



# Estabrook Dam – Environmental Assessment Update

Milwaukee County Parks, Energy, and Environment Committee Meeting  
July 22, 2014

# Presenters

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- Don Pirrung, P.E., PH, AECOM

# Environmental Assessment

- National Environmental Policy Act (NEPA) and Wisconsin Environmental Policy Act (WEPA)
- Agency input:
  - ▶ DNR
  - ▶ SEWRPC
  - ▶ Bureau of Land Management (BLM)
  - ▶ US Fish & Wildlife Service
  - ▶ US Army Corps of Engineers
- Comprise Technical Advisory Team

# Environmental Assessment Objectives

- Address alternatives to the dam
- Evaluate alternatives based on NEPA and WEPA criteria
- Solicit public input on scoping process and alternatives

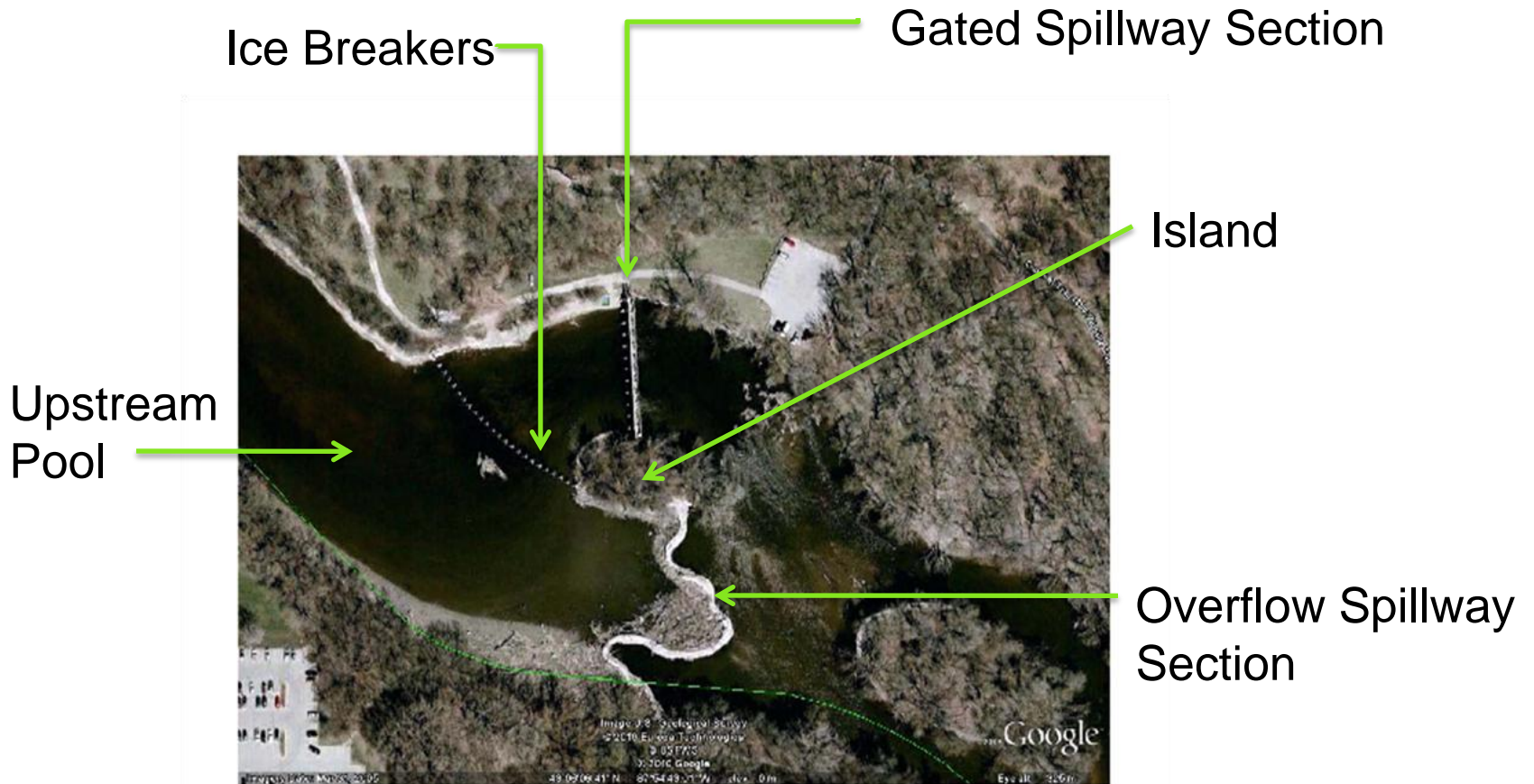
# Environmental Consequences

- Physical
- Biological
- Wildlife
- Fisheries
- Water Resources
- Water Depth
- Plant Community
- Endangered Resources
- Cultural
- Land Use
- Socio / Economic
- Archaeological / Historical
- Other State Resources
- Summary of Adverse Impacts That Cannot be Avoided

