# Appendix H – Wetland Finding

**U.S. DEPARTMENT OF TRANSPORTATION**
Federal Highway Administration

**THE STATE OF SOUTH DAKOTA**
South Dakota Department of Transportation

Projects:
IM2292(101)4 N, PCN 05HN
IM 2292(105)3, PCN 07CY
Sioux Falls CIP #11100
Sioux Falls #7 (2023 Bike Plan)
I-229 Exit 4 (Cliff Avenue) Interchange
Sioux Falls, Minnehaha County, South Dakota

This action complies with the Executive Order 11990 "Protection of Wetlands".

Approved Tom Lehmkuhl 2023.11.06 15:20:41 -06'00' Date: 11.06.2023

FHWA Environmental Engineer

Approved Chad Babcock Digitally signed by Chad Babcock Date: 2023.11.06 11:27:44 -06'00' Date:

SDDOT Environmental Manager

**SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION**
**FEDERAL HIGHWAY ADMINISTRATION**
**E.O. 11990 – WETLAND FINDING**

**Projects:**
**IM2292(101)4 N, PCN 05HN**
**IM 2292(105)3, PCN 07CY**
**Sioux Falls CIP #11100**
**Sioux Falls #7 (2023 Bike Plan)**

**I-229 Exit 4 (Cliff Avenue) Interchange**
**Sioux Falls, Minnehaha County, South Dakota**

## 1. INTRODUCTION

In compliance with Executive Order 11990 and in accordance with 23 CFR 771. 777 and Technical Advisory T6640.8a, this statement sets forth the basis for a finding that there is no practical alternative to the placing of fill for highway construction in certain wetlands adjacent to the reconstruction of the existing interchange at I-229 and Exit 4 (Cliff Avenue) in Sioux Falls, Minnehaha County, South Dakota. All practicable measures to minimize the fill areas to reduce harm to the wetlands have been taken.

## 2. PROJECT LOCATION AND SUMMARY

The stakeholders for this project include the City of Sioux Falls, the Sioux Falls Metropolitan Planning Organization (MPO), South Dakota Department of Transportation (SDDOT), and the Federal Highway Administration (FHWA). SDDOT, in partnership with the other project stakeholders, is completing an environmental study of the Interstate Highway 229 (I-229) interchange and its approach roadways at Exit 4 (Cliff Avenue) in Sioux Falls, South Dakota. This study will build on the work and findings of recently completed studies for the area, including the 2010 Decennial Interstate Corridor Study, the I-229 Major Investment Study (MIS), the I-229 Exit 4 Interchange Modification Justification Report (IMJR) and I-229 Environmental Scan Report (ESR).

The recommended build alternative includes the replacement of the existing I-229 Exit 4 Interchange with a new Single Point Urban Interchange, including the realignment of 41$^{st}$ Street to Pam Road, Cliff Avenue interchange approach and access management improvements, and associated bicycle/pedestrian safety and Sioux Falls Bike Trail reconstructions, realignments, and reconnections. Total estimated project construction cost is $36.3M. The project is tentatively scheduled to begin construction in FY 2025.

**Appendix A** illustrates the project location and infrastructure improvements included in the Build Alternative.

## 3. PURPOSE AND NEED FOR THE ACTION

The purpose of the project is to address the main needs identified in the study area. These needs, which are listed below and will be addressed with equal importance and priority in this study, are:

- **Mobility –** LOS C or better should be maintained along all sections of I-229 and all ramp terminals (Per SDDOT standards) and LOS D or better should be maintained along all sections of Cliff Avenue within the project area (per City of Sioux Falls Standards) through the 2050 project design year with a preference for alternatives that meet these requirements under higher than anticipated demand.

- **Geometric Deficiencies –** Geometric deficiencies, including infrastructure condition deficiencies for roadways in the study area, should be addressed to meet current standards by the project's design year (2050).

## 4. ALTERNATIVES CONSIDERED

Four (4) alternatives were considered for the project, including the No Build Alternative, Build Alternative Cliff-1, Build Alternative Cliff-6, and Build Alternative Cliff-7. Each of the alternatives is described as follows:

*A. No Build Alternative – "No Action" (Maintenance for operating safety only)*

With failing levels of service and unaddressed geometric deficiencies, the No Build Alternative does not meet the purpose and need of the project. Alternatives which do not meet the purpose and need of the project are not typically carried forward for consideration in the NEPA Process. Although the No Build Alternative does not meet the purpose the project, it is always carried forward to serve as the baseline when analyzing the potential social, economic, and environmental impacts of other alternatives. Consideration of a no action alternative is required by Council of Environmental Quality regulations for implementing NEPA (40 CFR 1500-1508).

*B. Build Alternative Cliff-1*

*Northbound Cliff to Southbound I-229 Loop Ramp Alternative*

For this alternative, the northbound I-229 ramp terminal would remain a standard diamond configuration with additional turn lanes to improve capacity.

The southbound I-229 ramps would be significantly reconfigured. The I-229 entrance ramp would be split into two ramps with a new entrance ramp access on southbound I-229. The southbound Cliff Avenue ramp would be a free right turn movement and the northbound Cliff Avenue traffic would have a free right turn onto a new loop ramp connection. The southbound I-229 exit ramp would connect to the 41st Street intersection. This connection helps improve safety and relieves the closely-spaced intersection issues.

Along Cliff Avenue, a 4-lane divided roadway would be provided directly to the north with the south Lincoln High School driveway access being reduced to a right-in/right-out access (RI/RO). To the south, a median would be constructed to just north of the Spencer Park intersection resulting in RI/RO access for the existing business driveways.

*C. Build Alternative Cliff-6 – Recommended Build Alternative*

*Single Point Urban Interchange, 41st Street Realigned to Pam Road Alternative*

This alternative is carried forward from the I-229 Major Investment Study (MIS) recommendations. The existing diamond interchange would be reconfigured to a Single

Point Urban Interchange (SPUI). 41st Street would be realigned to the north to provide better intersection spacing with the proposed interchange design.

The 41st Street realignment creates a significant amount of right-of-way impacts and would require Pam Road to be closed to Cliff Avenue. The configuration creates a weaving condition along northbound Cliff Avenue between the southbound I-229 right turning vehicles wanting to use 41st Street to the west. Along Cliff Avenue, a 4-lane divided roadway would be provided directly to the north with the south Lincoln High School driveway access being reduced to a RI/RO. To the south, a median would be constructed to just north of the Spencer Park intersection resulting in RI/RO access for the north driveway (to Spoke-N-Sport), and full access to Spencer Park on the south driveway.

*D. Build Alternative Cliff-7*

*Single Point Urban Interchange, Southbound I-229 Exit Ramp Through and Right Turns at 41st Street Alternative*

This alternative is carried forward from the I-229 MIS recommendations. The existing diamond interchange would be reconfigured to a SPUI with a modified southbound ramp connection.

The northbound I-229 ramps are of typical SPUI design, and the southbound I-229 entrance ramp is also typical of a SPUI design.

The southbound I-229 exit ramp would be significantly reconfigured from a standard SPUI design. The I-229 exit ramp would be split into directional ramps for Cliff Avenue. The southbound Cliff Avenue traffic would tie into the traditional SPUI intersection. The northbound Cliff Avenue traffic would connect to the 41st Street intersection; this connection helps relieve the closely spaced intersection and weaving issues.

Along Cliff Avenue, a 4-lane divided roadway would be provided directly to the north with the south Lincoln High School driveway access being reduced to a RI/RO. To the south, a median would be constructed to just north of the Spencer Park intersection resulting in RI/RO access for the existing business driveways.

Among the build alternatives, Alternative Cliff-6 is the most prudent and feasible. It is the most likely to meet the purpose and need of the project through the design year (2050), while also providing the greatest reduction in crash numbers. This alternative will be further evaluated for wetland impacts to satisfy NEPA requirements. Conversely, Alternatives Cliff-1 and Cliff-7 do not meet the purpose and need of the project as sensitivity analysis indicated both alternatives fail operationally with higher than anticipated levels of traffic. Therefore, neither Alternative Cliff-1 nor Cliff-7 will not be further evaluated for wetland impacts. Alternative Cliff-6 will be referred to as the “Build Alternative” for the analysis of environmental impacts.

The proposed action includes improvements to the I-229 Exit 4 Interchange (PCN 05HN), along with other adjacent component projects. Component projects include a temporary “crossover" project for I-229 improvements (PCN 07CY), improvements along Cliff Avenue from 33rd Street to the Big Sioux River (CP #11100), and a shared use path under I-229 (City Bike Plan Project #7).

## 5. BASIS FOR DETERMINING THE PROPOSED ACTION INCLUDES ALL PRACTICABLE MEASURES TO MINIMIZE HARM TO WETLANDS

The project is located within the Lower Big Sioux watershed. The wetlands adjacent to the project are depressional and riverine. These wetlands have been previously disturbed by highway

construction and maintenance activities and commercial development and are not considered high quality wetlands.

Measures to minimize impacts to the wetlands were discussed and considered at all points of planning, location, and design of the project. A field delineation was conducted to identify the locations of wetlands within the study area. Elements of the Build Alternative, including drainage features, will be designed in such a way that they would avoid identified wetlands to the extent practicable. This includes consideration for an assessment of unavoidable impacts associated with cuts and fills necessary to satisfy SDDOT and City of Sioux Falls design standards for all roadways, sidepaths, and structural components of the project. The purpose and need for the project are to improve travel mobility and address geometric deficiencies at the I-229 Exit 4 Interchange and along Cliff Avenue from 38th St S to the Big Sioux River. The project goals also include improving safety and nonmotorized connectivity. Because the impacted wetlands are in areas of shallow fills near the proposed interchange improvements, it was determined that total avoidance of adjacent wetlands was not feasible.

Best Management Practices (BMPs) will be implemented during all phases of construction to reduce impacts to aquatic resources from erosion and sedimentation. All disturbed areas will be restored and revegetated according to a project specific erosion and sediment control plan, which will be included in the project plans as Section D. The contractor will be required to submit a Spill Prevention, Control, and Countermeasure (SPCC) Plan prior to commencing construction. With implementation of these measures, it is anticipated that the construction of the proposed I-229 Exit 4 Interchange and associated roadways will not result in long-term impacts to aquatic resources along the project corridor. In addition to the above measures, the project will require a Section 404 permit issued by the United States Army Corps of Engineers (USACE) and a South Dakota Department of Agriculture and Natural Resources (SDDANR) General Permit Authorizing Stormwater Discharges Associated with Construction Activities, and the project will comply with the conditions listed in these permits.

## 6. WETLAND IMPACTS

Several digital resources were examined, and a field review was conducted to determine wetland locations within the study area. Digital resources examined include:

- The Natural Resources Conservation Service (NRCS) Soil Survey Geographic Maps (SSURGO) for Minnehaha County (2019)
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI) (2019)
- Minnehaha County Hydric Soils List (2019)

The field delineation site visit was conducted by Rebecca Beduhn, SEH Senior Scientist, on September 12th and 13th, 2018. The purpose of these visits was to identify areas meeting the technical wetland criteria in accordance with the U.S. Army Corps of Engineers Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (USACE 2010). In total, 10 wetland areas were delineated within the study area. Wetlands in the study area consist of primarily palustrine emergent wetlands (PEM), with one palustrine unconsolidated bottom (PUB) wetland. The project's wetland delineation report is included in **Appendix B**.

The initial wetland delineation type and boundary concurrence expired in September 2023, a reevaluation of the wetland boundaries was made by Luke Menden, an SEH Wetland Biologist, in early September 2023. This reevaluation included a site visit to each of the previously delineated wetlands to compare conditions and determine if any significant changes were observed to either the wetland boundary or type. Approved wetland boundaries were field verified

using a sub-meter GPS unit and were determined to be accurate and therefore will continue to be utilized for project planning purposes. This assessment relies primarily on observations of vegetation and hydrology, it confirmed that site conditions were unchanged, and none of the wetland boundaries have been altered, modified, or natural changed. On this basis, the previous boundaries remain valid for the purposes of completing the EA, quantifying impacts, and identification of mitigation. The findings of the reevaluation are documented in the Wetland Boundary Verification memo included in **Appendix B**.

The Preliminary Wetlands Assessment for the current survey was provided to the USACE on January 26, 2022 and is included in **Appendix B**. The USACE provided an Approved Jurisdictional Determination (AJD) on March 31, 2022 and is included in **Appendix C.** The AJD states that there are jurisdictional and non-jurisdictional waters located within the review area. A summary of USACE jurisdictional status is included in Table 1 below. Discharge of dredged or fill material within the waters of the United States, as part of this project, will require a permit from the USACE. Coordination took place between USACE and SDDOT in October 2023 following the expiration of the initial wetland delineation. USACE confirmed the findings of the March 31, 2022 AJD remain valid.

The Build Alternative results in an estimated 2.68 acres of permanent wetland impact (0.31 acres of jurisdictional wetlands, 2.37 acres of non-jurisdictional wetlands). Due to the space requirements of the necessary improvements and the number and proximity of wetlands within the study area, these impacts are unavoidable. There are no planned temporary wetland impacts or impacts to non-wetland Waters of the United States (WOTUS) such as rivers, streams, and lakes. A Section 404 permit will be required for jurisdictional wetland impacts. Non-jurisdictional wetlands will require to be mitigated by the Federal Highway Administration (FHWA) under the authority of EO 11990, in accordance with 23 CFR 777.9. Wetland impacts are listed in **Table 1** below. A map of delineated wetland and impacted wetland areas is included in **Appendix D.**

**Table 1 – Wetland Impacts and Mitigation**

| Wetland Name | Permanent Wetland Impact (acres) | Jurisdictional Status | Anticipated Mitigation Ratio (in-kind and in-place) | Mitigation Required Under (EO 11990 or Section 404) | Anticipated Mitigation Required (Credits) |
|---|---|---|---|---|---|
| Wetland 1 | 0.19 | JD | 5.5:1 | Section 404 | 1.05 |
| Wetland 2 | 0.12 | JD | 5.5:1 | Section 404 | 0.66 |
| Wetland 6 | 0.19 | Non-JD | 1.01:1 | EO 11990 | 0.19 |
| Wetland 7 | 0.75 | Non-JD | 1.01:1 | EO 11990 | 0.76 |
| Wetland 8 | 1.31 | Non-JD | 1.01:1 | EO 11990 | 1.32 |
| Wetland 9 | 0.10 | Non-JD | 1.01:1 | EO 11990 | 0.10 |
| Wetland 10 | 0.02 | Non-JD | 1.01.1 | EO 11990 | 0.02 |
| **TOTAL** | 2.68 (0.31 JD, 2.37 Non-JD) | | | | |
| | | | | | **Total Mitigation Required under Section 404** |
| | | | | Total Credits | **1.71** |
| | | | | | **Total Mitigation Required Under EO 11990** |
| | | | | Total Credits | **2.39** |

## 7. WETLAND MITIGATION

There are a total of 0.31 acres of permanent wetland impacts to jurisdiction waters (Wetlands 1 and 2) which will be mitigated in accordance with Section 404. Based on a standard mitigation

ratio of 5.5:1, a total of 1.71 functional capacity units (FCUs) is expected to satisfy Section 404 compensatory mitigation requirements. The remaining 2.37 acres of permanent wetland impacts are to non-jurisdication waters (Wetlands 6, 7, 8, 9, and 10) and will be mitigated in accordance with EO 11990. A total of 2.39 FCUs will be required to satisfy E0 11990 compensatory mitigation requirements based on a 1.01:1 ratio mitigation. All wetland impacts occur in the Lower Big Sioux Geographic Service Area (GSA).

Off-site wetland mitigation through the purchase of wetland credits from a wetland bank is proposed to satisfy the requirements for both the Section 404 permit and "No Net Loss" per EO 11990. Wetland Banking is the preferred option for off-site mitigation, and since it is feasible for this project, other options for off-site mitigation such as In-lieu fee and permittee responsible site were not considered. On-site mitigation is not proposed due to the site constraints with available land. The SDDOT proposes to mitigate permanent wetland impacts by purchasing credits from Goeden Properties II, LLC's Wetland Bank (Goeden Properties). SDDOT intends to mitigate EO11990 impacts concurrently with Section 404 impacts which is anticipated to require a purchase of 4.1 FCUs from Goeden Properties. A breakdown of FCUs is shown in Table 1.

Goeden Properties has confirmed it has sufficient credits available at this time and has provided a letter of credit availability for the project, a copy of the letter is included in **Appendix E**. Final compensatory mitigation for unavoidable permanent impacts to aquatic resources resulting from construction of the proposed project will be determined by the USACE during Section 404 permitting.

## 8. NEPA COORDINATION & DOCUMENTATION

In accordance with the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-4370h and the Regulations for Implementing the procedural Provisions of NEPA (40 CFR §§ 1500-1508), the SDDOT conducted an environmental review on the project to determine if significant impacts to the environment would occur because of the proposed project improvements and to determine the level of documentation required to comply with NEPA. Based on input from state and federal agencies, tribes that have an interest in projects located in Minnehaha County and the public, SDDOT has determined this project will not individually or cumulatively have a significant effect on the environment and that NEPA compliance will be documented under an Environmental Assessment (EA). Agency correspondence appears in **Appendix F.**

Coordination for the project has taken place with the following agencies as it relates to wetland impacts:

- SDDOT Coordinated with South Dakota Department of Environment & Natural Resources (renamed South Dakota Department of Agriculture & Natural Resources during this study) (DENR/DANR) on 12/10/2018. A response was received on 12/27/2018.

- SDDOT Coordinated with South Dakota Department of Game, Fish and Parks (GFP) on 12/10/2018. A response was received on 12/27/2018.

- State Historic Preservation Office (SHPO): A cultural resources survey was conducted for the project by the Archaeological Resource Center (ARC) and Sent to SHPO on 4/24/2019. SHPO concurred with the determination of No Adverse Effect on June 12, 2019. ARC completed survey of an expanded area of potential effect including additional stormwater retention and borrow areas which was sent to SHPO of September 8, 2023. SHPO concurred with the determination of No Adverse Effect on September 12, 2023.

- SDDOT Coordinated with U.S. Fish and Wildlife Service (USFWS) on 12/17/2021. A response was received on 02/01/2022 concurring with the determination that the project would not adversely affect listed species.

In addition, in accordance with Section 106 of the NHPA (36 CFR Part 800), the SDDOT solicited comments on this project from the following tribes:

- Flandreau Santee Sioux Tribe
- Ponca Tribe of Nebraska
- Lower Brule Sioux Tribe
- Sisseton-Wahpeton Oyate Tribe
- Standing Rock Sioux Tribe
- Yankton Sioux Tribe
- Three Affiliated Tribes of North Dakota
- Chippewa Cree Tribe

Consultation letters were sent to each tribe on December 11, 2018 (**Appendix F**). One response was received from the Yankton Sioux Tribe Tribal Historic Preservation Office (THPO) on January 31, 2019. They responded their office does not have interest in the proposed project at this time but requested notification if any cultural artifacts were found at the project site. A copy of the letter is included in **Appendix F**.

**Public Involvement**

Open House style public meetings were held throughout the project, which helped the study team identify impacts and obtain input on the alternatives. Stakeholder were notified of the meetings through postcard mailings, the project website, press release, local newspaper ads, and social media. While these were meetings held during the planning phase of the project, a final public meeting is planned to take place for the NEPA process in winter 2023. The following Open Houses have been held for the project to date:

*Public Meeting /Open House #1, January 23, 2019*

The focus of this meeting was to introduce the project and provide an overview of the scope and schedule, present a draft purpose and need, and present a draft range of alternatives. A presentation was provided by project staff, and poster-board exhibits were set up at the meeting. Comment forms were provided, and members of the study team were on hand to answer questions. Postcard invitations were mailed directly to 670 properties surrounding the project area. Approximately 166 individuals signed in at the meeting.

*Public Meeting /Virtual Open House #2 November 6 – December 5, 2020*

Due to the COVID 19 pandemic, an online public meeting and virtual open house were held without in-person contact. The online meeting was held concurrently for I-229 Exit 3 and I-229 Exit 4, as both interchanges are adjacent to one another and planned for reconstruction. Three individual speaker presentations were recorded for the public's information on recommended improvements, the Interchange Modification Justification Report (IMJR) summary, and Environmental Scan Report (ESR) and posted online for a period of 30 days. A total of 933 unique website visitors were recorded during this period, the majority of which accessed the project website directly for project update information. Online comment forms were provided next to each pre-recorded presentation in the Virtual Open House. Comments were received on the three video recordings and were also received via telephone and email.

*Future Public Involvement*

The EA will be made available to public agencies and the general public for review and comments. The EA will be available for a 30-day comment period at the following locations:

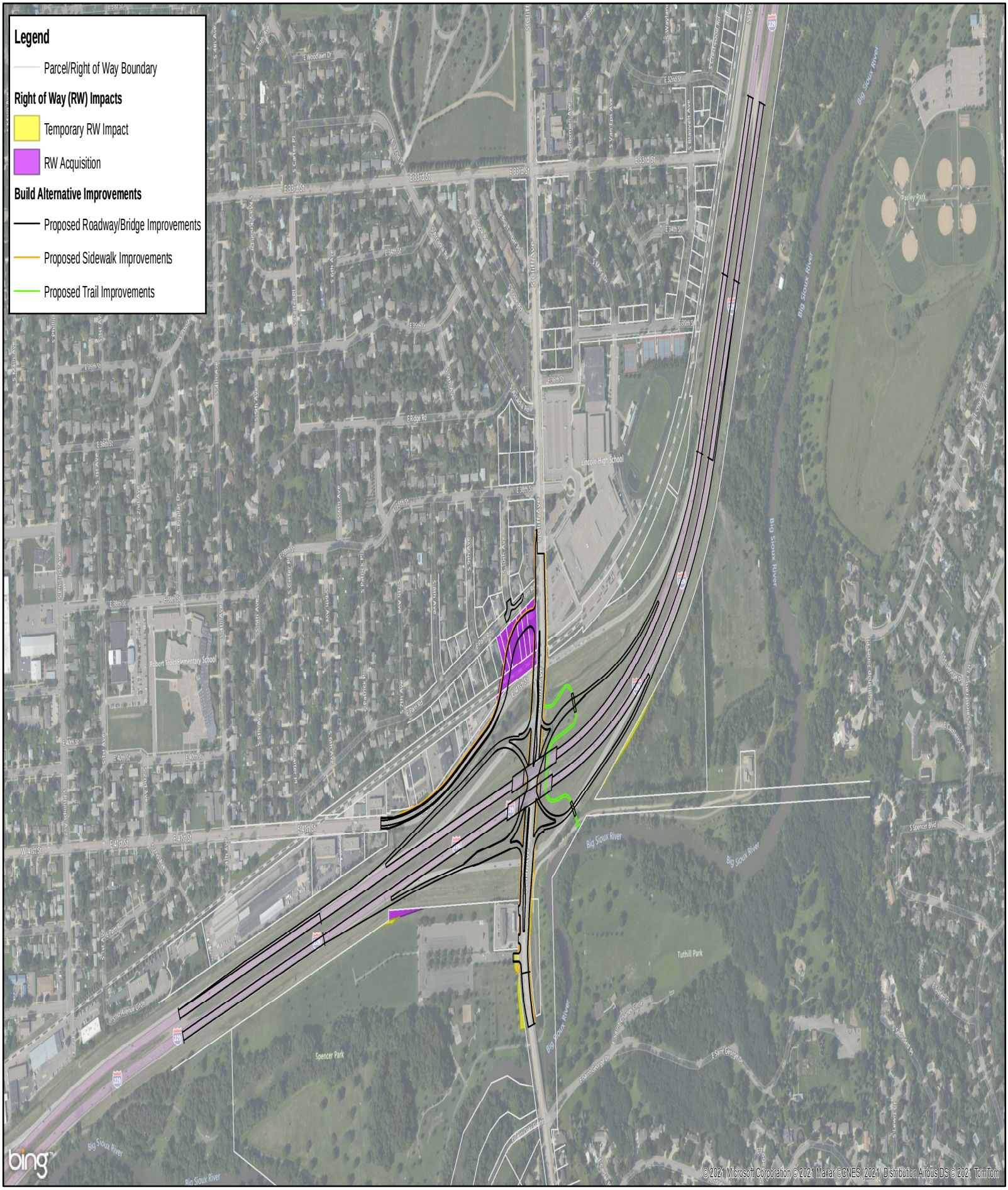
- SDDOT Website
- Sioux Falls City Hall, Engineering Department
- SDDOT Sioux Falls Area Office
- Siouxland Library, Caille Branch
- SDDOT Office of Project Development in Pierre
- FHWA Division Office, Pierre

FHWA will take into consideration all verbal and formal comments received during the comment period in determining whether the Preferred Alternative (when identified) would or would not result in significant social, economic, and environmental impacts. If it is found that project does not result in significant impacts, a Finding of No Significant Impact (FONSI) document will be prepared and submitted to FHWA. The FHWA would take into consideration all verbal and formal comments received during the comment period in determining whether the Preferred Alternative would or would not result in significant social, economic, and environmental impacts. If a FONSI is determined, this document will be posted on the SDDOT and other project websites. If not, the agencies would consider whether the project will be pursued under an Environmental Impact Statement (EIS).

## 9. CONCLUSION

Based on the above considerations, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

# APPENDIX A – Project Location Map




401 East 8th Street
Suite 309
Sioux Falls, SD 57103
(605) 330-7000

Print Date: 12/15/2021
Source: Bing Maps, Minnehaha County

Map by: mfalk
Projection: State Plane South Dakota S...

**Build Alternative**
*I-229 Exit 4 Interchange Project*
*Minnehaha County, SD*

Feet
0 500 1,000

# APPENDIX B – Wetland Delineation Report

# Wetland Boundary Verification

## I-229 Exit 4 Reconstruction Project

### Minnehaha County, SD

IM-B 2292(101)4, PCN 05HN - IM 2292(105)3, PCN 07CY - Sioux Falls  CIP #11100 - Sioux Falls #7 (2023 Bike Plan)

October 30, 2023

SEH

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October 31, 2023

RE: I-229 Exit 4 Interchange Reconstruction
Sioux Falls, Minnehaha County, SD
Wetland Boundary Verification
IM-B 2292(101)4, PCN 05HN
IM 2292(105)3, PCN 07CY
Sioux Falls CIP #11100
Sioux Falls #7 (2023 Bike Plan)

SDDOT – Environmental Office
Attn: Chad Babcock
700 East Broadway
Pierre, South Dakota 57501-2586

South Dakota Regulatory Office:

Initial wetland delineation took place for the referenced project in September, 2018. An AJD was received for the project on April 1, 2022.

