Stantec

# NORTH FORK RUSH CREEK REMEANDER FEASIBILITY REPORT

October 1, 2025

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Elm Creek WMC

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Project Number:
227705924

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# Acronyms / Abbreviations

| | |
|---|---|
| CSAH | County State Aid Highways |
| EPA | Environmental Protection Agency |
| LF | linear feet |
| MPCA | Minnesota Pollution Control Agency |
| WMC | Watershed Management Commission |

# 1 Introduction and Background

The Elm Creek Watershed Management Commission (WMC, Commission, or Elm Creek) and the City of Rogers, Minnesota, desire to evaluate the feasibility of a maintenance project on a portion of the North Fork of Rush Creek in Rogers, which is part of Hennepin County Ditch #21. The proposed project would stabilize banks, improve water quality, enhance aquatic habitat, and reintroduce some of the natural meanders that existed prior to channelization.

The impetus for this was the pending acquisition by Rogers of a large tract of high-quality maple-basswood forest known as Steig Woods, which had been owned and preserved by the Steig family for over a century. The City's intent is to manage the site as open space with limited access and is interested in enhancements to the surrounding area. The woods are south of the current alignment of the Creek.

Several constraints were considered during the conceptual design of the Study Area. These included:

- The proposed extension of CSAH 117 across the Creek and its riparian wetlands north of the Woods and Three Rivers Park District Master Plan for the Rush Creek Regional Trail.
- The private sod farms on the most eastern and western portions of the Study Area. The private sod farm owners did not want the ditch alignment changed due to impacts to the sod farm dikes.
- Several rows of overhead electric lines and tall pylons on the north side of the current alignment that would need to be avoided.
- Environmentally sensitive/protected areas: Stieg Woods and a Freshwater Shrub Wetland.

This Feasibility Study considers options for the desired stream improvements and open space enhancements while also accommodating future infrastructure projects and landowner needs (Figure 1).

## 1.1 Site Setting

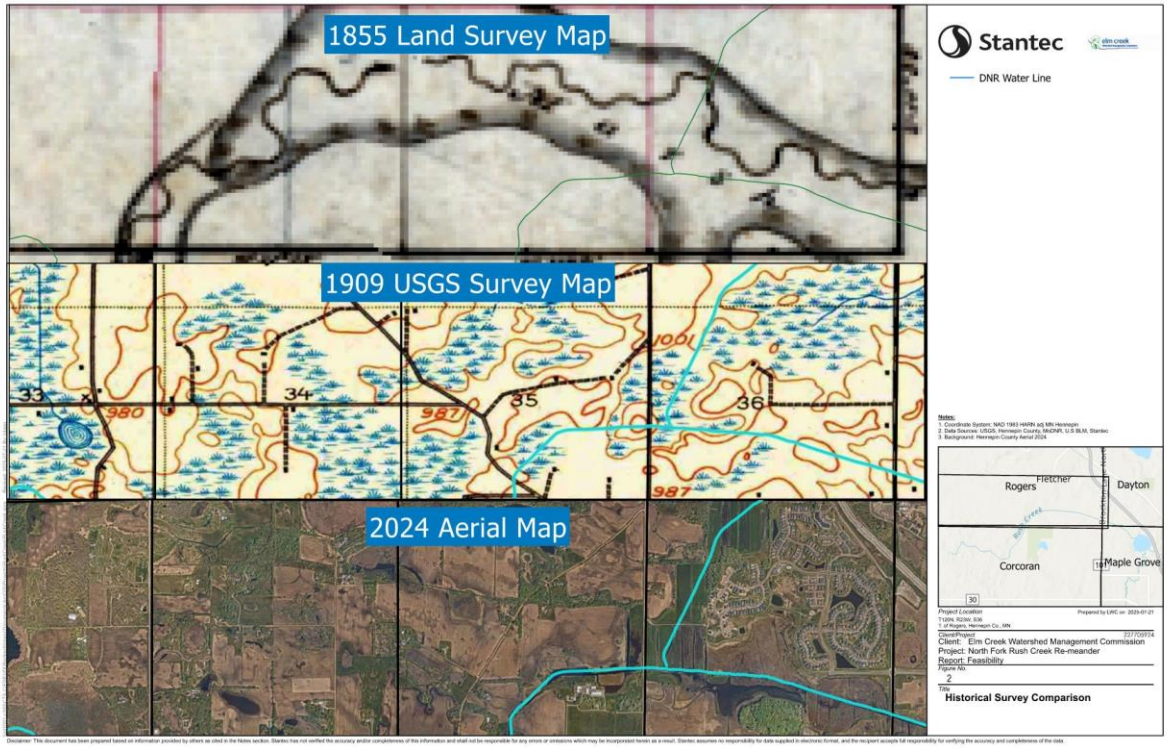
The Study Area is in eastern Rogers, Minnesota (Figure 1), between Fletcher Lane (CSAH 116) and Brockton Lane (CSAH 101). The proposed CSAH 117 extension would align with the current Dayton Parkway and plans for the Rush Creek Regional Corridor. New residential development, Laurel Creek, was recently developed to the north. The Steig Woods is on the south side of the creek across from the residential development near the middle of the Study Area. The creek also passes through several private sod farms on the most eastern and western portions of the Study Area. Approximately one mile downstream of the Study Area is the confluence of the South Fork of Rush Creek.

## Figure 1. Location and Constraints Map

# 2 Existing Conditions

The North Fork Rush Creek within the Study Area is a ditched waterway that was channelized for agricultural drainage purposes prior to the 1900s (Figure 2). It is a 303 (d) listed impaired waterway for fish bioassessments (2002), *E. coli* (2010), dissolved oxygen (2010), and benthic macroinvertebrates bioassessments (2014)[1]. The contributing drainage area upstream of the project is approximately 23 square miles.

**Figure 2. Historical Survey Comparison**




The channel within the Study Area is approximately 5,400 feet between the Fletcher Lane bridge to the west (upstream) and the Brockton Lane bridge on the east (downstream). The Brockton bridge was reconstructed to a bigger design in 2014. However, there is a private road crossing approximately 1,500 feet downstream of Brockton Lane that potentially restricts flow during high-flow events (Appendix B.2).

The creek flows through mostly wetland dominated by reed canary grass and has an average channel slope of approximately 0.02%. The channel banks and bed are assumed to consist of a layer peat soils

[1] Minnesota Pollution Control Agency. (April, 2024). Minnesota's impaired waters list (Document No. wq-iw1-81). https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list[1](https://www.pca.state.mn.us/air-water-land-climate/minnesotas-impaired-waters-list)

on top of layers of sandy soils, based on soil borings from nearby developments (Laurel Creek, 2017). The bankfull width is approximately 34 feet with an estimated depth of 3 to 4 feet. Some years the reed canary grass is dense enough to obscure sections of the channel from view. During snowmelt it is common for the area to experience significant inundations as with the early spring snowmelt event of 2023 (Appendix C.1)

# 3 Conceptual Design

Stantec proposes two design approaches to address habitat degradation and to promote a healthier habitat and better hydraulic capacity. The first option is to reintroduce a meander to the stream, to be completed in one or two/multiple phases. The second option places step-pools along the proposed re-meander for additional benefit of habitat. During future design phases, the step pools can be implemented and included in the design, based on available funding.

As illustrated in Figure 1, several key constraints influenced the conceptual design of the proposed channel alignment. For instance, the sod farm owner requested that the existing alignment remain unchanged, which precludes introducing meanders west of the sod parcel boundary. On the north side of the creek, multiple rows of overhead electric lines limit design flexibility, prompting the re-meander alignment to be placed south of the current ditch. Additionally, the planned extension of CSAH 117 will intersect the creek, requiring the channel to remain straight and perpendicular at the crossing point (Appendix A.1), though meanders may be introduced upstream and downstream of the crossing. To minimize construction impacts, the existing creek could remain in place until the new channel is built, eliminating the need for a temporary diversion. However, this approach would necessitate offsetting the proposed alignment from the current channel location.

