Technical Report

# Preliminary Draft Wetland Delineation Technical Report:

# **US 14 EIS Corridor**

From Front Street in New UIm, MN to the south side of CSAH 6 west of North Mankato, MN

Prepared by:



### Minnesota Department of Transportation

District 7 Mankato, MN

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With Support from: CH2M HILL, Inc. Kestrel Design Group, Inc.

## **Table of Contents**

TABLE OF CONTENTS	1
LIST OF TABLES	2
List of Figures	2
1.0 INTRODUCTION AND BACKGROUND	3
1.1 Legal Context	7
State Regulations	
Federal Regulations	
1.2 Purpose of This Report	
1.3 WETLAND NAMING PROTOCOL USED IN THIS REPORT	9
2.0 METHODS	11
2.1 REVIEW OF PUBLISHED RESOURCES	
2.2 PLANNING-LEVEL WETLAND SURVEY	
2.3 THREE-PARAMETER WETLAND DELINEATIONS (NON-AGRICULTURAL WETLANDS)	
2.4 AERIAL SLIDE REVIEW (AGRICULTURAL WETLANDS)	
2.5 WETLAND FUNCTIONAL ASSESSMENT (MNRAM V. 3.0)	19
3.0 RESULTS	21
3.1 Non-Agricultural Wetlands	
3.2 Agricultural Wetlands	22
3.3 PUBLIC WATERS AND PUBLIC WATERS WETLANDS	
3.4 PRELIMINARY DISCUSSION OF WETLAND SEQUENCING	
3.4.1 Wetland Impact Avoidance	
3.4.2 Wetland Impact Minimization	
3.4.3 Wetland Mitigation	
3.5 PRELIMINARY ESTIMATE OF WETLAND IMPACTS PER ALTERNATIVE.	
3.6 POTENTIAL INCIDENTAL WETLANDS IN THE US 14 PROJECT AREA POLYGON	
4.0 CONCLUSIONS	
LIST OF REFERENCES	
APPENDIX A: ROUTINE ON-SITE WETLAND DELINEATION FORMS	
APPENDIX B: AERIAL SLIDE REVIEW DATA SHEETS	
APPENDIX C: MINNESOTA ROUTINE ASSESSMENT METHOD (MNRAM V.3) FORMS	
APPENDIX D: EXHIBITS	
APPENDIX E: SUMMARY TABLE FOR NON-AGRICULTURAL WETLANDS	

APPENDIX F: SUMMARY TABLE FOR AGRICULTURAL WETLANDS

### List of Tables

		Page
TABLE 1:	Key Events and Dates Related to Wetland Assessment in the US 14 Project Area Polygon	 7
TABLE 2:	WETLAND NAMING PROTOCOL FOR THE US 14 PROJECT AREA POLYGON	 10
TABLE 3:	CHARACTERISTICS AND LANDSCAPE POSITIONS OF HYDRIC SOILS IN THE US 14 PROJECT AREA POLYGON	11
TABLE 4:	RAINFALL RECORDED AT 2 WEATHER STATIONS IN THE US 14 PROJECT AREA COMPARED TO THE 30-YEAR NORMAL (1971-2000)	 13
TABLE 5:	DATES OF FARM SERVICE AGENCY AERIAL PHOTOGRAPHY WITH RESPECT TO RAINFALL NORMALCY	 14
TABLE 6:	DECISION MATRIX FOR OFF-SITE WETLAND DETERMINATIONS FOR A POTHOLE DOMINATED LANDSCAPE	 18
TABLE 7:	AREAL EXTENT OF WETLAND TYPES IN THE US 14 PROJECT AREA POLYGON	 21
TABLE 8:	SUMMARY OF WETLAND IMPACTS BY WETLAND TYPE IN WESTERN SECTION OF THE US 14 PROJECT AREA POLYGON	 26
TABLE 9:	SUMMARY OF WETLAND IMPACTS BY WETLAND TYPE IN EASTERN SECTION OF THRE US 14 PROJECT AREA POLYGON	 27
TABLE 10:	SUMMARY OF POTENTIAL WETLAND IMPACTS FOR Combined Eastern and Western Sections of the US 14 Project Area Polygon	 27
TABLE 11:	SUMMARY OF NON-AGRICULTURAL WETLANDS IN THE US 14 PROJECT AREA POLYGON	 E-1
TABLE 12:	SUMMARY OF AGRICULTURAL WETLANDS IN THE US 14 PROJECT AREA PROJECT AREA POLYGON	 F-1

### List of Figures

		Page
FIGURE 1:	US 14 STUDY AREA MAP	5
FIGURE 2:	US 14 PROPOSED ALTERNATIVES	6
FIGURE 3	US 14 WETLANDS AND HYDRIC SOILS	D-1

The US 14 Draft EIS Project Area (New Ulm, MN to North Mankato, MN) is approximately 22 miles long; bounded on the west by the south side of the US 14 Bridge over the Minnesota River (Brown County) and on the east by the south side of County State Aid Highway (CSAH) 6. The US 14 Draft EIS Project Area, entirely in Nicollet County, includes bypasses of the Cities of Courtland, MN and Nicollet, MN. **Figure 1** shows the generalized US 14 Draft EIS Project Area. Proposed Build Alternatives are depicted schematically on **Figure 2** and in more detail on **Figure 3** (Appendix D).

This Preliminary Draft Wetland Technical Report is intended to provide Mn/DOT and wetland regulatory agencies with a clear picture of the extent of wetland resources in the US 14 Draft EIS Project Area and a preliminary estimate of potential wetland impacts per proposed alternative. These data will be necessary for road designers to attempt to avoid and minimize impacts to project area wetlands.

The US 14 Draft EIS Project Area is situated at the southeastern edge of the Prairie Pothole Region (USGS 2004). The eastern half of the project area is relatively flat with poorly developed natural drainage. The western half of the project area is an undulating to deeply dissected landscape situated close to the Minnesota River.

For purposes of this Preliminary Draft Wetland Technical Report, the US 14 Draft EIS Project Area will be referred to as the US 14 Project Area Polygon. The US 14 Project Area Polygon has been clearly defined and is depicted on **Figure 3** (Appendix D) as a thick-lined yellow polygon. The intention of creating the US 14 Project Area Polygon is to facilitate agency review of this Preliminary Draft Wetland Technical Report. Thus, agencies reviewing this report can sign-off in agreement on the extent of wetlands within the US 14 Project Area Polygon. Further, the Project Area Polygon gives road designers the space to adjust an alignment while knowing what the wetland impacts would be with the adjustment. Some notes on the dimensions of the US 14 Project Area Polygon are as follows:

- The perimeter of the US 14 Project Area Polygon lies 450 feet outside of the centerline for proposed alignment alternatives. This means 300 feet outside of the preliminary Rightof-Way (ROW) Limit and assumes that the preliminary ROW Limit is 150 feet either side of the median centerline,
- The perimeter of the US 14 Project Area Polygon lies 650 feet south of the centerline of existing US 14 between the US 14 western terminus and Hwy. 37. This means 500 feet south of the preliminary ROW Limit in this road section assuming the ROW Limit is 150 feet either side of the centerline of existing US 14,
- The perimeter of the US 14 Project Area Polygon lies 150 feet outside of the centerline for proposed local access road improvements. This means 75 feet outside of the preliminary ROW Limits for proposed local road accesses and assumes that the preliminary ROW Limit is 75 feet either side of the centerline. Local access roads in the US 14 Project Area Polygon are depicted on Figure 3 (Appendix D) in orange color.

• The area of the US 14 Project Area Polygon is 6,902 acres.

It should be noted that wetland delineations in the Minnesota River bottoms near the western terminus of the US 14 Project Area Polygon were completed prior to extension of the Project Area limits over the Minnesota River. With the Project Area extension, some Minnesota River bottom wetlands near the existing US 14 bridge are not accounted for in this Report. Figure 3 depicts the terminus of wetland delineations with respect to the current terminus of the US 14 Project Area Polygon. The wetland boundary near the western Project Area terminus will be extended in Spring 2005 and any additional wetland acreage delineated will be reported in a subsequent version of this Report. Further, any wetland impacts associated with improvements to US 14 that occur outside of the US 14 Project Area Polygon will be reported in a subsequent version of this Report.

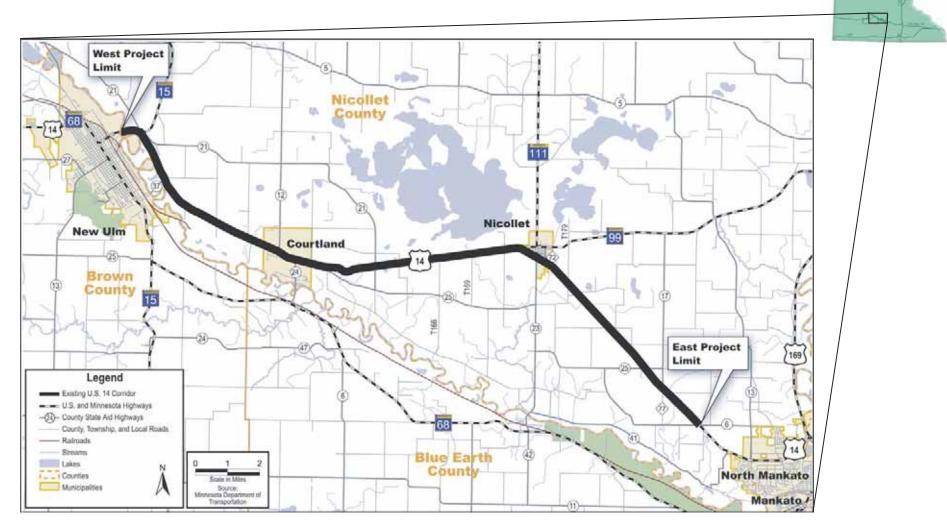
Wetland resources within the US 14 Project Area Polygon were examined using a review of published sources, a planning-level "windshield" assessment of wetlands, and detailed wetland delineation procedures. Detailed wetland delineations were carried out for alternatives to be retained in the US 14 Draft EIS. The Routine On-site Wetland Delineation Method was used to delineate wetlands in non-agricultural landscapes within the US 14 Project Area Polygon. In areas where agriculture had disturbed the vegetation, the Off-site Aerial Slide Review Method was used to delineate potential wetland. The use of the Aerial Slide review method in agricultural landscapes was effective in identifying potential Type 1 wetlands (per Circular 39 terminology), a wetland type that is often undetected with other delineation methods. See Section 2.0 for a description of methods used to assess wetland resources in the US 14 Project Area Polygon. See Section 3.0 for results of the wetland delineation effort.

The Aerial Photo Exhibit (Figure 3), folded at the end of this report, shows a 24" X 36" aerial photo base map of the US 14 Project Area Polygon in addition to the following information:

- National Wetland Wetland Inventory (NWI),
- Hydric Soils,
- The US 14 Project Area Polygon boundary,
- Digitized boundaries of delineated wetlands (agricultural wetlands and non-agricultural wetlands) labeled with unique wetland identifiers,
- Mn/DNR Public Waters and Public Waters Wetlands,
- Gridwork of Township-Range-Section Boundaries with each section labeled.

Two Compact Disks (CDs) are included in the back pocket of this report; the first CD contains a pdf of this Report and associated graphics, and the second CD contains the Farm Service Agency (FSA) aerial slides for the US 14 Project Area Polygon for the years 1991-2000.

Key events and associated dates in the assessment of wetland resources in the US 14 Project Area Polygon, those that are completed and those that remain to be completed, are summarized in **Table 1**. See sections below for more detailed description of wetland assessment activities in the US 14 Project Area Polygon.





US 14 Wetland Technical Report New Ulm to North Mankato

T112004005MKE 316774.14.D1 Study Area Map 11-29-04tll

Figure 1 Study Area Map

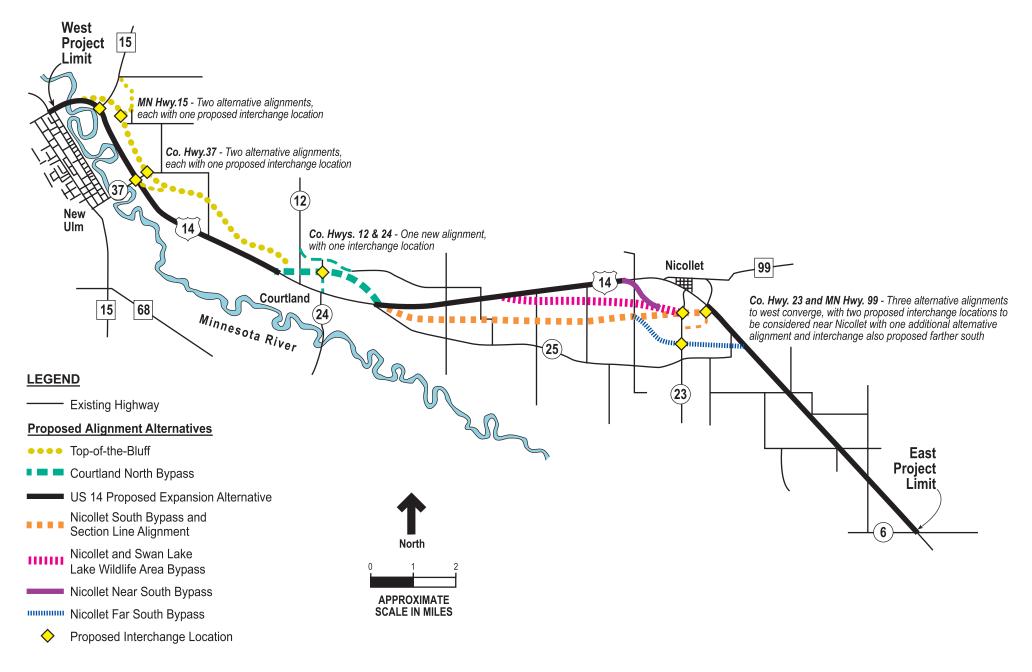




Figure 2 US 14 Proposed Alternatives TABLE 1

Kev	Events and Dates	Related to	Wetland Assessmen	t in the US 14 P	roiect Area Polydon
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Event	Date	Notes
Planning-Level "Windshield" Wetland Survey	June 2, 2004	Cursory assessment of wetland resources. Digitized and submitted to Mn/DOT as GIS layer.
Three-Parameter Wetland	September 22-23, 2004	Wetland boundaries recorded with GPS. Uploaded to
Delineations (Non- Agricultural Wetlands)	October 18-20, 2004	GIS and submitted to MnDOT
Aerial Slide Review (Agricultural Wetlands)	September – November, 2004	10 years of Farm Service Agency aerial slides analyzed in agricultural areas within the US 14 Project Area Polygon.
Technical Evaluation Panel (TEP) Field Review	To be scheduled concurrent with Mn/DOT review of this Report	Field review exercise with Mn/DOT, wetland regulatory personnel, and CH2M HILL wetland professional. Purpose is to gain concurrence on wetland boundaries within the US 14 Project Area Polygon.
Selection of Preferred Alternative and submittal of "Final" version of this Report	October, 2005	Key report update will be precise accounting of wetland impacts along the Preferred Alternative.

Representatives of Mn/DOT, state, and federal environmental agencies met on July 21, 2004 for a day-long Environmental Workshop to discuss issues relevant to the US 14 Project Area. The Workshop was held at the Mn/DNR Regional Headquarters in New UIm, MN. In attendance were representatives from the Mn/DNR, Board of Water and Soil Resources (BWSR), Nicollet County Soil and Water Conservation District (SWCD), US Fish and Wildlife Service, and the US Army Corps of Engineers (USACOE). The issue of wetlands was among a suite of environmental subjects discussed. At this Workshop, BWSR asserted that Type 1 wetlands (per Circular 39 terminology), while not as obvious on the landscape as other Wetland Types, are wetlands nonetheless and should not be overlooked in the wetland delineation effort for the subject US 14 (Front Street in New UIm, MN to South Side of CSAH 6 – west of North Mankato, MN) Project Area.

Further wetland agency contacts included coordination with the Nicollet County SWCD, BWSR and NRCS concerning the aerial slide review conducted to delineate agricultural wetlands in the US 14 Project Area Polygon.

### 1.1 Legal Context

At the State Government level wetlands are protected by the Minnesota Wetland Conservation Act (WCA) administered by the Board of Water and Soil Resources (BWSR) and the Protected Waters Program administered by the Minnesota Department of Natural Resources (MnDNR).

At the Federal Government level, wetlands are protected by the Clean Water Act (CWA), primarily Sections 401 and 404; and the Swampbuster provisions of Federal agricultural legislation (The Farm Bill).

To comply with Section 404 of the Clean Water Act, the federal government mandates the use of two wetland delineation manuals: the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Department of Agriculture's National Food Security Manual* (third ed.). A 1994 Federal Memorandum of Agreement between the Department of Defense, Department of Interior, USEPA, and the USDA requires the use of the *1987 Corps of Engineers Wetland Delineation Manual* Manual by all federal resource agencies on nonagricultural land and the *National Food Security Act Manual* for determinations or delineations on agricultural lands.

Wetland regulations relevant to the US 14 Project Area Polygon are summarized below.

### **State Regulations**

*Minnesota WCA*. The WCA (April 2003 update) establishes a state policy of no net loss of wetlands and requires in the course of project development the avoidance of wetlands, minimization of impacts to wetlands, and mitigation for unavoidable impacts to wetlands. The WCA specifies several exemptions, e.g. conditions under which wet areas are not afforded the protection of the WCA. Categories of exemptions that potentially apply to the US 14 Project Area Polygon, excerpted from the *Minnesota Wetland Conservation Act Manual (April 2003 update)*, are **1)** Incidental Wetlands (See Section 3.5 for more information about Incidental Wetlands), and **2)** The *de minimis* exemption. A *de minimis* is an area of wetland that may be impacted for which there is no obligation to mitigate for it. The appropriate *de minimus* varies with respect to several factors such as location in the State, wetland types impacted and presence of shoreland zones. However, if the *de minimus* impact threshold is exceeded then mitigation is required for all wetland impacts. A preliminary estimate of wetland impacts per proposed alternative (See Section 3.4) shows that the applicable *de minimus* will likely be exceeded by any proposed alternative. Therefore, the *de minimus* will not likely be applicable to the US 14 Project Area Polygon.

*Governor's Executive Order 03-04 and 00-02.* This is the No-Net-Loss of Wetlands policy for the State of Minnesota.

*Pubic Waters Work Permit Program*. Those wetlands, waters, and streams that are included on Protected Waters and Wetlands Maps are under the jurisdiction of the Mn/DNR and specifically excluded from protection under the WCA.

### **Federal Regulations**

*Clean Water Act (CWA) (Sections 404 and 401).* Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers administers the Section 404 permit program, while the US Environmental Protection Agency oversees the overall implementation of the Clean Water Act.

The United States Supreme Court issued a decision on January 8, 2001 asserting that the U.S. Army Corps of Engineers does not have jurisdiction per Section 404 of the CWA over wetlands that are isolated with respect to surface hydrology. This decision, referred to as Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers does not affect the Corps' jurisdiction of wetlands that have a surface water connection (intermittent or perennial) to tributaries (navigable or other). The Corps will determine whether it has jurisdiction per the CWA over isolated basins on a case by case basis.

DOT Order 5660.1A. "Preservation of the Nation's Wetlands" policy.

*Swampbuster Provisions of the Food Security Act.* The Swampbuster program provides disincentives for wetland conversion by denying federal farm program benefits to farmers who violate the program by converting wetlands to agricultural use.

*Executive Order (EO) 11990 – Protection of Wetlands.* EO 11990 requires federal agencies to minimize detrimental actions affecting wetlands while preserving and enhancing the natural and beneficial values of wetlands. This protection is extended to road improvements that, in part, receive Federal funding.

### 1.2 Purpose of This Report

This Preliminary Draft Wetland Technical Report has been prepared in order to:

- **Present** an accurate record of wetland resources within the US 14 Project Area Polygon early in the road planning process,
- **Provide** a document with which to guide the Technical Evaluation Panel (TEP) in a field review,
- Solicit review and comment on wetland resources from Mn/DOT and wetland regulatory agencies early in the planning process,
- **Calculate** estimated wetland impacts by wetland type per proposed alignment alternative, and,
- Assist in the comparison of alternatives proposed in the DEIS.

Refinements of alternatives throughout the planning process will likely change wetland impacts. Wetland impacts will be calculated again once the Preferred Alternative has been selected and the road footprint is known with more precision.

This draft report is intended for the critical review of appropriate wetland resource agencies such as BWSR, Nicollet County SWCD, Mn/DNR, and the U.S. Army Corps of Engineers. This draft report is also intended to serve as a resource with which to guide a Technical Evaluation Panel (TEP) in a field verification exercise. It is expected that this draft report is a working document; agency comments will be incorporated in the final report. As a result of the TEP, it is expected that wetland resource agencies will sign-off in agreement of the wetland resources in the US 14 Project Area Polygon. This Preliminary Draft Wetland Technical Report is intended to provide definitive locations of wetlands in the US 14 Project Area Polygon so that road designers can have the information necessary to avoid and minimize impacts to wetlands to the extent practicable. It is anticipated that at the time of the selection of the Preferred Alternative (FEIS phase), this report will be updated and will become the "Final Wetland Technical Report".

### 1.3 Wetland Naming Protocol Used in this Report

Wetlands in this report are summarized in two sections; Section 3.1 – Summary of Non-Agricultural Wetlands, and Section 3.2 – Summary of Agricultural Wetlands. Wetlands

described in this report have been assigned unique identifiers as seen in the Wetland Summary section and in **Figure 3** – Aerial Photo Exhibit. The naming protocol for identified wetlands in this report uses a prefix of "AW" for Agricultural Wetlands, and "W" for non-agricultural wetlands <sup>1</sup>. **Table 2** shows the wetland naming protocol for purposes of this report using the **Prefix-Township-Range-Section-Wetland Number** format.

TABLE 2 Wetland Naming Protocol for the I	JS 14 Project A	rea Polygon			
Wetland Effort *	Prefix	Township	Range	Section	Wetland Number
Agricultural Wetlands	AW	-XX <sup>1</sup>	-# #	-# #	-#
Non-Agricultural Wetlands	W	-XX <sup>1</sup>	-# #	-# #	-#

\* Agricultural Wetlands (AW), in the context of this report, are not to be confused with wetlands mapped by the NRCS.

<sup>1</sup> Townships are indicated with a two-letter code as follows: "CO" = Courtland, "NI" = Nicollet, "NU" = New UIm, and "BE" = Belgrade

In addition to the above-referenced wetland naming protocol, wetlands were numbered by their occurrence west to east in the US 14 Project Area Polygon (without regard to status as Agricultural Wetlands or Non-Agricultural Wetlands) from Wetland #1 through Wetland #64. These two naming protocols are separated by a colon ":" in Appendices E and F and in Figure 3. Hopefully, this dual naming protocol will be useful to those agencies who will and will not examine this Report on a section by section basis.

<sup>&</sup>lt;sup>1</sup> The use of the prefix "AW" and "W" wetland naming protocols, for purposes of this report, is not to be confused with the Natural Resource Conservation Service codes "AW" meaning "Artificial Wetland" and "W" meaning "Wetland".

# 2.0 Methods

Assessment of wetlands in the US 14 Project Area Polygon consisted of a review of published sources, a preliminary planning-level "windshield" survey of the US 14 Project Area Polygon, delineation of non-agricultural wetlands per the "Three-parameter" methodology, and delineation of agricultural wetlands with an aerial slide review.

Published sources used in the wetland assessment included National Wetland Inventory (NWI) mapping, Mn/DNR Protected Waters and Wetlands Map for Nicollet County, soil survey data, rainfall data, aerial photography, topographic maps, and stream gage data.

### 2.1 Review of Published Resources

The review of published sources is relevant to any subsequent effort to assess the extent of wetland resources, e.g. Planning-Level Wetland Survey (See Section 2.2), Three-Parameter Wetland Delineations (Non-Agricultural Wetlands) (See Section 2.3), and Aerial Slide Review (Agricultural Wetlands) (See Section 2.4).

### Soils

The *Soil Survey of Nicollet County, Minnesota* (NRCS 1994) and the County Hydric Soils List for Nicollet County (NRCS 2004) were examined prior to and during fieldwork in the US 14 Project Area Polygon. SSURGO digital soils data were obtained and hydric soil polygons were overlain on aerial photography for use during fieldwork and as part of the aerial slide review analysis. Definitions of hydric soils are per the *Field Indicators of Hydric Soils in the United States: Guide for Identifying and Delineating Hydric Soils, Version 5.01, 2003* (NRCS 2003) and the *1987 Corps of Engineers Wetland Delineation Manual*. These sources were reviewed prior to and during fieldwork. **Table 3** summarizes hydric soils in Nicollet County. **Figure 3** – Aerial Photo Exhibit (Appendix D) shows polygons of hydric soils mapped in the US 14 Project Area Polygon.

Characteristics and landscape positions of hydric soils in the US 14 Project Area Polygon

Map Unit Symbol	Map Unit name	Landscape Position
35	Blue Earth mucky silt loam	Depressions on moraines
84	Brownton silty clay	Flats on moraines. Rims on depression on moraines.
86	Canisteo clay loam	Rims on depression on moraines. Flats on moraines
109	Cordova clay loam	Flats on moraines. Swales on moraines.
110	Marna silty clay loam	Flats on moraines. Swales on moraines.
112	Harps clay loam	Rims on depressions on moraines. Flats on moraines.
113	Webster clay loam	Flats on moraines. Swales on moraines.
114	Glencoe silty clay loam	Depressions on moraines

Map Unit Symbol	Map Unit name	Landscape Position
134	Okoboji silty clay loam	Depression on moraines
196	Joliet silty clay loam	Swales on stream terraces. Flats on stream terraces
221	Canisteo silty clay loam, depressional	Depressions on moraines
269	Millington clay loam	Swales on floodplains. Flats on floodplains.
317	Oshawa silty clay loam	Depressions on floodplains
321	Tilfer silty clay loam	Flats on stream terraces. Swales on stream terraces.
336	Delft clay loam	Swales on moraines. Drainageways on moraines.
386	Okoboji mucky silty clay loam	Depressions on moraines.
525	Muskego muck	Depression on moraines
539	Klossner muck	Depressions on moraines
575	Nishna silty clay loam	Flats on floodplains. Swales on floodplains.
854	Cordova-Urban Land Complex	Flats on moraines.
956	Canisteo – Glencoe Complex	Rims on depressions on moraines. Flats on moraines.
978	Cordova – Rolfe Complex	Flats on moraines. Swales on moraines.
1075	Klossner – Muskego Complex, ponded	Depression on moraines
1917	Nishna silty clay, ponded	Backswamps on floodplains
1931	Essexville sandy loam	Beach ridges on moraines
1999	Minneiska – Kalmarville Complex, frequently flooded	Flats on floodplains. Meanders on floodplains.

Characteristics and landscape	nositions of hydric soils	s in the US 14 Project Area Polygon

Source: Soil Survey for Nicollet County (NRCS 1994)

#### Rainfall Data

TABLE 3

Analysis of rainfall data pertinent to the US 14 Project Area Polygon serves two purposes: 1) to establish the validity of wetness signatures interpreted in the aerial slide review (Agricultural Wetlands) and 2) to assist in interpretation of wetland hydrology indicators observed during 3-parameter wetland delineations (Non-Agricultural Wetlands). For both wetland delineation methodologies, a non-normal rainfall is considered to be plus or minus ≥30% of the normal rainfall. The normal rainfall is based on the 1971-2000 average. Table 4 shows normal rainfall for the 1971-2000 period compared to actual rainfall (April-August) recorded at two weather stations near the US 14 Project Area Polygon; one in Mankato, MN and the other in New UIm, MN (National Weather Service 2004). Shaded cells in Table 4 indicate non-normal rainfall.

The 1990's was one of the warmest decades on record and weather patterns in the Upper Midwest during this period were highly variable.

Year	Apr	il	May	/	Jun	е	Jul	ed to the 30-Year Norm July		ust
	Mankato <sup>1</sup>	New Ulm <sup>2</sup>	Mankato <sup>1</sup>	Nev Ulm						
1991	5.36	5.43	6.76	3.95	4.83	5.19	6.24	4.94	4.53	4.5 <sup>-</sup>
1992	2.05	2.81	2.15	2.21	4.50	4.21	4.77	3.33	5.19	5.19
1993	3.86	2.40	5.90	5.66	9.21	7.44	6.68	7.72	8.37	6.22
1994	4.19	4.51	1.66	2.60	7.64	6.22	5.11	2.92	6.32	7.18
1995	2.92	3.23	3.18	3.49	5.65	3.71	7.88	6.10	4.57	3.30
1996	0.66	0.37	4.06	3.87	8.96	4.35	1.96	2.59	6.18	3.8
1997	1.58	1.28	3.47	2.33	5.20	5.10	6.21	5.44	3.54	2.8
1998	3.43	0.86	4.11	3.11	4.92	5.68	2.50	6.28	4.03	3.08
1999	6.12	4.69	5.36	3.46	5.27	5.99	6.66	5.28	3.85	3.58
2000	1.14	0.76	5.77	8.49	7.73	4.34	4.48	4.17	2.20	5.8
2001	5.94	7.24	4.32	2.78	3.47	3.12	3.14	3.94	1.44	1.8
2002	2.13	2.36	2.05	2.38	5.09	10.05	2.00	3.62	4.92	3.4 <sup>-</sup>
lankato Normal Range <sup>1</sup>	2.04-4	.26	2.46-4	.11	4.04-7	.24	3.57-6	6.30	3.48-5	5.27
lew Ulm Normal Range <sup>2</sup>	1.57-3	.13	2.32-4	.10	3.31-5	5.30	2.38-4	4.83	2.96-4	4.75

Source: National Weather Service

\* Shaded cells in this table indicate rainfall outside of the normal range for a given weather station.

<sup>1</sup> Mankato, MN Weather Station (Station # 21-5073).

<sup>2</sup> New Ulm, MN Weather Station (Station # 21-5887).

+ The Minnesota Wetland Conservation Act defines normal rainfall as the 30-year average (1971-2000) and the normal range is defined as  $\pm$  ≥30% of normal rainfall.

#### National Wetland Inventory (NWI)

Digital NWI data were obtained and overlain on aerial photography and depicted on maps used during wetland fieldwork (USFWS 1990). The NWI is a useful tool with which to guide wetland fieldwork; however, this effort was completed over 20 years ago, is based on remote-sensing methods, and has not been systematically field-verified. Polygons mapped by the NWI are depicted on the Aerial Photo Exhibit.

#### Aerial Photography

TABLE 5

Digital color orthophotos were obtained from the US Department of Agriculture, Farm Service Agency (FSA) and used for the Aerial Photo Exhibit (at back of this report). Photos were taken between June 2002 and August 2002 during a time of full leaf out and mature crops prior to harvest. The resolution of the aerial photos used is approximately 2 meters. Aerial slides from the FSA were also obtained for other years as part of the aerial slide review conducted to determine the extent of agricultural wetlands. See Section 2.4 Aerial Slide Review for more information. The FSA aerial slides for the complete US 14 Project Area Polygon for the period 1991-2000 are burned on a CD, included at the back of this report. **Table 5** summarizes dates of aerial photography with respect to rainfall normalcy.

Year	Month	Rainfall Normalcy	
		New Ulm, MN	Mankato, MN
1991	August	Normal	normal
1992	July	Normal	normal
1993	July	Non-Normal (wet)	Non-normal (wet
1994	June	Non-normal ( <b>wet</b> )	Non-normal (wet
1995	August	Normal	normal
1996	July	Normal	Non-normal (dry
1997	July	Non-normal ( <b>wet</b> )	normal
1998	Unknown	Unknown	Unknown
1999	July	Non-normal (wet)	Non-normal (wet

Source: National Weather Service

#### Natural Resources Conservation Service (NRCS) Wetland Mapping

The NRCS has mapped several polygons in the vicinity of the US 14 project area as "AW" = Artificial Wetlands, "FW" = Farmed Wetlands, "W" = Wetlands, and "PC" = Prior Converted. However, very few of these NRCS designations have been certified (SWCD personal communication with Jeff Olson, November, 2004). Therefore, these polygons are not depicted in this report. Concurrence of the Technical Evaluation Panel (TEP) will be sought to use this Report and revisions of this Report as the basis for wetland resources in the US 14 Project Area Polygon rather than using previous wetland mapping from other sources such as NRCS mapping.

Public Waters and Public Waters Wetlands

Public Waters Wetlands are those wetlands regulated by the Minnesota Department of Natural Resources (Mn/DNR) and specifically excluded from jurisdiction under the Minnesota Wetland Conservation Act. The following, exerpted from the Mn/DNR webpage, summarizes key facts about Public Waters Wetlands:

"Public waters wetlands include all type 3, type 4, and type 5 wetlands (as defined in U.S. Fish and Wildlife Service Circular No. 39, 1971 edition) that are 10 acres or more in size in unincorporated areas or 2 ½ acres or more in size in incorporated areas (see <u>Minnesota Statutes</u> <u>Section 103G.005</u>, subd. 17b, Wetland Type). DNR Waters utilizes county-scale maps to show the general location of the public waters and public waters wetlands (lakes, wetlands, and watercourses) under its regulatory jurisdiction. These maps are commonly known as **Public Waters Inventory (PWI)** maps. The regulatory "boundary" of these waters and wetlands is called the <u>ordinary high water level</u> (OHWL)."

Locations of Public Waters and Public Waters Wetlands within the US 14 Project Area Polygon were determined with review of the Protected Waters and Wetlands Map for Nicollet County (Minnesota Department of Natural Resources 1996). Relevant data from the Protected Waters and Wetlands Map for Nicollet County has been transcribed onto Figure 3 (Appendix D), found at the back of this Report. Individual Protected Waters and Wetlands within the US 14 Project Area Polygon are described in Section 3.3 – Protected Water Wetlands.