While the initial wetland delineation type and boundary concurrence has expired, a reevaluation of the wetland boundaries was made by Luke Menden, an SEH Wetland Biologist, in September 2023. This reevaluation included a site visit to each of the previously delineated wetlands and an updated desktop review. The desktop review included digital elevation models (DEM), aerial imagery, soil maps, hydrology data, land use/land cover information, and review of the existing wetland delineations. All wetlands were visited in the field to compare conditions and determine if any significant changes were observed to either the wetland boundary or type. The wetland boundaries were field verified by comparing the previously recorded GPS lines with current site conditions. Most wetland sites were bounded by roads, trails, or rises in elevation significant enough to restrict the expansion of wetland conditions.

Based on the above review, the previous wetland boundaries were found to match the current extent of wetland vegetation.

Please contact me directly with any questions regarding this investigation at 651.470.6027 or via e-mail at rbeduhn@sehinc.com.

Sincerely,

Rebecca Beduhn
Professional Wetland Scientist
Certified Professional Soil Scientist

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# MEMORANDUM

TO: US Army Corps of Engineers

FROM: Rebecca Beduhn, SEH

DATE: August 5, 2021

RE: Interstate 229 Exit 4 Reconstruction Wetland Delineation
SDDOT PCN 05HN
SEH No. SDDOT 147016

Please find the enclosed wetland delineation report and Approved Jurisdictional Determination (AJD) request for the Interstate 229 Exit 4 Reconstruction project. An AJD is requested for Wetlands 1, 2, 3, 6, 7, 8, 9, and 10.

If there are any questions, please contact Rebecca Beduhn at rebduhn@sehinc.com or 651.470.6027.

BN

s:\pt\s\sddot\147016\3-env-stdy-regs\30-env-doc\90-wetlands\october 2021 updated report\exit 4 - 05hn\memo exit 4.docx

U.S. ARMY CORPS OF ENGINEERS

# REQUEST FOR CORPS JURISDICTIONAL DETERMINATION

*__Authorities__: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332. __Principal Purpose__: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above. __Routine Uses__: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website. __Disclosure__: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

CORPS USE ONLY:
DATE RECEIVED:

PROJECT NO.:

## 1. PROPERTY LOCATION:

Street Address: Exit 4 (I-229 and Cliff Ave)

City/Township/Parish: Sioux Falls

County: Minnehaha County State: SD

Acreage of Parcel/Review Area for JD: 90

Section: 227 Township: 101 Range: 49

Latitude: 43.515189 Longitude: -96.71163

*(For linear projects, please include the center point of the proposed alignment.)*

## 2.REQUESTOR CONTACT INFORMATION:

Typed or Printed Name: Steve Gramm

Company Name: SDDOT

Street Address: 700 East Broadway Avenue

City: Pierre State: SD ZIP: 77501

Phone Number: (605) 773-6641

E-mail: steve.gramm@state.sd.us

## 3. MAP: Please attach a survey/plat map and vicinity map identifying location and review area for the JD.

## 4. REASON FOR REQUEST (check as many as applicable):

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☒ A Corps JD is required in order to obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other:

## 5. TYPE OF DETERMINATION BEING REQUESTED:

- ☒ I am requesting an approved JD.
- ☐ I am requesting a preliminary JD.
- ☐ I am requesting a “no permit required” letter as I believe my proposed activity is not regulated.
- ☐ I am unclear as to which JD I would like to request and require additional information to inform my decision.

## 6. OWNERSHIP DETAILS:

- ☐ I currently own this property.
- ☐ I plan to purchase this property.
- ☒ I am an agent/consultant acting on behalf of the requestor.
- ☐ Other (please explain:)

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

Signature: Bailey Nelson Digitally signed by Bailey Nelson Date: 2021.08.05 14:23:26 -05'00' Date:

October 22, 2021

RE: Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County, South Dakota
Wetland Delineation Report
SDDOT PCN : 05HN
SEH Project Number: **Error! Reference source not found.**

Steve Gramm, PE
SDDOT - Project Development
700 East Broadway Avenue
Pierre, SD, 75501-2589

Dear Mr. Steve Gramm, PE:

Please find enclosed the Wetland Delineation Report for Interstate 229 Exit 3 Reconstruction in the City of Sioux Falls, South Dakota. This Report presents the results of the field delineation for wetlands performed on September 13th and 14th, 2018 completed by Rebecca Beduhn (CWD #1243, PWS #2758). The field delineation included on-site identification, classification, and boundary determinations of wetland basins following the 1987 U.S. Army Corps of Engineers *Wetlands Delineation Manual* and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE 2010).

Thank you for the opportunity to provide wetland services to the South Dakota Department of Transportation (SDDOT). Short Elliott Hendrickson Inc. (SEH®) is pleased to provide you with this information for your records and review. If you have any questions, please contact me directly at 651.490.2146 or via e-mail at rbeduhn@sehinc.com.

Sincerely,

Rebecca Beduhn
Professional Wetland Scientist
Certified Professional Soil Scientist

# Wetland Delineation Report

## South Dakota Department of Transportation (SDDOT)

## Interstate 229 Exit 4 Reconstruction

Sioux Falls, Minnehaha County, South Dakota

SDDOT Number: PCN 05HN | SEH Number: SDDOT 147016

October 2021

SEH

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# Wetland Delineation Report

Interstate 229 Exit 4 Reconstruction
PCN 05HN
Minnehaha County, South Dakota

Prepared for:
South Dakota Department of Transportation (SDDOT)
700 East Broadway Avenue
Pierre, SD, 75501-2589

Prepared by:
Short Elliott Hendrickson Inc.
3535 Vadnais Center Drive
St. Paul, MN 55110-5196
651.490.2000

The procedures described in this report and the field methods used constitute an official wetland delineation in accordance with the 1987 U.S. Army Corps of Engineers *Wetlands Delineation Manual* and applicable *Regional Supplement*.

The field delineation was completed by Rebecca Beduhn. The methodology meets the standards and criteria described in the manual, and conforms to the applicable standards and regulations in force at the time the fieldwork was completed. The results reflect conditions present at the time of the delineation.

I hereby certify that this report was prepared by me or under my direct supervision.

Prepared by:  1/20/2019
Bailey Nelson, Wetland Biologist — Date

Reviewed by:  10/22/2021
Rebecca Beduhn, Wetland Scientist — Date
Professional Wetland Scientist, No. 2758
Certified Professional Soil Scientist, No. 333315

# Contents



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# 1 Introduction

The purpose of this study was to investigate the project area, identify areas meeting the technical criteria for wetlands, delineate the jurisdictional extent of the wetland basins, and classify the wetland habitat for reconstruction. This field delineation will be the basis on which wetland impacts from the proposed project will be determined.

This report describes the methodology and results of the field delineation performed on September 12th and 13th, 2018. Figures referred to in the text are included at the end of the report.

## 1.1 Site Description

The project site is located in Sections 27, 28, 33, and 34 in Township 101 North, Range 49 West in Sioux Falls, Minnehaha County, South Dakota as shown on **Figure 1**. The approximately 90-acre site is bounded on the north by W 33rd Street, on the east by the Big Sioux River, on the south by E 49th Street, and on the west by S Minnesota Avenue. The site is located in the Lower Big Sioux watershed.

The project site consists of a variety of upland and wetland plant communities. The wetland and upland communities onsite are described in more detail in the following sections.

# 2 Wetland Delineation

## 2.1 Wetlands Definition

Wetlands are defined in federal Executive Order 11990 as follows:

> "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

According to U.S. Army Corps of Engineers *Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE 2010), one positive indicator (except in certain situations) from each of three elements must be present in order to make a positive wetland determination, which are as follows:

- Greater than 50 percent dominance of hydrophytic plant species.
- Presence of hydric soil.
- The area is either permanently or periodically inundated, or soil is saturated to the surface during the growing season of the dominant vegetation.

## 2.2 Methodology

### 2.2.1 Resource Review

Topographic maps, the U. S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) map, and the Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2019) for Minnehaha County, the Minnehaha County hydric soils list were reviewed prior to visiting the site to locate potential wetland habitats. **Figure 2** is a copy of the NWI map, and **Figure 3** is a copy of the NRCS Web Soil Survey map. These sources showed a number wetland areas that were investigated in greater detail during the field delineation.

### 2.2.2 Field Procedures

The project site was examined on September 12th and 13th, 2018 for areas meeting the technical wetland criteria in accordance with the U.S. Army Corps of Engineers *Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE 2010).

The delineation procedures in the Corps *Manual* (*i.e.*, the Routine Onsite Determination Method), in combination with wetland indicators and guidance provided in the *Regional Supplement* were applied for this delineation. Where differences in the two documents occur, the *Regional Supplement* takes precedence over the Corps *Manual* for applications in the *Midwest Region* (USACE 2010).

Field notes, samples, and photographs were taken at representative locations in each wetland basin, with data transect locations following spacing guidelines in the *Regional Supplement.* The respective wetland and upland plots for each wetland were documented on Wetland Determination Data Forms (**Appendix A**). Relevant photographs of the site and representative sample locations are included in **Appendix B**; all other photographs will be retained on file at SEH.

Wetland boundaries were located and marked with pin flags and/or flagging labeled with "WETLAND BOUNDARY" to allow for field review. The locations of the delineated wetland boundaries were collected with a sub-meter accuracy Global Positioning System (GPS) unit and mapped. The results of the delineation are shown on **Figures 4-1** and **4-2**. The sample points noted identify where data was collected.

## 2.3 Hydrophytic/Wetland Vegetation

Wetland plant species nomenclature follows the *National Wetland Plant List* (USACE 2016). Identification was aided when necessary with field guides for the region. Vegetation was sampled in nested circular plots: 5-ft radius for herbaceous species, 15-ft radius for shrubs, and 30-ft radius for trees and vines.

## 2.4 Hydric/Wetland Soils

Soils were observed for hydric soil characteristics. Soils were examined in cores taken with a Dutch auger. Soil profiles were observed at a depth necessary to confirm hydric soil characteristics. Typical soil profile depths are typically within 18-24 inches below ground surface to allow for: (1) observation of an adequate portion of the soil profile to determine presence/absence of hydric soil characteristics; (2) observation of hydrology including depth to the water table and saturated soils; and, (3) identification of disturbances (*e.g.*, buried horizon, plow line, etc.). Soil color determinations were made using Munsell Soil Color Charts (Gretag-Macbeth 1994). Site soil characteristics were compared to those mapped and described in the Soil Survey for Minnehaha County (USDA 2019). Hydric soil characteristics were compared to those identified in the *Midwest Regional Supplement* (USACE 2010) and the most recent version of the NRCS publication *Field Indicators of Hydric Soils in the United States, Version 8.1* (USDA 2017).

## 2.5 Hydrology

Primary and secondary indicators of hydrology were identified in the field to determine the presence or absence of wetland hydrology, as described in the *Midwest Regional Supplement* (USACE

2010), and are listed in each wetland description. Subsurface wetland hydrology indicators were examined using the soil cores and/or soil pits as deep as 24 inches.

# 3 Results

The field delineation was conducted under temperature conditions that were higher than normal and precipitation conditions that were wetter than normal as compared to the historical average for the region according to Midwest Regional Climate Center (**Appendix C**). Most of the vegetation was identifiable, including all dominant species.

10 wetland basins were identified, delineated, and classified (**Figures 4-1** and **4-2**). The Wetland Determination Data Forms (**Appendix A**) indicate the dominant species of vegetation and the soil and hydrologic characteristics at representative locations around each basin. **Table 1** is a summary of the size and classification of each wetland basin.

The wetlands are grouped by wetland habitat classification and described below **Table 1**.

Table 1 – Wetland and Aquatic Resource Characteristics

| Wetland ID | Size (acres)[1] | HGM Classification | Cowardin Classification | Location (Decimal Degrees) | Jurisdictional Status |
|---|---|---|---|---|---|
| 1 | 0.9129 | Prairie Pothole | PEMC | 43.5147, -96.7110 | Jurisdictional, Culverts provide connection to river |
| 2 | 0.1236 | Prairie Pothole | PEMC | 43.5149, -96.7082 | Jurisdictional, Culverts provide connection to river |
| 3 | 6.6559 | Prairie Pothole | PEMC | 43.5133, -96.7114 | Jurisdictional, Culverts provide connection to river |
| 4 | 0.1623 | Riverine | PEMB | 43.5153, -96.7135 | Jurisdictional, Adjacent to river |
| 5 | 0.2012 | Riverine | PEMB | 43.5164, -96.7119 | Jurisdictional, Adjacent to river |
| 6 | 0.1869 | Prairie Pothole | PEMB | 43.5165, -96.7092 | Not Jurisdictional, No Surficial Connection observed |
| 7 | 0.7492 | Prairie Pothole | PEMB | 43.5158, -96.7109 | Not Jurisdictional, No Surficial Connection observed |
| 8 | 1.3048 | Prairie Pothole | PEMC | 43.5122, -96.7111 | Not Jurisdictional, No Surficial Connection |
| 9 | 0.0977 | Prairie Pothole | PEMB | 43.5175, -96.7076 | Not Jurisdictional, No Surficial Connection |
| 10 | 0.8589 | Prairie Pothole | PEMC | 43.5139, -96.7160 | Not Jurisdictional, No Surficial Connection |
| **TOTAL** | **11.2534** | | | | |

[1] Size includes areas of wetland within the area of investigation only. Wetlands may extend beyond the limits of the area investigated and actual wetland size may be larger than that indicated.

## 3.1 Prairie Pothole Wetlands

The following sections describe wetlands within the project area that are classified as Prairie Pothole Wetland Communities based on the Hydrogeomophic Approach.

### 3.1.1 PEMC Wetlands

Table 2 – Summary of PEMC Prairie Potholes

| Wetland ID | Size (acres) | Cowardin |
|---|---|---|
| 1 | 0.9129 | PEMC |
| 2 | 0.1236 | PEMC |
| 3 | 6.6559 | PEMC |
| 8 | 1.3048 | PEMC |
| 10 | 0.8589 | PEMC |
| **Total acreage** | **9.8561** | |

Five (5) wetlands within the project limits is classified utilizing the Prairie Pothole Classification that are described as Shallow Marsh wetland communities. These wetlands included Wetlands 1, 2, 3, 8 and 10 (**Figure 4-1** and **4-2**). Wetlands 1-3 are located south of Interstate 229, while Wetlands 8 and 10 are located north of Interstate 229.

Dominant vegetation in the shallow marsh communities included blunt spike-rush (*Eleocharis obtusa* – OBL), dock-leaf smartweed (*Persicaria lapathifolia* – FACW), large barnyard grass (*Echinochloa crus-galli* – FACW), narrow-leaf cat-tail (*Typha angustifolia* – OBL), broad-leaf cat-tail (*Typha latifolia* – FACW), and catnip (*Nepeta cataria* – FACU) in the herbaceous stratum.

A typical soil profile in the shallow marsh community met the technical hydric soil indicator A11 – Depleted Below Dark Surface, A12 – Thick Dark Surface, F6 – Redox Dark Surface, and/or F7 – Depleted Below Dark Surface. The Minnehaha County soil survey identifies soils in this wetland as predominantly hydric and predominantly nonhydric.

The primary wetland hydrology indicators observed included A2 – High Water Table and A3 – Saturation. Saturation was observed 0-3 inches below the ground surface. In addition, a water table was encountered at 11 inches below ground surface in one sample point.

The wetland boundary placement was primarily based upon a slight topographic rise and a change in vegetation dominance. The surrounding upland areas were dominated by green ash (*Fraxinus pennsylvanica* – FACW) in the tree stratum; European buckthorn (*Rhamnus cathartica* – FAC) in the shrub stratum; and/or fox-tail barley (*Hordeum jubatum* – FAC), smooth brome (*Bromus inermis* – FACU), yellow bristle grass (*Setaria pumila* – FAC), black medick (*Medicago lupulina* – FACU), European buckthorn, Pennsylvania sedge (*Carex pensylvanica* – UPL), and/or black-bindweed (*Fallopia convolvulus* – FACU) in the herbaceous stratum. Upland soils did not meet for hydric soils criteria. Hydrology indicators were not observed in the upland.

### 3.1.2 PEMB Wetlands

Table 3 – Summary of Fresh (Wet) Meadow Communities

| Wetland ID | Size (acres) | Cowardin |
|---|---|---|
| 6 | 0.1868 | PEMB |
| 7 | 0.7492 | PEMB |
| 9 | 0.0977 | PEMB |
| **Total acreage** | **1.0338** | |

There are three (3) wetlands within the project limits is classified utilizing the Prairie Pothole Classification that are described as Fresh (wet) Meadow wetland communities. They include Wetlands 6, 7 and 9 (**Figure 4-1** and **4-2**).

Dominant vegetation in the fresh (wet) meadow communities included large barnyard grass, dock-leaf smartweed, reed canary grass, blunt spike-rush, and/or fox-tail barley in the herbaceous stratum.

A typical soil profile in the fresh (wet) meadow community met the technical hydric soil indicator A11 – Depleted Below Dark Suface and/or F6 – Redox Dark Surface. The Minnehaha County soil survey identifies soils in this wetland as predominantly hydric, predominantly nonhydric, and nonhydric.

The primary wetland hydrology indicator observed included A3 – Saturation. Saturation was present at the soil surface in the sample points.

The wetland boundary placement was primarily based upon a slight topographic rise and a change in vegetation dominance. The surrounding upland areas were dominated by yellow bristle grass, Canadian thistle (*Cirsium arvense* – FACU), smooth brome, Kentucky blue grass (*Poa pratensis* – FAC), annual ragweed (*Ambrosia artemisiifolia* – FAC), wand panic grass (*Panicum virgatum* – FAC), wild black currant (*Ribes americanum* – FACW), tall goldenrod (*Solidago altissima* – FACU), European buckthorn, and/or bull thistle (*Cirsium vulgare* – FACU) in the herbaceous stratum. Upland soils did not meet for hydric soils criteria. Hydrology indicators were not present at the upland sample points.

## 3.2 Riverine Wetlands

Wetlands 4 and 5 are associated with the Big Sioux River, and are directly adjacent to the main river channel, located along the riverbanks. These wetlands are categorized as Riverine Wetland Communities based on the Hydrogeomophic Approach and are described below.

### 3.2.1 PEMB Wetlands

Table 4 – Summary of Fresh (Wet) Meadow Communities

| Wetland ID | Size (acres) | Cowardin |
|---|---|---|
| 4 | 0.1623 | PEMB |
| 5 | 0.2012 | PEMB |
| **Total acreage** | **0.3635** | |

Wetlands 4 and 5 are classified as Riverine, and are best described as Fresh (Wet) Meadow wetland communities in the project area. They are located along the riverbanks of the Big Sioux River (**Figure 4-1** and **4-2**).

Dominant vegetation in the fresh (wet) meadow communities included large barnyard grass, dock-leaf smartweed, reed canary grass, blunt spike-rush, and/or fox-tail barley in the herbaceous stratum.

A typical soil profile in the fresh (wet) meadow community met the technical hydric soil indicator A11 – Depleted Below Dark Suface and/or F6 – Redox Dark Surface. The Minnehaha County soil survey identifies soils in this wetland as predominantly hydric, predominantly nonhydric, and nonhydric.

The primary wetland hydrology indicator observed included A3 – Saturation. Saturation was present at the soil surface in the sample points.

The wetland boundary placement was primarily based upon a slight topographic rise and a change in vegetation dominance. The surrounding upland areas were dominated by yellow bristle grass, Canadian thistle, smooth brome, Kentucky blue grass, annual ragweed, wand panic grass, wild black currant, tall goldenrod, European buckthorn, and/or bull thistle in the herbaceous stratum. Upland soils did not meet for hydric soils criteria. Primary indicator A3 – Saturation was present at the upland sample point for Wetland 5, but was not present at the other upland sample points.

## 3.3 Additional Upland Sample Points – U-A and U-B

Using GIS and other off-site resources, areas that appear to be wetland are mapped and identified for additional on-site review. During the on-site review, sample points within the potential wetland areas are used to determine if the technical criterion for wetland is present or absent. This process ensures that areas that appear meet wetland criteria based on initial review are appropriately identified through collection of field data. Form a regulatory standpoint,

inclusion of potential wetland areas, even if ultimately eliminated based on actual field conditions, provides the clarity needed to support a final decision on the wetland boundary and types.

For this project, two (2) areas were identified as potentially wetland during the GIS/ off-site investigation, one south of Interstate 229 (U-A) and one north of Interstate 229 (U-B). Both areas were determined non-wetland, and the data collected for each is described below.

The dominant vegetation at U-A was yellow bristle grass in the herbaceous stratum. Other vegetation included common milkweed (*Asclepias syriaca* – FACU), smooth brome, lamb's quarters (*Chenopodium album* – FACU), large barnyard grass, curly dock (*Rumex crispus* – FAC), black-bindweed, big bluestem (*Andropogon gerardii* – FAC), Canadian thistle, and narrow-leaf hawkweed (*Hieracium umbellatum* – UPL) in the herbaceous stratum. Soils in the area are classified as Bon loam, 0 to 2 percent slopes, occasionally flooded, with a hydric rating of predominantly nonhydric. There were no signatures within the site landscape that suggest water would be retained for a duration sufficient to meet primary or secondary hydrology indicators. Although hydrophytic vegetation was present, soils did not meet hydric soil criteria and hydrology indicators were not observed. From this field visit, we conclude that this area is not wetland.

The dominant vegetation at U-B was smooth brome, reed canary grass, leafy spurge (*Euphorbia esula* – UPL), and black-bindweed in the herbaceous stratum. Other vegetation included yellow bristle grass, Japanese bristle grass (*Setaria faberi* – FACU), and Virginia ground cherry (*Physalis virginiana* – UPL) in the herbaceous stratum. Soils in the area are classified as Baltic silty clay loam, ponded, with a hydric rating of predominantly hydric. There were no signatures within the site landscape that suggest water would be retained for a duration sufficient to meet primary or secondary hydrology indicators. Although hydrophytic vegetation was present, soils did not meet hydric soil criteria and hydrology indicators were not observed. From this field visit, we conclude that this area is not wetland.

# 4 Hydrogeomorphic (HGM) Assessment

The Hydrogeomophic (HGM) Approach is a method to assess the functional condition of wetlands by using data from a range of physical characteristics of the wetland collected during the field delineation. The HGM Approach incorporates data collected from the wetlands by using mathematic models to provide a level of wetland condition for each function. When combined in an aggregation equation, these functions produce a functional capacity index (FCI), a measure of the functional capacity of a wetland relative to reference standard wetlands on a scale of 0.0 – 1.0. A low FCI indicates that the wetland is performing a function at a level that is below that characteristic of reference standard.

While the FCI scores alone define relationships between variables of the wetland, when they are combined with the area of the wetland, a Functional Capacity Unit (FCU) score is generated. The FCU provides a basis for determination of impact and mitigation.

The HGM Approach was utilized on the 10 delineated wetland basin described above. HGM scores were calculated as required for the wetland delineation. A summary table of the HGM scores is included in Table 2. Full calculations for HGM can be found in the Hydrogeomophic Model Worksheets in Appendix D. The total HGM score for the site is 15.55 FCUs.

**HGM Functions [1, 2]**

| Basin ID | Wetland Size (acres) | HGM Method | 1 | 2 | 3 | 4 | 5 | 6 (Riverine) 6a (Prairie Pothole) | 7 (Riverine) 6b (Prairie Pothole) | 8 | 9 | Total FCI[3] | Total FCU[4] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.91 | Prairie Pothole | 0.18 | 0.18 | 0.6 | 0.16 | 0.15 | 0.16 | 0.1 | N/A | N/A | 1.53 | 1.40 |
| 2 | 0.12 | Prairie Pothole | 0.18 | 0.18 | 0.57 | 0.16 | 0.15 | 0.15 | 0.09 | N/A | N/A | 1.48 | 0.18 |
| 3 | 6.66 | Prairie Pothole | 0.18 | 0.17 | 0.32 | 0.12 | 0.13 | 0.14 | 0.11 | N/A | N/A | 1.17 | 7.79 |
| 4 | 0.16 | Riverine | N/A | 0.32 | 0.52 | 0 | 0.12 | 0.15 | 0 | 0.08 | 0.2 | 1.39 | 0.21 |
| 5 | 0.2 | Riverine | N/A | 0.37 | 0.52 | 0 | 0.16 | 0.19 | 0 | 0.08 | 0.24 | 1.56 | 0.31 |
| 6 | 0.19 | Prairie Pothole | 0.18 | 0.19 | 0.51 | 0.15 | 0.14 | 0.15 | 0.09 | N/A | N/A | 1.23 | 0.27 |
| 7 | 0.75 | Prairie Pothole | 0.18 | 0.18 | 0.53 | 0.15 | 0.14 | 0.15 | 0.1 | N/A | N/A | 1.25 | 1.07 |
| 8 | 1.3 | Prairie Pothole | 0.18 | 0.17 | 0.61 | 0.17 | 0.16 | 0.16 | 0.1 | N/A | N/A | 1.37 | 2.01 |
| 9 | 0.1 | Prairie Pothole | 0.18 | 0.19 | 0.58 | 0.16 | 0.14 | 0.16 | 0.09 | N/A | N/A | 1.32 | 0.01 |
| 10 | 0.86 | Prairie Pothole | 0.4 | 0.41 | 0.6 | 0.36 | 0.33 | 0.35 | 0.24 | N/A | N/A | 2.29 | 2.3 |

1. Prairie Pothole Functions are: 1. Water storage, 2. groundwater recharge, 3. particulate retention, 4. dissolved substances, 5. plant community and carbon sequestration, 6a. Faunal habitat, 6b. Faunal habitat (alternate formula)
2. Riverine Functions are: 2. Velocity Reduction of Surface Water Flow, 3. Storage and Release of Subsurface Water, 4. Removal of Imported Elements and Compounds, Retention of Particulates and Organic Materials, 6. Organic Carbon Export, 7/ Maintains Characteristic Plant Community, 8. Maintains Habitat Structure Within Wetland, 9. Maintains Hab. Str. And Connect. Among Wetlands
3. FCI = Functional Capacity Index
4. FCU = Functional Capacity Units

## 4.1 Conclusion

10 wetland basins were identified, delineated, and classified (**Figures 4-1** and **4-2**) with in the project limits. A total of 11.2534 acres of wetland habitat was delineated within the project limits for a total of 15.55 FCUs, as calculated utilizing the HGM. Two (2) of the wetlands are classified as Riverine under the HGM assessments, and the remaining eight (8) are classified as Prairie Pothole. In general, wetlands south of the center of I-229 are assumed connected to the Big Sioux River via culverts or direct surface flow. Because of this, these five (5) wetlands (1, 2,3, 4, and 5) are presumed to be jurisdictional by the USACE. The remaining five (5) wetlands (6, 7, 8, 9, and 10) have no apparent connection to the river and are presumed to be not jurisdictional by the USACE.

