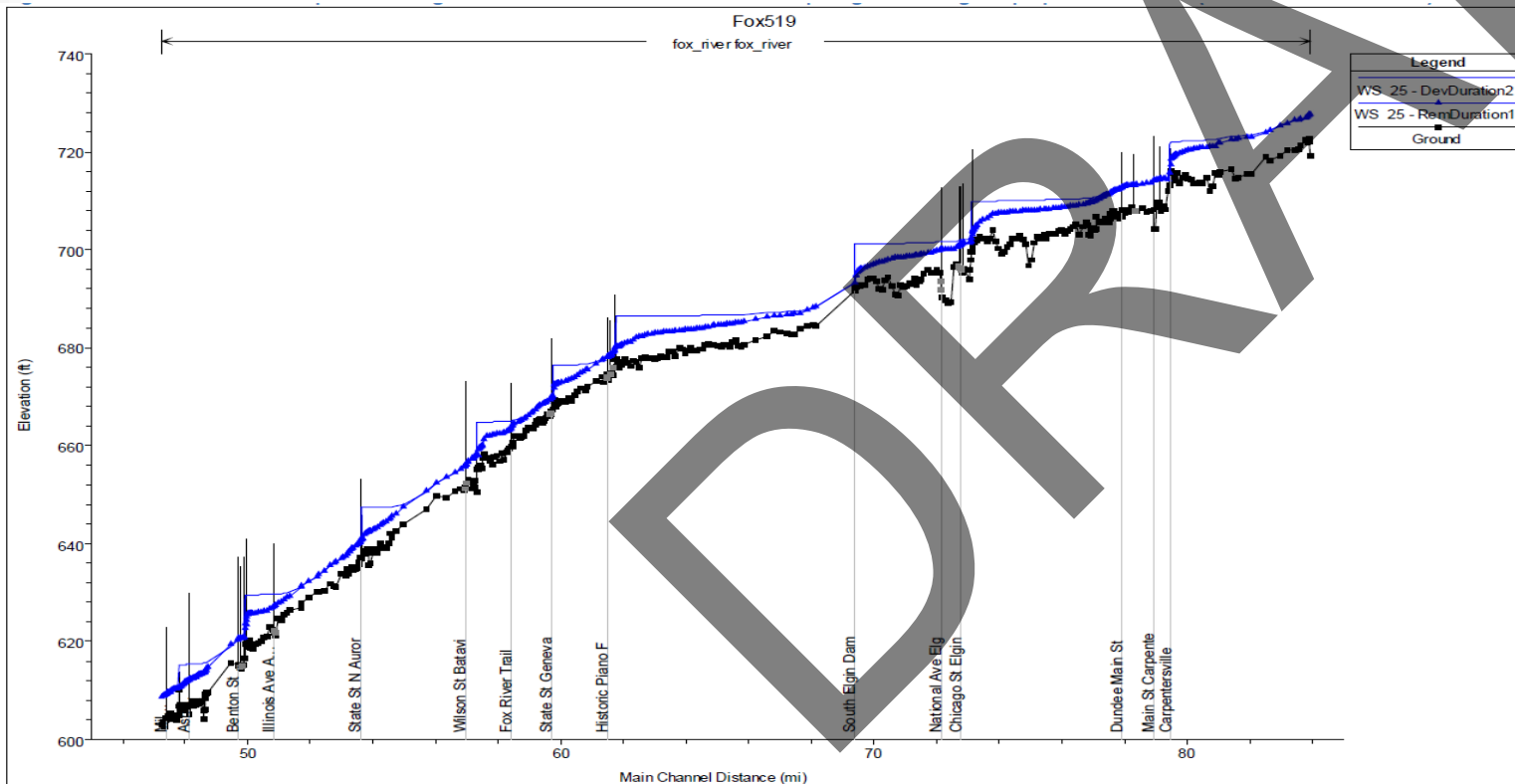
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RIVER CHANNEL HYDRAULIC EFFECTS



Normal Water Levels (river surface profile)

- Removal of dam will result in decrease in water levels within impoundment area (upstream dam location)





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PRE & POST DAM REMOVAL EXAMPLES



North Avenue Dam - Removed 2005



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PRE & POST DAM REMOVAL EXAMPLES



