Appendix F – Wetland Delineation Report

Building a Better World for All of Us®

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

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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:

Building a Better World for All of Us®

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

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

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

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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.

5 Bibliography

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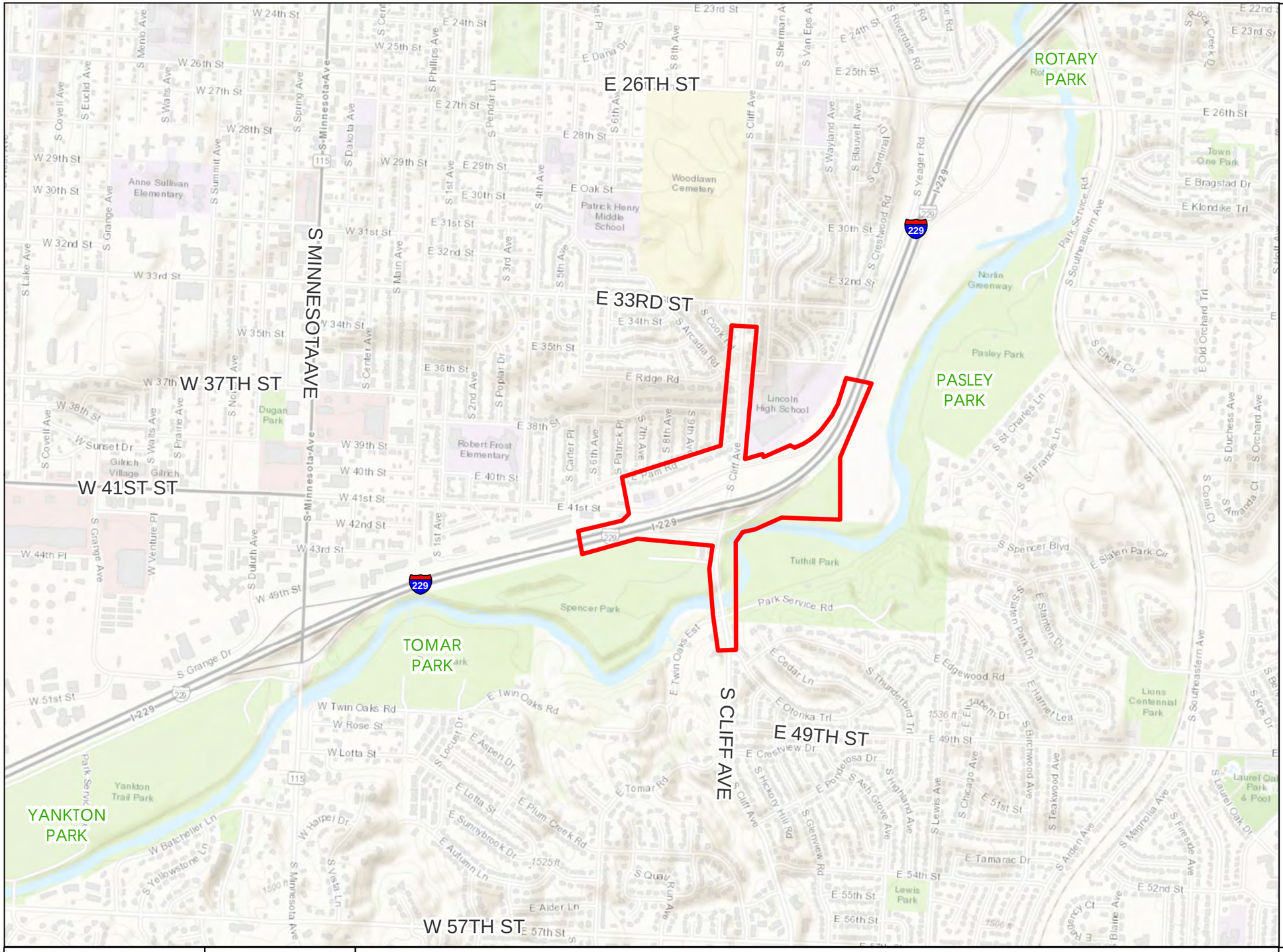
Figures



Legend

Area of Investigation

N

0 0.125 0.25 0.5 Miles

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

SEH
PHONE: (651) 490-2000
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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