Wetlands in the project area are regulated by agencies at the local, regional, state, and federal levels including the USACE and the EPA at the federal level. It is presumed that the USACE has jurisdiction over all the wetlands in the project are due to their and connectivity proximity to the River. The primary state agencies in involved in wetlands protection include the South Dakota Department of Environment and Natural Resources (SDDENR), South Dakota Department of Game, Fish, and Parks (SDGFP), and the South Dakota Department of Agriculture (SDDA). These agencies may require a field review of the wetland delineation.

Construction plans that propose any direct alteration or indirect impact to wetlands or watercourses within the project area will require permits from the appropriate regulatory agencies. Violation of wetland regulations can result in substantial civil and/or criminal penalties.

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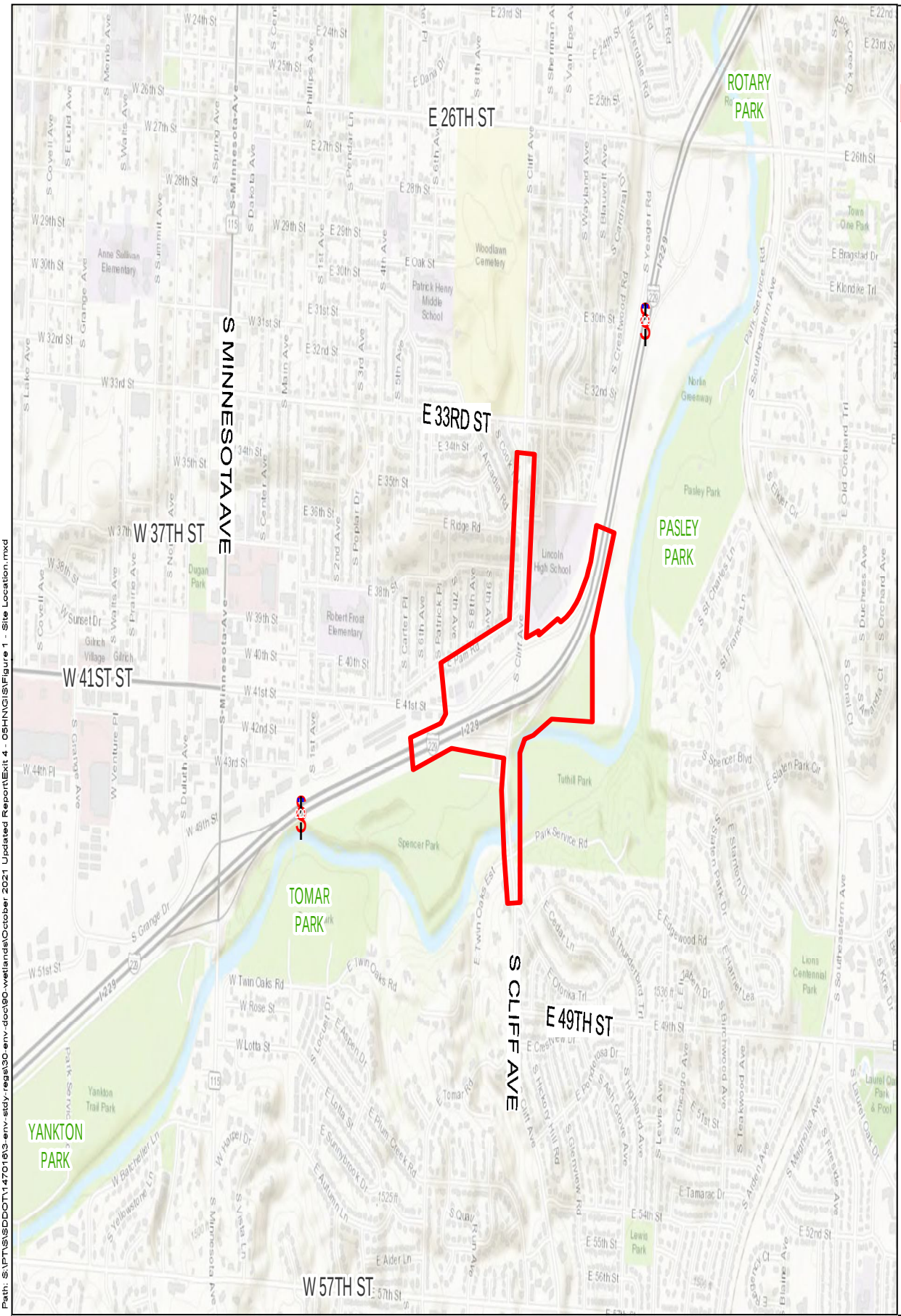
U.S. Fish and Wildlife Service National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands

U.S. Geological Survey 7.5' Quadrangle Map, Sioux Falls East, South Dakota Quadrangle, 2019. Scale: 1:24000.

# Figures




## Legend

Area of Investigation

0

0 0.125 0.25 0.5 Miles



Path: S:\PT\S\SDDOT\147016\3-env-study-regs\30-env-docs\90-wetlands\October 2021 Updated Report\Exit 4 - 05HN\GIS\Figure 1 - Site Location.mxd

SEH
PHONE: (651) 490-2000
FAX: (651) 490-2150
www.sehinc.com

Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS, USGS, NRCS, USDA

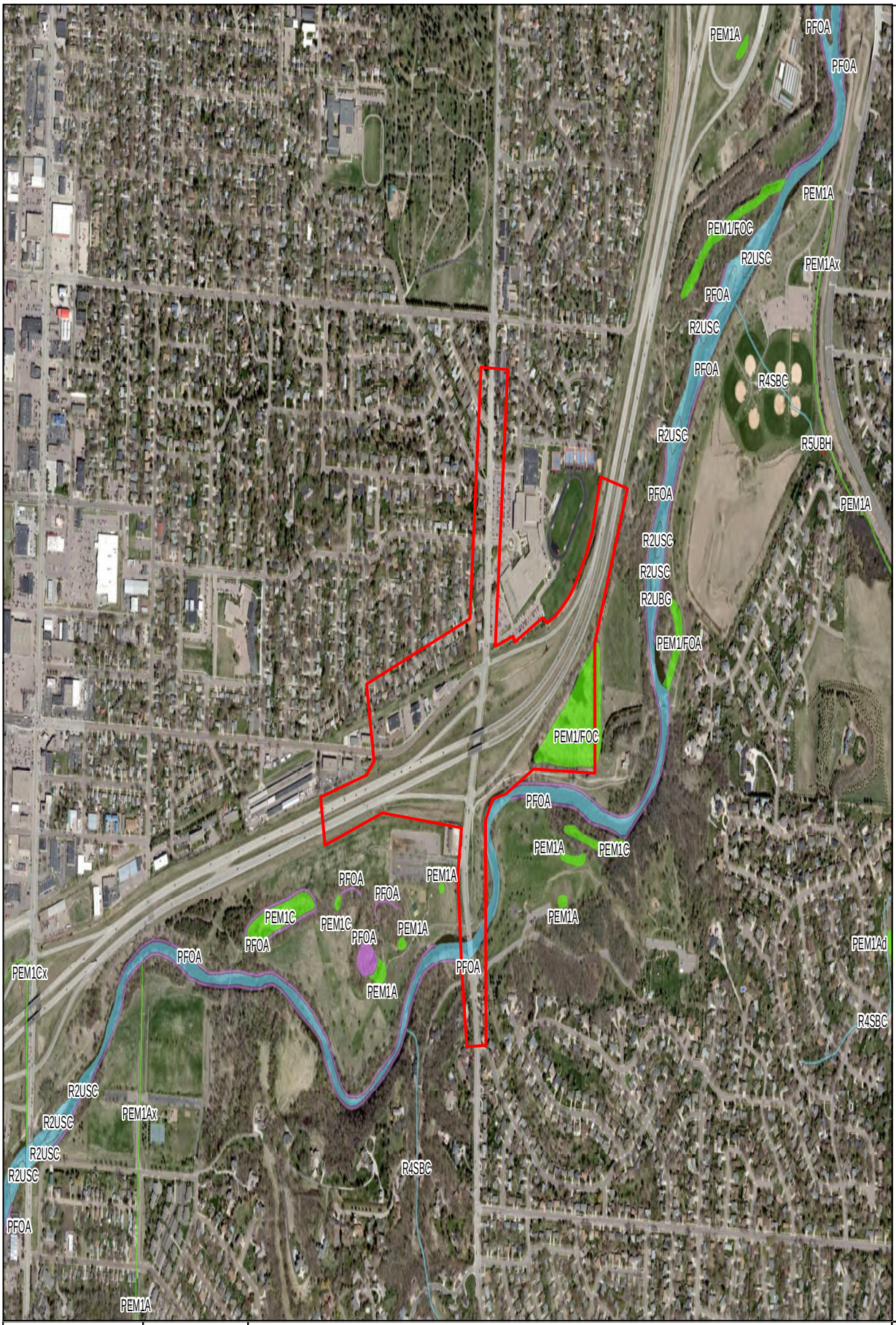
Print Date: 10/22/2021

# SITE LOCATION AND TOPOGRAPHY

Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County

**Exit 4**
Project: PCN 05HN
SEH Number: SDDOT 147016

**Figure 1**




## Legend

Area of Investigation

NWI Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0

0 500 1,000 2,000 Feet

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

Path: S:\PT\S\SDDOT\147016\3-env-study regs\30-env-docs\90-wetlands\October 2021 Updated Report\Exit 4 - 05HN\GIS\Figure 2 - NWI.mxd

SEH
PHONE: (651) 490-2000
FAX: (651) 490-2150
www.sehinc.com

Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS, USGS, NRCS, USDA

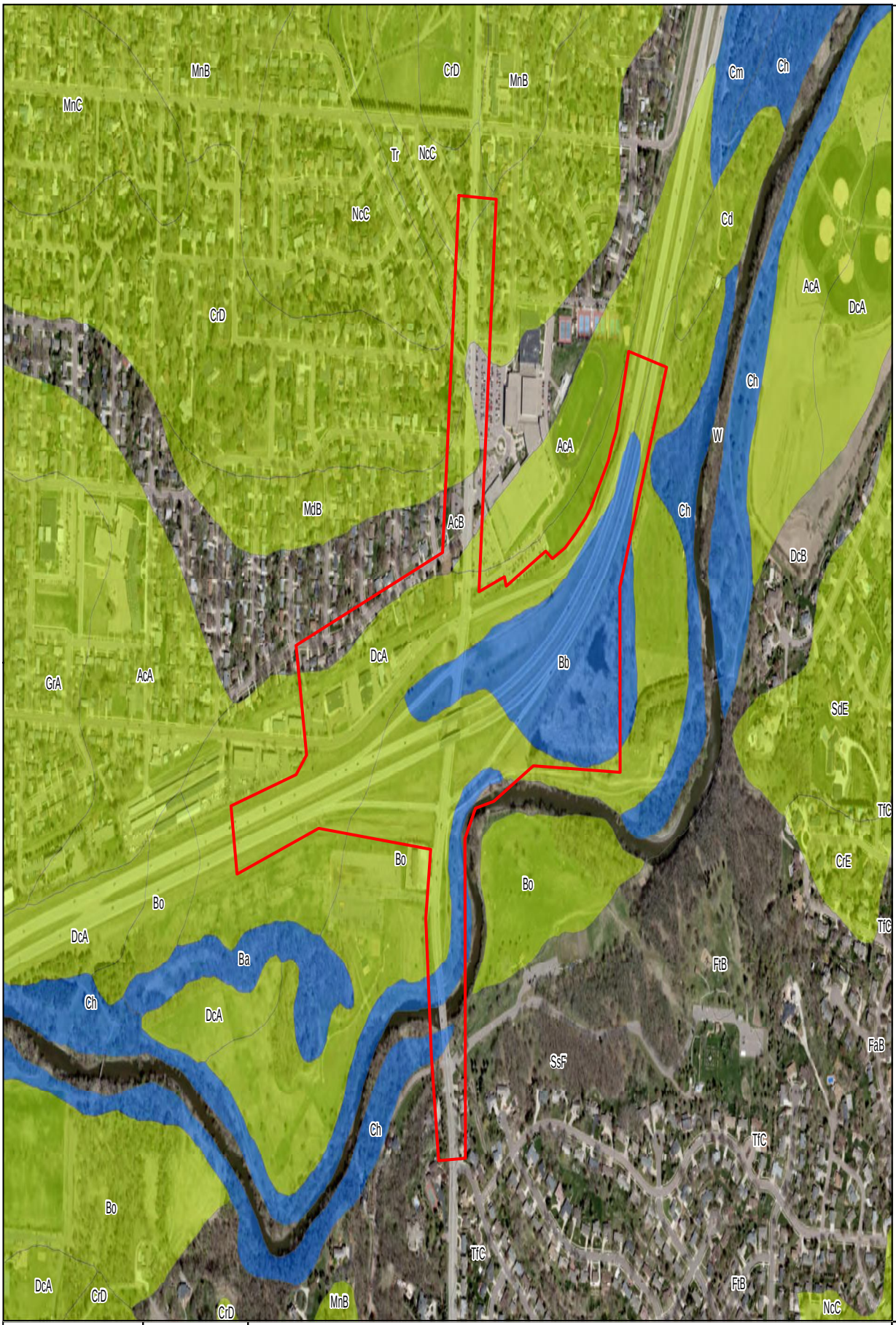
Print Date: 10/22/2021

# NATIONAL WETLANDS INVENTORY (NWI)

Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County

Exit 4
Project: PCN 05HN
SEH Number: SDDOT 147016

Figure 2




## Legend

Area of Investigation

Hydric Rating

- Nonhydric
- Predominantly Nonhydric
- Predominantly Hydric

| Map Unit | Soil Name |
|---|---|
| AcA | Alcester silty clay loam, cool, 0 to 2 percent slopes |
| AcB | Alcester silty clay loam, cool, 2 to 6 percent slopes |
| Ba | Baltic silty clay loam, 0 to 1 percent slopes |
| Bb | Baltic silty clay loam, ponded |
| Bo | Bon loam, 0 to 2 percent slopes, occasionally flooded |
| Cd | Chaska loam, 0 to 2 percent slopes |
| Ch | Chaska loam, channeled |
| Cm | Clamo silty day, 0 to 1 percent slopes |
| CrD | Crofton-Nora complex, 9 to 15 percent slopes |
| CrE | Crofton-Nora complex, 15 to 25 percent slopes |
| DcA | Davis loam, 0 to 2 percent slopes |
| DcB | Davis loam, 2 to 6 percent slopes |
| FaB | Flandreau loam, 2 to 6 percent slopes |
| FtB | Flandreau-Thurman complex, 2 to 6 percent slopes |
| GrA | Graceville silty clay loam, 0 to 2 percent slopes |
| MdB | Moody silty clay loam, cool, 2 to 6 percent slopes |
| MnB | Moody-Nora complex, 2 to 6 percent slopes |
| MnC | Moody-Nora silty clay loams, 6 to 9 percent slopes |
| NcC | Nora-Crofton complex, 6 to 9 percent slopes |
| SdE | Shindler-Houdek clay loams, 15 to 40 percent slopes |
| SsF | Steinauer-Shindler clay loams, 25 to 60 percent slopes |
| TfC | Thurman-Flandreau complex, 6 to 9 percent slopes |
| Tr | Trent silty clay loam, 0 to 3 percent slopes |
| W | Water |

N

0 375 750 1,500 Feet



Path: S:\PT\S\SDDOT\147016\3-env-study-regs\30-env-docs\90-wetlands\October 2021 Updated Report\Exit 4 - 05HN\GIS\Figure 3 - Soils.mxd

SEH
PHONE: (651) 490-2000
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www.sehinc.com

Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS, USGS, NRCS, USDA

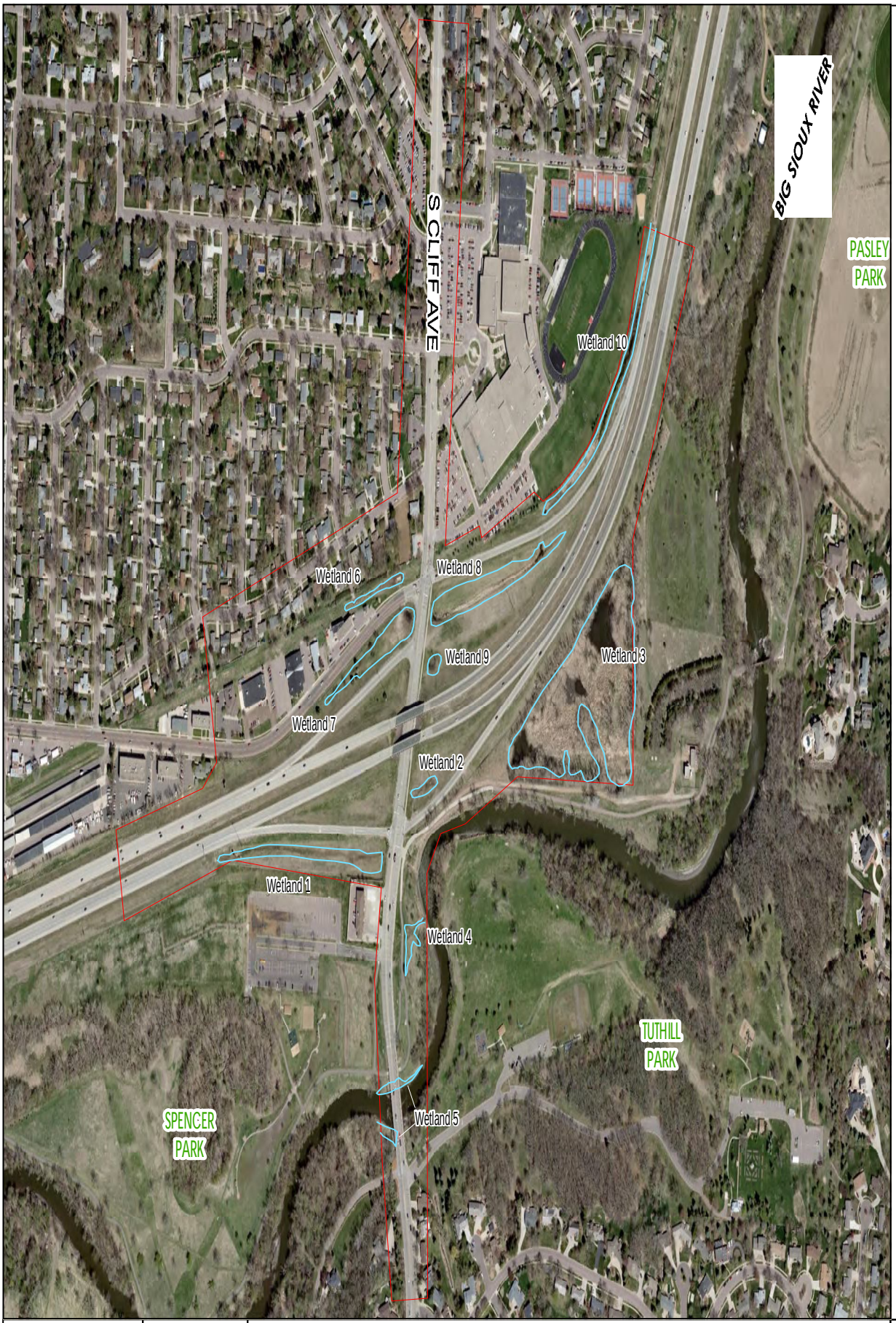
Print Date: 10/22/2021

# MINNEHAHA COUNTY SOIL SURVEY

Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County

Exit 4
Project: PCN 05HN
SEH Number: SDDOT 147016

Figure 3




## Legend

- Area of Investigation
- Wetland Boundary

0

0 250 500 1,000 Feet



Path: S:\PT\S\SDDOT\147016\3-env-study-regs\30-env-docs\90-wetlands\October 2021 Updated Report\Exit 4 - 05HN\GIS\Figure 4-1 - Wetland Delin.mxd

SEH
PHONE: (651) 490-2000
FAX: (651) 490-2150
www.sehinc.com

Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS, USGS, NRCS, USDA

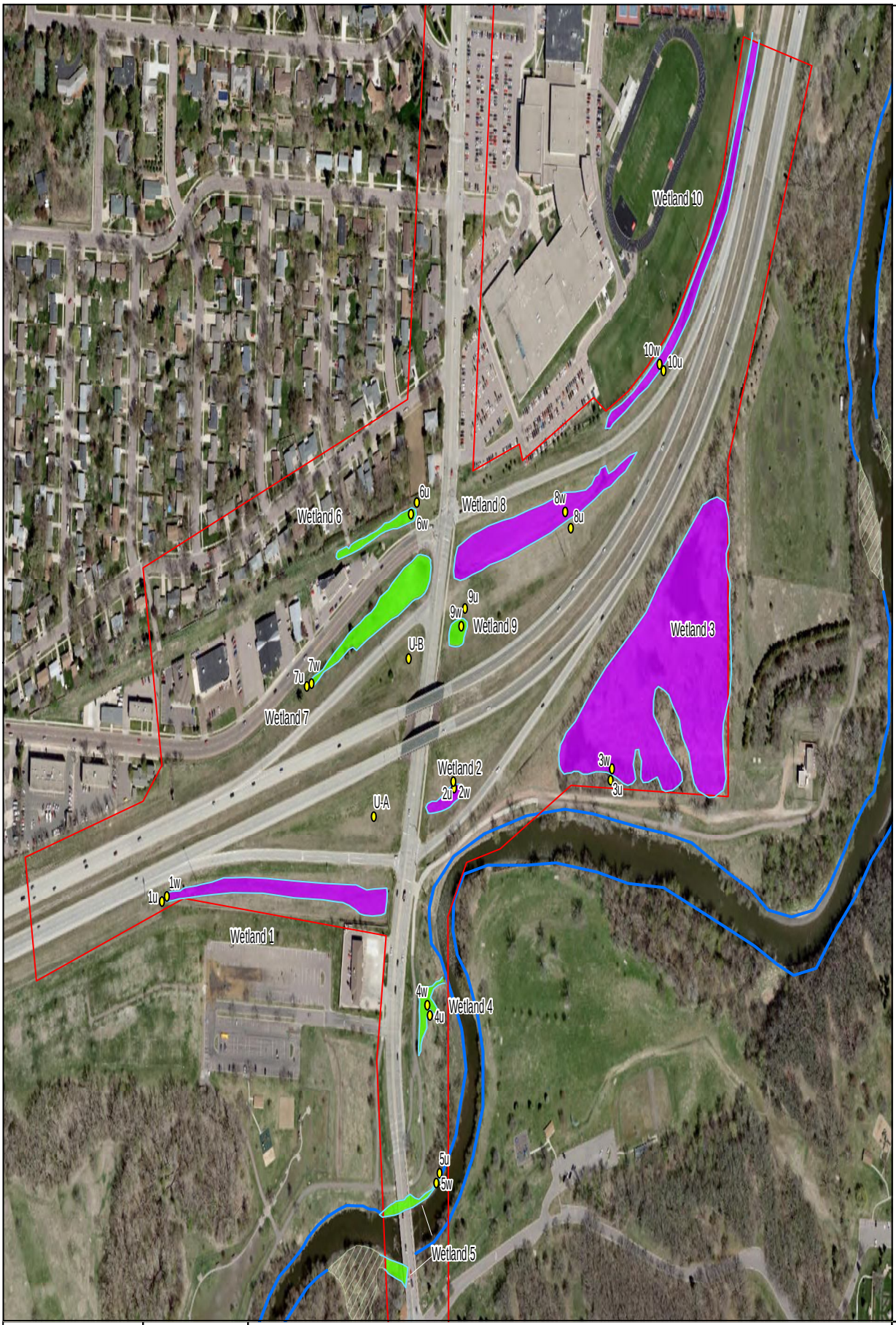
Print Date: 10/22/2021

# WETLAND DELINEATION RESULTS

Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County

Exit 4
Project: PCN 05HN
SEH Number: SDDOT 147016

Figure 4-1




## Legend

- Area of Investigation
- Sample Point
- Wetland Boundary
- Big Sioux River - Top of Bank

### Wetland Type

- Fresh (Wet) Meadow
- Shallow Marsh
- Not Delineated Wetland *(outside of Area of Investigation)*

0

0 200 400 800 Feet



Path: S:\PT\S\SDDOT\147016\3-env-study-regs\30-env-docs\90-wetlands\October 2021 Updated Report\Exit 4 - 05HNGIS\Figure 4-1 - Wetland Communities.mxd

SEH
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Project: SDDOT 147016
Print Date: 10/22/2021

Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS, USGS, NRCS, USDA

# WETLAND DELINEATION RESULTS

Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County

Exit 4

Figure 4-2

# Appendix A

## Wetland Delineation Data Forms

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 1U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S33 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 3 | Lat: 43° 30' 49.992" N | Long: 96° 42' 57.968" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Davis loam, 0 to 2 percent slopes | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | N | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 1.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Hordeum jubatum* | -- *Fox-Tail Barley* | 30 | Y | FAC |
| 2 | *Bromus inermis* | -- *Smooth Brome* | 30 | Y | FACU |
| 3 | *Plantago major* | -- *Great Plantain* | 15 | N | FAC |
| 4 | *Trifolium pratense* | -- *Red Clover* | 15 | N | FACU |
| 5 | *Echinochloa crus-galli* | -- *Large Barnyard Grass* | 5 | N | FACW |
| 6 | *Conyza canadensis* | -- *Canadian Horseweed* | 5 | N | UPL |
| 7 | | -- | | | |
| 8 | | -- | | | |
| 9 | | -- | | | |
| 10 | | -- | | | |
| | | | 100 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

| Total % Cover of: | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 5 | x 2 = | 10 | |
| FAC species | 45 | x 3 = | 135 | |
| FACU species | 45 | x 4 = | 180 | |
| UPL species | 5 | x 5 = | 25 | |
| Column totals | 100 | (A) | 350 | (B) |

