



LOWER MINNESOTA RIVER WATERSHED DISTRICT

Executive Summary for Action

Lower Minnesota River Watershed District Board of Managers Meeting
Wednesday, May 16, 2018

Agenda Item

Item 5. E. - Corps of Engineers - Lower Minnesota River Watershed District Storage Assessment

Prepared By

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Summary

The Corps of Engineers informed the LMRWD that the Corps has an opportunity to get approval for an assessment that would look at issues on the Lower Minnesota River Basin. Nathan Campbell from the Corps asked if the Lower Minnesota River Watershed District would have an interest in such a study.

I asked him for more details and explained the LMRWD is concerned with sediment transport from the upper basin and tributaries and the impact the sediment has on the Lower MN River Valley.. Mr. Campbell said the Corps would like to be involved with a study like that. He explained that these types of projects generally require congressional approval however there is a mechanism built into the watershed assessment guidance that will allow for spin-off studies to take place in an area where a study authority is already present.

In this case the Minnesota River Basin assessment would qualify for that existing authority. In the final report for the Minnesota River Basin assessment, the Corps needs to identify potential "spin-offs". Mr. Campbell thinks that a flood risk assessment as a result of sedimentation would work really well as a spin-off. They could potentially receive funding next FY for it. There would be a 50/50 cost share requirement that could come in the form of work-in-kind. Cost share could come from state grants as well.

Mr. Campbell asked if it would be possible for the Watershed District to send a letter of interest for such a study. The letter of interest does not legally bind any one to anything; it just helps the Corps prioritize funding. If there is an interest and motivated sponsor, they are more likely to receive funding.

Mr. Campbell recommended that a letter of support should confirm that the watershed district would have a possible interest in pursuing the following:

- Impacts of sedimentation on flood risk in the Lower Minnesota River Watershed
- Assessment of water storage opportunities and benefits associated with water storage in the Minnesota river basin
- Study of how land-use changes may increase or decrease sediment delivery rates to the lower Minnesota river

He then provided explanations of two possible spin-off studies, which is attached. If the Board determines that it would benefit the LMRWD to participate we could also speak with the state agencies and urge participation.

Attachments

Spin off study explanations

Recommended Action

Motion to participate in spin-off study and direct preparation of a letter of interest

Spin-Off Study Explanations

Minnesota River Basin Assessment

5/10/2018

- 1) Analysis of how land-use changes may increase or decrease sediment delivery rates to the lower Minnesota River and an assessment of the ecological and economic impacts of sedimentation has on the Lower Minnesota River Watershed.

Sponsor: Lower Minnesota River Watershed District and Minnesota Pollution Control Agency

General Scope: This detailed look at sedimentation in the Lower Minnesota River Watershed will require monitoring, modeling, and analysis of sediment sources, sinks, and pathways in the watershed, a summary of how sources, sinks, and pathways may have changed over time, and estimates of the economic and ecological effects of sedimentation including:

- changes in stage-discharge relationships, which may affect flooding,
- effects on the cost to maintain a commercial navigation channel on the Minnesota River
- effects on the ecological conditions on the LMRW

Through these analyses a new baseline can be established and an understanding for how changes in land-use will alter that baseline in the Lower Minnesota River Watershed and create a new future condition.

Analysis needed to accomplish:

- Research available sediment rating relationships for tributaries
- Integrate the most simplistic sediment routing within existing HEC_RAS model from Mankato to the mouth.
- Link HSPF hydrograph outputs for existing condition 12-year simulations at tributary confluences and route for a baseline
 - Assess natural reaches of sediment sources and sinks
 - Compare to USGS monitoring data
- Use HECRAS+sediment to route another land use condition with the same period of record (12 years).

Budget: \$600,000 (50% non-fed/50% fed)

- 2) Assessment of water storage opportunities and benefits associated with water storage in the Minnesota River basin

Sponsor: Lower Minnesota River Watershed District and Board of Water and Soil Resources

General Scope: Utilize the Agricultural Conservation Planning Framework (ACPF) and the Prioritize, Target, and Measure Application (PTMAApp) efforts going on in the basin to determine the flow reduction benefits received from placing storage measures in key locations throughout the basin.

This analysis will achieve a better understanding for the threshold for meaningful change realized in the basin and recommend specific levels of storage in the basin.

Analysis needed to accomplish:

- Hydro-corrected DEMs for the lower watershed where storage impacts are desired
- Run ACPF on priority sub-basins to determine where storage opportunities exist.
- Develop a detailed Hydrologic model if one doesn't exist.
- Run existing and storage scenario to determine how much discharges could be lowered for hypothetical rainfall events ranging from 10 year to 100 year events.
- Summarize the saturation of storage and the maximum change anticipated in the specific agroecoregion.

Time and Budget: \$600,000 (50% non-fed/50% fed)