Ames Mill Dam Replacement Feasibility Study

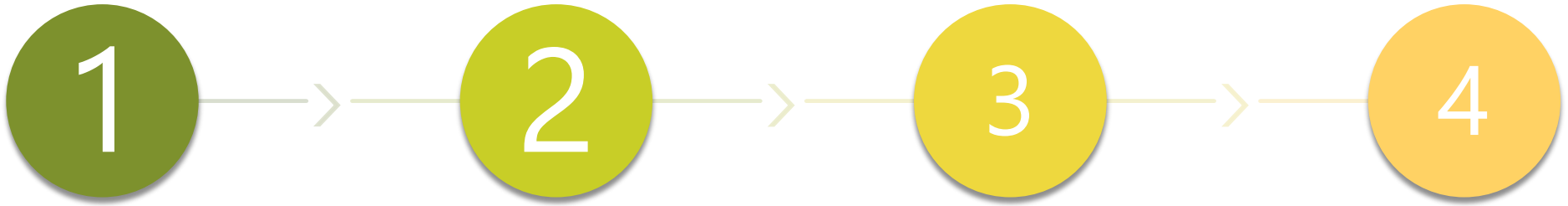
City Council September 12, 2023

Overview

- Project Status
- Overview of options
- Evaluation of options
- Next Steps
- Discussion

Process

We are here.



Phase 1
- Feasibility Study
  - Alternatives Analysis
  - Public Engagement

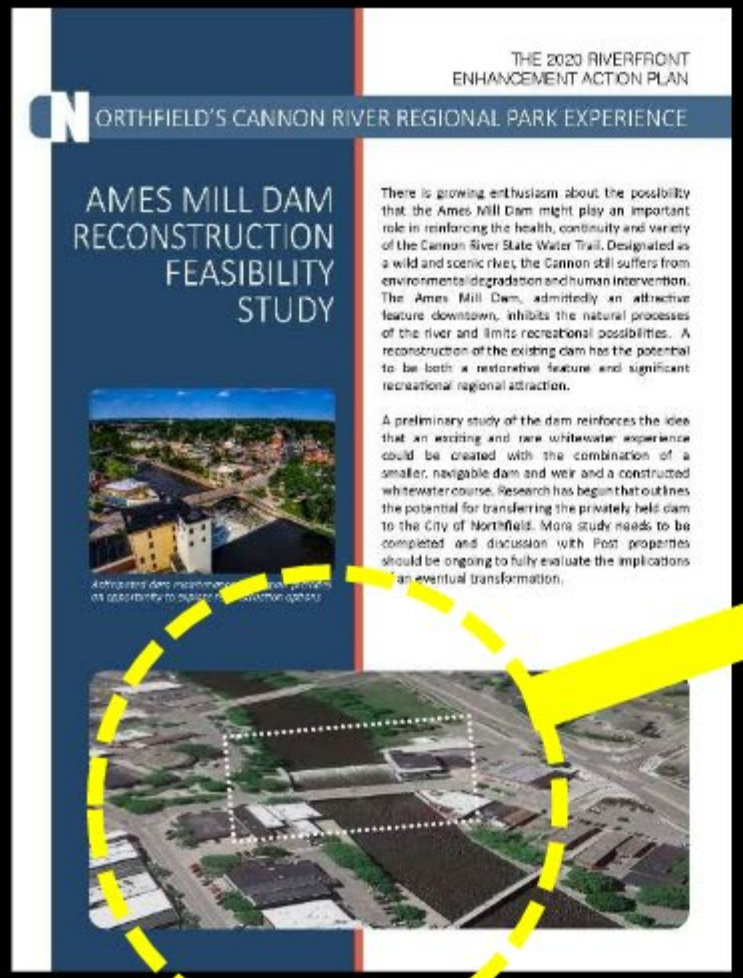
Phase 2
- Transfer Dam Ownership
- Financing

Phase 3
- Design/Permitting

Phase 4
- Construction

City goals and priorities

- Improve public safety
- Realize riverfront plan
- Honor historic structures
- Enhance recreation opportunities
- Improve river ecology