Prevalence Index = B/A = 3.50

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** N

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 1U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR 3/1 | 100 | | | | | Sandy Loam | |
| 15-20 | 10YR 3/2 | 100 | | | | | Sandy Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 1W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S33 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 50.122" N | Long: 96° 42' 57.659" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Davis loam, 0 to 2 percent slopes | NWI Classification:

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 1 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 1.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun (Plot size: 15' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum (Plot size: 5' Radius)** | | | | | |
| 1 | *Eleocharis obtusa* | -- *Blunt Spike-Rush* | 65 | Y | OBL |
| 2 | *Persicaria lapathifolia* | -- *Dock-Leaf Smartweed* | 20 | Y | FACW |
| 3 | *Echinochloa crus-galli* | -- *Large Barnyard Grass* | 10 | N | FACW |
| 4 | *Hordeum jubatum* | -- *Fox-Tail Barley* | 5 | N | FAC |
| 5 | -- | | | | |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum (Plot size: 30' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

Remarks: (Include photo numbers here or on a separate sheet)

### Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

### Prevalence Index Worksheet

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 65 | x 1 = | 65 |
| FACW species | 30 | x 2 = | 60 |
| FAC species | 5 | x 3 = | 15 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 140 (B) |

Prevalence Index = B/A = 1.40

### Hydrophytic Vegetation Indicators:

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 1W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 3/1 | 100 | | | | | Silty Loam | |
| 4-12 | 10YR 3/1 | 75 | 5YR 4/4 | 20 | C | M | Silty Loam | |
| | | | 7.5YR 4/4 | 5 | C | M | | |
| 12-20 | 10YR 4/1 | 80 | 7.5YR 4/6 | 20 | C | M | Course Sandy Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 2U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): footslope | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 43° 30' 53.329" N | Long: 96° 42' 39.808" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Bon loam, 0-2% slopes, occasionally flooded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | N | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 2.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun** (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum** (Plot size: 5' Radius) | | | | | |
| 1 | *Setaria pumila* | -- *Yellow Bristle Grass* | 40 | Y | FAC |
| 2 | *Medicago lupulina* | -- *Black Medick* | 20 | Y | FACU |
| 3 | *Andropogon gerardii* | -- *Big Bluestem* | 15 | N | FAC |
| 4 | *Poa pratensis* | -- *Kentucky Blue Grass* | 15 | N | FAC |
| 5 | *Trifolium pratense* | -- *Red Clover* | 10 | N | FACU |
| 6 | | -- | | | |
| 7 | | -- | | | |
| 8 | | -- | | | |
| 9 | | -- | | | |
| 10 | | -- | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum** (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

| Total % Cover of: | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 70 | x 3 = | 210 | |
| FACU species | 30 | x 4 = | 120 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 100 | (A) | 330 | (B) |

Prevalence Index = B/A = 3.30

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** N

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

**SOIL** **Sampling Point:** 2U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 3/3 | 100 | | | | | Silty Loam with rocks | |
| 10+ | | | | | | | | Rocks |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 2W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 53.178" N | Long: 96° 42' 39.746" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Bon loam, 0-2% slopes, occasionally flooded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 2 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 2.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Echinochloa crus-galli* | *Large Barnyard Grass* | 40 | Y | FACW |
| 2 | *Typha angustifolia* | *Narrow-Leaf Cat-Tail* | 25 | Y | OBL |
| 3 | *Cyperus esculentus* | *Chufa* | 15 | N | FACW |
| 4 | *Poa pratensis* | *Kentucky Blue Grass* | 10 | N | FAC |
| 5 | *Setaria pumila* | *Yellow Bristle Grass* | 10 | N | FAC |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 25 | x 1 = | 25 |
| FACW species | 55 | x 2 = | 110 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 195 (B) |

Prevalence Index = B/A = 1.95

**Hydrophytic Vegetation Indicators:**

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 2W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 2/1 | 90 | 10YR 6/1 | 10 | C | M | Silty Loam with rocks | |
| 6-18 | 10YR 2/1 | 85 | 7.5YR 4/6 | 15 | C | M | Silty Loam with rocks | |
| 18-24 | 10YR 5/1 | 85 | 7.5YR 46 | 15 | C | M | Silty Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 3U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 4 | Lat: 43° 30' 53.682" N | Long: 96° 42' 29.909" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Bon loam, 0-2% slopes, occasionally flooded | NWI Classification: PEM1/FOC

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 3.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Fraxinus pennsylvanica* -- *Green Ash* | 10 | Y | FACW |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 10 | =Total Cover | |

| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | |
|---|---|---|---|---|
| 1 | *Rhamnus cathartica* -- *European Buckthorn* | 50 | Y | FAC |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 50 | =Total Cover | |

| Herb stratum (Plot size: 5' Radius) | | | | |
|---|---|---|---|---|
| 1 | *Rhamnus cathartica* -- *European Buckthorn* | 40 | Y | FAC |
| 2 | *Carex pensylvanica* -- *Pennsylvania Sedge* | 15 | Y | UPL |
| 3 | *Laportea canadensis* -- *Canadian Wood-Nettle* | 10 | N | FACW |
| 4 | *Acer saccharinum* -- *Silver Maple* | 5 | N | FACW |
| 5 | *Oxalis stricta* -- *Upright Yellow Wood-So* | 5 | N | FACU |
| 6 | -- | | | |
| 7 | -- | | | |
| 8 | -- | | | |
| 9 | -- | | | |
| 10 | -- | | | |
| | | 75 | =Total Cover | |

| Woody vine stratum (Plot size: 30' Radius) | | | | |
|---|---|---|---|---|
| 1 | -- | | | |
| 2 | -- | | | |
| | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

**Prevalence Index Worksheet**

| Total % Cover of: | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 25 | x 2 = | 50 |
| FAC species | 90 | x 3 = | 270 |
| FACU species | 5 | x 4 = | 20 |
| UPL species | 15 | x 5 = | 75 |
| Column totals | 135 (A) | | 415 (B) |

Prevalence Index = B/A = 3.07

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 3U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 4/3 | 100 | | | | | Sandy Loam | |
| 8-18 | 10YR 4/4 | 90 | 7.5YR 5/6 | 10 | C | M | Silty Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 3W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 53.958" N | Long: 96° 42' 29.838" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Bon loam, 0-2% slopes, occasionally flooded | NWI Classification: PEM1/FOC

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 3 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 3.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Acer saccharinum* -- *Silver Maple* | 20 | Y | FACW |
| 2 | *Populus deltoides* -- *Eastern Cottonwood* | 10 | Y | FAC |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 30 | =Total Cover | |

| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | |
|---|---|---|---|---|
| 1 | -- | | | |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 0 | =Total Cover | |

| Herb stratum (Plot size: 5' Radius) | | | | |
|---|---|---|---|---|
| 1 | *Typha latifolia* -- *Broad-Leaf Cat-Tail* | 35 | Y | OBL |
| 2 | *Phalaris arundinacea* -- *Reed Canary Grass* | 15 | Y | FACW |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| 6 | -- | | | |
| 7 | -- | | | |
| 8 | -- | | | |
| 9 | -- | | | |
| 10 | -- | | | |
| | | 50 | =Total Cover | |

| Woody vine stratum (Plot size: 30' Radius) | | | | |
|---|---|---|---|---|
| 1 | -- | | | |
| 2 | -- | | | |
| | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 35 | x 1 = | 35 | |
| FACW species | 35 | x 2 = | 70 | |
| FAC species | 10 | x 3 = | 30 | |
| FACU species | 0 | x 4 = | 0 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 80 | (A) | 135 | (B) |

Prevalence Index = B/A = 1.69

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 3W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 3/1 | 80 | 7.5YR 4/6 | 20 | C | M | Silty Loam | |
| 10-20 | 10YR 5/1 | 75 | 7.5YR 5/6 | 25 | C | M | Silty Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | X | No | ___ | Depth (inches): | 11 |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 3 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 4U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S33 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 4 | Lat: 43° 30' 47.935" N | Long: 96° 42' 40.955" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Chaska loam, channeled | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | N | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 4.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | *Quercus alba* -- *Northern White Oak* | | | FACU |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 0 | =Total Cover | |

| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | |
|---|---|---|---|---|
| 1 | -- | | | |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 0 | =Total Cover | |

| Herb stratum (Plot size: 5' Radius) | | | | |
|---|---|---|---|---|
| 1 | *Bromus inermis* -- *Smooth Brome* | 60 | Y | FACU |
| 2 | *Cirsium vulgare* -- *Bull Thistle* | 20 | Y | FACU |
| 3 | *Parthenocissus quinquefolia* -- *Virginia-Creeper* | 10 | N | FACU |
| 4 | *Medicago lupulina* -- *Black Medick* | 10 | N | FACU |
| 5 | -- | | | |
| 6 | -- | | | |
| 7 | -- | | | |
| 8 | -- | | | |
| 9 | -- | | | |
| 10 | -- | | | |
| | | 100 | =Total Cover | |

| Woody vine stratum (Plot size: 30' Radius) | | | | |
|---|---|---|---|---|
| 1 | -- | | | |
| 2 | -- | | | |
| | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 0 | x 3 = | 0 | |
| FACU species | 100 | x 4 = | 400 | |
| UPL species | 0 | x 5 = | 0 | |
| Column totals | 100 | (A) | 400 | (B) |

Prevalence Index = B/A = 4.00

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** N

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 4U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10YR 3/2 | 100 | | | | | Sandy Loam | |
| 15-20 | 10YR 7/3 | 100 | | | | | Sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 4W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S33 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 48.163" N | Long: 96° 42' 41.134" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Chaska loam, channeled | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | |
|---|---|
| Hydrophytic vegetation present? Y | **Is the sampled area within a wetland?** Y |
| Hydric soil present? Y | If yes, optional wetland site ID: Wetland 4 |
| Indicators of wetland hydrology present? Y | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 4.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun (Plot size: 15' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum (Plot size: 5' Radius)** | | | | | |
| 1 | *Echinochloa crus-galli* | *Large Barnyard Grass* | 40 | Y | FACW |
| 2 | *Persicaria lapathifolia* | *Dock-Leaf Smartweed* | 20 | Y | FACW |
| 3 | *Poa pratensis* | *Kentucky Blue Grass* | 10 | N | FAC |
| 4 | *Hordeum jubatum* | *Fox-Tail Barley* | 10 | N | FAC |
| 5 | *Typha angustifolia* | *Narrow-Leaf Cat-Tail* | 10 | N | OBL |
| 6 | *Silphium laciniatum* | *Compass Plant* | 10 | N | UPL |
| 7 | *Bidens frondosa* | *Devil's-Pitchfork* | 2 | N | FACW |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 102 | =Total Cover | |
| **Woody vine stratum (Plot size: 30' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 10 | x 1 = | 10 |
| FACW species | 62 | x 2 = | 124 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 10 | x 5 = | 50 |
| Column totals | 102 (A) | | 244 (B) |

Prevalence Index = B/A = 2.39

**Hydrophytic Vegetation Indicators:**

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 4W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 3/1 | 100 | | | | | Sandy Loam | |
| 8-16 | 10YR 3/1 | 90 | 7.5YR 5/6 | 10 | C | M | Sandy Loam | |
| 16-20 | 10YR 7/1 | 100 | | | | | Sand | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 5U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S33 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 5 | Lat: 43° 30' 44.339" N | Long: 96° 42' 40.126" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Water | NWI Classification: R2UBG

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 5.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun (Plot size: 15' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum (Plot size: 5' Radius)** | | | | | |
| 1 | *Ribes americanum* | -- *Wild Black Currant* | 20 | Y | FACW |
| 2 | *Solidago altissima* | -- *Tall Goldenrod* | 20 | Y | FACU |
| 3 | *Rhamnus cathartica* | -- *European Buckthorn* | 20 | Y | FAC |
| 4 | *Glechoma hederacea* | -- *Groundivy* | 15 | N | FACU |
| 5 | *Erigeron annuus* | -- *Eastern Daisy Fleabane* | 15 | N | FACU |
| 6 | *Parthenocissus quinquefolia* | -- *Virginia-Creeper* | 10 | N | FACU |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum (Plot size: 30' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

Remarks: (Include photo numbers here or on a separate sheet)

### Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

### Prevalence Index Worksheet

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 60 | x 4 = | 240 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 340 (B) |

Prevalence Index = B/A = 3.40

### Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 5U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 2/2 | 100 | | | | | Silty Loam | |
| 8-18 | 10YR 3/3 | 60 | 10YR 4/4 | 40 | C | M | Sandy Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | | No | X | Depth (inches): | |
| Water table present? | Yes | | No | X | Depth (inches): | |
| Saturation present? (includes capillary fringe) | Yes | X | No | | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 5W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S33 T101N R49W

Landform (hillslope, terrace, etc.): footslope | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 43° 30' 44.110" N | Long: 96° 42' 40.309" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Water | NWI Classification: R2UBG

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 5 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 5.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun (Plot size: 15' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum (Plot size: 5' Radius)** | | | | | |
| 1 | *Phalaris arundinacea* | -- *Reed Canary Grass* | 60 | Y | FACW |
| 2 | *Solidago altissima* | -- *Tall Goldenrod* | 15 | N | FACU |
| 3 | *Urtica dioica* | -- *Stinging Nettle* | 15 | N | FACW |
| 4 | *Persicaria lapathifolia* | -- *Dock-Leaf Smartweed* | 10 | N | FACW |
| 5 | -- | | | | |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum (Plot size: 30' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 85 | x 2 = | 170 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 15 | x 4 = | 60 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 230 (B) |

Prevalence Index = B/A = 2.30

**Hydrophytic Vegetation Indicators:**

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 5W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 2/2 | 95 | 10YR 5/6 | 5 | C | M | Silty Loam | |
| 12-20 | 10YR 5/1 | 80 | 7.5YR 5/6 | 15 | C | M | Silty Loam | |
| | | | 10YR 5/8 | 5 | C | M | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 6U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S28 T101N R49W

Landform (hillslope, terrace, etc.): footslope | Local relief (concave, convex, none): Concave

Slope (%): 3 | Lat: 43° 30' 59.644" N | Long: 96° 42' 42.506" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Davis loam, 0 to 2 percent slopes | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 6.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Ambrosia artemisiifolia* | -- *Annual Ragweed* | 40 | Y | FACU |
| 2 | *Setaria pumila* | -- *Yellow Bristle Grass* | 35 | Y | FAC |
| 3 | *Panicum virgatum* | -- *Wand Panic Grass* | 20 | Y | FAC |
| 4 | *Physalis virginiana* | -- *Virginia Ground Cherry* | 5 | N | UPL |
| 5 | -- | | | | |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

**Prevalence Index Worksheet**

| Total % Cover of: | | | | |
|---|---|---|---|---|
| OBL species | 0 | x 1 = | 0 | |
| FACW species | 0 | x 2 = | 0 | |
| FAC species | 55 | x 3 = | 165 | |
| FACU species | 40 | x 4 = | 160 | |
| UPL species | 5 | x 5 = | 25 | |
| Column totals | 100 | (A) | 350 | (B) |

Prevalence Index = B/A = 3.50

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 6U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/1 | 100 | | | | | Sandy Loam | |
| 12-20 | 10YR 3/2 | 100 | | | | | Sandy Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 6W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S28 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 59.359" N | Long: 96° 42' 42.847" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Davis loam, 0 to 2 percent slopes | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 6 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 6.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|
| 1 | -- | | | |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 0 | =Total Cover | |
| **Sapling/Shrub stratun (Plot size: 15' Radius)** | | | | |
| 1 | -- | | | |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| | | 0 | =Total Cover | |
| **Herb stratum (Plot size: 5' Radius)** | | | | |
| 1 | *Phalaris arundinacea* -- *Reed Canary Grass* | 100 | Y | FACW |
| 2 | -- | | | |
| 3 | -- | | | |
| 4 | -- | | | |
| 5 | -- | | | |
| 6 | -- | | | |
| 7 | -- | | | |
| 8 | -- | | | |
| 9 | -- | | | |
| 10 | -- | | | |
| | | 100 | =Total Cover | |
| **Woody vine stratum (Plot size: 30' Radius)** | | | | |
| 1 | -- | | | |
| 2 | -- | | | |
| | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 100 | x 2 = | 200 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 200 (B) |

Prevalence Index = B/A = 2.00

**Hydrophytic Vegetation Indicators:**

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 6W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-6 | 10YR 3/1 | 100 | | | | | Silty Loam | |
| 6-12 | 10YR 3/1 | 80 | 5YR 4/4 | 15 | C | M | Silty Loam | |
| | | | 7.5YR 4/4 | 5 | C | M | | |
| 12-20 | 10YR 4/1 | 90 | 7.5YR 4/6 | 10 | C | M | Course Sandy Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | | No | X | Depth (inches): | |
| Water table present? | Yes | | No | X | Depth (inches): | |
| Saturation present? (includes capillary fringe) | Yes | X | No | | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 7U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S28 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 3 | Lat: 43° 30' 55.210" N | Long: 96° 42' 49.149" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Davis loam, 0 to 2 percent slopes | NWI Classification:

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | N | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 7.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Cirsium arvense* | -- *Canadian Thistle* | 25 | Y | FACU |
| 2 | *Bromus inermis* | -- *Smooth Brome* | 20 | Y | FACU |
| 3 | *Poa pratensis* | -- *Kentucky Blue Grass* | 15 | Y | FAC |
| 4 | *Setaria pumila* | -- *Yellow Bristle Grass* | 10 | N | FAC |
| 5 | *Phalaris arundinacea* | -- *Reed Canary Grass* | 10 | N | FACW |
| 6 | *Fallopia convolvulus* | -- *Black-Bindweed* | 10 | N | FACU |
| 7 | *Euphorbia esula* | -- *Leafy Spurge* | 10 | N | UPL |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 10 | x 2 = | 20 |
| FAC species | 25 | x 3 = | 75 |
| FACU species | 55 | x 4 = | 220 |
| UPL species | 10 | x 5 = | 50 |
| Column totals | 100 (A) | | 365 (B) |

Prevalence Index = B/A = 3.65

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** N

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 7U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10YR 3/1 | 100 | | | | | Sandy Loam | |
| 14-20 | 10YR 3/2 | 100 | | | | | Sandy Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 7W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S28 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 55.286" N | Long: 96° 42' 48.860" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Davis loam, 0 to 2 percent slopes | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 7 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 7.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Phalaris arundinacea* | -- *Reed Canary Grass* | 35 | Y | FACW |
| 2 | *Eleocharis obtusa* | -- *Blunt Spike-Rush* | 25 | Y | OBL |
| 3 | *Echinochloa crus-galli* | -- *Large Barnyard Grass* | 10 | N | FACW |
| 4 | *Persicaria pensylvanica* | -- *Pinkweed* | 10 | N | FACW |
| 5 | *Poa pratensis* | -- *Kentucky Blue Grass* | 10 | N | FAC |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 90 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

Remarks: (Include photo numbers here or on a separate sheet)

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 25 | x 1 = | 25 |
| FACW species | 55 | x 2 = | 110 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 90 (A) | | 165 (B) |

Prevalence Index = B/A = 1.83

**Hydrophytic Vegetation Indicators:**

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 7W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 3/1 | 100 | | | | | Silty Loam | |
| 8-12 | 10YR 3/1 | 80 | 5YR 4/4 | 15 | C | M | Silty Loam | |
| | | | 7.5YR 4/4 | 5 | C | M | | |
| 12-20 | 10YR 4/1 | 90 | 7.5YR 4/6 | 10 | C | M | Course Sandy Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 8U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 4 | Lat: 43° 30' 59.370" N | Long: 96° 42' 32.780" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Baltic silty clay loam, ponded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | N | | |
| Hydric soil present? | N | **Is the sampled area within a wetland?** | N |
| Indicators of wetland hydrology present? | N | If yes, optional wetland site ID: | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 8.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Setaria pumila* | -- *Yellow Bristle Grass* | 40 | Y | FAC |
| 2 | *Fallopia convolvulus* | -- *Black-Bindweed* | 30 | Y | FACU |
| 3 | *Medicago lupulina* | -- *Black Medick* | 5 | N | FACU |
| 4 | *Physalis virginiana* | -- *Virginia Ground Cherry* | 5 | N | UPL |
| 5 | -- | | | | |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 80 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 40 | x 3 = | 120 |
| FACU species | 35 | x 4 = | 140 |
| UPL species | 5 | x 5 = | 25 |
| Column totals | 80 (A) | | 285 (B) |

Prevalence Index = B/A = 3.56

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** N

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

**SOIL** **Sampling Point:** 8U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 3/3 | 100 | | | | | Silty Loam with rocks | |
| 10+ | | | | | | | | Rocks |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 8W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 1 | Lat: 43° 30' 59.728" N | Long: 96° 42' 33.160" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Baltic silty clay loam, ponded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 8 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 8.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun** (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum** (Plot size: 5' Radius) | | | | | |
| 1 | *Typha latifolia* | -- *Broad-Leaf Cat-Tail* | 50 | Y | OBL |
| 2 | *Nepeta cataria* | -- *Catnip* | 10 | N | FACU |
| 3 | *Persicaria lapathifolia* | -- *Dock-Leaf Smartweed* | 10 | N | FACW |
| 4 | *Eleocharis acicularis* | -- *Needle Spike-Rush* | 10 | N | OBL |
| 5 | *Hordeum jubatum* | -- *Fox-Tail Barley* | 10 | N | FAC |
| 6 | *Bidens frondosa* | -- *Devil's-Pitchfork* | 5 | N | FACW |
| 7 | *Cyperus esculentus* | -- *Chufa* | 5 | N | FACW |
| 8 | | -- | | | |
| 9 | | -- | | | |
| 10 | | -- | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum** (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 60 | x 1 = | 60 |
| FACW species | 20 | x 2 = | 40 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 10 | x 4 = | 40 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 170 (B) |

Prevalence Index = B/A = 1.70

**Hydrophytic Vegetation Indicators:**

- X Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 8W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 2/1 | 90 | 10YR 6/1 | 10 | C | M | Silty Loam with rocks | |
| 8-18 | 10YR 2/1 | 85 | 7.5YR 4/6 | 15 | C | M | Silty Loam with rocks | |
| 18-24 | 10YR 5/1 | 85 | 7.5YR 46 | 15 | C | M | Silty Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 9U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 4 | Lat: 43° 30' 57.319" N | Long: 96° 42' 39.309" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Baltic silty clay loam, ponded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | |
|---|---|
| Hydrophytic vegetation present? Y | **Is the sampled area within a wetland?** N |
| Hydric soil present? N | If yes, optional wetland site ID: |
| Indicators of wetland hydrology present? N | |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 9.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun (Plot size: 15' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum (Plot size: 5' Radius)** | | | | | |
| 1 | *Setaria pumila* | -- *Yellow Bristle Grass* | 60 | Y | FAC |
| 2 | *Asclepias syriaca* | -- *Common Milkweed* | 20 | N | FACU |
| 3 | *Cirsium arvense* | -- *Canadian Thistle* | 10 | N | FACU |
| 4 | *Hieracium umbellatum* | -- *Narrow-Leaf Hawkweed* | 10 | N | UPL |
| 5 | *Euphorbia esula* | -- *Leafy Spurge* | 5 | N | UPL |
| 6 | *Fallopia convolvulus* | -- *Black-Bindweed* | 5 | N | FACU |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 110 | =Total Cover | |
| **Woody vine stratum (Plot size: 30' Radius)** | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

Remarks: (Include photo numbers here or on a separate sheet)

### Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

### Prevalence Index Worksheet

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 60 | x 3 = | 180 |
| FACU species | 35 | x 4 = | 140 |
| UPL species | 15 | x 5 = | 75 |
| Column totals | 110 (A) | | 395 (B) |

Prevalence Index = B/A = 3.59

### Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 9U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/1 | 100 | | | | | Sandy Loam | |
| 12-20 | 10YR 3/2 | 100 | | | | | Sandy Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 9W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): footslope | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 43° 30' 56.901" N | Long: 96° 42' 39.529" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Baltic silty clay loam, ponded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 9 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 9.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Sapling/Shrub stratun (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| Herb stratum (Plot size: 5' Radius) | | | | | |
| 1 | *Phalaris arundinacea* | -- *Reed Canary Grass* | 50 | Y | FACW |
| 2 | *Hordeum jubatum* | -- *Fox-Tail Barley* | 20 | Y | FAC |
| 3 | *Persicaria lapathifolia* | -- *Dock-Leaf Smartweed* | 15 | N | FACW |
| 4 | *Cyperus esculentus* | -- *Chufa* | 15 | N | FACW |
| 5 | -- | | | | |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| Woody vine stratum (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

Remarks: (Include photo numbers here or on a separate sheet)

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

**Prevalence Index Worksheet**

| Total % Cover of: | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 80 | x 2 = | 160 |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 0 | x 4 = | 0 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 220 (B) |

Prevalence Index = B/A = 2.20

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 9W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 3/1 | 80 | 7.5YR 4/6 | 20 | C | M | Silty Loam | |
| 8-20 | 10YR 5/1 | 75 | 7.5YR 5/6 | 25 | C | M | Silty Loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 10U

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): backslope | Local relief (concave, convex, none): Concave

Slope (%): 4 | Lat: 43° 31' 3.164" N | Long: 96° 42' 27.165" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Baltic silty clay loam, ponded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | |
|---|---|
| Hydrophytic vegetation present? N | |
| Hydric soil present? N | **Is the sampled area within a wetland?** N |
| Indicators of wetland hydrology present? N | If yes, optional wetland site ID: |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected adjacent to Wetland 10.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun** (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum** (Plot size: 5' Radius) | | | | | |
| 1 | *Setaria pumila* | -- *Yellow Bristle Grass* | 50 | Y | FAC |
| 2 | *Fallopia convolvulus* | -- *Black-Bindweed* | 30 | Y | FACU |
| 3 | *Medicago lupulina* | -- *Black Medick* | 10 | N | FACU |
| 4 | *Physalis virginiana* | -- *Virginia Ground Cherry* | 10 | N | UPL |
| 5 | -- | | | | |
| 6 | -- | | | | |
| 7 | -- | | | | |
| 8 | -- | | | | |
| 9 | -- | | | | |
| 10 | -- | | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum** (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

| Total % Cover of: | | | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 50 | x 3 = | 150 |
| FACU species | 40 | x 4 = | 160 |
| UPL species | 10 | x 5 = | 50 |
| Column totals | 100 (A) | | 360 (B) |

Prevalence Index = B/A = 3.60

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** N

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 10U

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-12 | 10YR 3/3 | 100 | | | | | Silty Loam with rocks | |
| 12+ | | | | | | | | Rocks |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** N

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | ___ | No | X | Depth (inches): | ___ |

**Indicators of wetland hydrology present?** N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: PCN 05HN: I-229 Exit 4 Reconstruction | City/County: Sioux Falls/Minnehaha | Sampling Date: 9/25/2018

Applicant/Owner: South Dakota Department of Transportation | State: South Dakota | Sampling Point: 10W

Investigator(s): Rebecca Beduhn | Section, Township, Range: S27 T101N R49W

Landform (hillslope, terrace, etc.): toeslope | Local relief (concave, convex, none): Concave

Slope (%): 2 | Lat: 43° 31' 3.312" N | Long: 96° 42' 27.419" W | Datum: UTM NAD83 Zone 14N

Soil Map Unit Name: Baltic silty clay loam, ponded | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? N (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

## SUMMARY OF FINDINGS

| | | | |
|---|---|---|---|
| Hydrophytic vegetation present? | Y | | |
| Hydric soil present? | Y | **Is the sampled area within a wetland?** | Y |
| Indicators of wetland hydrology present? | Y | If yes, optional wetland site ID: | Wetland 10 |

Remarks: (Explain alternative procedures here or in a separate report.)