### 2.2 Planning-Level Wetland Survey

Digital NWI (USFWS 2004) and hydric soils data (SSURGO 2004) were overlain on 2002 aerial photography for the US 14 Project Area Polygon. These data were used to assist with a "windshield level" verification of wetlands in the US 14 Project Area Polygon conducted on June 2, 2004. All areas mapped as wetland by NWI or hydric soil by SSURGO within the US 14 Project Area Polygon were observed generally from the nearest road. Field observations were recorded pertaining to the landscape position, dominant vegetation, and readily visible indicators of hydrology (crop drown-out, standing water, moist or cracked soil, tire ruts). However, field data collected at this stage was cursory and only recorded if readily observable from the roadside with binoculars.

Areas that, based on June 2, 2004 field observations, showed evidence of being potential wetlands were depicted as polygons on a preliminary GIS map of wetlands in the US 14 Project Area Polygon. The results of the "windshield" wetland survey were used to provide preliminary input to road designers on potential wetland locations. Depictions of estimated wetland boundaries at the Planning-Level are not to be construed as Wetland Delineations.

# 2.3 Three-Parameter Wetland Delineations (Non-Agricultural Wetlands)

Detailed wetland delineations were undertaken when proposed alignment alternatives were screened to those that will be carried forward in the DEIS. The delineation effort built upon the previous planning-level wetland assessment.

Wetland delineations in non-agricultural areas were conducted in accordance with the Routine On-site procedures in the *1987 US Army Corps of Engineers Wetland Delineation Manual* (hereafter, *The 1987 Manual*) and associated Regulatory Guidance Letters. Data on soils, hydrology, and vegetation (the three parameters mandated in the 1987 Manual) were collected at each potential wetland. At least one sampling transect was established at each wetland which included a sampling pit clearly on the upland side of the wetland boundary and another sampling pit clearly on the wetland side of the wetland boundary. The wetland boundary was established at the line where one or more of the mandatory parameters (hydric soils, indicators of wetland hydrology, and a predominance of hydrophytic vegetation) were not present.

The definition of hydric soils as used in this report is per *Field Indicators of Hydric Soils, Version 5.01, March 2003. The 1987 Manual* provides additional information relevant to the definition and characteristics of hydric soils. The *Soil Survey for Nicollet County, Minnesota* (NRCS 2004) was consulted for locations of polygons of hydric soils, potential inclusions of hydric soil, and non-hydric soils. Soil map units considered hydric in Nicollet County are based on the *Nicollet County Hydric Soils List* maintained by the Natural Resources Conservation Service (NRCS 2004).

The definitions of wetland hydrology and predominance of hydrophytic vegetation follow *The 1987 Manual.* The designation of Wetland Plant Indicator Status for plants observed in wetland and upland sampling pits follows *The National List of Plant Species That Occur in Wetlands – 1996 Update* (USFWS 1996).

Boundaries of Non-Agricultural wetlands were recorded with a Garmin e-trex Legend GPS Unit. Prior to fieldwork, the GPS Unit was tested for precision and accuracy and found to allow navigation to within ~2 meters of a test waypoint in an environment relatively free of tree cover. Selected wetland boundary points recorded with GPS were also flagged with fluorescent red pin flags numbered with the corresponding GPS waypoint number. The purpose of the flagging was to assist in the Technical Evaluation Panel (TEP) should it have a field component, yet to be scheduled.

### 2.4 Aerial Slide Review (Agricultural Wetlands)

Agricultural wetlands may be dry enough to grow crops in some years though wet enough in other years to stunt or prevent crop growth. Thus, interpretation of a sequence of years of aerial photography is used to identify agricultural wetlands. In general, areas that consistently show signatures of wetness are potential agricultural wetlands; whereas, areas that do not consistently show signs of wetness are not agricultural wetlands. Procedures used to map Agricultural Wetlands in the US 14 Project Area Polygon follow *The State of Minnesota Cooperative Agreement for Implementation of the Federal Wetland Delineation MOA*, specifically, *The Minnesota Wetland Mapping Conventions for the 1985 Food Security Act (FSA) (as amended) and Section 404 of the Clean Water Act (CWA).* 

For purposes of this Preliminary Draft Wetland Technical Report, we discuss "Non-Agricultural Wetlands" and "Agricultural Wetlands" in separate sections. See Sections 2.3, 3.1, and 3.2, respectively. "Agricultural Wetlands" were delineated with the NRCS off-site aerial slide review methodology. The reason we chose this dual methodology is because of the difficulty of

locating wet depressions in mature row crops. These wet depressions are more easy to locate using an aerial slide review and wetness signatures may not be present at the time of fieldwork. Further, offsite methods minimize intrusiveness in farmed land and avoid potential crop damage that may occur in the course of traversing it.

Aerial photography (35 millimeter slides) for the US 14 Project Area Polygon was obtained from the Farm Service Agency. The aerial slide set was composed of ten years of data, from 1991-2000 and 2002. The US 14 Project Area Polygon comprises portions of more than 40 sections, thus, the whole slide set contained over 400 photos. The Nicollet County Soil and Water Conservation District (SWCD) scanned these slides and burned them on a CD as high resolution jpeg images, organized by Township, Range, and Section (T-R-S). This CD is included at the back of this report. Aerial slides used for this effort were not ortho-rectified.

Aerial slide images for a ten-year sequence (for a given Township-Range-Section) were projected onto a wall with a digital projector. The aerial slides were not ortho-rectified. The scale of the first projected image of the sequence was measured and recorded based on known distances between roads or other recognizable features. The scale of subsequent projected images in the sequence was adjusted to match the scale of the first projection by adjusting the distance of the projector to the wall. Overhead transparency sheets were aligned with the projected images and taped to the wall. Areas showing signatures of wetness for a given year were outlined on the transparencies with permanent marker. Based on the known projection scale, the area (acres) of Agricultural Wetlands was determined and the locations were digitized onto ortho-rectified photography and displayed as a GIS layer.

Three corroborative data sources in the aerial slide review were used to draw conclusions concerning the designation of an area as wetland in the US 14 Project Area Polygon. These are:

- Wetness signatures recorded from the Farm Service Agency (FSA) aerial slides,
- Hydric soil mapping by the Nicollet County Soil Survey, and
- National Wetland Inventory (NWI) mapping.

These corroborative data sources were qualitatively weighted with respect to their estimated reliability in predicting the presence or absence of wetlands. The data source with the best likelihood of predicting the presence/ absence of wetlands is the FSA aerial slide review, the metric being the percentage of years that a wetness signature is observed. When corroborated with hydric soil mapping, the FSA slide review is a reliable off-site procedure for identifying potential wetlands. In our professional opinion, NWI mapping is an important corroborative source; however, this effort is outdated and most of it has never been field verified. Therefore, the use of NWI as corroborative evidence doesn't likely add much to ones acuity in identifying wetlands using off-site procedures.

**Table 6** shows the decision matrix for off-site wetland determinations prescribed for a "Pothole" dominated landscape modified from the Minnesota Wetland Mapping Conventions. The decision matrix in the Mapping Conventions was modified for purposes of this Report in order to provide a more conclusive wetland status within the US 14 Project Area Polygon. The following bulleted points summarize the contents of Table 6:

- If the aerial slide review revealed wetness signatures in ≤ 30% of years analyzed, then the
  parcel was designated as Non-wetland regardless of hydric soil mapping (yes or no) or NWI
  mapping (yes or no).
- If the aerial slide review revealed wetness signatures in >30% but <50% of years analyzed and corroborative sources (hydric soils mapping and NWI mapping) were both present, then the parcel was designated as Wetland.
- If the aerial slide review revealed wetness signatures in >30% but <50% of years analyzed and if either hydric soils mapping or NWI mapping were absent, then the conclusion drawn is that the parcel must be field verified.
- If the aerial slide review revealed wetness signatures in >30% but <50% of years analyzed and if both hydric soils mapping and NWI mapping were absent, then the conclusion drawn is that the parcel is Non-wetland.
- If the aerial slide review revealed wetness signatures in ≥50% of years analyzed and if both hydric soil mapping and NWI mapping were present then the parcel was designated as Wetland.
- If the aerial slide review revealed wetness signatures in ≥50% of years analyzed and if hydric soil mapping was present and NWI mapping was not present then the parcel was designated as Wetland.
- If the aerial slide review revealed wetness signatures in ≥50% of years analyzed and if hydric soil mapping was not present (regardless of NWI mapping) then the conclusion drawn is that the parcel must be field verified.

Decision Matrix for Off-Site Wetland Determinations for a Pothole Dominated Landscape								
Farm Service Agency (FSA) Slides	Map Units: Hydric Soils	National Wetland Inventory (NWI) Mapping	Wetland Status					
≤ 30%	Yes or No	Yes or No	Non-wetland					
>30% and <50%	Yes	Yes	Wetland					
>30% and <50%	Yes	No	Field verify					
>30% and <50%	No	Yes	Field verify					
>30% and <50%	No	No	Non-wetland					
≥ 50%	Yes	Yes	Wetland					
≥ 50%	Yes	No	Wetland					
≥ 50%	No	Yes	Field verify					
≥ 50%	No	No	Field verify					

Farm Service Agency Map Units: Hydric Soils National Wetland Wetla (FSA) Slides National Wetland Wetla								
Source: Modified from Minnesota Wetland Mapping Conventions for the 1985 Food Security Act (FSA) (as amended) and								
Section 404 of the Clean Water Act (CWA). <sup>1</sup> Aerial slides taken after a month of non-normal rainfall, i.e. plus or minus ≥ 30% of normal, should be used with caution in the analysis or not used at all.								

Hydric soil mapping (NRCS 1994), the NWI (USFWS 1990), and climatic data (National Weather Service 2004) were used to augment the aerial slide interpretation effort. Hydric soil mapping and NWI data are GIS layers displayed in **Figure 3** (Aerial Photo Exhibit). Climatic data were used to determine rainfall prior to the date an aerial photo was taken. Analysis of rainfall is provided in Section 2.1 – Review of Published Sources (See **Table 4**).

Results of the Aerial Slide Review are summarized in Section 3.2 – Agricultural Wetlands and in Appendix B – Data Sheets for Aerial Slide Review. Agricultural Wetlands are depicted on **Figure 3** (Aerial Photo Exhibit – Appendix D).

### 2.5 Wetland Functional Assessment (MnRAM v. 3.0)

Wetland functions were assessed for wetlands within the US 14 Project Area Polygon using the Minnesota Routine Assessment Method, version 3.0 (MnRAM v. 3.0). For purposes of this Preliminary Draft Report and the Draft EIS, project area wetlands were categorized into logical functional groupings (A-G). Thus, MnRAM v. 3.0 was not performed on each wetland within the US 14 Project Area Polygon; rather, MnRAM v. 3.0 was performed on groupings of wetlands that express functionality similarly. MnRAM v. 3.0 in the Draft EIS phase of this project thus serves as a means with which to compare wetland functional impacts among proposed US 14 alternatives. Wetland functional groupings are as follows:

- Functional Grouping A Isolated (hydrologically) basins with emergent vegetation.
- Functional Grouping B Isolated (hydrologically) agricultural basins, vegetation type unknown.
- Functional Grouping C Isolated (hydrologically) agricultural basins, no hydrophytic vegetation apparent (crops only).
- Functional Grouping D Isolated (hydrologically) basins with perennial woody vegetation.
- Functional Grouping E Non-isolated (hydrologically) basins with emergent or herbaceous vegetation.
- Functional Grouping F Non-isolated (hydrologically) basins with perennial woody vegetation.

• Functional Grouping G – Isolated (hydrologically) basins with open water or excavated ponds.

Detailed MnRAM v. 3.0 forms for each functional grouping (A-G) are provided in Appendix C of this Preliminary Draft Report.

# 3.0 Results

Aerial Slide Review. Two-hundred and three (203) depressional areas were analyzed with the Aerial Slide Review, some of which lie outside of the current US 14 Project Area Polygon and many of which were determined to be "Non-Wetlands" per off-site delineation procedures. Of these 203 depressional areas, 39 lie wholly or partly in the US 14 Project Area Polygon *and* exhibit some evidence of wetlands per off-site delineation procedures. Of these 39 polygons, 30 were determined to meet the definition of "Wetlands" per off-site delineation procedures and 9 polygons were determined to require "Field Verification". The total area of these 39 polygons within the US 14 Project Area Polygon is 170.3 acres. The total area of the 30 polygons that meet the definition of "Wetlands" per off-site delineation procedures is 145.4 acres. The total area of the 9 polygons for which "Field Verification" will be necessary is 24.9 acres.

Routine On-Site Wetland Delineation. The Routine On-Site Wetland Delineation effort identified 22 non-agricultural wetlands that lie wholly or partly in the US 14 Project Area Polygon, with a total area of 143.5 acres.

Palustrine wetland types identified within the US 14 Project Area Polygon include floodplain forest, wet meadow, sedge meadow, scrub-shrub wetland, emergent marsh, and agricultural wetlands. The *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin 1979) assigns codes to these wetland types consistent with usage in the NWI. The publication *Wetlands of the United States* (a.k.a 'Circular 39') (Shaw and Fredine 1956) assigns codes to wetland types consistent with usage in the Minnesota Wetland Conservation Act. **Table 7** summarizes the areal extent of wetland types delineated with the Routine On-Site Delineation and the Aerial Slide Review (Off-site delineation procedures) in the US 14 Project Area Polygon.

#### TABLE 7

Delineation Methodology							
Circular 39 (Cowardin Code)	Routine On-Site (acres)	Aerial Slide Review (acres)	Total Area (acres)	Percentage Area of US 14 Project Area Polygon 2			
Type 1 (PEMA)	0.0	145.4	145.4	2.1%			
Type 2 (PEMB)	14.9	0.0	14.9	0.2%			
Type 3 (PEMC)	52.7	0.0	52.7	0.8%			
Type 4 (PEMC, PEMF)	0.0	0.0	0.0	0.0%			
Type 5 (PEMF, POWF)	2.9	0.0	2.9	0.04%			
Type 6 (PSS1A, PSS1C)	1.8	0.0	1.8	0.03%			
Type 7 (PFO1A, PFO1C)	71.2	0.0	71.2	1.0%			
Type 8 (PFO –various)	0.0	0.0	0.0	0.0%			
Total	143.5	145.4	288.9	4.2%			

	Delineation	Methodology		
Circular 39 (Cowardin Code)	Routine On-Site (acres)	Aerial Slide Review (acres)	Total Area (acres)	Percentage Area of US 14 Project Area Polygor 2
(Areas Requiring "Field Verification")	0.0	24.9	24.9	0.4%
	143.5	170.3	313.8	4.9%

<sup>1</sup> Translations of Cowardin Codes and Circular 39 Codes are per the Minnesota Wetland Conservation Act. These acreages are based on data analyzed on January 18, 2005.

<sup>2</sup>Assumes US 14 Project Area Polygon is 6,902 acres.

Note: Acreages in this table do not represent wetland impacts, rather they represent the total extent of wetlands in the US 14 Project Area Polygon.

Detailed descriptions of individual wetlands in the US 14 Project Area Polygon are provided in Appendix A - Routine On-Site Wetland Delineation Forms, Appendix B – Aerial Slide Review Data Sheets, and Appendix C – Minnesota Routine Assessment Method (MnRAM v.3.0) Forms.

As a result of agency coordination including the Technical Evaluation Panel (TEP), we expect that the jurisdictional status of wetlands in the US 14 Project Area Polygon will be determined. In future updates to this Report, no distinction will be made between "Non-Agricultural Wetlands" and "Agricultural Wetlands"; rather all areas determined to be wetlands will be categorized into wetland types per Circular 39.

### 3.1 Non-Agricultural Wetlands

Table 11 (Appendix E) summarizes non-agricultural wetlands in the US 14 Project Area Polygon.

### 3.2 Agricultural Wetlands

Table 12 (Appendix F) summarizes agricultural wetlands in the US 14 Project Area Polygon.

### 3.3 Public Waters and Public Waters Wetlands

Relevant data from the Nicollet County Protected Waters and Wetlands Map was transcribed onto Figure 3 (Appendix D). Information about Public Waters and Public Waters Wetlands in the US 14 Project Area Polygon is included in **Table 11** (Appendix E) and **Table 12** (Appendix F).

Two Pubic Waters Wetlands and two Public Waters are mapped partly or wholly within the US 14 Project Area Polygon, summarized as follows:

- Public Water Wetland "26W" is mapped south of the City of Nicollet, MN. The Protected Wetland (26W) corresponds in part with delineated wetlands "W-NI-28-6-1" and "AW-NI-28-9-1."
- **Public Water Wetland** *"62W"*, an abandoned River oxbow, is mapped in the bottoms of the Minnesota River just northwest of Hwy 37
- **Public Water**, **"60P**" is mapped in a meander loop of the Minnesota River between the western project area terminus and the US 14/ Hwy 37 intersection.
- Heyman's Creek, in portions within the US 14 Project Area Polygon, is mapped as a Public Water.

### 3.4 Preliminary Discussion of Wetland Sequencing

Wetland sequencing refers to the planning process which demonstrates to the degree practicable wetland avoidance, wetland impact minimization, and mitigation for unavoidable wetland impacts. This Preliminary Draft Wetland Technical Report describes and depicts precise wetland boundaries within the US 14 Project Area Polygon; with wetland resources defined, road designers are able to develop alignment alternatives with wetland sequencing rules in mind.

### 3.4.1 Wetland Impact Avoidance

Road designers have been presented with digitized wetland boundaries within the US 14 Project Area Polygon so that they can design alternatives that to the extent practicable avoid wetlands. Certainly, other natural and socio-economic resources bring to bear on alternative and alignment decisions as well, thus, the planning process becomes one of best-balance of impacts to these resource types. Given the abundance of wetlands in the US 14 Project Area Polygon it will be impracticable to design alternatives that meet safety guidelines and completely avoid impacts to wetlands. Detailed efforts to avoid wetland impacts in the course of road design will be documented in the update to this Preliminary Draft Wetland Technical Report, after a Preferred Alternative has been selected. For this Preliminary Draft Wetland Technical Report, the following points summarize successful wetland avoidance implemented thus far in the roadway planning process:

- The Far North Bypass of the City of Courtland, MN was eliminated as an alternative early in the planning process in part because of the potential for high acreage impacts to wetlands. This alternative will not be carried forward for discussion in the Draft Environmental Impact Statement (DEIS) associated with this road improvement project.
- Alternative E-3 was designed to avoid impacts to Mn/DNR Protected Wetland "26W" by
  passing just to the north of its northernmost edge. The northern portion of this Protected
  Wetland has been delineated as wetland "W-NI-28-9-1" and the southern portion of this
  Protected Wetland has been delineated as wetland "AW-NI-28-9-1".
- Alternative E-4 was designed to avoid an area mapped by NWI as a wetland in the southwest corner of Section 8, Range 28W, Nicollet Township. While it was found during fieldwork and the aerial slide review that this area did not meet the criteria of wetlands, avoidance of this area demonstrates attempts at wetland avoidance.

A more detailed account of alternatives screening and alignment adjustment pertinent to wetland avoidance can be found at the project website at <a href="http://www.dot.state.mn.us/d7/projects/14newulmtonmankato/">http://www.dot.state.mn.us/d7/projects/14newulmtonmankato/</a>

### 3.4.2 Wetland Impact Minimization

Several design strategies and Best Management Practices (BMPs) can beused to minimize unavoidable wetland impacts. Design strategies under consideration for the US 14 road improvement project include the following:

- Use of existing US 14 alignment where possible. Alternatives under consideration in the Draft EIS that use existing alignment are E-1 and W-1. Use of existing alignment has the potential to minimize wetland impacts because only the roadway width increase causes impacts.
- Reduction in median width. Median width reduction decreases the roadway footprint and thereby the potential for wetland impacts. Median reduction is not a safe strategy around intersections because the median provides a refuge for crossing and left turning vehicles; however, this strategy may be employed safely in non-intersection road sections. The west portion of alternative W-1 will have a reduced median to minimize impacts to the wetland and floodplain in the bottoms of the Minnesota River.
- Increase in ditch slope. Increasing the slope of the ditch adjacent to the outside lanes would reduce the footprint of the roadway. The typical rural cross section calls for 1:6 (vertical:horizontal) slopes. Thus, either, a 1:5 or 1:4 slope with additional unpaved shoulder width are acceptable strategies to minimize wetland impacts. Steeper slopes are not acceptable because of the hazard presented to drivers running off the road or hitting guard rail. Increased use of guard rail can also make roadway snow removal more difficult.
- Reduction in elevation of road profile. Lowering the road profile would reduce the footprint of the roadway. This strategy has limited application because the roadway should be at least 5 feet above the water table to prevent water damage to the roadbed, and in some areas, the roadway should be at least 4 feet above the adjacent ground to allow snow to blow off the road and decrease the hazard posed by drifting snow.
- **Construction of bridges.** Bridging over wetlands is applicable only where there are exceptional wetlands because of the cost of bridging and the reduction in safety. There are no such wetlands in the US 14 Project Area Polygon, therefore bridge construction is not an appropriate minimization strategy.

Best Management Practices (BMPs) that may serve to minimize wetland impacts for the US 14 road improvement project includeproperly installed silt fences, establishment of no intrusion areas during road construction, rapid-revegetation of side slopes with anti-erosion cover crops with techniques such as hydro-seeding or seed drills, and the use of appropriate anti-erosion technologies such as jute mats or hay-disking. Efforts to minimize wetland impacts per delineated wetland in the US 14 Project Area Polygon will be documented in updates to this Preliminary Draft Wetland Technical Report, after a Preferred Alternative has been selected.

### 3.4.3 Wetland Mitigation

Abundant opportunities for wetland mitigation are present within the US 14 Project Area Polygon. Drained hydric soils, nearly ubiquitous in the eastern portion of the US 14 Project Area Polygon, have high potential for successful wetland restoration. It is anticipated that wetland mitigation required for the US 14 road improvement project will be accomplished in conjunction with the long-term acquisition goals of the Swan Lake Wildlife Management Area, state land managed by the Minnesota Department of Natural Resources (MnDNR). Landowners willing to sell parcels suitable for wetland mitigation will be identified through a dialogue with the MnDNR and the Nicollet County Soil and Water Conservation District (SWCD). An analysis of potential parcels with respect to their suitability for wetland mitigation and availability for acquisition will be prepared after a preferred alternative has been identified and will be documented in the update to this Wetland Technical Report, after a Preferred Alternative has been selected.

### 3.5 Preliminary Estimate of Wetland Impacts per Alternative

The design of the proposed US 14 alternatives are currently in an early phase of engineering. Wetland impacts reported in the following tables are intended to serve as preliminary estimates. In this preliminary phase of roadway engineering, it is assumed that the preliminary ROW is a 300 foot wide band uniform in width across the entire length of an alternative. For purposes of this Report, it is assumed that any portion of a delineated wetland that lies within this 300 foot wide band will be considered an impact. More exact roadway footprints will not be known until the vertical alignment has been established. Wetland impacts will be updated in the "Final" version of this Report, after a Preferred Alternative has been selected. **Figure 2** and **Figure 3** (Appendix D) show the location of the proposed US 14 alternatives.

Wetland impacts are summarized for the western section of the US 14 Project Area Polygon (See **Table 8**), the eastern section of the US 14 Project Area Polygon (See **Table 9**), and finally the whole US 14 Project Area Polygon (See **Table 10**). The western section of the US 14 Project Area Polygon (containing three proposed alternatives) is from the western project terminus to roughly County Road 12 (west of Courtland). The eastern section of the US 14 Project Area Polygon (containing four proposed alternatives) is from roughly County Road 12 eastward to the eastern project terminus and includes bypasses of the Cities of Courtland and Nicollet. The dividing line between the western and eastern sections of the US 14 Project Area Polygon is depicted as a dashed white line on **Figure 3** (Appendix D).

#### TABLE 8

Summary of Wetland Impacts by Wetland Type in Western Section of the US 14 Project Area Polygon

Wetland Type (Circ.	I	mpacts per Proposed Alternative – ac	; <sup>1*</sup>
(Circ. 39)			
	Alt W1	Alt W2	Alt W3

		Alt W1			Alt W2			Alt W3	
	Known	Require Field Verify	Total	Known	Require Field Verify	Total	Known	Require Field Verify	Total
Type 1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Type 2	1.2	0.0	1.2	1.3	0.0	1.3	1.3	0.0	1.3
Туре 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 5	0.0	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5
Туре 6	1.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0
Type 7	5.8	0.0	5.8	0.0	0.0	0.0	7.4	0.0	7.4
Туре 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	8.0	0.1	8.1	1.8	0.0	1.8	10.2	0.0	10.2

Note: These data are based on impact calculation on January 18, 2005.

<sup>1</sup> Alternatives as reported in this table are depicted on Figure 3 (Appendix D).

\* Impacts associated with all interchanges in the Western Segment are included in the acreages above.

#### TABLE 9

Summary of Wetland Impacts by Wetland Type in Eastern Section of Project Area Polygon

Wetland

### Туре-

Circ. 39

		Alt E1			Alt E2			Alt E3			Alt E4	
	Known	Require Field Verify	Total									
Type 1	5.3	0.5	5.8	4.4	2.3	6.7	17.8	0.1	17.9	4.7	0.0	4.7
Type 2	4.8	0.0	4.8	3.3	0.0	3.3	1.2	0.0	1.2	1.2	0.0	1.2
Туре 3	2.3	0.0	2.3	5.0	0.0	5.0	0.1	0.0	0.1	0.1	0.0	0.1
Type 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Туре 6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type 7	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Туре 8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	12.5	0.5	13.0	12.8	2.3	15.1	19.1	0.1	19.2	6.0	0.0	6.0

Impacts per Proposed Alternative – ac (ha)<sup>1\*</sup>

Note: These data are based on impact calculation on January 18, 2005.

<sup>1</sup> Alternatives as reported in this table are depicted on Figure 3 (Appendix D).

\* There would be no wetland impacts associated with the Hwy 99 Interchange for any proposed alternative. However, selection of the Hwy 99 Interchange would preclude some wetland impacts associated with the Hwy 23 Interchange for alternatives E1, E2, and E3. Specifically, the Hwy 99 Interchange would preclude 0.5 acres wetland impacts associated with E1, 0.2 acres with E2, and 4.1 acres with E3.

#### TABLE 10

Summary of Potential Wetland Impacts for Combined Eastern and Western Sections of the US 14 Project Area Polygon

Wetland Type (Circular 39)	Range of Potential Wetland Impacts for Western Segment – ac	Range of Potential Wetland Impacts for Eastern Segment– ac	Range of Total Potential Wetland Impacts (western and eastern Segment) – ac
Туре 1	0.0-0.1	4.4-17.8	4.4-17.9
Туре 2	1.2-1.3	1.2-4.8	2.4-6.1
Туре 3	0.0-0.0	0.1-5.0	0.1-5.0
Type 4	0.0-0.0	0.0-0.0	0.0-0.0
Туре 5	0.0-0.5	0.0-0.0	0.0-0.5
Туре 6	1.0-1.0	0.0-0.0	1.0-1.0
Туре 7	0.0-7.4	0.0-0.1	0.0-7.5

TABLE 10 Summary of Potentia	I Wetland Impacts for Combined East	stern and Western Sections of th	e US 14 Project Area Polygon
Wetland Type (Circular 39)	Range of Potential Wetland Impacts for Western Segment – ac	Range of Potential Wetland Impacts for Eastern Segment– ac	Range of Total Potential Wetland Impacts (western and eastern Segment) – ac
Туре 8	0.0-0.0	0.0-0.0	0.0-0.0
Total	2.2-10.3	5.7-27.7	7.9-38.0

Note: These data are based on impact calculation on January 18, 2005.

# 3.6 Potential Incidental Wetlands in the US 14 Project Area Polygon

Incidental wetlands are those wet areas formed as a result of beaver activity, culvert blockage, and other activities not intended to create or restore wetlands. Incidental Wetlands are exempt from jurisdiction under the Minnesota Wetland Conservation Act though not necessarily under the Clean Water Act. If Mn/DOT and wetland regulatory agencies are in agreement that certain wetlands in the project area are Incidental, then Mn/DOT should prepare a Certificate of Exemption for each of these wetlands. Certificates of Exemption should be submitted as part of the permitting phase of the project.

One potential Incidental Wetland in the US 14 Project Area Polygon is "W-NU-30-21-2". This wetland is in part a ditch on the north side of US 14 near the western project terminus. The ditch bottom has been unmaintained and trees there are approximately 15-20 years old.

# 4.0 Conclusions

This Preliminary Draft Wetland Technical Report is submitted to Mn/DOT and appropriate wetland regulatory agencies (state and federal) prior to the wetland permitting phase of the US 14 road improvement project. This Report is submitted to wetland regulatory agencies early in the planning process in order to provide ample time for their review and comment.

Wetland impacts per proposed alternative as summarized in this Wetland technical report are only the best estimate possible given the current preliminary engineering phase of road design. It is expected that final engineering phases for this road improvement project will allow a more refined and precise analysis of wetland impacts per proposed alternative. Further, a preferred alternative will be selected during the Final Environmental Impact Statement (FEIS) phase of this project. Wetland impacts associated with the preferred alternative will be known to a degree of precision and accuracy appropriate for submittal of wetland permitting.

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#### DATA FORM ROUTINE WETLAND DETERMINATION (1987 COE Wetlands Delineation Manual)

Project/Site:	US 14 (North Mankato to New UIm, MN)			Date:	9-20-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NU-30-21-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)				

#### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator	
1. <u>Acer saccharinum</u>	Τ		9			
2. Fraxinus pennsylvanicus	SH		10			
3. <u>Acer negundo</u>	SH		11			
4. Phalaris arundinacea	Н		12			
5. <i>Vitis riparia</i>	Vine		13			
6			14			
7			15			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%						
Remarks: Disturbances in floodplain as a result of dumping (concrete rubble, etc.)						

#### HYDROLOGY

Recorded Data (Describe in Remar	ks):	Wetlar	Wetland Hydrology Indicators:		
Stream, Lake or Tid	e Gauge	Prim	Primary Indicators:		
Aerial Photographs			Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
		Х	Drift Lines		
Field Observations:		Х	Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	(in.)	Secor	ndary Indicators (2 or more required):		
			Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	(in.)	Х	Water-Stained Leaves		
			Local Soil Survey Data		
Depth to Saturated Soil	(in.)		FAC-Neutral Test		
			Other (Explain in Remarks)		
			-		
Remarks: Drift lines of large woody debris forest floor.	s observed on forest	floor. Dr	ift lines of herbaceous vegetation observed at 3 feet above		

Map Unit Name (Series and Phase): Nishna silty clay loam Drainage Class: Poorly Drained Field Observations Taxonomy (Subgroup): Cumulic Haplaquolls Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, (Munsell Moist) Size/Contrast Structure, etc. Depth (inches) Horizon (Munsell Moist) 0-4 10YR 3/1 А None None Sandy loam 4-15 А 10YR 3/1 10YR 3/3 Few/ small Silty clay loam 10YR 2/1 Organic streaking Hydric Soil Indicators: Concretions (Redox concentrations) Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Х Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low chroma matrix and redox concentrations in combination with a low-lying landscape position are evidence of hydric soils. Soils in this sampling pit meet hydric soil criteria.

#### WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: All three mandatory criteria of	of wetlands a	are met at tl	nis sampling pit.

SOILS

#### DATA FORM ROUTINE WETLAND DETERMINATION (1987 COE Wetlands Delineation Manual)

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	9-20-2004	
Applicant/Owner:	MN DOT District 7			County:	Nicollet	
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota	
Do Normal Circumstances exist on the site?		Yes	No	Community ID: W-NU-30		W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:		Transect 1
Is the area a potential Pro	Yes	No	Plot ID:		Upland Pit	
(If needed, explain on reverse)						

#### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Coronilla varia</u>	Н	UPL	9		
2. <u>Cirsium arvense</u>	Н	FACU	10		
3. Phalaris arundinacea	Н	FACW+	11		
4			12		
5			13		
6			14		
7			15.		
8.			16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	33 %		
Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.					

#### HYDROLOGY

Recorded Data (Describe in Re	emarks):	Wetland Hydrology Indicators:			
Stream, Lake o	r Tide Gauge	Primary Indicators:			
Aerial Photogra	aphs	Inundated			
Other		Saturated in Upper 12 Inches			
No Recorded Data Available		Water Marks			
		Drift Lines			
Field Observations:		Sediment Deposits			
		Drainage Patterns in Wetlands			
Depth of Surface Water: (in.)		Secondary Indicators (2 or more required):			
-		Oxidized Root Channels in Upper 12 Inches			
Depth to Free Water in Pit:	(in.)	Water-Stained Leaves			
-		Local Soil Survey Data			
Depth to Saturated Soil (in.)		FAC-Neutral Test			
		Other (Explain in Remarks)			
Remarks: No indicators of wetland h	drology were observed a	t this sampling pit.			
	,	······································			

Map Unit Name (Series and Phase	e): <u>Terril loa</u>	m (94B)		Drainage Class:	Moderately drained	well-						
Taxonomy (Subç	roup): <u>Cumulic</u>	Hapludolls	Field Observations Confirm Mapped Type?	Yes	No							
Profile Description	<u>on</u>											
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast		concretions, ure, etc.						
0-6	A	2.5Y 5/4	None		Sand	y clay						
6-12	В	10YR 3/2	None		Claye	y sand						
Hydric Soil Indic	ators:											
	Histosol		Conc	retions (Redox concentratio	ins)							
	Histic Epipedon		High	High Organic Content in Surface Layer in Sandy Soils								
Sulfidic Odor Organic Streaking in Sandy Soils												
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	5	dy Soils						
	_Sulfidic Odor _Aquic Moisture F	Regime		nic Streaking in Sandy Soils d on Local Hydric Soils List	5	dy Soils						
	-	0	Lister	0 5	5	dy Soils						
 X	_ Aquic Moisture F	ions	Lister	d on Local Hydric Soils List	5	dy Soils						

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: This sampling pit does not m	eet any of t	he three ma	ndatory criteria of wetlands.		