City Of Northfield Minnesota

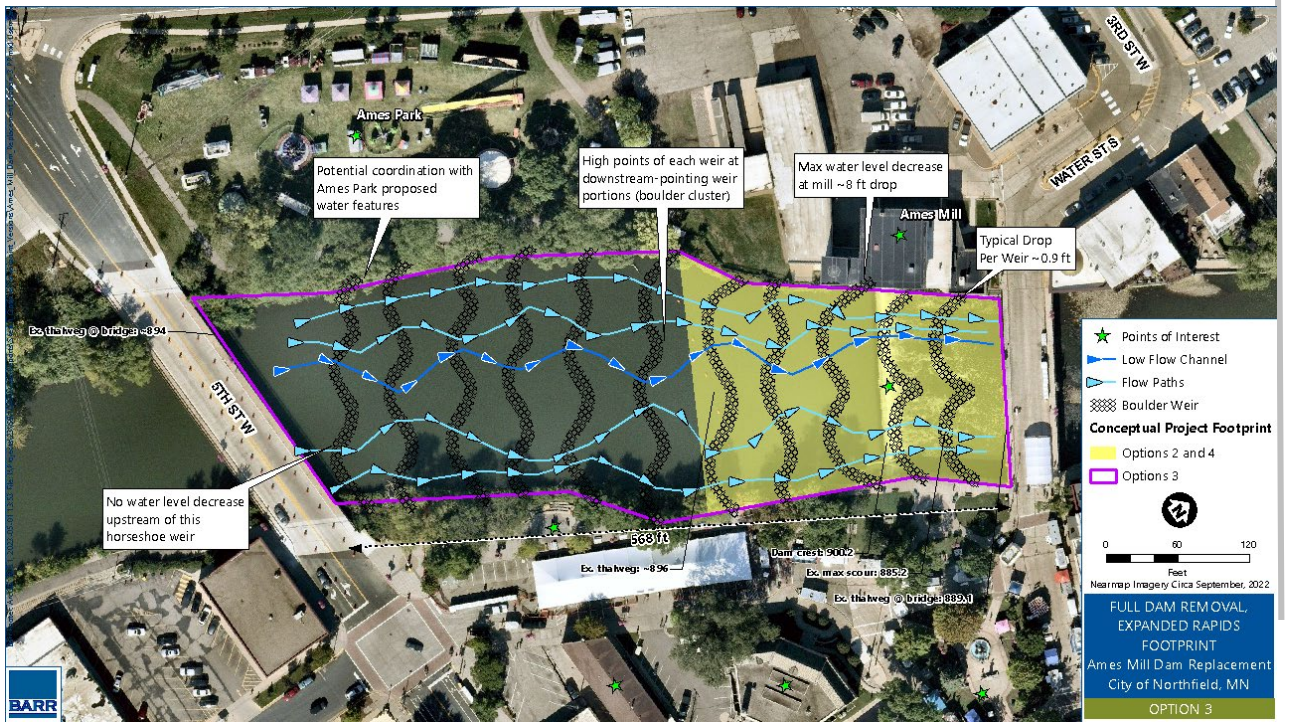
IMPLEMENTING THE RIVERFRONT ENHANCEMENT ACTION PLAN

adopted by Mayor and City Council in 2020

Status

Complete

- Evaluated options
- Estimated planning level costs



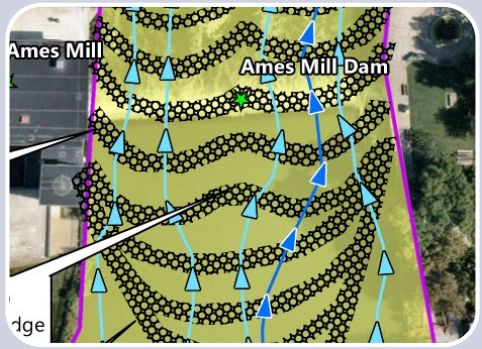
Next Steps

- Meet with stakeholders
- Select a preferred option
- Initiate ownership transfer? (*depends on selected alternative*)