Sample Point collected in Wetland 10.

## VEGETATION -- Use scientific names of plants.

| Tree Stratum (Plot size: 30' Radius) | | | Absolute % Cover | Dominant Species | Indicator Status |
|---|---|---|---|---|---|
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Sapling/Shrub stratun** (Plot size: 15' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| 3 | -- | | | | |
| 4 | -- | | | | |
| 5 | -- | | | | |
| | | | 0 | =Total Cover | |
| **Herb stratum** (Plot size: 5' Radius) | | | | | |
| 1 | *Typha latifolia* | -- *Broad-Leaf Cat-Tail* | 40 | Y | OBL |
| 2 | *Nepeta cataria* | -- *Catnip* | 20 | Y | FACU |
| 3 | *Persicaria lapathifolia* | -- *Dock-Leaf Smartweed* | 15 | N | FACW |
| 4 | *Eleocharis acicularis* | -- *Needle Spike-Rush* | 10 | N | OBL |
| 5 | *Hordeum jubatum* | -- *Fox-Tail Barley* | 5 | N | FAC |
| 6 | *Bidens frondosa* | -- *Devil's-Pitchfork* | 5 | N | FACW |
| 7 | *Cyperus esculentus* | -- *Chufa* | 5 | N | FACW |
| 8 | | -- | | | |
| 9 | | -- | | | |
| 10 | | -- | | | |
| | | | 100 | =Total Cover | |
| **Woody vine stratum** (Plot size: 30' Radius) | | | | | |
| 1 | -- | | | | |
| 2 | -- | | | | |
| | | | 0 | =Total Cover | |

**Dominance Test Worksheet**

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

**Prevalence Index Worksheet**

Total % Cover of:

| | | | |
|---|---|---|---|
| OBL species | 50 | x 1 = | 50 |
| FACW species | 25 | x 2 = | 50 |
| FAC species | 5 | x 3 = | 15 |
| FACU species | 20 | x 4 = | 80 |
| UPL species | 0 | x 5 = | 0 |
| Column totals | 100 (A) | | 195 (B) |

Prevalence Index = B/A = 1.95

**Hydrophytic Vegetation Indicators:**

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

**Hydrophytic vegetation present?** Y

Remarks: (Include photo numbers here or on a separate sheet)

**Note: This data sheet has been adapted to use the 2016 National Wetland Plant List:**

*Robert W. Lichvar and John T. Kartesz. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC. (2016)*

## SOIL

**Sampling Point:** 10W

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (Inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type* | Loc** | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10YR 2/1 | 90 | 10YR 6/1 | 10 | C | M | Silty Loam with rocks | |
| 10-18 | 10YR 2/1 | 85 | 7.5YR 4/6 | 15 | C | M | Silty Loam with rocks | |
| 18-24 | 10YR 5/1 | 85 | 7.5YR 46 | 15 | C | M | Silty Loam with rocks | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

**Indicators for Problematic Hydric Soils:**

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric soil present?** Y

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Surface water present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Water table present? | Yes | ___ | No | X | Depth (inches): | ___ |
| Saturation present? (includes capillary fringe) | Yes | X | No | ___ | Depth (inches): | 0 |

**Indicators of wetland hydrology present?** Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Antecedent precipitation conditions were determined "Wetter than normal" (Appendix C).

# Appendix B

Site Photographs

Photo 1 Wetland 1 – Shallow Marsh

Photo 2 Wetland 1 – Shallow Marsh

Photo 3 Wetland 2 – Shallow Marsh

Photo 4 Wetland 2 – Shallow Marsh

Photo 5 Wetland 3 – Shallow Marsh

Photo 6 Wetland 3 – Shallow Marsh

Photo 7 Wetland 4 – Fresh (Wet) Meadow

Photo 8 Wetland 4 – Fresh (Wet) Meadow

Photo 9 Wetland 5 – Fresh (Wet) Meadow

Photo 10 Wetland 5 – Fresh (Wet) Meadow

Photo 11 Wetland 6 – Fresh (Wet) Meadow

Photo 12 Wetland 6 – Fresh (Wet) Meadow

Photo 13 Wetland 7 – Fresh (Wet) Meadow


Photo 14 Wetland 7 – Fresh (Wet) Meadow

Photo 15 Wetland 8 – Fresh (Wet) Meadow

Photo 16 Wetland 8 – Fresh (Wet) Meadow

Photo 17 Wetland 9 – Fresh (Wet) Meadow

Photo 18 Wetland 9 – Fresh (Wet) Meadow

Photo 19 Wetland 10 – Shallow Marsh

Photo 20 Wetland 10 – Shallow Marsh

Photo 21 Upland Sample Point (U-A)

Photo 22 Upland Sample Point (U-B)

# Appendix C

Climate Summary Data

**Field Visit Date:** August 25, 2018

| | Month | Long-term rainfall records: 3 yrs. in 10 less than | Normal | 3 yrs. in 10 more than | Rain fall | Condition: dry, wet, normal | Condition value | Month weight value | Product of previous two columns |
|---|---|---|---|---|---|---|---|---|---|
| **1st prior month*** | September | 1.84 | 2.93 | 3.54 | 7.32 | 3 | Dry | **3** | 9 |
| **2nd prior month*** | August | 1.86 | 3.01 | 3.64 | 5.33 | 3 | Wet | **2** | 6 |
| **3rd prior month*** | July | 1.46 | 2.58 | 3.15 | 4.94 | 3 | Wet | **1** | 3 |

**Sum** 18

*Monthly data prior to field date "Wet"

Note: If sum is

| | |
|---|---|
| 6-9 | then prior period has been drier than normal |
| 10-14 | then prior period has been normal |
| 15-18 | then prior period has been wetter than normal |

Condition value:

| | |
|---|---|
| Dry | =1 |
| Normal | =2 |
| Wet | =3 |

# Appendix D

## Hydrogeomorphic Functional Assessment Workbooks

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #1

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 2145.60 | 1.00 |
| | | grassland along perimeter (feet): | 2145.60 | |
| | | percent continuity: | 100.00 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.88 |
| | | Point 1: | 43.00 | |
| | | Point 2: | 45.00 | |
| | | Point 3: | 50.00 | |
| | | Point 4: | 33.00 | |
| | | Point 5: | 32.00 | |
| | | Point 6: | 50.00 | |
| | | Point 7: | 50.00 | |
| | | Point 8: | 50.00 | |
| | | Point 9: | 50.00 | |
| | | Point 10: | 50.00 | |
| | | Point 11: | 33.00 | |
| | | Point 12: | 34.00 | |
| | | mean width (feet): | 43.33 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.14 |
| | | sum of species: | 11.00 | |
| | | sum of C values: | 9.00 | |
| | | mean coefficient of conservatism: | 0.82 | |
| | | FQI: | 2.71 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.50 | 0.50 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 12.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.05 |
| | | sample 1: | 2.00 | |
| | | sample 2: | 2.00 | |
| | | sample 3: | 1.50 | |
| | | sample 4: | 2.00 | |
| | | average SQI score: | 1.88 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.23 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 9.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | average ADI: | 7.75 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.44 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1398.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1396.00 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | -2.00 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 0.25 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 2145.60 | 1.00 |
| | | wetland area (acres): | 0.91 | |
| | | Shoreline Development Index: | 3.04 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 0.91 | 1.00 |
| | | catchment area (acres): | 8.00 | |
| | | ratio of catchment size to wetland size: | 8.79 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 8.00 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 8.00 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 228.00 | 0.77 |
| | | distance to 2nd nearest wetland: | 261.00 | |
| | | distance to 3rd nearest wetland: | 452.00 | |
| | | distance to 4th nearest wetland: | 634.00 | |
| | | distance to 5th nearest wetland: | 671.00 | |
| | | mean distance (feet): | 449.20 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 0.16 |
| **2. Groundwater Recharge** | 0.18 | 0.17 |
| **3. Retain Particlulates** | 0.60 | 0.55 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.16 | 0.15 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.15 | 0.14 |
| **6a. Provide Faunal Habitat** | 0.16 | 0.15 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.10 | 0.09 |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #2

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 382.70 | 1.00 |
| | | grassland along perimeter (feet): | 382.70 | |
| | | percent continuity: | 100.00 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.87 |
| | | Point 1: | 50.00 | |
| | | Point 2: | 50.00 | |
| | | Point 3: | 50.00 | |
| | | Point 4: | 50.00 | |
| | | Point 5: | 31.00 | |
| | | Point 6: | 34.00 | |
| | | Point 7: | 37.00 | |
| | | Point 8: | 50.00 | |
| | | Point 9: | 50.00 | |
| | | Point 10: | 16.00 | |
| | | Point 11: | 47.00 | |
| | | Point 12: | 50.00 | |
| | | mean width (feet): | 42.92 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.00 |
| | | sum of species: | 5.00 | |
| | | sum of C values: | 0.00 | |
| | | mean coefficient of conservatism: | 0.00 | |
| | | FQI: | 0.00 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.50 | 0.50 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 18.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.06 |
| | | sample 1: | 2.00 | |
| | | sample 2: | 2.00 | |
| | | sample 3: | 2.00 | |
| | | sample 4: | 2.00 | |
| | | average SQI score: | 2.00 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.32 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | average ADI: | 6.50 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.74 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1398.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1397.50 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | -0.20 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 1.00 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 382.70 | 1.00 |
| | | wetland area (acres): | 0.12 | |
| | | Shoreline Development Index: | 1.49 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 0.12 | 1.00 |
| | | catchment area (acres): | 2.10 | |
| | | ratio of catchment size to wetland size: | 17.50 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 2.10 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 2.10 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 260.00 | 0.86 |
| | | distance to 2nd nearest wetland: | 318.00 | |
| | | distance to 3rd nearest wetland: | 404.00 | |
| | | distance to 4th nearest wetland: | 452.00 | |
| | | distance to 5th nearest wetland: | 471.00 | |
| | | mean distance (feet): | 381.00 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 0.02 |
| **2. Groundwater Recharge** | 0.18 | 0.02 |
| **3. Retain Particlulates** | 0.57 | 0.07 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.16 | 0.02 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.15 | 0.02 |
| **6a. Provide Faunal Habitat** | 0.15 | 0.02 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.09 | 0.01 |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #3

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 3186.10 | 0.09 |
| | | grassland along perimeter (feet): | 300.00 | |
| | | percent continuity: | 9.42 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.17 |
| | | Point 1: | 0.00 | |
| | | Point 2: | 0.00 | |
| | | Point 3: | 0.00 | |
| | | Point 4: | 0.00 | |
| | | Point 5: | 0.00 | |
| | | Point 6: | 50.00 | |
| | | Point 7: | 0.00 | |
| | | Point 8: | 0.00 | |
| | | Point 9: | 50.00 | |
| | | Point 10: | 0.00 | |
| | | Point 11: | 0.00 | |
| | | Point 12: | 0.00 | |
| | | mean width (feet): | 8.33 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.19 |
| | | sum of species: | 5.00 | |
| | | sum of C values: | 8.00 | |
| | | mean coefficient of conservatism: | 1.60 | |
| | | FQI: | 3.58 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.50 | 0.50 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 10.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.04 |
| | | sample 1: | 1.50 | |
| | | sample 2: | 1.50 | |
| | | sample 3: | 2.00 | |
| | | sample 4: | 2.00 | |
| | | average SQI score: | 1.75 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.39 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 1.00 | |
| | | sample 2: | 1.00 | |
| | | sample 3: | 2.00 | |
| | | sample 4: | 2.00 | |
| | | Average Litter Depth (inches): | 1.50 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | average ADI: | 7.50 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.96 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1392.00 | |
| | | elevation of the edge of the historic wetland: | 1394.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1392.00 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | 0.00 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 1.00 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 3186.10 | 1.00 |
| | | wetland area (acres): | 6.66 | |
| | | Shoreline Development Index: | 1.67 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 6.66 | 0.54 |
| | | catchment area (acres): | 24.00 | |
| | | ratio of catchment size to wetland size: | 3.60 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 24.00 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 24.00 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 297.00 | 0.73 |
| | | distance to 2nd nearest wetland: | 422.00 | |
| | | distance to 3rd nearest wetland: | 455.00 | |
| | | distance to 4th nearest wetland: | 508.00 | |
| | | distance to 5th nearest wetland: | 756.00 | |
| | | mean distance (feet): | 487.60 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 1.18 |
| **2. Groundwater Recharge** | 0.17 | 1.15 |
| **3. Retain Particlulates** | 0.32 | 2.14 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.12 | 0.82 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.13 | 0.85 |
| **6a. Provide Faunal Habitat** | 0.14 | 0.94 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.11 | 0.71 |

# South Dakota Riverine HGM Model, Version 1.1
## Variable Score Field Form

| | | | |
|---|---|---|---|
| Field Office ---------- | | Assessment Area ID. (if more than one) ----- | 4 |
| County ---------- | Minnehaha County | Wetland acres (Pre-project) ------ | 0.16 |
| Date ---------- | 9/25/2018 | Wetland acres (Post-project) ---- | |
| Producer/Landowner | South Dakota DOT | Type of wetland (fringe adjacent to stream channel, or depressional or linear on flood plain)? --- | |
| Yellow flag? (Y/N) --- | If Y, what? | | |
| Red flag? (Y/N) ------- | If Y, what? | | |

| Variable | Measurement or Condition Results | | | | Discussion/ Rationale | Variable Score | |
|---|---|---|---|---|---|---|---|
| | | | | | | Pre-proj. | Post-proj. |
| $V_{hydalt}$ | Flood plain hydrology ($H_{fp}$) | | | | | 1.00 | 0.00 |
| | Alterations present (Y/N)? ---------- | N | | | | | |
| | If Y, what? -------- | | | | | | |
| | ($H_{fp}$) pre-project ---------- | 1 | | | | | |
| | ($H_{fp}$) post-project ---------- | | | | | | |
| | Wetland hydrology ($H_w$) | | | | | | |
| | Alterations present (Y/N)? ---------- | N | | | | | |
| | If Y, what? -------- | | | | | | |
| | ($H_w$) pre-project ---------- | 1 | | | | | |
| | ($H_w$) post-project ---------- | | | | | | |
| $V_{source}$ | Watershed alterations present? (Y/N) ------- | Y | | | | 0.50 | 0.00 |
| | If Y, what? | Drain Tiles, culverts, stormwater facilities | | | | | |
| | % of watershed area ---------- | 80 | | | | | |
| $V_{topog}$ | Wetland topography ($T_w$) | | | | | 0.20 | 0.00 |
| | Alterations present? (Y/N) ---------- | N | | | | | |
| | If Y, what? ---------- | | | | | | |
| | % of area (pre) ----- | 0 | ($T_w$) pre = | 1 | | | |
| | % of area (post) --- | | (Tw) post = | | | | |
| | Flood plain topography ($T_{fp}$) | | | | | | |
| | Alterations present? (Y/N) ---------- | y | | | | | |
| | If Y, what? ---------- | Rip rap, trails, parks | | | | | |
| | % of area (pre) ----- | 40 | ($T_{fp}$) pre = | 0.5 | | | |
| | % of area (post) --- | | ($T_{fp}$) post = | | | | |
| $V_{upuse}$ | Dominant upland uses (3 maximum) | | | | | 0.57 | #DIV/0! |
| | | | | | | | |
| | pre1 Index ----- | 0.1 | % area --- | 40 | | | |
| | pre2 Index ----- | 1 | % area --- | 30 | | | |
| | pre3 Index ----- | 0.75 | % area --- | 30 | | | |
| | post1 Index ---- | | % area --- | | | | |
| | post2 Index ---- | | % area --- | | | | |
| | post3 Index ---- | | % area --- | | | | |
| $V_{detritus}$ | Detritus thickness (in.)---------- | 0 | | | | | |
| | Accelerated sediment in wetland? (Y/N) ----- | N | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| $V_{sed}$ | If Y, evidence? -------- | | | | |
| | Sediment thickness (in.) ---------- | 0 | | | |
| $V_{som}$ | Dominant soil texture in upper 18" ---------- | Sand Loam | | | |
| | Dominant soil color (value) upper 12" -------- | 10YR 3/1 | | | |
| $V_{soil}$ | Soil pores observed ---------- | Fine | | | |
| | Soil structure --------- | Sub Angular Blky | | | |
| | Rupture resistance ---------- | Firm | | | |
| $V_{buffer}$ | Pre-project | | | 0.24 | |
| | Buffer continuity (%) ---------- | 100 | | | |
| | Average buffer width (ft.) --------- | 60 | | | |
| | Continuity/width rating ($B_1$) ---------- | 0.6 | | | |
| | Buffer condition ------ | | | | |
| | Condition rating ($B_2$) ---------- | 0.1 | | | |
| | Post-project | | | | 0.00 |
| | Buffer continuity (%) ---------- | | | | |
| | Average buffer width (ft.) --------- | | | | |
| | Continuity/width rating ($B_1$) ---------- | | | | |
| | Buffer condition ------ | | | | |
| | Condition rating ($B_2$) ---------- | | | | |
| $V_{denhw}$ | Woody species present in WAA? (Y/N) ---- | Y | | | |
| | (If N, score variable based on the herbaceous part.) | | | | |
| | Herbaceous density (%) ---------- | 100% | | | |
| | Woody density (%, if applicable) ---------- | 5% | | | |
| $V_{pratio}$ | Native species present in wetland (% of total | | | | |
| | dominants) ---------- | 50% | | | |
| $V_{veg}$ | Vegetative canopy coverage (%) ---------- | 5 | | | |
| | Number of vegetative strata present ---------- | 3 | | | |
| | Deviation from normal (number of strata believed to | | | | |
| | be absent) ---------- | 0 | | | |
| $V_{wetuse}$ | Dominant use of wetland ---------- | | | | |

# S.D. RIVERINE HGM MODEL WORKSHEET 1, VER. 1.1

Use this worksheet for depressional or linear wetlands that are disconnected from the channel and that have the ability to store surface water. For wetlands adjacent to the channel and that lack this ability, use worksheet 2.

| | | | |
|---|---|---|---|
| DATE ---------- | 09/25/18 | OWNER/OPERATOR ------ | South Dakota DOT |
| WETLAND ID. ---------- | 4 | ASSESSMENT TYPE ------- | Field |
| OBSERVERS ---------- | Rebecca Beduhn | WETLAND TYPE (NWI) --- | R2USC |
| CONDITIONS ---------- | | WETLAND TYPE (FSA) ---- | |
| PROJECT NAME ---------- | PCN 05HN (I-229 Exit 4) | REMARKS -- | |
| PLANNED ACTIVITY ------ | Roadway improvements | | |
| YELLOW FLAG (Y/N) ----- | | RED FLAG (Y/N) ---------- | |
| WETLAND ACRES (EXISTING) ---------- | 0.16 | WETLAND ACRES (PREDICTED) -------- | 0 |

## FUNCTIONAL INDICES (VARIABLE) SCORING

| Variable | Existing | Predicted |
|---|---|---|
| $V_{hydalt}$ - Flood Plain/Wetland Hydrology Alterations | 1.00 | 0.00 |
| $V_{source}$ - Watershed Hydrology Alterations | 0.50 | 0.00 |
| $V_{topog}$ - Flood Plain/Wetland Topographic Complexity | 0.20 | 0.00 |
| $V_{upuse}$ - Upland Use | 0.57 | #DIV/0! |
| $V_{detritus}$ - Detritus | 0.00 | 0.00 |
| $V_{sed}$ - Sedimentation Within the Wetland | 0.00 | 0.00 |
| $V_{som}$ - Soil Organic Matter | 0.00 | 0.00 |
| $V_{soil}$ - Soil Porosity | 0.00 | 0.00 |
| $V_{buffer}$ - Buffer Condition, Continuity, and Width | 0.24 | 0.00 |
| $V_{denhw}$ - Density of Perennial Herbaceous and Woody Vegetation | 0.00 | 0.00 |
| $V_{pratio}$ - Ratio of Native to Non-Native Plant Species | 0.00 | 0.00 |
| $V_{veg}$ - Vegetative Strata and Canopy Coverage | 0.00 | 0.00 |
| $V_{wetuse}$ - Wetland Use | 0.00 | 0.00 |

]1

| Function | Existing | | Predicted | |
|---|---|---|---|---|
| | FCI | FCU | FCI | FCU |
| 1.0 Storage of Surface Water | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.0 Velocity Reduction of Surface Water Flow | 0.32 | 0.05 | #DIV/0! | #DIV/0! |
| 3.0 Storage and Release of Subsurface Water | 0.52 | 0.08 | #DIV/0! | #DIV/0! |
| 4.0 Removal of Imported Elements and Compounds | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 5.0 Retention of Particulates and Organic Materials | 0.12 | 0.02 | #DIV/0! | #DIV/0! |
| 6.0 Organic Carbon Export | 0.15 | 0.02 | 0.00 | 0.00 |
| 7.0 Maintains Characteristic Plant Community | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 8.0 Maintains Habitat Structure Within Wetland | 0.08 | 0.01 | 0.00 | 0.00 |
| 9.0 Maintains Hab. Str. and Connect. Among Wetlands | 0.20 | 0.03 | #DIV/0! | #DIV/0! |

| FUNCTION | CHANGE IN FCU's | | MINIMAL EFFECT | JUSTIFICATION OF MINIMAL EFFECT IF THERE IS A NET FUNCTIONAL LOSS OF 10 TO 20 PERCENT |
|---|---|---|---|---|
| | NUMERICAL | % | (Y or N) | |
| 1.0 | 0.00 | #DIV/0! | #DIV/0! | |
| 2.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 3.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 4.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 5.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 6.0 | -0.02 | -100.00% | No | |
| 7.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 8.0 | -0.01 | -100.00% | No | |
| 9.0 | #DIV/0! | #DIV/0! | #DIV/0! | |

# S.D. RIVERINE HGM MODEL WORKSHEET 2, VER. 1.1

Use this worksheet for wetlands that are adjacent and parallel to the channel and that lack the ability to store surface water. For depressional and linear wetlands with the ability to store surface water, use worksheet 1.

| | | | |
|---|---|---|---|
| DATE ---------- | 09/25/18 | OWNER/OPERATOR ------ | South Dakota DOT |
| WETLAND ID. ---------- | 4 | ASSESSMENT TYPE ------- | |
| OBSERVERS ---------- | | WETLAND TYPE (NWI) --- | |
| CONDITIONS ---------- | | WETLAND TYPE (FSA) ---- | |
| PROJECT NAME ---------- | | REMARKS -- | |
| PLANNED ACTIVITY ------ | | | |
| YELLOW FLAG (Y/N) ----- | | RED FLAG (Y/N) ---------- | |
| WETLAND ACRES (EXISTING) ---------- | 0.16 | WETLAND ACRES (PREDICTED) -------- | 0 |

## FUNCTIONAL INDICES (VARIABLE) SCORING

| Variable | Existing | Predicted |
|---|---|---|
| $V_{hydalt}$ - Flood Plain/Wetland Hydrology Alterations | 1.00 | 0.00 |
| $V_{source}$ - Watershed Hydrology Alterations | 0.50 | 0.00 |
| $V_{topog}$ - Flood Plain/Wetland Topographic Complexity | 0.20 | 0.00 |
| $V_{upuse}$ - Upland Use | 0.57 | #DIV/0! |
| $V_{detritus}$ - Detritus | 0.00 | 0.00 |
| $V_{sed}$ - Sedimentation Within the Wetland | 0.00 | 0.00 |
| $V_{som}$ - Soil Organic Matter | 0.00 | 0.00 |
| $V_{soil}$ - Soil Porosity | 0.00 | 0.00 |
| $V_{buffer}$ - Buffer Condition, Continuity, and Width | 0.24 | 0.00 |
| $V_{denhw}$ - Density of Perennial Herbaceous and Woody Vegetation | 0.00 | 0.00 |
| $V_{pratio}$ - Ratio of Native to Non-Native Plant Species | 0.00 | 0.00 |
| $V_{veg}$ - Vegetative Strata and Canopy Coverage | 0.00 | 0.00 |
| $V_{wetuse}$ - Wetland Use | 0.00 | 0.00 |