0 500 1,000 2,000 Feet

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

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

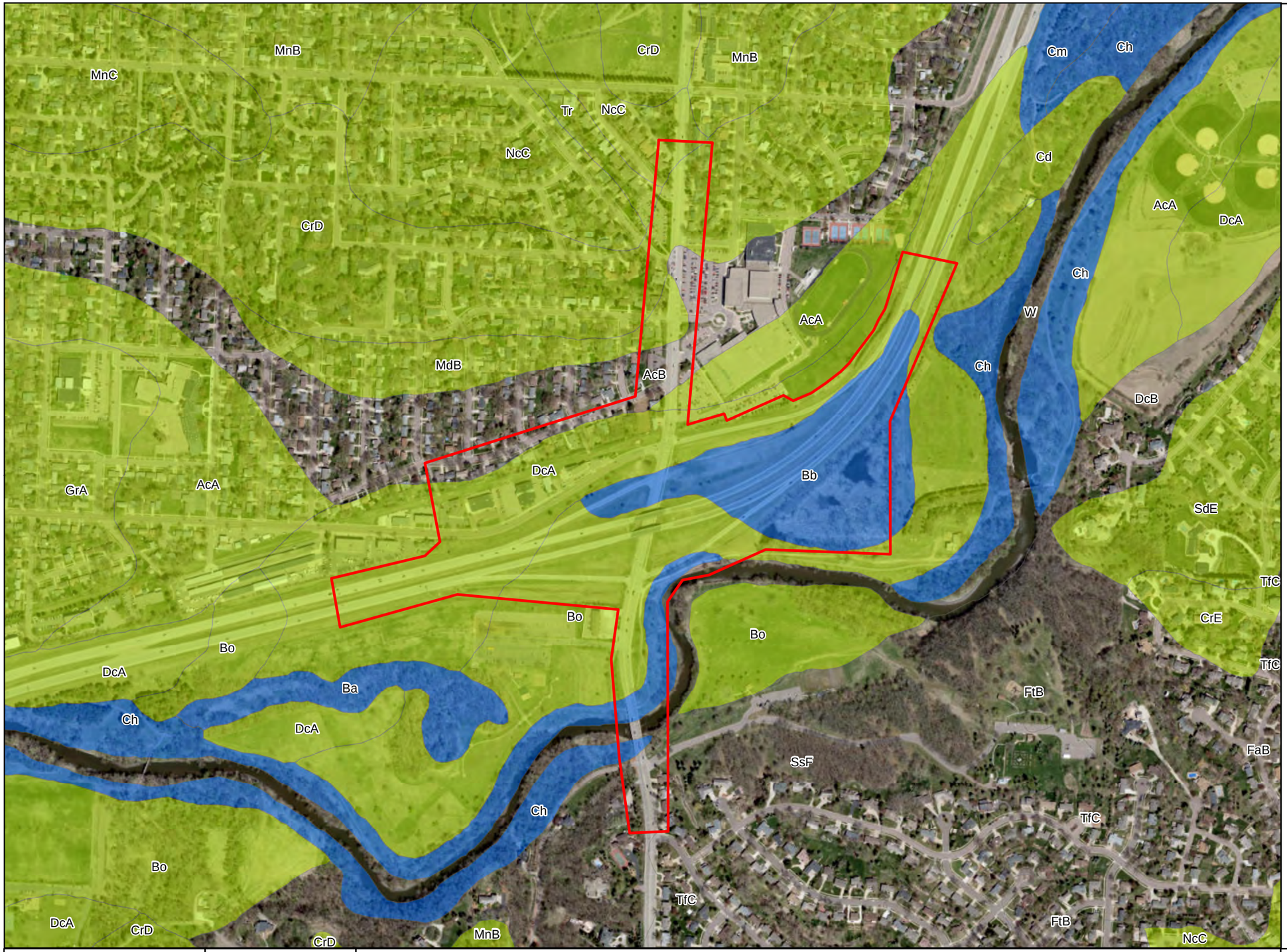
Print Date: 10/22/2021

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 clay, 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:\PTS\SDDOT\147016\3-env-stdy-regs\30-env-doc\90-wetlands\October 2021 Updated Report\Exit 4 - 05HN\GIS\Figure 3 - Soils.mxd