## 3.1 Re-meander

The North Fork Rush Creek was channelized as a County Ditch prior to 1930 to provide a drainage outlet for the agricultural properties in the area. The design practice at the time was to excavate a straight, trapezoidal channel to maximize flow capacity. While this design was very efficient at draining runoff, it severely limited availability of habitat for fish and other aquatic life. One option to increase habitat quality is to add meanders to the creek to create opportunities for various water depths and velocities and habitat complexity. The alternating areas of erosion and deposition of the newly sinuous channel could enhance biodiversity along the creek bank. This aligns with the future goals of the area as a natural resource and regional trail corridor for the public.

Ideally, the project would attempt to replicate the original meander pattern that existed prior to ditching. Without original ditch plans or historical aerials of what this area looked like in the natural state, we used a representative meandered reach upstream of Cain Road in Corcoran, MN (Appendix A.2). Similarly, the recent work on the South Fork of Rush Creek provided an additional template for the channel geometry (Appendix B Figure 5).

To evaluate the geomorphic characteristics of the stream, the Rosgen stream classification method was applied to the proposed design. The proposed meanders would lengthen the channel from 5,385 LF to 7,935 LF, or a 47% increase. The sinuosity would increase from 1 to 1.5. The entrenchment ratio, which is the ratio of the width of the flood-prone area to the bankfull width to the channel, for this creek is likely to have a high ratio (>2.2) due to a bankfull width of approximately 34 feet and the adjacent flat wetland. The width/depth ratio is very low (<12) with an estimated depth of 5 feet. These two characteristics classify this stream as a Rosgen Type E, and Type E streams have sinuosity that is greater than 1.5.[2] The increasing length of the channel would mean the proposed channel slope would decrease. However, the decrease in slope and its corresponding decrease in velocity is not a concern for this creek as it does not have an existing function of transporting sediment due to its existing minimal channel slope and velocity.

The proposed channel would be 5 feet deep to prevent the growth of cattails. The bank slopes would be 3:1 (Appendix B.5). The excavated material could be used to fill in several of the lateral ditches. Two of the ditches are used as outlets for stormwater ponds for residential development, but the remaining lateral ditches may be filled unless needed for future development.

This conceptual design could be completed in three phases. The first phase would construct the western portion of the alignment upstream of the proposed CSAH 117 alignment. The second phase would construct the proposed alignment approximately 3,775 feet from the beginning of the re-meander and would be the largest phase of the project reconstructing 4,160 feet. The third and final phase would be the construction of the last 1,814 feet adjacent to the CSAH 117. This would allow for a majority of the project to be completed while accommodating potential alignment and timeline changes for the future CSAH 117 (Appendix B.1).

## 3.2 Step-pools

The existing creek does not have pools and riffles, so constructing step-pools would add more habitat variety and complexity and increase habitat quality and biodiversity to supplement adding meanders. The pools would also allow for more of a channel slope between the pools.

Three step-pools are proposed in addition to the above re-meander alignment (Appendix B.3 & B.4). Two of the pools would be on the City property or on Stieg property that will be purchased by the City. The third pool would be on private property in an area that is typically flooded. The meanders in between the pools would increase the channel length from 5,385 LF to 6,995 LF, or an increase of 30%. This option retains the same alignment as the re-meander and could be phased in the same way as the re-meander option if needed.

[2] Natural Resources Conservation Service. (August 2007). Technical Supplement 3E—Rosgen Stream Classification Technique—Supplemental Materials. U.S. Department of Agriculture. https://directives.nrcs.usda.gov/sites/default/files2/1712931124/7381.pdf

# 4 Updated Base Flood Elevation Modeling

Stantec was authorized through the Elm Creek Watershed Commission to investigate and update the HUC-8 modeling along the North Fork of Rush Creek, near the 'Four Corners' of Rogers, Dayton, Corcoran, and Maple Grove. The investigation led to updated flows along the North Fork, three crossings, and the downstream boundary condition. The 100-yr inundation map from the following analysis is provided in Figure 6 below.

**Updated Flows:**

For this analysis Stantec updated the HUC-8 modeling with flow from the FIS study. So, this increased the 100-year flow from 312 cfs at Cain Rd. to 530 cfs (FIS).

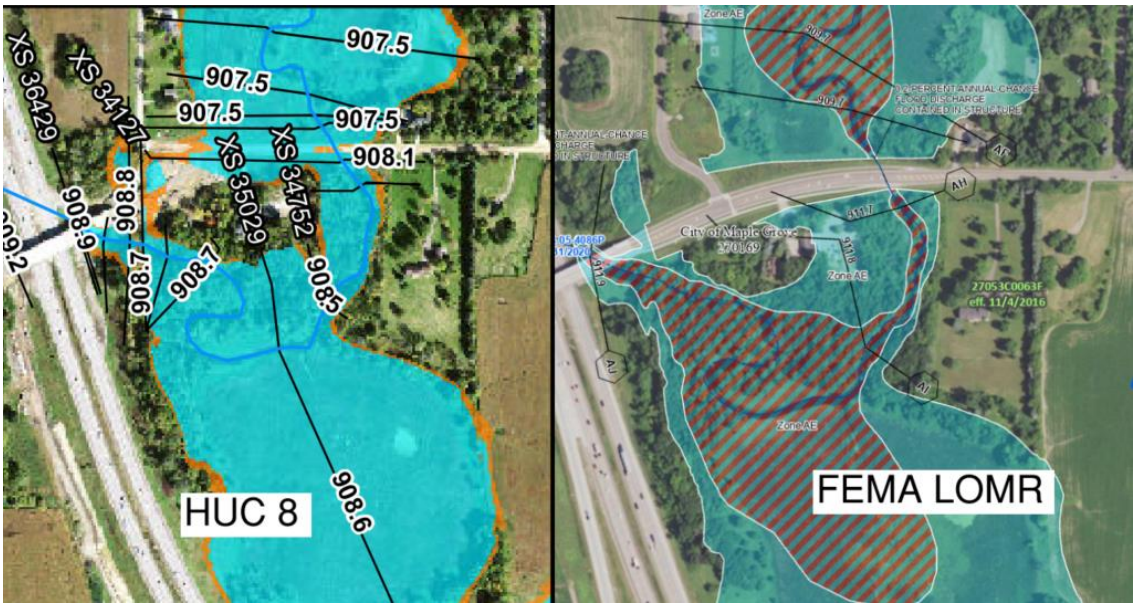
**Updated/Added Cross-sections:**

- Stantec added two cross-sections and a third cross-section was updated, downstream of the North/South Fork Confluence.
- Stantec added two private crossings in Dayton and Maple Grove (Figure 4, Circles #1 & #2) and updated the 105th Ave. Crossing (Figure 4, Circle #3) downstream of 94.

This second update had the largest impact on the modeling. The HUC-8 modeling did not have the new deck/roadway and just had the culvert crossing, which allowed overtopping of the roadway in the previous model. Below is a side-by-side of the HUC-8 and the FEMA LOMR that wasn't fully incorporated into the HUC 8 (Figure 5). This increase affected the downstream boundary condition for our North Fork Rush Creek analysis.

**Figure 3. Cross-Sections Added to the Model**


**Figure 4. Changes to HUC 8 Modeling**




**<u>Updated Boundary Condition:</u>**

This increased flow and updated cross-sections (especially the 105th Ave. crossing update) resulted in an increase at the confluence of the North and South Fork. The modeling showed a 912.65 feet Base Flood Elevation (BFE) for this confluence, compared to the ~910 feet BFE that was shown in the HUC-8 Report.

This 912.65 ft. elevation was used as a fixed tailwater condition for the North Fork of Rush Creek – this is the most conservative approach as it models the peak flows occurring on the North Fork and South Fork of Rush Creek occurring simultaneously.

**Updated Results:**

Overall, the results along the North Fork of Rush Creek, in the area of interest, range between 912.65 feet - 912.80 feet (Figure 6), which is similar to what our various models had shown in the past. The 10-yr inundation elevations showed similar results (Figure 7).

