STATE OF MINNESOTA

Memorandum

DEPARTMENT: Natural Resources – Ecological and Water Resources

DATE: March 20, 2016

TO: Jill Townley, EIS Project Manager

FROM: Randall Doneen, Environmental Review Unit Supervisor

This document was created in response to public comment on the Draft EIS. There is no Draft EIS version of this Report.

SUBJECT: **Final EIS Appendix M**: Purpose & Need and Alternative Rescreen Report

SUMMARY

- The Minnesota Department of Natural Resources (MNDNR) conducted an Alternative Rescreen Exercise to determine if the Purpose and Need (P&N) for the Proposed Project was too narrowly-focused such that it improperly/inappropriately screened out other less impact alternatives.
- The Alternative Rescreen Exercise approach was developed to concurrently evaluate the P&N statement by rescreening the Previously-Screened Alternatives and screening New/Combination Alternatives using a broadened P&N.
- None of the alternatives in this exercise "passed" the Rescreen Exercise; therefore, MNDNR has determined that:
    - The P&N, as originally proposed in Scoping, is acceptable, not too-narrowly focused, and not too excessive.
    - None of the Previously-Screened or New/Combination Alternatives require further analysis.

PURPOSE

- The MNDNR received many public comments on the Draft Environmental Impact Statement (DEIS) stating the P&N for the Proposed Project (Project), developed as part of the EIS Scoping process, was too narrowly-focused such that it improperly/inappropriately screened out other less impact alternatives.
- Additionally, MNDNR received numerous public comments that requested review of previously-screened (Scoping) alternatives, new alternatives or additional combinations of components of previously-screened (New/Combination) alternatives.
- In response to these public comments, MNDNR conducted an "Alternative Rescreen Exercise" between January and March 2016.
- The Alternative Rescreen Exercise process of evaluation was developed to concurrently address the P&N comments as well as the New/Combination Alternatives.

APPROACH

The Alternative Rescreen Exercise approach was developed to concurrently address the P&N comments as well as the New/Combination Alternatives.

Purpose and Need:

- The DEIS P&N statement included 3 components against which potential alternatives were screened; all 3 components had to be met in order for an alternative to be considered for full evaluation in the DEIS. The following purpose and need statement were developed by the Diversion Authority to meet the needs of the state environmental review process and are not the same as those used in the FFREIS.
  - The purpose of the Project is to reduce flood risk, flood damages, and flood protection costs related to flooding in the F-M Metropolitan area. To the extent technically and fiscally feasible, the Project will:
    1. Reduce flood risk potential associated with a long history of frequent flooding on local streams including the Red River, Sheyenne, Wild Rice (North Dakota), Maple, Rush and Lower Rush Rivers passing through or into the F-M metropolitan area,
    2. Qualify substantial portions of the F-M metropolitan area for 1-percent chance flood (i.e., 100-year flood) accreditation (i.e., meets the standard to be shown on Flood Insurance Rate Maps as providing protection) by the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program; and
    3. Reduce flood risk for floods exceeding the 100-year flood or greater, given the importance of the F-M metropolitan area to the region and recent frequencies of potentially catastrophic flood events.
- Because public comments received alleged that the DEIS P&N was too narrow a way to evaluate this was to conduct an alternative screening exercise (i.e., Alternative Rescreen Exercise) by broadening the P&N by using only the Federal Emergency Management Agency (FEMA) 100-year flood accreditation (accreditation) component of the P&N. FEMA accreditation is likely the most essential part of the need for the Project because it is the minimum flood risk reduction level that communities typically seek.

Previously-Screened/New/Combination Alternatives:

MNDNR determined that conducting an alternative "rescreen" would allow us to determine if any alternatives (Previously-Screened/New/Combination) should be reevaluated or newly evaluated in the Final EIS (FEIS).

