July 2013 version

Environmental Assessment Worksheet

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's (EQB) EAW Process webpage. (EQB, 2020). The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. Project Title:

Vermillion River Aquatic Management Area: Stream Bank Stabilization

2. Proposer:

Contact Person: Mark Nemeth
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3. RGU:

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4. Reason for EAW Preparation:

Required	Discretionary
☐ EIS Scoping	☐ Citizen petition
▌ Mandatory EAW	☐ RGU discretion
	☐ Proposer initiated

If EAW is mandatory, give EQB rule category subpart number(s) and name(s): MN Rules 4410.4300 Subpart 26

5. Project Location:

County: Dakota
City/Township: Vermillion
PLS Location (¼, ¼, Section, Township, Range) SW ¼ SE¼ of Section 20, T114, R18
Watershed (81 major watershed scale): 38 Mississippi River and Lake Pepin
GPS Coordinates: 44°39'43.085"N, -93°0'13.908"W
Tax Parcel Number(s): 39-02000-77-030

At a minimum, attach each of the following to the EAW:

- County map showing the general location of the project;
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable); and
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan.

Figures and Attachments

- Figure 1. County map showing the proposed project location.
- Figure 2. U.S. Geological Survey 7.5 Minute, 1:24,000 scale map indicating properties boundaries
- Figure 3. Proposed project site images from 2012, 2013, and 2019
- Figure 4. Proposed project overview with reference pool
- Figure 5. Proposed project overview
- Figure 6. Typical wood bank stabilization
- Figure 7. Footer logs, rootwads, and coarse woody material prior to covering by fabric encapsulated soil lifts
- Figure 8. Toewood bank stabilization with encapsulated soil lift
- Figure 9. Encapsulated soil lift installation details
- Figure 10. Encapsulated soil lift installation details continued
- Figure 11. Typical constructed riffle
- Figure 12. Land cover types within and surrounding the proposed project area
- Figure 13. Generalized land use surrounding the proposed project area
- Figure 14. Soils map units for the proposed project area from the Web Soil Survey
- Figure 15. Public water inventory surrounding the proposed project site
- Figure 16. FEMA floodzones for the proposed project area
- Figure 17. Minnesota Department of Health well index for the proposed project area
- Figure 18. National wetland inventory utilizing the Cowardin classification for the proposed project area

- Attachment A. DNR Forestry/Fish & Wildlife Archaeologist and State Historic Preservation Office
- Attachment B. Minnesota Department of Natural Resources Fisheries and Wildlife Vermillion River Aquatic Management Area Management Guidance Document
- Attachment C. Well logs
- Attachment D. Minnesota Department of Natural Resources, Natural Heritage Information System

6. Project Description:

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

The proposed Vermillion River Aquatic Management Area: Stream Bank Stabilization project would stabilize an eroding bank within the Vermillion River Aquatic Management Area. The Vermillion River is migrating into a high bank and increasing erosion. Stabilization of 365 feet length of streambank would reduce erosion while benefiting fish, aquatic invertebrate, and wildlife habitats.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion, include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

Project location and overview

The proposed project site is located approximately northeast of the intersection of Hwy 52 and 200th Street East. The proposed project site is showing degradation (Figure 3) due to channel down-cutting and streambank erosion during moderate and high flows .This stream segment has a narrow channel bend length and is incised. At moderate and high flows the stream is confined within the channel increasing stream velocities and accelerating bank erosion. The increased sediment causes negative impacts downstream to fish, invertebrates, and water quality.

The Minnesota Department of Natural Resources (DNR), Section of Fisheries, proposes to stabilize an eroding bank along the Vermillion River within the Vermillion River State Aquatic Management Area (AMA), in Vermillion Township in Dakota County (refer to Figures 1 and Figure 2). The 365' project area is within the DNR Vermillion River State Aquatic Management Area (AMA) and within the last mile of the river designated as a trout stream.

The dimension and pattern of the proposed stream bank reconstruction were developed using Natural Channel Design (NCD) methodology. This process uses a stable reference reach as the basis for stream design. The reach downstream was developed from a reference reach and the streambanks have remained relatively stable since 2012 (Figure 4). The drainage area of the reference reach and proposed stream bank are nearly identical; no adjustments in channel dimensions were needed. This proposed project would reduce erosion by adjusting the channel away from the eroding bank. Materials from the excavated channel would be used to fill in the previous channel. Additional fill would come from within the floodplain. The quantity of fill is estimated as 119.4 cubic yards. There would be soil compaction for the plug in the old channel and estimate an additional 12 cubic yards (total of 132 cubic yards) of fill would be needed for the project. The bank height would be decreased to a bankfull elevation creating a flood plain bench to lessen stream velocities during high flows. The proposed project also proposes to increase the bend length which increases the radius of the stream segment which also lessens stream velocity (refer to proposed project overview in Figure 5).

First, the woody vegetation needed for toewood would be harvested from the immediate area after August first and before September 30. Therefore, necessary tree removal and clearing would be completed outside of the nesting season for several species of interest, including the north long-eared bat (Myotis septentrionalis) (USFWS 2015) and the loggerhead shrike (Lanius ludovicianus) (USFWS 2000).

Second, the proposed project would excavate a new channel and place footer logs, insertion of rootwads, and woody debris. Dirt would be added as fill and rooting substrate to the woody debris layer. The river would be diverted into the new channel and the old channel, once disconnected, would be filled with sediments from the excavation of the new channel. The upper bank would be regraded to bankfull and grading of a gradual slope through the 50 foot wide buffer area.

The final stage would address the stream bank and any disturbed soils. These areas would be seeded with a native seed mix free of any invasive species, protected with natural erosion control blankets and weed free straw. The stream bank would be treated with locally collected willow stakes.