**Figure 5. 100-yr Updated Inundation Map**

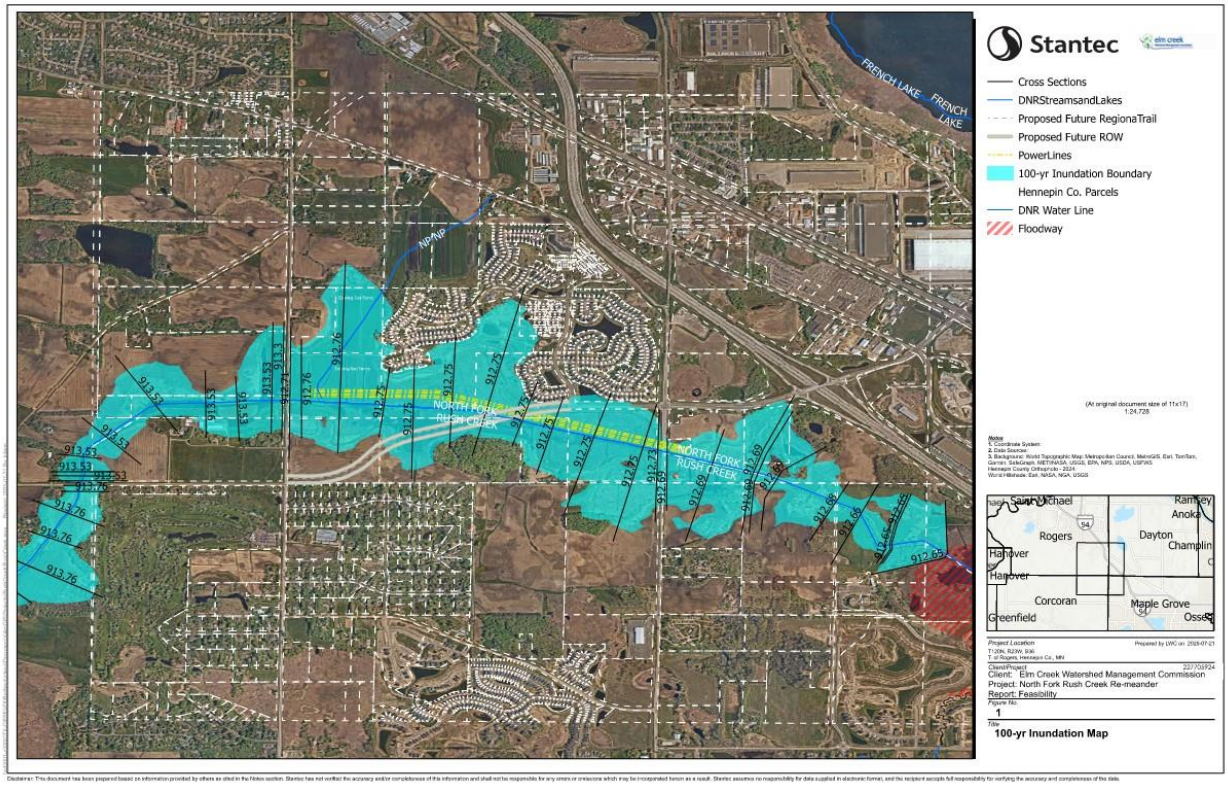
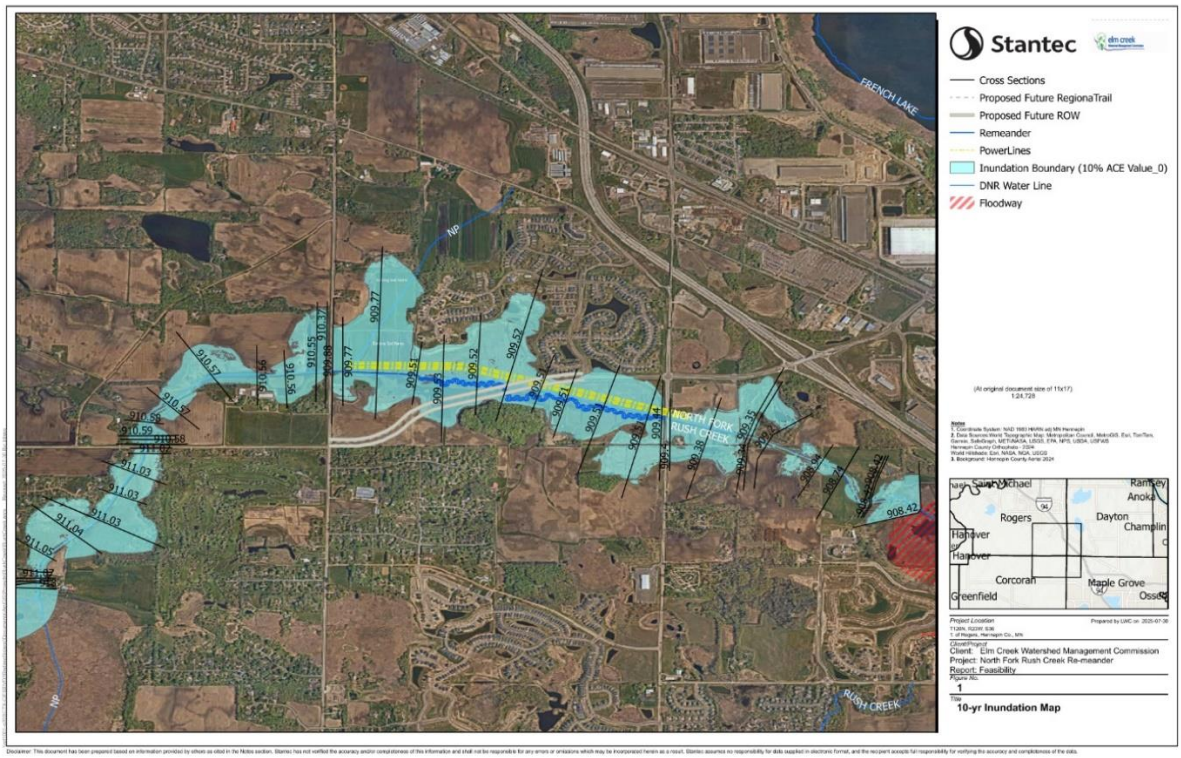


**Figure 6. 10-yr Updated Inundation Map**




# 5 Regulatory, Environmental, and Project Considerations

There are three regulatory programs that may be triggered by a drainage system repair/improvement project, including the Minnesota Department of Natural Resources (MnDNR) Public Waters Permitting Program, the federal Clean Water Act (CWA) implemented by the US Army Corps of Engineers (USACE), and the state Wetland Conservation Act (WCA) administered by local government units (LGUs). The City of Rogers is the LGU within the project corridor.

Other regulatory considerations include compliance with MS103E (a.k.a. “drainage law”), state and federal threatened and endangered species laws, and the National Flood Insurance Program (NFIP). Environmental effects include water quality and flooding. The following discussion describes how the alternatives reviewed are regulated and the impacts they have on environmental factors.

## 5.1 Minnesota Drainage Law (M.S. 103E)

Hennepin County is the Ditch Authority for County Ditch #12 under Chapter 103E of Minnesota Statutes.[3] The two conceptual designs are anticipated to fall under the definition of "repair" and would need to adhere to the provisions outlined in M.S. 103E.701. These provisions would likely be met by common restoration practices for the anticipated work. Hennepin County staff are aware of the proposed project but have made no official determination as to whether this could be considered repair rather than improvement. This determination should be made early in the process as the statutory requirements that must be met for each are different.

## 5.2 Public Waters

Rush Creek is a public water according to the DNR Public Waters Inventory; however, the surrounding wetlands are not identified as public waters. Changing the ditch course would likely require an individual water permit under 103G.245 subdivision 1 due to "the changing of the course and cross-section of the water by means of filling, excavating, and placing materials in the beds of public waters".[4] Recent legislation has stated that the legal definition of public water as understood by the DNR determines whether it is or is not a public water rather than the historical public waters maps. It will be imperative to schedule a pre-application meeting with the DNR to understand what their determination will be.

## 5.3 Wetlands

The Minnesota Wetland Conservation Act (WCA) requires that any impact on wetlands must be avoided if possible.[5] If not, the impacts should be minimal, and the impacted area replaced with another wetland of equal function and value. Within this project there would be minimal impacts that would alter the function or size of the existing wetlands.

