

Mitigation Planning

Ecosystem Restoration Webinar

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US Army Corps of Engineers
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Key Policy for Mitigation Planning

- 33 CFR Parts 325 and 332
 - ▶ Compensatory Mitigation for Losses of Aquatic Resources (USACE 404 Permits)
- 40 CFR 1508.20 Mitigation discussion from CEQ Regulations for Implementing NEPA
- **ER 1105-2-100**
- **Section 2036(a) of WRDA 2007 (amends Sec. 906(d) of WRDA '86)**
- **Implementation Guidance for 2036(a) (Aug 2009)**
 - Policy directed at SA projects
 - CAP follows 1105-2-100



General Types of Mitigation

"Mitigation" includes:

1. Avoiding the impact.
2. Minimizing impacts by modifying the action.
3. Mitigating any remaining significant impacts.
 - ▶ Restore the affected environment.
 - ▶ Compensate by restoring other resources.
 - ▶ Reduce or eliminate the impact by preserving or maintaining resources during the project life.



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Incorporating Mitigation During Project Planning

- Appropriate mitigation to be included for each alternative plan.
- Planning should demonstrate damages to all *significant* ecological resources have been avoided and minimized *to the extent practicable*, and that any remaining unavoidable damages have been compensated *to the extent possible*.
- Projects will utilize mitigation to compensate for non-negligible impacts to the *extent incrementally justified*. Projects will not have more than negligible adverse impacts on ecological resources.



Mitigation Plans Described in the Decision Document

Mitigation plans will include :

- (1) Specific mitigation objectives;
- (2) Specific success metrics/criteria (did mitigation work?);
- (3) Location – strong watershed context;
 - ▶ Preferred within the watershed,
 - ▶ If outside of watershed, justification explaining why,
- (4) The type, amount, and characteristics of the habitat being restored;
- (5) Monitoring plan to evaluate effectiveness of mitigation;
- (6) Description of the lands or interests in lands to be acquired, if needed.



Mitigation part of Adaptive Process

Mitigation plans will include:

- 1) Monitoring until successful (measured by metrics/criteria);
- 2) Identification of the entity responsible for monitoring;
- 3) Establishing a consultation process with appropriate agencies to determine mitigation success;
- 4) Development of contingency plans (i.e., adaptive management) should mitigation prove in-effective; or if impacts prove worse than anticipated.



Monitoring of Mitigation Actions

Projects required to develop a mitigation monitoring plan.

- Monitoring to measure performance standards /metrics.
- Monitoring plan to include:
 - ▶ Specific methodologies,
 - ▶ Periodicities,
 - ▶ Cost,
 - ▶ Responsible parties.
- Decision document to discuss how data will be considered to evaluate mitigation effectiveness.
- Appropriateness and content of monitoring plan subject to ATR and IEPR.



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How to Plan Mitigation Actions?

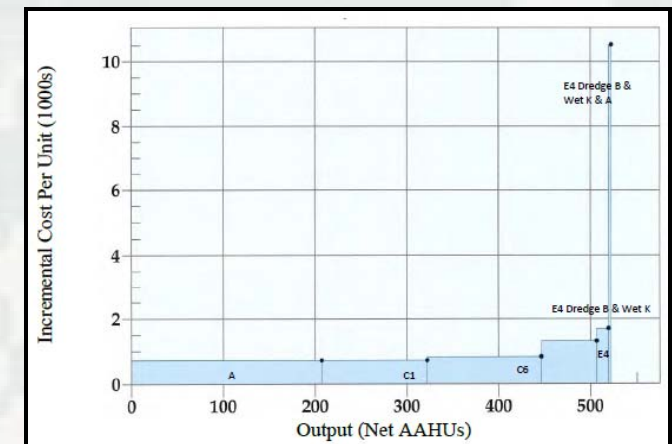
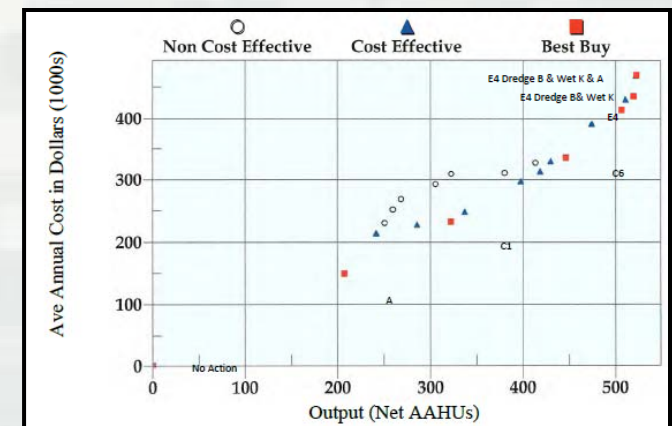
- Highly similar to planning for ecosystem restoration studies.
- Requires consideration of multiple mitigation alternatives.
- Requires estimating benefits AND costs of each alternative.