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9-20-2	2004		
Applicant/Owner:	MN DOT District 7	County:	Nicol	let		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minn	esota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:	W-NU-30-21-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:		Transect 2
Is the area a potential Pro	Yes	No	Plot ID:		Upland Pit	
(If needed, explain or	n reverse)					

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator	
1. Ambrosia trifida	Н	FAC+	9			
2. Ambrosia artemisiifolia	Н	FACU	10			
3. <u>Oenothera biennis</u>	Н	FACU	11			
4. <u>Solidago gigantea</u>	Н	FACW	12			
5. <u>Setaria glauca</u>	Н	FAC	13			
6. Fraxinus pennsylvanica	Н	FACW	14			
7. Rudbeckia hirta	Hz	FACU	15			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 57 %						
Remarks: A predominance of h	ydrophytic vege	etation is present a	at this sampling pit.			

Recorded Data (Describe in Remarks):			Wetland	Hydrology Indicators:	
Stream, Lake or Tide Gauge			Primary Indicators:		
Aerial Photog	raphs			Inundated	
Other				Saturated in Upper 12 Inches	
No Recorded Data Available				Water Marks	
				Drift Lines	
Field Observations:				Sediment Deposits	
				Drainage Patterns in Wetlands	
Depth of Surface Water:	None	(in.)	Second	ary Indicators (2 or more required):	
		-	Х	Oxidized Root Channels in Upper 12 Inches	
Depth to Free Water in Pit:	None	(in.)		Water-Stained Leaves	
		-		Local Soil Survey Data	
Depth to Saturated Soil	>15	(in.)		FAC-Neutral Test	
		-		Other (Explain in Remarks)	
Remarks: The criterion of wetland h	ydrology wa	s not met at th	is samplin	a pit.	
	5 55 -		T.		

Map Unit Name (Series and Phase	e): Nishna (5	75) silty clay loam		Drainage Class:	Poorly						
Taxonomy (Subg	Yes	No									
Profile Description											
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, C Structu						
0-15	Α	10YR 2/1	None		Fine sandy	clay loam					
Hydric Soil India	ators:										
	Histosol		Conc	retions (Redox concentratio	ns)						
	Histic Epipedon		High	Organic Content in Surface	Layer in Sand	dy Soils					
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	i						
	_ Aquic Moisture R	legime	Liste	d on Local Hydric Soils List							
	_Reducing Conditi	ions	Liste	d on National Hydric Soils I	_ist						
X	_Gleyed or Low-C	hroma Colors	Othe	r (Explain in Remarks)							
				ne definition in the 1987 Ma	nual. Whether	soils here					
meet the definition	n of hydric solls per	<i>r Field Indicators</i> is ir	iconclusive because	e of the thick A horizon.							

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No		1	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	'es N	lo
Remarks: This sampling pit meets 2 ou	t of the 3 ma	ndatory pa	rameters of wetlands; therefore this sampling pit is no	t wetland.	

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9-22-2004		
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 2
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Wetland Pit
(If needed, explain or	n reverse)				

#### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator			
1. Acer saccharinum	Т	FACW	9					
2. <i>Salix exigua</i>	Sh	OBL	10					
3. Xanthium strumarium	Н	FAC	11					
4. Bidens aristosus	Н	FACW	12					
5. <i>Rumex crispus</i>	Н	FAC+	13					
6. Ambrosia trifida	Н	FAC+	14					
7. Setaria faberi	Η	FACU+	15					
8. Polvaonum amphibium	Н	OBL	16.					
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).								

Remarks: A predominance of hydrophytic plants are present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

				nd Hydrology Indicators:	
Stream, Lake	or Tide Gau	ge	Primary Indicators:		
Aerial Photog	graphs		Х	Inundated	
Other			Х	Saturated in Upper 12 Inches	
No Recorded Data Available	ý			Water Marks	
				Drift Lines	
Field Observations:				Sediment Deposits	
				Drainage Patterns in Wetlands	
Depth of Surface Water:	0	(in.)	Seco	- ndary Indicators (2 or more required):	
		_		Oxidized Root Channels in Upper 12 Inches	
Depth to Free Water in Pit:	1	(in.)		Water-Stained Leaves	
		_		Local Soil Survey Data	
Depth to Saturated Soil	0	(in.)		FAC-Neutral Test	
		_		Other (Explain in Remarks)	
				-	
Remarks: The criterion of wetland h	ydrology is i	met at this sar	npling pi	t.	

Map Unit Name (Series and Phase	e): <u>Nishna sil</u>	ty clay loam (575)		Drainage Class:	Poorly drained					
Taxonomy (Subg	roup): <u>Cumulic I</u>	Field Observations Confirm Mapped Type?	Yes No							
Profile Description										
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.					
0-15	Α	10YR 2/1	None		Silty clay					
Hydric Soil Indic	ators:									
	Histosol		Conc	retions (Redox concentratio	ns)					
	Histic Epipedon		High	Organic Content in Surface	Layer in Sandy Soils					
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils						
	Aquic Moisture R	legime	Liste	d on Local Hydric Soils List						
	Reducing Conditi	ions	Liste	d on National Hydric Soils I	_ist					
X	Gleyed or Low-C	hroma Colors	Othe	r (Explain in Remarks)						
				e definition in the <i>1987 Mar</i>	nual. Whether soils here					
neet the definition	for hydric sons per	<i>Field Indicators</i> is in	ICONCLUSIVE DECAUSE	e of the thick A horizon.						

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No No	Is this Sampling Point Within a Wetland?	Yes No
Remarks: This sampling pit meets all 3	mandatory cr	riteria of w	retlands.	

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	9/22/2004		
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 3
Is the area a potential Problem Area?			No	Plot ID:	Upland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species Stratum Indicator					
1. <u>Acer negundo</u>	Т	FACW-	9					
2. <u>Rudbeckia laciniata</u>	Н	FACW+	10					
3. Laportea canadensis	Н	FACW	11					
4			12					
5			13					
6			14					
7.			15.					
8.			16.					
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %								
Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.								

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gaug	le	Primary Indicators:		
Aerial Photog	raphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	None	(in.)	Secondary Indicators (2 or more required):		
		-	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>16	(in.)	Water-Stained Leaves		
		-	Local Soil Survey Data		
Depth to Saturated Soil	>16	(in.)	FAC-Neutral Test		
			Other (Explain in Remarks)		
Remarks: Indicators of wetland hyd	rology were	not observed a	at this site.		

Map Unit Name (Series and Phase	e): <u>Terril loar</u>	m (94B)_	Drainage Class:	Moderately well drained				
Taxonomy (Subg	roup): <u>Cumulic I</u>	Hapludoll	Field Observations Confirm Mapped Type?	Yes No				
Profile Description								
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.			
0-12	A	10YR 3/1	None		Fine sandy silt loam			
12-16	C	10YR 3/2	10YR 4/3	Common, small	Fine sand			
			10YR 4/1	Common, small				
Hydric Soil India	ators:							
	Histosol		X Conc	retions (Redox concentratio	ns)			
	- Histic Epipedon		High	Organic Content in Surface	e Layer in Sandy Soils			
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	i			
	- Aquic Moisture R	Peqime	Liste	ted on Local Hydric Soils List				
	Reducing Conditi	0						
				sted on National Hydric Soils List				
X Gleyed or Low-Chroma Colors Othe				r (Explain in Remarks)				
				position and redox concent pling pit meet the definitior				
1987 Manual and F								

Hydrophytic Vegetation Present? Wetland Hydrology Present?	Yes Yes	No No						
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No			
Remarks: This sampling pit meets 2 of the 3 mandatory parameters of wetlands. This sampling pit is not within wetland.								

Project/Site:	US 14 (North Mankato to New UIm, MN)	Date:			
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NU-30-21-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 3
Is the area a potential Problem Area?			No	Plot ID:	Wetland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator			
1. <u>Fraxinus pennsylvanica</u>	Τ	FACW	9					
2. Acer saccharinum	Τ	FACW	10					
3. Laportea canadensis	Н	FACW	11					
4. <u>Pilea pumila</u>	Н	FACW	12					
5			13					
6			14					
7			15					
8.			16.					
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %								
Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.								

Recorded Data (Describe in F	Remarks):		Wetlan	d Hydrology Indicators:		
Stream, Lake	,	ge	Primary Indicators:			
Aerial Photog	raphs			Inundated		
Other				Saturated in Upper 12 Inches		
No Recorded Data Available				Water Marks		
			Х	Drift Lines		
Field Observations:				Sediment Deposits		
				Drainage Patterns in Wetlands		
Depth of Surface Water:	Depth of Surface Water: None (in.)		Secondary Indicators (2 or more required):			
		-		Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>14	(in.)		Water-Stained Leaves		
		-		Local Soil Survey Data		
Depth to Saturated Soil	>14	(in.)		FAC-Neutral Test		
		-		Other (Explain in Remarks)		
Remarks: Driftlines of herbaceous vegetation and woody debris are indicative of flooding. Bare areas devoid of vegetation were observed at this sampling pit; indicative of standing water during the growing season. This sampling pit meets the criterion of wetland hydrology.						

Map Unit Name (Series and Phase)	): Nishna si	Ity clay loam (575)	Drainage Class:	Poorly drair	Poorly drained			
Taxonomy (Subgr	oup): Cumulic	Haplaquoll	Field Observations Confirm Mapped Type?	Yes	No			
Profile Descriptio	<u>n</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast		oncretions, ure, etc.		
0-14	А	10YR 2/1	7.5YR 3/4	Common/small	Sandy c	lay loam		
14+	А	10YR 2/1	7.5YR 3/4	Common/small	Fine	sand		
			10 YR 4/1	Common/small				
Hydric Soil Indica	ators:							
	Histosol		X Cond	retions (Redox concentratio	ons)			
	Histic Epipedon		High	h Organic Content in Surface Layer in Sandy Soils				
	Sulfidic Odor		0rga					
			0	ganic Streaking in Sandy Soils				
	Aquic Moisture F	Regime	Liste	isted on Local Hydric Soils List				
	Reducing Condit	ions	Liste	isted on National Hydric Soils List				
X	Gleyed or Low-C	chroma Colors	Othe	r (Explain in Remarks)				
				and redox delpetions and a				
position is evidence Indicators.	e of hydric soils.	Soil at this sampling	pit meets the defin	ition of hydric soil in the 19	987 Manual and	d in <i>Field</i>		

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present? Hydric Soils Present?	Yes Yes	No No	Is this Sampling Point Within a Wetland? Yes No
Remarks: This sampling pit meets all 3	mandatory	parameters	of wetlands.

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:				
Applicant/Owner:	MN DOT District 7	MN DOT District 7			Nicol	let
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minn	esota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community I	D:	W-NU-30-21-2
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:		Transect 1
Is the area a potential Problem Area?			No	Plot ID:		Wetland Pit
(If needed, explain or	n reverse)					

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <u>Populus deltoides</u>	Т		9				
2. <u>Salix exigua</u>	Sh		10				
3. Phalaris arundinacea	Н		11				
4			12				
5			13				
6			14				
7			15				
8.			16.				
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %							
Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.							

Recorded Data (Describe in Remarks): Stream, Lake or Tide Gauge			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gaug	ge	Prima	ary Indicators:	
Aerial Photog	Iraphs		Х	Inundated	
Other			Х	Saturated in Upper 12 Inches	
No Recorded Data Available				Water Marks	
				Drift Lines	
Field Observations:				Sediment Deposits	
				Drainage Patterns in Wetlands	
Depth of Surface Water:	0-2	(in.)	Secor	dary Indicators (2 or more required):	
				Oxidized Root Channels in Upper 12 Inches	
Depth to Free Water in Pit:	0	(in.)		Water-Stained Leaves	
				Local Soil Survey Data	
Depth to Saturated Soil	0	(in.)		FAC-Neutral Test	
		_		Other (Explain in Remarks)	
	criterion of \	wetland hydro		I to the surface for a long duration during the growing is site is a roadside ditch that has been unmaintained	

Map Unit Name (Series and Phase	e): Undeterm	ined		Drainage Class:	Undetermir	ned	
Taxonomy (Subg	roup): <u>Orthents (</u>	disturbed from roa	Field Observations Confirm Mapped Type?	Yes	No		
Profile Description	<u>on</u>						
Depth (inches) Undet	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast		oncretions, ure, etc.	
Hydric Soil Indic	ators:						
	Histosol		Conc	retions (Redox concentratio	ins)		
	Histic Epipedon		High	Organic Content in Surface	e Layer in San	dy Soils	
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	5		
	Aquic Moisture R	egime	Liste	ed on Local Hydric Soils List			
	Reducing Conditi	ons	Liste	sted on National Hydric Soils List			
	Gleyed or Low-Cl	hroma Colors	r (Explain in Remarks)				
Remarks: Soils di hydric soils.	sturbed from road	earthmoving, soil p	profile undetermine	ed. Conditions are favorabl	e for the form	ation of	

Hydrophytic Vegetation Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	
been determined as a result of historical	roadwork ea	arthmoving	ogy and hydrophytic vegetation. Presence of hydric soils has not ; however conditions are favorable for the formation of hydric soils. idental" and exempt from WCA jurisdiction.

Project/Site:	US 14 (North Mankato to New UIm, MN)			Date:	
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenha Group)	rt (Kestrel I	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NU-30-21-2
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro (If needed, explain or		Yes	No	Plot ID:	Upland Pit

# VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species Str	ratum Indicator
1. <u>Bromis inermis</u>	Н	UPL		
2. Soghastrum nutans	Н	FACU+		
3				
4				
5				
6				
7.				
8.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	,	
Pomarks: This sampling pit do	s pot bavo a pr	dominance of hy	hytic vegetation. This sampling pit	doos not most the

Remarks: This sampling pit does not have a predominance of hydrophytic vegetation. This sampling pit does not meet the criterion of hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gau	ge	Primary Indicators:		
Aerial Photog	graphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available	<b>;</b>		Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>15	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>15	(in.)	FAC-Neutral Test		
		—	Other (Explain in Remarks)		
Remarks: No indicators of wetland	hydrology w	vere observed a	at this sampling pit. This sampling pit does not meet the criterion		
of wetland hydrology.					

Map Unit Name (Series and Phase	e): Undeterm	ined	Drainage Class:	Undetermir	ned			
Taxonomy (Subg	roup): <u>Orthents</u>		Field Observations Confirm Mapped Type?	Yes	No			
Profile Description	on							
Depth (inches) Undet.	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast		Concretions, ure, etc.		
Hydric Soil Indic	ators:							
	Histosol		Conc	retions (Redox concentratio	ns)			
	Histic Epipedon		High	h Organic Content in Surface Layer in Sandy Soils				
	Sulfidic Odor		Orga	anic Streaking in Sandy Soils				
	Aquic Moisture R	egime	Liste	ed on Local Hydric Soils List				
	Reducing Conditi	ons	Liste	ted on National Hydric Soils List				
	Gleyed or Low-Cl	hroma Colors	Othe	r (Explain in Remarks)				
				rical roadwork earthmoving the formation of hydric soi		ocated at a		

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: This sampling pit does not m	eet any of tl	ne 3 mandat	ory parameters of wetlands.		

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:				
Applicant/Owner:	MN DOT District 7	County:	County: Nicollet			
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minne	esota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community I	D:	W-NU-30-27-2
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	_	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:		Wetland Pit
(If needed, explain or	n reverse)					

#### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. <i>Ulmus americana</i>	Т	FACW-	9		
2. Fraxinus pennsylvanicus	T	FACW	10		
3. <u>Salix nigra</u>	Τ	OBL	11		
4. <u>Ribes missouriense</u>	Sh	UPL	12		
5. <u>Rhamnus catharticus</u>	Sh	FACU	13		
6. <i>Vitis riparia</i>	Vine	FACW-	14		
7. Phalaris arundinacea	н	FACW+	15		
8. <i>Carex sp.</i>	Н		16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	71 %		

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the definition of hydrophytic vegetation.

			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gau	ge	Prima	ary Indicators:	
Aerial Photo	graphs		Х	Inundated	
Other			Х	Saturated in Upper 12 Inches	
No Recorded Data Available	9			Water Marks	
				Drift Lines	
Field Observations:				Sediment Deposits	
				Drainage Patterns in Wetlands	
Depth of Surface Water:	3	(in.)	Secor	dary Indicators (2 or more required):	
		_		Oxidized Root Channels in Upper 12 Inches	
Depth to Free Water in Pit:	0	(in.)		Water-Stained Leaves	
		_		Local Soil Survey Data	
Depth to Saturated Soil	0	(in.)		FAC-Neutral Test	
		_		Other (Explain in Remarks)	
Remarks: This sampling pit is inune sampling pit meets the definition of			urface for	a long duration during the growing season. This	

Map Unit Name (Series and Phase	e):	y clay loam (321)		Drainage Class:	Very poorly to poorly drained			
Taxonomy (Subg	roup): <u>Typic Ha</u>	plaquoll	Field Observations Confirm Mapped Type?	Yes No				
Profile Description	<u>on</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions Structure, etc.			
0-15	10YR 2/1	None			loam			
		·						
,								
Hydric Soil Indic	ators:							
	Histosol		Conc	retions (Redox concentratio	ins)			
	_ Histic Epipedon		High	n Organic Content in Surface Layer in Sandy Soils				
	_Sulfidic Odor		Orga	anic Streaking in Sandy Soils				
	_ Aquic Moisture F	Regime	Liste	_ Listed on Local Hydric Soils List				
	Reducing Condit	ions	Liste	sted on National Hydric Soils List				
X	_Gleyed or Low-C	Chroma Colors	Othe	r (Explain in Remarks)				
	n of hydric soils ir	n the <i>1987 Manual</i> . V		position is evidence of hyd eets the definition of hydric				

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: This sampling pit clearly mee though inconclusive as a result of a thick		mandatory	criteria for wetlands. The presence of hydric soils is assumed,

Project/Site:	US 14 (North Mankato to New UIm, MN)			Date:	
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstances exist on the site?		Yes	No	Community I	D: W-NU-30-27-2
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Upland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <u>Solidago gigantea</u>	Н	FACW	9				
2. Solidago canadensis	Н	FACU	10				
3. <u>Poa pratensis</u>	Н	FAC-	11				
4. <u>Carex sp.</u>	Н		12				
5			13				
6			14				
7			15				
8.			16.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	50 %				

Remarks: The *Carex* sp. was not identifiable to species; though, it was assumed in this case to be hydrophytic. A situation where 50% of the dominants are hydrophytic does not meet the definition of a predominance of hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gauge	è	Primary Indicators:		
Aerial Photog	graphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available	9		Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):		
			Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:		(in.)	Water-Stained Leaves		
			Local Soil Survey Data		
Depth to Saturated Soil		(in.)	FAC-Neutral Test		
			Other (Explain in Remarks)		
Remarks: No indicators of wetland	hydrology wei	re observed a	at this sampling pit.		

Map Unit Name (Series and Phase): Copaston – rock outcrop complex (923) Drainage Class: Well drained Field Observations Taxonomy (Subgroup): Lithic Hapludolls Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Size/Contrast Structure, etc. Depth (inches) Horizon (Munsell Moist) (Munsell Moist) 0-5 А 10YR 3/2 None Sandy loam 5-12 А 10YR 3/2 None --Loamy coarse sand >12 bedrock -----Hydric Soil Indicators: Histosol Concretions (Redox concentrations) Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: While a low-chroma matrix was observed, redox concentrations and redox depletions were not observed. This sampling pit does not meet the definition of hydric soils in the 1987 Manual or Field Indicators.

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			1
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: This sampling pit does not me	et any of th	ne 3 mandat	ory parameters of wetlands.		

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18	-2004
Applicant/Owner:	MN DOT District 7			County:	Nicol	llet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minn	iesota		
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	W-NU-30-34-2
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:		Transect 1
Is the area a potential Pro	Yes	No	Plot ID:		Wetland Pit	
(If needed, explain or	n reverse)				_	

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <i>Ulmus americana</i>	Т	FACW-	9				
2. <u>Acer negundo</u>	Т	FACW-	10				
3. Phalaris arundinacea	Н	FACW+	11				
4. Glechoma hederacea	Н	FACU	12				
5. <u>Aster sp.</u>	Н		13				
6			14				
7			15				
8.	8 16						
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%							
Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.							

Recorded Data (Describe in R	Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gau	je	Prima	Primary Indicators:		
Aerial Photog	raphs			Inundated		
Other			Х	Saturated in Upper 12 Inches		
No Recorded Data Available				Water Marks		
				Drift Lines		
Field Observations:			Х	Sediment Deposits		
				Drainage Patterns in Wetlands		
Depth of Surface Water:	None	(in.)	Secor	dary Indicators (2 or more required):		
-		_		Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	8	(in.)	Х	Water-Stained Leaves		
-		_		Local Soil Survey Data		
Depth to Saturated Soil	0	(in.)		FAC-Neutral Test		
		_		Other (Explain in Remarks)		
Remarks: This sampling pit meets th	e criterion o	f wetland hyd	rology.			
			<u>9</u>			

Map Unit Name (Series and Phase): Copaston - rock outcrop complex (923) Drainage Class: Well drained Field Observations Taxonomy (Subgroup): Lithic Hapludolls Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc. Depth (inches) Horizon 0-8 10YR 3/2 10YR 4/3 Few/small Loamy fine sand А 10YR 5-1 Few/small С gravel 8-10 Red gravel -----Hydric Soil Indicators: Histosol X Concretions (Redox concentrations) Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: Soils in this sampling pit meet the definition of hydric soils in the 1987 Manual and in Field Indicators.

# WETLAND DETERMINATION

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No No	Is this Sampling Point Within a Wetland? Yes No
Remarks: Criteria for all 3 mandatory	parameters of	fwetlands	are met at this sampling pit.

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18	3-2004
Applicant/Owner:	MN DOT District 7			County:	Nico	llet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minn	nesota
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	W-NU-30-34-2
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	-	Transect 1
Is the area a potential Problem Area?			No	Plot ID:	_	Upland Pit
(If needed, explain or	n reverse)				-	

#### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. Fraxinus pennsylvanicus	Т	FACW	9		
2. Ulmus americana	Т	FACW-	10		
3. <i>Salix nigra</i>	Т	OBL	11		
4. Rhamnus catharticus	Sh	FACU	12		
5. Rubus allegheniensis	Sh	FACU+	13		
6. <u>Ribes missouriense</u>	Sh	UPL	14		
7. Ribes cynosbati	Sh	UPL	15		
8. Hvdrophvllum virainianum	Н	FACW-	16.		
Percent of Dominant Species (excluding FAC-).	that are OBL, F	ACW or FAC	50%		

Remarks: 50% of the dominant plant species are hydrophytic; therefore, a predominance of hydrophytic vegetation is not present at this sampling pit.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gaug	ge	Primary Indicators:		
Aerial Photog	graphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available	<u>)</u>		Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	None	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>18	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>18	(in.)	FAC-Neutral Test		
		_	Other (Explain in Remarks)		
Remarks: No indicators of wetland wetland hydrology.	hydrology w	ere observed a	at this sampling pit. This sampling pit does not meet the criterion of		

Map Unit Name (Series and Phase): Copaston - rock outcrop complex (923) Drainage Class: Well drained Field Observations Taxonomy (Subgroup): Lithic Hapludolls Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Size/Contrast Depth (inches) Horizon (Munsell Moist) (Munsell Moist) Structure, etc. 0-4 А 10YR 4/3 10YR 3/2 Few/ small Loamy sand 4-18 А 10YR 3/2 10YR 4/3 Few/ small Loamy sand Hydric Soil Indicators: X Concretions (Redox concentrations) Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List Reducing Conditions Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position is evidence of hydric soils. This soil meets the definition of hydric soils in the 1987 Manual and in Field Indicators.

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			1
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: This sampling pit meets only wetland.	/ 1 of the 3 m	andatory pa	arameters of wetlands; therefore, this sampling pit	is not v	vithin

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18-2004	
Applicant/Owner:	MN DOT District 7			County:	Nicollet	
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota	
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1	
Is the area a potential Problem Area?			No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)					

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <u>Salix exigua</u>	Sh	OBL	9				
2. Phalaris arundinacea	Н	FACW+	10				
3. <u>Solidago gigantea</u>	Н	FACW	11				
4. Solidago canadensis	Н	FACU	12				
5			13				
6			14				
7			15				
8.			16.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	75 %				

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. Vegetation at this sampling pit meets the criterion of hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake or Tide Gauge			Primary Indicators:		
Aerial Photog	Iraphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			X Drainage Patterns in Wetlands		
Depth of Surface Water:	None	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>10	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>10	(in.)	FAC-Neutral Test		
		_	Other (Explain in Remarks)		
Remarks: This depression is an old stream channel of Heyman's Creek and is approximately 6-12 inches above the elevation of the existing flowing creek channel. In our professional opinion, this sampling pit is inundated or saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.					

Map Unit Name (Series and Phase): Hawick sandy loam (611F) Drainage Class: Excessively drained Field Observations Taxonomy (Subgroup): Entic Hapludoll Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Size/Contrast Structure, etc. Depth (inches) Horizon (Munsell Moist) (Munsell Moist) 0-5 10YR 2/1 Sandy loam А None 5-10 А N/2.5 None Sandy loam --Hydric Soil Indicators: Concretions (Redox concentrations) Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the 1987 Manual and Field Indicators.

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: This site meets the criteria fo	r all 3 manda	tory param	neters of wetlands.		

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18-2004	
Applicant/Owner:	MN DOT District 7			County:	Nicollet	
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota	
Do Normal Circumstances exist on the site?		Yes	No	Community II	D: W-NU-30-34-1	
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1	
Is the area a potential Problem Area?			No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)					

# VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <u>Salix exigua</u>	Sh	OBL	9				
2. Phalaris arundinacea	Н	FACW+	10				
3. <u>Solidago gigantea</u>	Н	FACW	11				
4. <i>Monarda fistulosa</i>	Н	FACU	12				
5			13				
6			14				
7			15				
8.			16.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	75 %				

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. Vegetation at this sampling pit meets the criteria of hydrophytic vegetation.

### HYDROLOGY

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake or Tide Gauge			Primary Indicators:		
Aerial Photog	graphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available	<u>)</u>		Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	None	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>10	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>10	(in.)	FAC-Neutral Test		
		_	Other (Explain in Remarks)		
Remarks: This depressional area is a	adjacent to th	e current char	nnel of Heyman's Creek. Soil were moist to the soil surface though		

not saturated. In our professional opinion, this site is inundated or saturated to the surface for period long enough during the growing season to satisfy the criterion of wetland hydrology.

Map Unit Name (Series and Phase): Hawick sandy loam (611F) Drainage Class: Excessively drained Field Observations Taxonomy (Subgroup): Entic Hapludoll Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Size/Contrast Structure, etc. Depth (inches) Horizon (Munsell Moist) (Munsell Moist) 0-5 10YR 2/1 А None Sandy loam 5-10 А N/2.5 None Sandy loam --Hydric Soil Indicators: Concretions (Redox concentrations) Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List Reducing Conditions Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low-chroma matrix in conjunction with a low landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the 1987 Manual and Field Indicators. Soils at this sampling pit have been disturbed as a result of historical roadwork and stream realignment.

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: This site meets the criteria fo	r all 3 mand	atory parar	neters of wetlands.

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18-2004	
Applicant/Owner:	MN DOT District 7			County:	Nicollet	
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota	
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1	
Is the area a potential Problem Area?			No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)					

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Scirpus fluviatilis</u>	Н	OBL	9		
2. <u>Eleocharis erythropoda</u>	н	OBL	10		
3. <u>Glycine max</u>	Н	UPL	11		
4			12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	66 %		
					the stand of the latter of

Remarks: A predominance of hydrophytic plant species are present at this sampling pit. This sampling pit meets the definition of hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake or Tide Gauge			Primary Indicators:		
Aerial Photog	jraphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	None	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	4	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	0	(in.)	FAC-Neutral Test		
		_	X Other (Explain in Remarks)		
Remarks: Standing water was observed in tire ruts at this sampling pit. In our professional opinion, this sampling pit is inundated or saturated to the surface for a period long enough during the growing season to satisfy the criterion of wetland hydrology.					

Map Unit Name (Series and Phase)		ay loam (112) and GI 4)	encoe silty clay	Drainage Class:	Harps (very Poorly Drained), Glencoe silty clay loam (114)			
Typic Calciaquolls (112), Cumulic Haplaquolls Taxonomy (Subgroup): (114)			Field Observations Confirm Mapped Type?	Yes No				
Profile Descriptio	<u>n</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.			
0-5	А	10YR 2/1	None		Clay loam			
5-11	А	N/2.5	None		Clay loam			
		- ·						
Hydric Soil Indica	ators:							
	Histosol		Conc	retions (Redox concentratio	ins)			
	Histic Epipedon		High	High Organic Content in Surface Layer in Sandy Soils				
	Sulfidic Odor		Orga	Drganic Streaking in Sandy Soils				
	Aquic Moisture F	Regime	Liste	Listed on Local Hydric Soils List				
	Reducing Condit	ions	Liste	Listed on National Hydric Soils List				
	0			ther (Explain in Remarks)				
			Oure					
		conjunction with a l ydric soils per the 1		e position is evidence of hyd Id Indicators.	dric soils. Soils at this			

Hydrophytic Vegetation Present?	Yes	No						
Wetland Hydrology Present?	Yes	No						
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No					
Remarks: This site meets criteria for all 3 mandatory parameters of wetlands.								

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <u>Populus deltoides</u>	Т	FAC+	9				
2. <u>Salix exigua</u>	Sh	OBL	10				
3. <u>Typha angustifolia</u>	Н	OBL	11				
4. <u>Scirpus fluviatilis</u>	Н	OBL	12				
5			13				
6			14				
7			15				
8.			16.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	100 %				
Remarks: A predominance of hydrophytic species is present at this sampling pit. This sampling pit meets the criterion of							

hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:			
Stream, Lake	or Tide Gau	ge	Prima	ary Indicators:		
Aerial Photog	graphs			Inundated		
Other			Х	Saturated in Upper 12 Inches		
No Recorded Data Available	<u>)</u>			Water Marks		
				Drift Lines		
Field Observations:			1	Sediment Deposits		
				Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secor	dary Indicators (2 or more required):		
		_		Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	0	(in.)		Water-Stained Leaves		
		_		Local Soil Survey Data		
Depth to Saturated Soil	0	(in.)		FAC-Neutral Test		
		_		Other (Explain in Remarks)		
Remarks: This site is a depression in an agricultural landscape that is too wet to farm. This site meets the criteria for wetland hydrology.						

Moderately-well to Map Unit Name somewhat-poorly (Series and Phase): Nicollet clay loam (130) Drainage Class: drained Field Observations Taxonomy (Subgroup): Aquic Hapludolls Confirm Mapped Type? Yes No Profile Description Mottle Abundance/ Texture, Concretions, Matrix Color Mottle Colors Depth (inches) Horizon (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc. 0-35 А N/2.5 None Clay ---35-42 В 2.5Y 5/2 10YR 4/4 Few/ small Clay Hydric Soil Indicators: Histosol X Concretions (Redox concentrations) Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Х Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low-chroma matrix inconjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the 1987 Manual and Field Indicators.

Hydrophytic Vegetation Present?	Yes	No		
Wetland Hydrology Present?	Yes	No	Γ	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No
Remarks: This sampling pit meets crite	ria for all 3	mandatory	parameters of wetlands.	

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18	-2004		
Applicant/Owner:	MN DOT District 7			County:	Nicol	let
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minn	esota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:	W-NU-30-36-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:		Transect 1
Is the area a potential Pro	Yes	No	Plot ID:		Wetland Pit	
(If needed, explain or	n reverse)				_	

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator			
1. <u>Carex sp.</u>	Н		9					
2. Phalaris arundinacea	Н	FACW+	10					
3. <u>Poa pratensis</u>	H	FAC-	11					
4			12					
5			13					
6			14					
7.			15.					
8.			16.					
Percent of Dominant Species (excluding FAC-).	s that are OBL, I	FACW or FAC	100 %					
Demarks. They share sould not identify the Carayte species, it was assumed in this landscape position to be hydrophytic.								

Remarks: Though we could not identify the *Carex* to species, it was assumed in this landscape position to be hydrophytic. A predominance of hydrophytic species were present at this site. Vegetation at this site meets the definition of hydrophytic vegetation.

Recorded Data (Describe in Remarks):				Wetland Hydrology Indicators:		
Stream, Lake	e or Tide Gau	ge	Prima	Primary Indicators:		
Aerial Photo	graphs			Inundated		
Other			Х	Saturated in Upper 12 Inches		
No Recorded Data Available	е			Water Marks		
				Drift Lines		
Field Observations:				Sediment Deposits		
				Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secon	dary Indicators (2 or more required):		
		_	i i	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	12	(in.)		Water-Stained Leaves		
		_		Local Soil Survey Data		
Depth to Saturated Soil	6	(in.)		FAC-Neutral Test		
		_		Other (Explain in Remarks)		
Remarks: Low areas near the sampling pit were saturated to the surface. At the sampling pit, soils were saturated at a depth of 6 inches from the soil surface. This sampling pit meets the criterion of wetland hydrology.						
incries from the soll surface. This sa	impling pit m	ieets the criter	ion of wet	iana nyarology.		