The MN DNR Wetland Finder identifies three Circular 39 wetland classifications within the project area: Types 1, 3, and 6.[6] Historical survey from the 1855 plat (Figure 2) indicates that this area was once a stream with an associated floodplain. As noted previously, it remains unclear whether the surrounding wetlands would be classified as public waters—thus falling under DNR jurisdiction—or be regulated under the Wetland Conservation Act (WCA). One of the identified wetlands, a Type 6 freshwater shrub wetland, has been prioritized for preservation by stakeholders and lies outside the project impact area (Figure 3). Given the historical evidence of a stream in this location, the proposed work could be considered a restoration to original conditions. This supports a strong case under WCA for a finding of no impact, as the project would enhance, rather than degrade, existing wetland functions.

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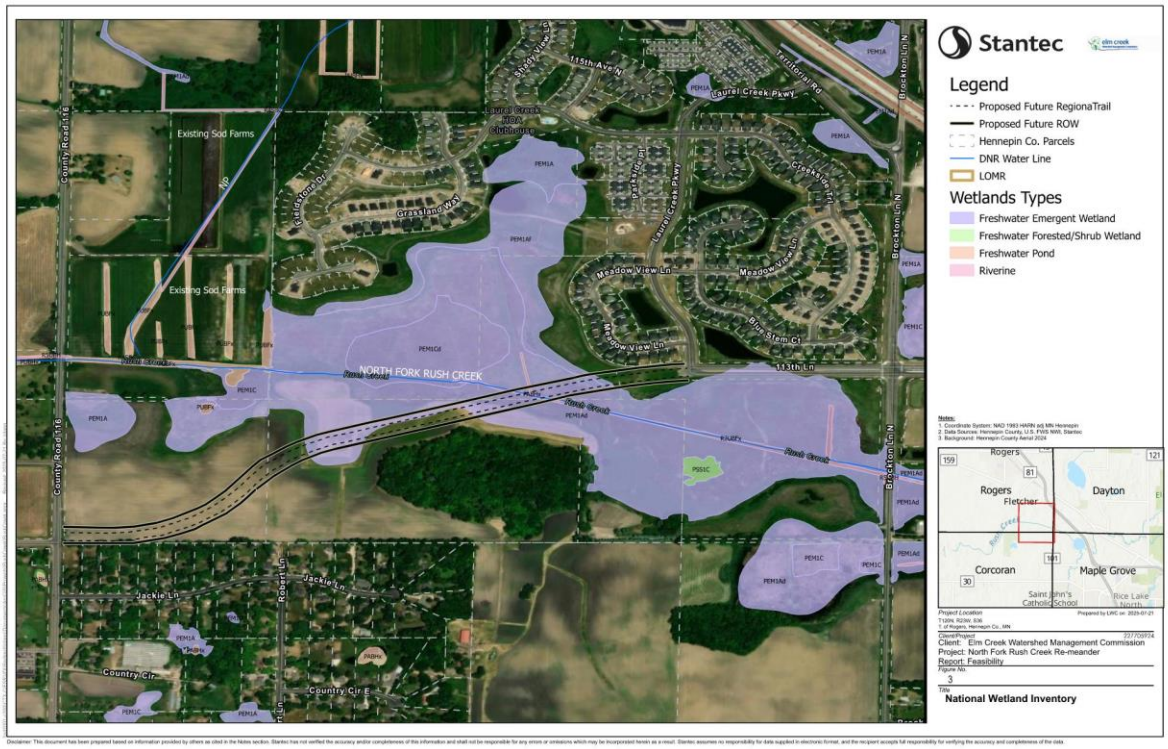
[3] Minnesota Office of the Revisor of Statutes. (2024). Minnesota Statutes, Chapter 103E – Drainage. https://www.revisor.mn.gov/statutes/cite/103E[1](https://www.revisor.mn.gov/statutes/cite/103E)

[4] Minnesota Office of the Revisor of Statutes. (2024). *Section 103G.245: Work in public waters*. 2024 Minnesota Statutes. https://www.revisor.mn.gov/statutes/cite/103G.245

[5] Minnesota Board of Water and Soil Resources. (March 2019). General wetlands regulation in Minnesota. https://bwsr.state.mn.us/sites/default/files/2019-04/WETLAND_General_Wetlands_Regulation_in_Minnesota_v2.1_March_2019.pdf

[6] Minnesota Department of Natural Resources. (May 2025.). Wetland Finder. https://wetland-finder.dnr.state.mn.us/[1](https://wetland-finder.dnr.state.mn.us/)

**Figure 7. National Wetland Inventory**




## 5.4 USACE 401 Permit

The project will likely need a Section 401 permit for the work. This permit provides evidence that state water quality standards are being met. Like the DNR public waters permit, the permittee can apply for a pre-application meeting to identify the requirements and materials to meet permit standards.

## 5.5 MPCA Permits

The construction of stormwater permit will be required as the area of disturbance being greater than an acre. Depending on the nature of the construction, i.e. the need for pumping water, the project may be required to obtain an NPDES permit.

## 5.6 FEMA Floodplain and Floodway

The project area is within a designated FEMA flood Zone A with a Zone AE downstream at the confluence of the North and South Fork. The proposed alternatives have been designed for no increase to the 100-year flood elevations throughout the project reach and would therefore have no adverse impact on the floodplain water surface elevations. See Section 4 –Updated Base Flood Elevation Modeling.

## 5.7 Downstream Hydraulic Restrictions

During Stantec's review of the site it was noted by city staff that there were several downstream restrictions that may impact goals and potential outcomes of the project. It would be prudent to address the downstream restrictions prior to the completion of the project (Appendix C.2).

## 5.8 Threatened and Endangered Species

A National Heritage Information System request will need to be submitted to the DNR. Due to the ecology of the site it is possible there is documentation of Blandings turtles. This would require:

- Area and wetland and aquatic impacts need to be avoided during hibernation season from September 15th to April 15th.
- Filling in voids in the permanent riprap with gravel, soil, or other material between large stones to avoid entrapping turtles
- limiting erosion and sediment control
- avoiding hydro-mulch products with synthetic fiber additives.

## 5.9 Property Owner Constraints

Both design options would need cooperation with landowners as the proposed creek channel would be shifting on private property, and lateral ditches might be filled on private property. Additionally, it should be properly conveyed to landowners that the purpose of this project is to improve water quality and habitat, and not to reduce localized flooding. Hydraulics will likely be enhanced with a more defined channel, but the modeled base flood elevation will not change.

# 6 Cost Estimate

A preliminary opinion of probable construction cost for the proposed alternatives was calculated using anticipated project quantities and unit costs based on bids from past projects involving similar work and project scale. The estimated cost is subject to change with the final design and does not include potential permitting costs. The cost estimate for the remeander and the additional cost associated with the inclusion of the step-pools are summarized in the table below. The cost of an initial phase 1 has also been included in the case that construction of the project would want to begin prior to the CSAH 117 roadway project. The cost estimates included several assumptions that are detailed below. A more in-depth cost breakdown can be found in Appendix C.

- Assumes excavated soils are not contaminated and will be able to be used on-site
- Mobilization would be approximately 7.5%

- Lack of roadways resulted in little traffic control.
- Assuming double perimeter protection on both sides of the stream
- The cost of the re-meander includes the excavation of the new alignment, fine grading, and respreading of soils on-site.

**Stream Re-meander**

The design aims to restore the channelized North Fork of Rush Creek to a re-meandered, more natural stream. This involves significant excavation to widen and deepen the channel and fill the existing ditch. The resulting sinuous alignment would promote alternating zones of erosion and deposition, enhancing streambank biodiversity. This approach supports long-term goals for the area as a natural resource and regional trail corridor.

**Step-Pool Enhancements**

An alternative design includes three step-pools in addition to the re-meander (Appendix A.3). Due to the added excavation, materials, and construction—such as level spreaders and ditch plugs—this option is approximately 35% more expensive than the re-meander alone. However, this option allows for additional ecological benefits by providing diversifying the hydraulic habitat within the stream.

