



**Ecological and Water Resources**

**2115 Birchmont Beach Rd NE**

**Bemidji, MN 56601**

July 13, 2021

Todd Larson

Stevens County Drainage Authority

1762 State Highway 9

Morris, MN 56267

**Re: Commissioner's Advisory Report for Preliminary Survey Report for the Stevens County Ditch 16 Improvement**

Dear Todd Larson,

On behalf of the Director of Ecological and Water Resources of the Minnesota Department of Natural Resources (MDNR), I offer the following comments on the Preliminary Engineers Report for Traverse County Ditch 16 improvements in accordance with Minnesota Statutes section 103E.255.

1. The Preliminary Survey Report appears to be adequate as it contains all the required information; however we have recommendations for the final engineering report below.
2. A soil survey is not needed.

**Recommendations to improve completeness**

- Expand upon the project purpose, describing the need for the improvement project rather than maintenance. Explain why is an improvement project needed at this time (i.e. multi-year crop damage due to flooding, road closures due to flooding, or other structural damages)? Describe the location, frequency, duration, and extent of damages due to flooding.
- Provide additional information on the character of the outlet and potential impacts to wetlands, and downstream water quality and biotic life, and consistency with watershed planning efforts. Recommendations for how to provide this information are outlined below.
- Clarify the design of potential storage areas, tiling through and around wetlands, and what will occur with the existing mainline ditch.

- The preliminary report alternatives provide little detail on the potential design for all listed storage options. Please note that both on-channel and off-channel storage may require a Minnesota Dam Safety Permit depending on design. The final advisory report should show details on proposed structures including their design height and proposed acre-feet of water storage. For more information about Dam Safety Permits see the [MN DNR Dam Safety webpage](#) or contact Jason Boyle at 651-259-5715.

### **Water Quality and Altered Hydrology**

Altered hydrology is a stated stressor in the Pomme De Terre 1 Watershed 1 Plan (1W1P) report. The proposed drainage improvement project is immediately upstream of Muddy Creek, which is newly listed as impaired for *E.coli*. The current proposal would increase drainage at the outlet by approximately six times its current condition. This is the fourth drainage improvement project MDNR has reviewed in the Muddy Creek HUC-10 Watershed (the others were CD 5, 18, and 25). Downstream flooding, increased streambank and streambed erosion, and a decrease in water quality is likely to occur as a result of increasing discharge from improving multiple drainage systems within the same watershed. MDNR recommends that the Drainage Authority include the following in the final engineer's report:

- Discussion of cumulative effects to the hydrology of Muddy Creek from this improvement (CD 16) in combination with CD 5, CD 18, CD 25. DNR is not only interested in peak flows and cubic feet per second, but also on the total volume of water draining off the landscape.
- Incorporation of water quality improvement practices to not only offset impacts from the proposed improvement, but also contribute to the overall improvement of the Pomme De Terre watershed hydrology as outlined in the 1W1P. Potential practices such as filter strips, wetland restorations, sediment control basins, buried rock tile inlets should be incorporated into the Final Engineer's report.
- Include total volume run-off for events with existing versus the proposed improvement with hydrographs.
- The report does not indicate the existing mainline ditch would be filled-in, and it also appears may connect with the proposed drain tile. Leaving this ditch open and abandoning it for landowner control presents a high likelihood that the mainline ditch would be maintained by landowners. Because the open ditch is likely to be maintained by landowners, MDNR recommends including the drainage from this open ditch into hydrological modeling if it is not physically disconnected from the overall CD 16 drainage system.
- DNR notes the suggested area for water storage is small in size and unlikely to provide a substantial offset the increase in drainage efficiency from the proposed project.

- For additional water quality and wildlife habitat, MDNR recommends use of Minnesota Board and Soil and Water Conservation (BWSR) [native seed mixes](#). Appropriate BWSR mixes include Mesic Prairie Northwest (35-441) or Wet Prairie (34-262).

### Effects of proposed drainage on wetlands

- Immediately downstream of the outlet is a public water wetland (75010200). The drainage improvement is likely to result in degradation changes through increased discharge into the basin (potentially raising the water levels) as well as increased sedimentation and decrease of water quality. Please describe potential changes in water levels and sedimentation that may occur in this basin as a result of the proposed improvement project. Describe any practices proposed to prevent impacts to this public water wetland.
- Tiling is proposed through several wetland areas of the project. MDNR recommends avoidance of tile through wetlands as much as possible and further investigation into potential wetland restoration opportunities. Non-perforated tile should be extended beyond wetland boundaries to prevent lateral drainage effects. We encourage close coordination with the Wetland Conservation Act Local Government Unit (Stevens County SWCD) and Technical Evaluation Panel to ensure compliance with state and federal wetland regulations.

Thank you for the consideration of these comments. Please contact Environmental Assessment Ecologist Jaimé Thibodeaux ([jaimethibodeaux@state.mn.us](mailto:jaimethibodeaux@state.mn.us)) with any concerns or questions.

