

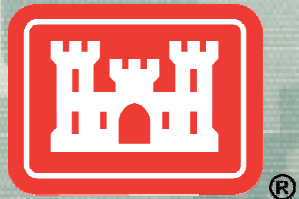
Rethinking Instream Structures

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US Army Corps of Engineers
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The subjects of this talk

- The general use of instream structures in stream and river restoration, especially vanes and cross-vanes
- Roughened ramps in dam “removals”
- Kayak play waves and whitewater “parks”
- Implications and needs



In-stream Structures in Restoration

What they do:

- Provide lateral and vertical stability

What proponents say they do:

- Replicate instream forms, functions and processes

What proponents don't say they do:

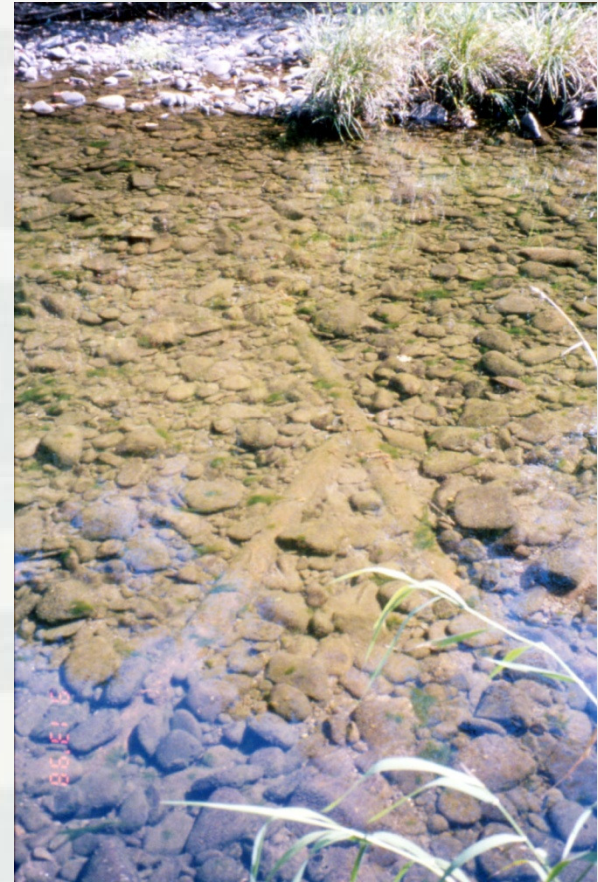
- Simplify longitudinal and cross-sectional hydraulic habitats
- Arrest physical dynamism and attendant biotic response
- Look bizarre



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Historic influences

- Navigation
- BOBSAR survey methods
- Single family, and even single age cohort goals
- Spatially restricted data and trials
- Familiarity with forms, not fluvial process



A Poster Child



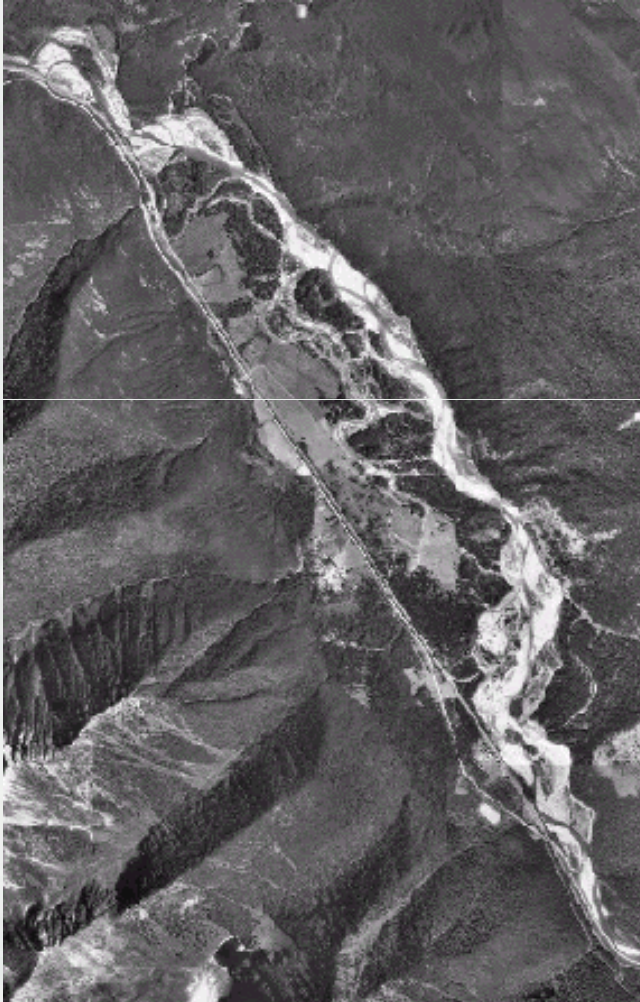
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Habitat form diversity



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When is project success restoration failure (fidelity to analogs)?



