



May 1, 2017

Board of Managers
Buffalo-Red River Watershed District
1303 4th Ave. N.E., PO Box 341
Barnesville, MN 56514

Ted D. Rud, P.E.
Project Engineer
Houston Engineering, Inc.
1401 21st Ave. N.
Fargo, ND 58102

Re: BWSR Advisory Report for Engineer's Design Report, Wolverton Creek Restoration, Buffalo-Red River Watershed District

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

The Engineer's Design Report appears to present a practical plan and to fulfill the applicable requirements of Minnesota Statutes, Section 103D.711, Subd. 2, although the report provides limited technical information about design details and associated drawings. Specific comments are provided below. The soil type map (Figure 4), which is presumably based on the USDA-NRCS Web Soil Survey and associated soils information, should adequately address the soils information need. I understand this project to be a product of substantial multipurpose water management planning and coordination over a number of years, which is commendable!

Specific Comments

Section 1.2 Project Background: It would be helpful to identify and document the statutory provision(s) under which the project was initiated, including a project petition and/or a watershed district board order in relation to its watershed management plan, as applicable. The report indicates that substantial prior channel stabilization, buffers and sediment BMPs have been completed downstream of Highway 75, and that buffer strips, erosion control and sediment BMPs have been installed on all Chapter 103E drainage systems that outlet into Wolverton Creek, all of which is also commendable.

Section 1.3 Existing Conditions: Presumably, all or part of Wolverton Creek has perennial low flow. It would be helpful to document this characteristic in the report, because channels with perennial low flow typically are most suitable for 2-stage channels. (See also comments for Section 3.1.)

Section 2.1 Project Goals and Objectives: The report doesn't indicate why a 10-year floodplain / floodway is a key consideration for design. However, I'm not questioning a project goal for a 10-yr. floodway corridor. For this creek, a 10-yr. annual event design (as opposed to a summer rainfall event) seems reasonable.

Section 3.1 Channel Geometry: Typical existing and proposed channel and floodway cross-sections would be very helpful to better understand both existing conditions and the proposed plan, including the dimensions of the proposed two-stage "channel", which it seems would be better characterized as a two-stage floodway corridor. (Meandering 1.5-yr. channel in a 10-yr. floodway, as I understand it.)

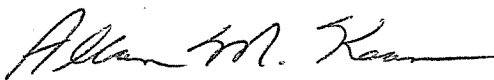
Section 3.4 Side Inlet Sediment BMP'S: As you may know, I believe side inlet BMPs with associated low berms/embankments are a very cost effective, multipurpose conservation practice. This section indicates side inlet size recommendations in Table 4, but does not indicate the basis for the size recommendations, such as an NRCS conservation practice standard or other design criteria/basis. It also does not speak about associated embankments, or refer to a typical drawing to better understand the design.

Section 4.2 Flood Damage Reduction (Based on Modeling):

- This section does not indicate why 1997 USGS Regression Equations were used to determine design hydrology, rather than using current USGS StreamStats. I note that the 1997 USGS Regression Equation flows were reportedly increased based on HEC-RAS calibration to highwater marks and comparison to flood events recorded for the Buffalo River at Sabin. The report does not indicate the difference between existing and proposed conditions water surface profiles or flows. It is recommended that more hydraulic design data be documented in the report for current and future reference.
- It's not clear to me how the flood corridor widths (250 ft., 400 ft., and 200 ft.) relate to the "Downstream Valley Width (FT)" in Section 3.1, Table 1. Presumably, the flood corridor widths correspond to the "Primary Easement" Buffer Areas on Sheets 1 - 5 of the Restoration Concept maps.
- The locations of CSAH #2, 170th St., and 180th Ave., which are identified as transition locations (approximate) for the width of flood corridor and primary easement acquisition, are not identified on Restoration Concept Sheets 1 and 4 of 5 and are difficult to find on Sheet 5 of 5.

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

Sincerely,



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cc: John Jaschke, Executive Director
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