Before

After

South Batavia Dam – Removed 2006



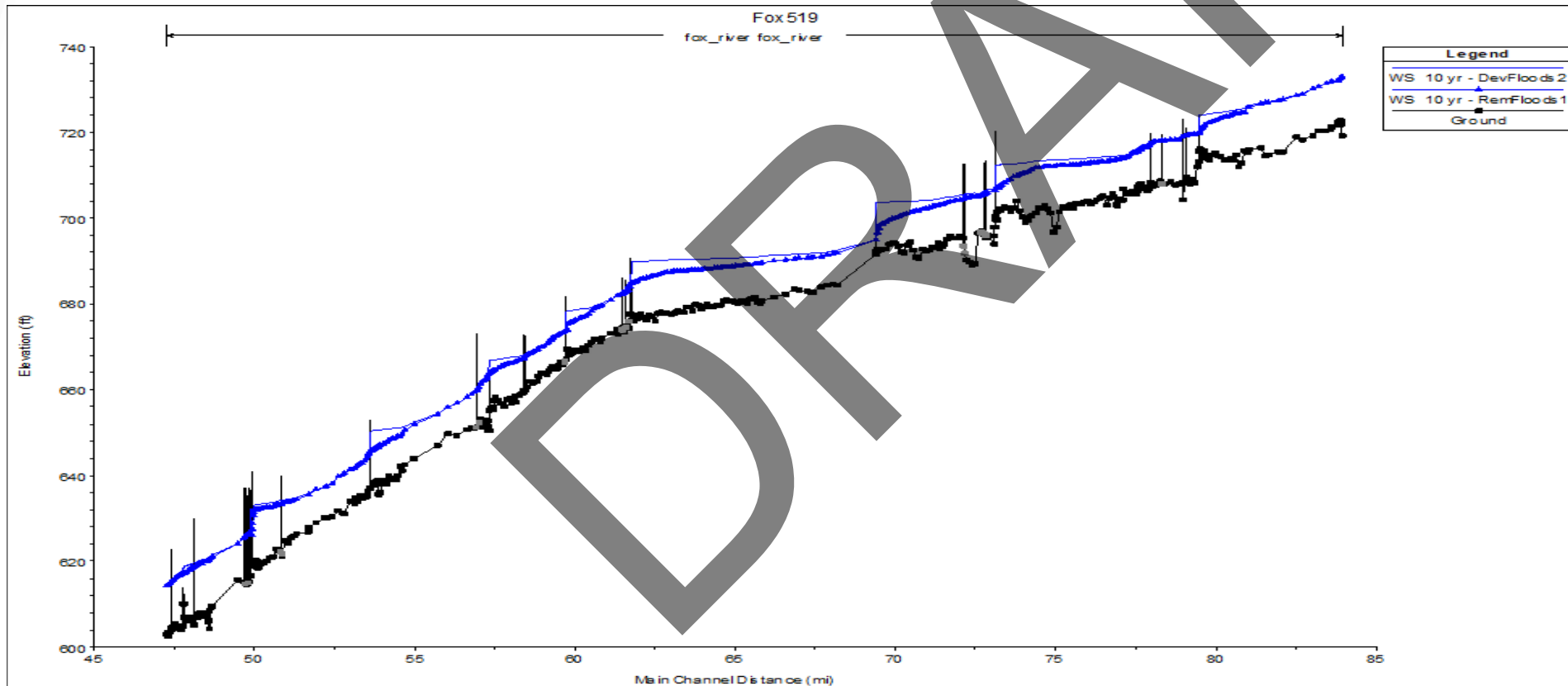
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RIVER CHANNEL HYDRAULIC EFFECTS



Flood Water Levels (river surface profile)

- Run-of-the-river dams have limited storage resulting in minor flood flow (cfs) differences both upstream and downstream of dam
- Reduced flood inundation area and flood levels upstream, insignificant difference downstream





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REAL ESTATE LERRD ESTIMATE

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23.53 acres including

- 7.04 acres fee simple containing dam footprints
 - All owned by state, county, or local governments
- 12.10 acres temporary work area easements (TWAE)
 - Access, staging, work, and storage
- 4.39 acres temporary road easement to maintain access

Total LERRDs estimated at \$984,000

- 90% of required real estate owned by state, county, or municipal governments
- Project area accessed from public lands when possible; disposal of spoil at appropriate recycling and/or landfill facilities
- Lands created by accretion belong to existing adjacent landowners, whose parcels run to the thread of the stream



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REAL ESTATE Q&A

I own property on the river. What will it look like if these dams are removed?