(113) Poorly drained, Map Unit Name Webster clay loam (113), Okoboji silty clay (134) - Very poorly (Series and Phase): loam (134) Drainage Class: drained (113) - Typic Haplaquoll, (134) Cumulic Field Observations Taxonomy (Subgroup): Confirm Mapped Type? Haplaquoll Yes No Profile Description Mottle Abundance/ Texture, Concretions, Matrix Color Mottle Colors Depth (inches) Horizon (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc. 0-32 А N/2.5 None Clay loam ---Hydric Soil Indicators: Histosol Concretions (Redox concentrations) Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List Х Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low-chroma matrix in conjunction with a low-lying landscape position is evidence of hydric soils. Soils at this sampling site meet the definition of hydric soils per the 1987 Manual and Field Indicators.

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No No	Is this Sampling Point Within a Wetland? Yes No					
Remarks: This sampling pit meets criteria for all 3 mandatory parameters of wetlands.								

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: <u>W-NU-30-35-1</u>
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Problem Area?			No	Plot ID:	Upland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator		
1. <u>Salix exigua</u>	Sh	OBL	9				
2. Phalaris arundinacea	Н	FACW+	10				
3. <u>Urtica dioica</u>	Н	FAC+	11				
4			12				
5			13				
6			14				
7.			15.				
8.			16.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	100 %				
Demarks. A prodominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterian of							

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:		
Stream, Lake or Tide Gauge			Primary Indicators:		
Aerial Photoc		5	Inundated		
Other	, 1		Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>28	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>28	(in.)	FAC-Neutral Test		
		_	Other (Explain in Remarks)		
	5 05		It this sampling pit. In our professional opinion, this site is not owing season long enough to satisfy the criterion of wetland		

Map Unit Name (Series and Phase): Plainfield loamy sand (283A) Drainage Class: Excessively drained **Field Observations** Taxonomy (Subgroup): Typic Udipsamments Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Structure, etc. Depth (inches) Horizon (Munsell Moist) (Munsell Moist) Size/Contrast 0-4 10YR 2/1 А None Clayey sand 4-28 А N/2.5 7.5YR 4/4 Common/ small Sandy clay (At 8 inches) Hydric Soil Indicators: X Concretions (Redox concentrations) Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List Reducing Conditions Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position is evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the 1987 Manual and Field Indicators.

# WETLAND DETERMINATION

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No	Is this Sampling Point Within a Wetland?	Yes	No			
Remarks: This site meets the criteria for only 2 of the 3 mandatory parameters of wetlands.								

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-18-2004	
Applicant/Owner:	MN DOT District 7	County:	Nicollet			
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	State: Minnesota			
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1	
Is the area a potential Pro	Yes	No	Plot ID:	Wetland Pit		
(If needed, explain or	n reverse)					

#### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. <i>Urtica dioica</i>	Н	FAC+	9		
2. Phalaris arundinacea	Н	FACW+	10		
3			11		
4			12		
5			13		
6			14		
7.			15.		
8.			16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	100 %		
Domorko: A prodominance of h	draphyticycog	tation is present a	t this site. This sampling pit may	to the oritorion	of by drop by tio

Remarks: A predominance of hydrophytic vegetation is present at this site. This sampling pit meets the criterion of hydrophytic vegetation.

Recorded Data (Describe in Remarks):			Wetland Hydrology Indicators:
Stream, Lake	or Tide Gau	je	Primary Indicators:
Aerial Photog	graphs		Inundated
Other			Saturated in Upper 12 Inches
No Recorded Data Available	<u>)</u>		Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	None	(in.)	Secondary Indicators (2 or more required):
		_	X Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	36	(in.)	Water-Stained Leaves
		-	Local Soil Survey Data
Depth to Saturated Soil	20	(in.)	FAC-Neutral Test
		_	Other (Explain in Remarks)
			r saturated to the surface for a period during the growing season
long enough to satisfy the criterion of	or wettand ny	aroiogy.	

Map Unit Name         (Series and Phase):       Webster clay loam (113)         Drainage Class:       Poorly drained								
Taxonomy (Subg	roup): <u>Typic Ha</u>	olaquoll		Field Observations Confirm Mapped Type?	Yes No			
Profile Description								
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.			
0-14	Α	N/2.5	None		Silt			
14-42	Α	N/2.5	10YR 4/4	Common/ small	Clayey sand			
Hydric Soil Indic	ators:							
	Histosol		X Conc	retions (Redox concentratio	ns)			
	Histic Epipedon		High	Organic Content in Surface	Layer in Sandy Soils			
Χ	Sulfidic Odor		Orga	rganic Streaking in Sandy Soils				
	Aquic Moisture R	Regime	Listed	Listed on Local Hydric Soils List				
	Reducing Conditions Liste				ed on National Hydric Soils List			
X	X Gleyed or Low-Chroma Colors Of			ther (Explain in Remarks)				
				,				
Pemarks: A low	chroma matrix in (	soniunction with roc	lov concentrations i	in the rooting zone, a sulfidi	codor and a low lying			
REITIGERS. A 10W-	uni unia matrix In t	Juniction with rec	ion concentiations i	n ne i outina zune, d'Sullia				

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: This site meets all three mane	datory criteri	a of wetlan	ds.

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18	10-18-2004		
Applicant/Owner:	MN DOT District 7	County:	Nicollet			
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minn	iesota		
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	W-NU-30-36-4
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:		Transect 1
Is the area a potential Pro	Yes	No	Plot ID:		Wetland Pit	
(If needed, explain or	n reverse)				_	

#### VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant S	pecies <u>Stratun</u>	n <u>Indicator</u>
1. Phalaris arundinacea	Н	FACW+	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Specie: (excluding FAC-).	s that are OBL, F	FACW or FAC	100 %		
Remarks: A predominance of hydrophytic vegetation is present at this site. This site meets the criterion of hydrophytic					

Remarks: A predominance of hydrophytic vegetation is present at this site. This site meets the criterion of hydrophytic vegetation.

Recorded Data (Describe in Remarks): Stream, Lake or Tide Gauge			Wetland Hydrology Indicators: Primary Indicators:
Aerial Photog	graphs	•	X Inundated
Other			X Saturated in Upper 12 Inches
No Recorded Data Available	9		Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):
		_	Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	>15	(in.)	Water-Stained Leaves
		_	Local Soil Survey Data
Depth to Saturated Soil	>15	(in.)	FAC-Neutral Test
		_	Other (Explain in Remarks)

Remarks: This site is an excavated pond which receives drainage from a larger area of drained hydric soil. The pond is approximately 3 feet deep at its deepest point – areas surrounding the pond were not inundated the time of the wetland delineation. In our professional opinion, the area outside of the pond but inside the delineated wetland boundary is saturated to the surface for a period during the growing season long enough to satisfy the criterion of wetland hydrology.

Map Unit Name (Series and Phase	e): Delft clay	loam (336)		Drainage Class:	Poorly Drained			
Taxonomy (Subg	group): <u>Cumulic I</u>	Haplaquolls		Field Observations Confirm Mapped Type?	Yes No			
Profile Description	on							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.			
0-10	A	10YR 2/1	None		Clay loam			
10-20	Α	N/2.5	None		Clay loam			
Hydric Soil India	cators:							
	_Histosol		Conc	retions (Redox concentratio	ns)			
	_Histic Epipedon		High	n Organic Content in Surface Layer in Sandy Soils				
	_Sulfidic Odor		Orga	anic Streaking in Sandy Soils				
	Aquic Moisture R	Regime	Liste	– Listed on Local Hydric Soils List				
	Reducing Condit	ions	Liste	sted on National Hydric Soils List				
X				er (Explain in Remarks)				
			Ouic					
		conjunction with a le 1987 Manual and Fie		position is evidence of hyd	ric soils. This soils meets			

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No No	Is this Sampling Point Within a Wetland?	es No
Remarks: This site meets the criteria fo	r all 3 manda	tory param	neters of wetlands.	

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-18-2004		
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-CO-29-6-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Wetland Pit
(If needed, explain or	i reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. Phalaris arundinacea	Н	FACW+	9		
2. Eleocharis erythropoda	H	OBL	10		
3. <u><i>Carex</i> sp.</u>	H		11		
4			12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, I	FACW or FAC	100 %		

Remarks: The *Carex* was not identifiable to species; however, based on the landscape position in which it was growing, it was assumed to be hydrophytic. A predominance of hydrophytic vegetation is present at this sampling pit.

Recorded Data (Describe in F Stream, Lake	,	je	Wetland Hydrology Indicators: Primary Indicators:
Aerial Photographs			Inundated
Other			Saturated in Upper 12 Inches
No Recorded Data Available			Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):
		-	X Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	>25	(in.)	Water-Stained Leaves
		_	Local Soil Survey Data
Depth to Saturated Soil	>25	(in.)	FAC-Neutral Test
		-	Other (Explain in Remarks)

Remarks: While soil saturation was not observed in the upper 25 inches – the delineation was performed late in the growing season, so this is to be expected. Further the percolation rate in this silty clay loam soil is quite low. In our professional opinion, this site is inundated or saturated to the surface for a period during the growing season for a period long enough to satisfy the criterion of wetland hydrology.

Map Unit Name (Series and Phase	e): Delft clay	loam (336)		Drainage Class:	Poorly drained			
Taxonomy (Subg	roup): <u>Cumulic I</u>	Haplaqolls		Field Observations Confirm Mapped Type?	Yes No			
Profile Description	<u>on</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.			
0-25	Α	N/2.5	None		Silty clay loam			
Hydric Soil Indic	ators:							
	Histosol		Conc	retions (Redox concentratio	ns)			
	Histic Epipedon		High	n Organic Content in Surface Layer in Sandy Soils				
	Sulfidic Odor		Orga	anic Streaking in Sandy Soils				
	Aquic Moisture R	egime	Liste	ed on Local Hydric Soils List				
	Reducing Conditi	ons	Liste	d on National Hydric Soils I	_ist			
X	X Gleyed or Low-Chroma Colors Othe			er (Explain in Remarks)				
Remarks: A low- pit meets the defin			ow landscape posit	ion is evidence of hydric sol	Is. Soils at this sampling			
Sit meets the defin	ITTOTI OF HYDRIG SOIL							

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: This sampling pit meets the c	riteria for all	3 mandato	bry parameters of wetlands.

Project/Site:	US 14 (North Mankato to New UIm, MN)	Date:	10-18-2004		
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-CO-29-6-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Upland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Glycine max</u>	Н	UPL	9.			
2			10.			
3			11.			
4			12.			
5			13.			
6			14.			
7.			15.			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).			0 %			

Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit. This sampling pit does not meet the criteria of hydrophytic vegetation.

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:			
Stream, Lake	or Tide Gau	ge	Primary Indicators:			
Aerial Photog	Iraphs		Inundated			
Other			Saturated in Upper 12 Inches			
No Recorded Data Available			Water Marks			
			Drift Lines			
Field Observations:			Sediment Deposits			
			Drainage Patterns in Wetlands			
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):			
		_	Oxidized Root Channels in Upper 12 Inches			
Depth to Free Water in Pit:	>36	(in.)	Water-Stained Leaves			
		_	Local Soil Survey Data			
Depth to Saturated Soil	>36	(in.)	FAC-Neutral Test			
		_	Other (Explain in Remarks)			
Remarks: No indicators of wetland hydrology were observed at this sampling pit.						

Map Unit Name (Series and Phas				Drainage Class:	Undet.
Faxonomy (Sub	group): <u>Undet.</u>			Field Observations Confirm Mapped Type?	Yes No
Profile Descript	on				
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretior Structure, etc.
0-9	Α	10YR 3/2	10YR 4/3	Few/small	Sandy loam
9-36	A (buried)	10 YR 3/1	None		Loam
		N/2.5			·
		- <u> </u>			
		·			
Hydric Soil Indi	cators:				
Hydric Soil Indi	cators:		  XConc	retions (Redox concentratio	  ins)
Hydric Soil Indi		·		retions (Redox concentratio Organic Content in Surface	
Hydric Soil Indi 	Histosol	·	High		e Layer in Sandy Soils
Hydric Soil Indi 	_Histosol _Histic Epipedon	·	High Orga	Organic Content in Surface	e Layer in Sandy Soils
Hydric Soil Indi 	_ Histosol _ Histic Epipedon _ Sulfidic Odor	Regime	High Orga Listed	Organic Content in Surface nic Streaking in Sandy Soils	e Layer in Sandy Soils
Hydric Soil Indi	_ Histosol _ Histic Epipedon _ Sulfidic Odor _ Aquic Moisture F	Regime	High Orga Listed Listed	Organic Content in Surface nic Streaking in Sandy Soils d on Local Hydric Soils List	e Layer in Sandy Soils

Hydrophytic Vegetation Present? Wetland Hydrology Present?	Yes Yes	No No			
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: This sampling pit meets the	criteria of on	ly 1 of 3 ma	ndatory parameters of wetlands.		

Project/Site:	US 14 (North Mankato to New UIm, MN)			Date:	10-19	-2004
Applicant/Owner:	MN DOT District 7			County:	Nicol	let
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minn	esota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:	W-CO-29-9-1
Is the site significantly dis	Yes	No	Transect ID:	_	Transect 1	
Is the area a potential Pro	Yes	No	Plot ID:		Wetland Pit	
(If needed, explain or	n reverse)				_	

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator			
1. <u>Salix nigra</u>	Τ	OBL	9					
2. Acer saccharinum	Τ	FACW	10					
3. Sambucus canadensis	Sh	FACU-	11					
4. <u>Urtica dioica</u>	Н	FAC+	12					
5. <i>Phalaris arundinacea</i>	Н	FACW+	13					
6			14					
7			15					
8.			16.					
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	80 %					
Demarks: A prodominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterian of								

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:			
Stream, Lake	or Tide Gau	ge	Primary Indicators:			
Aerial Photog	graphs		Inundated			
Other			X Saturated in Upper 12 Inches			
No Recorded Data Available			Water Marks			
			Drift Lines			
Field Observations:			Sediment Deposits			
			Drainage Patterns in Wetlands			
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):			
		_	Oxidized Root Channels in Upper 12 Inches			
Depth to Free Water in Pit:	3	(in.)	Water-Stained Leaves			
		_	Local Soil Survey Data			
Depth to Saturated Soil	0	(in.)	FAC-Neutral Test			
		_	Other (Explain in Remarks)			
Remarks: This sampling pit meets the	ne criterion f	or wetland hy	drology.			
		5				

Map Unit Name (Series and Phase	e): Lester loa	m (106B)		Drainage Class:	Well drained	ł				
Taxonomy (Subg	roup): <u>Mollic Ha</u>	pludalfs	Field Observations Confirm Mapped Type?	Yes	No					
Profile Descriptio	<u>n</u>									
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Co Structu					
0-5	А	10YR 2/1	None		Silt	oam				
5-16	A	N/2.5	7.5YR 4/4	Common/ small	Silt	oam				
Hydric Soil Indica	ators:									
	Histosol		X Conc	retions (Redox concentratio	ns)					
	Histic Epipedon		High	Organic Content in Surface	e Layer in Sanc	ly Soils				
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	i					
	Aquic Moisture F	Regime	Liste	d on Local Hydric Soils List						
	d on National Hydric Soils I	_ist								
Reducing Conditions       Listed on National Hydric Soils List         X       Gleyed or Low-Chroma Colors       Other (Explain in Remarks)										
<u></u>			Oure							
Remarks: A low-o are evidence of hyc		conjunction with rec	tox concentrations	in the rooting zone and a lo	w-lying landso	ape positior				
5										

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: This sampling pit meets crite	ria for all 3 n	nandatory p	parameters of wetlands.

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-CO-29-9-1
Is the site significantly disturbed (Atypical Situation)?			No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Upland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plar	nt Species	<u>Stratum</u>	Indicator			
1. <u>Bromus inermis</u>	Н	UPL	9						
2. <u>Poa pratensis</u>	Н	FAC-	10						
3			11						
4			12						
5			13						
6			14						
7			15						
8 16 16.									
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%									
Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.									

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gau	ge	Primary Indicators:		
Aerial Photog	raphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):		
		_	Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>12	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>12	(in.)	FAC-Neutral Test		
			Other (Explain in Remarks)		
Remarks: No indicators of wetland I	nydrology w	vere observed a	at this sampling pit.		
	.,				

Taxonomy (Subgroup):       Mollic Hapludalfs       Field Observations Confirm Mapped Type?       Yes       No         Profile Description       Matrix Color (Munsell Moist)       Mottle Colors (Munsell Moist)       Mottle Abundance/ Size/Contrast       Texture, Concretion Structure, etc.         0-12       A       10YR 3/2       None        Silt loam         12-15       B       10YR 4/2       None        Silty clay loam         15+	Map Unit Name (Series and Phas	e): Lester loa	m (106C2)		Drainage Class:	Well drained					
Depth (inches)       Horizon       Matrix Color (Munsell Moist)       Mottle Colors (Munsell Moist)       Mottle Abundance/ Size/Contrast       Texture, Concretion Structure, etc.         0-12       A       10YR 3/2       None        Silt loam         12-15       B       10YR 4/2       None        Silty clay loam         15+	Taxonomy (Subg	group): <u>Mollic Ha</u>	apludalfs			Yes	No				
Depth (inches)       Horizon       (Munsell Moist)       (Munsell Moist)       Size/Contrast       Structure, etc.         0-12       A       10YR 3/2       None        Silt loam         12-15       B       10YR 4/2       None        Silty clay loam         15+	Profile Descripti	on									
12-15       B       10YR 4/2       None        Silty clay loam         15+       Gravel       Gravel       Gravel         Hydric Soil Indicators:       Concretions (Redox concentrations)       Histosol       Concretions (Redox concentrations)         Histic Epipedon       High Organic Content in Surface Layer in Sandy Soils       Organic Streaking in Sandy Soils         Sulfidic Odor       Organic Streaking in Sandy Soils       Listed on Local Hydric Soils List         Reducing Conditions       Listed on National Hydric Soils List	Depth (inches)	Horizon				,					
15+       Gravel         Hydric Soil Indicators:       Concretions (Redox concentrations)         Histosol       Concretions (Redox concentrations)         Histic Epipedon       High Organic Content in Surface Layer in Sandy Soils         Sulfidic Odor       Organic Streaking in Sandy Soils         Aquic Moisture Regime       Listed on Local Hydric Soils List         Reducing Conditions       Listed on National Hydric Soils List	0-12	А	10YR 3/2	None		Silt lo	am				
Hydric Soil Indicators:        Histosol      Concretions (Redox concentrations)        Histic Epipedon      High Organic Content in Surface Layer in Sandy Soils        Sulfidic Odor      Organic Streaking in Sandy Soils        Aquic Moisture Regime      Listed on Local Hydric Soils List        Reducing Conditions      Listed on National Hydric Soils List	12-15	В	10YR 4/2	None		Silty clay	/ loam				
Histosol       Concretions (Redox concentrations)         Histic Epipedon       High Organic Content in Surface Layer in Sandy Soils         Sulfidic Odor       Organic Streaking in Sandy Soils         Aquic Moisture Regime       Listed on Local Hydric Soils List         Reducing Conditions       Listed on National Hydric Soils List	15+					Grav	/el				
Histosol       Concretions (Redox concentrations)         Histic Epipedon       High Organic Content in Surface Layer in Sandy Soils         Sulfidic Odor       Organic Streaking in Sandy Soils         Aquic Moisture Regime       Listed on Local Hydric Soils List         Reducing Conditions       Listed on National Hydric Soils List											
Histosol       Concretions (Redox concentrations)         Histic Epipedon       High Organic Content in Surface Layer in Sandy Soils         Sulfidic Odor       Organic Streaking in Sandy Soils         Aquic Moisture Regime       Listed on Local Hydric Soils List         Reducing Conditions       Listed on National Hydric Soils List											
Histic Epipedon       High Organic Content in Surface Layer in Sandy Soils         Sulfidic Odor       Organic Streaking in Sandy Soils         Aquic Moisture Regime       Listed on Local Hydric Soils List         Reducing Conditions       Listed on National Hydric Soils List	Hydric Soil India	cators:									
		Histosol		Conc	retions (Redox concentratio	ns)					
Aquic Moisture Regime Listed on Local Hydric Soils List Reducing Conditions Listed on National Hydric Soils List		_Histic Epipedon		High	Organic Content in Surface	Layer in Sandy	y Soils				
Reducing Conditions Listed on National Hydric Soils List		_Sulfidic Odor		Orga	nic Streaking in Sandy Soils						
		_ Aquic Moisture F	Regime	Liste	d on Local Hydric Soils List						
X Gleyed or Low-Chroma Colors Other (Explain in Remarks)											
	X Gleyed or Low-Chroma Colors Other (Explain in Remarks)										

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: None of the criteria for any o	of the 3 man	datory parar	neters of wetlands were met at this site.		

Project/Site:	US 14 (North Mankato to New UIm, MN)			Date:	10-19	-2004
Applicant/Owner:	MN DOT District 7			County:	Nico	llet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minn	lesota
Do Normal Circumstances exist on the site?		Yes	No	Community II	D:	W-CO-29-10-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:		Transect 1
Is the area a potential Pro	Yes	No	Plot ID:		Wetland Pit	
(If needed, explain or	n reverse)			(also W-CO-29	- 9-10-2)	

### VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator		
1. Phalaris arundinacea	Н	FACW+	9.					
2			10.					
3			11.					
4			12.					
5			13.					
6			14.					
7.			15.					
8.			16.					
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %								
Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling meets the criterion for								

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling meets the criterion for hydrophytic vegetation.

Recorded Data (Describe in F			Wetland Hydrology Indicators:
Stream, Lake	or Tide Gaug	ge	Primary Indicators:
Aerial Photog	jraphs		Inundated
Other			Saturated in Upper 12 Inches
No Recorded Data Available			Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):
		_	Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	>27	(in.)	Water-Stained Leaves
		_	Local Soil Survey Data
Depth to Saturated Soil	>27	(in.)	FAC-Neutral Test
		_	X Other (Explain in Remarks)
			f surface saturation or inundation. In our professional opinion, this d during the growing season long enough to satisfy the criterion of

Map Unit Name (Series and Phase	): Undet.			Drainage Class:	Undet.			
Taxonomy (Subgr	roup): Undet.			Field Observations Confirm Mapped Type?	Yes No			
Profile Descriptio	<u>n</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.			
0-27	А	N/2.5	10YR 4/4	Common/small	Silty clay loam			
27+	В	N/2.5	5Y 5/2	Common/large	Clay loam			
Hydric Soil Indica	ators:							
	Histosol		X Conc	retions (Redox concentratio	ons)			
	Histic Epipedon		High	gh Organic Content in Surface Layer in Sandy Soils				
	Sulfidic Odor		Orga	ganic Streaking in Sandy Soils				
	Aquic Moisture	Regime	Liste	sted on Local Hydric Soils List				
	Reducing Condit	tions	Liste	ed on National Hydric Soils List				
	Gleyed or Low-C			Other (Explain in Remarks)				
			Ouic					
				in the rooting zone and rec Soils at this sampling pit m				
pils per the 1987 N			ice of fryune solis.	sons at this sampling pit in	der me deminion of flydric			

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	()
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: Criteria for all 3 mandatory p	parameters of	fwetlands	are met at this sampling pit.

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19	-2004
Applicant/Owner:	MN DOT District 7	County:	Nicol	llet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minn	iesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:	W-CO-29-10-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	-	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:		Upland Pit
(If needed, explain or		<u></u>	(also W-CO-29	- 9-10-2)		

### VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. Zea mays (harvested)	Н	UPL	9		
2			10		
3			11		
4			12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Specie (excluding FAC-).	s that are OBL, F	FACW or FAC	0 %		
Remarks:					

Recorded Data (Describe in F	emarks):		Wetland Hydrology Indicators:
Stream, Lake	or Tide Gau	ge	Primary Indicators:
Aerial Photog	raphs		Inundated
Other			Saturated in Upper 12 Inches
No Recorded Data Available			Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):
		_	Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	>27	(in.)	Water-Stained Leaves
		_	Local Soil Survey Data
Depth to Saturated Soil	>27	(in.)	FAC-Neutral Test
		_	Other (Explain in Remarks)
	5 05		at this site. In our professional opinion, this sampling pit is not owing season long enough to satisfy the criterion of wetland

Map Unit Name (Series and Phase	e): Undet.			Drainage Class:	Undet.		
Taxonomy (Subg	group): Undet.			Field Observations Confirm Mapped Type?	Yes	No	
Profile Description	on						
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Cono Structure,		
0-27	Α	N/2.5	10YR 4/4	Common/small	Silty clay loam		
27+	В	N/2.5	5Y 5/2	Common/large	Clay loam		
,							
Hydric Soil India	cators:						
	Histosol		X Conc	retions (Redox concentratio	ins)		
	_Histic Epipedon		High	h Organic Content in Surface Layer in Sandy Soils			
	_Sulfidic Odor		Orga	ganic Streaking in Sandy Soils			
	Aquic Moisture R	Regime	Liste	sted on Local Hydric Soils List			
	Reducing Condit	ions	Liste	Listed on National Hydric Soils List			
X	Gleved or Low-C			Dther (Explain in Remarks)			
			Oure				
				in the rooting zone and rede Soils at this sampling pit m			
	Manual and Field In		<b>J</b>			,	

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: Criteria for only 1 of 3 mand	atory param	eters of wet	lands are met at this site.		

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-CO-29-10-3
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Wetland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. Phalaris arundinacea	Н	FACW+	9		
2. Hordeum jubatum	<u> </u>	FAC+	10		
3. <u>Aster pilosus</u>	H	FACU-	11		
4			12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, I	FACW or FAC	66 %		

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This sampling pit meets the criterion of hydrophytic vegetation.

Recorded Data (Describe in I	Remarks):		Wetland Hydrology Indicators:
Stream, Lake	or Tide Gau	ge	Primary Indicators:
Aerial Photog	graphs		Inundated
Other			Saturated in Upper 12 Inches
No Recorded Data Available	9		Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):
		_	Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	20	(in.)	Water-Stained Leaves
		_	Local Soil Survey Data
Depth to Saturated Soil	15	(in.)	FAC-Neutral Test
		_	X Other (Explain in Remarks)
		01	ndated or saturated to the surface for a period during the growing
season long enough to satisfy the cri	iterion of we	tland hydrolog	JY.

(Series and Phase	e): Undet.			Drainage Class:	Undet.
Taxonomy (Subg	group): <u>Undet.</u>			Field Observations Confirm Mapped Type?	Yes No
Profile Description	on				
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-22	A	N/2.5	None		Silty clay loam
22+	В	10YR 5/2	None		Clay loam
Hydric Soil India	cators:				
	Histosol		Conc	retions (Redox concentration	ns)
	_Histosol _Histic Epipedon			retions (Redox concentration) Organic Content in Surface	
	-		High		e Layer in Sandy Soils
	_ _Histic Epipedon	Regime	High Orga	Organic Content in Surface	e Layer in Sandy Soils
	_ Histic Epipedon _Sulfidic Odor	-	High Orga Liste	Organic Content in Surface nic Streaking in Sandy Soils	e Layer in Sandy Soils
	_ Histic Epipedon _ Sulfidic Odor _ Aquic Moisture F	ions	High Orga Liste Liste	Organic Content in Surface nic Streaking in Sandy Soils d on Local Hydric Soils List	e Layer in Sandy Soils
  X	_ Histic Epipedon _ Sulfidic Odor _ Aquic Moisture F _ Reducing Condit	ions	High Orga Liste Liste	Organic Content in Surface nic Streaking in Sandy Soils d on Local Hydric Soils List d on National Hydric Soils	e Layer in Sandy Soils
	_ Histic Epipedon _ Sulfidic Odor _ Aquic Moisture F _ Reducing Condit _ Gleyed or Low-C	ions Chroma Colors	High Orga Liste Liste	Organic Content in Surface nic Streaking in Sandy Soils d on Local Hydric Soils List d on National Hydric Soils	e Layer in Sandy Soils

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: Criteria are met for all 3 mar	ndatory para	meters of w	retlands at this sampling pit.

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-CO-29-10-3
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Upland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Bromus inermis</u>	Н	UPL	9.			
2			10.			
3						
4			12.			
5			13.			
6			14.			
7			15.			
8.			16.			
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	0 %			
Remarks: A predominance of h	ydrophytic vege	etation is not prese	ent at t	his site.		

Recorded Data (Describe in I	Remarks):		Wetland Hydrology Indicators:		
Stream, Lake or Tide Gauge			Primary Indicators:		
Aerial Photographs			Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available			Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):		
			Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>22	(in.)	Water-Stained Leaves		
			Local Soil Survey Data		
Depth to Saturated Soil	>22	(in.)	FAC-Neutral Test		
		_	Other (Explain in Remarks)		
Remarks: No indicators of wetland of wetland hydrology.	hydrology w	vere observed a	at this sampling pit. This sampling pit does not meet the criterion		

Map Unit Name (Series and Phase)	: Undet.			Drainage Class:	Undet.		
Taxonomy (Subgr	oup): <u>Undet.</u>			Field Observations Confirm Mapped Type?	Yes No		
Profile Description	<u>n</u>						
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.		
0-11	А	N/2.5	None		Silty clay loam		
11+	В	10YR 4/2	None		Silty clay loam		
Hydric Soil Indica	itors:						
	Histosol		Conc	retions (Redox concentratic	ins)		
	Histic Epipedon		High	h Organic Content in Surface Layer in Sandy Soils			
	Sulfidic Odor		Orga	anic Streaking in Sandy Soils			
	Aquic Moisture R	Regime	Liste	ed on Local Hydric Soils List			
	Reducing Condit	ions	Liste	ed on National Hydric Soils List			
	Gleyed or Low-C			ner (Explain in Remarks)			
Domorko: A lour	bromo motriv in	conjunction with a	ow lying landsoon	position are evidence of h			
NEILIGERS. A IOW-C	, ni utta titati iX III			e position are evidence of h	yui iu sulls.		

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
		2			
Remarks: Criteria for only 1 of 3 mand	atory param	eters of wet	lands are present at his sampling pit.		

Project/Site:	US 14 (North Mankato to New UIm, MN)			Date:	10-19	9-2004
Applicant/Owner:	MN DOT District 7	County:	Nicol	llet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minn	nesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D:	W-CO-29-11-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	-	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:		Wetland Pit
(If needed, explain or	n reverse)				_	

### VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Phalaris arundinacea</u>	Н	FACW+	9.			
2			10.			
3			11.			
4			12.			
5			12			
6			14.			
7			15.			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %						
Remarks: A predominance of h	ydrophytic vege	etation is present a	at this	sampling pit.		

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:			
Stream, Lake or Tide Gauge			Primary Indicators:			
Aerial Photographs			Inundated			
Other			X Saturated in Upper 12 Inches			
No Recorded Data Available			Water Marks			
			Drift Lines			
Field Observations:			Sediment Deposits			
			Drainage Patterns in Wetlands			
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):			
		_	X Oxidized Root Channels in Upper 12 Inches			
Depth to Free Water in Pit:	14	(in.)	Water-Stained Leaves			
		_	Local Soil Survey Data			
Depth to Saturated Soil	11	(in.)	FAC-Neutral Test			
		_	Other (Explain in Remarks)			
Remarks: This sampling pit meets the	ne criteria of	wetland hvdro	ology.			
		j.				

(Series and Phase	e): Okoboji s	silty clay loam (386)		Drainage Class:	Very poorly	drained
Taxonomy (Subg	roup): <u>Cumulic</u>	Haplaquolls		Field Observations Confirm Mapped Type?	Yes	No
Profile Description	on					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, C Structu	oncretions, ure, etc.
0-16	Α	N/2.5	10YR 4/4	Common/medium	Silt I	loam
16-20	Α	N/2.5	10YR 4/4	Common/ medium	Silty cla	ay loam
20+	В	10YR 4/2	10YR 4/4	Common/ medium	Clay	Ioam
Hydric Soil India	ators:					
Hydric Soil India	ators: _ Histosol		XCond	retions (Redox concentratio	ns)	
Hydric Soil Indic				cretions (Redox concentratio Organic Content in Surface		dy Soils
Hydric Soil Indic	Histosol		High		e Layer in Sand	dy Soils
Hydric Soil Indic	_Histosol _Histic Epipedon	Regime	High Orga	Organic Content in Surface	e Layer in Sand	dy Soils
Hydric Soil Indic	Histosol Histic Epipedon Sulfidic Odor	-	High Orga Liste	Organic Content in Surface nic Streaking in Sandy Soils	e Layer in Sand	dy Soils
Hydric Soil Indic	Histosol Histic Epipedon Sulfidic Odor Aquic Moisture I	tions	High Orga Liste Liste	Organic Content in Surface nic Streaking in Sandy Soils d on Local Hydric Soils List	e Layer in Sand	dy Soils

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No No		
Wetland Hydrology Present? Hydric Soils Present?	Yes Yes	No	Is this Sampling Point Within a Wetland?	Yes No
	<u> </u>			
Remarks: This sampling pit met criteria	a for all three	e parameter	s of wetlands.	

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-CO-29-11-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Upland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. Row-cropped land	Н	UPL	9.			
2			10.			
3			11.			
4			12.			
5			13.			
6			14.			
7			15.			
8.			16.			
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	0 %			
Remarks: A predominance of h	ydrophytic vege	etation is not prese	ent at t	his sampling pit.		

