

September 20, 2017

Board of Managers  
Heron Lake Watershed District  
1008 3<sup>rd</sup> Ave.  
P.O. Box 345  
Heron Lake, MN 56137

Chuck Brandel, PE  
Project Engineer  
ISG  
115 East Hickory Street, Suite 300  
Mankato, MN 56001

Re: BWSR Advisory Report for the Preliminary Engineering Report, Judicial Ditch No. 14  
Improvements, Jackson County, Minnesota

Dear Managers and Project Engineer,

On behalf of the Board of Water and Soil Resources, I offer the following advisory report for the referenced project, in accordance with Minnesota Statutes, Section 103D.711, Subdivision 5. As indicated in Subdivision 5, the BWSR report shall include:

- 1) a statement about the completeness of the report in relation to statutory requirements,
- 2) a statement as to whether or not the report presents a practical plan,
- 3) recommendations for changes, if considered advisable, and
- 4) a recommendation as to whether a soil survey appears advisable.

#### **General Comments**

When citing items in the appendices, it would be helpful to include page numbers in the citation.

#### **A statement about the completeness of the report in relation to statutory requirements.**

The preliminary engineers report for JD 14 Improvement Project is complete in relation to statutory requirements except for the following:

- a. It would be helpful to have a location map at a larger scale than that found in the lower right hand corner of the Multipurpose Drainage Management Sheet, especially considering the proximity of JD14 to Heron Lake.
- b. The report does not have discussion of the engineer's preliminary survey results related to public waters.
- c. The report does not have any discussion related to the condition or capacity of JD 30 which is the outlet for JD 14. Does it flood presently? Has it been improved recently? Will the new flow regime on JD 14 cause erosion, scour or flooding in JD 30 before it enters Heron Lake?

#### **A statement as to whether or not the report presents a practical plan.**

The preliminary engineers report for JD 14 Improvement Project presents a practical plan except for the following:

- a. Page 1, *Existing Conditions*: The dimensions of the existing ditches are not indicated.
- b. Would lower drainage coefficients still provide adequate drainage? In conversation with state NRCS staff, it is clear that there is concern on their part that the "guidance" in the 1984 Minnesota Drainage Guide and the 2001 Chapter 14 of the Engineers Field Handbook is being considered as a blanket "recommendation" and might be misinterpreted.
- c. It would be helpful to use inlet language consistently within the report and the construction plans so as to differentiate **side** inlets from **tile** inlets. Side inlets are "side inlet controls" in Drainage law.

- d. The name used in detail AG120 should be consistent with that used in AG124. "Inlet" would be preferred in both cases.
- e. It is unclear as to why the tile drainage system needs to be as deep as proposed in some reaches.
- f. The details for AG123, AG120, AG 121, and AG124 should be consistent. Any pipe entering the open ditch should have the same riprap protection, preferably like AG123.
- g. Would riprap stability and ditch efficiency be better if the riprap protection was placed in the slope and the ditch bottom and not on top of the ground surface?
- h. On pages 8-11, *Proposed Conditions*, there is no discussion of the purpose of proposed two-stage ditch and the detail is unclear about existing conditions of the proposed reach. Is there a need to protect the transition from trapezoidal cross section to the two-stage ditch cross section and visa versa? It would be helpful to see the existing typical cross section shown on the proposed two-stage ditch cross section.
- i. It would be helpful to identify the improvements to be conducted on the main ditch on Sheet 10, *Proposed Map; i.e., two-stage ditch, clean ditch, control structure*.
- j. It would seem that the field crossings will create in-channel storage. However, it is difficult to see that without a design event hydraulic grade line placed on the construction plans.
- k. On sheet #13 of the construction plans, the weir/control structure proposed at 55+00 on the open ditch is not shown and notated on the plan view.
- l. On page 13, third paragraph, last line it would seem appropriate, to add **rate** after **flow**.
- m. On page 15, it would be helpful to clarify how or if a "**surge** basin (storage pond)" is a treatment measure.
- n. On page 15, should saturated buffers be added to the list of treatment measures?
- o. On page 15, who was consulted regarding potential sources of external funding in accordance with Sec. 103E.015, Subd. 1a.?
- p. On page 15, how could a Community Partners Grant be used on this drainage system? The fact sheet on the BWSR website is explicit that the grants are available to non-governmental entities, and not "multiple government units".
- q. On page 15, the CWF Multipurpose Drainage Management Grant program may be a better fit for this project.
- r. On page 17, item 7, has there been thought given to short term erosion and sediment transport during the construction period or before vegetation is established for excavated ditch banks and the two-stage ditch?
- s. On page 17, *Subd 1a.*, the **Funding** section could easily be placed here and with the types of funding investigated clarified by source. MDA – Ag BMP loans, BWSR – CWF Multipurpose Drainage Management and Project and Practices, NRCS – Environmental Quality Incentives Program, The Nature Conservancy - ?, etc.
- t. In Appendix B, *Separable Maintenance Costs* are any or all of the ditch buffers costs attributable to improvement project?
- u. In the flood maps legend, what are the units and meaning of the colored high to low numbers?

**Recommendations for changes, if considered advisable.**

Only as noted above.

**A recommendation as to whether a soil survey appears advisable.**

The report indicates use of the USDA Web Soil Survey. For this improvement project, a separate soil survey is not necessary. However, the report should discuss streambank soil characteristics in relation to the proposed side slopes within the ditch reaches.

If you have any questions, please contact me via phone or email.

Sincerely,

Handwritten signature of Timothy A. Gillette in cursive script.

Timothy A. Gillette, PE

651-297-8287

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cc: John Jaschke, Executive Director  
Dave Weirens, Assistant Director  
Ed Lenz, South Region Manager  
Douglas Goodrich, Board Conservationist  
Brian Nyborg, DNR Area Hydrologist  
Mark Hiles, Clean Water Specialist - Drainage  
Al Kean, Chief Engineer