Dam Replacement Options Evaluated

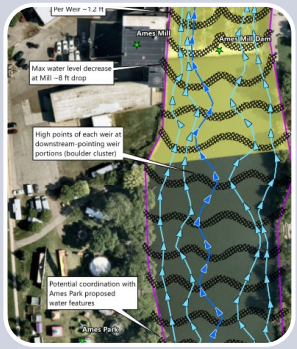
Option 1
No Action

- keep dam



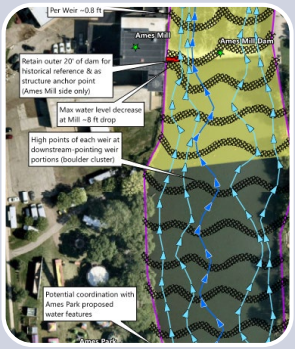
Option 2
Short Rock Rapids

- full removal



Option 3
Long Rock Rapids

- full removal



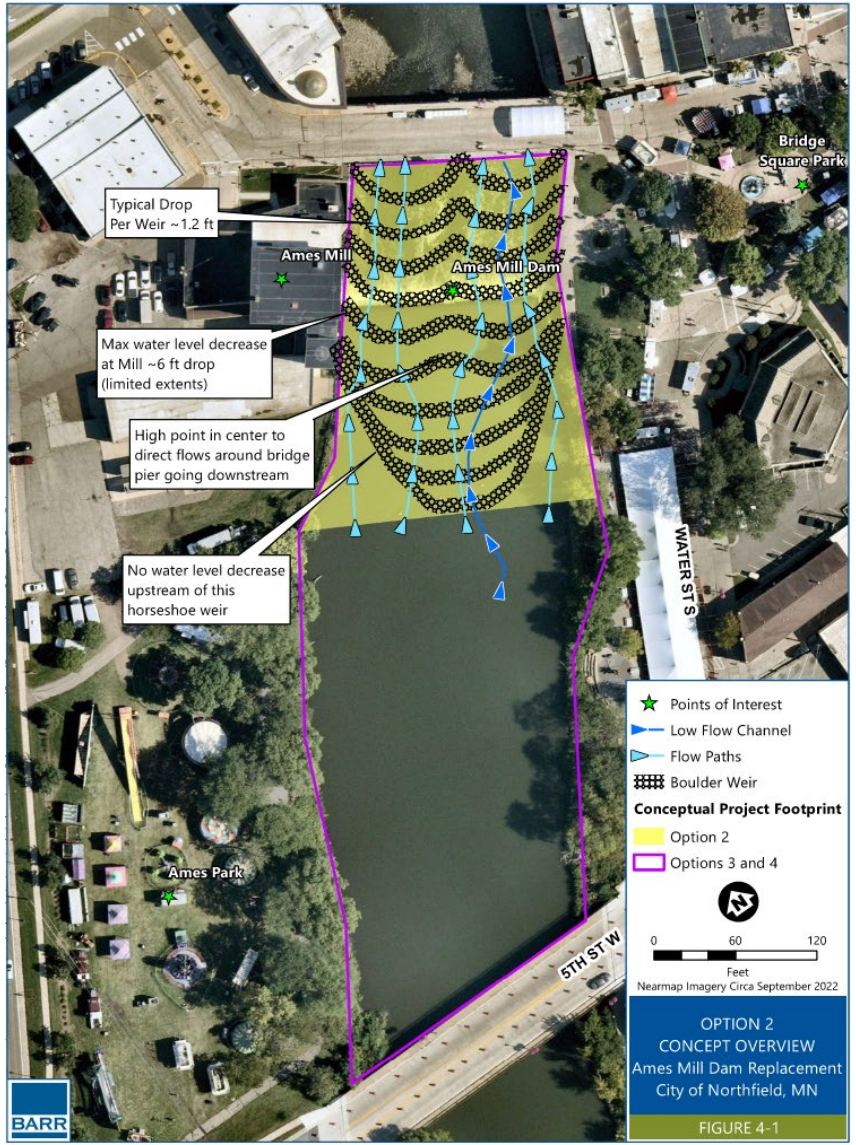
Option 4
Long Rock Rapids