Project construction

The proposed project would use natural materials including trees 12 inches or greater in diameter and 20 feet or greater in length as foundation logs (Figure 6). Logs would protect the streambank from erosion, encourage scour along the toe of the bank to create greater depth preferred by adult fish and provide complex cover for fish. These logs would be partially buried into the bank to the calculated scour depth of the stream channel up to six inches above the baseflow water surface elevation, laying just offset from being parallel to the current. Logs would also be pinned in place by rootwads, tree trunks greater than 12 inches in diameter, and 15 feet in length with rootballs attached, buried perpendicular to current and underlying foundation logs (refer to Figure 6). A layer of coarse woody materials, approximately two to eight inches in diameter and 10 feet in length (refer to Figure 7) would be placed on top of the tree trunks and behind the rootwads. The coarse woody material would be topped with native willow (*Salix* species) cuttings collected from the site and then by coir fiber blanket-wrapped soil layers up to the bankfull elevation at a 2:1 slope (refer to Figures 6 and 8). A coir fiber blanket is a biodegradable coconut fabric that is staked into the ground and is used to retain soils during vegetation establishment.

The coir fiber blanket-wrapped soil layers would be created in lifts of approximately 12 inches in height (refer to Figures 9 and 10). Two layers of coir blanket would be used to wrap soil: a coarse mesh blanket on the outside rated to withstand up to 10 feet per second of stream velocity, and an inner layer of fine coir fiber that prevents erosion of fine materials through the coarse blanket. Construction of the wrap would use temporary wood and steel forms that are placed along what would be the face of the streambank. Both blankets would be initially rolled out parallel to the stream channel with blanket reaching three to four feet back from the form and the rest laying over the top and on the other side of the form. Fill would be placed on top of the blanket until the soil is up to the top of the form. The remaining blanket would then be wrapped around the lift and pulled back from the face until taught (typically at least six feet) and anchored with wedge stakes every three feet. Successive layers of wraps could be built on top of one another, set back from the underlying face by two feet to achieve the desired 2:1 bank slope.

A floodplain bench would extend southward and over the previous stream channel to increase access area for flood flows and lessen stream velocity along this bank during bankfull flows. The approximate 50-foot buffer area would be planted with native vegetation, blanked with wildlife-friendly erosion control fabric, and cover crop to aid future root structure's stabilization of the bank. These areas would be seeded with a native seed mix free of any invasive species, protected with natural erosion control blankets and weed free straw. The stream bank would be treated with locally collected willow stakes.

Before beginning the construction, stockpile areas and proposed project limits would be staked. Practices to accomplish containment include undisturbed lengths of vegetation, silt fence, or wood chip wattles.

The proposed project channel would tie into a glide and riffle that may be augmented with cleaned river rock to preserve the current stream grade and to prevent down-cutting. The augmented riffle would be formed by

placing coarse gravel and small cobbles up to six inches in diameter on the bed of the stream. A minimum of 12 inches of deep of rock would be placed in an upstream U-shape (refer to Figure 11), and would gradually slope from the lowest elevation in the center at a 15 percent slope up to the streambank at a 5:1 slope, then down from the peak at a 20:1 slope. The shape and the slope of the riffle are designed to funnel flow to the center of the channel, creating a scour pool downstream of the structure and maintaining peak stream velocity in the center of the channel away from streambanks to minimize erosion.

The proposed stream crossing would occur at a glide. The purpose of the stream crossing is to access the stream restoration area without impacting private landowners. The crossing is at a riffle. To support vehicles, natural rock would be added to support traffic crossing the river. Upon project completion, elevations would be returned to pre-project conditions. The crossing would provide future grade control of the streambed. The glide would be returned to preconditioned grading and elevations. It may be augmented with cleaned river rock, cobbles, and gravel to preserve the stream grade and to prevent down-cutting.

The estimated timeline for the construction stages are as follows:

- August 1 through August 7 –stockpile rock necessary to tie into the glide and riffle and stream crossing
- August 1 through August 7 –begin project construction; harvest rootwads for toewood and willow sod mats for construction
- August 7 through August 31 –begin constructing the bank, tie into the riffle, and grading bank and bankfull bench
- August 21 to September –complete any remaining stabilization of soils with blanketing, seeding, planting, and willow staking

The exact dates of the work would depend on weather and streamflow conditions. Once work begins the work is planned to take three weeks to complete.

Monitoring

The DNR Section of Fisheries would monitor the newly constructed stream bank for stability, and any areas with obvious erosion would be repaired. Invasive plant species would be controlled for at least three years to encourage the establishment of native plant species.

c. Project magnitude:

Table 1. Project magnitude.

Type	Amount
Total Project Acreage	6.28
Linear project length	365 feet
Number and type of residential units	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable

Type	Amount
Other uses – specify	Not applicable
Structure height(s)	Not applicable

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The primary purpose of the proposed project is to stabilize a bank to reduce erosion in the project area and therefore reduce sedimentation in downstream areas. Native vegetation established with the proposed project would provide better stabilization of the stream bank due to deeper root depth and density than the riparian area that is currently dominated by reed canary grass (*Phalaris arundinacea*) and common buckthorn (*Rhamnus cathartica*).

The secondary purpose of the proposed project is to improve habitat for brown trout and other coldwater aquatic organisms, thereby improving angler enjoyment of this public resource.

Anglers and other users of the Vermillion River AMA would benefit from the proposed project, seeing improved habitat and water quality.

e. Are future stages of this development including development on any other property planned or likely to happen, Yes or No? No.

f. If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review. Not applicable.

g. Is this project a subsequent stage of an earlier project, Yes or No? No.
If yes, briefly describe the past development, timeline and any past environmental review. Not applicable.