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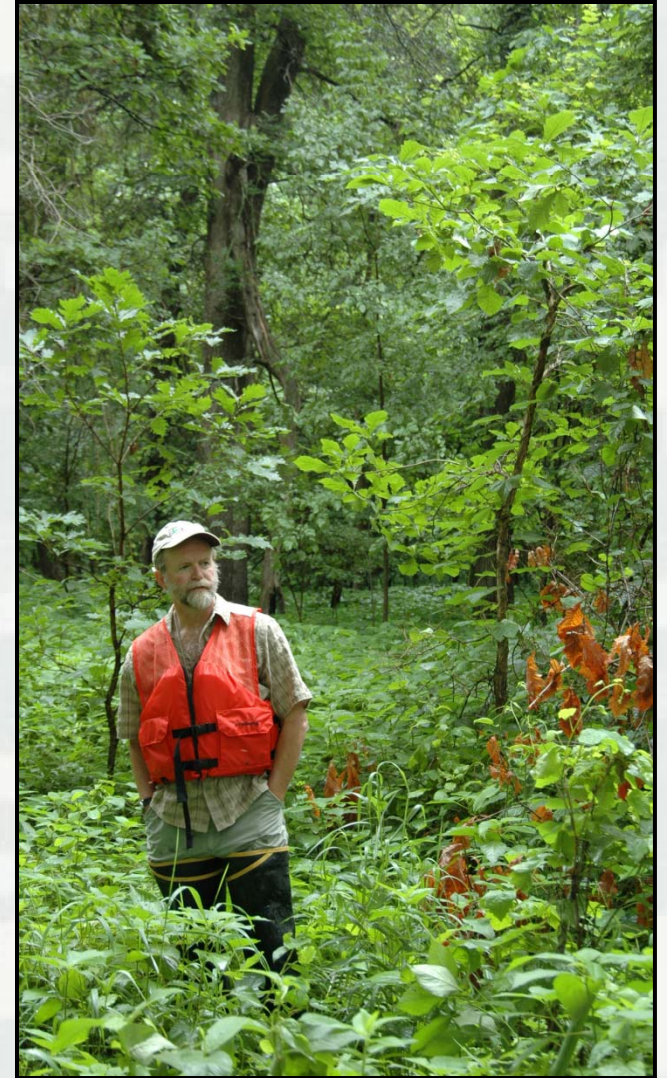
How to Evaluate Mitigation Actions?

- Habitat-based methodology to quantify impacts and mitigation needs.
 - ▶ Area (quantity) X Quality = Habitat Units,
 - ▶ HUs averaged over 50-year project life (AAHUs),
 - ▶ Habitat “functions” can be used to quantify loss,
 - ▶ Subject to model certification requirements.
- Mitigation alts undergo CE & ICA.
- Mitigation actions should be cost effective.
- Projects should neither “under-mitigate” or “over-mitigate.”



Special Considerations

- Bottomland hardwood forests are mitigated in-kind, to the extent possible.
- Wetland habitats should have impacts fully mitigated (no net loss).
- Mitigation alternatives for wetland impacts should consider wetland banks as one alternative for evaluation.



Additional Considerations

- Mitigation should be implemented concurrently with major project features, where practical.
- Mitigation costs are part of total project costs and included in the benefit-cost analysis of alternative plans.
- Mitigation planning and assessment done in partnership with federal and State resource partners to the extent practicable.
 - ▶ Initial Mitigation Planning
 - ▶ Evaluation of monitoring results
 - ▶ Determination of mitigation success



