



August 8, 2016

Board of Managers  
Buffalo-Red River Watershed District  
PO Box 341  
Barnesville, MN 56514

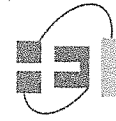
**Subject: Wilkin County Ditch 6A Repair  
T135N, R45W (Tanberg Township) and T134N, R46W (Meadows Township),  
Wilkin County  
HEI Project No. 1915\_230**

Dear Board of Managers:

We recently collected and reviewed survey data for a portion of Wilkin County Ditch 6A located in Sections 31 and 32 of Tanberg Township, and Sections 1, 2, 3, and 10 of Meadows Township. The reviewed portion of Wilkin County Ditch 6A begins in the southeast corner of Section 32, T135N, R45W (Tanberg Township) and runs west approximately 1.8 miles along the south sides of Sections 31 and 32 of Tanberg Township. At County Road 15 the ditch turns to the southwest and runs diagonally for approximately 3.3 miles through Sections 1, 2, 3, and 10, T134N, R46W (Meadows Township) before ending our review at County Road 163. This letter report summarizes our review and repair recommendations for the ditch system.

#### Background

The extension of the Wilkin County Ditch 6A main ditch and branches was originally petitioned for in May of 1906. A petition for repair in 1934 led to some excavating/clearing work in Sections 31 and 32 of Tanberg Township. Plans from that repair show a bottom channel width of 8ft and sideslopes of 1.5H:1V. Wilkin County recently performed repair work in Section 32 that included the installation of three rock drop structures and sloping of the north ditch slope. Construction Plans for ditch cleaning, culvert installation, and seeding were prepared in 2011 by the Wilkin County Highway Department for Sections 1, 2, 3, 8, 9, and 10 of Meadows Township. The typical ditch cleaning section shows a bottom channel width of 15 feet and sideslopes of 3H:1V. The plans also show the installation of 6 rock drop structures.



### Existing Ditch Condition

The surveyed channel gradeline and cross sectional geometry was compared to the construction plans for ditch cleaning in 2011. The condition of the ditch as it is today is described on a section by section basis from upstream to downstream as follows:

- **Section 32, Tanberg Township:** Survey of the farthest upstream ditch mile shows an existing gradeline of approximately 0.10% between the three existing rock drop structures. Significant erosion of the south ditch slope has occurred at each of the rock drop structures. Without a repair, erosion of the ditch down cutting would potentially result in a ditch grade of 0.20% - 0.30%. The north ditch slope looks to have been recently repaired. The south ditch slope has experienced some erosion and currently has a steeper than 3H:1V sideslope.
- **Section 31, Tanberg Township:** Survey of the ditch section between 280<sup>th</sup> Ave. and 290<sup>th</sup> Ave. shows an existing gradeline of approximately 0.22%. The ditch slopes on both sides have shown significant signs of failure with 4 to 6 foot vertical slope failures. There are no existing rock drop structures located within this reach.
- **Section 1, 2, and 3, Meadows Township:** Survey of the ditch section between County Road 172 and 280<sup>th</sup> Ave. shows an existing gradeline of approximately 0.10% to 0.15%. The ditch slopes on both sides have shown significant signs of failure with 2 to 4 foot vertical slope failures. There are five existing rock drop structures located within this reach with most of them failing due to erosion occurring on the adjacent ditch slopes.
- **Section 10, Meadows Township:** Survey of the ditch section between County Road 163 and County Road 172 shows an existing gradeline of approximately 0.16%. The ditch slopes on both sides appear to be in fairly good condition with the exception of the rock drop location. There is one existing rock drop structure that is failing due to erosion occurring on the south ditch slope.

### Proposed Repair Features

The proposed features include the repair and reinforcement of all existing rock drop structures along with the installation of five new rock drop structures. The established grade throughout the repair will have a maximum slope of 0.11%. In Sections 1, 2, 3, and 10 of Meadows Township the ditch will be restored to a 15 foot bottom width and 3H:1V sideslopes. Excess excavation material throughout this reach should be used to repair channel geometry as necessary. The ditch through Section 31 will be restored to an 8 foot bottom width and 3H:1V sideslopes. Excess excavation material through this reach shall be placed adjacent to the ditch in spoil piles along both sides of the ditch. The ditch through Section 32 will be restored to an 8 foot bottom width and 3H:1V sideslopes by excavating a portion of the south ditch slope and placing excess excavation material adjacent to

the ditch along the south side. There should be little to no work performed on the north ditch slope in Section 32.

Opinion of Probable Cost

The Opinion of Probable Cost of construction is estimated to be \$300,000 to \$330,000. Cost savings are likely if Wilkin County completes the construction. Steve Ackerman Land Surveying is currently assembling existing ditch right of way information. Additional right-of-way needs will be determined once Ackerman completes his work. The Buffalo-Red River Watershed District Board of Managers will need to determine what, if anything, should be paid for this permanent easement as well as the temporary easement required for the repair construction. The BRRWD should also consider meeting with project area landowners to discuss the scope of work.

Let me know if you have any questions or concerns.

Thank you.

Sincerely,

HOUSTON ENGINEERING, INC.



Erik S. Jones, PE

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Enclosure

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