

## Potential Project Modifications for F-M Task Force

*This is a consensus document created by the Technical Advisory Group: Bob Zimmerman-Moorhead Engineer, Nathan Boerboom-Fargo Engineer, Gregg Thielman-Diversion Authority Engineer; Kent Lokkesmoe-DNR Manager; Suzanne Jiwani—Floodplain Engineer; Jill Townley—EIS Manager*

### Design Considerations

- a. Allow greater downstream flood impacts.
- b. Stage increase at Canadian border.
- c. Expand internal storage in the South Fargo area.
- d. Move the Overflow Embankment further west.
- e. Move alignment of the dam further north.
- f. Finish appropriate in-town works.
- g. Current and future FEMA accreditations
- h. Running more water through town (from 35 feet; up to 37 feet or up to 39 feet).

### Safety

- a. Limit risk of a high hazard dam.
- b. Magnitude of residual risk as it relates to life and safety

### Operation

- a. Limit frequency of operation of the staging area
- b. Limit number of control structures or closure structures requiring human intervention for flood risk reduction

### Land Use Plans and Regulations

- a. Meet local ordinances and plans.
- b. Other development restrictions (e.g., the area below the dam and between the confluence of the Wild Rice River and Red River; areas requiring significant fill).
- c. Limit stage increase at Clay-Cass/Wilkin-Richland County borders.
- d. Create a restricted development zone downstream of the dam based on safety concerns (depth x velocity)

### Mitigation

- a. To be determined
- b. Note that acquisition or easements needed to develop the project including the staging area are conditions of the permit.

### Key Criteria (in no particular order)

- a. Satisfy Task Force Charter
- b. Engineering feasibility
- c. Meets laws and ordinances
- d. Protects existing development
- e. Minimize Residual Risk (e.g., Level of Protection (floods greater than the 100-yr flood do occur); Life and Safety – Evacuation; Length of levee/dam embankment; Height of levee/dam embankment (and depth of water along the face of embankment); Internal floodplain/drainage).
- f. Reduce Floodplain Impacts (e.g., New Acres Added to floodplain; Existing Floodplain Acres Protected vs Acres Flooded – ND/MN; Newly designated floodway).
- g. Reduce Environmental Effects
- h. Limit impacts to Structures (e.g., Residential, Commercial, other)
- i. Resilience/Robustness of Design (e.g., Maintain FEMA Accreditation if Future Hydrology Changes, What is likely to happen if a flood larger than the design flood occurs)
- j. Limit impacts to jurisdictions outside of Cass County, ND and Clay County, MN
- k. Cost