- partial removal

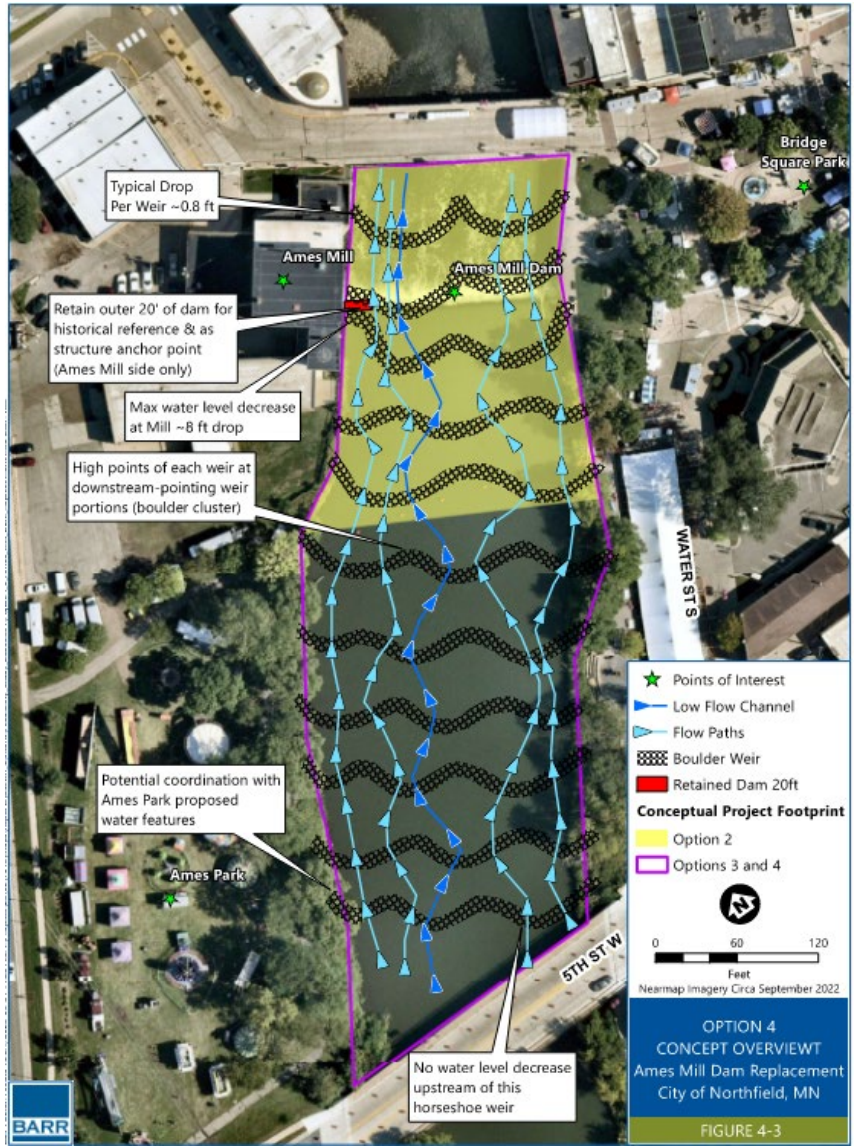
Ames Mill Dam Options

Option 1

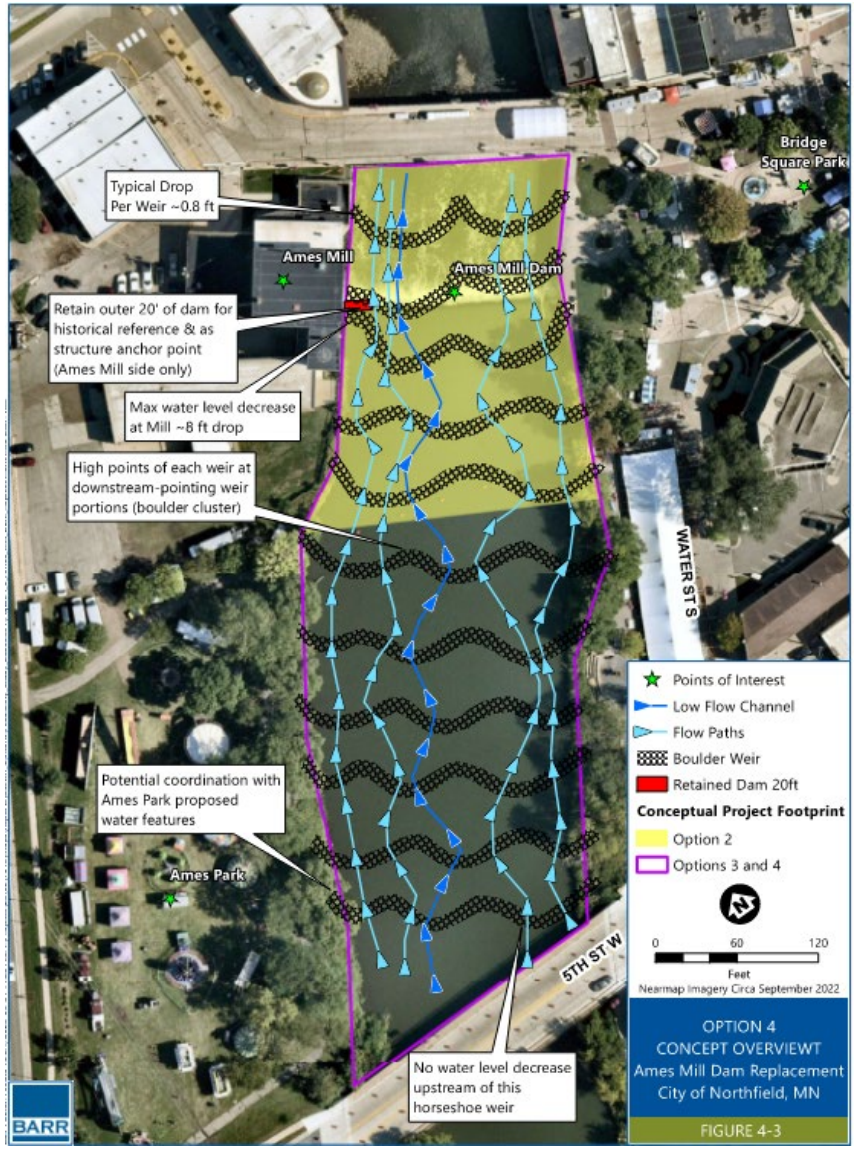
Option 2



Options 3 and 4



Evaluation of options



1. River hydrology and hydraulics
2. Design and construction
3. **Public recreation & safety**
4. **Aquatic organism passage**