# Identification of Alternatives

- Proposed Action – Rehabilitate the Dam
- Alternative 1A – Rehabilitate the Dam and Add Fish Passage
- Alternative 2 – Abandon and Remove the Dam
- Alternatives 3 and 3A – Abandon and Remove the Dam, Providing a Rock Ramp to Facilitate Fish Passage
- Alternative 4 – Gated Spillway Removed, Serpentine Overflow Spillway Lowered, and 6.3-Foot High Rock Ramp Constructed
- Alternative 5 – No Action
- Alternative 6 – New Dam

# Estabrook Dam Aerial View, with Features



# Proposed Action – Rehabilitate the Dam

- Structural improvements
- Upgrading gates
- Tree removal at dam structure
- County Board voted to implement Proposed Action in 2010
- Need to address NEPA/WEPA and alternatives
- Alternative 1A – Same as Proposed Action plus Fish Passage





# Alternative 2 – Abandon and Remove the Dam

- Restore the river to a free flowing condition
- Under normal flow, similar to existing conditions
- Under flood flows, river levels will be lower than with the dam and gates open
- Sediment would not accumulate
- Eliminates the impoundment upstream
- Provides for kayaks and canoes but not boats
- Aesthetics of a free flowing river
- No annual O&M cost results in substantial savings to County
- Least capital cost of alternatives
- Fish passage