## CALCULATION OF FUNCTIONAL CAPACITY INDICES (FCI's) AND UNITS (FCU's)

| Function | Existing | | Predicted | |
|---|---|---|---|---|
| | FCI | FCU | FCI | FCU |
| 1.0 Storage of Surface Water | | | | |
| 2.0 Velocity Reduction of Surface Water Flow | 0.32 | 0.05 | #DIV/0! | #DIV/0! |
| 3.0 Storage and Release of Subsurface Water | 0.52 | 0.08 | #DIV/0! | #DIV/0! |
| 4.0 Removal of Imported Elements and Compounds | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 5.0 Retention of Particulates and Organic Materials | 0.12 | 0.02 | #DIV/0! | #DIV/0! |
| 6.0 Organic Carbon Export | 0.15 | 0.02 | 0.00 | 0.00 |
| 7.0 Maintains Characteristic Plant Community | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 8.0 Maintains Habitat Structure Within Wetland | 0.08 | 0.01 | 0.00 | 0.00 |
| 9.0 Maintains Hab. Str. and Connect. Among Wetlands | 0.20 | 0.03 | #DIV/0! | #DIV/0! |

| FUNCTION | CHANGE IN FCU's | | MINIMAL EFFECT | JUSTIFICATION OF MINIMAL EFFECT IF THERE IS A NET FUNCTIONAL LOSS OF 10 TO 20 PERCENT |
|---|---|---|---|---|
| | NUMERICAL | % | (Y or N) | |
| 1.0 | | | | |
| 2.0 | #DIV/0! | #DIV/0! | #DIV/0! | 1.40 |
| 3.0 | #DIV/0! | #DIV/0! | #DIV/0! | 0.22 |
| 4.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 5.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 6.0 | -0.02 | -100.00% | No | |
| 7.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 8.0 | -0.01 | -100.00% | No | |
| 9.0 | #DIV/0! | #DIV/0! | #DIV/0! | |

# South Dakota Riverine HGM Model, Version 1.1
## Variable Score Field Form

| | | | |
|---|---|---|---|
| Field Office ---------- | | Assessment Area ID. (if more than one) ----- | 5 |
| County ---------- | Minnehaha County | Wetland acres (Pre-project) ------ | 0.2 |
| Date ---------- | 9/25/2018 | Wetland acres (Post-project) ---- | |
| Producer/Landowner | South Dakota DOT | Type of wetland (fringe adjacent to stream channel, or depressional or linear on flood plain)? --- | |
| Yellow flag? (Y/N) --- | If Y, what? | | |
| Red flag? (Y/N) ------- | If Y, what? | | |

| Variable | Measurement or Condition Results | | | | Discussion/ Rationale | Variable Score Pre-proj. | Variable Score Post-proj. |
|---|---|---|---|---|---|---|---|
| $V_{hydalt}$ | Flood plain hydrology ($H_{fp}$) | | | | | 1.00 | 0.00 |
| | Alterations present (Y/N)? ---------- | N | | | | | |
| | If Y, what? -------- | | | | | | |
| | ($H_{fp}$) pre-project ---------- | 1 | | | | | |
| | ($H_{fp}$) post-project ---------- | | | | | | |
| | Wetland hydrology ($H_w$) | | | | | | |
| | Alterations present (Y/N)? ---------- | N | | | | | |
| | If Y, what? -------- | | | | | | |
| | ($H_w$) pre-project ---------- | 1 | | | | | |
| | ($H_w$) post-project ---------- | | | | | | |
| $V_{source}$ | Watershed alterations present? (Y/N) ------- | Y | | | | 0.50 | 0.00 |
| | If Y, what? | Drain Tiles, Culverts, Stormwater facilities | | | | | |
| | % of watershed area ---------- | 80 | | | | | |
| $V_{topog}$ | Wetland topography ($T_w$) | | | | | 0.50 | 0.00 |
| | Alterations present? (Y/N) ---------- | Y | | | | | |
| | If Y, what? ---------- | rip rap | | | | | |
| | % of area (pre) ----- | 30 | ($T_w$) pre = | 1 | | | |
| | % of area (post) --- | | (Tw) post = | | | | |
| | Flood plain topography ($T_{fp}$) | | | | | | |
| | Alterations present? (Y/N) ---------- | Y | | | | | |
| | If Y, what? ---------- | Rip rap, trails, parks | | | | | |
| | % of area (pre) ----- | 40 | ($T_{fp}$) pre = | 0.5 | | | |
| | % of area (post) --- | | ($T_{fp}$) post = | | | | |
| $V_{upuse}$ | Dominant upland uses (3 maximum) | | | | | 0.57 | #DIV/0! |
| | | | | | | | |
| | pre1 Index ----- | 0.1 | % area --- | 40 | | | |
| | pre2 Index ----- | 1 | % area --- | 30 | | | |
| | pre3 Index ----- | 0.75 | % area --- | 30 | | | |
| | post1 Index --- | | % area --- | | | | |
| | post2 Index --- | | % area --- | | | | |
| | post3 Index --- | | % area --- | | | | |
| $V_{detritus}$ | Detritus thickness (in.)---------- | 0 | | | | | |
| | Accelerated sediment in wetland? (Y/N) ----- | N | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| $V_{sed}$ | If Y, evidence? -------- | | | | |
| | Sediment thickness (in.) ---------- | 0 | | | |
| $V_{som}$ | Dominant soil texture in upper 18" ---------- | Silty Loam | | | |
| | Dominant soil color (value) upper 12" -------- | 10YR 2/2 | | | |
| $V_{soil}$ | Soil pores observed ---------- | Fine | | | |
| | Soil structure --------- | Sub Angular Blky | | | |
| | Rupture resistance ---------- | Firm | | | |
| $V_{buffer}$ | Pre-project | | | 0.14 | |
| | Buffer continuity (%) ---------- | 50 | | | |
| | Average buffer width (ft.) --------- | 30 | | | |
| | Continuity/width rating ($B_1$) ---------- | 0.2 | | | |
| | Buffer condition ------ | | | | |
| | Condition rating ($B_2$) ---------- | 0.1 | | | |
| | Post-project | | | | 0.00 |
| | Buffer continuity (%) ---------- | | | | |
| | Average buffer width (ft.) --------- | | | | |
| | Continuity/width rating ($B_1$) ---------- | | | | |
| | Buffer condition ------ | | | | |
| | Condition rating ($B_2$) ---------- | | | | |
| $V_{denhw}$ | Woody species present in WAA? (Y/N) ---- | N | | | |
| | (If N, score variable based on the herbaceous part.) | | | | |
| | Herbaceous density (%) ---------- | 100% | | | |
| | Woody density (%, if applicable) ---------- | 0% | | | |
| $V_{pratio}$ | Native species present in wetland (% of total | | | | |
| | dominants) ---------- | 100% | | | |
| $V_{veg}$ | Vegetative canopy coverage (%) ---------- | 0 | | | |
| | Number of vegetative strata present ---------- | 1 | | | |
| | Deviation from normal (number of strata believed to | | | | |
| | be absent) ---------- | 0 | | | |
| $V_{wetuse}$ | Dominant use of wetland ---------- | | | | |

# S.D. RIVERINE HGM MODEL WORKSHEET 1, VER. 1.1

Use this worksheet for depressional or linear wetlands that are disconnected from the channel and that have the ability to store surface water. For wetlands adjacent to the channel and that lack this ability, use worksheet 2.

| | | | |
|---|---|---|---|
| DATE ---------- | 09/25/18 | OWNER/OPERATOR ------ | South Dakota DOT |
| WETLAND ID. ---------- | 5 | ASSESSMENT TYPE ------- | Field |
| OBSERVERS ---------- | Rebecca Beduhn | WETLAND TYPE (NWI) --- | R2USC |
| CONDITIONS ---------- | | WETLAND TYPE (FSA) ---- | |
| PROJECT NAME ---------- | PCN 05HN (I-229 Exit 4) | REMARKS -- | |
| PLANNED ACTIVITY ------ | Roadway improvements | | |
| YELLOW FLAG (Y/N) ----- | | RED FLAG (Y/N) ---------- | |
| WETLAND ACRES (EXISTING) ---------- | 0.2 | WETLAND ACRES (PREDICTED) -------- | 0 |

## FUNCTIONAL INDICES (VARIABLE) SCORING

| Variable | Existing | Predicted |
|---|---|---|
| $V_{hydalt}$ - Flood Plain/Wetland Hydrology Alterations | 1.00 | 0.00 |
| $V_{source}$ - Watershed Hydrology Alterations | 0.50 | 0.00 |
| $V_{topog}$ - Flood Plain/Wetland Topographic Complexity | 0.50 | 0.00 |
| $V_{upuse}$ - Upland Use | 0.57 | #DIV/0! |
| $V_{detritus}$ - Detritus | 0.00 | 0.00 |
| $V_{sed}$ - Sedimentation Within the Wetland | 0.00 | 0.00 |
| $V_{som}$ - Soil Organic Matter | 0.00 | 0.00 |
| $V_{soil}$ - Soil Porosity | 0.00 | 0.00 |
| $V_{buffer}$ - Buffer Condition, Continuity, and Width | 0.14 | 0.00 |
| $V_{denhw}$ - Density of Perennial Herbaceous and Woody Vegetation | 0.00 | 0.00 |
| $V_{pratio}$ - Ratio of Native to Non-Native Plant Species | 0.00 | 0.00 |
| $V_{veg}$ - Vegetative Strata and Canopy Coverage | 0.00 | 0.00 |
| $V_{wetuse}$ - Wetland Use | 0.00 | 0.00 |

]1

| Function | Existing | | Predicted | |
|---|---|---|---|---|
| | FCI | FCU | FCI | FCU |
| 1.0 Storage of Surface Water | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.0 Velocity Reduction of Surface Water Flow | 0.37 | 0.07 | #DIV/0! | #DIV/0! |
| 3.0 Storage and Release of Subsurface Water | 0.52 | 0.10 | #DIV/0! | #DIV/0! |
| 4.0 Removal of Imported Elements and Compounds | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 5.0 Retention of Particulates and Organic Materials | 0.16 | 0.03 | #DIV/0! | #DIV/0! |
| 6.0 Organic Carbon Export | 0.19 | 0.04 | 0.00 | 0.00 |
| 7.0 Maintains Characteristic Plant Community | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 8.0 Maintains Habitat Structure Within Wetland | 0.08 | 0.02 | 0.00 | 0.00 |
| 9.0 Maintains Hab. Str. and Connect. Among Wetlands | 0.24 | 0.05 | #DIV/0! | #DIV/0! |

| FUNCTION | CHANGE IN FCU's | | MINIMAL EFFECT | JUSTIFICATION OF MINIMAL EFFECT IF THERE IS A NET FUNCTIONAL LOSS OF 10 TO 20 PERCENT |
|---|---|---|---|---|
| | NUMERICAL | % | (Y or N) | |
| 1.0 | 0.00 | #DIV/0! | #DIV/0! | |
| 2.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 3.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 4.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 5.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 6.0 | -0.04 | -100.00% | No | |
| 7.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 8.0 | -0.02 | -100.00% | No | |
| 9.0 | #DIV/0! | #DIV/0! | #DIV/0! | |

# S.D. RIVERINE HGM MODEL WORKSHEET 2, VER. 1.1

Use this worksheet for wetlands that are adjacent and parallel to the channel and that lack the ability to store surface water. For depressional and linear wetlands with the ability to store surface water, use worksheet 1.

| | | | |
|---|---|---|---|
| DATE ---------- | 09/25/18 | OWNER/OPERATOR ------ | South Dakota DOT |
| WETLAND ID. ---------- | 5 | ASSESSMENT TYPE ------- | |
| OBSERVERS ---------- | | WETLAND TYPE (NWI) --- | |
| CONDITIONS ---------- | | WETLAND TYPE (FSA) ---- | |
| PROJECT NAME ---------- | | REMARKS -- | |
| PLANNED ACTIVITY ------ | | | |
| YELLOW FLAG (Y/N) ----- | | RED FLAG (Y/N) ---------- | |
| WETLAND ACRES (EXISTING) ---------- | 0.2 | WETLAND ACRES (PREDICTED) -------- | 0 |

## FUNCTIONAL INDICES (VARIABLE) SCORING

| Variable | Existing | Predicted |
|---|---|---|
| $V_{hydalt}$ - Flood Plain/Wetland Hydrology Alterations | 1.00 | 0.00 |
| $V_{source}$ - Watershed Hydrology Alterations | 0.50 | 0.00 |
| $V_{topog}$ - Flood Plain/Wetland Topographic Complexity | 0.50 | 0.00 |
| $V_{upuse}$ - Upland Use | 0.57 | #DIV/0! |
| $V_{detritus}$ - Detritus | 0.00 | 0.00 |
| $V_{sed}$ - Sedimentation Within the Wetland | 0.00 | 0.00 |
| $V_{som}$ - Soil Organic Matter | 0.00 | 0.00 |
| $V_{soil}$ - Soil Porosity | 0.00 | 0.00 |
| $V_{buffer}$ - Buffer Condition, Continuity, and Width | 0.14 | 0.00 |
| $V_{denhw}$ - Density of Perennial Herbaceous and Woody Vegetation | 0.00 | 0.00 |
| $V_{pratio}$ - Ratio of Native to Non-Native Plant Species | 0.00 | 0.00 |
| $V_{veg}$ - Vegetative Strata and Canopy Coverage | 0.00 | 0.00 |
| $V_{wetuse}$ - Wetland Use | 0.00 | 0.00 |

## CALCULATION OF FUNCTIONAL CAPACITY INDICES (FCI's) AND UNITS (FCU's)

| Function | Existing | | Predicted | |
|---|---|---|---|---|
| | FCI | FCU | FCI | FCU |
| 1.0 Storage of Surface Water | | | | |
| 2.0 Velocity Reduction of Surface Water Flow | 0.37 | 0.07 | #DIV/0! | #DIV/0! |
| 3.0 Storage and Release of Subsurface Water | 0.52 | 0.10 | #DIV/0! | #DIV/0! |
| 4.0 Removal of Imported Elements and Compounds | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 5.0 Retention of Particulates and Organic Materials | 0.16 | 0.03 | #DIV/0! | #DIV/0! |
| 6.0 Organic Carbon Export | 0.19 | 0.04 | 0.00 | 0.00 |
| 7.0 Maintains Characteristic Plant Community | 0.00 | 0.00 | #DIV/0! | #DIV/0! |
| 8.0 Maintains Habitat Structure Within Wetland | 0.08 | 0.02 | 0.00 | 0.00 |
| 9.0 Maintains Hab. Str. and Connect. Among Wetlands | 0.24 | 0.05 | #DIV/0! | #DIV/0! |

| FUNCTION | CHANGE IN FCU's | | MINIMAL EFFECT | JUSTIFICATION OF MINIMAL EFFECT IF THERE IS A NET FUNCTIONAL LOSS OF 10 TO 20 PERCENT |
|---|---|---|---|---|
| | NUMERICAL | % | (Y or N) | |
| 1.0 | | | | |
| 2.0 | #DIV/0! | #DIV/0! | #DIV/0! | 1.55 |
| 3.0 | #DIV/0! | #DIV/0! | #DIV/0! | 0.31 |
| 4.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 5.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 6.0 | -0.04 | -100.00% | No | |
| 7.0 | #DIV/0! | #DIV/0! | #DIV/0! | |
| 8.0 | -0.02 | -100.00% | No | |
| 9.0 | #DIV/0! | #DIV/0! | #DIV/0! | |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #6

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 803.90 | 1.00 |
| | | grassland along perimeter (feet): | 803.90 | |
| | | percent continuity: | 100.00 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.48 |
| | | Point 1: | 15.00 | |
| | | Point 2: | 15.00 | |
| | | Point 3: | 15.00 | |
| | | Point 4: | 30.00 | |
| | | Point 5: | 19.00 | |
| | | Point 6: | 33.00 | |
| | | Point 7: | 48.00 | |
| | | Point 8: | 10.00 | |
| | | Point 9: | 20.00 | |
| | | Point 10: | 50.00 | |
| | | Point 11: | 15.00 | |
| | | Point 12: | 15.00 | |
| | | mean width (feet): | 23.75 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.00 |
| | | sum of species: | 1.00 | |
| | | sum of C values: | 0.00 | |
| | | mean coefficient of conservatism: | 0.00 | |
| | | FQI: | 0.00 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.75 | 0.75 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 12.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.04 |
| | | sample 1: | 1.50 | |
| | | sample 2: | 2.00 | |
| | | sample 3: | 1.50 | |
| | | sample 4: | 2.00 | |
| | | average SQI score: | 1.75 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.21 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | average ADI: | 8.00 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.35 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1397.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1397.00 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | 0.00 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 0.25 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 803.90 | 1.00 |
| | | wetland area (acres): | 0.19 | |
| | | Shoreline Development Index: | 2.49 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 0.19 | 0.98 |
| | | catchment area (acres): | 1.10 | |
| | | ratio of catchment size to wetland size: | 5.79 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 1.10 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 1.10 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 82.00 | 0.89 |
| | | distance to 2nd nearest wetland: | 210.00 | |
| | | distance to 3rd nearest wetland: | 298.00 | |
| | | distance to 4th nearest wetland: | 473.00 | |
| | | distance to 5th nearest wetland: | 716.00 | |
| | | mean distance (feet): | 355.80 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 0.03 |
| **2. Groundwater Recharge** | 0.19 | 0.04 |
| **3. Retain Particlulates** | 0.51 | 0.10 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.15 | 0.03 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.14 | 0.03 |
| **6a. Provide Faunal Habitat** | 0.15 | 0.03 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.09 | 0.02 |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #7

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 1332.00 | 0.98 |
| | | grassland along perimeter (feet): | 1300.00 | |
| | | percent continuity: | 97.60 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.60 |
| | | Point 1: | 35.00 | |
| | | Point 2: | 25.00 | |
| | | Point 3: | 16.00 | |
| | | Point 4: | 13.00 | |
| | | Point 5: | 22.00 | |
| | | Point 6: | 24.00 | |
| | | Point 7: | 35.00 | |
| | | Point 8: | 39.00 | |
| | | Point 9: | 50.00 | |
| | | Point 10: | 37.00 | |
| | | Point 11: | 30.00 | |
| | | Point 12: | 26.00 | |
| | | mean width (feet): | 29.33 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.04 |
| | | sum of species: | 6.00 | |
| | | sum of C values: | 3.00 | |
| | | mean coefficient of conservatism: | 0.50 | |
| | | FQI: | 1.22 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.75 | 0.75 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 12.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.03 |
| | | sample 1: | 1.50 | |
| | | sample 2: | 1.50 | |
| | | sample 3: | 1.50 | |
| | | sample 4: | 2.00 | |
| | | average SQI score: | 1.63 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.16 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 9.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 9.00 | |
| | | average ADI: | 8.50 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.21 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1398.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1396.50 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | -1.00 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 0.25 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 1332.00 | 1.00 |
| | | wetland area (acres): | 0.75 | |
| | | Shoreline Development Index: | 2.08 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 0.75 | 0.43 |
| | | catchment area (acres): | 2.30 | |
| | | ratio of catchment size to wetland size: | 3.07 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 2.30 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 2.30 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 82.00 | 1.00 |
| | | distance to 2nd nearest wetland: | 120.00 | |
| | | distance to 3rd nearest wetland: | 145.00 | |
| | | distance to 4th nearest wetland: | 452.00 | |
| | | distance to 5th nearest wetland: | 468.00 | |
| | | mean distance (feet): | 253.40 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 0.13 |
| **2. Groundwater Recharge** | 0.18 | 0.13 |
| **3. Retain Particlulates** | 0.53 | 0.40 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.15 | 0.11 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.14 | 0.10 |
| **6a. Provide Faunal Habitat** | 0.15 | 0.12 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.10 | 0.07 |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #8

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 1851.00 | 1.00 |
| | | grassland along perimeter (feet): | 1851.00 | |
| | | percent continuity: | 100.00 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.91 |
| | | Point 1: | 44.00 | |
| | | Point 2: | 50.00 | |
| | | Point 3: | 45.00 | |
| | | Point 4: | 50.00 | |
| | | Point 5: | 50.00 | |
| | | Point 6: | 50.00 | |
| | | Point 7: | 50.00 | |
| | | Point 8: | 50.00 | |
| | | Point 9: | 50.00 | |
| | | Point 10: | 16.00 | |
| | | Point 11: | 43.00 | |
| | | Point 12: | 40.00 | |
| | | mean width (feet): | 44.83 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.15 |
| | | sum of species: | 7.00 | |
| | | sum of C values: | 8.00 | |
| | | mean coefficient of conservatism: | 1.14 | |
| | | FQI: | 3.02 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.50 | 0.50 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 18.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.05 |
| | | sample 1: | 2.00 | |
| | | sample 2: | 2.00 | |
| | | sample 3: | 2.00 | |
| | | sample 4: | 1.50 | |
| | | average SQI score: | 1.88 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.31 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 7.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 7.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | average ADI: | 6.50 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.71 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1394.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1394.00 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | 0.00 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 0.25 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 1851.00 | 1.00 |
| | | wetland area (acres): | 1.30 | |
| | | Shoreline Development Index: | 2.19 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 1.30 | 0.34 |
| | | catchment area (acres): | 3.40 | |
| | | ratio of catchment size to wetland size: | 2.62 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 3.40 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 3.40 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 89.00 | 1.00 |
| | | distance to 2nd nearest wetland: | 89.00 | |
| | | distance to 3rd nearest wetland: | 109.00 | |
| | | distance to 4th nearest wetland: | 205.00 | |
| | | distance to 5th nearest wetland: | 300.00 | |
| | | mean distance (feet): | 158.40 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 0.23 |
| **2. Groundwater Recharge** | 0.17 | 0.22 |
| **3. Retain Particlulates** | 0.61 | 0.79 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.17 | 0.22 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.16 | 0.20 |
| **6a. Provide Faunal Habitat** | 0.16 | 0.21 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.10 | 0.14 |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #9

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 247.50 | 1.00 |
| | | grassland along perimeter (feet): | 247.50 | |
| | | percent continuity: | 100.00 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.94 |
| | | Point 1: | 50.00 | |
| | | Point 2: | 50.00 | |
| | | Point 3: | 50.00 | |
| | | Point 4: | 50.00 | |
| | | Point 5: | 50.00 | |
| | | Point 6: | 50.00 | |
| | | Point 7: | 50.00 | |
| | | Point 8: | 50.00 | |
| | | Point 9: | 50.00 | |
| | | Point 10: | 29.00 | |
| | | Point 11: | 30.00 | |
| | | Point 12: | 46.00 | |
| | | mean width (feet): | 46.25 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.00 |
| | | sum of species: | 5.00 | |
| | | sum of C values: | 1.00 | |
| | | mean coefficient of conservatism: | 0.20 | |
| | | FQI: | 0.45 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.75 | 0.75 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 8.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.04 |
| | | sample 1: | 1.50 | |
| | | sample 2: | 1.50 | |
| | | sample 3: | 2.00 | |
| | | sample 4: | 2.00 | |
| | | average SQI score: | 1.75 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.19 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 9.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 3.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 8.00 | |
| | | average ADI: | 8.25 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.30 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.05 |
| | | present (or constructed) invert elevation: | 1398.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1398.00 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | 0.00 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 1.00 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 247.50 | 1.00 |
| | | wetland area (acres): | 0.01 | |
| | | Shoreline Development Index: | 3.35 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 0.01 | 1.00 |
| | | catchment area (acres): | 2.50 | |
| | | ratio of catchment size to wetland size: | 250.00 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 2.50 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 2.50 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 90.00 | 0.99 |
| | | distance to 2nd nearest wetland: | 139.00 | |
| | | distance to 3rd nearest wetland: | 297.00 | |
| | | distance to 4th nearest wetland: | 318.00 | |
| | | distance to 5th nearest wetland: | 509.00 | |
| | | mean distance (feet): | 270.60 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.18 | 0.00 |
| **2. Groundwater Recharge** | 0.19 | 0.00 |
| **3. Retain Particlulates** | 0.58 | 0.01 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.16 | 0.00 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.14 | 0.00 |
| **6a. Provide Faunal Habitat** | 0.16 | 0.00 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.09 | 0.00 |

# Summary Sheet

***USER NOTE:*** **Do not enter any data in this worksheet. All data and calculations are entered for you using previously entered information. If any of this information is incorrect, enter the correct information in the appropriate worksheet.**