5. Groundwater drawdown and subsidence
6. Adjacent infrastructure
7. Cultural resources
8. Permitting and environmental review
9. **Funding sources**

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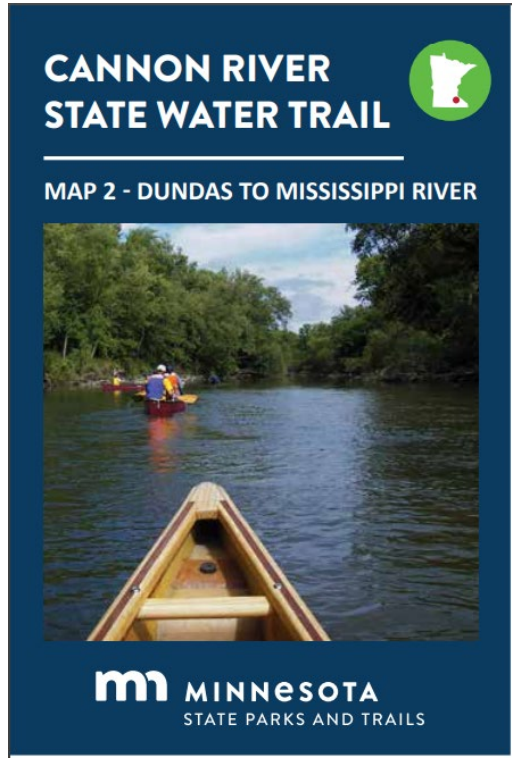
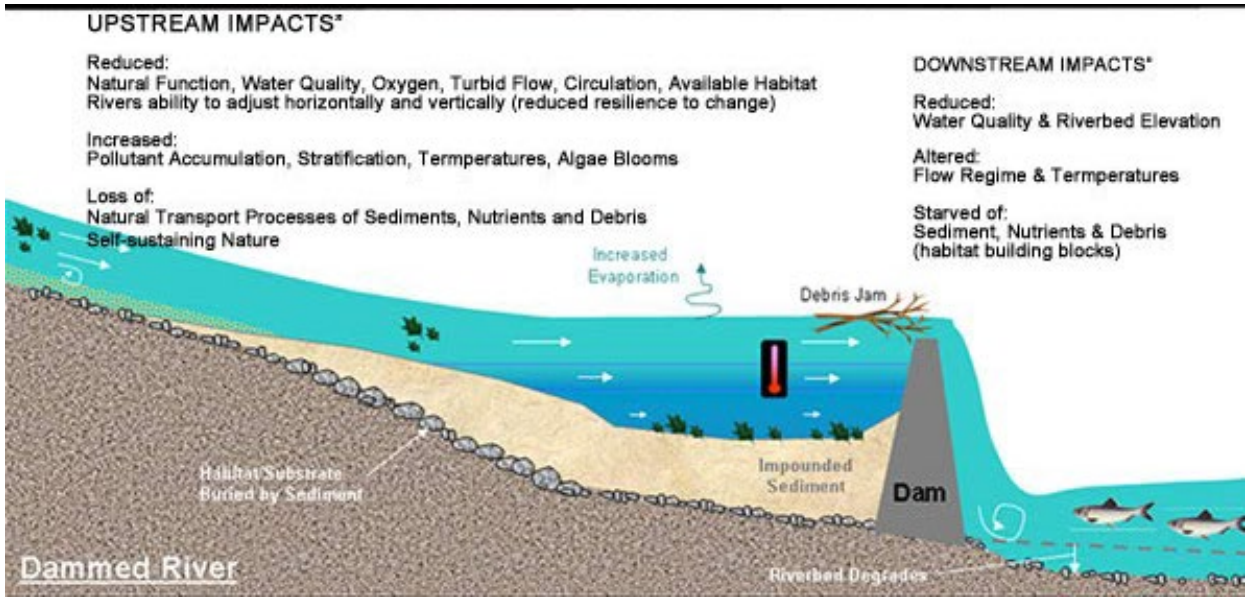
3. Public Recreation