**Potential Phasing**

Given the high costs of full channel realignment, a phased construction approach is proposed. A summary of phased costs is provided in Table 1 and in Appendix A.2. Future phasing can be adjusted based on available funding and project priorities.

**Table 1. Opinion of Probable Cost Summary Table**

| Design Option | Item | Costs |
|---|---|---|
| Re-Meander Full Build Out | SUBTOTAL | $ 1,910,000 |
| | 25% CONTINGENCY | $ 478,000 |
| | **TOTAL OPINION OF PROBABLE CONSTRUCTION COST** | **$ 2,388,000** |
| Step-pool and Re-meander | SUBTOTAL | $ 2,574,000 |
| | 25% CONTINGENCY | $ 644,000 |
| | **TOTAL OPINION OF PROBABLE CONSTRUCTION COST** | **$ 3,218,000** |
| Re-Meander Phase 1 | SUBTOTAL | $ 781,000 |
| | 25% CONTINGENCY | $ 196,000 |
| | **TOTAL OPINION OF PROBABLE CONSTRUCTION COST** | **$ 977,000** |

# 7 Recommendation

The purpose of the proposed alternative is to restore the North Fork of Rush Creek and align with local agency plans for the area as a natural corridor. Based on the preliminary assessment of the site, we recommend consideration for re-meandering and including step-pools, if additional budget is available, for additional ecological habitat. As part of this work, it will be necessary to address downstream hydraulic restrictions and consider future development and potential erosion stabilization.

Due to the unknown construction timeline and details of the CSAH 117 project and it crossing through the site, it is anticipated that the full build out of the project would be difficult to complete until concept plans for the CSAH 117 alignment are finalized. Stantec recommends initially addressing downstream hydraulic constraints identified in Section 4.7 and shown in Appendix C, while additional planning for the CSAH 117 crossing, Steig Woods area, and regional trails are finalized. In the meantime, funding sources and permitting requirements for the project could be further investigated. Once funding is allocated and planning for other infrastructure is finalized, the potential phasing of the project can be refined.

# 8 Future Funding

Several potential external funding sources may be available. There are generally competitive grant opportunities, including the Clean Water Fund (CWF) Projects and Practices grant and the Multi-purpose Drainage Management Grant. A non-competitive potential funding source is the Watershed Based Implementation Fund (WBIF). We recommend further consideration of one or all of these potential funding sources for this project.

# 9 References

Minnesota Board of Water and Soil Resources. (March 2019). General wetlands regulation in Minnesota. https://bwsr.state.mn.us/sites/default/files/2019-04/WETLAND_General_Wetlands_Regulation_in_Minnesota_v2.1_March_2019.pdf

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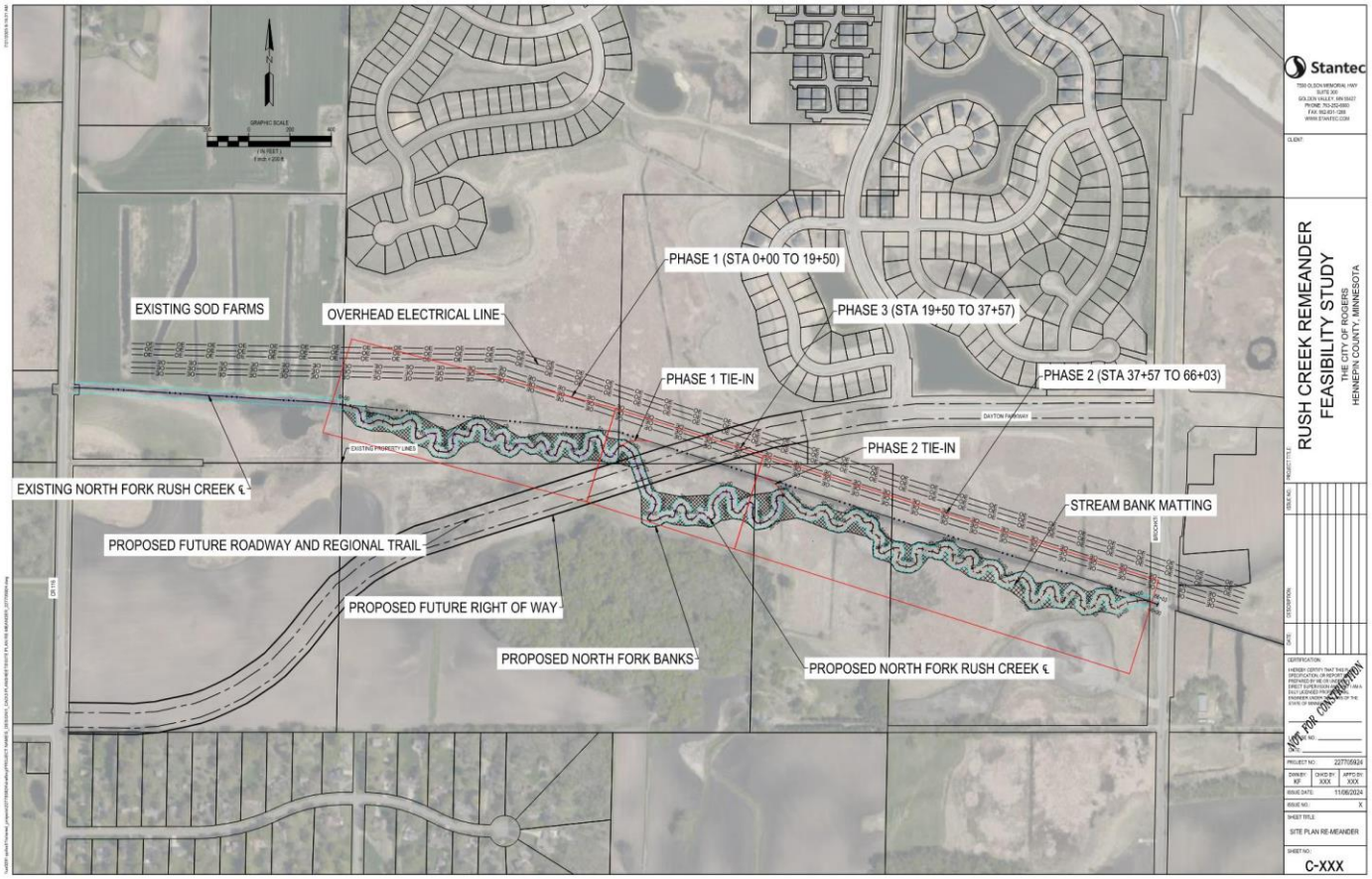
Rosgen, D. L., 1994. A classification of natural rivers. Catena, Vol. 22, Iss 3, pp 169-199.