Previously underwater areas will be exposed once the river returns to a more natural surface elevation. These areas are expected to be bedrock and other hard substrate, with minimal muck bottom. Landowners will be able to use newly exposed land on their property as they would the rest of their parcel(s).

I have a dock on the Fox River. What will happen to it if these dams are removed?

Personal boat docks authorized under USACE Chicago District's Shoreline Activities Regional General Permit and IDNR's Statewide Permit No. 5 will continue to be authorized. Authorized boat docks may be moved to the new OHWM so long as they continue to meet specified placement criteria.

How will this project affect my property values and taxes?

The proposed project will not change the size of any parcels but will change the physical characteristics of some parcels. The value of these changes may be subjective. Please direct inquiries regarding the assessment and taxing of your property to your local property tax assessor or other qualified tax professional.

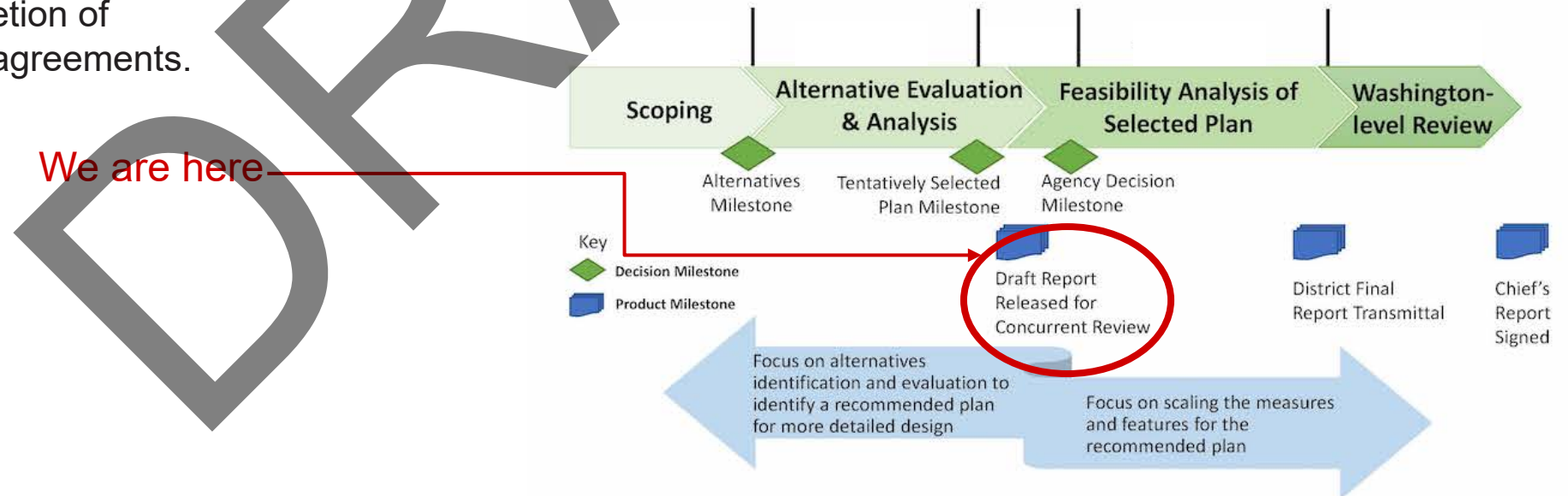


NEXT STEPS: IMPLEMENTATION SCHEDULE

Public Comment Period Ends	November 6, 2023
Feasibility Report Approval	January 2025*
Execute Project Partnership Agreement	April 2025*
Final Construction Plans and Specifications	October 2026*
Construction Contract Award	January 2027*
Construction Complete	January 2030*

*Tentative schedule based on estimated timelines for feasibility report approval, funding receipt, and completion of partnership and real estate agreements.

The Feasibility Study Process: Key Decision & Product Milestones





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PUBLIC COMMENT

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Report available at:

<https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/Public-Review-Documents/>

Project webpage:

<https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/Fox-River-Connectivity-Habitat-Study-IL/>

Ways to comment:

1. During this meeting – 3-minute oral comment or fill out comment form
2. Email: Must be received by November 6, 2023
Fox-River-Study@usace.army.mil
3. Mail: Must be postmarked by November 6, 2023
USACE, Chicago District
ATTN: Planning
231 S. LaSalle, St., Ste. 1500
Chicago, IL 60604

PUBLIC COMMENT PERIOD

Recording in Progress

Comments Remaining