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Changes in restoration techniques—Case study



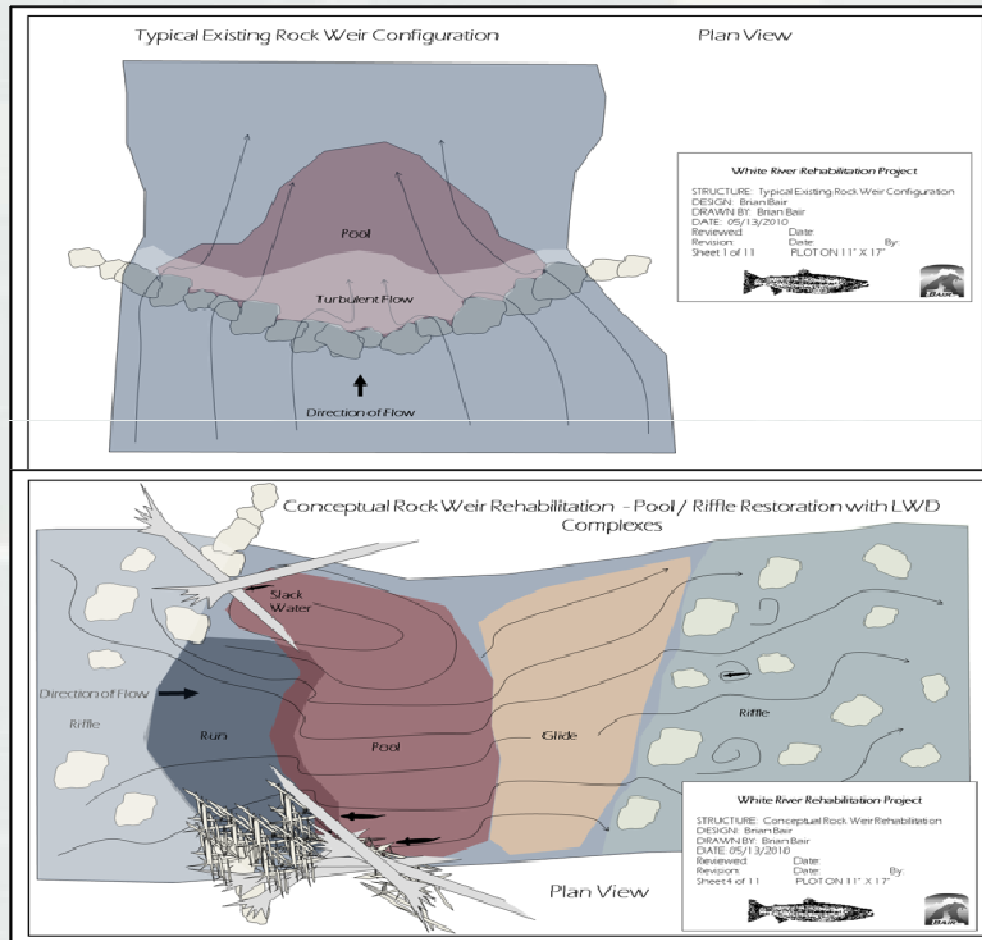
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Case study near-analog