- Previously-Screened Alternatives: Prior to the DEIS, during the Minnesota EIS Scoping Process, MNDNR evaluated 14 Scoping Alternatives against their ability to meet all three of the above components of the P&N statement.[1] If a Scoping Alternative was able to meet all three components, it was to be included for full evaluation in the EIS. Three of

[1] Draft Alternatives Screening Report Fargo-Moorhead Metropolitan Area Flood Risk Management Project (Wenck Associates, December 2012)

the 14 Scoping Alternatives received full evaluation in the EIS—two which combined to become the Proposed Project (#1 and #13) and one that became the Distributed Storage Alternative (#12). The remaining 11 Scoping Alternatives evaluated in the Draft Alternatives Screening Report (Wenck Associates, December 2012) were not included for full evaluation in the EIS because they failed to meet all three components of the Project Proposer's Purpose and Need Statement.

1. MNDNR decided to rescreen the 14 Scoping Alternatives on their ability to achieve FEMA Accreditation to determine if a less impact alternative existed and was subsequently screened out by one of the remaining two P&N components.

- New/Combination: Under the same theory as #1 above, all New/Combination Alternatives were screened using only the FEMA Accreditation component, then further evaluated in accordance with Minnesota Rules Part 4410.2300, Item G (Minn. Rules 4410.2300, item G) and Minn. Rules 4410.2100 Subpart. 8.
- In order for one of the Scoping Alternatives or the New/Combination Alternatives to be considered for inclusion to the EIS (i.e., carried forward), it must meet all criteria of Minn. Rules 4410.2300, item G and Minn. Rules 4410.2100, subpart. 8.
  - Is the alternative feasible?
  - Does the alternative have significant environmental benefit compared to the Proposed Project?
  - Does the alternative have substantially less adverse socioeconomic impact over Proposed Project?

DATA/RESOURCES

In total, 88 commenters submitted alternatives for consideration. Many were duplicates or had already been reviewed in previous documents. Ultimately, MNDNR rescreened 14 Scoping Alternatives and screened 15 New/Combination Alternatives, for a total of 29 alternatives as part of this process.

- To inform the Alternatives Rescreen Exercise, MNDNR referenced the following sources:
  - Draft Alternatives Screening Report Fargo-Moorhead Metropolitan Area Flood Risk Management Project (Wenck Associates, December 2012) (re: previously-screened alternatives)
  - Resources provided by the USACE:
    - Final Feasibility Report and Environmental Impact Statement (FFREIS, USACE 2011)
      - FFREIS, Attachment 5-Consultant's Report, Appendix C, Attachment 2 (Re: Northwest Diversion)
      - FFREIS Appendix O, Attachment 7: Red River Diversion - Alternatives Scenario Analysis (Re: downstream storage areas and reduced upstream staging)
      - March 2010 version of the Federal EIS Hydraulics Appendix, Figures B-18 & B-19 (filename "Attachment3_100329_Appendix_B_4_AFB.pdf") and Excel file with supporting data (filename "Modeling

Results_No_RRN_CTRL_STR.xls") (Re: Diversion with no control structure)
        - USACE September 2013 Supplemental Environmental Assessment, Page 10 and Appendix A, pages A-10 through A-14 (Re: internal storage concept, Storage Area #1)
        - Post-Feasibility Southern Alignment Analysis report, October 10, 2012, Houston-Moore Group (Re: internal storage concept, Storage Area #1)
        - Feb 20, 2014 letter from USACE to DNR re: maximum practical levee height and distributed storage. The letter included a figure showing the "Red River of the North Profile and Landmark Information through Fargo-Moorhead." The letter included enclosures (provided electronically): October 2009 levee cost estimates, March 2010 Hydraulics appendix, May 2010 Geotechnical appendix and May 2010 Civil Design appendix, all from Draft versions of the Federal EIS. (Re: Maximum practical levee height and flow through town)
        - Excel filename "ATT1_data_ProfilesThruTown_v3.xlsx" provided data to support the figure in the Feb 20, 2014 USACE letter. (Re: Maximum practical levee height and flow through town)
        - Fargo-Moorhead and Upstream Feasibility Study Phase 1 Summary report, USACE, September 9, 2005 (Re: various proposed storage features, ideas to change Wild Rice River peak flows, etc.)
    - Houston Engineering, Inc. 2014. Halstad Upstream Retention Study. Prepared for Red River Basin Commission. (Re: upstream retention concepts)
    - Red River of the North Basin, Basin Technical and Scientific Advisory Committee (BTSAC), Briefing Papers #1 and #3 (Re: drain tile)
    - National Inventory of Dams website (Re: dam tributaries; Orwell and Baldhill dams)
    - Correspondence with dam engineers and hydrologists
    - Professional judgement