**Project Name/Location:**

Interstate 229 Exit 4 Reconstruction
Sioux Falls/Minnehaha County
Wetland #10

| | Variable | Data entered | | Subindex |
|---|---|---|---|---|
| Vegetation | $V_{GRASSCONT}$ | wetland perimeter (feet): | 2358.90 | 1.00 |
| | | grassland along perimeter (feet): | 2358.90 | |
| | | percent continuity: | 100.00 | |
| | $V_{GRASSWIDTH}$ | grassland width (feet) at 12 points: | | 0.55 |
| | | Point 1: | 8.00 | |
| | | Point 2: | 11.00 | |
| | | Point 3: | 38.00 | |
| | | Point 4: | 50.00 | |
| | | Point 5: | 23.00 | |
| | | Point 6: | 24.00 | |
| | | Point 7: | 39.00 | |
| | | Point 8: | 28.00 | |
| | | Point 9: | 38.00 | |
| | | Point 10: | 50.00 | |
| | | Point 11: | 10.00 | |
| | | Point 12: | 5.00 | |
| | | mean width (feet): | 27.00 | |
| | $V_{VEGCOMP}$ | (see vegetation worksheet for species entered) | | 0.16 |
| | | sum of species: | 8.00 | |
| | | sum of C values: | 9.00 | |
| | | mean coefficient of conservatism: | 1.13 | |
| | | FQI: | 3.18 | |

| | | | | |
|---|---|---|---|---|
| **Soil** | $V_{RECHARGE}$ | Soil Recharge Potential Subindex: | 0.50 | 0.50 |
| | $V_{SED}$ | **Eastern Prairie Potholes** | | 1.00 |
| | | mean depth to B horizon (inches): | | |
| | | **Western Prairie Potholes** | | |
| | | mean depth to B horizon (inches): | 18.00 | |
| | $V_{SQI}$ | SQI scores for 4 samples: | | 0.05 |
| | | sample 1: | 2.00 | |
| | | sample 2: | 2.00 | |
| | | sample 3: | 2.00 | |
| | | sample 4: | 1.50 | |
| | | average SQI score: | 1.88 | |
| | $V_{SOM}$ | **Indirect Measurements** | | 0.33 |
| | | Litter Depth for 4 samples: | | |
| | | sample 1: | 0.00 | |
| | | sample 2: | 0.00 | |
| | | sample 3: | 0.00 | |
| | | sample 4: | 0.00 | |
| | | Average Litter Depth (inches): | 0.00 | |
| | | ADI for 4 samples: | | |
| | | Sample 1 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | Sample 2 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 2.00 | |
| | | ADI: | 7.00 | |
| | | Sample 3 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | Sample 4 hue: | 10.00 | |
| | | value: | 2.00 | |
| | | chroma: | 1.00 | |
| | | ADI: | 6.00 | |
| | | average ADI: | 6.25 | |
| | | **Direct Measurements** | | |
| | | % organic carbon for 0-15cm depth: | | |
| | | % organic carbon for 15-30cm depth: | | |
| | | mean percentage: | | |
| | | % organic carbon: | 1.77 | |

| | | | | |
|---|---|---|---|---|
| Hydrogeomorphic | $V_{OUT}$ | historic invert elevation in relation to wetland maximum depth: | 1395.00 | 0.68 |
| | | present (or constructed) invert elevation: | 1394.00 | |
| | | elevation of the edge of the historic wetland: | 1395.00 | |
| | | elevation of a representative deepest portion of the wetland: | 1392.00 | |
| | | if evaluating pit or fill, enter % volume of pit/fill vs. wetland (ex. 25%=25), otherwise enter 0: | 0.00 | |
| | | ratio of the constructed elevation to the natural outlet elevation: | 0.67 | |
| | $V_{SUBOUT}$ | depth of surface drainage invert: | | 0.25 |
| | | distance from WAA edge: | | |
| | | location/spacing of subsurface tile within the WAA: | | |
| | $V_{SOURCE}$ | type & effect of surface alteration(s): | | 0.50 |
| | | % of historic catchment area still contributing runoff: | | |
| | | additions of water from other sources: | | |
| | | change in wetland regime class? | | |
| | $V_{EDGE}$ | wetland perimeter (feet): | 2358.90 | 1.00 |
| | | wetland area (acres): | 0.86 | |
| | | Shoreline Development Index: | 3.44 | |
| | $V_{CATCHWET}$ | wetland area (acres): | 0.86 | 1.00 |
| | | catchment area (acres): | 6.00 | |
| | | ratio of catchment size to wetland size: | 6.98 | |
| Landscape & Landuse | $V_{UPUSE}$ | total acre size of the present day catchment: | 6.00 | 0.00 |
| | | acres of catchment for each curve number: | | |
| | | 98 | 6.00 | |
| | | 90 | | |
| | | 79 | | |
| | | 77 | | |
| | | 72 | | |
| | | 75 | | |
| | | 73 | | |
| | | 71 | | |
| | | 72 | | |
| | | 74 | | |
| | | 69 | | |
| | | 79 | | |
| | | 74 | | |
| | | 69 | | |
| | | 61 | | |
| | | weighted average score for upland land use: | 98.00 | |
| | $V_{WETPROX}$ | distance to nearest wetland(feet): | 86.00 | 0.59 |
| | | distance to 2nd nearest wetland: | 373.00 | |
| | | distance to 3rd nearest wetland: | 784.00 | |
| | | distance to 4th nearest wetland: | 866.00 | |
| | | distance to 5th nearest wetland: | 900.00 | |
| | | mean distance (feet): | 601.80 | |
| | $V_{WETAREA}$ | acres of palustrine wetlands within a 1-mile radius: | 40.00 | 0.07 |
| | $V_{BASINS}$ | number of palustrine wetlands within a 1-mile radius: | 41.00 | 0.18 |
| | $V_{HABFRAG}$ | miles of roads and linear attributes within a 1-mile radius: | 29.00 | 0.00 |

| Function | FCI | FCU |
|---|---|---|
| **1. Water Storage** | 0.40 | 0.34 |
| **2. Groundwater Recharge** | 0.41 | 0.35 |
| **3. Retain Particlulates** | 0.60 | 0.52 |
| **4. Remove, Convert, and Sequester Dissolved Substances** | 0.36 | 0.31 |
| **5. Plant Community Resilience and Carbon Cycling** | 0.33 | 0.29 |
| **6a. Provide Faunal Habitat** | 0.35 | 0.30 |
| **6b. Provide Faunal Habitat (Alternate Formula)** | 0.24 | 0.20 |

# Building a Better World for All of Us®

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# APPENDIX C – Approved Jurisdiction Determination

**From:** Carnahan, Bridget G CIV USARMY CENWO (USA)
**To:** Babcock, Chad
**Cc:** Juhas, Catherine D CIV USARMY CENWO (USA)
**Subject:** RE: [EXT] AJD - NWO-2022-00214-PIE
**Date:** Thursday, October 26, 2023 4:19:27 PM
**Attachments:** image001.png

---

Chad,

Good afternoon. We've just received confirmation from our district jurisdiction subject matter expert that AJD's completed under the pre-2015 regulatory regime, pre-Sackett are still valid. In reviewing the types of waters present within the review area, there were wetlands that abut a relatively permanent water and isolated wetlands. We no longer use the term abutting wetlands, they are now adjacent wetlands, but even with the change of guidance, they would still be jurisdictional. The other features identified were isolated wetlands, which is another term we don't use. Technically these wetlands would not meet the adjacency test and would not be jurisdictional. So it boils down to the fact that the only real changes are to vocabulary and an AJD would not be necessary. I hope that helps to clear up your concerns.

Thanks,

Bridget Carnahan
U.S. Army Corps of Engineers
South Dakota Regulatory Office
28563 Powerhouse Road, Room 118
Pierre, South Dakota 57501

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Good afternoon. We've just received confirmation from our district jurisdiction subject matter expert that AJD's completed under the pre-2015 regulatory regime, pre-Sackett are still valid. In reviewing the types of waters present within the review area, there were wetlands that abut a relatively permanent water and isolated wetlands. We no longer use the term abutting wetlands, they are now adjacent wetlands, but even with the change of guidance, they would still be jurisdictional. The other features identified were isolated wetlands, which is another term we don't use. Technically these wetlands would not meet the adjacency test and would not be jurisdictional. So it boils down to the fact that the only real changes are to vocabulary and an AJD would not be necessary. I hope that helps to clear up your concerns.

Thanks,

Bridget Carnahan
U.S. Army Corps of Engineers
South Dakota Regulatory Office
28563 Powerhouse Road, Room 118
Pierre, South Dakota 57501

**From:** Babcock, Chad <Chad.Babcock@state.sd.us>
**Sent:** Monday, October 16, 2023 1:51 PM
**To:** Juhas, Catherine D CIV USARMY CENWO (USA) <Catherine.D.Juhas@usace.army.mil>; Carnahan, Bridget G CIV USARMY CENWO (USA) <Bridget.G.Carnahan@usace.army.mil>
**Subject:** [Non-DoD Source] AJD

Good afternoon,

We received an AJD for SDDOT Project I229 Exits 3 and 4 on March 31, 2022. Is this still valid for 5 years (from the date of issuance) or would we need to submit a new application given changes in federal definitions? Thanks

**Chad Babcock**
**Environmental Manager | South Dakota Department of Transportation**
Better Lives Through Better Transportation
700 E. Broadway Ave, Pierre SD 57501
O: 605.773.3721 | C: 605.280.6035 | dot.sd.gov

**APPROVED JURISDICTIONAL DETERMINATION FORM**
**U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** March 31, 2022

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:** Omaha District - SDDOT I-229 Exits 3 and 4 - NWO-2022-00214-PIE

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** The project consists of two review areas: I-229 Exits 3 and 4. Eleven wetlands are located at Exit 3; 7 are adjacent to the Big Sioux River and 4 are isolated. Exit 4 contains 10 wetlands; 5 are adjacent to the Big Sioux River and 5 are isolated. The Big Sioux River is a TNW.

State: South Dakota County/parish/borough: Minnehaha County City: Corson
Center coordinates of site (lat/long in degree decimal format): Lat. 43.510150 N; Long. -96.731234 W
Universal Transverse Mercator: 14
Name of nearest waterbody: Big Sioux River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Big Sioux River
Name of watershed or Hydrologic Unit Code (HUC): 10170203

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: March 8, 2022
☐ Field Determination. Date(s):

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **are and are not** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 10.24 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

2. **Non-regulated waters/wetlands (check if applicable):**[3]

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: Four aquatic resources at Exit 3 (Wetlands 7, 8, 9, and 10) and five aquatic resources at Exit 4 (Wetlands 6, 7, 8, 9, and 10) are isolated waters that are not located within a reasonably close proximity to jurisdictional waters; whereby, nonspeculative ecological connection(s) could be made. Further, these aquatic resources: 1) are not used by interstate or foreign travelers for recreational or other purposes; 2) do not support fish or shellfish that could be taken and sold in interstate or foreign commerce; and 3) are not used for industrial purposes by industries in interstate commerce. Based upon these principle considerations, it is determined that these aquatic resources are non-jurisdictional under the auspices of Section 404 of the Clean Water Act.

## SECTION III: CWA ANALYSIS

### A. TNWs AND WETLANDS ADJACENT TO TNWs

**The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.**

1. **TNW**

Identify TNW: .

Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**

Summarize rationale supporting conclusion that wetland is "adjacent": .

### B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

**This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.**

**The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.**

**A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.**

**If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.**

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

**(i) General Area Conditions:**

Watershed size: **acres**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

**(ii) Physical Characteristics:**

(a) Relationship with TNW:

☐ Tributary flows directly into TNW.

[3] Supporting documentation is presented in Section III.F.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):

**Tributary** is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

**Tributary** properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

| | | |
|---|---|---|
| ☐ Silts | ☐ Sands | ☐ Concrete |
| ☐ Cobbles | ☐ Gravel | ☐ Muck |
| ☐ Bedrock | ☐ Vegetation. Type/% cover: | |
| ☐ Other. Explain: . | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

| | |
|---|---|
| ☐ clear, natural line impressed on the bank | ☐ the presence of litter and debris |
| ☐ changes in the character of soil | ☐ destruction of terrestrial vegetation |
| ☐ shelving | ☐ the presence of wrack line |
| ☐ vegetation matted down, bent, or absent | ☐ sediment sorting |
| ☐ leaf litter disturbed or washed away | ☐ scour |
| ☐ sediment deposition | ☐ multiple observed or predicted flow events |
| ☐ water staining | ☐ abrupt change in plant community |
| ☐ other (list): | |

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

| | |
|---|---|
| ☐ High Tide Line indicated by: | ☐ Mean High Water Mark indicated by: |
| ☐ oil or scum line along shore objects | ☐ survey to available datum; |
| ☐ fine shell or debris deposits (foreshore) | ☐ physical markings; |

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7] Ibid.

☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

**(iii) Chemical Characteristics:**
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

**(iv) Biological Characteristics. Channel supports (check all that apply):**
☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☐ Aquatic/wildlife diversity. Explain findings: .

**2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

**(i) Physical Characteristics:**
(a) General Wetland Characteristics:
Properties:
Wetland size:
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
☐ Discrete wetland hydrologic connection. Explain: .
☐ Ecological connection. Explain: .
☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

**(ii) Chemical Characteristics:**
Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: .

**(iii) Biological Characteristics. Wetland supports (check all that apply):**
☐ Riparian buffer. Characteristics (type, average width): .
☐ Vegetation type/percent cover. Explain: .
☐ Habitat for:
☐ Federally Listed species. Explain findings: .
☐ Fish/spawn areas. Explain findings: .
☐ Other environmentally-sensitive species. Explain findings: .
☐ Aquatic/wildlife diversity. Explain findings: .

**3. Characteristics of all wetlands adjacent to the tributary (if any)**
All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

| Directly abuts? (Y/N) | Size (in acres) | Directly abuts? (Y/N) | Size (in acres) |
|---|---|---|---|

Summarize overall biological, chemical and physical functions being performed: .

## C. SIGNIFICANT NEXUS DETERMINATION

**A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.**

**Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:**

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

**Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:**

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

## D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   - ☐ Tributary waters: width (ft).
   - ☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

**3. Non-RPWs[8] that flow directly or indirectly into TNWs.**

☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

**4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☒ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetlands 1, 2, 3, 4, 5, 6 and 11 at Exit 3 and Wetlands 1, 2, 3, 4, and 5 at Exit 4 exhibit a contiguous surface connection to the Big Sioux River, a perennial TNW.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: **10.24 acres**.

**5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

**6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

**7. Impoundments of jurisdictional waters.[9]**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from "waters of the U.S.," or

☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

**E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]**

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

☐ which are or could be used for industrial purposes by industries in interstate commerce.

☐ Interstate isolated waters. Explain: .

☐ Other factors. Explain: .

**Identify water body and summarize rationale supporting determination:** .

Provide estimates for jurisdictional waters in the review area (check all that apply):

---

[8] See Footnote # 3.

[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos*.**

☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above):

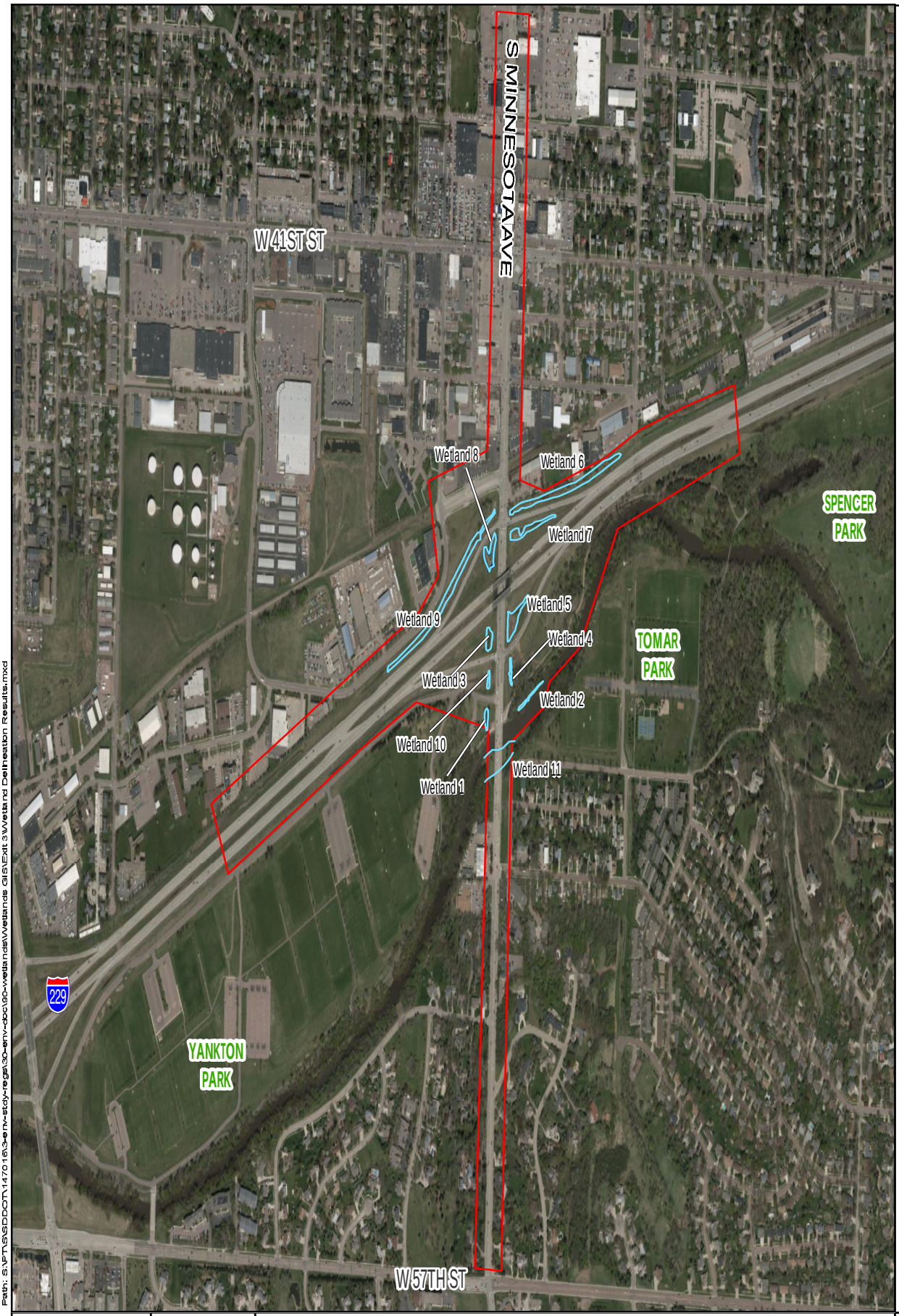
Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 4.71 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply -** checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: JD request received January 26, 2022.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 Sioux Falls East.
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☒ National wetlands inventory map(s). Cite name: FWS Online Mapper.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Google Earth Pro and ORM2 Database.
or ☒ Other (Name & Date): Onsite provided on behalf of applicant (2021).
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:** .




## Legend

- Area of Investigation
- Wetland Boundary

0

0 500 1,000 2,000 Feet



Path: S:\PTS\SDDOT\147016\3-env-study-regs\30-env-doc\90-wetlands\Wetlands GIS\Exit 3\Wetland Delineation Results.mxd

SEH
3535 VADNAIS CENTER DR.
ST. PAUL, MN 55110
PHONE: (651) 490-2000
FAX: (651) 490-2150
WATTS: 800-325-2055
www.sehinc.com

Project: SDDOT 147016
Print Date: 1/7/2019

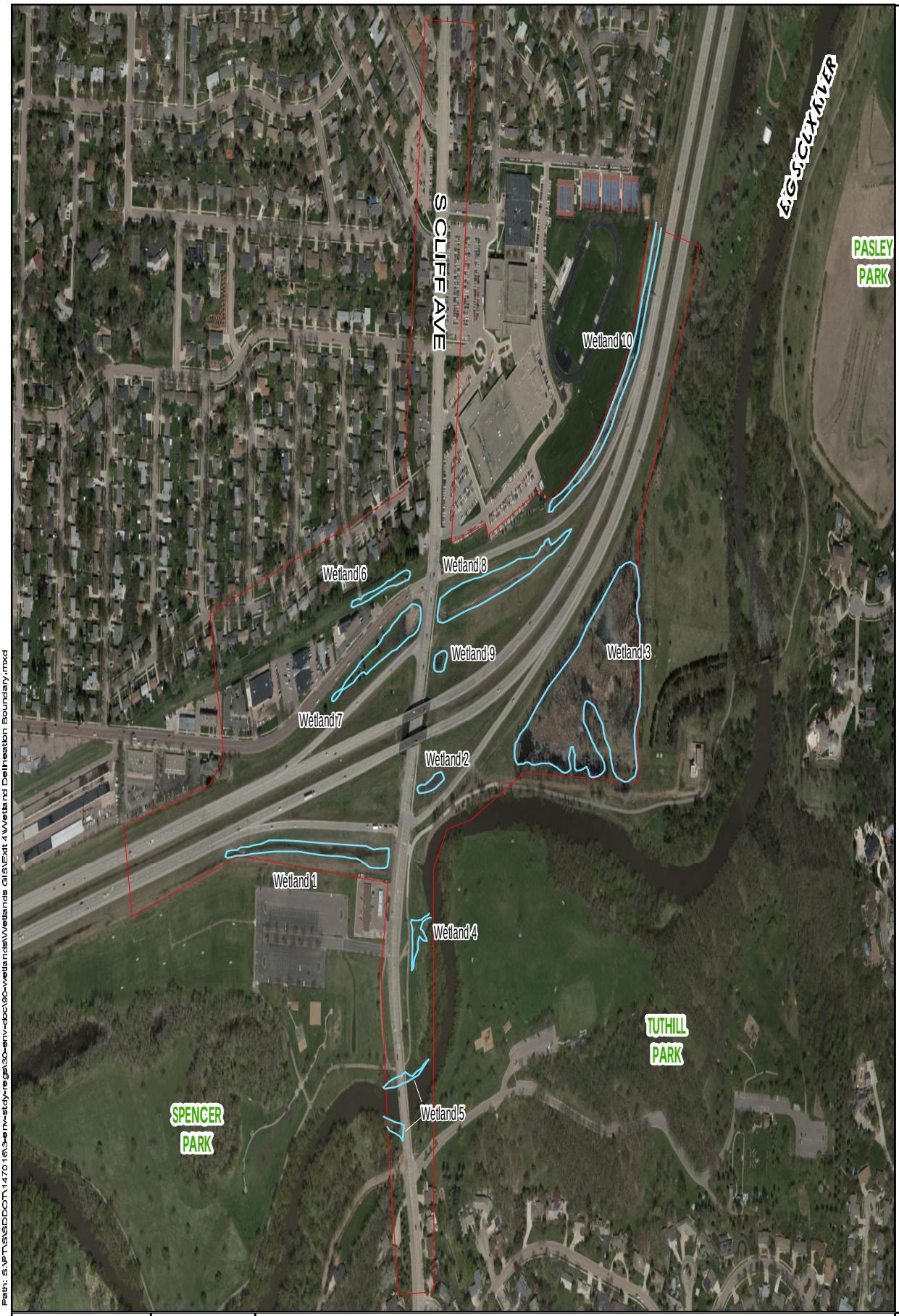
Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS
USGS, NRCS, USDA

# WETLAND DELINEATION RESULTS

Interstate 229 Exit 3 Reconstruction
Sioux Falls, Minnehaha County

Exit 3

Figure 4-1




## Legend

- Area of Investigation
- Wetland Boundary

0

0 250 500 1,000 Feet



Path: S:\PTS\SDDOT\147016\3-env-study-regs\30-env-doc\90-wetlands\Wetlands GIS\Exit 4\Wetland Delineation Boundary.mxd

SEH
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www.sehinc.com

Project: SDDOT 147016
Print Date: 1/7/2019

Map by: rbeduhn
Projection: UTM NAD 83 Zone 14N
Source: SEH, SDDOT, ESRI, FWS, USGS, NRCS, USDA

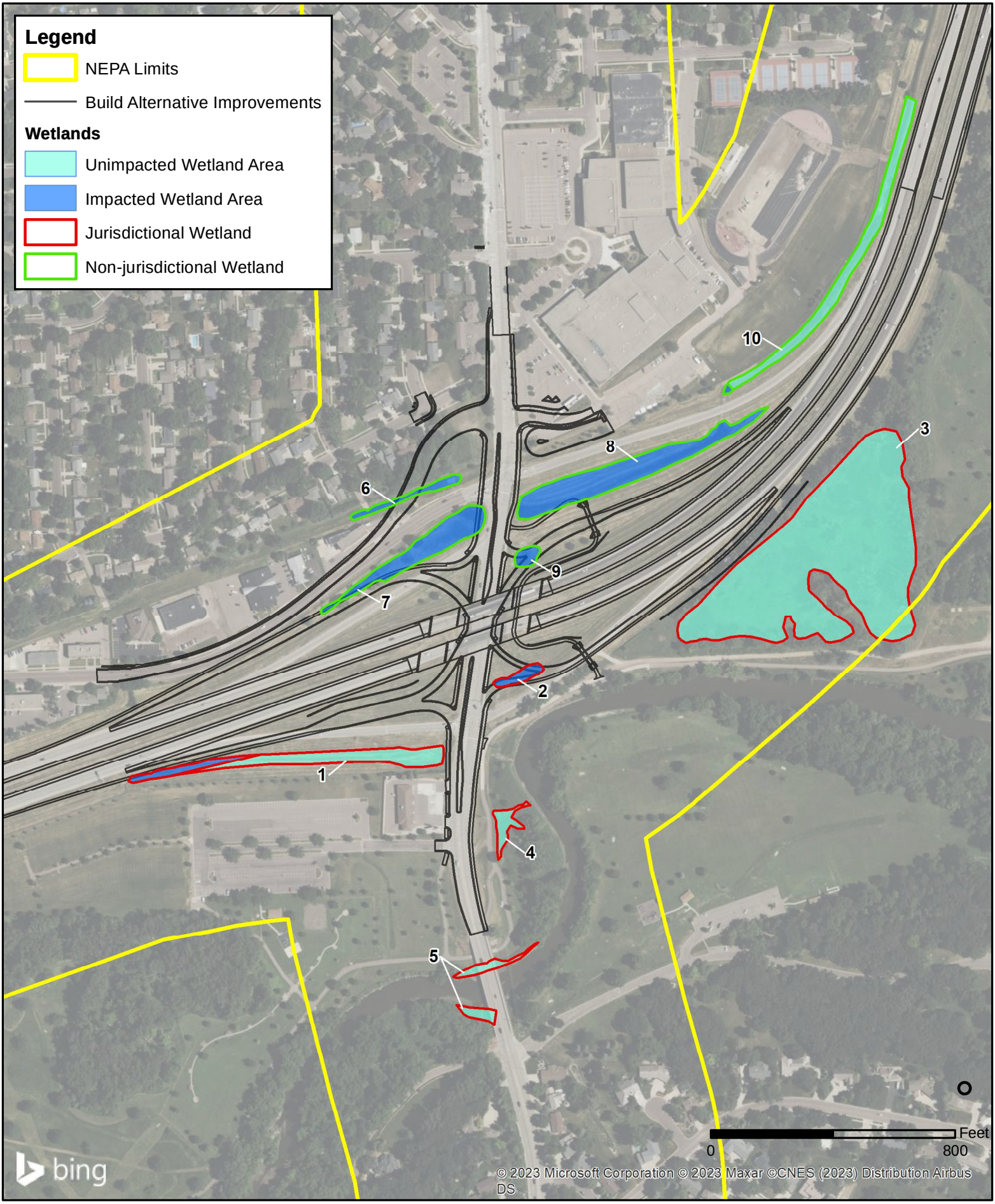
# WETLAND DELINEATION RESULTS

Interstate 229 Exit 4 Reconstruction
Sioux Falls, Minnehaha County

Exit 4

Figure 4-1

# APPENDIX D – Wetland Impacts




SEH
401 East 8th Street
Suite 309
Sioux Falls, SD 57103
(605) 330-7000

Print Date: 9/8/2023
Source: SDDENR, FEMA

Map by: mfalk
Projection: State Plane South Dakota S

# Wetland Impacts

*I-229 Exit 4 (Cliff Avenue) Interchange*
*Minnehaha County, SD*

# APPENDIX E – Letter of Credit Availability

# Goeden Properties II LLC, Wetland Bank

**Andy Harr**
Mitigation POC

4500 E 33rd St #49
Sioux Falls, SD 57110
605-201-1559
andy@totalaar.com

**SDDOT**
700 E Broadway Ave
Pierre, SD 57501
605-773-4336

10/31/2023

Dear SDDOT,

This is a letter of credit availability regarding Corps ID NO: NWO-2022-00214-PIE. We have 4.10 Riverine credits that would be available for purchase. The purchase price is $20,000.00 per wetland credit for a total of $82,000.00. These credits would need to be purchased by May 01 2024.