Recreation Criteria	*Option 1* No Action	*Option 2* Short Rock Rapids	*Option 3* Long Rock Rapids	*Option 4* Long Rock Rapids, partial dam removal
Integration with Ames Mill Park	Poor	Good	Best	Best
In-water recreation	Poor	Better	Best	Best
Safety	Poor	Good	Best	Better

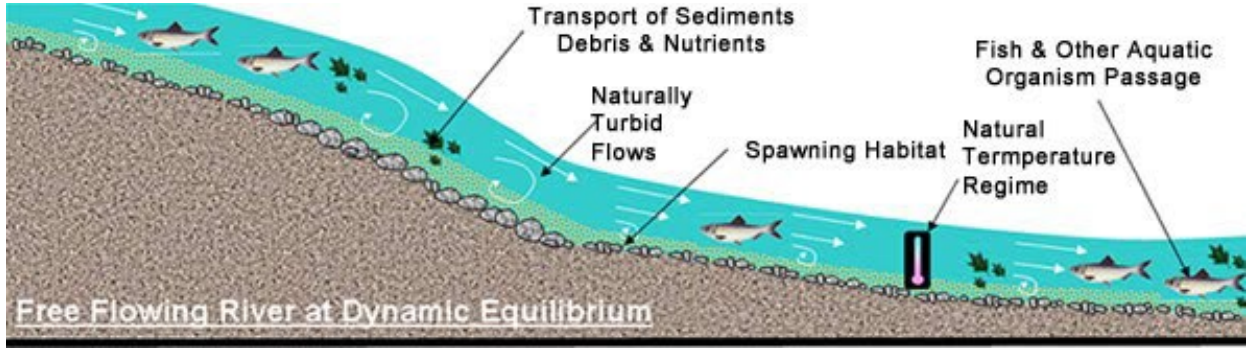


4. Aquatic Organism Passage (AOP)

Flow conditions	***Option 1*** **No Action**	***Option 2*** **Short Rock Rapids**	***Option 3*** **Long Rock Rapids**	***Option 4*** **Long Rock Rapids, partial dam removal**
Low flow	Very Unlikely	Likely	Very Likely	Very Likely
Average flow	Very Unlikely	Depends on Construction	Likely	Likely
Flood flow	Very Unlikely	Unlikely	Unlikely	Unlikely