Sincerely,



Nathan Kestner  
Regional Manager, Ecological and Water Resources

CC: Emily Siira, Area Hydrologist  
Jaimé Thibodeaux, NW Environmental Assessment Ecologist

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**Links:**

Minnesota DNR Dam Safety

[https://www.dnr.state.mn.us/waters/surfacewater\\_section/damsafety/permit\\_guidelines.html](https://www.dnr.state.mn.us/waters/surfacewater_section/damsafety/permit_guidelines.html)

BWSR Native Seed Mixes

<http://bwsr.state.mn.us/seed-mixes>

# Engineer's Response to DNR's Preliminary Advisory Letter

Stevens County Ditch No. 16



To: Stevens County Drainage Authority  
From: Jacob Rischmiller, PE  
Date: July 16<sup>th</sup>, 2021  
Subject: Engineer's Response to DNR's Preliminary Advisory Letter  
cc: Stephanie Buss, Todd Larson (Stevens County);  
Region 1, Emily Siira, Nathan Kestner (MnDNR);  
Kale Van Bruggen (Rinke Noonan)

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## OVERVIEW

Stevens County Ditch No. 16 (CD 16) lies within the Darnen Township, just west of the City of Morris. ISG submitted the Preliminary Engineer's Report on June 2<sup>nd</sup>, 2021. The response below follows the format of the DNR letter.

### Recommendations to improve completeness

- The purpose of the proposed project is to gain adequate depth for current farm practices as well as increase the capacity due to multi-year crop damage due to flooding within the farm fields. Several areas within the watershed are low where water sits and does not have an adequate outlet to drain which is causing crop stress and damages.
- Further comments are below in the Water Quality and Altered Hydrology section.
- The proposed storage area will utilize the existing storage basin downstream of the watershed. This area is already being utilized as a storage area therefore, with the proper modifications to the outlet structure the storage basin will be adequate to offset the improvement capacity. As for the proposed tiles, the project will utilize non-perforated tile through wetlands that either have been determined by the Level 1 analysis (submitted to the TEP) or by certified wetland determinations provided by the landowners.
- ISG will provide further analysis on whether the existing storage basin would require a dam safety permit in the Final Engineer's Report.

### Water Quality and Altered Hydrology

- Each of the (CD 5, CD 18 and CD 25) systems are either matching or decreasing peak flows (for majority of the storm events) into Muddy Creek, therefore the cumulative effect of the creek will be negligible.
  - As for the total volumes that each system is contributing to Muddy Creek, there are multiple different factors that would have to be assumed (i.e. evapotranspiration rate, infiltration rate of soil, etc...). To understand the total impacts to Muddy Creek from a volume standpoint, the entire Muddy Creek watershed would have to be modeled, which is beyond the scope of project as well as above the requirements of drainage code 103E.
- The proposed modification to the storage basin downstream of the system will aid in offsetting the impacts. Other wetland restoration projects within the watershed could further enhance the water quality of the CD 16 system. One specific area on the north side of the CD 16 watershed, will turn into a wetland restoration if approval from agencies occur. The CD 16 watershed has 3 other large areas that could be wetland restorations, with landowner support. As shown in Appendix D of the Preliminary Engineer's Report on the Multi-Purpose Drainage Management Plan.
- The total volume run-off for each of the events can be provided in the Final Engineer's Report.
- The existing main ditch would be abandoned from the public system since the main tile outlet bypasses the ditch. The individual landowner however could maintain the existing ditch or fill the ditch in. ISG modeled the ditch as being maintained which would be the conservative option.
  - The modification of the existing storage basin, in the NW ¼ of the NE ¼ of Section 16 of Darnen Township, will increase the footprint of the storage by approximately 0.70 acres while deepening the depth of the storage by approximately 2 feet. Modifying the storage outlet does not create additional storage but manages the flow of the existing storage area.. The blue hatch on the proposed watershed maps, is dictating an area if the existing

storage area would fall through. ISG has talked to the landowner that owns the existing storage and they are in favor of modifying the control structure as part of this system.

- ISG will utilize native BWSR seed mixes where applicable.

#### **Effects of proposed drainage on wetlands**

- The proposed project will have negligible effects on public water wetland (75010200) since the wetland is downstream of the Gahm storage basin. By modifying the storage basin's outlet, the project will reduce the erosion of the bank which in turn will reduce the sedimentation occurring in the public water wetland. Another reduction in sedimentation from the project is reducing the amount of overland flow that is occurring within the CD 16 system, from increasing the tile capacity.
- ISG has submitted a level 1 wetland determination to the Technical Evaluation Panel and will be in contact with the Stevens County SWCD and TEP if any wetland issues arise from the determination. The comment period for the determination ended on July 13<sup>th</sup>, 2021, so a notice of decision should be issued shortly.

#### **Conclusion**

ISG feels that the project adequately meets the requirements of 103E.245 and is an acceptable plan, as described in the Preliminary Engineer's report and this letter. Hence, ISG recommendation for approval of the Preliminary Engineer's Report. ISG will also coordinate with the DNR about the Dam Safety permit and other clarification issues that were brought up in the advisory letter and include them in the Final Engineer's Report.

Sincerely,



Jacob Rischmiller, PE

Civil Engineer