7. Cover Types:

Estimate the acreage of the site with each of the following cover types before and after development:

Note: From the GAP Land Cover Analysis from 1991-1993, the floodplain forest type cover is identified as Lowland Deciduous Forest. It includes subtypes cottonwood, silver maple, and lowland deciduous forest.

Table 2. An assessment of land cover types estimated using GIS.

Cover Type	Before	After
Wetlands	2.1	2.1
Deep water/streams	0.71	0.71
Wooded/forest	0	0
Brush/Grassland	1.98	1.98
Cropland	1.49	1.49
Lawn/landscaping	0	0
Impervious Surface	0	0
Stormwater Pond	0	0
Other (describe)	0	0
Total	6.28	6.28

Trees would be removed from the floodplain forest. This would be done to create an access route to the proposed project area. Approximately 60 trees would be removed and used during the proposed project. Project plans would replant trees with species represented within the floodplain forest (silver maple, cottonwood, and willow). The project does not propose to change the floodplain forest communities.

8. Permits and approvals required:

List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental reviews has been completed. See Minnesota Rules, Chapter 4410.3100.*

Table3. List of permits and approval required.

Unit of Government	Type of Application	Status
U.S. Fish and Wildlife Service	Section 7 concurrence	To be obtained
Minnesota Pollution Control Agency	NPDES/SDS Construction stormwater permit	To be obtained
Minnesota Department of Natural Resources	Work in public water permit	To be obtained
State Historic Preservation Agency	Section 106 concurrence	Issued Appendix A
Minnesota Office of State Archaeologist	Project approval	Issued Appendix A
Minnesota Department of Natural Resources	Natural Heritage Information System Data	Issued Appendix D
State of Minnesota	Lessard-Sams Outdoor Heritage Grant	Funded
State of Minnesota	Fisheries	Funded

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

9. Land Use:

a. Describe:
   i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

The Minnesota Land Cover use of the surrounding area is included in Figure 13, which was updated in 2016. The current land within the proposed project site is an Aquatic Management Area, DNR Section of Fisheries is transitioning the land from past farming practices to a natural area. The public land is used for angling, hunting, and nature viewing. The area is a mix of restored prairie (79 acres), floodplain forest (4.7 acres), and altered/non-native plant community with a wetland forest (5.8 acres) (Figures 12 and 13).

Adjacent to the proposed project are agricultural, undeveloped, and industrial or utility lands (Figure 13). The south 20-acre field is managed for row crop production. The 12-acre field to the west is agriculturally managed using eight acres for market gardening and the remaining acreage along the river is undeveloped floodplain forest. Northern portions of these agricultural fields are seasonally flooded. The undeveloped land north of the proposed project is a floodplain forest. The 18-acre field to the north was identified as maintained tall grass upland (Figure 12) that transitioned to row crop production. However, this field has been fallow for the last two years. The industrial site has been vacant for at least the last seven years (2012-2019). The site was previously operated as a compost facility.

Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The DNR plans to continue managing the restored prairie areas and reduce the abundance of common buckthorn within the floodplain forest community. Please see the Vermillion River AMA Management Guiding Document (Appendix B).

This portion of the Vermillion River is a designated trout stream and managed as a catch-and-release only for brown trout. Rainbow trout (*Oncorhynchus mykiss*) are stocked annually for fishing. Rainbow trout are managed by regular statewide regulations. From September 15 through October 15, angling for brown trout and rainbow trout is allowed but catch-and-release only.

The Vermillion River Watershed Restoration and Protection Strategy Report details plans for the watershed.

ii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The proposed bank stabilization area is located entirely within the Dakota County's Shoreland Zoning District and the 100-year floodplain of the Vermillion River (Figure 16).

The AMA is zoned as a Greenway Search Corridor in the Dakota County 2040 Comprehensive plan Dakota County 2040 Comprehensive Plan website (co.dakota.mn.us/Government/Planning/CompPlan/Documents/DakotaCounty2040ComprehensivePlan.pdf).

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The proposed project is compatible with the managed natural area within the AMA. The streambank stabilization is part of the overall goal to benefit water quality and habitats for fish, invertebrates, and wildlife. Native planting of shrubs, grasses, and forbs would complement previous restorations and management guidelines.

This proposed project appears to meet the strategy of "Identify and implement sediment reduction and/or volume reduction best management practices (BMPs) within publicly owned or managed lands" in the Vermillion River Watershed Restoration and Protection Strategy Report.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

The proposed project doesn't appear to have any conflicts with nearby land use, zoning, and future plans.

10. Geology, soils, and topography/land forms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

Bedrock underlying the proposed project area is the Prairie Du Chien Formation (Balaban and Hobbs, 1990.) The Prairie Du Chien Formation is formed by dolostone of the Shakopee Formation in the upper two thirds and Oneota Dolomite in the bottom. The Shakopee Formation is thin bedded and sandy or oolitic and contains thin beds of sandstone and chert. Oneota Dolomite is massive to thick bedded, and generally not oolitic or sandy. The Prairie Du Chien is karsted and may be rubbly where the overlying formations have been removed by erosion. Depth to bedrock in the proposed project area is up to 250 feet below the ground surface. Surficial geology consists primarily of floodplain alluvium and Pre-Late Wisconsinan deposits.

No karst features or other geologically sensitive features are known to occur in the vicinity of the proposed project area. No known limitations have been identified in the proposed project area. Therefore, no known mitigation measures have been identified for geologic features.