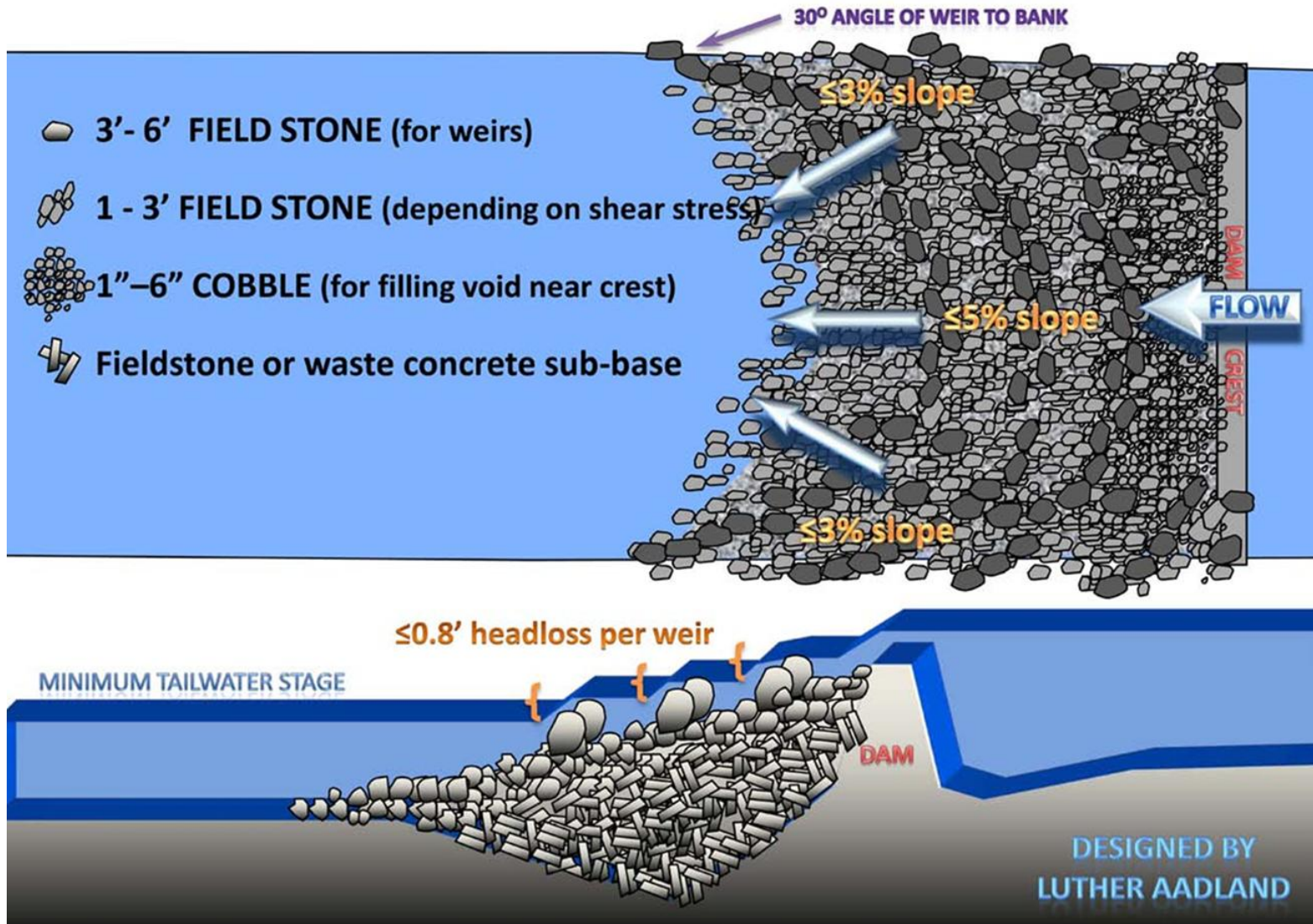


Figure 54. Generalized conceptual design of the Rock Arch Rapids. *Reconnecting Rivers: Natural Channel Design in Dam Removals and Fish Passage*, p. 48. Minnesota Department of Natural Resources Ecological Resources Division, 2010.



Figure 91. Rapids replacing dam to provide grade control and facilitate fish and canoe passage. *Reconnecting Rivers: Natural Channel Design in Dam Removals and Fish Passage*, p. 80. Minnesota Department of Natural Resources Ecological Resources Division, 2010.

## Alternative 4 – Gated Spillway Removed, Serpentine Overflow Spillway Lowered, and 6.3-Foot High Rock Ramp

- 10 gates removed
- Provides a more natural setting
- Provides impoundment
- Classified as a dam by DNR
- Less O&M than Alternative 1A
- Less capital cost than Alternative 1A
- Fish passage

# Feasible Alternatives

- Alternative 1A – Rehabilitate the dam and add fish passage
- Alternative 2 – Abandon and remove the dam
- Alternative 4 – Gated spillway removed, serpentine overflow spillway lowered, and a 6.3-foot high rock ramp

# June 5, 2014 – Public Scoping Meeting

- Presentation on EA Alternatives
- 100 attended
- Public comments solicited on County website
- Letters from public



# Public Scoping Meeting Comments

- 125 comments on website
- 2 letters
- 73 responses favored repair to dam
- 31 responses endorsed removing the dam
- 5 responses endorsed rock ramp
- The rest provided general comments



# Public Comments

- Provide public boat launch upstream
- Dam provides flood protection, other alternatives do not
- Dam provides boating, canoeing, and kayaking
- Existing river levels allow limited canoeing

# Public Comments

- Impoundment directly benefits about 350 property owners, County tax payers end up paying long-term costs
- Remove the dam
- Environmentally, dam removal is the best, long-term solution

# Public Comments

- Provide fish passage to benefit fish, mussels, and ecosystem
- Provide cost information on all feasible alternatives, including construction and long-term operation and maintenance
- Address indirect effects on other projects such as \$8 million invested in fish passage projects in Ozaukee County
- Address flooding, collection of debris, and County's ability to respond to flood events

# Project Costs

Alternative	Estimated Capital Cost	Annual Estimated O&M Cost
1A – Rehabilitate Dam, Fish Passage	\$2,518,000	\$160,000
2 – Remove Dam	\$1,674,000	\$0
4 – Rock Ramp at Dam, Fish Passage	\$2,419,000	\$55,000

# Funding

1. County has \$1,600,000 Bonding Capacity through annual budget process
2. WDNR Municipal Dam Grant Program: \$400,000 for dam repair
3. Wisconsin Stewardship Fund: Up to \$1,000,000 available for dam repair, dam removal, and fish passage
4. US Fish & Wildlife authorized a grant for \$220,000 for fish passage
5. Annual O&M Costs – County responsibility

# Present Worth Analysis

Alternative	Estimated Capital Cost	Present Worth O&M Cost	Total Present Worth
1A – Rehabilitate Dam, Fish Passage	\$2,518,000	\$2,616,000	\$5,134,000
2 – Remove Dam	\$1,674,000	\$0	\$1,674,000
4 – Rock Ramp at Dam, Fish Passage	\$2,419,000	\$899,000	\$3,318,000

Alternative 2 – Lowest capital cost, no O&M cost, and lowest total present worth cost.

Present worth analysis based on 2% interest, 20-year period.