Common Mistakes with Mitigation Planning

- Failure to avoid and minimize prior to compensating (are we avoiding and minimizing to the extent practical?)
 - Multiple mitigation plans not clearly developed or evaluated for CE/ICA.
 - Mitigation quantity must be based on habitat or function – do NOT use ratios!
 - Success criteria not clearly stated.
 - Failure to coordinate ecosystem models with the ECO-PCX.
 - Referencing 33 CFR 325/332 as our mitigation policy for CW projects.
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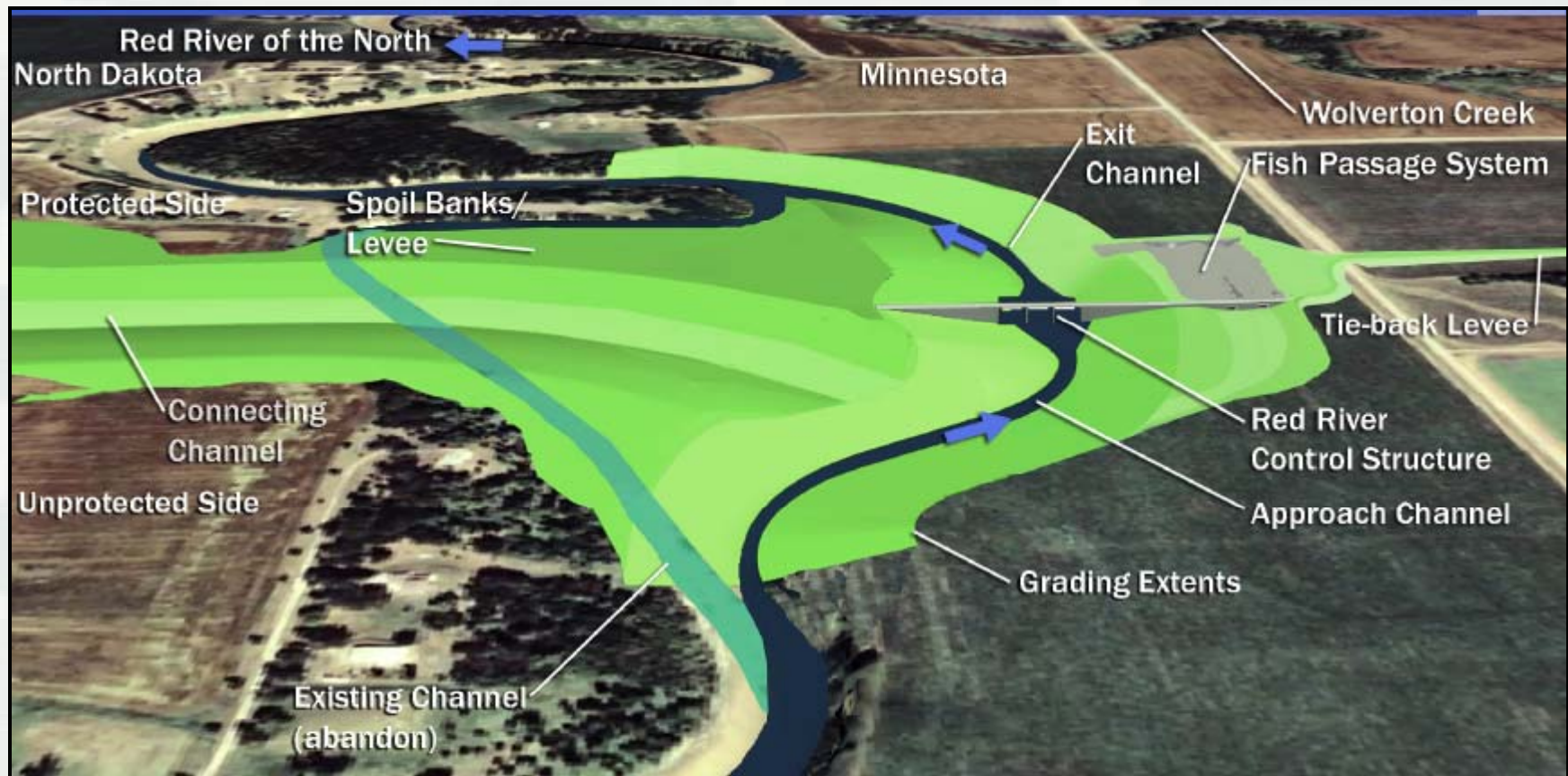
Example Mitigation Planning Process