Recorded Data (Describe in Remarks):	:	Wetland Hydrology Indicators:
Stream, Lake or Tide G	auge	Primary Indicators:
Aerial Photographs		Inundated
Other		Saturated in Upper 12 Inches
No Recorded Data Available		Water Marks
		Drift Lines
Field Observations:		Sediment Deposits
		Drainage Patterns in Wetlands
Depth of Surface Water:	(in.)	Secondary Indicators (2 or more required):
		Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	(in.)	Water-Stained Leaves
		Local Soil Survey Data
Depth to Saturated Soil	(in.)	FAC-Neutral Test
		Other (Explain in Remarks)
Remarks: No indicators of wetland hydrolog	y were observed a	at this sampling pit.
,,		

Map Unit Name (Series and Phase): Okoboji silty clay loam (386) Drainage Class: Very poorly drained Field Observations Taxonomy (Subgroup): Cumulic Haplaquolls Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, (Munsell Moist) (Munsell Moist) Size/Contrast Structure, etc. Depth (inches) Horizon 0-16 10YR 2/1 10YR 4/4 Few/ small Silt loam А Hydric Soil Indicators: Histosol X Concretions (Redox concentrations) Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List **Reducing Conditions** Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils.

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No			
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: Criteria for only 1 of 3 manc	latory param	neters of we	tlands are met at this site. This sampling pit is not	within v	vetland.

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NI-28-6-2
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Wetland Pit
(If needed, explain or	i reverse)			(also W-NI-28	-6-1)

### VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. Phalaris arundinacea	Н	FACW+	9.			
2. <u>Urtica dioica</u>	Н	FAC+	10.			
3			11.			
4			12.			
5			12			
6			14.			
7.			15.			
8.			16.			
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	100 \$	%		
Remarks: A predominance of h	ydrophytic vege	etation is present a	at this s	ampling pit.		

Recorded Data (Describe in F			Vetland Hydrology Indicators:	
Stream, Lake	or Tide Gau	ge	Primary Indicators:	
Aerial Photog	jraphs		Inundated	
Other			X Saturated in Upper 12 Inches	
No Recorded Data Available			Water Marks	
			Drift Lines	
Field Observations:			Sediment Deposits	
			Drainage Patterns in Wetlands	
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more requir	ed):
		_	Oxidized Root Channels in Upp	per 12 Inches
Depth to Free Water in Pit:	14	(in.)	Water-Stained Leaves	
		_	Local Soil Survey Data	
Depth to Saturated Soil	11	(in.)	FAC-Neutral Test	
		_	Other (Explain in Remarks)	
Remarks: This sampling pit meets th	ne criterion o	f wetland hvd	oqv.	
······································			- 37 .	

Map Unit Name (Series and Phase	): Undet.			Drainage Class:	Undet.	
Taxonomy (Subgr	roup): <u>Undet.</u>			Field Observations Confirm Mapped Type?	Yes	No
Profile Descriptio	<u>n</u>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, C Structu	
0-21	A	N/2.5	7.5YR 4/4	Common/ small	Silt I	oam
21+	B/C	10YR 4/2	7.5YR 4/4	Common/ Small	Claye	y sand
Hydric Soil Indica	ators:					
	Histosol		X Conc	retions (Redox concentratio	ns)	
	Histic Epipedon		High	Organic Content in Surface	e Layer in Sand	dy Soils
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	5	
	Aquic Moisture R	egime	Liste	d on Local Hydric Soils List		
	Reducing Conditi	ons	Liste	d on National Hydric Soils	List	
X	Gleyed or Low-C	hroma Colors	Othe	r (Explain in Remarks)		
	-			· ·		
Remarks: A low- are evidence of hyd		onjunction with rec	lox concentrations	in the rooting zone and a lo	w-lying lands	cape position

Hydrophytic Vegetation Present?	Yes	No		
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No
Remarks: Criteria for all 3 mandatory	parameters c	f wetlands	are met at this sampling pit.	

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	t (Kestrel D	Design	State:	Minnesota
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NI-28-6-2
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Upland Pit
(If needed, explain or	i reverse)			(also W-NI-28	-6-1)

### VEGETATION

Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Bromus inermis</u>	Н	UPL	9.			
2. <u>Trifolium repens</u>	H	FACU+	10.			
3			11.			
4			12.			
5			13.			
6			14.			
7			15.			
8.			16.			
Percent of Dominant Specie (excluding FAC-).	s that are OBL, F	ACW or FAC	0 %			
Remarks: A predominance of h	ydrophytic plan	its is not present a	t this s	ampling pit.		

Recorded Data (Describe in Remarks):	:	Wetland Hydrology Indicators:
Stream, Lake or Tide G	auge	Primary Indicators:
Aerial Photographs		Inundated
Other		Saturated in Upper 12 Inches
No Recorded Data Available		Water Marks
		Drift Lines
Field Observations:		Sediment Deposits
		Drainage Patterns in Wetlands
Depth of Surface Water:	(in.)	Secondary Indicators (2 or more required):
		Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	(in.)	Water-Stained Leaves
		Local Soil Survey Data
Depth to Saturated Soil	(in.)	FAC-Neutral Test
		Other (Explain in Remarks)
Remarks: No indicators of wetland hydrolog	y were observed a	at this sampling pit.
,,		1 01

(Series and Phase	e):			Drainage Class:		
Taxonomy (Subg	Iroup):			Field Observations Confirm Mapped Type?	Yes	No
Profile Descripti	on					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, C Structu	oncretions ure, etc.
0-12	Α	10YR 2/1	None		Clay	loam
12+	A	10YR 2/1	7.5YR 4/4	Common/ small	Clay	loam
Hydric Soil India	ators:					
Hydric Soil India	ators: _Histosol		XConct	retions (Redox concentration	ns)	
Hydric Soil India				retions (Redox concentration Organic Content in Surface		dy Soils
Hydric Soil India	Histosol	 	High			dy Soils
Hydric Soil India	_Histosol _Histic Epipedor		High Orgai	Organic Content in Surface		dy Soils
Hydric Soil India	Histosol Histic Epipedor Sulfidic Odor Aquic Moisture	Regime	High Orgai Listed	Organic Content in Surface nic Streaking in Sandy Soils d on Local Hydric Soils List	Layer in Sand	dy Soils
Hydric Soil India	_Histosol _Histic Epipedor _Sulfidic Odor	Regime itions	High Orgai Listec	Organic Content in Surface nic Streaking in Sandy Soils	Layer in Sand	dy Soils

Hydrophytic Vegetation Present?	Yes	No					
Wetland Hydrology Present?	Yes	No					
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes	No		
Remarks: Criteria for only 1 of 3 mandatory parameters of wetland are met at this sampling pit.							

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NI-28-6-3
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Problem Area?		Yes	No	Plot ID:	Wetland Pit
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator	
1. <u>Scirpus fluviatilis</u>	Н	OBL	9			
2. Phalaris arundinacea	Н	FACW+	10			
3			11			
4			12			
5			13			
6			14			
7.			15.			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %						
Remarks: A predominance of hydrophytic vegetation is present at this sampling pit.						

Recorded Data (Describe in I	Remarks):		Wetland Hydrology Indicators:			
Stream, Lake	or Tide Gau	ge	Primary Indicators:			
Aerial Photog	graphs		Inundated			
Other			X Saturated in Upper 12 Inches			
No Recorded Data Available	)		Water Marks			
			Drift Lines			
Field Observations:			Sediment Deposits			
			Drainage Patterns in Wetlands			
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):			
		_	Oxidized Root Channels in Upper 12 Inches			
Depth to Free Water in Pit:	16	(in.)	Water-Stained Leaves			
		-	Local Soil Survey Data			
Depth to Saturated Soil	12	(in.)	FAC-Neutral Test			
		_	Other (Explain in Remarks)			
Remarks: The criterion for wetland	hydrology is	met at this sa	• mpling pit.			

Map Unit Name (Series and Phase)	): Undet.			Drainage Class:	Undet.			
Taxonomy (Subgr	oup): Undet.			Field Observations Confirm Mapped Type?	Yes	No		
Profile Descriptio	<u>n</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Co Structur			
0-16	А	N/2.5	None		Clay lo	bam		
16+	А	N/2.5	7.5YR 4/4	Few/ small	Cla	у		
Hydric Soil Indica	ators:							
	Histosol		X Conc	retions (Redox concentratio	ons)			
	Histic Epipedon		High	h Organic Content in Surface Layer in Sandy Soils				
	Sulfidic Odor		Orga	ganic Streaking in Sandy Soils				
	Aquic Moisture I	Reaime	Liste	red on Local Hydric Soils List				
	Reducing Condit	-		2				
	-			ted on National Hydric Soils List				
X	Gleyed or Low-C	Chroma Colors	Othe	r (Explain in Remarks)				
		conjunction with rec	dox concentrations	in the rooting zone and a lo	w-lying landsca	npe positio		
re evidence of hyd	FIC SOIIS.							

Hydrophytic Vegetation Present?	Yes	No						
Wetland Hydrology Present?	Yes	No						
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No				
Remarks: Criteria for all 3 mandatory p	Remarks: Criteria for all 3 mandatory parameters of wetlands are met at this sampling pit.							

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NI-28-6-3
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Upland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator	
1. Schizachyrium scoparium	Н	FACU-	9.				
2. <u>Andopogon gerardii</u>	Н	FAC-	10.				
3			11.				
4			12.				
5			13.				
6			14.				
7.			15.				
8.			16.				
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	0 %				
Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.							

Recorded Data (Describe in Rema	rks):	Wetland Hydrology Indicators:			
Stream, Lake or Ti	de Gauge	Primary Indicators:			
Aerial Photograph	IS	Inundated			
Other		Saturated in Upper 12 Inches			
No Recorded Data Available		Water Marks			
		Drift Lines			
Field Observations:		Sediment Deposits			
		Drainage Patterns in Wetlands			
Depth of Surface Water:	(in.)	Secondary Indicators (2 or more required):			
		Oxidized Root Channels in Upper 12 Inches			
Depth to Free Water in Pit:	(in.)	Water-Stained Leaves			
		Local Soil Survey Data			
Depth to Saturated Soil	(in.)	FAC-Neutral Test			
		Other (Explain in Remarks)			
Remarks: No indicators of wetland hydro	ology were observed a	at this sampling pit.			
, , , , , , , , , , , , , , , , , , ,					

(Series and Phase	e): Undet.			Drainage Class:	Undet.		
Taxonomy (Subg	jroup): <u>Undet.</u>			Field Observations Confirm Mapped Type?	Yes	No	
Profile Description	<u>on</u>						
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Co Structu		
0-11	A	10YR 2/1	None		Silty cla	iy loam	
11+	В	2.5Y 4/2	7.5YR 4/4	Few/ small	Clayey	/ sand	
					· . <u> </u>		
Hydric Soil Indic	ators:						
	Histosol		X Conc	retions (Redox concentratio	ins)		
	_Histic Epipedon		High	Organic Content in Surface	e Layer in Sand	ly Soils	
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	5		
	Aquic Moisture F	Regime	Liste	ed on Local Hydric Soils List			
	Reducing Condit	ions	Liste	isted on National Hydric Soils List			
			her (Explain in Remarks)				
X			0110				

Hydrophytic Vegetation Present? Wetland Hydrology Present? Hydric Soils Present?	Yes Yes Yes	No No	Is this Sampling Point Within a Wetland?	Yes	No
Remarks: Criteria for only 1 of 3 manda	atory paramo	eters of wet	ands are met at this sampling pit.		

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7	County:	Nicollet		
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-NI-28-9-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator	
1. <u>Scirpus fluviatilis</u>	Н	OBL	9			
2. Phalaris arundinacea	Н	FACW+	10			
3. <u>Urtica dioica</u>	Н	FAC+	11			
4. Ambrosia trifida		FAC+	12			
5			13			
6			14			
7.			15.			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100 %						
Remarks: A predominace of hydrophytic vegetation is present at this sampling pit.						

Departed Data (Departies in Demarka)			Matlenal I. I. and a state of a s		
			Wetland Hydrology Indicators:		
Stream, Lake	or Tide Gau	ge	Primary Indicators:		
Aerial Photog	graphs		Inundated		
Other			Saturated in Upper 12 Inches		
No Recorded Data Available	)		Water Marks		
			Drift Lines		
Field Observations:			Sediment Deposits		
			Drainage Patterns in Wetlands		
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):		
		_	X Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	>34	(in.)	Water-Stained Leaves		
		_	Local Soil Survey Data		
Depth to Saturated Soil	>34	(in.)	FAC-Neutral Test		
		_	Other (Explain in Remarks)		
Remarks: In our professional opinion, this sampling is inundated or saturated to the surface for a long enough period during the growing season to satisfy the criterion of wetland hydrology. Free water accumulates slowly in sampling pits augered in soils of such high clay content.					

Map Unit Name (Series and Phase		silty clay loam (134) a loam (114)	and Glencoe	Drainage Class:	Very poorly (134 and 11		
Taxonomy (Subgr	oup): <u>Cumulic</u>	Haplaquolls	Field Observations Confirm Mapped Type?	Yes	No		
Profile Descriptio	<u>n</u>						
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast		oncretions, ure, etc.	
0-13	А	N/2.5	7.5YR 4/4	Common/ small	S	ilt	
13-24	А	N/2.5	7.5YR 4/4	Common/ small	Clay	loam	
24-34	А	10YR 2/1	None		Clay	loam	
Hydric Soil Indica	ators:						
	Histosol		X Conc	retions (Redox concentratio	ns)		
	Histic Epipedon		High	gh Organic Content in Surface Layer in Sandy Soils			
	Sulfidic Odor		Orga	rganic Streaking in Sandy Soils			
	Aquic Moisture I	Regime	Liste	isted on Local Hydric Soils List			
	Reducing Condit	tions	Liste	Listed on National Hydric Soils List			
X Gleyed or Low-Chroma Colors			Othe	r (Explain in Remarks)			
	Remarks: A low-chroma matrix in conjunction with redox concentrations in the rootinf zone and a low-lying landscape position. Soils at this sampling pit meet the definition of hydric soils per the <i>1987 Manual</i> and <i>Field Indicators</i> .						

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No				
Wetland Hydrology Present?	Yes	No				
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No			
Remarks: This sampling pit meets criteria for all 3 mandatory parameters of wetlands.						

SOILS

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstances exist on the site?		Yes	No	Community II	D: W-NI-28-9-1
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Upland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator		Dominant Plant Species	Stratum	Indicator
1. <u>Glycine max</u>	Н	UPL	9.			
2			10.			
3			11.			
4			12.			
5			13.			
6			14.			
7			15.			
8.			16.			
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0 %						
Remarks: A predominance of hydrophytic vegetation is not present at this sampling pit.						

Recorded Data (Describe in Re	marks):	Wetland Hydrology Indicators:		
Stream, Lake o	r Tide Gauge	Primary Indicators:		
Aerial Photogra	aphs	Inundated		
Other		Saturated in Upper 12 Inches		
No Recorded Data Available		Water Marks		
		Drift Lines		
Field Observations:		Sediment Deposits		
		Drainage Patterns in Wetlands		
Depth of Surface Water:	(in.)	Secondary Indicators (2 or more required):		
-		Oxidized Root Channels in Upper 12 Inches		
Depth to Free Water in Pit:	(in.)	Water-Stained Leaves		
		Local Soil Survey Data		
Depth to Saturated Soil	(in.)	FAC-Neutral Test		
		Other (Explain in Remarks)		
Remarks: No indicators of wetland hy	drology were observed i	n this sampling pit.		

(Series and Phase			Drainage Class:					
Taxonomy (Subgr	oup):		Field Observations Confirm Mapped Type?	Yes	No			
Profile Descriptio	<u>n</u>							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, C Structu	oncretions µre, etc.		
0-25	Α	10YR 2/1	7.5YR 4/4	Few/small	Silt	oam		
Hydric Soil Indica	Histosol		X Conc	retions (Redox concentratio	ns)			
			High Organic Content in Surface Layer in Sandy Soils					
Histic Epipedon			Organic Streaking in Sandy Soils					
	Sulfidic Odor							
		<b>D</b> .						
	Aquic Moisture	-	Listee	d on Local Hydric Soils List				
		-		d on Local Hydric Soils List d on National Hydric Soils L	ist			
	Aquic Moisture	tions	Liste	-	.ist			

Hydrophytic Vegetation Present?	Yes	No		
Wetland Hydrology Present?	Yes	No		1
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No
Remarks: This sampling pit meets crit	eria for only <sup>2</sup>	1 of 3 mand	atory parameters of wetlands.	

Project/Site:	US 14 (North Mankato to New Ulm, MN)			Date:	10-19-2004
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhart (Kestrel Design Group)			State:	Minnesota
Do Normal Circumstances exist on the site?		Yes	No	Community II	D: W-BE-27-30-2
Is the site significantly disturbed (Atypical Situation)?		Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	Yes	No	Plot ID:	Wetland Pit	
(If needed, explain or	n reverse)				

### VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Rumex crispus</u>	Н	FAC+	9		
2. Polygoinum amphibium	Н	OBL	10		
3. <u>Panicum virgatum</u>	Н	FAC+	11		
4. Hordeum jubatum	Н	FAC+	12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Species (excluding FAC-).	that are OBL, I	FACW or FAC	100 %		
		totion is museumt a	t this compling pit. This small w	at domassion li	

Remarks: A predominance of hydrophytic vegetation is present at this sampling pit. This small wet depression lies within a native prairie planting.

#### HYDROLOGY

			Wetland Hydrology Indicators:
Stream, Lake	or Tide Gau	ge	Primary Indicators:
Aerial Photog	graphs		Inundated
Other			Saturated in Upper 12 Inches
No Recorded Data Available	;		Water Marks
			Drift Lines
Field Observations:			Sediment Deposits
			Drainage Patterns in Wetlands
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):
		_	Oxidized Root Channels in Upper 12 Inches
Depth to Free Water in Pit:	30	(in.)	Water-Stained Leaves
		_	Local Soil Survey Data
Depth to Saturated Soil	25	(in.)	FAC-Neutral Test
		-	Other (Explain in Remarks)
Remarks: In our professional opinio	on this sampl	ina pit is inuna	dated or saturated to the surface for a period long enough to satisfy

Remarks: In our professional opinion this sampling pit is inundated or saturated to the surface for a period long enough to satisfy the criterion of wetland hydrology. Free water accumulates slowly in a sampling pit augered in soil with such high clay content.

Map Unit Name (Series and Phase): Canisteo clay loam (86) Drainage Class: Very poorly drained Field Observations Taxonomy (Subgroup): Typic Haplaquoll Confirm Mapped Type? Yes No **Profile Description** Matrix Color Mottle Colors Mottle Abundance/ Texture, Concretions, Structure, etc. Size/Contrast Depth (inches) Horizon (Munsell Moist) (Munsell Moist) 0-15 N/2.5 А None Clay loam 15-35 А N/2.5 7.5YR 4/4 Few/ small Clay loam 10YR 5/2 Hydric Soil Indicators: X Concretions (Redox concentrations) Histosol Histic Epipedon High Organic Content in Surface Layer in Sandy Soils Sulfidic Odor Organic Streaking in Sandy Soils Aquic Moisture Regime Listed on Local Hydric Soils List Reducing Conditions Listed on National Hydric Soils List X Gleyed or Low-Chroma Colors Other (Explain in Remarks) Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position are evidence of hydric soils. This soil meets the difinition of hydric soils per the 1987 Manual and Field Indicators.

## WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: Criteria for all 3 parameters of	of wetlands v	vere met at	this site.

## DATA FORM ROUTINE WETLAND DETERMINATION (1987 COE Wetlands Delineation Manual)

Project/Site:	US 14 (North Mankato to New Ulm, MN)	Date:	10-20-2004		
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-BE-27-4-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Wetland Pit
(If needed, explain or	n reverse)				

## VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator	Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Polygonum amphibium</u>	Н	OBL	9		
2. <u>Echinochloa crus-galli</u>	Н	FACW	10		
3. <u>Rumex crispus</u>	Н	FAC+	11		
4. Eleocharis erythropoda	Н	OBL	12		
5			13		
6			14		
7			15		
8.			16.		
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	ACW or FAC	100 %		
Remarks: A predominance of hy	ydrophytic vege	etation is present a	at this sampling pit.		

# HYDROLOGY

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:				
Stream, Lake	or Tide Gau	ge	Primary Indicators:				
Aerial Photog	Iraphs		Inundated				
Other			Saturated in Upper 12 Inches				
No Recorded Data Available			Water Marks				
			Drift Lines				
Field Observations:			Sediment Deposits				
			Drainage Patterns in Wetlands				
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):				
		_	Oxidized Root Channels in Upper 12 Inches				
Depth to Free Water in Pit:	>12	(in.)	Water-Stained Leaves				
		_	Local Soil Survey Data				
Depth to Saturated Soil	>12	(in.)	FAC-Neutral Test				
		_	X Other (Explain in Remarks)				
			is sampling pit – indicative of standing water during the growing vetting cycles. In our professional opinion, this site is inundated or n long enough to satisfy the criterion of wetland hydrology.				

SOILS

Taxonomy (Subgroup) Profile Description Depth (inches) 0-5 5-12	): Typic Argi Horizon A A	Matrix Color (Munsell Moist) N/2.5 N/2.5	Mottle Colors (Munsell Moist) None	Field Observations Confirm Mapped Type? Mottle Abundance/ Size/Contrast	Yes No Texture, Concretions, Structure, etc.			
Depth (inches)	А	(Munsell Moist) N/2.5	(Munsell Moist)					
0-5	А	(Munsell Moist) N/2.5	(Munsell Moist)					
·			None					
5-12	A	N/2.5			Clay loam			
		147 2.0	7.5YR 4/4	Common/ small	Clay loam			
Hydric Soil Indicators	:							
Hist	osol		X Conc	retions (Redox concentratio	ns)			
Hist	ic Epipedon		High	Organic Content in Surface	Layer in Sandy Soils			
Sulfi	idic Odor		Orga	nic Streaking in Sandy Soils				
Aqu	ic Moisture Re	egime	Listed	d on Local Hydric Soils List				
Redu	ucing Conditio	ons	Listee	d on National Hydric Soils L	_ist			
X Gley	red or Low-Ch	nroma Colors	Other	ner (Explain in Remarks)				
				· · · · · · · · · · · · · · · · · · ·				
Pomarka: A low abrou	ma matrix in a	onlunction with ro	dov concontrations	in the reating zone and a la	w lying landscape positi			
are evidence of hydric s				in the rooting zone and a lo	w-iying ianuscape positi			

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No	
Wetland Hydrology Present?	Yes	No	
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland? Yes No
Remarks: Criteria for all 3 parameters	of wetlands	are met at t	nis site.

## DATA FORM ROUTINE WETLAND DETERMINATION (1987 COE Wetlands Delineation Manual)

Project/Site:	US 14 (North Mankato to New UIm, MN)	Date:	10-20-2004		
Applicant/Owner:	MN DOT District 7			County:	Nicollet
Investigator:	Jeff Olson (CH2M HILL) and Chris Lenhar Group)	State:	Minnesota		
Do Normal Circumstance	es exist on the site?	Yes	No	Community II	D: W-BE-27-4-1
Is the site significantly dis	sturbed (Atypical Situation)?	Yes	No	Transect ID:	Transect 1
Is the area a potential Pro	blem Area?	Yes	No	Plot ID:	Upland Pit
(If needed, explain or	n reverse)				

## VEGETATION

Dominant Plant Species	<u>Stratum</u>	Indicator		Dominant Plant Species	<u>Stratum</u>	Indicator
1. <u>Zea mays</u>	Н	UPL	9.			
2			10.			
3			11.			
4			12.			
5			13.			
6			14.			
7			15.			
8.			16.			
Percent of Dominant Species (excluding FAC-).	s that are OBL, F	FACW or FAC	0 %			
Remarks: A predominance of h	ydrophytic vege	etation is not prese	ent at t	his sampling pit.		

# HYDROLOGY

Recorded Data (Describe in F	Remarks):		Wetland Hydrology Indicators:				
Stream, Lake	or Tide Gau	ge	Primary Indicators:				
Aerial Photog	Iraphs		Inundated				
Other			Saturated in Upper 12 Inches				
No Recorded Data Available			Water Marks				
			Drift Lines				
Field Observations:			Sediment Deposits				
			Drainage Patterns in Wetlands				
Depth of Surface Water:	0	(in.)	Secondary Indicators (2 or more required):				
		_	Oxidized Root Channels in Upper 12 Inches				
Depth to Free Water in Pit:	>24	(in.)	Water-Stained Leaves				
		_	Local Soil Survey Data				
Depth to Saturated Soil	>24	(in.)	FAC-Neutral Test				
		_	Other (Explain in Remarks)				
Remarks: No indicators of wetland I	nydrology w	vere observed a	at this sampling pit.				
	5 05						
Remarks: No indicators of wetland I	nydrology w	vere observed a	at this sampling pit.				

SOILS

Map Unit Name (Series and Phase	): <u>Cordova</u>	clay loam (109)		Drainage Class:	Poorly drained					
Taxonomy (Subgi	roup): <u>Typic Ar</u> ç	giaquolls	Field Observations Confirm Mapped Type?	Yes No						
Profile Descriptio	n									
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.					
0-10	А	N/2.5	None		Clay loam					
10-12	А	N/2.5	7.5YR 4/4	Common/ small	Clay loam					
Hydric Soil Indica	ators:									
	Histosol		X Conc	retions (Redox concentratio	ins)					
	Histic Epipedon		High	Organic Content in Surface	e Layer in Sandy Soils					
	Sulfidic Odor		Orga	nic Streaking in Sandy Soils	5					
	Aquic Moisture F	Regime	Liste	d on Local Hydric Soils List						
	Reducing Condit	ions	Liste	d on National Hydric Soils	List					
X	Gleyed or Low-C		ner (Explain in Remarks)							
<u></u>			Othe							
Remarks: A low-chroma matrix in conjunction with redox concentrations in the rooting zone and a low-lying landscape position re evidence of hydric soils. Soils at this sampling pit meet the definition of hydric soils per the <i>1987 Manual</i> and <i>Field Indicators</i> .										

# WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	No		
Wetland Hydrology Present?	Yes	No		
Hydric Soils Present?	Yes	No	Is this Sampling Point Within a Wetland?	Yes No
Remarks: Criteria for only 1 of 3 mand	datory param	eters of we	tlands are present at this sampling pit.	

US 14: Aerial Slid Years 1991-2000, Township 109 (Belgrade) Scale 1"=364 feet	2002 Range 27															
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
64: AW-BE-27-30-1 n/a n/a	no yes no	no yes no	yes yes yes	yes no yes	yes no no	yes no no	yes no no	no no no	yes no yes	no no no	yes yes yes	7/11 4/11 4/11	64% 36% 36%	Yes na na	No na na	Meets definition of wetland per off-site delineation methods. na na
		licates tha cates abse							ch as cro	op stress						

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
58: AW-BE-27-19-3	ves	ves	yes	yes	ves	no slide y	ves	no	ves	no	no	7/10	70%	Yes	No	Meets definition of wetland per off-site delineation methods.
60: AW-BE-27-19-2		yes	yes	no	no	no slide		yes	yes	no	no	6 / 10	60%	Yes	No	Meets definition of wetland per off-site delineation methods.
62: AW-BE-27-19-1	yes	yes	yes	yes	yes	no slide y	yes	yes	yes	yes	yes	10/10	100%	Yes	No	Meets definition of wetland per off-site delineation methods.
59: AW-BE-27-19-4	no	no	yes	yes	no	no slide i	no	no	no	yes	yes	4 / 10	40%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	yes	yes	no	no	yes	no slide y	yes	no	no	no	no	4 / 10	40%	No	No	na
n/a	yes	yes	yes	no	no	no slide r	no	yes	no	no	no	4 / 10	40%	No	No	na
n/a	yes	yes	yes	no	no	no slide r	no	no	yes	no	yes	5/10	50%	No	No	na
n/a	no	no	yes	no	no	no slide y	yes	no	yes	no	no	3 / 10	30%	No	No	na
n/a	no	no	yes	no	no	no slide y	yes	no	yes	no	yes	4 / 10	40%	No	No	na
				•		esent in a other signs	• •		ıch as cr	op stres	s					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
12: AW-CO-29-6-3	no	no	yes	yes	yes	9/11	82%	No	No	Field verify						
13: AW-CO-29-6-2	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes	8 / 11	73%	No	No	Field verify
n/a	yes	no	yes	no	yes	no	yes	no	yes	no	yes	6 / 11	55%	No	No	Deleted from wetland list.
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	No	No	
n/a	yes	yes	no	no	no	no	yes	no	yes	yes	yes	6 / 11	55%	No	No	
n/a	yes	no	no	no	no	no	no	no	no	no	yes	2/11	18%	No	No	
n/a	yes	no	no	yes	no	no	yes	yes	no	no	yes	5/11	45%	No	No	
n/a	no	yes	no	no	yes	2/11	18%	No	No							
		icates that tates abs							uch as cr	op stres	5					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
AW-CO-29-31-1	yes	yes	no	yes	yes	no	yes	no	yes	no	yes	7/11	64%	Yes		Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
n/a	no	no	no	no	no	no	yes	no	no	no	yes	2/11	18%	na	na	na
n/a	yes	yes	yes	no	no	no	yes	no	no	no	no	4/11	36%	na	na	na
	1	licates the cates abs		•					uch as cr	op stres	s					

	2002 Range 29															
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
AW-CO-29-8-1	missing	no	missing	no	no	yes	yes	missing	yes	yes	yes	5/8	63%	No	No	Field Verify. Outside of US 14 Project Area Polygon (PAP)
			at a wet s sence of v						ch as ci	rop stres	s					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
15: AW-CO-29-5-1 AW-CO-29-5-2	missing missing		missing missing		yes no	yes yes	no yes	missing missing		yes yes	yes yes	7/8 7/8	88% 88%	Yes Yes	Yes	Meets definition of wetland per off-site delineation methods. Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
n/a	missing missing		missing missing		no no	no yes	yes no	missing missing		no no	no yes	2/8 2/8	25% 25%	na na	na na	
n/a	missing	yes	missing	yes	no	no	yes	missing	no	yes	no	4/8	50%	na	na	
			at a wet sig ence of w						n as croj	o stress						

US 14: Aerial Sliv Years 1991-2000, Township 109 (Courtland) Scale 1"=364 feet	2002 Range 29															
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
AW-CO-29-32-1	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-32-2	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-32-3	no	yes	no	yes	yes	no	yes	no	yes	no	yes	6 / 11	65%	Yes	Yes	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
	1	licates the cates abs		•			• •		uch as cr	op stres	s					

US 14: Aerial Sli	de Reviev	/
Years 1991-2000,	2002	
Township	Range	Sect.
109 (Courtland)	29	4
Scale 1"=364 fee	t	

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
AW-CO-29-4-1	Missing	yes	no	no	no	no	yes	yes	no	yes	yes	5 / 10	50%	Yes		Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-2	Missing	yes	no	no	yes	no	yes	no	yes	no	yes	5 / 10	50%	Yes		Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-3	Missing	yes	no	yes	no	yes	no	no	no	no	yes	4 / 10	40%	Yes	?	Field Verify. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-4	Missing	yes	no	no	yes	yes	no	no	yes	no	yes	5 / 10	50%	Yes		Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
AW-CO-29-4-5	Missing	yes	no	yes	yes	yes	yes	no	yes	no	yes	7 / 10	70%	Yes		Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP)
n/a	Missing	yes	yes	no	no	yes	yes	yes	yes	yes	yes	8 / 10	80%	na	na	na
n/a	Missing	yes	yes	yes	no	yes	yes	yes	no	yes	yes	8 / 10	80%	na	na	na
n/a	Missing	yes	no	no	no	no	no	no	no	no	yes	2 / 10	20%	na	na	na
	1			•		esent in a other sign	• •		ch as cro	op stress	3					

US 14: Aerial Sli Years 1991-2000, Township 109 (Courtland)	2002 Range 29															
Scale 1"=364 feet			J			Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	y Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
n/a n/a	missing missing		no no	no no	no no	yes yes	no no	yes no	yes no	no yes	no yes	3 / 10 3 / 10	30% 30%	na na		na na
	YES indi									on stros	<b>.</b>					

ōownship 09 (Courtland) Scale 1"=364 feet	Range 29	3														
			-			Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Vetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
dentifier W-CO-29-3-2	no	yes	yes	no	no	no	yes	yes	no	no	yes	5/11	45%	Yes		Meets definition of wetland per off-site delineation
W-CO-29-3-1	no	no	yes	no	no	yes	yes	yes	no	no	yes	5/11	45%	Yes	No	methods. Outside of US 14 Project Area Polygon (PAP Meets definition of wetland per off-site delineation methods. Outside of PAP.
W-CO-29-3-4	no	no	yes	no	no	yes	no	no	yes	yes	yes	5/11	45%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of PAP.
W-CO-29-3-3	yes	yes	no	no	yes	10 / 11	91%	Yes		Meets definition of wetland per off-site delineation methods. Outside of PAP.						
/a	no	no	yes	no	no	no	yes	no	no	no	yes	3/11	27%	na	na	na
a	no	no	yes	no	yes	2/11	18%	na	na	na						
a	no	no	yes	no	yes	2/11	18%	na	na	na						
a	yes	no	yes	no	yes	2/11	18%	na	na	na						
'a	no	no	yes	no	yes	2/11	18%	na	na	na						
а	no	yes	yes	no	yes	3/11	27%	na	na	na						