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii

Topography in the proposed project area, including access routes, ranges from 836 to 852 feet above mean sea level. Within the immediate streambank construction area, the elevation ranges from 836 to 840 feet above mean sea level with the steepest portion located at the eroding bank.
The valley slope measured is .19%. The slope within the floodplain area, where the proposed stream bank stabilization would occur, is estimated at .18%. The greatest slope measured within the work area measured from the 200 Street East to the stream was less than 1.7%.

The dominant soil types in the proposed project area are Kato silty clay loam 67.0 percent (map unit 208). On access routes or areas where materials could be stockpiled includes Hubbard loamy sand, zero to one percent slopes 13.3 percent (map unit 7A), Hubbard loamy sand, one to six percent slopes 4.6 percent (map unit 7B), Dickinson sandy loam, two to six percent slopes 2.5 percent (map unit 27B), Estherville sandy loam, zero to two percent slope 1.8 percent (map unit 41A), or water 9.6 percent Table 4 and Figure 14. Additional less dominant soil map units are present in the proposed project area, as shown in Table 4 and Figure 14.

During construction, the ground disturbance would be limited to the extent possible to minimize the potential for erosion. Erosion and sediment control BMPs would be installed and designed to minimize erosion onsite, protect sensitive resources, and prevent construction-related sediment from migrating offsite. Site conditions would determine the final selections and placement of BMPs. Such BMPs would include heavier 3N or 4N (wildlife-friendly) erosion control blankets located at the top of slopes and thorough staking methods to prevent stormwater runoff from undercutting the blanket. BMPs would include the Minnesota Board of Water and Soil Resources-approved native seeds mixes that are free of invasive species and designed for rapid stabilization.

An estimated volume and acreage for the new channel is 129.29 cubic yards and occurs in an area of 0.239 acres. The estimated volume to fill the old channel is 248.69 cubic yards and occurs in an area of 0.344 acres.

Table 4. Soil descriptions for the project area from the Web Soil Survey 2019.

Soil Symbol	Soil Unit Name	Slope (%)	Erosion (T) Factor	Hydrologic Group	Hydric Rating	Farmland Classification	Acres in Project Area	Percent of Project Area
7A	Hubbard loamy sand	0-1%	5	A	No	Not prime farmland	0.9	13.3
7B	Hubbard loamy sand	1-6%	5	A	No	Not prime farmland	0.3	4.6
27B	Dickinson sandy loam	2-6%	3	A	No	All areas are prime farmland	0.2	2.5
39A	Wadena loam	0-2%	3	B	No	All areas are prime farmland	0.0	0.1
41A	Estherville sandy loam	0-2%	3	A	No	Farmland of statewide importance	0.1	1.8
41B	Estherville sandy loam	2-6%	2	A	No	Farmland of statewide importance	0.1	.08

Soil Symbol	Soil Unit Name	Slope (%)	Erosion (T) Factor	Hydrologic Group	Hydric Rating	Farmland Classification	Acres in Project Area	Percent of Project Area
129	Cinder loam	2-6%	3	B/D	No	All areas are prime farmland	0	0.2
208	Kato silt clay	0-1%	3	B/D	Yes	Prime farmland if drained	4.6	67
W	Water	0.001					0.7	9.6
Total							6.8	100

TABLE NOTES: Soil descriptions for the proposed project area from the Web Soil Survey 2019.

11. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The Vermillion River (M-049) is a DNR designated trout stream. The Vermillion River is on the Minnesota Pollution Contral Agency (MPCA) 303d Impaired Water list. It is listed as impaired for Aquatic Consumption. It has an approved total maximum daily load for Mercury in fish tissue.

Within one mile and upstream of the proposed project area is the South Branch of the Vermillion River (M-049-005), and Unnamed (M-049-006), also known as the North Branch of the Vermillion River, protected tributaries to a designated trout stream (Figure 15).

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

The proposed project is within a Minnesota Department of Health (MDH) wellhead protection area which is shown in Figure 17. There are no known springs with the proposed project area; however, the flows for the Vermillion River are generated by upstream seeps, infiltration, and surface water runoff. The depth to groundwater is fairly shallow between 3 and 25 feet in wells near the proposed project.

The proposed project area is with the Vermillion Township and within the Hastings Wellhead Protection Area. The residences of Empire Township are located approximately a ½ mile from the proposed project site and are on well water. The following Table 5 lists the 19 wells identified on the MDH website within approximately ½ mile radius of the proposed project area. Of these wells, three are within approximately ¼ mile radius of the project site, and the well logs for these wells are included in Appendix C. If any unknown wells are found through the course of the proposed project, these wells would be sealed in accordance with the regulations of MDH.

The bank stabilization project would occur above well depths and along the river. The proposed work area is below the water source for the wells. The project does not anticipate any impacts to the wells.

Table 5. Wells within one-half mile of the project area.

Well Identification Number	Well Depth in Feet	Well Log Included in Appendix C
79058	138	Yes
159461	102	Not applicable
224401	320	Yes
227969	21	Not applicable
227970	52	Not applicable
243743	32	Not applicable
437949	154	Not applicable
475857	144	Not applicable
506749	180	Not applicable
524232	142	Not applicable
573811	340	Not applicable
608244	152	Not applicable
698208	143	Not applicable
736089	150	Not applicable
738021	132	Not applicable
751702	135	Not applicable
768392	134	Not applicable
1000002476	30	Not applicable
10000021189	27	Yes

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392

393 b. Describe effects from project activities on water resources and measures to minimize or mitigate the
394 effects in Item b.i. through Item b.iv.

i. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

The proposed project would not produce any sanitary, municipal/domestic, or industrial wastewater.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

The proposed project would not produce any sanitary, municipal/domestic, or industrial wastewater.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

The proposed project would not produce any sanitary, municipal/domestic, or industrial wastewater.

ii. Stormwater - Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

The immediate watershed area contributing runoff to the proposed project area is managed as a natural area and would continue to be managed as a natural area after the proposed project is complete. The Vermillion River would receive runoff from the site. The Mississippi River is located approximately 20 miles downstream from the site.