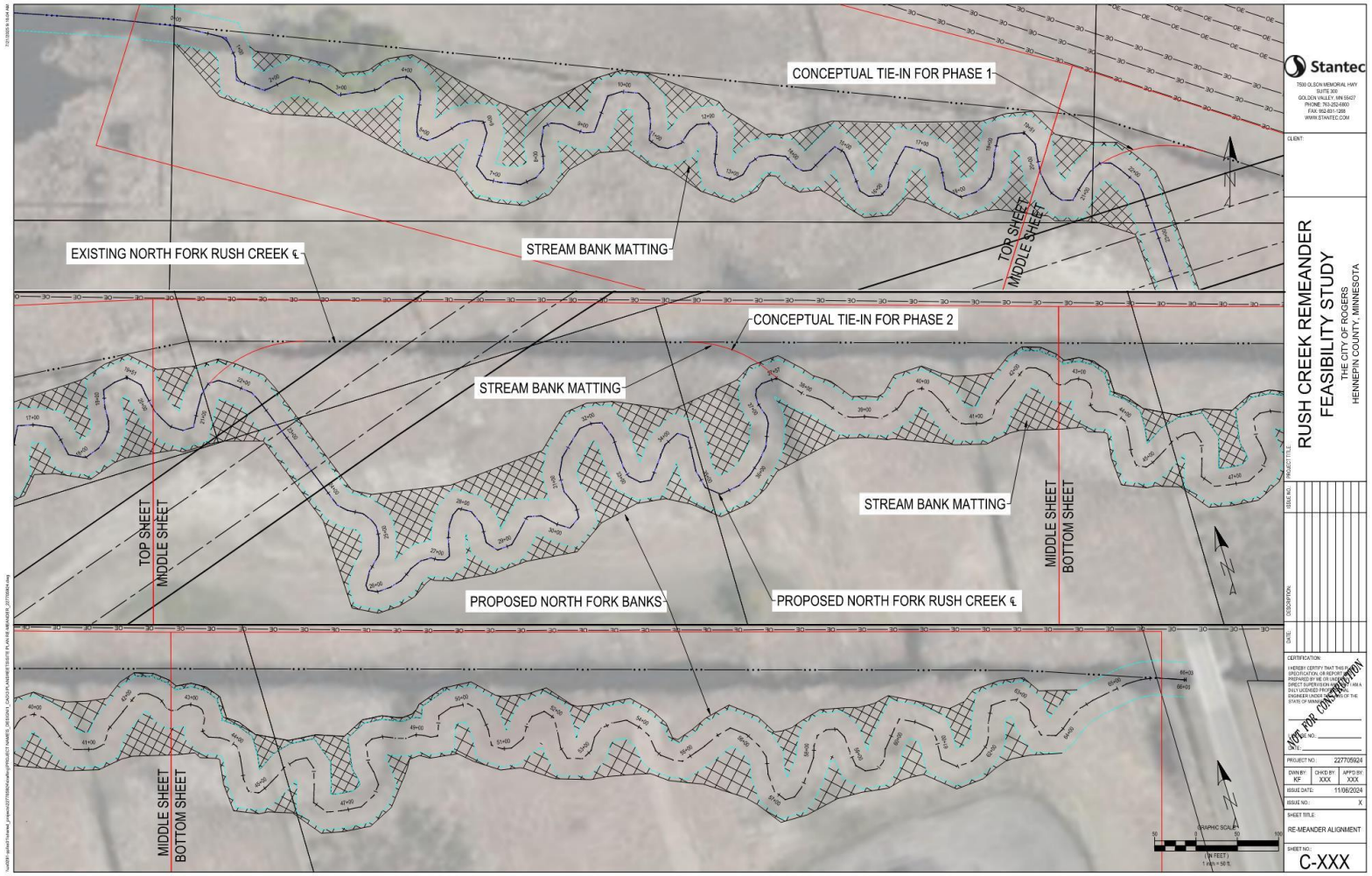
# APPENDICES

# Appendix A Conceptual Designs

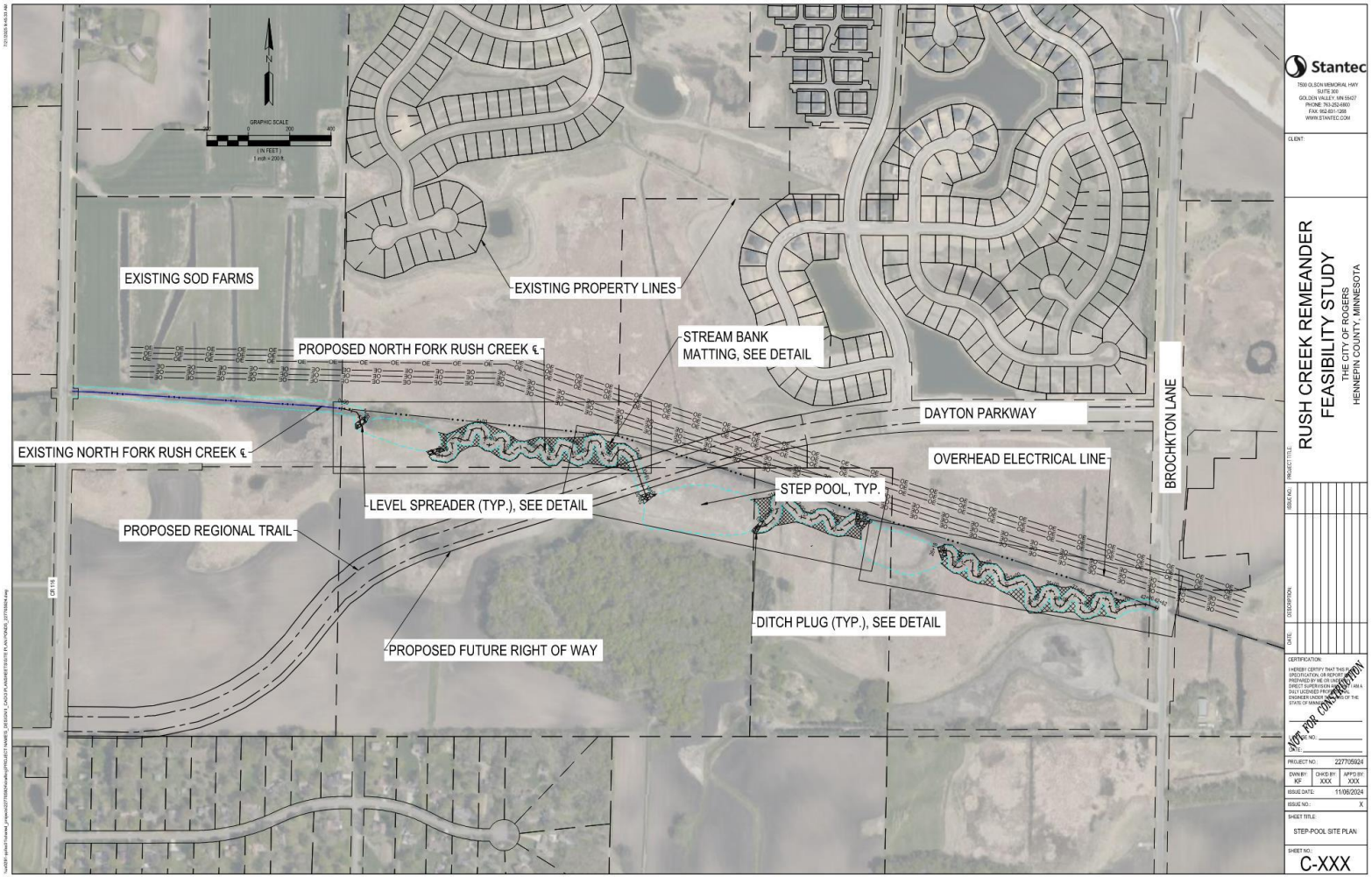
## A.1 Stream Re-Meander Site Plan