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
	yes	yes yes no no yes no	yes yes yes no no yes	yes yes no yes yes no	no yes yes no yes no	yes no yes no yes no	yes yes no yes no no	no yes yes no yes no no	no yes yes no yes no	yes yes no no no no	yes no yes no yes no no	8/11 9/11 1/11 1/11 4/11 5/11 2/11	73% 82% 100% 9% 36% 45% 18%	Yes Yes na na na na	Yes	Meets definition of wetland per off-site delineation methods. Meets definition of wetland per off-site delineation methods. Meets definition of wetland per off-site delineation methods.
		icates that ates abso		•			• •		ich as cr	op stres	5					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
27: AW-CO-29-12-2	yes	yes	no	yes	no	yes	no	no	no	no	yes	5 /11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
28: AW-CO-29-12-	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	7/11	64%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
29: AW-CO-29-12-	no	yes	yes	yes	no	yes	no	no	no	no	yes	5/11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
30: AW-CO-29-12-	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	11 / 11	100%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
31: AW-CO-29-12-	yes	yes	yes	yes	no	yes	yes	no	no	yes	yes	8/11	73%	Yes	No	Meets definition of wetland per off-site delineation methods.
34: AW-CO-29-12-	no	yes	yes	yes	no	yes	yes	yes	no	yes	yes	8/11	73%	Yes	No	Meets definition of wetland per off-site delineation methods.
AW-CO-29-12-8	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	9/11	82%	Yes	No	Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon.
n/a	yes	yes	no	yes	no	no	no	no	no	no	yes	4/11	36%	n/a	n/a	n/a
n/a	yes	yes	yes	no	no	yes	yes	no	no	no	yes	5/11	45%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	yes	no	no	no	no	yes	3/11	27%	n/a	n/a	n/a
	1	icates that tates abs		•			• •		uch as cr	op stres	S					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland dentifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
23: AW-CO-29-11-2	NO	YES	YES	YES	NO	YES	YES	NO	YES	YES	YES	8 / 11	64%	Yes	Yes	Meets definition of wetland per off-site delineation method
23: AW-CO-29-11-	NO	YES	YES	NO	YES	YES	YES	NO	NO	NO	YES	6 / 11	55%	Yes	Yes	Meets definition of wetland per off-site delineation method
26: AW-CO-29-11-	NO	YES	YES	YES	NO	YES	NO	NO	NO	NO	YES	5/11	45%	Yes	No	Field Verify
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO	1 / 11	9%	na	na	na
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	2/11	18%	na	na	na
n/a	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	2/11	18%	na	na	na
n/a	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	2/11	18%	na	na	na
n/a	NO	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO	3/11	27%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	1 / 11	9%	na	na	na
n/a	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	1 / 11	9%	na	na	na
	YES ind	icates that	at a wet	signature	e was pre	esent in a	a given y	/ear,								
	NO indi	cates abs	ence of	wet sign	ature or	other sia	ns of we	tness, si	uch as c	rop stres	s					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
25: AW-CO29-2-2	NO	YES	YES	YES	NO	NO	NO	NO	YES	NO	YES	5/11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods
AW-CO29-2-1	NO	YES	NO	YES	NO	NO	YES	YES	YES	YES	YES	7 / 11	64%	Yes		Meets definition of wetland per off-site delineation methods. Outside of US 14 Project Area Polygon (PAP).
AW-CO29-2-3	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO	NO	4 / 11	36%	Yes		Meets definition of wetland per off-site delineation methods. Outside of (PAP).
n/a	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	NO	2/11	18%	n/a		n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a		n/a
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a		n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a		n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a		n/a
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a		n/a
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a		n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	4 / 11	36%	n/a	n/a	n/a
		licates tha cates abs		•			• •		uch as ci	op stres	S					

US 14: Aerial Slide	Review	
Years 1991-2000, 20	02	
Township	Range	Sect.
109 (Courtland)	29	1
Scale 1"=364 feet		

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
32: AW-CO-29-12-4	VOS	ves	yes	yes	no	yes	yes	no	no	no	yes	7/11	64%	Yes	No	Meets definition of wetland per off-site delineation methods
33: AW-CO-29-12-5		ves	yes	no	no	yes	yes	no	no	yes	yes	7/11	64%	Yes	No	Meets definition of wetland per off-site delineation methods
	yes	yes	yes	no	no	yes	no	no	no	no	yes	5/11	45%	Yes	No	Meets definition of wetland per off-site delineation methods Outside of US 14 Project Area Polygon(PAP).
AW-CO-29-1-2	yes	yes	yes	no	no	no	yes	no	yes	no	yes	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods Outside of PAP.
AW-CO-29-1-3	yes	no	yes	no	no	yes	yes	no	no	yes	yes	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods Outside of PAP.
n/a	yes	no	no	no	no	no	yes	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	yes	no	no	no	no	no	yes	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1/11	9%	n/a	n/a	n/a
n/a	yes	no	no	no	no	no	no	no	no	no	no	1/11	9%	n/a	n/a	n/a
n/a	no	no	no	no	no	no	yes	no	yes	no	yes	3/11	27%	n/a	n/a	n/a
		dicates the							uch as ci	rop stres	S					

US 14: Aerial S	ide Revie	w
Years 1991-2000	), 2002	
Township	Range	Sect.
US 14: Aerial Si Years 1991-2000 Township 109 (Nicollet)	28	6

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
n/a	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	11/11	100%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	1/11	9%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a	n/a	n/a
n/a	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	10/11	91%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	YES	2/11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	3/11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	3/11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
	1	icates that cates abs		•			• •		uch as cr	op stres	S					

US 14: Aerial Slic Years 1991-2000, Township 109 (Nicollet) Scale 1"=364 feet	2002 Range 28															
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
37: AW-NI-28-7-2	no	yes	yes	no	no	no	yes	no	yes	no	yes	5/11	45%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
39: AW-NI-28-7-3	no	yes	yes	yes	no	no	no	no	no	no	yes	4 / 11	36%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
40: AW-NI-28-7-1	no	no	yes	no	no	no	no	yes	yes	yes	no	4 / 11	36%	Yes	No	Field Verify
n/a	no	no	yes	no	no	no	yes	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	no	no	yes	yes	no	no	yes	no	no	no	no	3/11	27%	n/a	n/a	n/a
n/a	1	yes licates tha cates abs		•			• •		yes uch as cr	no op stres	yes s	10 / 11	91%	n/a	n/a	n/a

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
44: AW-NI-28-8-3	YES	YES	YES	YES	NO	YES	YES	NO	NO	YES	NO	7 / 11	64%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
45: AW-NI-28-8-2	YES	YES	YES	YES	NO	YES	NO	NO	NO	NO	YES	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods.
46: AW-NI-28-8-1	NO	NO	NO	NO	YES	YES	NO	YES	YES	YES	YES	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods.
n/a	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
n/a	YES	NO	YES	NO	NO	YES	NO	NO	YES	NO	YES	5/11	45%	n/a	n/a	n/a
n/a	NO	NO	NO	YES	NO	YES	NO	NO	NO	NO	YES	3/11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	YES	NO	YES	NO	NO	YES	NO	NO	4 / 11	36%	n/a	n/a	n/a
	1	icates that cates abs		•			• •		uch as cr	op stres	s					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
49: AW-NI-28-4-2	no	yes	yes	yes	no	yes	no	no	no	no	yes	5/11	45%	Yes	No	Meets definition of wetland per off-site delineation methods.
52: AW-NI-28-4-3	no	yes	yes	yes	no	yes	yes	no	no	no	yes	6 / 11	54%	Yes	No	Meets definition of wetland per off-site delineation methods.
AW-NI-28-4-1	no	no	no	yes	no	yes	yes	no	yes	no	yes	5/11	45%	Yes	No	Field Verify. Outside of US14 Project Area Polygon.
n/a	no	yes	yes	yes	no	yes	no	no	no	no	yes	4/11	36%	n/a	n/a	n/a
n/a	no	yes	yes	no	no	yes	no	no	no	yes	no	3/11	27%	n/a	n/a	n/a
n/a	no	no	yes	no	no	yes	no	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	yes	no	no	no	no	yes	3/11	27%	n/a	n/a	n/a
n/a	no	yes	yes	no	no	no	no	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1 / 11	9%	n/a	n/a	n/a
		icates tha ates abs		•			• •		uch as cr	op stres	5					

#### US 14: Aerial Slide Review Years 1991-2000, 2002

TownshipRangeSect.109 (Nicollet)285

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
42: AW-NI-28-5-2	No	yes	yes	yes	No	yes	No	No	No	No	No	4 / 11	36%	Yes	No	Field Verify.
43: AW-NI-28-5-3	no	yes	No	No	No	yes	yes	yes	No	No	yes	5/11	45%	Yes	No	Field Verify.
41: AW-NI-28-5-1	yes	No	yes	yes	No	yes	No	No	No	No	No	4 / 11	36%	Yes	No	Field Verify.
n/a	No	No	No	No	No	yes	No	No	No	No	No	1/11	9%	n/a	n/a	n/a
n/a	No	No	yes	No	No	No	No	No	No	No	No	1/11	9%	n/a	n/a	n/a
n/a	No	No	No	yes	No	No	No	No	No	No	yes	1/11	9%	n/a	n/a	n/a
n/a	No	No	No	No	No	yes	No	No	No	No	No	1/11	9%	n/a	n/a	n/a
n/a	yes	No	yes	No	No	yes	yes	No	No	No	yes	5/11	45%	n/a	n/a	n/a
n/a	No	No	yes	No	No	No	yes	No	No	No	yes	4 / 11	36%	n/a	n/a	n/a
n/a	No	yes	No	No	No	1/11	9%	n/a	n/a	n/a						
		icates that cates abs							ich as cr	op stress	1					

#### US 14: Aerial Slide Review Years 1991-2000, 2002

TownshipRangeSect.109 (Nicollet)289

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	9/11	82%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
51: AW-NI-28-9-2	no	no	yes	yes	yes	yes	yes	no	no	yes	no	6/11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
53: AW-NI-28-9-3	yes	yes	yes	yes	no	yes	yes	yes	no	yes	yes	6/11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
50: AW-NI-28-9-4	yes	no	yes	no	no	yes	no	no	yes	yes	yes	6/11	55%	Yes	Yes	Meets definition of wetland per off-site delineation methods.
n/a	yes	no	yes	no	no	no	no	no	no	no	yes	3/11	27%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	yes	no	no	no	no	no	no	no	yes	no	no	3 / 11	27%	n/a	n/a	n/a
	1	licates tha cates abs		•					uch as cr	op stres	s					

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
54: AW-NI-28-10-1	no	no	yes	no	yes	yes	yes	no	yes	yes	no	6/11	55%	No	No	Field Verify
n/a	no	no	-	no	no	no	no	no	no	no	no	0/11	0%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1/11	9%	n/a	n/a	n/a
n/a	no	no	no	yes	no	no	yes	yes	yes	no	no	3/11	27%	n/a	n/a	n/a
n/a	no	no	no	no	no	no	yes	no	yes	no	no	2/11	18%	n/a	n/a	n/a
n/a	no	yes	yes	no	no	no	no	no	no	no	no	3/11	27%	n/a	n/a	n/a
n/a	yes	no	yes	no	no	no	no	no	no	no	no	2/11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	no	1/11	9%	n/a	n/a	n/a
n/a	no	no	no	no	no	no	no	no	yes	no	no	1/11	9%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	no	no	no	no	yes	2/11	18%	n/a	n/a	n/a
n/a	no	no	yes	no	no	no	yes	yes	no	no	yes	4/11	36%	n/a	n/a	n/a
n/a	no	no	no	no	no	yes	no	no	no	no	yes	2/11	18%	n/a	n/a	n/a
	1	icates that cates abs		•			• •		uch as cr	op stres	s					

US 14: Aerial S	lide Revie	w
Years 1991-200	0, 2002	
Township	Range	Sect.
109 (Nicollet)	28	11
. ,		

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
AW-NI-28-11-1	NO	YES	YES	NO	NO	YES	YES	NO	NO	NO	YES	5 / 11	45%	Yes	No	Field Verify. Outside of US14 Project Area Polygon.
n/a	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	1/11	9%	n/a	n/a	n/a
n/a	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	2/11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1/11	9%	n/a	n/a	n/a
n/a	NO	YES	NO	NO	NO	NO	YES	NO	YES	NO	NO	3/11	27%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	2/11	18%	n/a	n/a	n/a
n/a	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	1 / 11	9%	n/a	n/a	n/a
	1	licates the cates abs		•			• •		uch as cr	op stres	s					

	002 Range															
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
55: AW-NI-28-14-1	NO	YES	YES	YES	NO	NO	YES	NO	NO	YES	YES	6 / 11	55%	Yes	No	Meets definition of wetland per off-site delineation methods
n/a N	NO	YES	NO	1 / 11	9%	n/a	n/a	n/a								
		NO	YES	NO	1 / 11	9%	n/a		n/a							
		NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	2/11	18%	n/a		n/a
		NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	3/11	27%	n/a		n/a
n/a 🏻 🖻	NO	NO	YES	NO	YES	2/11	18%	n/a	n/a	n/a						
n/a N	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	3/11	27%	n/a	n/a	n/a
n/a N	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES	2/11	18%	n/a	n/a	n/a

1/11

3/11

9%

27%

NO

NO

n/a n/a

NO

NO

YES NO

YES NO

NO

NO

YES indicates that a wet signature was present in a given year,

NO

NO

NO indicates absence of wet signature or other signs of wetness, such as crop stress

NO

NO

YES NO

NO

YES NO

NO

NO

NO

n/a

n/a

n/a

n/a

n/a

n/a

						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
Identifier																
57: AW-NI-28-24-1	-	NO	YES	NO	NO	YES	YES	NO	NO	YES	YES	5/11	45%	Yes		Meets definition of wetland per off-site delineation methods.
n/a	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	NO	2/11	18%	n/a	n/a	n/a
n/a	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	1/11	9%	n/a	n/a	n/a
n/a	YES	NO	YES	NO	NO	YES	NO	NO	NO	NO	NO	3 / 11	27%	n/a	n/a	n/a
	1	licates tha cates abs		•					uch as cr	op stres	S					

US 14: Aerial Slic Years 1991-2000, Township 109 (Nicollet) Scale 1"=364 feet	2002 Range 28															
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
56: AW-NI-28-13-1 n/a n/a n/a n/a	NO YES NO NO YES	NO NO NO NO NO	YES YES YES NO YES NO	NO NO NO NO NO	NO NO NO NO YES	NO NO NO NO YES	YES NO YES NO YES YES	NO NO NO NO NO	NO NO NO NO NO	NO NO NO NO NO	YES NO NO NO NO	4/11 1/11 2/11 2/11 2/11 4/11	36% 9% 18% 18% 18% 9%	Yes Yes n/a n/a n/a	n/a n/a	Field Verify n/a n/a n/a n/a
		licates that cates abs							uch as ci	op stres	s					

US 14: Aerial Slid Years 1991-2000, Township 109 (Nicollet)																
Scale 1"=364 feet																
						Year						Wet Signatures/ Total Years	% Years Wet Signature Present	Hydric Soils Mapped?	Mapped by NWI?	y Conclusion
Wetland Identifier	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002					
n/a		NO licates that cates abs							NO uch as cr	NO op stres	NO s	1 / 11	9%	n/a	n/a	n/a

# Appendix C: Minnesota Routine Assessment Method (MnRAM v.3) Forms

## MNRAM 3.0 Wetland Assessment Data Form Page 1

		Wetl	and name / ID	We	tland name / ID	Wetl	and name / ID	Wetla	and name / ID
			Functional Group A						
	Date - 8/2004	Wetla	ands						
	Special Features (from list, p.2enter letter/s)	-		-		-		-	
#1	Community Number (circle each community which represents at least 10% of the wetland)	10A,	B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	10A	A, 13A, 13B, 12B, 14A, 15A,	10Å,	B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	10A,	B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B
#2 & #	↓ t3 ~ Describe each community						community type individually		
	Community Type (wet meadow, marsh)	13B	Shallow Marsh	-	-	-	-	-	- -
	Community Proportion (% of total)		40%		-		-		
	Dominant Vegetation / Cover Class	Hvbri	d Cattail / 4						
/#/		River	Bulrush / 2						
Junit			r Smartweed / 1 w Species / 2						
nmo		Hard	stem Bulrush / 2						
Plant Community #1			t Goldenrod / 1 x species / 1						
ä		Care							
	Invasive/exotic Vegetation / Cover Class		I Canary Grass / 2						
	Community Quality (E, H, M, L)	-	0.5		0		0		0
	Community Type (wet meadow, marsh)	15B	Wet Meadow	-	-	-	-	-	-
	Community Proportion (% of total)		60%						
N	Dominant Vegetation / Cover Class		Canary Grass / 5						
Plant Community #2			ing Nettle / 2 t Goldenrod / 2	<u> </u>					
nmu			bar Willow / 1						
t Cor			x species / 2 charis sp. / 1						
Plan									
	Invasive/exotic Vegetation / Cover Class	Reed	I Canary Grass / 5						
	Community Quality (E, H, M, L)	-	0.1		0		0		0
	Community Type (wet meadow, marsh)	-	<u> </u>	-		-	<u>-</u>	-	0
	Community Proportion (% of total)		-		-		-		
	Dominant Vegetation / Cover Class								
y #3									
nunit									
Comr				_					
Plant Community									
<u> </u>	Invasive/exotic Vegetation / Cover Class								
	_								
	Community Quality (E, H, M, L)		0		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
/ #4*	Dominant Vegetation / Cover Class								
tinnt									
omn									
Plant Community #4*									
	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>		U		0		0		0
	Cowardin Types								
	Photo ID								
Highe	st rated community veg. div./integ:	0.5	Medium	0	-	0	-	0	-
Avera	ge vegetative diversity/integrity:	0.30	Low	-	-	-	-	-	-
	nted Average veg. diversity/integrity:	0.26	Low	0.0		0.00	-	0.00	-
	Listed, rare, special plant species? Rare community or habitat?	n n	N N		YN YN		Y N Y N		YN YN
	Pre-European-settlement conditions?	n	N		Y N		Y N		Y N
Flood	dplain Forest [1A, 2A, 3A] * Hardwood Swamp	) [3B]	* Coniferous Bog [2A, 4B] *	Со	niferous Swamp [4B] * Oper	n Bog	[1B, 5A, 5B, 6A, 7A, 9A,	Cov	ver Class Class Range
10A]	* Calcareous Fen [7B, 11B, 14A] * Shrub S	wamp	[6B] * Alder Thicket [8A] *	' Sh	rub-carr [8B] * Sedge Mead	ow [1	0B, 11A, 12A, 13A] *		1 0-3%
	low Marsh [13B] * Deep Marsh [12B] * Wet sonally Flooded Basin [16B]	10 996	st-wesic Frame [14B, 15A]	r re	son (wei) weadow [15B] * Sh	anow	, open water [98, 16A] ^		2 3 - 10% 3 10 - 25%
								'	4 25 - 50%
*If the	re are more than four plant community types,	use th	e next column over to enter	the r	rest and do not rely on the auto	omati	c average calculations.		5 50 - 75% 6 75 - 100%

	А	в	С	_ D	E		F	G	Н			J		<	- 1	М	N	P
	A	• •						0			-	J			<u>с</u>	IVI	IN	F
1			MnRAM 3.0 Digital Works	neet	, 5106	<i>2</i>												
23			Question Description	User	Poting													
4			•	entry	Rating			This co	omes in	from	Side 1	auton	natica	lly.				
5		1	Veg. Table 2, Option 4	onay	0.26													
6		_	TOTAL VEG Rating	0.26	L													
7		4	Listed, rare, special plant species?	n	next													
8		5	Rare community or habitat?	n	next													
9		6	Pre-European-settlement conditions?	n	next													
10		7	hydrogeo & topo	I	Depressio	nal/Is	olated	1										
11 12		8	Water depth (inches) Water depth (% inundation)	36 50%		_												
13		9	Local watershed/immedita drainage (acres)	30					tartin									
14		10	Existing wetland size			bo	oxes	are u	sed in	l cal	cula	tions.						
15	_	11	SOILS: Up/Wetland (survey classification + site)	ollet/Glei	ncoe													
16	no	12	Outlet characteristics for flood retention	b	0.5													
17	cti	13	Outlet characteristics for hydrologic regime	b	0.5		1											
18 19	se	14 15	Dominant upland land use (within 500 ft) Soil condition (wetland)	c a	0.1		1											
20	et,	16	Vegetation (% cover)		Н		1											
21	he	17	Emerg. veg. flood resistance	NA	ter valid c	hoice												
20 21 22 23 24 25 26 27 28 29	Digital worksheet, section I	18	Sediment delivery	b	0.5												2	D
23	VOI	19 20	Upland soils (based on soil group) Stormwater runoff pretreatment & detention	b	0.5 1		0.1										Scro	DII
24		20	Subwatershed wetland density	a a	1		0.1									d	own	to
26	git	22	Channels/sheet flow	a	1													
27	Ď	22 23	Upland naturalized buffer average width (feet)		L	_	WQ	0.1			0.1					a	nsw	/er
28		24	Upland Area Management: % Full		0.1		3	0.21									mor	e
29 30			up area mgmt: % Manicured up area mgmt: % Bare		0.025 0.085													
31		25	Upland Area Diversity & Structure: % Native	2%	0.085	-	3	0.17								-	esti	
32			up area diversity: % Mixed		0.065											a	nd s	see
33			up area diversity: % Sparse/Inv./Exotic	85%	0.085											fc	ormu	دار
34 35		26	Upland Area Slope: % Gentle		0.75		3	0.855										
36			up area slope: % Moderate up area slope: % Steep		0.1 0.005											cald	cula	tion
38			up men sisper /s steep		0.000													
39		27	Downstream sensitivity/WQ protection	b	0.5													
40		28	Nutrient loading	b	0.5												ج ا	~
41		29	Shoreline wetland?	n	N												$\sim$	
42		30	Rooted shoreline vegetation (%cover )	NA NA	1													
43 44		31 32	Wetland in-water width (in feet, average) Emergent vegetation erosion resistance		1 ter valid c	hoice												
45		33	Shoreline erosion potential		ter valid c													
46		34	Bank protection/upslope veg.	NA	ter valid c	hoice												
47	_	35	Rare Wildlife	n	N													
48 49	L	36 37	Scarce/Rare/S1/S2 local community Vegetation interspersion cover (see diagram 1)	n 1	N L		0.1											
50	xic	38	Community interspersion (see diagram 2)		Н		1											
50 51	sec	39	Wetland detritus	b	0.5													
52	jt, :	40	Wetland interspersion on landscape		0.1													
53 54	Jee	41 42	Wildlife barriers Amphibian breeding potential-hydroperiod	b I	0.5 1													
55	ksł	42	Amphibian breeding potentialfish presence	a	1													
56 57	or	44	Amphibian & reptile overwintering habitat	с	0.1		1	"=MIN	N(D51,1	D52)	)							
57	3	45	Wildlife species (list)															
58	lita	46	Fish habitat quality	C	0.1													
59 60	Digital worksheet, section II	47 48	Fish species (list) Unique/rare educ./cultural/rec.opportunity	none n	N													
61		49	Wetland visibility	b	0.5													
62		50	Proximity to population	у	1													
63		51	Public ownership	b	0.5													
64 65		52 53	Public access Human influence on wetland	b c	0.5 0.1													
66		54	Human influence on viewshed		0.1													
67		55	Spatial buffer	с	0.1													
68		56	Recreational activity potential		0.5													
69		57	Commercial crophydrologic impact	n/a	N/A													

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	А	В
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74 75		59 60
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79	tio	64
80	es	65
	nb	66 A
81 82	lal	66 B
83	io I	66 C
84	dit	67
85	Ad	68
86		69
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	58	GW - Wetland soils	r	R or D	0.1	
	59	GW - Subwatershed land use	d	R or D	1	
	60	GW - Wetland size and soil group	d	R or D	1	
	61	GW - Wetland hydroperiod	r	R or D	0.1	
	62	GW - Inlet/Outlet configuration	r	R or D	0.1	
Su	63	GW - Surrounding upland topographic relief	d	R or D	1	
<u>9</u>	64	Restoration potential w/o flooding	na	Y or N	3.3	
est S	65	Landowners affected by restoration	na	Eabc	Enter va	alid choice
ž						
Additional questions	66 A	Existing wetland size (acres) [from #10]	8	acres		
na	66 B	Total wetland restoration size (acres)	4.3	acres		
<u>e</u>	66 C	Potential new wetland area (acres)=B-A	-3.7	acres		
5	67	Average width of naturalized upland buffer (poten	10	feet		
Ad		Ease of potential restoration	b	abc	0.5	
	69	Hydrologic alteration type	tile	Outlet, Tile	, Ditch,	GW pump, Wtrshd div., Filling
	70	Potential wetland type (Circ. 39)	2	1, 2, 3, 4, 5	5, 6, 7, 8	3
		Wetland sensitivity to stormwater	b	Eabc		
	72	Additional stormwater treatment needs	b	abc		
				•		
				-	ory	
		Function Name	Raw score	Final Rating	Rating Category	Formula shown to the right.
		Function Name Vegetative Diversity/Integrity	Raw score	<b>Final</b> Rating	⊤ Rating Category	Formula shown to the right.
ary			Raw score			Formula shown to the right.
ummary		Vegetative Diversity/Integrity	Raw score	0.26 0.43 #VALUE!	L Med #######	Formula shown to the right.
g Summary		Vegetative Diversity/Integrity Hydrology - Characteristic	Raw score	0.26	L Med #######	Formula shown to the right.
Rating Summary		Vegetative Diversity/Integrity Hydrology - Characteristic Flood Attenuation	Raw score	0.26 0.43 #VALUE!	L Med #######	Formula shown to the right.
nal Rating Summary		Vegetative Diversity/Integrity Hydrology - Characteristic Flood Attenuation Water QualityDownstream	Raw score	0.26 0.43 #VALUE! #VALUE!	L Med ####### #######	Formula shown to the right.
ictional Rating Summary		Vegetative Diversity/Integrity Hydrology - Characteristic Flood Attenuation Water QualityDownstream Water QualityWetland	Raw Score	0.26 0.43 #VALUE! #VALUE! 0.43	L Med ###### ###### Med	Formula shown to the right.
Functional Rating Summary		Vegetative Diversity/Integrity Hydrology - Characteristic Flood Attenuation Water QualityDownstream Water QualityWetland Shoreline Protection		0.26 0.43 #VALUE! #VALUE! 0.43 N/A	L Med ####### Med N/A	Formula shown to the right.
Functional Rating Summary		Vegetative Diversity/Integrity Hydrology - Characteristic Flood Attenuation Water QualityDownstream Water QualityWetland Shoreline Protection Characteristic Wildlife Habitat Structure	0.37	0.26 0.43 #VALUE! #VALUE! 0.43 N/A 0.37	L Med ####### ####### Med N/A Med	Formula shown to the right.
Functional Rating Summary		Vegetative Diversity/Integrity Hydrology - Characteristic Flood Attenuation Water QualityDownstream Water QualityWetland Shoreline Protection Characteristic Wildlife Habitat Structure Maintenance of Characteristic Fish Habitat	0.37	0.26 0.43 #VALUE! #VALUE! 0.43 N/A 0.37 0.25	L Med	Formula shown to the right.

## Special Features listing:

С

Groundwater Interaction Groundwater Functional Index

Restoration Potential (draft formula) Stormwater Sensitivity (not active) indeterminate GW source no special indicators

#VALUE!

		Wetland name / ID Wetland name / ID Wetland name / ID					Wetland name / ID				
		TH14 Functional Group B & C									
	Date - 8/2004	Wetlands						J			
	Special Features (from list, p.2enter letter/s)		-		-						
#1	Community Number (circle each community which	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, <b>13B</b> , 12B, 14A, 15A,		3B, 4A, 4B, 7A, 7B, 8A, 8B, A, 13A, 13B, 12B, 14A, 15A,				3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A,			
#1	represents at least 10% of the wetland)	15B, 16A, 16B				16A, 16B		, 16A, 16B, 12B, 14A, 15A, 16A, 16B			
#2 & #	3 ~ Describe each communit					community type individually					
#2 Q #	Community Type (wet meadow, marsh)		-	-	-		, 5010				
	Community Proportion (% of total)	13B Shallow Marsh 10%		-		-		-			
	Dominant Vegetation / Cover Class	Reed Canary Grass / 2									
ŧ	Dominant vegetation / Cover Class	River Bulrush / 1	-								
unity		Stinging Nettle / 2									
u u		Rumex Species / 1									
Plant Community #1											
Pla			_								
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 5									
	Community Quality (E, H, M, L)	- 0.1		0		0		0			
	Community Type (wet meadow, marsh)	no vegetation	-	-	-	-	-	-			
	Community Proportion (% of total)	90%									
<b>C</b> 1	Dominant Vegetation / Cover Class	Corn / Variously Cropped									
Plant Community #2											
muni											
Com											
lant (											
_											
	Invasive/exotic Vegetation / Cover Class										
	Community Quality (E, H, M, L)	- 0		0		0		0			
	Community Type (wet meadow, marsh)		-	-	-	-	-	-			
	Community Proportion (% of total)										
	Dominant Vegetation / Cover Class										
y #3											
nuni											
Com			-								
Plant Community #3											
_	Invasive/exotic Vegetation / Cover Class		-								
	invasive/exolic vegetation / cover class		-								
	Community Quality (E, H, M, L)	0		0		0		0			
	Community Type (wet meadow, marsh)		-	-	-	-	-	-			
	Community Proportion (% of total)										
* 14	Dominant Vegetation / Cover Class										
nity											
Plant Community #4*											
t Co											
Plan	Invasive/exotic Vegetation / Cover Class										
	invasive/extile vegetation / Cover Class										
	Community Quality (E, H, M, L)	- 0		0		0		0			
	Circular 39 Types (primary <tab> others)</tab>										
	Cowardin Types										
	Photo ID										
Highe	st rated community veg. div./integ:	0.1 Low	0	-	0	-	0	-			
Avera	ge vegetative diversity/integrity:	0.05 Low	-	-	-	-	-	-			
	ted Average veg. diversity/integrity:	0.01 -	0.0		0.00	-	0.00				
	Listed, rare, special plant species?	n N		YN YN		Y N Y N		Y N Y N			
	Rare community or habitat? Pre-European-settlement conditions?	n N		Y N Y N		Y N Y N		Y N Y N			
	dplain Forest [1A, 2A, 3A] * Hardwood Swamp		Co		n Bor			ver Class Class Range			
10A]	* Calcareous Fen [7B, 11B, 14A] * Shrub S	wamp [6B] * Alder Thicket [8A] *	' Sh	rub-carr [8B] * Sedge Mead	ow [1	0B, 11A, 12A, 13A] *		1 0 - 3%			
	ow Marsh [13B] * Deep Marsh [12B] * Wet	to Wet-Mesic Prairie [14B, 15A] *	Fre	esh (Wet) Meadow [15B] * Sh	allow	, Open Water [9B, 16A] *		2 3 - 10%			
Seas	onally Flooded Basin [16B]						1	3 10 - 25% 4 25 - 50%			
*If the	re are more than four plant community types,	use the next column over to enter	the r	est and do not rely on the aut	omat	ic average calculations.		5 50 - 75%			
								6 75 - 100%			

A 1 2 3 4 5 6 7 8 9	<u>В</u>	C MnRAM 3.0 Digital Works Question Description	⊳ heet	, Side 2	F 7	G	H	_	<u> </u>	J		K	<u> </u>	М	N	P
2 3 4 5 6 7 8 9	1	-	neel	, Side A	<b>r</b>											
3 4 5 6 7 8 9	1	Question Description			-											
4 5 6 7 8 9	1		User	Rating												
6 7 8 9	1	•	entry			-This co	omes in f	rom Si	de 1	autom	natica	ally.				
7 8 9		Veg. Table 2, Option 4	0.01	0.01												
8 9	٦L	TOTAL VEG Rating	0.01													
9	4	Listed, rare, special plant species? Rare community or habitat?	n n	next next												
	6	Pre-European-settlement conditions?	n	next												
10	7	hydrogeo & topo	I	Depressional	/Isolate	d										
11	8	Water depth (inches)	12	Depressional	1001410											
12		Water depth (% inundation)	10%		Enter	data s	starting	here	A Y	ellov	v					
13	9 10	Local watershed/immedita drainage (acres)	20 5.6				sed in				•					
14 15 16 17 8ection   19	10	Existing wetland size SOILS: Up/Wetland (survey classification + site)		rion												
16 <b>C</b>	12	Outlet characteristics for flood retention	c	0.1												
17 <b>ii</b>	13	Outlet characteristics for hydrologic regime	с	0.1												
18 00	14	Dominant upland land use (within 500 ft)	с	0.1	1											
19 <b>v</b>	15 16	Soil condition (wetland) Vegetation (% cover)	c NA	0.1 H	1											
21 2	17	Emerg. veg. flood resistance	NA	ter valid choi												
15       1         16       17         18       19         19       20         11       12         12       23         24       25         20       30         31       32         33       33	18	Sediment delivery	b	0.5											_	
23 5	19	Upland soils (based on soil group)	b	0.5										1	Scro	oll
24 3	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density		1	0.1									d	owr	to
26 <b>jita</b>	21	Channels/sheet flow	a c	0.1												
27 6	23	Upland naturalized buffer average width (feet)		ter valid cho	WQ	-	-	-						a	nsv	/er
28	24	Upland Area Management: % Full		0.1	3	0.21									mor	е
29		up area mgmt: % Manicured up area mgmt: % Bare	5% 85%	0.025 0.085												
31	25	Upland Area Diversity & Structure: % Native	2%	0.085	3	0.17	,							-		ons
32		up area diversity: % Mixed	13%	0.065										a	nd s	ee
33		up area diversity: % Sparse/Inv./Exotic	85%	0.085										f	orm	ıla
34 35 36	26	Upland Area Slope: % Gentle	75% 20%	0.75 0.1	3	0.855										
36		up area slope: % Moderate up area slope: % Steep		0.005										cal	cula	tions
38		-F min art have a start														
39	27	Downstream sensitivity/WQ protection	b	0.5												
40	28	Nutrient loading	с	0.1											$\prec$	~
41	29	Shoreline wetland?	n	N											~	
42 43	30 31	Rooted shoreline vegetation (%cover) Wetland in-water width (in feet, average)	NA NA	1												
44	32	Emergent vegetation erosion resistance		ter valid choi	ce											
45	33	Shoreline erosion potential	NA	ter valid choi	ce											
46	34	Bank protection/upslope veg.	NA	ter valid choi	ce											
47 48 <b>=</b>	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	n n	N N												
49 5	37	Vegetation interspersion cover (see diagram 1)	1	L	0.1											
50 51 51	38	Community interspersion (see diagram 2)		н	1											
51 0	39	Wetland detritus	C b	0.1												
52 <b>6</b> , <b>1</b>	40 41	Wetland interspersion on landscape Wildlife barriers	b b	0.5												
53 54 55 55	42	Amphibian breeding potential-hydroperiod		0.5												
55 <b>S</b>	43	Amphibian breeding potentialfish presence	а	1												
56 57	44	Amphibian & reptile overwintering habitat	N/A	N/A	0	"=MIN	N(D51,E	052)								
57 <b>7</b> 57	45 46	Wildlife species (list) Fish habitat quality	pheasant c	0.1												
59 59	47	Fish species (list)		0.1												
	48	Unique/rare educ./cultural/rec.opportunity	n	N												
61	49	Wetland visibility	с	0.1												
62 63	50 51	Proximity to population Public ownership	y c	1 0.1												
64	52	Public access	c	0.1												
65	53	Human influence on wetland	с	0.1												
66	54	Human influence on viewshed		0.1												
67 68	55 56	Spatial buffer Recreational activity potential	c c	0.1												
69	57	Commercial crophydrologic impact	c	0.1							_					