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Before and After



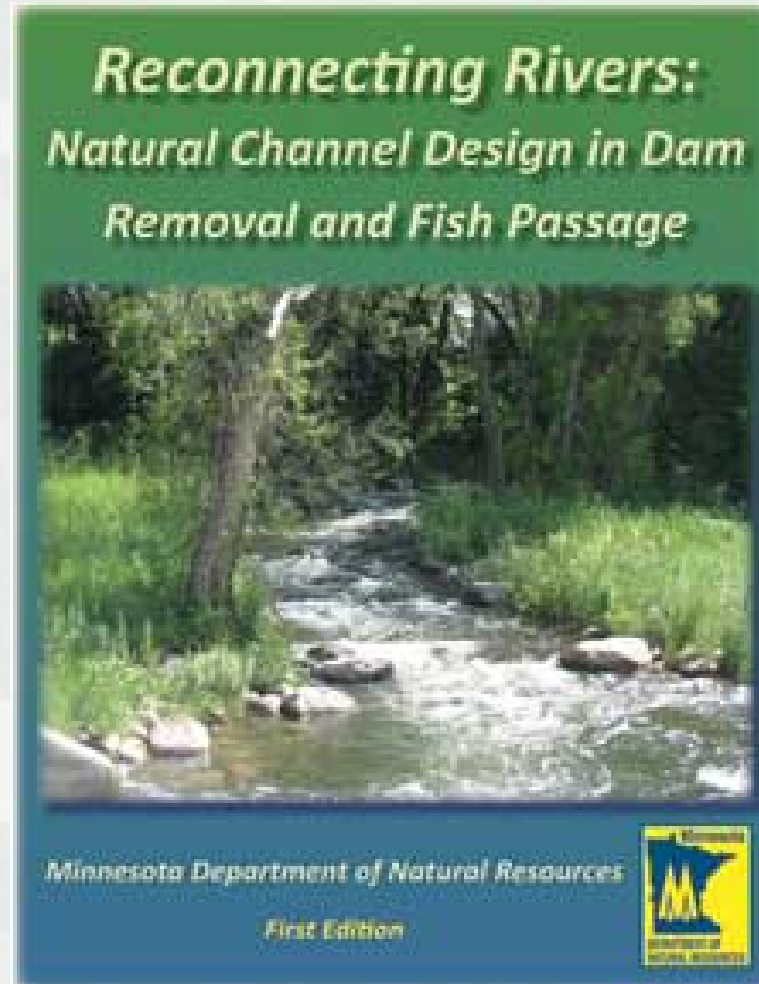
Roughened Rock Ramps in Dam Removals—Frankenmuth Dam, Detroit District



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The Design Manual

***Reconnecting Rivers:
Natural Channel Design in
Dam Removals and Fish Passage***



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Chesaning Dam Rock Ramp— the design precedent/rationale



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Kayak Play Waves (Get ready, Regulatory...)



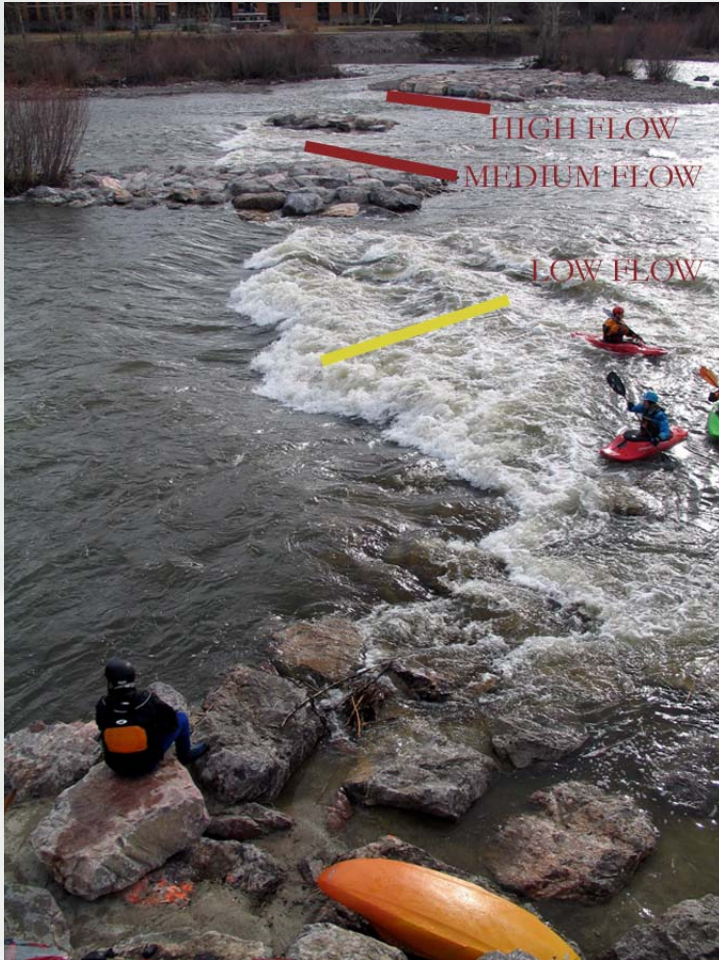
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Colorado's Experience