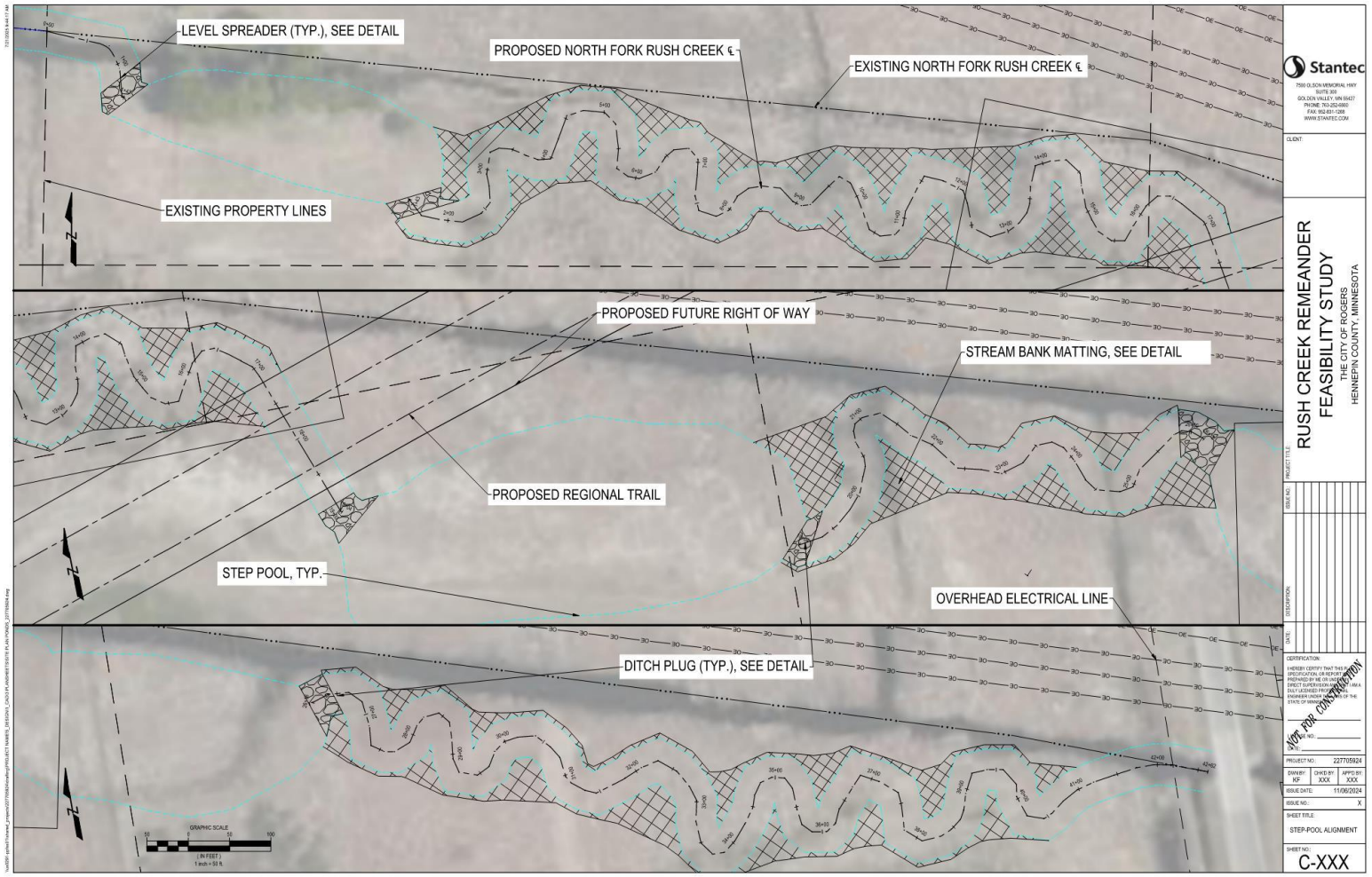
# A.2 Stream Re-meander Alignment



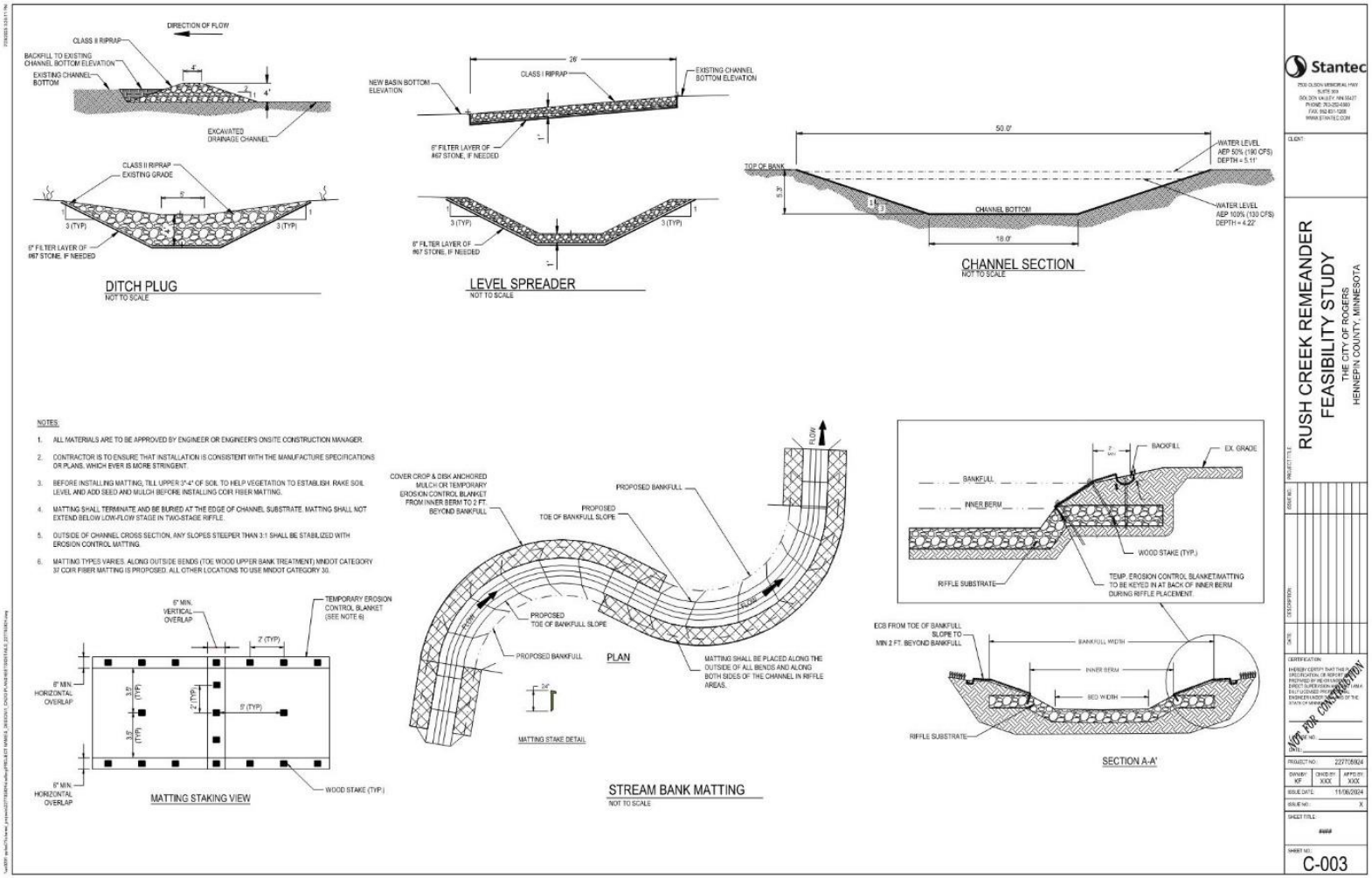
# A.3 Step-pool and Re-meander Site Plan