Connectivity Impacts and the Fargo Flood Study



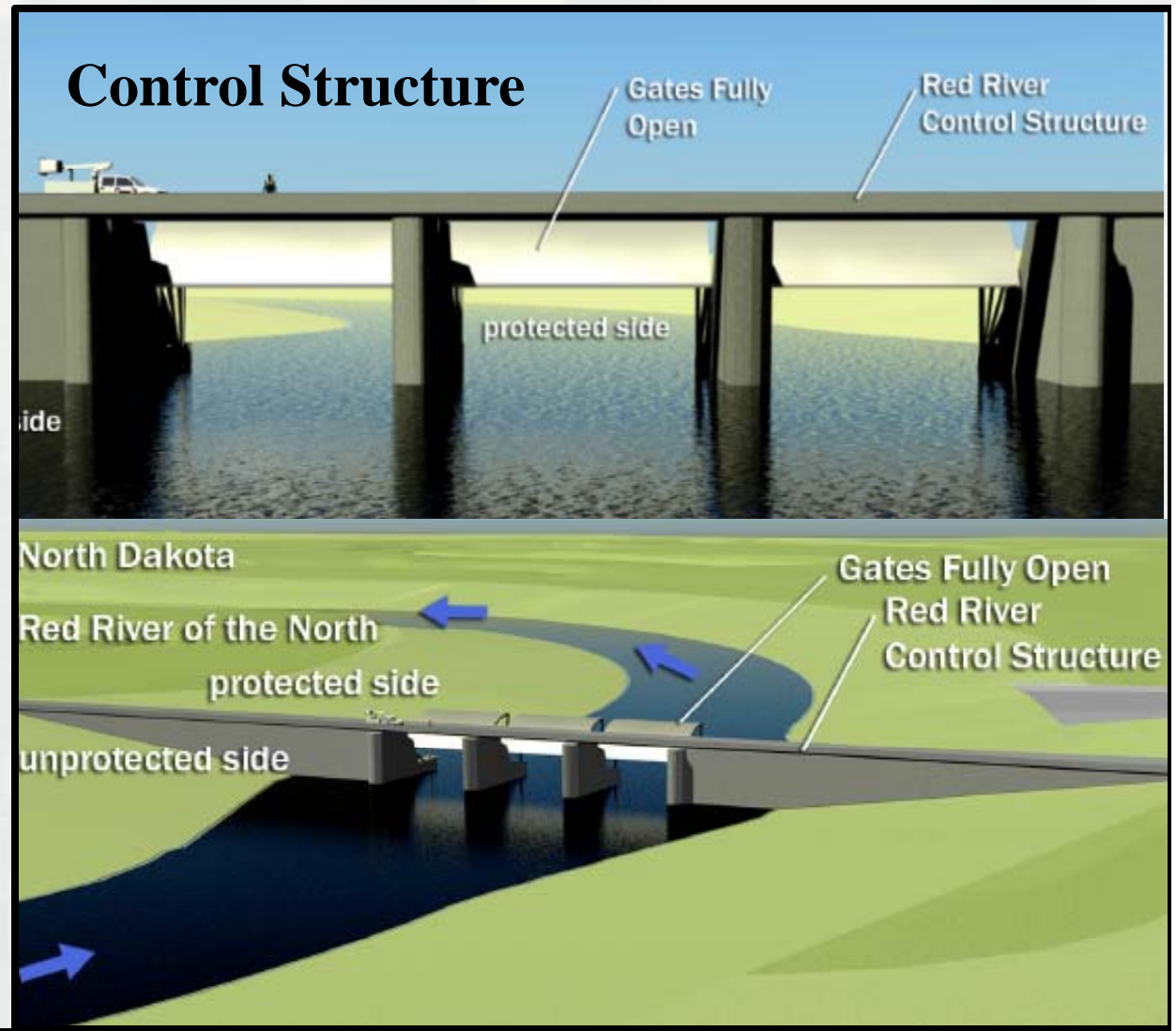
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- Feasible alternatives include a control structure and diversion channel.
- Red River fish passage could be affected.



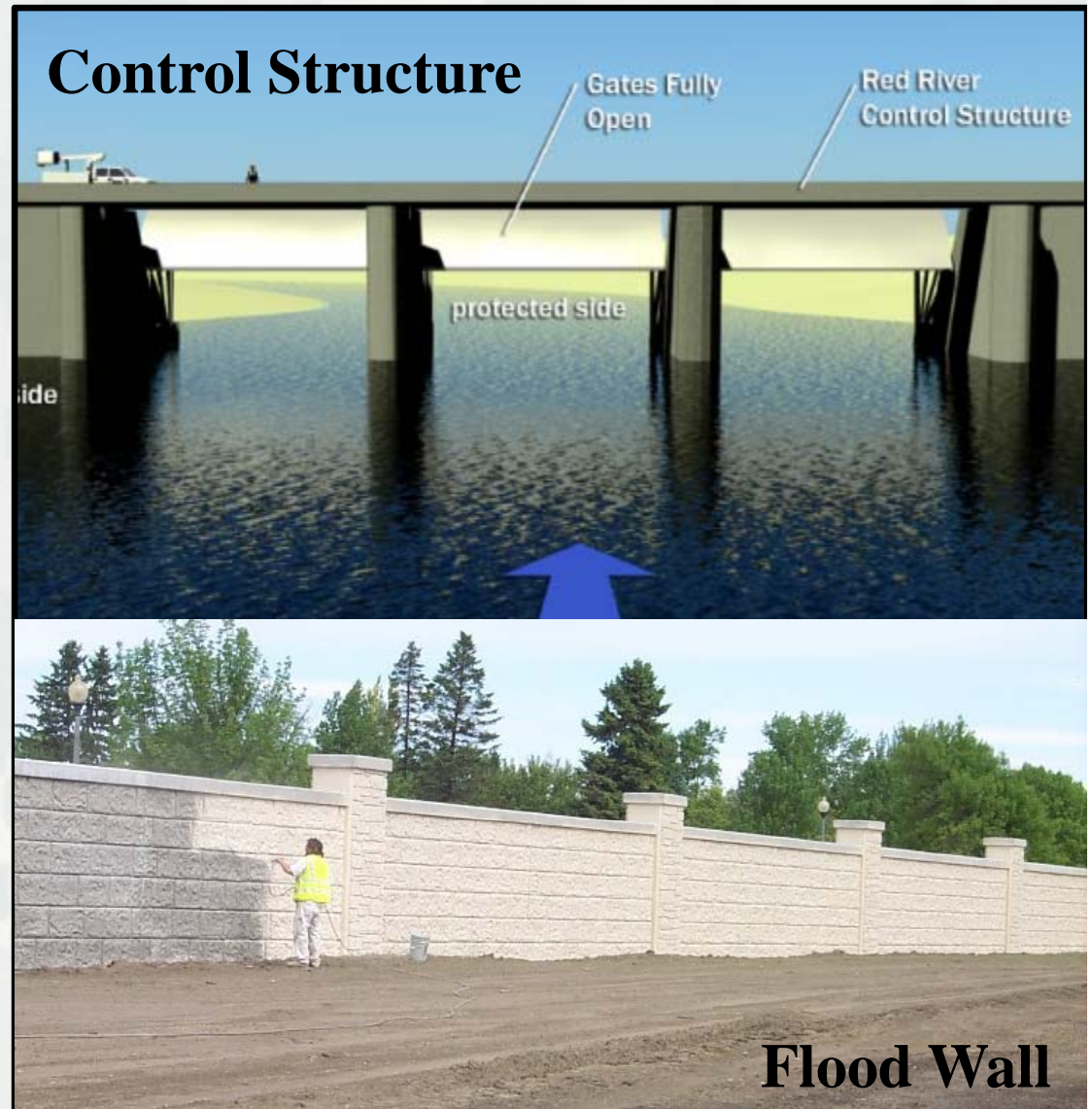
Can we avoid the impact?

