



February 22, 2022

Board of Managers  
Heron Lake Watershed District  
1008 3<sup>rd</sup> Avenue  
PO Box 345  
Heron Lake, MN 56137

Re: BWSR Advisory Report – Heron Lake Project 2 Improvement

Dear Managers,

On behalf of the Minnesota Board of Soil and Water Resources, I offer this advisory report in accordance with Minnesota Statute, Section 103D.711, Subdivision 5. The focus of this advisory report includes:

- A statement about the completeness of the report in relation to statutory requirements;
- A statement as to whether or not the report presents a practical plan;
- Recommendations for changes, if considered advisable, and;
- A recommendation as to whether a soil survey appears advisable.

The *Preliminary Engineering Report: Heron Lake Project 2 Improvement* (dated December 9, 2021), was reviewed to prepare this advisory report. The watershed district may want to consider the following review comments while compiling the Final Engineer’s Report.

### Completeness of the Report

The report is complete in accordance with the Minnesota Statutes Section 103D.711, Subdivision 2 and Section 103E.015, Subdivision 1. I appreciate that the individual pieces of statute are listed with the engineer’s response.

I have three comments that the board and engineer may want to consider.

- It would be helpful to have pictures of the outlet of the system into Duck Lake. While the increases in velocity and stage are minor, the current condition of the outlet is important to help understand if it can adequately convey higher velocities and higher stages.
- I would like to reiterate that the model results show “as-designed” conditions against the proposed conditions. This is the typical way to model these systems and I do not suggest that the engineer take a different approach. However, the board should keep in mind that the increase from “as-is” conditions to proposed conditions will be greater than “as-designed” to

proposed conditions. In other words, the increases in flow rate and velocities may be higher than modeled. This is not a fatal flaw in design, but something the board should keep in mind as they approve these improvements.

- The Appendix references are not always correct in the report – specifically the reference to the watershed maps (they are in Appendix B and not Appendix C). The engineer may want to check this and update for the final report.

### **Practicality of the Plan**

Overall, I believe that the plan as presented is practical. I suggest that the watershed district board ask their engineer to provide a map that shows the total area along the system that will no longer be flooded more than 24-hours (if that is the goal to reduce crop stress). Figures 3-6 in the hydraulic report are helpful to understand the change in flood extent and time, but it appears that the overall area going from red to green, or even from orange/yellow to green are minimal. It may help to quantify the total area that will no longer have crop stress due to the project. Then the watershed district board and landowners can determine if that is worth the overall cost of the project. I suggest considering a cost per acre of area that will no longer experience crop stress.

The board should also consider that while the open ditch does not currently have erosion issues or sediment deposition, but increased flow from Branch B and B1 may change the dynamics of the downstream system. Post construction the board may want to monitor the downstream system to make sure there is no additional erosion or sediment deposition. This will also help the board track how system improvements may affect downstream ditches.

### **Recommendations for Changes**

I have no specific suggestions for changes to the design.

### **Recommendations for Soil Survey**

I do not believe that a soil survey is necessary for this improvement project.

Please feel free to contact me at 651-539-2591 (email [rita.weaver@state.mn.us](mailto:rita.weaver@state.mn.us)) if you have questions regarding this advisory report.

Sincerely,



Rita Weaver, PE  
BWSR Chief Engineer

CC: Jacob Rischmiller, ISG

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