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А	В	С	D	E	F	G	Н	1	J	K	L	M	N
						-	-	-	-				-
	58	GW - Wetland soils	r	R or D	0.1								
	59	GW - Subwatershed land use	d	R or D	1								
	60	GW - Wetland size and soil group	d	R or D	1								
	61	GW - Wetland hydroperiod	r	R or D	0.1								
	62	GW - Inlet/Outlet configuration	d	R or D	1								
Su	63	GW - Surrounding upland topographic relief	d	R or D	1	_							
E:	64	Restoration potential w/o flooding	у	Y or N	4.2	-							
es	65	Landowners affected by restoration	b	Eabc	0.5								
nal	66 C 67 68 69 70 71	Existing wetland size (acres) [from #10] Total wetland restoration size (acres) Potential new wetland area (acres)=B-A Average width of naturalized upland buffer (poten Ease of potential restoration Hydrologic alteration type Potential wetland type (Circ. 39) Wetland sensitivity to stormwater Additional stormwater treatment needs	b tile, ditc	acres		GW p	ump, W	trshd di	v., Fillir	ng			

Function Name	Raw score	Final Rating	Rating Category	Formula shown to the
Vegetative Diversity/Integrity		0.01	L	
Hydrology - Characteristic		0.10	Low	
Flood Attenuation		#VALUE!	######	
Water QualityDownstream		#VALUE!	######	
Water QualityWetland		#VALUE!	######	
Shoreline Protection		N/A	N/A	
Characteristic Wildlife Habitat Structure	######	#VALUE!	######	
Maintenance of Characteristic Fish Habitat	0.19	0.19	Low	
Maintenance of Characteristic Amphibian Habitat		0.00	Low	
Aesthetics/Recreation/Education/Cultural	0.21	0.21	Low	
Commercial use		0.10	Low	. 0.1
Special Features listing:			-	
roundwater Interaction		discharge		

Groundwater Functional Index

Restoration Potential (draft formula) Stormwater Sensitivity (not active) 2.50

no special indicators

Ρ

		Wetland name / ID	Wetland name / ID			and name / ID	Wetland name / ID				
		TH14 Functional Group D									
	Date - 8/2004	Wetlands									
	Special Features (from list, p.2enter letter/s)		-				-				
#1	Community Number (circle each community which	3A, <b>3B</b> , 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A,		, 3B, 4A, 4B, 7A, 7B, 8A, 8B, A, 13A, 13B, 12B, 14A, 15A,				3B, 4A, 4B, 7A, 7B, 8A, 8B, , 13A, 13B, 12B, 14A, 15A,			
	represents at least 10% of the wetland)	15B, 16A, 16B				16A, 16B		, 16A, 16B			
#2 & #	A     Cescribe each community	y type individually below ~		~ Describe	each	community type individually	i / belo	W ~			
	Community Type (wet meadow, marsh)	3B Hardwood Swamp	-	-	-	<u>-</u>	-	-			
	Community Proportion (% of total)	100%				I					
	Dominant Vegetation / Cover Class	Green Ash / 3									
۷ #1		American Elm / 3									
Junit		Black Willow / 1 Reed Canary Grass / 2									
omn		Unidentified Sedge Species / 1									
Plant Community #1		Riverbank Grape / 1 Box Elder / 2	_								
₫.											
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 2	_								
	Community Quality (E, H, M, L)	m 0.5		0		0		0			
	Community Type (wet meadow, marsh)	0.0	-		-		_	Ŭ			
	Community Proportion (% of total)			-		-		-			
	Dominant Vegetation / Cover Class										
#2			-								
unity											
umo			-								
Plant Community #2											
Pla			-								
	Invasive/exotic Vegetation / Cover Class										
	Community Quality (E, H, M, L)	-				-					
-	Community Type (wet meadow, marsh)	-	-	0		0		0			
			-	-	-	-	-	-			
	Community Proportion (% of total)		-								
¥3	Dominant Vegetation / Cover Class										
unity											
umo											
Plant Community #3											
ä											
	Invasive/exotic Vegetation / Cover Class		_								
	Community Quality (E, H, M, L)	0		0		0		0			
	Community Type (wet meadow, marsh)		-	-	-	-	-	-			
	Community Proportion (% of total)										
* 4*	Dominant Vegetation / Cover Class										
unity			<u> </u>								
ammo											
Plant Community #4*			-								
₫.	Invasive/exotic Vegetation / Cover Class										
	Community Quality (E, H, M, L)	- 0		0		0		0			
	Circular 39 Types (primary <tab> others)</tab>					U					
	Cowardin Types										
	Photo ID										
Highe	st rated community veg. div./integ:	0.5 Medium	0	-	0	-	0	-			
Avera	ge vegetative diversity/integrity:	0.50 Medium	-	-	-	-	-	-			
	ted Average veg. diversity/integrity:	0.50 Medium	0.0		0.00		0.00				
	Listed, rare, special plant species? Rare community or habitat?	n N n N		Y N Y N		Y N Y N		Y N Y N			
	Pre-European-settlement conditions?	n N		Y N		Y N		Y N			
	dplain Forest [1A, 2A, 3A] * Hardwood Swamp		Co		n Boo			over Class Class Range			
10A]	* Calcareous Fen [7B, 11B, 14A] * Shrub S	wamp [6B] * Alder Thicket [8A] *	* Sh	nrub-carr [8B] * Sedge Mead	ow [1	0B, 11A, 12A, 13A] *		1 0 - 3%			
	ow Marsh [13B] * Deep Marsh [12B] * Wet onally Flooded Basin [16B]	to vvet-Mesic Prairie [14B, 15A] *	Fre	esn (Wet) Meadow [15B] * Sh	allow	, Open Water [9B, 16A] *		2 3 - 10% 3 10 - 25%			
							1	4 25 - 50%			
*If the	re are more than four plant community types,	es, use the next column over to enter the rest and do not rely on the automatic average calculations.						5. 5 50 - 75% 6 75 - 100%			
							l	o 75-100%			

	A	в	C	_ 		l F		G	Н		1	J	k		1	М	N	P	٦
			MnRAM 3.0 Digital Works			_		0				5			<u> </u>	IVI	11	<u> </u>	-
1			WITCHIN S.U DIGITAL WOLKS	ΠΕΕΙ	, Siue	. 2													
2			Question Description	User	Rating														
4		_	•	entry		-	_	This co	mes in f	from	Side 1	autom	natical	ly.					
5		1	Veg. Table 2, Option 4	0.5	0.50		-												
6		٦L	TOTAL VEG Rating Listed, rare, special plant species?	0.5	Medium														
7 8		5	Rare community or habitat?	n n	next next														
9		6	Pre-European-settlement conditions?	n	next														
10		7	hydrogeo & topo		Depression	nal/Isol	ated												
11		8	Water depth (inches)	12	F														
12			Water depth (% inundation)	25%		Ent	er c	lata s	tarting	a he	re. \	(ellov	v						
13		9 10	Local watershed/immedita drainage (acres) Existing wetland size	8					sed in										
14 15	_	11	SOILS: Up/Wetland (survey classification + site)		lilfer	L													
16 16 17	Ľ	12	Outlet characteristics for flood retention		0.5														
17	ţ	13	Outlet characteristics for hydrologic regime		0.5														
18	sec	14	Dominant upland land use (within 500 ft)		0.1		1												
20	žt,	15 16	Soil condition (wetland) Vegetation (% cover)	b N/A	0.5 N/A	N/A													
21	hee	17	Emerg. veg. flood resistance		ter valid ch														
22	ksl	18	Sediment delivery	b	0.5												~		
18 19 20 21 22 23 24 25 26 27 28	Digital worksheet, section I	19 20	Upland soils (based on soil group)		0.5	,	).5									1	Scro	oll	
24	- F	20	Stormwater runoff pretreatment & detention Subwatershed wetland density	b a	0.5	(	).5									d	owr	n to	
26	gita	22 23	Channels/sheet flow	b	0.5														
27	Ď		Upland naturalized buffer average width (feet)		Н	_	VQ		Μ		0.5					а	nsv	/er	
28		24	Upland Area Management: % Full		0.1		3	0.21									mor	е	
29 30			up area mgmt: % Manicured up area mgmt: % Bare		0.025 0.085											au	esti	ong	
31		25	Upland Area Diversity & Structure: % Native	2%	0.02	-	3	0.17								-			
32			up area diversity: % Mixed		0.065											a	nd s	see	
33 34		26	up area diversity: % Sparse/Inv./Exotic	85%	0.085	-	3	0.54								fo	orm	ula	
35		20	Upland Area Slope: % Gentle up area slope: % Moderate		0.2		3	0.54									cula		
36			up area slope: % Steep		0.015											Call	Jula	lion	2
38																			
39		27	Downstream sensitivity/WQ protection		0.5														
40		28	Nutrient loading		0.5												$\overline{}$	7	
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)		N 1														
43		31	Wetland in-water width (in feet, average)	NA	1														
44		32	Emergent vegetation erosion resistance		ter valid cł														
45 46		33 34	Shoreline erosion potential		ter valid ch ter valid ch														
40		35	Bank protection/upslope veg. Rare Wildlife	NA n	rer vand cr	loice													
48	=	36	Scarce/Rare/S1/S2 local community	n	N														
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	3	М		).5												
50 51	ect	38 39	Community interspersion (see diagram 2) Wetland detritus		L 1	(	).1												
52	, SC	40	Wetland interspersion on landscape	a b	0.5														
53	eet	41	Wildlife barriers	b	0.5														
54	she	42	Amphibian breeding potential-hydroperiod		0														
55 56	ork	43 44	Amphibian breeding potentialfish presence Amphibian & reptile overwintering habitat	a c	1 0.1		0 '	-MIN	(D51,I	D52)									
57	Ň	44	Wildlife species (list)		0.1		U	-1111	, <b>1,1</b>	(22									
58	ital	46	Fish habitat quality	с	0.1														
59	Digi	47	Fish species (list)																
60 61		48 49	Unique/rare educ./cultural/rec.opportunity Wetland visibility	n b	N 0.5														
62		50	Proximity to population		1														
63		51	Public ownership	c	0.1														
64		52 52	Public access Human influence on wetland	b	0.5														
65 66		53 54	Human influence on wetland Human influence on viewshed	b c	0.5 0.1														
67		55	Spatial buffer	c	0.1														
68		56	Recreational activity potential	b	0.5														
69		57	Commercial crophydrologic impact	N/A	N/A														

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А	В	С	D	E	F	G	Н	I	J	K	L	М	Ν
	58	GW - Wetland soils	r	R or D	0.1								
	59		d	R or D	1								
	60	GW - Wetland size and soil group	d	R or D	1								
	61	GW - Wetland hydroperiod	r	R or D	0.1								
ß	62	GW - Inlet/Outlet configuration	r	R or D	0.1								
Ë	63	GW - Surrounding upland topographic relief	r	R or D	0.1								
Additional questions		Restoration potential w/o flooding	N/A	Y or N	2.4								
es	65	Landowners affected by restoration	N/A	Eabc	Enter va	alid ch	oice						
ŋ	66 A												
Ē		Existing wetland size (acres) [from #10]	2	acres									
ů		Total wetland restoration size (acres)	4.3	acres									
₽		Potential new wetland area (acres)=B-A	2.3	acres									
ē		Average width of naturalized upland buffer (poten		feet									
Ă			N/A	abc	Enter va								
-		Hydrologic alteration type		Outlet, Tile	, Ditch,	GW pι	ump, Wtr	shd div	/., Fillir	ng			
	70	Potential wetland type (Circ. 39)	7	1, 2, 3, 4, 5	5, 6, 7, 8								
	71	Wetland sensitivity to stormwater	b	Eabc									
	72	Additional stormwater treatment needs	b	abc									
					•								
					È								
			. 0	l ng	gu gg								
			Raw score	Final Rating	Rating Category		<b>F I</b> .						
		Function Name		0.50	Med		Formula	snowi	1 to the	e right.			
		Vegetative Diversity/Integrity		0.50	Med								
		Hydrology - Characteristic		0.40	Med								
Summary		Hydrology Characteristic		0.40	med								
Ĕ		Flood Attenuation		0.60	Med								
Ę													
ທ		Water QualityDownstream		0.45	Med								

Special Features listing:

Groundwater Interaction	
Groundwater Functional Index	

Water Quality--Wetland

Characteristic Wildlife Habitat Structure

Maintenance of Characteristic Fish Habitat

Aesthetics/Recreation/Education/Cultural

Maintenance of Characteristic Amphibian Habitat

Shoreline Protection

Commercial use

Restoration Potential (draft formula) Stormwater Sensitivity (not active) recharge no special indicators

0

#VALUE!

0.45

N/A

0.45

0.32

0.00

0.41

N/A

0.45

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base - a200         THE Amenian different Prediction         memoion         memoion         memoion           commany Net presentation in pre-remained memoion and size estimation of the fire size			Wetl	and name / ID	Wetlar	nd name / ID	Wetl	and name / ID	Wetl	and name / ID	
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Image: state in the intervention of the interventintervention of the intervention of the intervention o				ands							
Image: market in the second and market when it is the second and market when		Special Features (from list, p.2enter letter/s)									
operation         light (A) (dig)         (b) (A) (dig)           state         Community Type (wet needow, name)         (b) (A) (dig)         (C) (C) (C) (dig)         (C) (C) (C) (C) (dig)         (C) (C) (C) (C) (C) (dig)         (C)	#1	Community Number (circle each community which									
	#1	represents at least 10% of the wetland)									4A, 13A,
Memory Type (with Masker, marker)         10         With Masker         -        -         -         - <td>#2 &amp; #</td> <td>A Cescribe each communit</td> <td></td> <td></td> <td>, í</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	#2 & #	A Cescribe each communit			, í						
					-				-		
Particular Vegetation / Cover Class     Read Canany Orise / 4 Claim & Goldsmod / 2 Sensitive Wiley / 3     Image Claim & College Of 2 Sensitive Wiley											
Marka         Control         Control <th< td=""><td></td><td></td><td>Reed</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>			Reed								
Invasive/exotic Vegetation / Cover Class         Reed Carary Grass / 4         Image: Community Proportion (% of trains)         M         0.5         0         0         0         0           Community Type (with medado, math)         48         Sindla-carr         1         .	ŧ										
Invasive/exotic Vegetation / Cover Class         Reed Carary Grass / 4         Image: Community Proportion (% of trains)         M         0.5         0         0         0         0           Community Type (with medado, math)         48         Sindla-carr         1         .	hini										
Involve/exact         Read Carary Grass / 4         Important         Important <thimportant< th="">         Important         Important&lt;</thimportant<>	umo		Sanu	bar Willow / 5							
Involve/exact         Read Carary Grass / 4         Important         Important <thimportant< th="">         Important         Important&lt;</thimportant<>	ant C										
Community Quality (E, H, M, L)         M         0.5         0         0         0           Community Type (exe madow, markh)         48         Strub-carr         0         0         0           Community Type (exe madow, markh)         88         Strub-carr         0         0         0         0           Community Type (exe madow, markh)         88         Strub-carr         0         0         0         0           Transive/exotic Vagetation / Cover Class         Savetter Wilkew / 5	Ē										
Community Type (rest meadow, marsh)         68         Strub-carr         -        -         -         - <td></td> <td>Invasive/exotic Vegetation / Cover Class</td> <td>Reed</td> <td>Canary Grass / 4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		Invasive/exotic Vegetation / Cover Class	Reed	Canary Grass / 4							
Community Type (rest meadow, marsh)         68         Strub-carr         -        -         -         - <td></td> <td>Community Quality (E, H, M, L)</td> <td>M</td> <td>0.5</td> <td></td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td>		Community Quality (E, H, M, L)	M	0.5		•					
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Mark         Deminant Vegetation / Cover Class         Sanchar Willow / 5         Image: Construction of Cover Class         Sanchar Willow / 5         Image: Construction of Cover Class         Image:			88		-	-	-	-	-	-	
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Invasive/exotic Vegetation / Cover Class         Image in the second	nity #		Reed	Canary Grass / 4							
Invasive/exotic Vegetation / Cover Class         Image in the second	nmu										
Invasive/exotic Vegetation / Cover Class         Image in the second	t Cor										
Community Quality (E, H, M, L)         L         0,1         0         <	Plan										
Community Quality (E, H, M, L)         L         0,1         0         <											
Community Type (wet meadow, marsh)         Community Proportion (% of total)		Invasive/exotic vegetation / Cover Class									
Community Type (wet meadow, marsh)         -		Community Quality (E, H, M, L)	L	0.1		0		0		0	
Dominant Vegetation / Cover Class		Community Type (wet meadow, marsh)	-	-	-	-	-	-	-		
Image: second		Community Proportion (% of total)									
Invasive/exotic Vegetation / Cover Class         Image: community of the sector of	~	Dominant Vegetation / Cover Class									
Invasive/exotic Vegetation / Cover Class         Image: Properties (% of total)         Image: Properies	ity #3	-									
Invasive/exotic Vegetation / Cover Class         Image: community of the sector of	unu										
Invasive/exotic Vegetation / Cover Class         Image: community of the sector of	Com										
Invasive/exotic Vegetation / Cover Class         Image: community of the sector of	lant										
Image: construction of the second s		Invasive/exotic Vegetation / Cover Class									
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Community Proportion (% of total)		Community Quality (E, H, M, L)		0		0		0		0	
Image: book of the section of the sectin of the sectin of the section of the section of the section of		Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-	
And a second s		Community Proportion (% of total)									
Invasive/exolic vegetation / Cover Class         Image: control of cover clas         Image: cover class         Ima	*4*	Dominant Vegetation / Cover Class									
Invasive/exolic vegetation / Cover Class         Image: control of cover clas         Image: cover class         Ima	unity										
Invasive/exolic vegetation / Cover Class         Image: control of cover clas         Image: cover class         Ima	й ш										
Invasive/exolic vegetation / Cover Class         Image: control of cover clas         Image: cover class         Ima	Ŭ										
Image: Community Quality (E, H, M, L)         Image: Community Quality (E, H, M,	Pla	Invasive/exotic Vegetation / Cover Class									
Circular 39 Types (primary <tab> others)       0<td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tab>											
Cowardin Types       N       V       N       V       N       V       N         Highest rated community veg. div./integ:       0.5       Medium       0       -       0       -       0       -         Average vegetative diversity/integrity:       0.30       Low       -       -       0       - <td></td> <td>Community Quality (E, H, M, L)</td> <td>-</td> <td>0</td> <td></td> <td>0</td> <td></td> <td>0</td> <td></td> <td>0</td> <td></td>		Community Quality (E, H, M, L)	-	0		0		0		0	
Photo ID       Image: Text of the photo ID       Photo ID       Image: Text of the photo ID       Image: Text of te		Circular 39 Types (primary <tab> others)</tab>									
Highest rated community veg. div./integ:       0.5       Medium       0       -       0       -       0       -         Average vegetative diversity/integrity:       0.30       Low       - </td <td></td>											
Average veg. diversity/integrity:       0.30       Low       - <td></td>											
Weighted Average veg. diversity/integrity:       0.42       Medium       0.00       0.00       0.00       0.00       0.00       0.00         #4       Listed, rare, special plant species?       n       N       Y	Highe	st rated community veg. div./integ:	0.5	Medium	0	-	0	-	0		
#4       Listed, rare, special plant species?       n       N       Y					-	-	-	-	-		
#5       Rare community or habitat?       n       N       Y					0.00	- V N	0.00	- V N	0.00	- -	
#6       Pre-European-settlement conditions?       n       N       Y       N       Y       N       Y       N         Floodplain Forest [1A, 2A, 3A] * Hardwood Swamp [3B] * Coniferous Bog [2A, 4B] * Coniferous Swamp [4B] * Open Bog [1B, 5A, 5B, 6A, 7A, 9A, 10A] *       Cover Class       Class Range         10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] *       Cover Class       Class Range         Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] *       2       3 - 10%         Seasonally Flooded Basin [16B]       *       *       *       4       25 - 50%         * If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.       5       50 - 75%											
10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] *10 - 3%Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] *23 - 10%Seasonally Flooded Basin [16B]310 - 25%425 - 50%*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.550 - 75%	#6	Pre-European-settlement conditions?	n	Ν		Y N		Y N			
Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] *       2       3 - 10%         Seasonally Flooded Basin [16B]       3       10 - 25%         *If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.       5       50 - 75%	Flood	dplain Forest [1A, 2A, 3A] * Hardwood Swamp	[3B]	* Coniferous Bog [2A, 4B] *	Conife	rous Swamp [4B] * Oper	n Bog	[1B, 5A, 5B, 6A, 7A, 9A,	Cove		
Seasonally Flooded Basin [16B]       3       10 - 25%         *If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations.       4       25 - 50%         5       50 - 75%											
*If there are more than four plant community types, use the next column over to enter the rest and do not rely on the automatic average calculations. 5 50 - 75%			10 116	a-meaic Fiante [14D, 13A]	116211		anow	, Open water [9D, TOA]			
				e neut eelumer euro ta t	4h a	and do not when the			1	4 25 -	50%
	ii the	re are more than four plant community types,	use th	e next column over to enter	uie rest	and do not rely on the aut	omat	c average calculations.			

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1			MnRAM 3.0 Digital Works	neel	, side	2										
2			Question Description	User	Rating											
4				entry	Rung		This co	omes in fro	om Side	1 auto	omatic	ally.				
5		1	Veg. Table 2, Option 4		0.42											
6			TOTAL VEG Rating	0.42	Medium											
7		4	Listed, rare, special plant species?	n	next											
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	n n	next next											
10		7	hydrogeo & topo		Floodplain											
11		8	Water depth (inches)	0	riooupiam											
12			Water depth (% inundation)	0%		Entor	data a	tarting	horo	Valle						
13		9	Local watershed/immedita drainage (acres)	5		_		sed in d								
14		10	Existing wetland size SOILS: Up/Wetland (survey classification + site)		lfor											
15	2	11 12	Outlet characteristics for flood retention	N/A	N/A											
17	tio	13	Outlet characteristics for hydrologic regime	N/A	ter valid che	oice										
18	Sec	14	Dominant upland land use (within 500 ft)	b	0.5	0.5										
19	ť, s	15	Soil condition (wetland)	b	0.5											
20	ee	16 17	Vegetation (% cover) Emerg. veg. flood resistance	95% a	H 1	1										
14           15           16           17           18           19           20           21           22           23           24           25           26           27           28           29           30           31           32           33	Digital worksheet, section I	18	Sediment delivery	b	0.5											
23	or	19	Upland soils (based on soil group)	b	0.5									S	Scro	11
24	<u>&gt;</u>	20	Stormwater runoff pretreatment & detention		0.5	0.5									own	
25	lita	21 22	Subwatershed wetland density Channels/sheet flow	a c	1 0.1									u		10
27	Dig	23	Upland naturalized buffer average width (feet)		Н	WQ	1	М	0.	5				a	nsw	ər
28	_	24	Upland Area Management: % Full	85%	0.85		0.865							r	nore	ć
29			up area mgmt: % Manicured		0											
31		25	up area mgmt: % Bare Upland Area Diversity & Structure: % Native	15% 75%	0.015	- 3	0.835							-	estic	
32		20	up area diversity: % Mixed		0.075		0.000							ar	nd se	эе
33			up area diversity: % Sparse/Inv./Exotic	10%	0.01	1								fo	rmu	
34 35 36		26	Upland Area Slope: % Gentle		0.1	3	0.35									
36			up area slope: % Moderate up area slope: % Steep		0.2 0.05									calc	ulat	IONS
38			up men sisper /s steep		0102	4										
39		27	Downstream sensitivity/WQ protection	a	1											
40		28	Nutrient loading	b	0.5									•		,
41		29	Shoreline wetland?		Y										$\sim$	
42 43		30 31	Rooted shoreline vegetation (%cover) Wetland in-water width (in feet, average)	95% 2	1 0.1											
43		32	Emergent vegetation erosion resistance		1											
45		33	Shoreline erosion potential		1											
46		34	Bank protection/upslope veg.	с	0.1											
47 48	=	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	n n	N N											
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	2	L	0.1										
50 51	ctic	38	Community interspersion (see diagram 2)	1	L	0.1										
51	Se	39 40	Wetland detritus	b	0.5											
52 53	et,	40 41	Wetland interspersion on landscape Wildlife barriers	b b	0.5 0.5											
53 54	he	42	Amphibian breeding potential-hydroperiod		0.5											
55	rks	43	Amphibian breeding potentialfish presence	b	0.5											
56 57	NO	44	Amphibian & reptile overwintering habitat		0.1	0	"=MIN	V(D51,D	52)							
57 58	al	45 46	Wildlife species (list) Fish habitat quality	none b	0.5											
59 60	igit	47	Fish species (list)		1											
60	Ō	48	Unique/rare educ./cultural/rec.opportunity	n	N											
61 62		49 50	Wetland visibility Proximity to population	b	0.5											
62 63		50	Proximity to population Public ownership	y b	1 0.5											
64		52	Public access	b	0.5											
65		53	Human influence on wetland	b	0.5											
66 67		54 55	Human influence on viewshed Spatial buffer	b b	0.5 0.5											
67 68		55	Recreational activity potential	b	0.5											
69		57	Commercial crophydrologic impact	N/A	N/A											

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А	В	C	D	E	F	G	Н		Ι	J		Κ	L	_	М	N	Ρ
	60				1 04												
	58 59	GW - Wetland soils GW - Subwatershed land use	r d	R or D R or D	0.1												
	60	GW - Wetland size and soil group	u r	R or D	0.1												
	61	GW - Wetland hydroperiod	r	R or D	0.1												
	62	GW - Inlet/Outlet configuration	d	R or D	1												
SL	63	GW - Surrounding upland topographic relief	d	R or D	1												
<u>ē</u>	64		N/A	Y or N	3.3												
ŝŝt	65	Landowners affected by restoration	N/A	Eabc	Enter v	alid cho	oice										
Additional questions	66 A																
a		Existing wetland size (acres) [from #10]	0.5	acres													
ü		Total wetland restoration size (acres)	4.3	acres													
Ĕ		Potential new wetland area (acres)=B-A	3.8	acres													
qq		Average width of naturalized upland buffer (poten		feet													
Ă			N/A	ab c	Enter va			14 m m la	الم ام		:11:						
		Hydrologic alteration type		Outlet, Tile	-		imp, vi	rrsr	ia ai	v., F	ming	)					
		Potential wetland type (Circ. 39)		1, 2, 3, 4, 5	5,6,7,8 I												
		Wetland sensitivity to stormwater Additional stormwater treatment needs	b b	Eabc													
	72	Additional stormwater treatment needs	D	abc													
		Function Name	Raw score	Final Rating	Rating Category		Form	ula s	how	n to 1	the	right.					
		Vegetative Diversity/Integrity		0.42	Med												
ary		Hydrology - Characteristic		#VALUE!	######												
mm		Flood Attenuation		0.61	Med			ł									
g Su		Water QualityDownstream	-	0.87	High												
atin		Water QualityWetland		0.51	Med												
nal F		Shoreline Protection		0.64	Med												
Functional Rating Summary		Characteristic Wildlife Habitat Structure	######	#VALUE!	######												
Fur		Maintenance of Characteristic Fish Habitat	0.50	0.50	Med												
		Maintenance of Characteristic Amphibian Habitat		0.00	Low	i											
		Aesthetics/Recreation/Education/Cultural	0.56	0.56	Med												
		Commercial use		N/A	N/A	:		0									
		Special Features listing:			-												
		Groundwater Interaction		indetermin	ate GW	source											

Groundwater Functional Index

Restoration Potential (draft formula) Stormwater Sensitivity (not active) no special indicators

#VALUE!