Short-term changes to runoff may occur during and immediately after construction; however, no changes to the local hydrology are expected due to the implementation of the proposed project. A Stormwater Pollution Prevention Plan (SWPPP) would be developed and submitted to the MPCA, during or following the environmental review process, as part of the National Pollution Discharge Elimination System (NPDES) permit administered by the MPCA. The proposed SWPPP would include BMPs to minimize soil erosion, including stabilization of constructed channel before the introduction of streamflow, use of wildlife-friendly erosion control blanket and mulch, and rapid revegetation of disturbed area with cover crop and native vegetation. Any additional measures required by the MPCA would also be added. Disturbed soils would be seeded with native vegetation and covered with wildlife-friendly erosion control blanket on slopes adjacent to the stream, and mulch would be placed on disturbed upland areas to prevent erosion and encourage revegetation. Water from the Vermillion River may be used to irrigate newly seeded and covered soils. If water is used, it would not exceed 10,000 gallons a day or a million gallons per year.

The proposed project would reduce long-term erosion by stabilizing the eroding bank, improving native vegetation quality throughout the buffer, so improved water quality is expected as a result of the proposed project.

iii. Water appropriation: Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

The proposed project would not appropriate surface or groundwater.

iv. Surface Waters:

1) Wetlands: Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

The proposed project would move the stream channel away from a tall eroding bank, which would involve excavating trees from the floodplain forest. The proposed project would affect the wetland forest community and an altered/non-native plant community within a wetland forest (Figures 12 and 18).

Utilizing the NWI Cowardin Classification work would occur in freshwater forested/emergent wetland and freshwater emergent wetland communities. A potential impact to wetlands may be soil compaction. To reduce impacts the equipment used would be required to use rubber tracks and operate from construction mats to limit compaction. The present grass component of the wetland community is dominated by reed canary grass. Before leaving soils would be scarified to reduce compaction and seeded with native wetland species and covered with erosion control fabric.

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When working in the wetland or wet conditions, mats would be used to maintain soil structure in an un-smeared and un-compacted conditions. Revegetation with native plant species to replace the reed canary grass and common buckthorn by replanting native grass, forbs, trees, and shrubs. Project plans would replant trees with species represented within the floodplain forest (silver maple, cottonwood, and willow). Stockpile areas would be maintained outside of wetland boundaries and equipment use would be minimized as much as possible and parked outside floodplain boundary. There would be no net changes in wetland area and other wetlands would be avoided to the extent possible.

Reseeding, shrub, and tree plantings would occur. Species chosen would be native to Dakota County and would be RCG tolerant species.

BMPs would limit onsite erosion and minimize wetland impacts during the proposed project that include avoidance, utilization of construction mats, maintain natural buffers, silt fence, and silt waddles. Construction would be conducted in phases to minimize the length of disturbance in a given area and to establish permanent erosion control with native seeding and plantings. Disturbed areas would also be covered in wildlife-friendly natural erosion control materials. Excavated soils would be used during the construction to fill the existing channel limiting the need for fill to be used with the proposed project area.

2) Other surface waters: Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The proposed project affects approximately 365 feet of the Vermillion River within a designated trout stream. The proposed project has been designed using NCD methodology by using reference reach information available on a stable upstream reach of the Vermillion River used on a constructed stream bank downstream. The proposed project streambank would be improved by addressing near and long-term erosion of the stream bank, agricultural land, and improve aquatic habitats.

The proposed project would reduce fine sediments from an eroding bank. Impacts or potential impacts of fine sediments may include covering of spawning habitat at the project site and downstream areas used by trout and other fish species. Branches, gravel, and cobble used as a substrate by invertebrates and cover by fish may benefit from less sediment as well. Nutrients bound to the sediments may increase biological oxygen demand and the darker sediments may absorb sunlight increasing water temperatures. The addition of fine sediments is natural in streams. However, sediment loss from this bank has been over five feet since 2013 (greater than 20 cubic yards). Though not acute, sedimentation creates chronic conditions. Reducing sediments may provide benefits to fish, invertebrates, and water quality.

Impacts on downstream resources would be minimized by constructing and stabilizing the bank during low flow conditions to minimize erosion and downstream sedimentation. The bank would be reconstructed to maximize the length of time planted and seeded vegetation can become established before winter. The proposed project would occur outside the exclusion dates to limit impacts to trout spawning and migration.

The proposed project would affect floodplain wetlands adjacent to the stream. Rapid re-vegetation with native plant species would replace the reed canary grass and buckthorn to improve diversity and provide better forage and habitats for wildlife.

BMPs would limit onsite erosion during the proposed project that include avoidance, utilization of construction mats, maintain natural buffers, silt fence, and silt waddles. Construction would be

conducted in phases to minimize the length of disturbance in a given area and to establish permanent erosion control with native seeding and plantings. Disturbed areas would also be covered in wildlife-friendly natural erosion control materials. Excavated soils would be used during the construction to fill the existing channel limiting the need for fill to be used with the proposed project area.

Through monitoring of the site, the area can be incorporated into future native landscape management of the AMA. This would benefit aquatic and riparian habitats for fish wildlife and other nongame species.

Canoe and kayak use is not common in the area, and impacts for use are not expected.

12. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions. Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

None anticipated.

b. Project related generation/storage of solid wastes. Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

Minor amounts of construction waste such as packaging would be disposed of at an appropriate landfill.

c. Project related use/storage of hazardous materials: Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

Petroleum fuels, oils, and lubricants would be used by earthmoving equipment for construction phases of the proposed project elements. Accidental fuel spillage from tanks or during refueling, and leakage reaching the ground may occur and is limited to construction machinery. A Spill Prevention and Countermeasure Plan (SPCC Plan) would be prepared prior to the construction phase of the proposed project. The SPCC Plan would include measures and methods to minimize the potential for spills and mitigation plans to contain spills. Also, the SPCC Plan would include a site specific Health and Safety Plan for use by workers during construction. Fueling and maintenance of equipment would be limited to areas at least 100 feet from the streambank or other surface water bodies and wetlands and is designated to a stockpile area nearest 200th Street East. Any spill or release of petroleum products would be reported to the construction site supervisor who would evaluate whether this is the potential for groundwater or surface water pollution. In the event of a significant spill or release, the construction site supervisor would use on-site equipment and supplies to contain the spill and contact the state duty officer and an environmental emergency response contractor for further action that might be warranted.

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Not applicable.

13. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The DNR, in collaboration with the U.S. Forest Service, developed an Ecological Classification System (ECS) for hierarchical mapping and classification of Minnesota land areas with similar native plant communities and other ecological features. Based on the ECS, the proposed project area is located within the Oak Savanna Subsection of Minnesota and Northeast Iowa Morainal Section of the Eastern Broadleaf Forest Province (DNR 2018a).

Pre-settlement vegetation primarily consisted of prairie in the Oak Savanna Subsection. At present, the majority of adjacent land consists of farmland DNR Oak savanna subsection website (dnr.state.mn.us/ecs/222Me/index.html). However, approximately 76.7 acres of 95.6 acres within the AMA of the proposed project area have been converted from farmland and managed by the DNR as tallgrass prairie.

Vegetation in the proposed project area consists of agricultural land and floodplain forest dominated primarily by silver maple (*Acer saccharinum*), eastern cottonwood (*Populous deltoides*), box elder (*Acer negundo*), common buckthorn, and reed canary grass.

The proposed project area and its vicinity provide habitat for a diversity of organisms, including fish, amphibians, such as frogs, toads, and salamanders; reptiles including snapping turtles (*Chelydra serpentine*), painted turtles (*Chrysemys picta*), garter snakes (*Thamnophis sirtalis*), and western fox snakes (*Elaphe vulpina*), birds such as American bald eagle (*Haliaeetus leucocephalus*), hawks, great blue heron (*Ardea herodias*), Eastern wild turkey (Meleagris gallopavo), wood ducks (*Aix sponsa*), and perching birds; and mammals, such as red fox (*Vulpes vulpes*), white-tailed deer (*Odocoileus virginianus*), squirrels, beaver (*Castor canadensis*), and muskrats (*Ondatra sibethicus*).

DNR conducted fish community sampling on the Vermillion River AMA area in the fall of 2017 to monitor the fish population within this portion of the Vermillion River. A total of seven fish species were caught with the sampling location in 2017. White sucker (*Catostomus commersonii*) (52.3 percent), central mudminnow (*Umbra limi*) (13.5 percent), green sunfish (*Lepomis cyanellus*) (12.5 percent), followed by brown trout (10.2 percent) were the most abundant species comprising 88.5 percent of the sample. Other species included northern pike (*Esox lucius*), rainbow trout, and Johnny darter (*Etheostoma nigrum*).

As mentioned above under EAW Item 11, the Vermillion River is a DNR –designated trout stream. This reach has the potential to provide spawning and added habitat for brown trout and other aquatic organisms. However, at present, an eroding bank is contributing sand and fine sediments downstream. The proposed project may improve habitat by stabilizing an eroding bank while increasing habitat

diversity for trout and other species. The adjacent landowner to the AMA may benefit from a more stable riparian buffer and the subsequent loss of tillable land.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

The DNR's Natural Heritage Information System (NHIS) database was queried in March 2020 to assess whether state or federally listed species have been documented in the vicinity of the proposed project. The correspondence number ERDB 20200276 was attained with the data. The NHIS letter is included in Appendix D. Fact sheets for species identified would be distributed to those working on the proposed project. According to the NHIS database, one state-endangered bird, the loggerhead shrike has been documented along Coates Boulevard (Highway 52), west and north of the proposed project area.

The loggerhead shrike inhabits areas of upland native and non-native grasslands and sometimes in agricultural areas where short grass vegetation and perching sites such as hedgerows, shrubs, and small trees are found Loggerhead shrike website (dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABPBR01030). Loggerhead shrikes nest in trees and brush less than 6.6 feet above the ground. It is possible loggerhead shrike could be present within the vicinity of the proposed project area, as suitable habitat for loggerhead shrike are present.

The threatened Blanding's turtle (*Emydoidea blandingii*) live in a wide variety of wetland and riverine habitats. Upland habitats including adjacent agricultural fields that are likely used for dispersal from winter habitats into adjacent wetland habitats, basking and or movements to nesting sites by mature females. Dispersal from preferred overwintering wetland habitats likely occur in spring and early summer. Blanding's turtle likely return to these overwinter habitats late summer early fall Blanding's turtle website (dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARAAD04010).

Western fox snakes have been observed in the vicinity of the proposed project and have been identified as a Species of Greatest Conservation Need. The western fox snake lives along forest edge habitats. They tend to be active in the spring and fall. Erosion control mesh would be limited to wildlife-friendly materials or areas of less slope non-netted erosion reducing practices would be used. If snakes are encountered, they would be moved out of harm's way if in danger. Otherwise, they would be left undisturbed.

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) online tool identifies the federally endangered Higgins eye mussel (*Lampsis higginsii*; state-endangered), the federally threatened northern long-eared bat (state-special concern), and the federally threatened prairie bush clover (*Lespedeza leptostachya*; state-threatened) as possibly occurring with the proposed project area.