- Based on plan formulation, a control structure is the only feasible solution.
- Impacts can't be avoided.



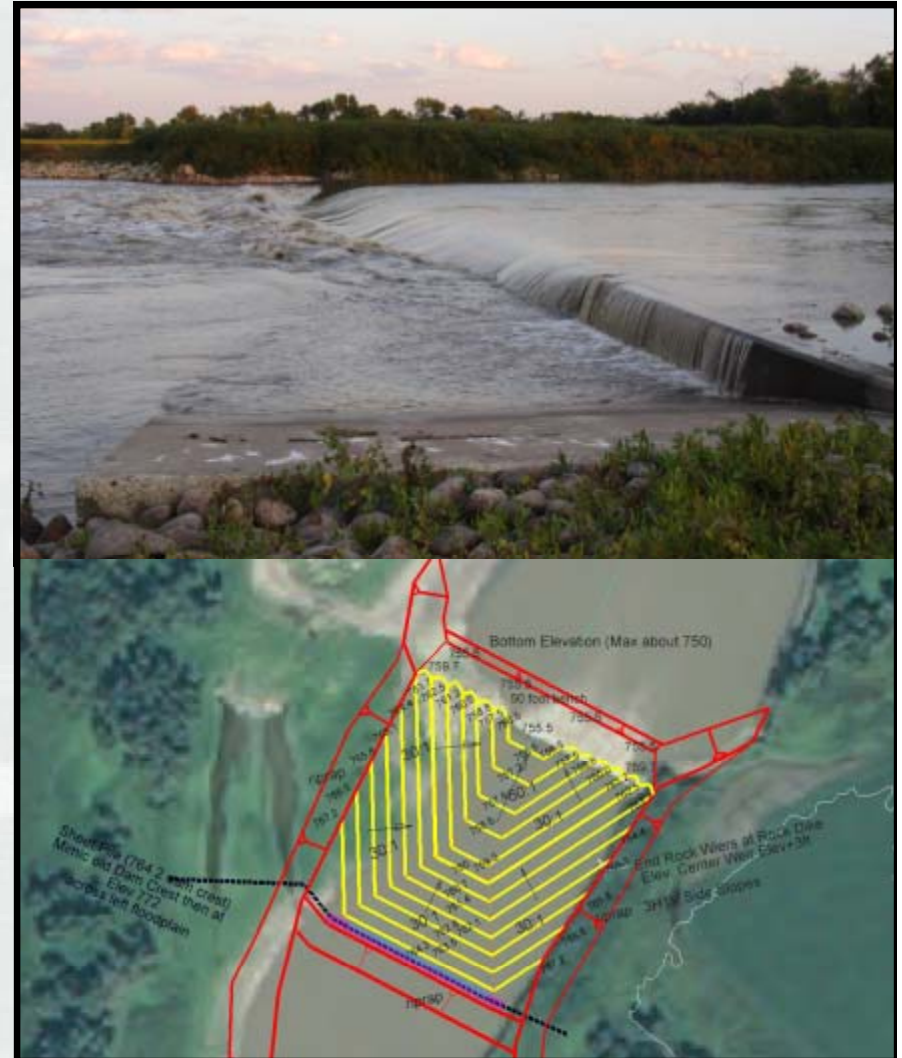
Can we minimize the impact?

- Yes!
- Wider gates improve fish passage during low-flows.
- Select levees allow project to operate less frequently.
- Features included as a project cost for all alternatives.