Harold Goeden X _____ Owner, Goeden Properties II LLC,

Point of Contact

Andy Harr

605-201-1559

andy@totalaar.com

4500 E 33rd Street #49 Sioux Falls SD 57110

# APPENDIX F – Project Coordination

**DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES**

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

December 27, 2018

Joanne Hight
Department of Transportation
700 East Broadway Avenue
Pierre, South Dakota 57501

RE: SD DOT Project
IM 2292(101)4
PCN 05HN
Minnehaha County

Dear Ms. Hight:

The South Dakota Department of Environment and Natural Resources (DENR), Division of Environmental Regulation, has reviewed the above referenced project.

This office has no objections to this project, which should not result in any violations of applicable statutes or regulations provided the Department of Transportation and/or its contractor(s) comply with the following requirements.

**SURFACE WATER QUALITY**

1. All fill material shall be free of substances in quantities, concentrations, or combinations which are toxic to aquatic life.

2. Removal of vegetation shall be confined to those areas absolutely necessary to construction.

3. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (800-737-8676) or http://denr.sd.gov/des/sw/stormwater.aspx.

4. All material identified in the application as removed waste material, material stockpiles, dredged or excavated material shall be placed for either temporary or permanent disposal in an upland site that is not a wetland, and measures taken to ensure that the material cannot enter the watercourse through erosion or any other means.

5. Methods shall be implemented to minimize the spillage of petroleum, oils and lubricants used in vehicles during construction activities. If a discharge does occur, suitable containment procedures such as banking or diking shall be used to prevent entry of these materials into a waterway.

6. All newly created and disturbed area above the ordinary high water mark which are not riprapped shall be seeded or otherwise revegetated to protect against erosion.

7. This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that water quality standards are not violated.

   This project is in the vicinity of the Big Sioux River. This waterbody is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (5) Warmwater semipermanent fish life propagation waters;
   (7) Immersion recreation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

   Because of these beneficial uses, special construction measures may have to be taken to ensure that the 30-day average total suspended solids criterion of 90 mg/L is not violated.

**HAZARDOUS and SOLID WASTES**

1. Should any hazardous waste be generated during the implementation of this project, the generator must abide by all applicable hazardous waste regulations found in ARSD 74:28 and 40 CFR Part 262.

2. If any contamination is encountered during construction activities, the contractor, owner, or party responsible for the release must report the contamination to the department at 605-773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements.

3. It is not expected that any hazardous wastes sites will be encountered during road construction in any rural area. However, if road construction is planned for areas within a city or town, the DOT or contractor should contact this Department prior to construction.

4. Some solid waste may be generated during this project. Any solid waste generated that will not be reused in some beneficial manner must be disposed or managed at a permitted solid waste facility.

5. Regional landfills able to accept all solid waste generated are listed on our website available here: https://apps.sd.gov/NR60SolidWaste/main.html#. Only Regional landfills are permitted to accept all wastes generated. If you have any questions please contact Waste Management at 605-773-3153.

6. Demolition or renovation of a building structure may be subject to asbestos abatement requirements. If demolition is part of the construction projects please contact our Asbestos Coordinator at 605-773-3153.

**AIR QUALITY**

1. It appears that Department of Transportation projects may have only a minor impact on the air quality in South Dakota. This impact would be through point source and fugitive emissions.

2. Equipment with point source emissions in many cases are required to have an air quality permit to operate. Permit applications can be obtained from the Air Quality or Minerals and Mining Programs.

3. Fugitive emissions, although not covered under State air quality regulations, are a common source of public concern and may be subject to local or county ordinances. Fugitive emissions add to the deterioration of the ambient air quality and should be controlled to protect the health of communities within the construction areas.

4. For further air quality information, please contact Rick Boddicker, Air Quality Program, telephone number 605-773-3151.

This office requests the opportunity to review and comment on any significant changes that may be proposed before the project is completed. Thank you for the opportunity to comment on the proposed project. If you have any questions, please contact me at 605-773-3351 or Shannon.Minerich@state.sd.us.

Sincerely,

Shannon Minerich

Shannon Minerich
Environmental Scientist
Surface Water Quality Program

Cc: Deanna Lehrkamp, DENR Waste Management Program
Rick Boddicker, DENR Air Quality Program

SOUTH DAKOTA DEPARTMENT OF
GAME, FISH AND PARKS
523 EAST CAPITOL AVENUE | PIERRE, SD 57501

December 27, 2018

Joanne Hight
SD Department of Transportation
700 E. Broadway Avenue
Pierre, SD 57501

RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County
I-229 – Exit 4 (Cliff Ave) in Sioux Falls
Interchange Improvements

Dear Joanne,

The Department of Game, Fish and Parks has reviewed the above project involving interchange improvements on I-229, Exit 4 in Sioux Falls.

A search of the South Dakota Natural Heritage Database found records of trout-perch (*Percopsis omiscomaycus*), a species of greatest conservation need in the Big Sioux River, downstream of the project area.

Based on the information provided, there is no anticipated significant impact to fish and wildlife resources and would anticipate that to remain if the following suggestions are considered during the planning and construction of the project:

1. Disturbance to riparian and wetland areas should be kept to an absolute minimum.
2. If riparian vegetation is lost it should be quantified and replaced on site. Seeding of indigenous species should be accomplished immediately after construction to reduce sediment and erosion.
3. A site specific sediment and erosion control plan should be part of the project.
4. A post construction erosion control plan should be implemented in order to provide interim control prior to re-establishing permanent vegetative cover on the disturbed site.
5. Stream bottoms impacted by construction activities should be restored to pre-project elevations.
6. In stream work should not be conducted during fish spawning periods. Most spawning occurs during April, May and June.

If you have any questions, please feel free to contact me at 605-773-6208.

Sincerely,

Hilary Meyer
Environmental Review Senior Biologist
523 East Capitol Avenue
Pierre, SD 57501

south dakota
STATE HISTORICAL SOCIETY
DEPARTMENT OF EDUCATION

Received
SDDOT Environmental
JUN 14 2019

June 12, 2019

Ms. Joanne Hight
Department of Transportation
Environmental Office
700 E. Broadway Avenue
Pierre, SD 57501-2586

**SECTION 106 PROJECT CONSULTATION**
Project: 190424003F – IM 2292(84)3 & IM 2292(101)4, PCN 000S & 05HN – I-229 Exit 3 & Exit 4 Interchange Modification & Improvements
Minnehaha County
(FHWA/DOT)

Dear Ms. Hight,

Thank you for the opportunity to comment on the above-referenced project pursuant to 54 U.S.C. 306108, Section 106 of the National Historic Preservation Act of 1966 (as amended). The Office of the South Dakota State Historic Preservation Officer (SHPO) has the following comments regarding the effect of the proposed undertaking on the non-renewable cultural resources of South Dakota.

On April 24, 2019, we received your letter and the report entitled "An Intensive Cultural Resources Survey for SEH, Inc. of Interstate I-229 Exits 3 and 4 IMJR and NEPA, Minnehaha County, South Dakota" by Cassie Vogt (CIS No. 3345). The report indicated that 11 structures, 2 bridges, and a new segment of Eligible site 39MH2000 were recorded during the survey. In email exchanges during May and June of 2019, you clarified the project's APE, stating that, at this time, no project activities will be occurring outside of the area surveyed for Ms. Vogt's report and you clarified the effects to the newly-recorded segment of 39MH2000. Based upon the information provided, SHPO concurs with your determination that structures MH00002403 through MH00002413 and bridges MH00002401 and MH00002402 should be considered Not Eligible for listing in the National Register of Historic Places. Site 39MH2000 is Eligible for listing in the National Register of Historic Places. However, the effect of the off-ramp to 39MH2000, as indicated in your June 12, 2019 email, will not affect the site's overall eligibility.

Therefore, we recommend a finding of "No Adverse Effect" for the proposed undertaking on the Area of Potential Effect (APE) labeled as 'survey area' in Ms. Vogt's report. Once a preferred alternative for each interchange's modification and improvements is selected, if activities are planned for the area outside of the APE identified in Ms. Vogt's report, such as the use of the

remaining railroad grade as an access road or the selection of Alternative 6 for the Cliff Avenue (Exit 4) interchange, additional documentation pertaining to the identification of historic properties, as described in 36 C.F.R. § 800.4, must be submitted to SHPO for consultation.

Concurrence of the SHPO does not relieve the federal agency official from consulting with other appropriate parties, as described in 36 C.F.R. § 800.2(c).

If historic properties are discovered or unanticipated effects on historic properties are found after the agency official has completed the process outlined by 54 U.S.C. 306108 (Section 106) of the National Historic Preservation Act, the agency official shall avoid, minimize, or mitigate the adverse effects to such properties and notify the SHPO and Indian tribes that might attach religious and cultural significance to the affected property within 48 hours of the discovery, pursuant to 36 C.F.R. § 800.13.

Should you require any additional information, please do not hesitate to contact Jenna Carlson Dietmeier at Jenna.CarlsonDietmeier@state.sd.us or (605)773-8370. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

Jenna Carlson Dietmeier
Review and Compliance Archaeologist

CC: Jane Watts - Archaeological Research Center, Rapid City
David Williams – Archaeological Research Center, Rapid City

September 12, 2023

Chad Babcock
SDDOT
700 E Broadway
Pierre, SD 57501

**SECTION 106 PROJECT CONSULTATION**
Project: 230908003F – IM 2292(84)2, PCN 000S; NH 2115(46), PCN 08DN; IM-B 2292(101)4, PCN 05HN; IM2292(105)3, PCN 07CY; IM 2292(106)2, PCN 07CX, Minnehaha County
Location: Minnehaha
FHWA - Federal Highway Administration

Dear Chad,

Thank you for the opportunity to comment on the above referenced project pursuant to 54 U.S.C. 306108, also known as Section 106 of the National Historic Preservation Act of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) concurs with your determination regarding the effect of the proposed undertaking on the non-renewable cultural resources of South Dakota.

On September 8, 2023, SHPO received your letter, maps of the Area of Potential Effects (APE), and a report titled "A Class III Cultural Resources Survey for South Dakota Department of Transportation Projects IM 2292(84)2 and IM-B-CR 2292(101)3, PCNs 000S and 05HN, Interstate 229 Exits 3 & 4, Lincoln and Minnehaha Counties, South Dakota" prepared by Fidel Martinez-Greer and Joes B. Jones of the Archaeological Research Center. Included in this report were efforts to identify cultural resources, maps showing the APE, and photographic overviews of the project area.

Based upon the information provided, the proposed undertaking is for interchange modifications, crossovers, and improvements. This project had been previously coordinated un SHPO# 190424003F. In the letter dated June 12, 2019 SHPO concurred with a determination of "No Adverse Effect". Since that time, revisions to the project design have necessitated additional consultation. According to the information submitted, the site 39MH2000 lies within the APE. This railroad is considered Eligible for listing in the National Register of Historic Places. Due to its heavily disturbed condition within the APE, it is considered not integral to the site's overall eligibility . No additional Historic Properties were identified within the APE. Therefore, SHPO concurs with your determination of "No Adverse Effect" for the proposed undertaking, provided that the work remains within the area surveyed.

Changes in the location and/or nature of activities from those identified in your request will require the submission of additional documentation pertaining to the identification of historic properties, as described in 36 C.F.R. § 800.4, and/or the undertaking's effects on historic properties, as described in 36 C.F.R. § 800.11.

Concurrence of the SHPO does not relieve the federal agency official from consulting with other appropriate parties, as described in 36 C.F.R. § 800.2(c).

If historic properties are discovered or unanticipated effects on historic properties are found after the

agency official has completed the Section 106 process, the agency official shall avoid, minimize or mitigate the adverse effects to such properties and notify the SHPO and Indian tribes that might attach religious and cultural significance to the affected property within 48 hours of the discovery, pursuant to 36 C.F.R. § 800.13.

Should you require any additional information, please contact Jozef Lamfers at Jozef.Lamfers@state.sd.us or at 605-773-6004. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,
Jenna Carlson Dietmeier
Interim State Historic Preservation Officer

Jozef Lamfers
Review & Compliance Archaeologist

CC:

Cassie Vogt - Archaeological Research Center

Lynn Griffin - Archaeological Research Center

DEPARTMENT OF TRANSPORTATION

**Planning and Engineering**
**Environmental Office**
700 E Broadway Avenue
Pierre, SD 57501-2586
O: 605.773.4336
dot.sd.gov

The U.S. Fish and Wildlife Service concurs with your conclusions that the described project will not adversely affect listed species. Contact this office if changes are made or new information becomes available.

Amity Bass Digitally signed by Amity Bass Date: 2022.02.01 16:14:06 -06'00'

Field Supervisor

December 17, 2021

Dylan Turner
U.S. Fish & Wildlife Service
420 S. Garfield Ave - Suite 400
Pierre, SD 57501-5408

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Modification

Dear Mr. Turner:

This letter includes information on the above project for your review and comment. Previous coordination with USFWS regarding this project occurred on November 30, 2018. Since this time design alternatives have been determined so that finalization of species impacts could be assessed.

Attached is information on the above project, including:

- Project background/description
- Project location map
- NLEB Habitat survey
- Concurrence Verification Letter for NLEB (first page)

This project may impact aquatic resources. The project area contains National Wetland Inventory Wetlands. The project will be reviewed for wetland impacts, and the project will comply with all federal and state environmental regulations.

According to the U.S. Fish & Wildlife Service (FWS) IPaC Information for Planning and Conservation system, the following species are known to occur in Lincoln and Minnehaha County: (Consultation code: 06E14000-2019-SLI-0269).

| Consultation Code | Species | Status | SDDOT Determination | Comments |
|---|---|---|---|---|
| 06E14000-2019-SLI-0269 | Northern Long-eared Bat | Threatened | May Affect, Not Likely to Adversely Affect | The USFWS IPaC determination key was completed for this species on April 5, 2019 and reviewed on October 18, 2021. A determination of "may effect – not likely to adversely affect" was made for the project. |

DEPARTMENT OF TRANSPORTATION

**Planning and Engineering**
**Environmental Office**
700 E Broadway Avenue
Pierre, SD 57501-2586
O: 605.773.4336
dot.sd.gov

| | | | | |
|---|---|---|---|---|
| 06E14000-2019-SLI-0269 | Red Knot | Threatened | No Effect | No project impacts are expected for the Red Knot. This species is migratory and is known to avoid inhabited, urbanized areas. Although no critical habitat has been defined for this species, no shallow water is available that would support feeding during migration, making the study area an unideal stopover site. |
| 06E14000-2019-SLI-0269 | Western Prairie Fringed Orchid | Threatened | No Effect | No project impacts are expected for this species. Impacts from the project would occur primarily on Mowed rights-of-way and developed urban area, which are not suitable habitats for this species. |
| 06E14000-2019-SLI-0269 | Monarch butterfly | Candidate | No Effect | There are no section 7 requirements for this species. However, this project, which will occur within mowed rights-of-way and developed urban area, is not anticipated to negatively impact habitat for this species. |

I am requesting FWS concurrence with the above determinations. Please provide your acknowledgment of this request at your earliest convenience.

Please submit your response so that the project's environmental documentation can be completed, and the project can be let and constructed in a timely manner.

Sincerely,

Kit Bramblee

Kit Bramblee
Environmental Scientist Manager
605.773.3721
CC: Amity Bass

# Department of Transportation
## Environmental Office
**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Garrie Killsahundred
Flandreau Santee Sioux Tribe THPO
P.O. Box 283
Flandreau, SD 57028

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Mr. Killsahundred:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight

Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

# Department of Transportation

## Environmental Office

**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Clair Green, Section 106 Coordinator
Lower Brule Sioux Tribe
P.O. Box 187
Lower Brule, SD 57548

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Ms. Green:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight

Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

# Department of Transportation
## Environmental Office
**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Diane Desrosiers
Sisseton-Wahpeton Oyate THPO
P.O. Box 907
Sisseton, SD 57028

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Ms. Desrosiers:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight

Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

# Department of Transportation

## Environmental Office

**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Jon Eagle
Standing Rock Sioux Tribe THPO
P.O. Box D
Fort Yates, ND 58538-0522

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Mr. Eagle:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight

Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

# Department of Transportation
## Environmental Office
**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Kip Spotted Eagle
Yankton Sioux Tribe THPO
P.O. Box 1153
Wagner, SD 57380-1153

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Mr. Spotted Eagle:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight

Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

# Department of Transportation

## Environmental Office

**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Elgin Crows Breast
Three Affiliated Tribes (Mandan Hidatsa Arikara Nation) THPO
404 Frontage Road
New Town, ND 58763-9404

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Mr. Crows Breast:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight


Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us


Attachments

# Department of Transportation
## Environmental Office
**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Shannon Wright
Ponca Tribe of Nebraska THPO
P.O. Box 288
Niobrara, NE 68760

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Mr. Wright:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

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Sincerely,

Joanne Hight

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Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

# Department of Transportation
## Environmental Office
**700 E Broadway Avenue**
**Pierre, South Dakota 57501-2586**
**605/773-4336**


December 10, 2018

Jonathan Windy Boy
Chippewa Cree Tribe THPO
P.O. Box 230
Box Elder, MT 59521

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229 – Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Mr. Windy Boy:

Attached is the scope summary and map detailing the location of the above referenced project. The proposed project will correct deficiencies at the interchange of I-229 and Cliff Avenue in Sioux Falls, SD. The project will comply with all federal and state environmental regulations.

Pursuant to Section 106 of the National Historic Preservation Act (36 CFR Part 800), the South Dakota Department of Transportation, on behalf of the Federal Highway Administration – SD Division, is soliciting comments on this project from tribes that have expressed an interest in highway projects in Minnehaha County. Please provide your comments by February 11, 2019, so that the project can move toward a timely letting and construction.

If you have any questions, please feel free to contact me at the phone number or email address below, or you may contact Tom Lehmkuhl, FHWA Environmental Protection Specialist, at (605) 224-8033.

Sincerely,

Joanne Hight

Joanne Hight
Engineering Supervisor
605.773.3721
Joanne.Hight@state.sd.us

Attachments

## Project Description and Background

The South Dakota Department of Transportation (SDDOT), in partnership with the City of Sioux Falls, the Sioux Falls Metropolitan Planning Organization (MPO) and Federal Highway Administration (FHWA) – the Study Partners – are proposing to improve the Interstate 229 (I-229) interchanges and their approach roadways at Exits 3 (Minnesota Avenue) and 4 (Cliff Avenue) in Sioux Falls, South Dakota. Potential I-229 Corridor Study improvements were documented in a recently completed Major Investment Corridor Study (MIS) from the Solberg Avenue Bridge crossing to the East 60th Street Bridge crossing. Five interchange substudies resulted from the MIS, including Exit 3 (Substudy 2) and Exit 4 (Substudy 6).

Next steps for advancing the interchange studies include preparation of Interchange Justification Modification Reports (IMJR), NEPA documentation, topographic surveys and subsurface utility engineering and exploration. With the preceding MIS groundwork completed, the Study Partners are moving forward with refining and continuing to narrow the range of reasonable alternatives, construct a defensible purpose and need for both projects through required NEPA documentation, and complete topographic surveys and utility locates for each project to determine existing rights-of-way, access control and potential utility conflicts.

Rather than completing long-term improvements in a piecemeal fashion along the I-229 corridor, the Study Partners determined that the best approach would be to develop a Vision project that could be accomplished in fundable segments over time. The Study Partners also recognized that the cost and detailing of the Vision project would be extensive and thus would need to be completed in stages and proceed through individual projects coordinated with supporting local roadway and other integrated multimodal projects. This approach also ensures the components "fit together" over time, especially as redevelopment projects and park and recreation uses adjacent to the I-229 Corridor evolve and change. The MPO's current 2040 Long Range Transportation Plan (LRTP) provides for this range of interchange and mainline I-229 improvement costs spread over a 20-year period, with priority determined by needs, funding availability and community-wide acceptance.

Based on project partner consensus – as well as efficiencies to be gained through concurrent traffic/other data collection, analysis in the IMJR and NEPA documentation processes, survey and utility investigations and public involvement efforts – it was strategically determined that Exit 3 and Exit 4 would be advanced simultaneously and proceed together to future design and construction staging. For each substudy area, MIS-identified alternatives may be further modified and some may potentially be eliminated during the completion of the IMJR documentation and/or NEPA processes.

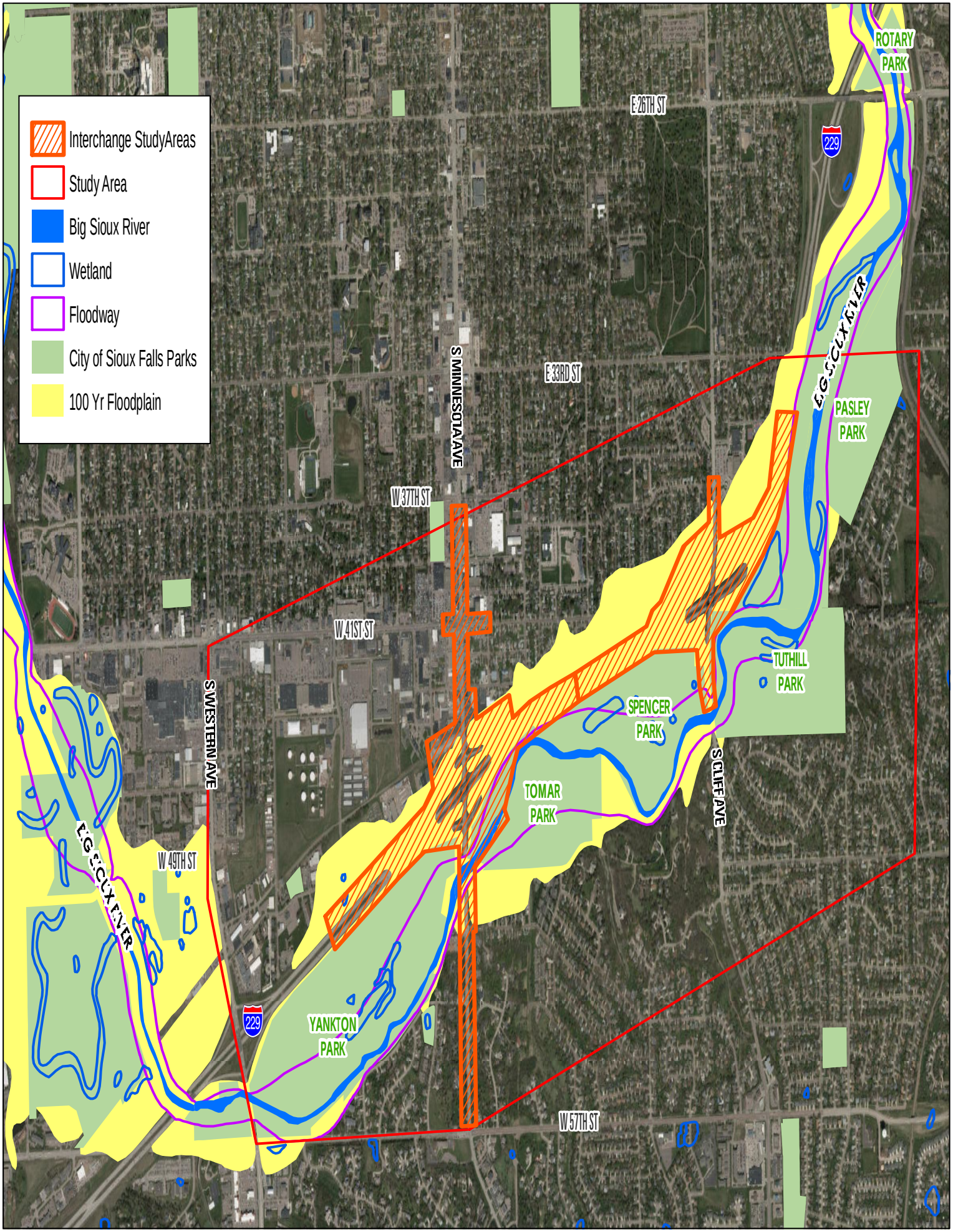
### I-229 Exit 4 (Cliff Avenue)


The I-229 Exit 4 southbound entrance ramp intersection experiences congestion in the peak traffic hours. This is due in part to Lincoln High School traffic, but also as because this heavily traveled commuter corridor distributes traffic between northern neighborhoods, downtown and southern parts of the community. Cliff Avenue provides direct access to Spencer and Tuthill Parks, and, similar to Minnesota Avenue, is a major north-south arterial roadway that crosses Sioux Falls with direct access to I-229.

By the year 2035, congestion is anticipated to increase at the current interchange ramp terminals. Preliminary concepts for the Cliff Avenue interchange to address the existing and year 2035 transportation deficiencies were developed for MIS Substudy 6. No additional improvements were deemed necessary beyond the interchange area, so no additional corridor options were analyzed in the MIS.

Preliminary concepts were developed and, through a screening process using established evaluation criteria, it was determined that the following three alternative scenarios should be carried forward for study in the IMJR:

- Cliff-1 – NB Cliff to SB I-229 Loop Ramp
- Cliff-6 – SPUI, 41st Street Realigned
- Cliff-7 – SPUI, SB I-229 Exit Ramp Thru and Rights at 41st Street

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YANKTON SIOUX TRIBE
TRIBAL HISTORIC PRESERVATION OFFICE
800 S. Main ■ PO BOX 1153 ■ Wagner, South Dakota 57380 ■ 605.384.3641

January 31, 2019

Joanne Hight
South Dakota Department of Transportation
Environmental Office
700 E. Broadway Ave.
Pierre, SD 57501-2586

**RE: Project IM 2292(101)4, PCN 05HN, Minnehaha County**
I-229-Exit 4 (Cliff Ave.) in Sioux Falls
Interchange Improvements

Dear Madam,

We have reviewed the documentation for the referenced project(s). Based on the information provided, we would like to notify you the Yankton Sioux Tribe Tribal Historic Preservation Office does not have interest in the proposed project at this time but would like to be notified if any cultural artifacts are found.

Please retain this letter in your files as compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. Finally, be advised that this correspondence is not consultation with the Yankton Sioux Tribe. The Ihanktonwan Consultation Wo'ope (Protocols for Consultation with the Yankton Sioux Tribe) are attached for your reference. Thank you for your cooperation. If there are any questions or concerns, please do not hesitate to contact us at our office by phone at 605-384-3641 ext. 1032/1033 or by e-mail at yst.thpo@gmail.com.

Sincerely,

Kip Spotted Eagle, THPO Director
Tribal Historic Preservation Office
Yankton Sioux Tribe of South Dakota