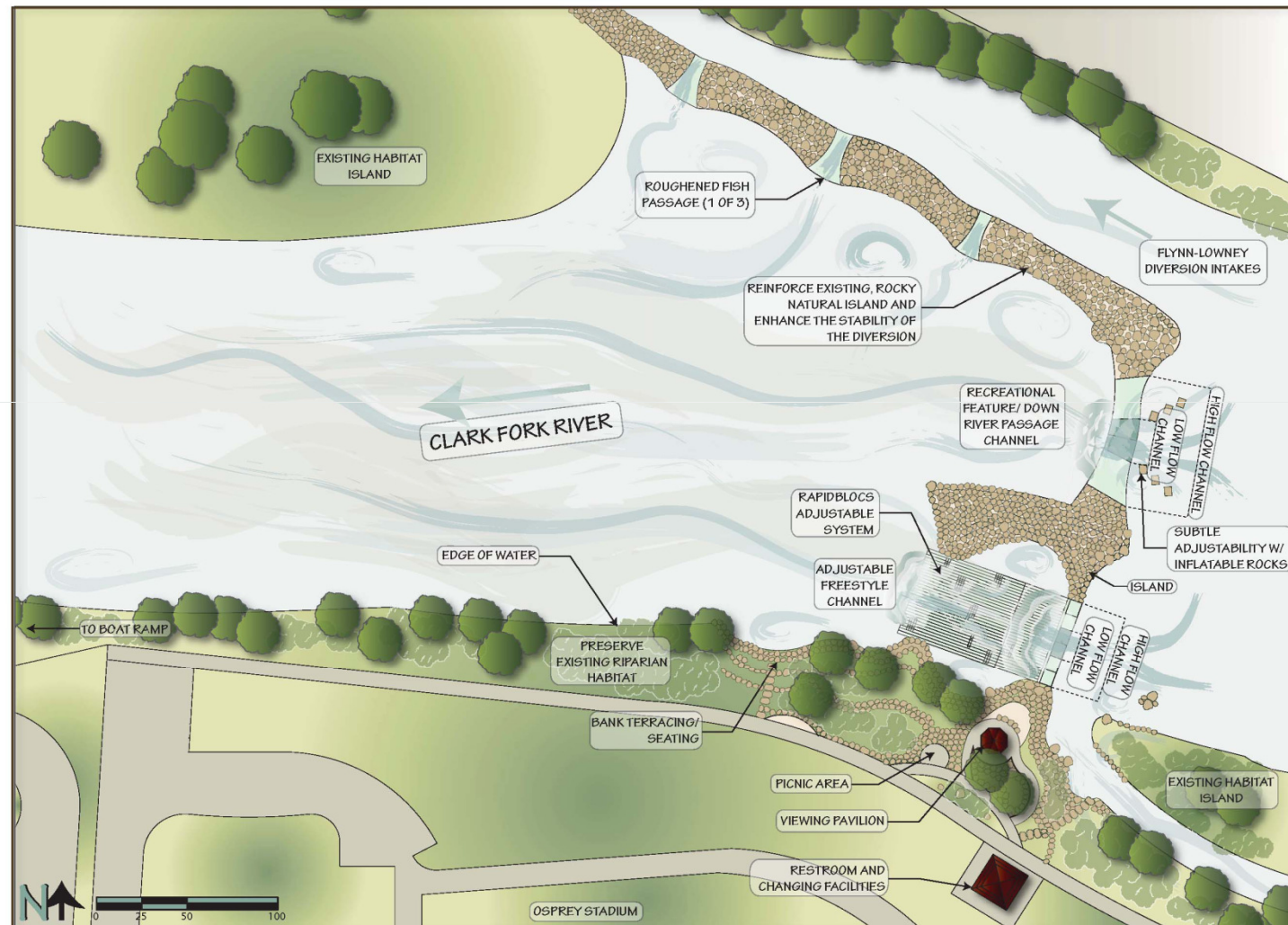
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Missoula's First Play Feature— Brennan's Wave



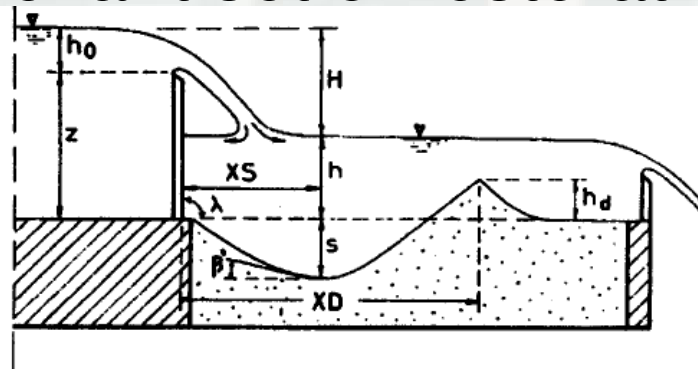
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Missoula's Wave Propagation



Implications and Needs

- The human capacity for narrow thinking and rationalization is infinite.
- The restoration community continues to impact important characteristics and processes with giddy self-righteousness.
- There is a continued need to inform restoration practice and review with engineering tools and engineering with a relevant set of restoration goals, and to explain why.



Questions & Feedback

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