# A.4 Step-pool and Re-meander Alignment



# A.5 Details


DIRECTION OF FLOW
CLASS II RIPRAP
BACKFILL TO EXISTING CHANNEL BOTTOM ELEVATION
EXISTING CHANNEL BOTTOM
EXCAVATED DRAINAGE CHANNEL
DITCH PLUG
NOT TO SCALE
CLASS II RIPRAP
EXISTING GRADE
6" FILTER LAYER OF #67 STONE, IF NEEDED
NEW BASIN BOTTOM ELEVATION
CLASS I RIPRAP
EXISTING CHANNEL BOTTOM ELEVATION
LEVEL SPREADER
NOT TO SCALE
TOP OF BANK
CHANNEL BOTTOM
WATER LEVEL AEP 50% (190 CFS) DEPTH = 5.11'
WATER LEVEL AEP 100% (130 CFS) DEPTH = 4.22'
CHANNEL SECTION
NOT TO SCALE
NOTES:
1. ALL MATERIALS ARE TO BE APPROVED BY ENGINEER OR ENGINEER'S ONSITE CONSTRUCTION MANAGER.
2. CONTRACTOR IS TO ENSURE THAT INSTALLATION IS CONSISTENT WITH THE MANUFACTURE SPECIFICATIONS OR PLANS, WHICH EVER IS MORE STRINGENT.
3. BEFORE INSTALLING MATTING, TILL UPPER 3"-4" OF SOIL TO HELP VEGETATION TO ESTABLISH. RAKE SOIL LEVEL AND ADD SEED AND MULCH BEFORE INSTALLING COIR FIBER MATTING.
4. MATTING SHALL TERMINATE AND BE BURIED AT THE EDGE OF CHANNEL SUBSTRATE. MATTING SHALL NOT EXTEND BELOW LOW-FLOW STAGE IN TWO-STAGE RIFFLE.
5. OUTSIDE OF CHANNEL CROSS SECTION, ANY SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH EROSION CONTROL MATTING.
6. MATTING TYPES VARIES. ALONG OUTSIDE BENDS (TOE WOOD UPPER BANK TREATMENT) MNDOT CATEGORY 37 COIR FIBER MATTING IS PROPOSED. ALL OTHER LOCATIONS TO USE MNDOT CATEGORY 30.
6" MIN. VERTICAL OVERLAP
TEMPORARY EROSION CONTROL BLANKET (SEE NOTE 6)
2' (TYP.)
6" MIN. HORIZONTAL OVERLAP
3.5' (TYP.)
2' (TYP.)
5' (TYP.)
WOOD STAKE (TYP.)
MATTING STAKING VIEW
COVER CROP & DISK ANCHORED MULCH OR TEMPORARY EROSION CONTROL BLANKET FROM INNER BERM TO 2 FT. BEYOND BANKFULL
PROPOSED BANKFULL
PROPOSED TOE OF BANKFULL SLOPE
FLOW
PLAN
MATTING SHALL BE PLACED ALONG THE OUTSIDE OF ALL BENDS AND ALONG BOTH SIDES OF THE CHANNEL IN RIFFLE AREAS.
24"
MATTING STAKE DETAIL
STREAM BANK MATTING
NOT TO SCALE
BANKFULL
INNER BERM
BACKFILL
EX. GRADE
WOOD STAKE (TYP.)
RIFFLE SUBSTRATE
TEMP. EROSION CONTROL BLANKET/MATTING TO BE KEYED IN AT BACK OF INNER BERM DURING RIFFLE PLACEMENT.
ECB FROM TOE OF BANKFULL SLOPE TO MIN 2 FT. BEYOND BANKFULL
BANKFULL WIDTH
INNER BERM
BED WIDTH
RIFFLE SUBSTRATE
SECTION A-A'
Stantec
RUSH CREEK REMEANDER FEASIBILITY STUDY
THE CITY OF ROGERS
HENNEPIN COUNTY, MINNESOTA
NOT FOR CONSTRUCTION
PROJECT NO: 227705924
DESIGNED BY: KF
DRAWN BY: XXX
APPD BY: XXX
ISSUE DATE: 11/06/2024
SHEET TITLE:
C-003

# Appendix B Detailed Preliminary Construction Cost

## B.1 Re-meander Phase 1 Costs

**Table 1. Stream Re-meander Phase 1**

| NO. | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| 1 | MOBILIZATION AND DEMOBILIZATION | LS | 1 | $ 71,000 | $ 71,000 |
| 2 | TRAFFIC CONTROL | LS | 1 | $ 5,000 | $ 5,000 |
| 3 | TEMPORARY EROSION CONTROL | LS | 1 | $ 63,000 | $ 63,000 |
| 4 | SALVAGE AND RESPREAD TOPSOIL | CY | 1,720 | $ 20 | $ 35,000 |
| 5 | PROPOSED CREEK REMEANDER (CUT TO FILL OLD CHANNEL) | LF | 2,310 | $ 160 | $ 370,000 |
| 6 | FILL OLD CREEK CHANNEL | CY | 9,980 | $ 6 | $ 60,000 |
| 7 | NATIVE SEED AND STRAW MULCH WITH DISC ANCHORING | SY | 18,800 | $ 2.50 | $ 47,000 |
| 8 | NATIVE SEED, EROSION CONTROL BLANKET AND COIR BLANKET | SY | 10,780 | $ 12 | $ 130,000 |
| | | | | **SUBTOTAL** | $ 781,000 |
| | | | | **25% CONTINGENCY** | $ 196,000 |
| | | | | **TOTAL OPINION OF PROBABLE CONSTRUCTION COST** | **$ 977,000** |

## B.2 Re-meander Full Build Out Costs

**Table 2. Cost Estimate for the Re-Meander Option 2 – Full Build Out**

| NO. | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| 1 | MOBILIZATION AND DEMOBILIZATION | LS | 1 | $134,000 | $ 134,000 |
| 2 | TRAFFIC CONTROL | LS | 1 | $5,000 | $ 5,000 |
| 3 | TEMPORARY EROSION CONTROL | LS | 1 | $118,000 | $ 118,000 |
| 4 | SALVAGE AND RESPREAD TOPSOIL | CY | 4,885 | $20 | $ 98,000 |
| 5 | PROPOSED CREEK REMEANDER (CUT TO FILL OLD CHANNEL) | LF | 6,590 | $150 | $ 989,000 |
| 6 | FILL OLD CREEK CHANNEL | CY | 26,950 | $6 | $ 162,000 |
| 7 | NATIVE SEED AND STRAW MULCH WITH DISC ANCHORING | SY | 53,950 | $1.50 | $ 81,000 |
| 8 | NATIVE SEED, EROSION CONTROL BLANKET AND COIR BLANKET | SY | 30,760 | $10.50 | $ 323,000 |
| | | | | **SUBTOTAL** | $ 1,910,000 |
| | | | | **25% CONTINGENCY** | $ 478,000 |
| | | | | **TOTAL OPINION OF PROBABLE CONSTRUCTION COST** | **$ 2,388,000** |

## B.3 Step-pool and Remeander Full Build out cost

**Table 3. Cost Estimate for the Step-pool and Re-meander**

| NO. | ITEM DESCRIPTION | UNIT | QUANTITY | UNIT PRICE | TOTAL PRICE |
|---|---|---|---|---|---|
| 1 | MOBILIZATION AND DEMOBILIZATION | LS | 1 | $ 180,000 | $ 180,000 |
| 2 | TRAFFIC CONTROL | LS | 1 | $ 5,000 | $ 5,000 |
| 3 | TEMPORARY EROSION CONTROL | LS | 1 | $ 118,000 | $ 118,000 |
| 4 | SALVAGE AND RESPREAD TOPSOIL | CY | 4,885 | $ 20 | $ 98,000 |
| 5 | PROPOSED CREEK REMEANDER (CUT TO FILL OLD CHANNEL) | LF | 6,590 | $ 150 | $ 989,000 |
| 6 | STEP POOL EXCAVATION AND GRADING INTO UPLAND AREAS | CY | 27,370 | $ 20 | $ 548,000 |
| 7 | FILL OLD CREEK CHANNEL | CY | 26,950 | $ 6 | $ 162,000 |
| 8 | LEVEL SPREADER | EA | 3 | $ 10,500 | $ 32,000 |
| 9 | DITCH PLUG | EA | 3 | $ 12,500 | $ 38,000 |
| 10 | NATIVE SEED AND STRAW MULCH WITH DISC ANCHORING | SY | 53,950 | $ 1.5 | $ 81,000 |
| 11 | NATIVE SEED, EROSION CONTROL BLANKET AND COIR BLANKET | SY | 30,760 | $ 10.5 | $ 323,000 |
| | | | | **SUBTOTAL** | $ 2,574,000 |
| | | | | **25% CONTINGENCY** | $ 644,000 |
| | | | | **TOTAL OPINION OF PROBABLE CONSTRUCTION COST** | **$ 3,218,000** |

# Appendix C Photos

## C.1 Recent Flooding & Inundation

### C.1.1 FLETCHER LANE LOOKING EAST (4.14.23)

## C.1.2 FLETCHER LANE LOOKING SOUTHEAST (4.14.23)

## C.1.3 BROCKTON LANE LOOKING WEST (4.14.23)

# C.2 Downstream Hydraulic Restrictions

## C.2.1 IDENTIFIED POTENTIAL HYDRAULIC RESTRICTIONS AT PRIVATE CROSSINGS

## C.2.2 PRIVATE ROAD CROSSING HYDRAULIC RESTRICTION DOWNSTREAM

## C.2.3 PRIVATE ROAD CROSSING HYDRAULIC RESTRICTION DOWNSTREAM

## C.2.4 PRIVATE ROAD CROSSING HYDRAULIC RESTRICTION DOWNSTREAM