PROCESS/METHODOLOGY

- Each alternative was assessed against each of the following questions (steps) in the order below.
    1. Was the alternative screened out in Scoping based on the DEIS P&N?
    2. Is it likely the alternative could receive FEMA accreditation (the critical component as explained above)?
    3. Is the proposal a reasonable alternative to the proposed project (i.e., not challenged by physical limitations, factors of time, cost, land acquisition, or political or regulatory issues?) (Minn. Rules 4410.2300, item G)?
    4. a) Does the alternative have significant environmental benefit compared to the Project as proposed? b) If no, is it similar? (Minn. Rules 4410.2300, item G)?
    5. Does the alternative have substantially less adverse socioeconomic impact over the Project? (Minn. Rules 4410.2300, item G)?
- In order for an alternative to be carried forward for potential further analysis to determine if the P&N is too narrow, it must receive a "yes" to all five of the above questions.

- Steps 1-3 and 5: If the answer to a question was 'no', the alternative was determined not subject to further questions.
- For step 4, an alternative must receive a "yes" for either parts a) or b) of the question in order to advance to the next step.
- "N/A" is used in select instances (Step1) when the alternative was not included in the MNDNR Draft Alternative Screening Report (Wenck Associates, December 2012).
- "Unavailable Info" was documented if the proposed New/Combination alternative described components for which MNDNR had no reliable data, and could not easily acquire within a reasonable amount of time, upon which to evaluate the alternative.

RESULTS

- Table 1 provides a summary of the 29 alternatives (Previously-Screened/New/Combination) screened as part of this exercise. The summary includes MNDNR's response to the question posed at each step in the process.
- In summary, none of the 14 Scoping Alternatives or the 15 New/Combination Alternatives received a "yes" to all five questions posed.

ASSUMPTIONS

- Feasibility Assumptions
    - **The Distributed Storage Alternative** (and other similarly described upstream storage/retention options), as analyzed in DEIS Appendix C and D, remain infeasible because they are challenged by time, cost, and regulatory issues. This applies to Alternatives 12, 15, 16, and 29.
    - **Incremental Alternatives.** Alternative 18 recommended multiple actions that cumulatively could potentially meet flood risk goals. While it is theoretically possible to combine enough measures to achieve FEMA accreditation, at some point, it becomes impractical and infeasible to complete the number and scope of projects that would be needed to achieve the necessary flood risk reductions.
    - **Feasibility of Mitigating Downstream Impacts.** In Alternative 3, while the alternative meets the 100-year accreditation and would have environmental benefits over the Project, it would result in downstream impacts that would require mitigation. Given the geographic distribution of downstream impacts and the amount of water that would require storage elsewhere on the landscape, it was determined that mitigating these impacts was infeasible.
- Information Assumptions
    - When evaluating environmental benefit (Rescreen Step 4), a common criteria for consideration was impact acreage. However, the exact number of impacted acres in each re/screened alternative was unknown; therefore, alternatives reaching this step in the process were screened based on existing information, including modeling for the project, and based on estimations of potentially flooded areas using professional judgement.

1. For example, Alternative 26 involves the transfer of flooding impacts between upstream and downstream locations. MNDNR used existing flood maps and existing flood modeling information associated with the Project to estimate flood reductions upstream and flood increases downstream.
2. This also applies to Alternatives 10, 14, and 19.