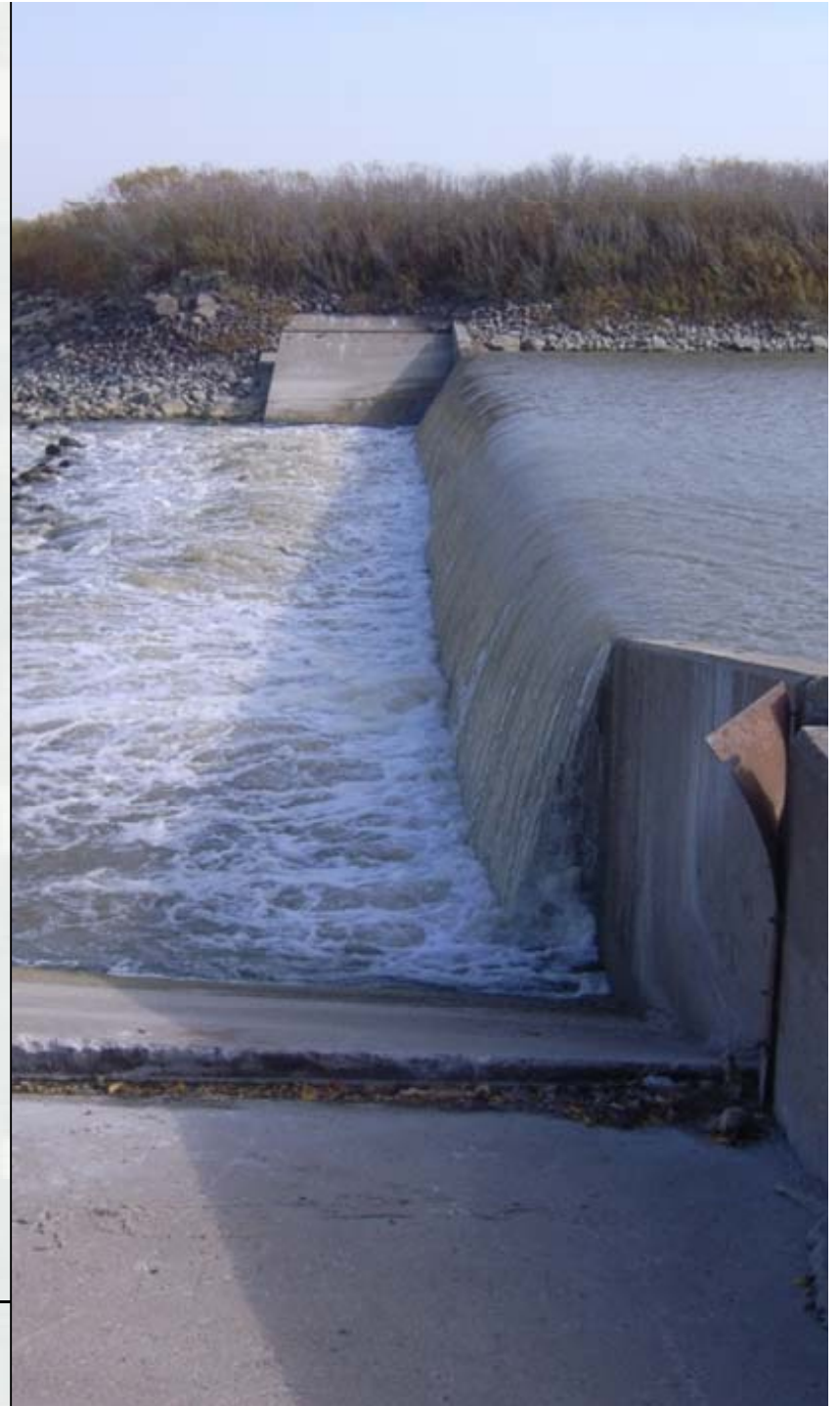
Do we need to mitigate a remaining significant impact?

- A potentially-significant impact remains for the preferred alternative.
- Due to uncertainty with the level of impact...
- ...and concern from natural resource agencies...
- ...additional fish passage proposed as mitigation for this impact.