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

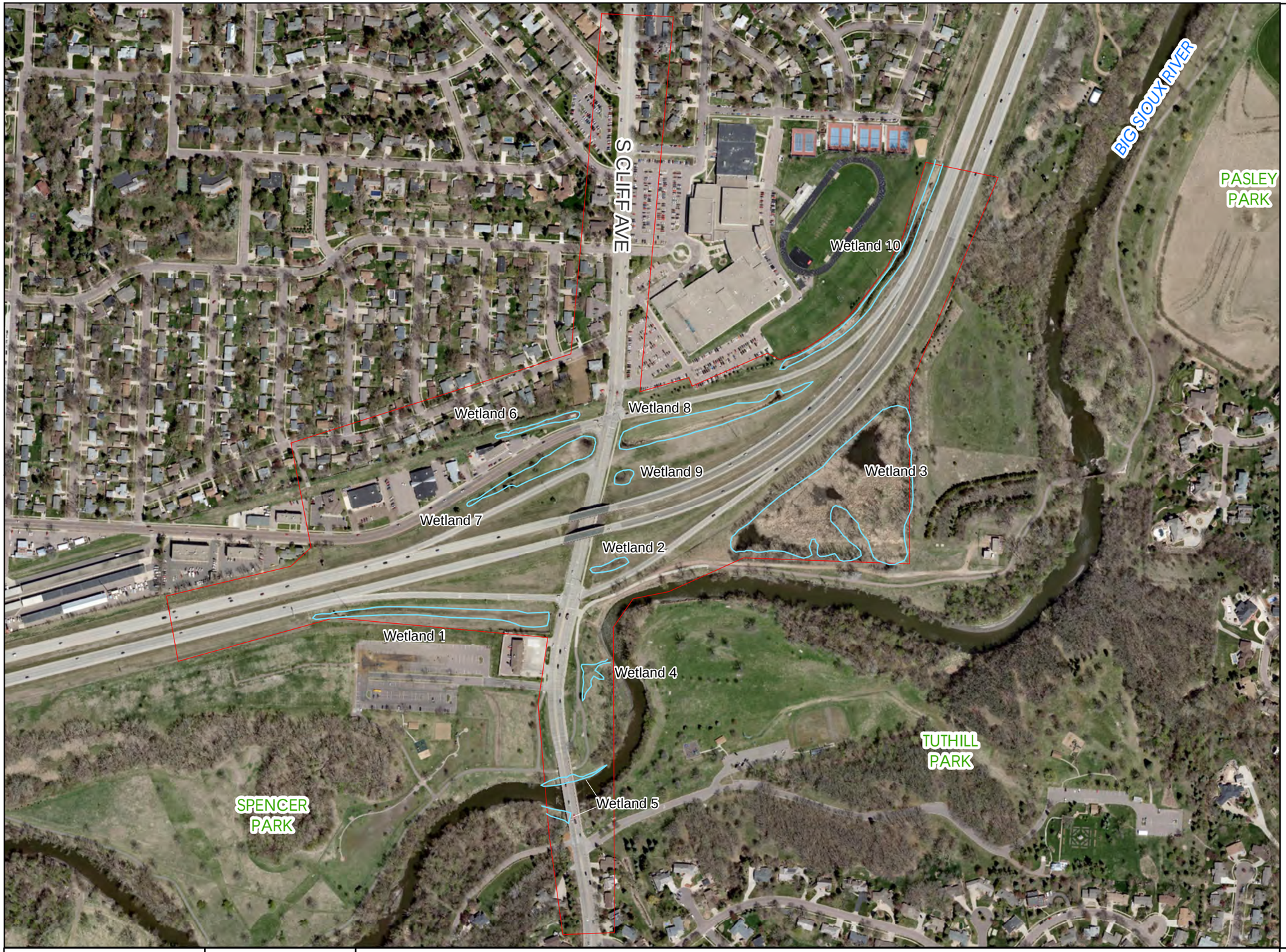
Print Date: 10/22/2021

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

0 250 500 1,000 Feet

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

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

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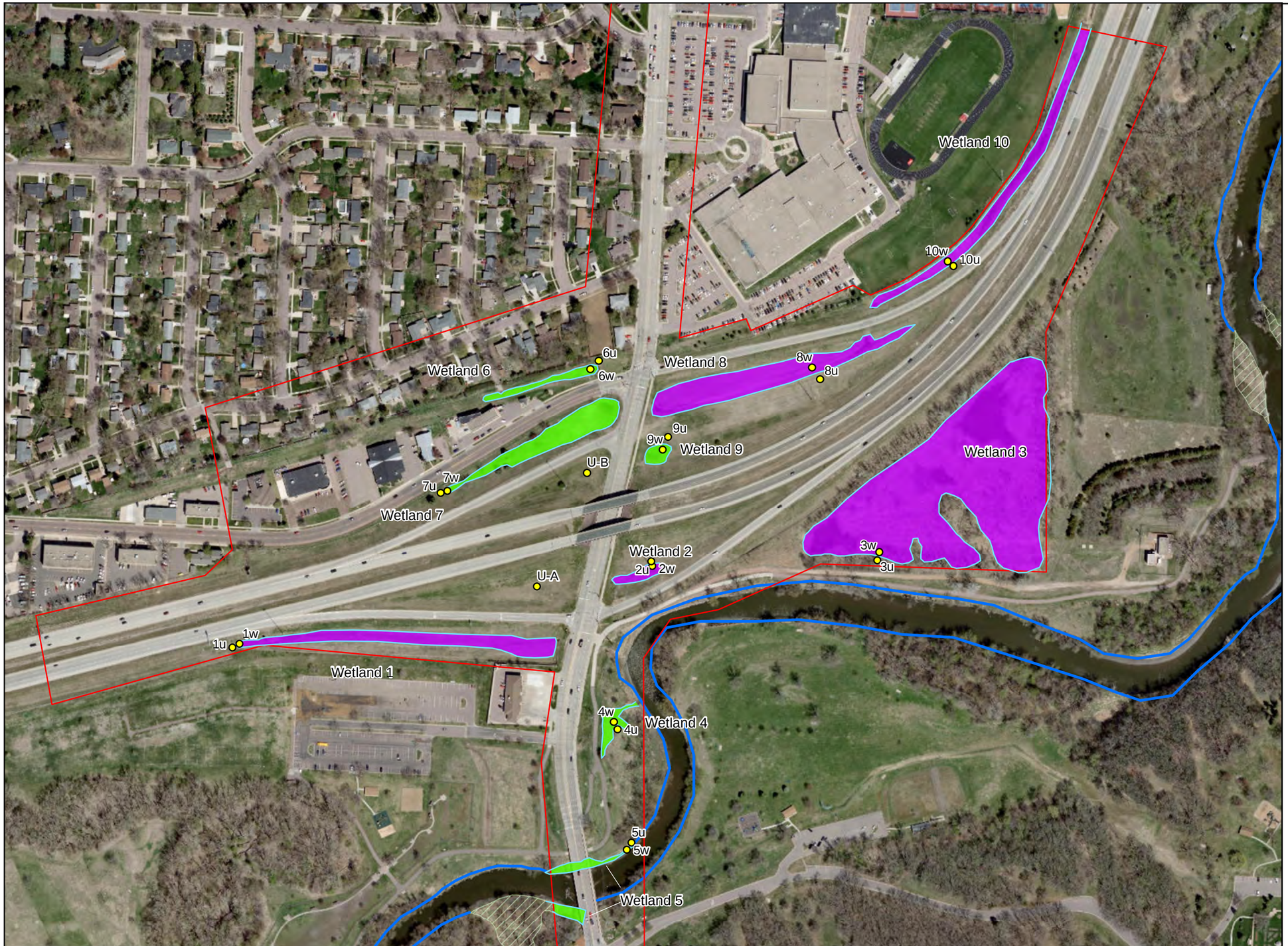
WETLAND DELINEATION RESULTS

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)*

0 200 400 800 Feet

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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

Path: S:\PT\SDDOT\1470163-env-stdy-regs\30-env-doc\90-wetlands\October 2021 Updated Report\Exit 4 - 05HNG\S\Figure 4-1 - Wetland Communities.mxd

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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	

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

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: 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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratu (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 4

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

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 stratum (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	

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

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: 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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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	

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

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: 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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present? N

Hydric soil present? N

Indicators of wetland hydrology present? N

Is the sampled area within a wetland? 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 stratum (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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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 stratum (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	

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

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:** 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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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	

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

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: 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?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

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 stratum (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 stratum (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

		Long-term rainfall records							
	Month	**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.	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

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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

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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

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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

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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