- When evaluating socioeconomic benefit (Rescreen Step 5), a common criteria is structure count impacts. However, the exact structure count impact difference was unknown; therefore, alternatives reaching this step in the process were screened based on professional judgement in assessing the potentially flooded areas.
    1. Similar to the above example, while specific information related to flood increases and reductions were unknown, MNDNR was able to estimate that the net socioeconomic impacts downstream and upstream would be approximately equivalent or worse as compared to the Project.
    2. This also applies to Alternatives 10, 14, and 19.

DISCUSSION/DETERMINATION

- Based on the available data, limitations, and process, it was determined that:
    - **Purpose and Need**: If the Alternative Rescreen Exercise resulted in zero alternatives that were able to meet the most critical component of the P&N (FEMA Accreditation) in the context of the Minnesota Rules EIS alternative criteria, it would indicate that the DEIS P&N was NOT too narrowly-focused. None of the 29 alternatives "passed" all five steps of the rescreening process; therefore, MNDNR has determined that the P&N, as originally proposed in Scoping, is acceptable, not too-narrowly focused, and not too excessive.
    - **Alternatives**: None of the Scoping Alternatives nor the 15 New/Combination Alternatives were able to pass all five steps of the rescreening process applying only the #2 component of the DEIS P&N statement; FEMA accreditation; therefore, MNDNR has determined that none of the Previously-Screened or New/Combination Alternatives require further analysis.

Summary of Purpose & Need and Alternative Rescreen

Exercise Attendees: Randall Doneen (Environmental Review Unit Supervisor), Kate Frantz (Environmental Review Planning Director), Jill Townley (Environmental Review EIS Project Manager)

Table 1. Fargo-Moorhead EIS – Summary of Purpose & Need and Alternative Rescreen

ID	Alternative Name	Step 1. Was the alternative screened out in Scoping based on DEIS Purpose & Need?	Step 2. Do we believe it can get FEMA accreditation?	Step 3. Is the proposal a reasonable alternative to the proposed project (i.e., not challenged by physical limitations, factors of time, cost, land acquisition, or political or regulatory issues?) (Minn. Rules 4410.2300, item G)?	Step 4. a. Does the alternative have significant environmental benefit compared to the project as proposed? b. If no, is it similar? (Minn. Rules 4410.2300, item G). "Yes" or "similar" answers proceed. "No" responses stop here.	Step 5. Does it have substantially less adverse socioeconomic impact over Proposed Project? (Minn. Rules 4410.2300, item G)
10	Flood Storage + Control Structure + Staging (no diversion, 100-year flows)	Y	Y	Y	a. NO. b. YES, similar.	N
14	Project + Reduced staging	Y	Y	Y	a. NO. b. YES, similar.	N
19	NWRR	n/a	Y	Y	a. NO. b. YES, similar.	N
26	Shared Upstream/Downstream Burden	n/a	Y	Y	a. NO. b. YES, similar.	N
4	Diversion in MN/ND	Y	Y	Y	N	
3	MN 35K	Y	Y	N		
12	DSA	N	Y	N		
15	DSA + More	n/a	Y	N		
16	Project + DSA	n/a	Y	N		
18	MN 35K + More	n/a	Y	N		
29	NWRR + DSA + Existing floodplain storage	n/a	Y	N		
5	Nonstructural Measures	Y	N			
7	Flood Barriers	Y	N			
9	Flood Storage	Y	N			
11	ND Diversion, no dam	Y	N			
17	ND/SD Retention	n/a	N			
20	Restoration	n/a	N			
21	Fargo FDR	n/a	N			
22	Dredge the River/Dynamite	n/a	N			
23	Internal Storage	n/a	N			
24	Increase Northern Flows, no Project	n/a	N			
25	Outlet into MN River	n/a	Unavailable info			
27	Divert Wild Rice into Sheyenne	n/a	N			
28	Change Wild Rice Peak	n/a	N			
8	I-29 Viaduct	N				
6	Tunneling	N				
2a&b	No Action Alternatives	N				
1&13	Proposed Project	N				