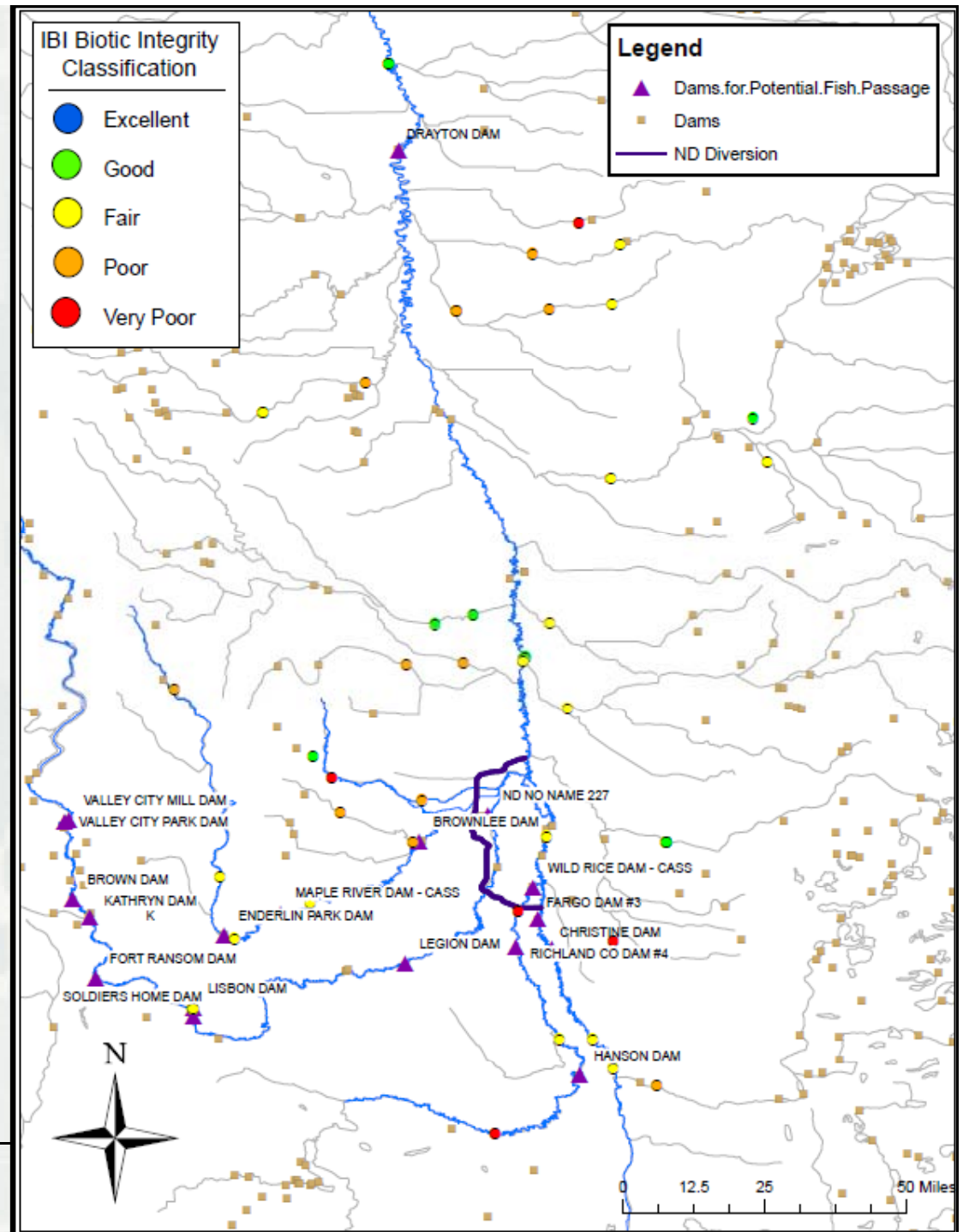
Mitigation Objective

- Provide improved fish passage to off-set remaining potentially-significant impacts to connectivity on the Red River
 - Mitigation needs to replace a similar level of connectivity lost by project.
 - ▶ More subjective for fish passage.
 - ▶ Direct habitat impacts often easier to quantify
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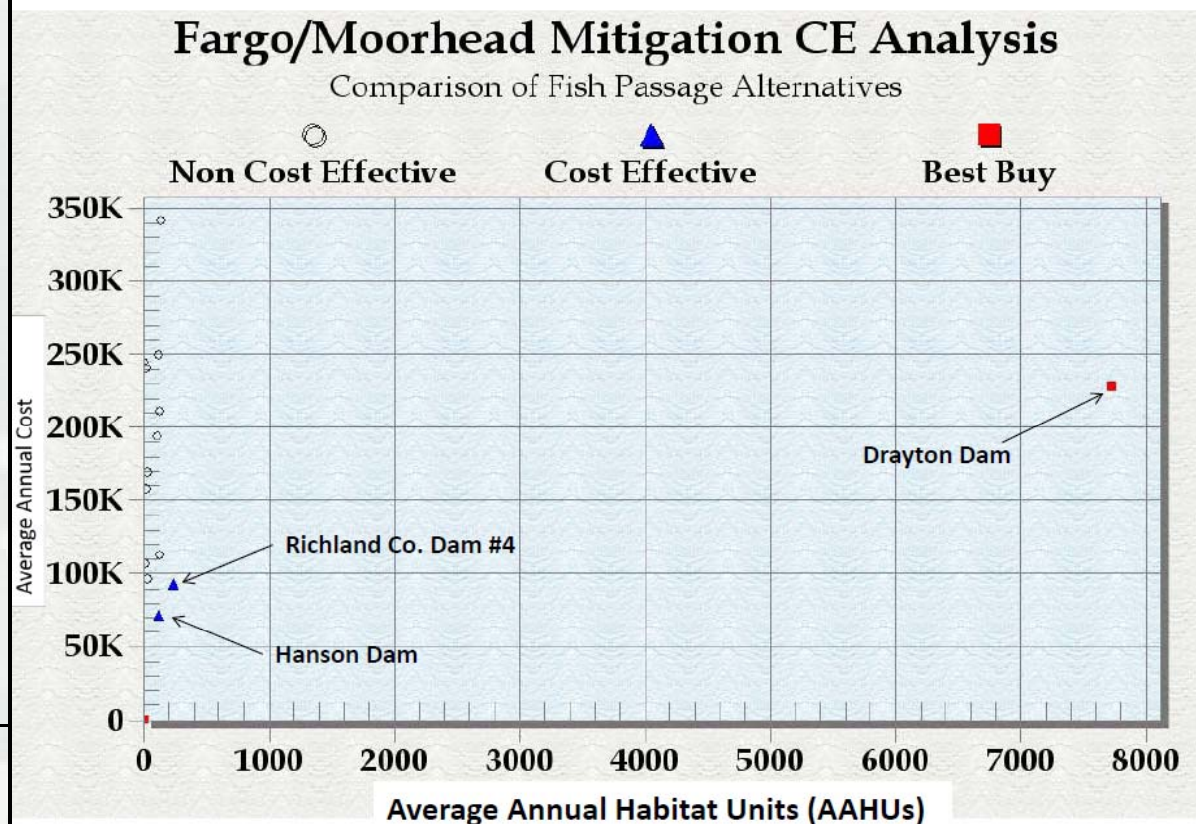
Mitigation alternatives identified

- Several dams considered for fish passage.
- Each dam was considered an alternative.



- Evaluated multiple alternatives.
- Alternatives calculated cost and benefits.
- CE & ICA
- Drayton Dam selected for mitigation.
 - ▶ Within watershed
 - ▶ On same river
 - ▶ Most cost-effective

Dam	River	Estimated Cost	Ave Annual Cost	Stream Miles	Stream Area	Habitat Quality	Cost per AAHU
Drayton	Red	\$6,500,000	\$327,251	2,167.8	14,575	0.53	\$42
No Name 227	Maple	\$4,470,000	\$226,609	69.5	93	0.3	\$8,083
Brownlee	Maple	\$7,140,000	\$358,980	211.0	314	0.38	\$3,005
Lisbon	Sheyenne	\$9,800,000	\$490,855	54.7	249	0.55	\$3,588
Kathryn	Sheyenne	\$4,790,000	\$242,474	11.9	64	0.55	\$6,875
Warwick	Sheyenne	\$2,670,000	\$137,371	10.7	59	0.55	\$4,258
Brown	Sheyenne	\$3,130,000	\$160,176	52.8	246	0.55	\$1,185
Fort Ransom	Sheyenne	\$5,990,000	\$301,966	58.0	238	0.55	\$2,311
Valley City Park	Sheyenne	\$6,970,000	\$350,552	1.3	8	0.55	\$79,099
Valley City Mill	Sheyenne	\$5,510,000	\$278,169	47.9	194	0.55	\$2,604