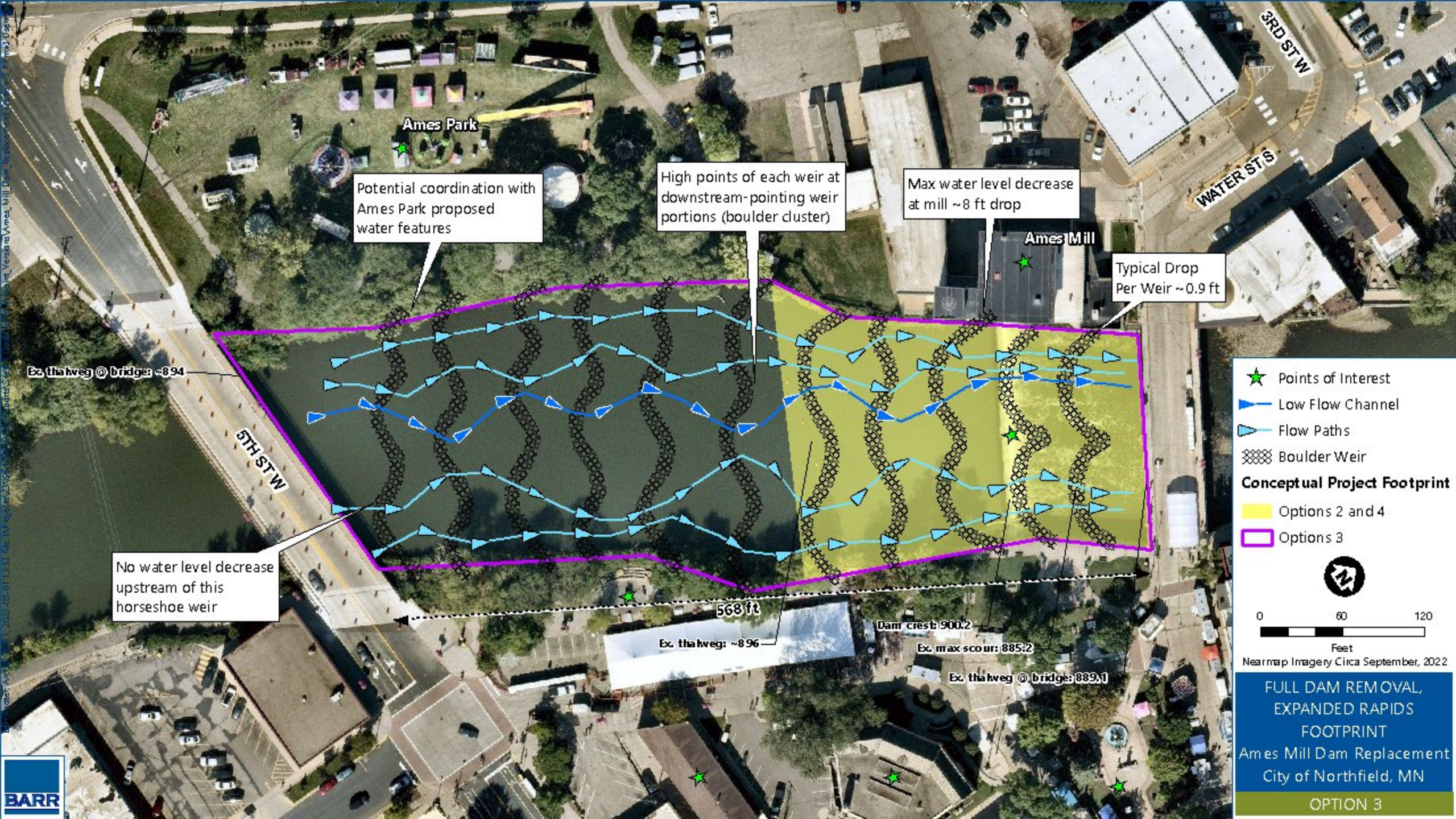


https://sites.google.com/a/maine.edu/constraints-on-river-restoration-potential/anadromous-fish/barriers-to-fish-passage



9. Potential Funding Sources

Funding Source	Amount	Favored alternative
MnDNR Dam Safety Grant	$25k to $1M	2, 3 or 4
Outdoor Heritage Fund/ Conservation Partners Legacy	No min or max for general funding $5k to $500k Conservation Partners Legacy Program grants	3 or 4 (for aquatic organism passage)
MN Environment and Natural Resources Trust Fund	No min or max	3 or 4 (for aquatic organism passage)
US Fish and Wildlife Service National Fish Passage Program	Up to $2M	3 or 4 (for aquatic organism passage)