The Higgins eye mussel inhabits larger rivers with steady currents and sand and gravel substrates. The St. Croix River has one of the largest remaining Higgins eye mussel populations throughout the species'

range. The Higgins eye pearly mussel has been extirpated from the Minnesota River and is rare in the Mississippi River Higgins eye mussel website (www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV21100). According to the NHIS database, no living Higgins eye mussels have been documented in the Vermillion River; as such, it is unlikely that the Higgins eye mussel would be present in the proposed project area.

The northern long-eared bat inhabits caves, mines, and forests Northern long-eared bat website (dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AMACC01150); while caves and mines are not present in the vicinity of the proposed project, forested communities are present. The proposed project area could provide suitable habitat for northern long-eared bats; however, the closest hibernacula is more than 14 miles from the proposed project area and no maternity roost trees have been documented within the vicinity of the proposed project area Townships containing documented northern long-eared bat maternity roost trees and or hibernacula website (dnr.state.mn.us/eco/ereview/minnesota_nleb_township_list_and_map.pdf).

The prairie bush clover is a vascular plant that inhabits native mesic to dry-mesic prairies Prairie bush clover website (dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDFAB27090#). According to DNR data, including native prairies and Minnesota Biological Survey (MBS) native plant communities, no native prairie communities are present in the proposed project area.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

The proposed project may have minor temporary adverse impacts on wildlife in the vicinity of the proposed project area. Temporary impacts to wildlife may include increased noise and human activity during construction. Many species, even those accustomed to human proximity, could temporarily abandon habitats near the proposed project area until the work is completed. These temporary impacts are not expected to irreparably harm wildlife individuals or populations.

Within the Vermillion River, mobile organisms such as fish are expected to avoid and move away from the work area during construction. Direct impacts may occur to more sessile aquatic biota that are unable to remove themselves from the construction area. Ultimately, the proposed project would improve aquatic habitat and reduce erosion with this stretch of the Vermillion River. Though the site and excavation of materials are watched (frogs, snails, fish, crayfish) the impacts to sessile aquatic biota are expected to be temporary. In part due to drift (downstream migration) of invertebrates can quickly recolonize habitats.

Non-native invasive terrestrial species have been documented in the vicinity of the proposed project area. In upland areas adjacent to the Vermillion River, common buckthorn is present. The non-native invasive Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), plumeless thistle (*Cardus nutans*), spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), reed canary grass and purple loosestrife (*Lythrum salicaria*) have also been documented in the area. The Vermillion River is not on the list of DNR infested water. However, rusty crayfish (*Orconectes rusticus*) is a regulated invasive species in Minnesota and has been sampled within this Vermillion River AMA since 2014.

In order to minimize the spread of non-native invasive species, construction equipment would be cleared before arriving on site and cleaned again upon leaving the site to minimize the potential for invasive species transfer.

The state-endangered loggerhead shrike could be present in the proposed project area, as suitable habitat is present. Loggerhead shrike are early nesters (USFWS 2000). Construction wouldn't begin until August after the nesting and fledging have likely occurred for loggerhead shrikes. The tree clearing and planting that would occur as part of the proposed project may improve habitat for loggerhead shrikes by opening up the area and creating better access to the existing barbed wire fencing, American red plum (*Prunus americana*), and hawthorn (*Crataegus* spp.) which are used by loggerhead shrikes.

The state-endangered Blanding's turtle have been recently noted within the Vermillion River system. Practices to avoid and minimize impacts to Blanding's turtle would include a Blanding's turtle fact sheet for all contractors in the work area, wetlands would be protected from dredging deepening, filling, and be protected from pollution. In addition, any disturbed areas would be left with as much natural contour as possible and revegetated with native grasses, forbs and shrubs.

The proposed project is not expected to impact the state and federally endangered Higgins eye mussel or the federally threatened prairie bush clover. Although the federally threatened (state-special concern) northern long-eared bat has not been documented in the proposed project area. Removal of trees could remove potential habitat for bats during summer months. To minimize potential impacts to northern long-eared bats, no tree removal would occur during the pupping season, between June 1 and July 31, as outline in the Threatened Species Status for the Northern Long-Eared Bat with 4(d) Rule Federal Register posting (80 FR 17973 18033).

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

As previously mentioned, potential impacts to fish would be minimized by avoiding construction activities in the Vermillion River between September 1 and April 1. This period represents the work in water restriction dates for designated trout stream in the Central Region and would avoid impacts to trout when spawning. Additionally, as described above in EAW Item 6, erosion and sediment control BMPs would be installed throughout the proposed project area in order to minimize impacts to the Vermillion River. The potential impacts associated with the construction of the proposed project would be mitigated by ultimately improving the overall aquatic habitat in this stretch of the Vermillion River.

Although no northern long-eared bats have been documented within the proposed project area, as indicated above, tree clearing would not occur between June 1 and July 31 to minimize the potential impacts to northern long-eared bats. To avoid potential impact to loggerhead shrikes nesting in the proposed project area, no tree clearing would occur until August 1st after the most likely loggerhead shrike nesting and fledging season.

To minimize the spread of non-native invasive species, as indicated above, construction equipment would be cleaned prior to arriving on site and cleaned again upon leaving the site to minimize the potential for invasive species transfer.

14. Historic Properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features.

Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

The Minnesota State Historic Preservation Office (SHPO) was contacted to consult with the SHPO database and performed a site visit for known occurrences of archeological, historical, or architectural resources in the vicinity of the proposed project. SHPO responded on March 31, 2020, reporting that no historic properties or known/suspected archaeological sites are within the proposed project area.

15. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

Limited view and vista would be impacted by this proposed project. There are a few residences with visual sight lines to the proposed project site. Construction times would be limited to daylight hours. No vapor plumes or glare from lights would be present at the restoration site.

16. Air:

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Not applicable, no stationary source emissions would be created by the proposed project.

b. Vehicle emissions. Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

The proposed project would result in short-term, localized air quality impacts due to emissions from construction vehicles during construction activities, which are expected to last three weeks (Monday through Thursday). Emissions from the powered equipment would be minor and temporary during construction and are expected to have an overall negligible impact on air quality.

c. Dust and odors. Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

During construction, the proposed project may generate limited amounts of dust as a result of site preparation and grading. The nearest resident to the proposed project area is 1,000 feet. An in-home daycare is 3,800 feet from the proposed project area. Two Vermillion River and one South Branch of the Vermillion River AMA's are within one mile of the proposed project area. Some dust may result, but this

site is generally very moist due to the proximity of groundwater, so dust during construction should be minimal. Construction times would be limited to daylight hours.

17. Noise:

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

The sources of noise associated with the proposed project are typical of the noise generated by construction equipment and workers accessing the proposed project area. The equipment associated with the proposed project is expected to be limited to general earth moving equipment (excavator and loader) and trucks to deliver material (i.e. boulders, gravels, and other materials) to and from the proposed project area.

Existing noise levels and sources are minimal and mostly limited ambient road noise. There are a number of private residences within one-half mile. The nearest resident to the proposed project area is 1,000 feet. An in-home daycare is 3,800 feet from the proposed project area.

Minn. R. pt. 7030.0040 establishes two noise levels, L10 and L50, based on the percent of time noise levels exceed the standard over a one-hour time period: L10 is defined as "noise levels exceeding the standard for 10% of the time for one hour (6 minutes/hour)" and L50 is defined as "noise levels exceeding the standard for 50% of the time for one hour (30 minutes/hour)." The rules also establish daytime and nighttime noise level standards based on Noise Activity Classification (NAC) levels. Minn. R. pt. 7030.0050 defines NAC levels based on land uses as 1, 2, 3, or 4. NAC Level 2 is for commercial and recreational land use types, typical to that of the Project site.

Construction times would be limited to daylight hours over the three week period of construction. No change in the long-term noise level is expected after completion of construction proposed project.

18. Transportation:

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

   Not applicable. The proposed project would not be within a right-of-way. The proposed project is planned between August 1 and September 30th. Work would be conducted Monday through Thursday. The site would be accessed by approximately four vehicles arriving in the morning and departing in the afternoon. Construction equipment would be delivered to the site and remain on site until the work is completed. Occasional truck traffic, typically one or two trips a week, would be necessary to deliver materials, but it would not affect traffic.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at the Minnesota Department of Transportation Access Management webpage)* or a similar local guidance (MNDOT, 2020).

   Not applicable.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

Not applicable.

19. Cumulative potential effects:

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Identification of project related Environmental Effects

The environmental effects that have the potential to contribute to cumulative potential effects have been identified as the following:

i. Contamination of surface water, specifically due to suspended solids during and shortly after construction

Identification of Geographic Area and Timeframe for Environmental Effects

Vermillion River Aquatic Management Area: Stream Bank Stabilization Project is proposed to reduce bank erosion. This proposed project would reduce erosion by adjusting the channel away from the eroding bank. The construction period is estimate to occur in August to September and take about three weeks, as weather and streamflow conditions permit.

The drainage area of the reference reach and proposed stream bank are nearly identical; no adjustments in channel dimensions were needed. The quantity of fill estimated as 119.4 cubic yards. There would be soil compaction for the plug in the old channel and estimate an additional 12 cubic yards (total of 132 cubic yards) of fill would be needed for the project. The bank height would be decreased to a bankfull elevation creating a flood plain bench to lessen stream velocities during high flows. The proposed project also proposes to increase the bend length which increases the radius of the stream segment which also lessens stream velocity. After the restoration is complete and the river banks are re-vegetated, this segment of the river should attain a high level of channel stability reduces sedimentation long term.

The proposed project could contribute to the cumulative potential effects on water quality of the Vermillion River, which is listed on the current (MPCA) 303d Impaired Water list. It is listed as impaired for Aquatic Consumption. It has an approved total maximum daily load for Mercury in fish tissue.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Reasonably Foreseeable Projects

There are no reasonably foreseeable projects for which a basis of expectation has been laid that are likely to interact within the geographic scope or timeline of the proposed project.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The cumulative potential effects associated with the proposed project are primarily relate to potential effects on water quality. The related project will increase the quantity of runoff to the Vermillion River and at least temporarily, increase the amount of sediments and other pollutants entering the river. If runoff is not managed, controlled, or filtered during and after constructions of the proposed project, the amount of soluble solids and nutrients carried to the surface waters could increase.

The potential cumulative effects on water quality will be temporary in nature, with the Vermillion River being most vulnerable during project construction. Soon after construction of the channel restoration is completed, the Vermillion River channel should exhibit sediment reduction as the stream banks are re-stabilized. Permit requirements and BMPs applied during construction should be sufficient to manage the temporary risk of higher sedimentation. There is a lack of evidence to indicate significant environmental effects would result from these cumulative effects.

20. Other potential environmental effects:

If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

All potential environmental effects have been addressed above.

RGU Certification

*(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

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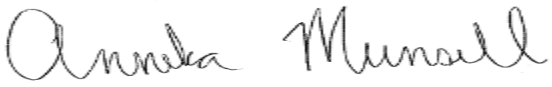

12/4/2020
Signature	**Date**

Title: EAW Project Manager