		14/- 41		114/-	then division (JD	14/-4		114/-4	land name (ID
			and name / ID Functional Group F	we	tland name / ID	weti	land name / ID	wet	land name / ID
	Date - 8/2004	Wetla							
	Special Features (from list, p.2enter letter/s)	-		-		-		-	
#1	Community Number (circle each community which represents at least 10% of the wetland)	10Å, 15B,	B, 4A, 4B, 7A, 7B, 8A, <b>8B</b> , 13A, <b>13B,</b> 12B, 14A, 15A, 16A, 16B	10A	8, 16A, 16B	3A, 3 10A, 15B,	3B, 4A, 4B, 7A, 7B, 8A, 8B, 13A, 13B, 12B, 14A, 15A, 16A, 16B	10A, 15B,	3B, 4A, 4B, 7A, 7B, 8A, 8B, , 13A, 13B, 12B, 14A, 15A, , 16A, 16B
#2 & #	•		individually below ~		~ Describe	each	community type individually	/ belo	W ~
	Community Type (wet meadow, marsh) Community Proportion (% of total)	3A	Floodplain Forest 70%	-	-	-	-	-	-
Plant Community #1	Dominant Vegetation / Cover Class	Silver Box E River Reed	n Ash / 4 Maple / 4 Elder / 3 Grape / 1 Canary Grass / 2 I Nettle / 2						
ш.	Invasive/exotic Vegetation / Cover Class	Reed	Canary Grass / 2						
	Community Quality (E, H, M, L)	m	0.5		0		0		0
	Community Type (wet meadow, marsh)	13B		-	0	-		-	
		100	Shallow Marsh		-		-		-
	Community Proportion (% of total)	ا م ما ب	20%			_			
#2	Dominant Vegetation / Cover Class		d Cattail / 4 Canary Grass / 3						
nity ≉			Bulrush / 2						
Plant Community									
Cor									
Plant									
	Invasive/exotic Vegetation / Cover Class		Canary Grass / 2 d Cattail / 4						
	Community Quality (E, H, M, L)	m			0		0		0
			0.5		0		0		0
	Community Type (wet meadow, marsh)	8B	Shrub-Carr	-	-	-	-	-	-
	Community Proportion (% of total)		10%						
Plant Community #3	Dominant Vegetation / Cover Class	Red ( Reed	bar Willow / 5 Dsier Dogwood / 2 Canary Grass / 3 < species / 2						
ant O									
Ĕ									
	Invasive/exotic Vegetation / Cover Class	Reed	Canary Grass / 3						
	Community Quality (E, H, M, L)	m	0.5		0		2		2
	5 5 ( ) , , , ,		0.5		0		0		0
	Community Type (wet meadow, marsh)	-	-	-	-	-	-	-	-
	Community Proportion (% of total)								
y #4	Dominant Vegetation / Cover Class								
Junit									
omn									
Plant Community #4*									
Ë	Invasive/exotic Vegetation / Cover Class								
	Community Quality (E, H, M, L)	-	0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>								
	Cowardin Types								
	Photo ID								
Highes	st rated community veg. div./integ:	0.5	Medium	0	-	0	-	0	-
Avera	ge vegetative diversity/integrity:	0.50	Medium	-	-	-	-	-	-
Weigh	ted Average veg. diversity/integrity:	0.50	Medium	0.0	0 -	0.00	-	0.00	-
#4	Listed, rare, special plant species?	n	Ν		Y N		Y N		Y N
	Rare community or habitat?	n	N		Y N		Y N		Y N
	Pre-European-settlement conditions?	n	N		Y N				Y N
10A] Shall Seas	Iplain Forest [1A, 2A, 3A] * Hardwood Swamp * Calcareous Fen [7B, 11B, 14A] * Shrub So ow Marsh [13B] * Deep Marsh [12B] * Wet onally Flooded Basin [16B] re are more than four plant community types,	wamp to We	[6B] * Alder Thicket [8A] * at-Mesic Prairie [14B, 15A] *	Sh Fre	rub-carr [8B] * Sedge Mead sh (Wet) Meadow [15B] * Sh	ow [1 allow	10B, 11A, 12A, 13A] * /, Open Water [9B, 16A] *		over Class         Class Range           1         0 - 3%           2         3 - 10%           3         10 - 25%           4         25 - 50%           5         50 - 75%
									6 75 - 100%

	A	в	C	D	E	F	G	Н		J	K		M	N	Р
	<u> </u>		MnRAM 3.0 Digital Works				0			<u> </u>	ĸ			IN	<u>г</u>
1			WINKAW S.U DIGITAL WOLKS	neel	, side	2									
2			Question Description	User	Rating										
4				entry	Rating		This co	omes in fro	om Side	1 autor	natically.				
5		1	Veg. Table 2, Option 4		0.50										
6			TOTAL VEG Rating	0.5	Medium										
7		4	Listed, rare, special plant species?	n	next										
8 9		5	Rare community or habitat? Pre-European-settlement conditions?	n n	next next										
10		7	hydrogeo & topo		Floodplain										
11		8	Water depth (inches)	36	Fioodpiani										
12			Water depth (% inundation)	20%		Entor	data a	tarting	horo	Valla		1			
13		9	Local watershed/immedita drainage (acres)			_		sed in o							
14		10	Existing wetland size SOILS: Up/Wetland (survey classification + site)		 here							J			
15	Ē	11 12	Outlet characteristics for flood retention	NA	ter valid ch	bice									
17	tio	13	Outlet characteristics for hydrologic regime	a	1	Jiee									
18	Sec	14	Dominant upland land use (within 500 ft)	b	0.5	0.5									
19	ť, s	15	Soil condition (wetland)	a	1										
14           15           16           17           18           19           20           21           22           23           24           25           26           27           28           29           30           31           32           33	Digital worksheet, section I	16 17	Vegetation (% cover) Emerg. veg. flood resistance	95% a	H 1	1									
22	ksh	18	Sediment delivery	b	0.5										
23	or	19	Upland soils (based on soil group)	b	0.5								(	Scro	
24	<u>&gt;</u>	20	Stormwater runoff pretreatment & detention		0.5	0.5								own	
25	lita	21 22	Subwatershed wetland density Channels/sheet flow	b c	0.5 0.1										
27	Dig	23	Upland naturalized buffer average width (feet)		Н	WQ	1	М	0.	5			a	nsw	er
28	_	24	Upland Area Management: % Full	70%	0.7	3	0.81							more	e.
29			up area mgmt: % Manicured		0.1										
31		25	up area mgmt: % Bare Upland Area Diversity & Structure: % Native	10% 70%	0.01 0.7	3	0.81						-	estic	
32		20	up area diversity: % Mixed	20%	0.1		0.01						a	nd se	ee
33			up area diversity: % Sparse/Inv./Exotic	10%	0.01	1							fc	ormu	
34		26	Upland Area Slope: % Gentle		0.2	3	0.44								
34 35 36			up area slope: % Moderate up area slope: % Steep		0.2 0.04								cald	culat	IONS
38			up alou stopet to stoop		0.01	4									
39		27	Downstream sensitivity/WQ protection	а	1										
40		28	Nutrient loading	b	0.5									ᆛ┝	-
41		29	Shoreline wetland?		Y									$\sim$	
42 43		30 31	Rooted shoreline vegetation (%cover) Wetland in-water width (in feet, average)	80% 0	1 0.1										
43		32	Emergent vegetation erosion resistance		0.1										
45		33	Shoreline erosion potential		1										
46		34	Bank protection/upslope veg.	c	0.1										
47 48	=	35 36	Rare Wildlife Scarce/Rare/S1/S2 local community	n n	N N										
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	3	M	0.5									
50 51	ctio	38	Community interspersion (see diagram 2)	2	М	0.5									
51	se	39 40	Wetland detritus	b	0.5										
52 53	et,	40 41	Wetland interspersion on landscape Wildlife barriers	b b	0.5 0.5										
53 54	he	42	Amphibian breeding potential-hydroperiod		1										
55	rks	43	Amphibian breeding potentialfish presence	b	0.5										
56 57	NO	44	Amphibian & reptile overwintering habitat		0.1	0.5	"=MIN	N(D51,D	52)						
57 58	al	45 46	Wildlife species (list) Fish habitat quality	deer b	0.5										
59 60	git	47	Fish species (list)												
60	ā	48	Unique/rare educ./cultural/rec.opportunity	n	N										
61 62		49 50	Wetland visibility Proximity to population	a	1										
62		50 51	Proximity to population Public ownership	y b	1 0.5										
64		52	Public access	b	0.5										
65		53	Human influence on wetland	b	0.5										
66 67		54 55	Human influence on viewshed Spatial buffer	b b	0.5 0.5										
67 68		55	Recreational activity potential	a	0.5										
69		57	Commercial crophydrologic impact	N/A	N/A										

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	r-221												
	58	GW - Wetland soils	r	R or D	0.1								
	59	GW - Subwatershed land use	d	R or D	1								
	60	GW - Wetland size and soil group	d	R or D	1								
	61	GW - Wetland hydroperiod	ר קו	R or D	0.1								
S	62	GW - Inlet/Outlet configuration GW - Surrounding upland topographic relief	d	R or D	1								
agaitional questions	63		d	R or D	1	-							
	64	Restoration potential w/o flooding	N	Y or N	_ 4.2								
Ű	65	Landowners affected by restoration	N/A	Eabc	Enter v	alid ch	noice						
d d	66 A												
5		Existing wetland size (acres) [from #10]	650	acres									
5		Total wetland restoration size (acres)		acres									
Ĕ		Potential new wetland area (acres)=B-A	-650	acres									
ז		Average width of naturalized upland buffer (poten		feet									
ť		Ease of potential restoration	N/A	abc	Enter v								
		Hydrologic alteration type		Outlet, Tile			ump, W	trshd d	iv., Filli	ng			
		Potential wetland type (Circ. 39)	3	1, 2, 3, 4, 5	5, 6, 7, 8	3							
		Wetland sensitivity to stormwater	b	Eabc									
	72	Additional stormwater treatment needs	b	abc									
				_								_	
		Function Name	Raw score	Final Rating	Rating Category		Formu	la show	n to th	e right.			
		Vegetative Diversity/Integrity		0.50	Med		1 01 1110		11 10 111	e ngina			
>		Hydrology - Characteristic		0.75	High								
5													
		Flood Attenuation		#VALUE!	######								
5													
0		Water QualityDownstream		#VALUE!	.#######								
<u>ר</u>				0.54	M 1								
ar		Water QualityWetland		0.54	Med								
Ž		Shoreline Protection		0.54	Med								
0		Shorenne Frotection		0.54	Meu								
5		Characteristic Wildlife Habitat Structure	0.57	0.57	Med		1						
3			0.01	0.07	mea								
3		Maintenance of Characteristic Fish Habitat	0.49	0.49	Med								
			0112	0115									
		Maintenance of Characteristic Amphibian Habitat		0.22	Low		i						
		1					i						
		Aesthetics/Recreation/Education/Cultural	0.69	0.69	High								
		Aesthetics/Recreation/Education/Cultural	0.69	0.69	High								
		Aesthetics/Recreation/Education/Cultural Commercial use		0.69 N/A	High N/A			0					
								0					
								0					

Groundwater Interaction Groundwater Functional Index

Restoration Potential (draft formula)

Stormwater Sensitivity (not active)

discharge no special indicators

N/A

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		Wetland name / ID	We	etland name / ID	Wetl	and name / ID	Wet	land name / ID
		TH14 Functional Group G						
	Date - 8/2004	Wetlands						
	Special Features (from list, p.2enter letter/s)						-	
#1	Community Number (circle each community which	3A, 3B, 4A, 4B, 7A, 7B, 8A, 8B, 10A, 13A, 13B, 12B, 14A, 15A,		, 3B, 4A, 4B, 7A, 7B, 8A, 8B, A, 13A, 13B, 12B, 14A, 15A,				3B, 4A, 4B, 7A, 7B, 8A, 8B, , 13A, 13B, 12B, 14A, 15A,
#1	Community Number (circle each community which represents at least 10% of the wetland)	15B, 16A, 16B				16A, 16B		, 16A, 16B
#2 & #	3 ~ Describe each communit					community type individually		
	Community Type (wet meadow, marsh)	16A Open Water	-	_	-	-	-	
	Community Proportion (% of total)	75%						
	Dominant Vegetation / Cover Class	No vegetation in Open Water						
#								
tiuni								
umo								
Plant Community #1								
ä								
	Invasive/exotic Vegetation / Cover Class							
	Community Quality (E, H, M, L)	L 01		0				
	Community Type (wet meadow, marsh)	0.1	-	0	_	0		0
		15B Wet Meadow	-	-	-	-	-	-
	Community Proportion (% of total)	25% Reed Canary Grass / 6						
5	Dominant Vegetation / Cover Class	Cottonwood / 1						
nity #								
Plant Community #2								
it Co								
Plan								
	Invasive/exotic Vegetation / Cover Class	Reed Canary Grass / 6						
	invasive/exolic vegetation / cover class							
	Community Quality (E, H, M, L)	L 0.1		0		0		0
	Community Type (wet meadow, marsh)		-	-	-	-	-	-
	Community Proportion (% of total)							
	Dominant Vegetation / Cover Class							
Plant Community #3								
munu								
Com								
lant								
ш.	Invasive/exotic Vegetation / Cover Class							
	Community Quality (E, H, M, L)	0		0		0		0
	Community Type (wet meadow, marsh)		-	-	-	-	-	-
	Community Proportion (% of total)							
*4*	Dominant Vegetation / Cover Class							
Plant Community #4*								
л шш								
č								
Plai	Invasive/exotic Vegetation / Cover Class							
	Community Quality (E, H, M, L)	- 0		0		0		0
	Circular 39 Types (primary <tab> others)</tab>							
	Cowardin Types							
	Photo ID							
Highe	st rated community veg. div./integ:	0.1 Low	0	-	0	-	0	-
Avera	ge vegetative diversity/integrity:	0.10 Low	-	-	-	-	-	-
	ted Average veg. diversity/integrity:	0.10 Low	0.0		0.00	-	0.00	
	Listed, rare, special plant species?	n N		Y N		Y N		Y N
	Rare community or habitat? Pre-European-settlement conditions?	n N n N		YN YN		Y N Y N		YN YN
			Co		n Bog		Cove	er Class Class Range
10A] * Calcareous Fen [7B, 11B, 14A] * Shrub Swamp [6B] * Alder Thicket [8A] * Shrub-carr [8B] * Sedge Meadow [10B, 11A, 12A, 13A] *								1 0 - 3%
Shallow Marsh [13B] * Deep Marsh [12B] * Wet to Wet-Mesic Prairie [14B, 15A] * Fresh (Wet) Meadow [15B] * Shallow, Open Water [9B, 16A] *       2         Seasonally Flooded Basin [16B]       3								
Seas			3 10 - 25% 4 25 - 50%					
*If the	re are more than four plant community types,	c average calculations.		5 50 - 75%				
								6 75 - 100%

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			MnRAM 3.0 Digital Works			_	0	·		<u> </u>	<u> </u>	K		111	IN	
1			WITTAW 5.0 Digital WOLKS	ΠΕΕΙ	, Side	. 2										
2			Question Description	User	Rating											
4		_	•	entry	J 3		This	s come	es in fro	m Side	1 autom	natically.				
5		1	Veg. Table 2, Option 4	0.1	0.10											
6 7		٦L	TOTAL VEG Rating	0.1												
8		4	Listed, rare, special plant species? Rare community or habitat?	n n	next next											
9		6	Pre-European-settlement conditions?	n	next											
10		7	hydrogeo & topo		Depression	nal/Isolate	đ									
11		8	Water depth (inches)	60												
12			Water depth (% inundation)	75%		Enter	data	a sta	rtina l	here.	Yellov	v	1			
13		9 10	Local watershed/immedita drainage (acres) Existing wetland size	10 2		boxes			-							
14		10	SOILS: Up/Wetland (survey classification + site)		.) _								1			
16	Ľ	12	Outlet characteristics for flood retention	b	0.5											
17	itio	13	Outlet characteristics for hydrologic regime	a	1											
18	sec	14	Dominant upland land use (within 500 ft)	b	0.5	0.5										
20	Ľ,	15 16	Soil condition (wetland) Vegetation (% cover)	a N/A	1 N/A	N/A										
14           15           16           17           18           19           20           21           22           23           24           25           26           27           28           29           30           31           32           33	Digital worksheet, section I	17	Emerg. veg. flood resistance		ter valid ch											
22	ksł	18	Sediment delivery	b	0.5											
23	٥	19	Upland soils (based on soil group)	b	0.5	0.5									Scro	
24	~	20 21	Stormwater runoff pretreatment & detention Subwatershed wetland density	b a	0.5	0.5								d	own	to
26	gita	22	Channels/sheet flow	a	1											
27	Ξ	23	Upland naturalized buffer average width (feet)	30	М	WQ		).5 L		0.1	l			a	nsw	er
28		24	Upland Area Management: % Full		0.5	2	0.7	75							mor	Э
29			up area mgmt: % Manicured up area mgmt: % Bare	50% 0%	0.25											
31		25	Upland Area Diversity & Structure: % Native	20%	0.2	3	0.5	58							esti	
32			up area diversity: % Mixed		0.375									a	nd s	ee
33		2.1	up area diversity: % Sparse/Inv./Exotic	5%	0.005	_								fc	ormu	la
34		26	Upland Area Slope: % Gentle up area slope: % Moderate		0.5 0.25	2	0.7	75								
34 35 36			up area slope: % Steep		0.25									cal	culat	ions
38																
39		27	Downstream sensitivity/WQ protection	b	0.5											
40		28	Nutrient loading	b	0.5										$\prec$	-
41 42		29 30	Shoreline wetland? Rooted shoreline vegetation (%cover)		Y										•	
42		31	Wetland in-water width (in feet, average)	<5	1											
44		32	Emergent vegetation erosion resistance		0.5											
45		33	Shoreline erosion potential		0.1											
46 47		34 35	Bank protection/upslope veg. Rare Wildlife	b	0.5											
47	=	36	Scarce/Rare/S1/S2 local community	n n	N N											
49	Digital worksheet, section II	37	Vegetation interspersion cover (see diagram 1)	8	L	0.1										
50 51	cti	38	Community interspersion (see diagram 2)		L	0.1										
51 52	se	39 40	Wetland detritus Wetland interspersion on landscape	c c	0.1 0.1											
52 53	et,	40	Wetland interspersion on landscape Wildlife barriers	c a	1											
54	she	42	Amphibian breeding potential-hydroperiod		1											
55	Т,	43	Amphibian breeding potentialfish presence	a	1											
56 57	N O	44 45	Amphibian & reptile overwintering habitat Wildlife species (list)	a Canada (	l Geese	1	''=M	11N(E	051,D5	(2)						
58	[a	46	Fish habitat quality	callada (	0.1											
59 60	igi	47	Fish species (list)		1											
60	Δ	48	Unique/rare educ./cultural/rec.opportunity	n	N											
61 62		49 50	Wetland visibility Proximity to population	c y	0.1											
63		51	Public ownership		0.1											
64		52	Public access	b	0.5											
65		53	Human influence on wetland	с 1	0.1											
66 67		54 55	Human influence on viewshed Spatial buffer	b c	0.5 0.1											
68		56	Recreational activity potential	b	0.1											
69		57	Commercial crophydrologic impact	b	0.5											

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A	В	C	D	E	F	G	Н		J	K	L	M	N	
	58	GW - Wetland soils	r	R or D	0.1									
	59	GW - Subwatershed land use	d	R or D	1									
	60	GW - Wetland size and soil group	d	R or D	1									
	61	GW - Wetland hydroperiod	d	R or D	1									
	62	GW - Inlet/Outlet configuration	d	R or D	1									
ns	63	GW - Surrounding upland topographic relief	d	R or D	1	_								
Additional questions	64	Restoration potential w/o flooding	N/A	Y or N	5.1	-								
es	65	Landowners affected by restoration	N/A	Eabc	Enter v	alid ch	oice							
nb	66 A													
Ē	00 7	Existing wetland size (acres) [from #10]	2	acres										
Ĕ	66 B	Total wetland restoration size (acres)	4.3	acres										
£.		Potential new wetland area (acres)=B-A	2.3	acres										
Ġ	67	Average width of naturalized upland buffer (poten	10	feet										
₽ A	68	Ease of potential restoration	N/A	abc	Enter v	alid ch	oice							
	69	Hydrologic alteration type		Outlet, Tile	, Ditch,	GW pu	ump, W	trshd div	., Fillir	ng				
	70	Potential wetland type (Circ. 39)		1, 2, 3, 4, 5	5, 6, 7, 8	3								
	71	Wetland sensitivity to stormwater	С	Eabc										
	72	Additional stormwater treatment needs	b	abc										
					Þ.									
				50	ıg gory									

	Raw score	Final Rating	Rating Catego	
 Function Name	R. SC	E X	μц	Formula shown to the
Vegetative Diversity/Integrity		0.10	L	
Hydrology - Characteristic		0.75	High	
Flood Attenuation		0.70	High	
Water QualityDownstream		0.53	Med	
Water QualityWetland		0.41	Med	
Shoreline Protection		0.62	Med	
Characteristic Wildlife Habitat Structure	0.42	0.42	Med	
Maintenance of Characteristic Fish Habitat	0.59	0.59	Med	
Maintenance of Characteristic Amphibian Habitat		0.53	Med	
Aesthetics/Recreation/Education/Cultural	0.36	0.36	Med	
Commercial use		0.50	Med	0.5
Special Features listing:			-	
Groundwater Interaction		discharge		

Groundwater Interaction Groundwater Functional Index

Restoration Potential (draft formula) Stormwater Sensitivity (not active) #VALUE!

no special indicators

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right.

# Appendix E: Summary Table for Non-Agricultural Wetlands

## TABLE 11

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Cowardin Wetland Type (as seen in field)	Soil Series		ed Hydric ?(Y or N)	Area of Wetland within US 14 Project Area Polygon (acres)	Notes				
									Mapped	Containing Inclusions		
65: W-BE-27-4-1	far NW corner of Section 4	1	PEMA	109-Cordova clay loam	Y		0.0	Tiny wetland in corner of road				
63: W-BE-27-30-1	north boundary of section 30	3	PEMC	114-Glencoe silty clay loam	Y		2.1	South of large farmed wetland, separated by driveway				
61: W-BE-27-30-2	Just south of TH-14	2	PEMB	113-Webster clay loam	Y		0.1	small basin surrounded by native grass planting				
47: W-NI-28-9-1	in middle of agricultural field, southwest of Nicollet. NW 1/4 of Sect.9	3	PEMC	114-Glencoe silty clay loam, 386- Okoboji mucky silty clay loam	Y		11.7	obligate wetland species, ringed with grass/shrub fringe				
36: W-NI-28-6-1	adjacent to Hwy 14. Just north of Basin 2	2	PEMB	1075-Klossner and Muskego soils ponded	Y		2.8	this has been altered by road construction				
35: W-NI-28-6-2	adjacent to Hwy 14. Just south of road	3	PEMC	1075-Klossner and Muskego soils ponded	Y		26.8	obligate wetland species, ringed with grass/shrub fringe non-farmed with some hay				
38: W-NI-28-6-3	just north of Hwy. 14, in WMA area	6	PSSC1	86-Canisteo clay Ioam	Y		0.7	small basin surrounded by native grasses-non-farmed				
24: W-CO-29-11-1	just north of Hwy. 14, NE 1/4 of Sect. 11	2	PEMB	386-Okoboji mucky silty clay loam	Y		2.6					
20: W-CO-29-10-1	north of Hwy. 14	2	PEMB	114-Glencoe silty	Y		1.9	connected to W-CO-29-10				

/etland Identifier	Wetland Location	Wetland Type (Circular 39)	Cowardin Wetland Type (as seen in field)	Soil Series		ed Hydric ?(Y or N)	Area of Wetland within US 14 Project Area Polygon (acres)	Notes
					Mapped	Containing Inclusions		
				clay loam				2
9: W-CO-29-10-2	south of HWY 14, NE 1/4 Sect. 10	3	PEMC	114-Glencoe silty clay loam	Y		2.8	was connected to W-CO- 29-10-1 historically.
2: W-CO-29-10-3	south of HWY 14, NE 1/4 Sect. 10	2	PEMB	978-Cordova-Rolfe complex	Y		0.6	small basin surrounded by native grasses
6: W-CO-29-9-1	south of HWY 14,in NW 1/4 of section 9	7	PFO1A	106B- Lester silt Ioam	Ν		1.8	area was excavated a long time ago, now a forested swamp
4: W-CO-29-6-1	north of Hwy 14, just west of a county road	2	PEMB	336-Delft clay loam	Y		3.0	sedge meadow/hayfield
1: W-NU-30-36-4	Northwest of the Town of Courtland	5	PEMC	336 – Delft clay Ioam	Y		2.9	Dominated by <i>Phalaris</i> arundinacea
: W-NU-30-35-1	South of US 14 near MN Valley Lutheran High School	2	PEMC	283A – Plainfield Ioamy sand	Ν		1.7	Phalaris arundinacea, Urtica dioica, and Salix exigua are dominant
: W-NU-30-36-1	North of US 14, east of Township Road 150	3	PEMA/ PEMC	130 – Nicollet clay Ioam	Y		0.9	<i>Populus deltoides, Salix exigua</i> , emergent vegetation are dominant
): W-NU-30-36-2	North of US 14, east of Township Road 150	2	PEMA/ PEMC	130 – Nicollet clay Ioam	Y		2.1	Scirpus fluviatilis, Eleocharic erythropoda, and Glycine max are dominant
: W-NU-30-35-2	Right in front of	3	PEMC	134- Okoboji silty	Y		8.4	marsh in front of MN Valley

# TABLE 11

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Cowardin Wetland Type (as seen in field)	Soil Series		ed Hydric ?(Y or N)	Area of Wetland within US 14 Project Area Polygon (acres)	Notes
	high school, north of Hwy. 14			clay loam	Mapped	Containing Inclusions		Lutheran H.S.
4: W-NU-30-34-2	South of US 14 at Heyman's Creek	7	PFO1A	Orthents – disturbed from road work	Ν		0.3	Former channel of Heyman's Creek
3: W-NU-30-27-2	South of US 14 and west of Hwy 37	7	PFO1A	321 – Tilfer silty clay loam	Y		0.3	Standing water on small floodplain forest
5: W-NU-30-34-1	North of US 14 at Heyman's Creek	2	PEMC	611F – Hawick sandy loam	Ν		0.1	Small depressions and former channel of Heyman's Creek
2: W-NU-30-21-2	Ditch north of US 14 near the western project terminus	6	PSS1A /PFO1A	Orthents – disturbed from road work	Undet.		1.1	Ditch just north of US 14
1: W-NU-30-21-1	along Minnesota River east of New Ulm, south to Hwy 37	7	PFO1A	575-Nishna silty clay loam, 1917, Nishna ponded	Y		68.8	Large bottomland forested wetland along Minnesota River

Note: These data are based on analysis of data on January 20, 2005.

# Appendix F: Summary Table for Agricultural Wetlands

	Summary of Agricultural Wetlands in the US 14 Project Area Polygon Wetland Wetland Wetland Mapped Mapped Soil Hydric Soils? (Y Wetland Area Notes										
Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Mapped by NWI?	Mapped Soil Series		Soils? or N)	(Y	Wetland Area within US 14 Project Area Polygon (ac)	Notes		
					Mapped	Contai Inclusi					
4: AW-BE-27-30-1	North of Hwy 14. In SE 1/4 section 30	Type 1	Not mapped	134- Okoboji silty clay loam	Y			2.6	7 of 11 years with wet signature		
2: AW-BE-27-19-1	North of Hwy 14. In SW 1/4 section 19	Type 1	Not Mapped	386-Okoboji mucky silty clay loam	Y			2.8	10 of 10 years with wet signature		
0: AW-BE-27-19-2	South of Hwy 14. In SW 1/4 section 19	Type 1	Not mapped	113-Webster clay loam	Y			2.3	6 of 10 years with wet signature		
8: AW-BE-27-19-3	South of Hwy 14. In extreme SW 1/4 section 19	Туре 1	Not mapped	114-Glencoe silty clay loam; 86- Canisteo clay loam	Y			0.9	7 of 10 years with wet signature		
9: AW-BE-27-19-4	North of Hwy 14. In SW 1/4 section 19, borders county road	Туре 1	Yes	386-Okoboji mucky silty clay loam	Y			0.5	4 of 10 years with wet signature		
7: AW-NI-28-24-1	north of Hwy 14, in SE 1/4 of Section 24	Type 1	Yes	539-Klossner Muck	Y			1.5	5 of 11 years with wet signature		
6: AW-NI-28-13-1	South of Hwy 14, in SW 1/4 of Section 13	Туре 1	Not mapped	114-Glencoe silty clay loam; 86- Canisteo clay loam	Y			1.1	4 of 11 years with wet signature		
5: AW-NI-28-14-1	South of Hwy 14, in NW 1/4 of Section 14	Туре 1	Not Mapped	525-Muskego muck	Y			2.5	6 of 11 years with wet signature. Right next to Hwy. 14.		
4: AW-NI-28-10-1	south of Hwy 14, along ditch in SW 1/4 of Section 10	Type 1	Not Mapped	336 - Delft clay Ioam, 102B Clarion Loam	Partly			2.5	6 of 11 years with wet signature. Small spot next to ditch		

Summary of Ag	ricultural Wetlands in	the US 14 P		a Polygon					
Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Mapped by NWI?	Mapped Soil Series	Hydric : C	Soils? or N)	(Y	Wetland Area within US 14 Project Area Polygon (ac)	Notes
					Mapped	Conta Inclus	0		
48: AW-NI-28-9-1	large basin in middle of agricultural field. NW 1/4 of Section 9	Туре 1	Yes	386-Okoboji mucky silty clay loam, 86-Canisteo clay loam	Y			12.4	9 of 11 years with wet signature. Big, clear basin. Northern half of basin was delineated and GPSed-see delineated wetland list.
51: AW-NI-28-9-2	basin in middle of agricultural field. NE 1/4 of Section 9	Туре 1	Yes	1075-Klossner and Muskego soils, ponded	Y			12.0	6 of 11 years with wet signature. West of site is farmed.
53: AW-NI-28-9-3	large basin in agricultural field. NE 1/4 of Section 9	Type 1	Yes	386-Okoboji mucky silty clay loam, 539- Klossner Muck	Y			19.3	9 of 11 years with wet signature. NWI wetland, non-farmed many years.
50: AW-NI-28-9-4	middle of agricultural field on southwest Edge of section 9	Туре 1	Yes	386-Okoboji mucky silty clay loam	Y			1.1	6 of 11 years with wet signature; very wet, unfarmed some years.
49: AW-NI-28-4-2	round basin in middle of agricultural field. SW 1/4 of S.4	Туре 1	Yes	114-Glencoe silty clay loam, 386- Okoboji mucky silty clay loam	Y			0.3	5 of 11 years with wet signature. Large wet spot in middle of ag field.
52: AW-NI-28-4-3	south of Nicollet, Hwy 14 in SE 1/4 of S. 4	Туре 1	Not Mapped	114-Glencoe silty clay loam; 86- Canisteo clay loam	Y			0.4	6 of 11 years with wet signature. large wet spot in middle of ag field.
41: AW-NI-28-5-1	south of Hwy 14 in SW 1/4 of S. 5	Туре 1	Not Mapped	109-Cordova clay loam	Y			4.9	4 of 11 years with wet signature. Near TH-14.
42: AW-NI-28-5-2	south of Hwy 14 in SW 1/4 of S. 5. South of AW-NI-28- 5-1	Туре 1	Not Mapped	109-Cordova clay Ioam	Y			3.6	4 of 11 years with wet signature.
43: AW-NI-28-5-3	south of Hwy 14 in SE 1/4 of S. 5. In	Type 1	Not Mapped	109-Cordova clay Ioam, 86-Canisteo	Y			4.3	5 of 11 years with wet signature, Conglomeration of dark spots in

### PAGE F-3

Wetland	Wetland	Wetland	Mapped	Mapped Soil	Hydric Soils? (Y			Wetland Area	Notes
Identifier	Location	Type (Circular 39)	by NWI?	Series		or N)	(	within US 14 Project Area Polygon (ac)	notes
					Mapped		aining sions		
	middle of field			clay loam					middle of field.
l6: AW-NI-28-8-1	NE 1/4 of Section 8	Type 1	Not Mapped	113-Webster clay loam	Y			1.6	6 of 11 years with wet signature.
15: AW-NI-28-8-2	NE 1/4 of Section 8	Туре 1	Not Mapped	114-Glencoe silty clay loam, 386- Okoboji mucky silty clay loam	Y			4.2	6 of 11 years with wet signature.
14: AW-NI-28-8-3	NE 1/4 of Section 8	Type 1	Yes	109-Cordova clay Ioam	Y			7.5	7 of 11 years with wet signature.
40: AW-NI-28-7-1	extreme NE 1/4 of Section 7	Туре 1	Not Mapped	109-Cordova clay loam	Y			4.1	4 of 11 years with wet signature.
37: AW-NI-28-7-2	middle of agricultural field. NE 1/4 of Section 7	Туре 1	Yes	114-Glencoe silty clay loam; 86- Canisteo clay loam	Y			1.9	5 of 11 years with wet signature. Wa a very dark spot in field.
39: AW-NI-28-7-3	middle of agricultural field. NE & SE 1/4 of Section 7	Туре 1	Yes	386-Okoboji mucky silty clay loam	Y			5.1	4 of 11 years with wet signature, wa a very dark spot in field.
28: AW-CO-29-12-1	NW 1/4 of section 12	Туре 1	Yes	386-Okoboji mucky silty clay loam	Y			2.2	7 of 11 years with wet signature. Sm dark depression in corner of sections 1, 12 and 11.
27: AW-CO-29-12-2	NW 1/4 of section 12. South of basin 1	Туре 1	Yes	386-Okoboji mucky silty clay loam	Y			3.3 2.7	5 of 11 years with wet signature. Sm kidney-shaped basin just south of above basin.
30: AW-CO-29-12-3	NW 1/4 of section 12	Type 1	Yes	539-Klossner Muck	Y			15.0	11 of 11 years with wet signature large, wet area, may be unfarmed
32: AW-CO-29-12-4	NW 1/4 of section 12	Туре 1	Not mapped	978-Cordova- Rolfe complex	Y			1.9	7 of 11 years with wet signature. Distinct basin near farmstead.

Wetland	cultural Wetlands in Wetland	Wetland	Mapped	Mapped Soil	Hydric S	Soile?	(Y	Wetland Area	Notes
Identifier	Location	Type (Circular 39)	by NWI?	Series		r N)	(T	wettand Area within US 14 Project Area Polygon (ac)	Notes
					Mapped	Contai Inclusi			
33: AW-CO-29-12-5	NE 1/4 of section 12	Type 1	Not Mapped	956-Canisteo- Glencoe complex	Y			4.3	7 of 11 years with wet signature. Dark spot north of farmhouse, along drive.
34: AW-CO-29-12-6	NE 1/4 of section 12	Type 1	Not Mapped	978-Cordova- Rolfe complex	Y			3.2	8 of 11 years with wet signature. Highly variable drown-out along driveway.
29: AW-CO-29-12-7	NW 1/4 of section 12	Туре 1	Yes	114-Glencoe silty clay loam;	Y			2.7	5 of 11 years with wet signature. distinct dark depression.
31: AW-CO-29-12-9	SW 1/4 of section 12	Туре 1	Not Mapped	956-Canisteo- Glencoe complex	Y			0.0	8 of 11 years with wet signature. Near south end of project limit.
26: AW-CO-29-11-1	NW 1/4 of section 11. Just south of Hwy. 14	Type 1	Not mapped	386-Okoboji mucky silty clay loam	Y			1.9	5 of 11 years with wet signature. Drown-out in field, near corner of county road.
23: AW-CO-29-11-2	SE 1/4 of section 11	Туре 1	Yes	134- Okoboji silty clay loam	Y			13.4	8 of 11 years with wet signature. Dark spot/drown-out in cornfield.
17: AW-CO-29-10-1	just north of Hwy 14 in North-central section 10	Туре 1	Yes	386-Okoboji mucky silty clay loam	Y			4.2	9 of 11 years with wet signature. Consistent wet spot in field. Some forested area.
21: AW-CO-29-10-2	NE 1/4 of Sect.10	Туре 1	Yes	114-Glencoe silty clay loam; 978- Cordova-Rolfe complex	Y			3.1	8 of 11 years with wet signature. Consistently wet. Located on section line. Lower basin was delineated in field.
18: AW-CO-29-10-3	NE 1/4 of Sect.10. North of Hwy. 14 by 800 meters	Туре 1	Yes	978-Cordova- Rolfe complex	Y			7.8	11 of 11 years with wet signature. Consistent basin in ag. field, some trees.
15: AW-CO-29-5-1	middle of agricultural field in section 5. North of Courtland	Туре 1	Not Mapped	134- Okoboji silty clay loam	Y			4.9	7 of 8 years with wet signature. large drown-out in middle of field.

Wetland Identifier	Wetland Location	Wetland Type (Circular 39)	Mapped by NWI?	Mapped Soil Series	Hydric Soils? (Y or N)		(Y	Wetland Area within US 14 Project Area Polygon (ac)	Notes
					Mapped	Contair Inclusio	0		
	about 1000 meters								
13: AW-CO-29-6-2	along county road. East boundary section 6	Type 1	Not mapped	336-Delft clay Ioam	Y			1.7	8 of 11 years with wet signature. Large wet spot at corner of two road varies in size a lot.
12: AW-CO-29-6-3	south of Hwy 14. SW 1/4 of section 6	Туре 3	Not Mapped	1030-Udorthents- Pits, gravel complex	Ν			0.8	9 of 11 years with wet signature. Excavated spot appears every year after 1993 - just south of TH 14.