Ames Park
Potential coordination with Ames Park proposed water features
High points of each weir at downstream-pointing weir portions (boulder cluster)
Max water level decrease at mill ~8 ft drop
Ames Mill
Typical Drop Per Weir ~0.9 ft
3RD ST W
WATER ST S
Ex. thalweg @ bridge: ~894
5TH ST W
No water level decrease upstream of this horseshoe weir
568 ft
Ex. thalweg: ~896
Dam crest: 900.2
Ex. max scour: 885.2
Ex. thalweg @ bridge: 889.1
Points of Interest
Low Flow Channel
Flow Paths
Boulder Weir
Conceptual Project Footprint
Options 2 and 4
Options 3
N
0
60
120
Feet
Nearmap Imagery Circa September, 2022
FULL DAM REMOVAL, EXPANDED RAPIDS FOOTPRINT
Ames Mill Dam Replacement
City of Northfield, MN
OPTION 3
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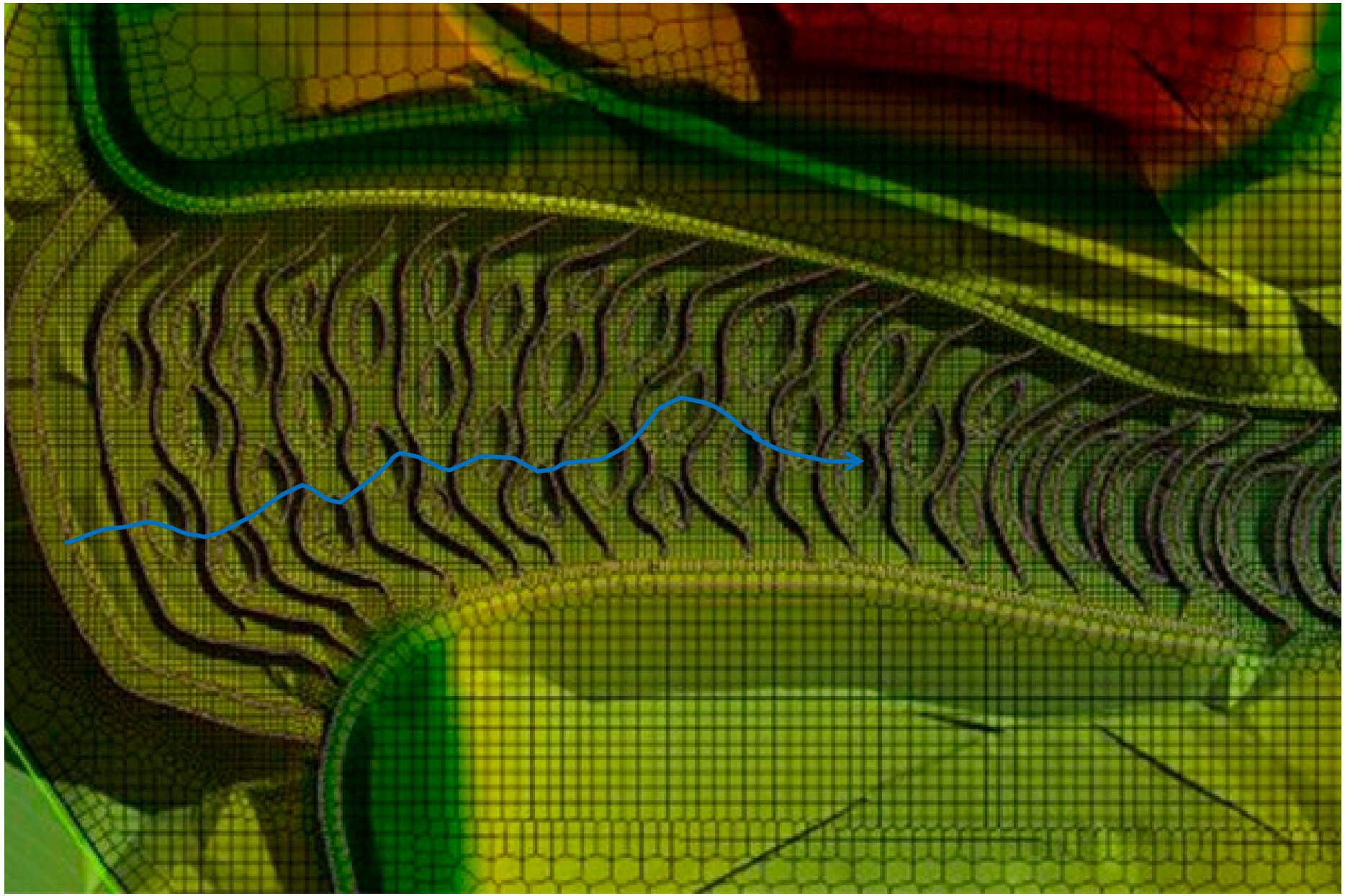
Rock Rapids Profile

Maintain existing ‘upper pool’ elevation (+/- 1 foot)

Willow River design of rock weirs and pools



Willow River rock rapids

Willow River rock rapids at low flow

Willow River rock rapids construction

In-river work for boulder placement and sediment removal

Not this…

Nor this…

Hutchinson rock rapids

Deschutes River rock rapids

Deschutes River rock rapids

Ames Mill Rock Rapids Rendering

Estimate of Probable Cost

Description	Option 2 Short Rock Rapids	Option 3 Long Rock Rapids, Full Removal	Option 4 Long Rock Rapids, Partial Removal
Estimate of Probable Cost	$3.5M	$6.4M	$6.4M
Cost Range (-25% to + 50%)	$2.5M to $5.5M	$5M to $10M	$5M to $10M

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Stakeholder engagement

- Stakeholder meetings
  - Agencies: Jul 27
  - Post: Aug 9
  - City Council: Sep 12
  - Public Listening Sessions: Sep/Oct
- Select a preferred option

Q&A/Discussion

Contact Info:

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Bruce Jacobson brucedjacobson@outlook.com 612-244-7702

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