Soldiers Home	Sheyenne	\$2,960,000	\$151,748	6.2	24	0.55	\$11,377
Wild Rice	Wild Rice	\$6,860,000	\$345,098	50.2	210	0.10	\$16,407
Hanson	Wild Rice	\$1,940,000	\$101,179	277.0	1,209	0.1	\$837



Did we meet our mitigation planning requirements?

- (1) Specific mitigation objectives;
 - ▶ Objective identified during mitigation planning.
- (2) Specific success metrics/criteria (did mitigation work?);
 - ▶ Most difficult, but restores connectivity above/beyond impact
- (3) Location
 - ▶ Performed on the same river;
- (4) Type, amount, and characteristics of the habitat restored;
 - ▶ Restoring the same (or more) habitat/function that is impaired
- (5) Monitoring plan to evaluate effectiveness of mitigation;
 - ▶ Basic monitoring plan developed to assess mitigation effectiveness on fish passage
- (6) Description of the lands or interests in lands to be acquired
 - ▶ Includes dam and property access for construction and O&M



Mitigation, Monitoring and the Adaptive Process

- Monitoring to include telemetry study of fish passage at Drayton Dam, likely over multiple years.
- Cost estimates included as a project cost – \$2M
- Responsible parties – USACE and sponsorship.
- Metrics to “measure success” still being developed, but likely include some percentage of fish passed.
- Results evaluated by collaborative agency team
- Contingency plan if mitigation fails: Modify fish passage design at Drayton.



Questions???



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