Drained Wetland Inventory
Vermillion River Watershed
Upper Vermillion and South Branch Drainage Areas

Final Report – July 2012

Prepared by:

Dakota County Soil and Water Conservation District

Prepared for:

Vermillion River Watershed Joint Powers Organization

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EXECUTIVE SUMMARY

Wetlands provide many valuable benefits including storing water during floods and releasing water during low flow periods. The Drained Wetland Inventory is an initiative of the Vermillion River Watershed Joint Powers Organization (VRWJPO). It includes assessing two drainage areas within the greater Vermillion River Watershed - the Upper Vermillion and South Branch.

Project objectives include (1) identifying hydric soils that when unaltered have the structural capacity to retain water, (2) evaluating current land use within hydric soils, (3) identifying locations where water is being removed off the landscape through surface and subsurface drainage or cultivation and (4) prioritizing wetland restoration opportunities based on soil type and existing land use.

The inventory selected hydric soil units to include both very poorly drained and poorly drained classifications as identified in the Soil Survey Database for Dakota County. Typically these soils develop wetland characteristics unless artificially drained or annually cultivated. Land cover information among these hydric soils was evaluated to determine the general land use occurring.

There are approximately 45,624 total acres within the Upper Vermillion and South Branch Drainage Areas. Of this total land area, approximately 23% or 10,475 acres include hydric soil types that historically existed as wetland or in an unaltered condition provided watershed benefits by holding water during floods and releasing water during droughts Based on current land cover data, approximately 53% or 5,568 acres of identified hydric soil has been drained or altered over a period of time. Approximately 4,907 acres or 47% of identified hydric soils remain as wetland within the Upper Vermillion and South Branch Drainage Areas.

Hydric soils typically provide the best opportunity to generate self-sustaining and successful wetland restoration projects. Therefore these areas can be used to evaluate and prioritize wetland restoration opportunities. Methods to restore wetlands can vary depending on site conditions. Reconfiguring subsurface drain tile systems, plugging ditch conveyance systems or creating earthen berms to create flood retention areas are some of the more common wetland restoration practices.

I. WETLAND BENEFITS WITHIN THE LANDSCAPE

Wetlands are defined as transitional areas between terrestrial and aquatic systems where the water table is usually at the surface or the land is covered by shallow water. Wetlands are important resources providing many benefits to the Vermillion River Watershed.

Wetlands improve water quality by filtering pollutants, trapping sediment and storing water during storm events. In addition, wetlands can facilitate groundwater recharge to aquifers and discharge water flow to surface waters during low flow periods. Without wetlands located on the landscape within the Vermillion River Watershed, water storage capacity and water quality is diminished.

In order to obtain the benefits wetlands provide to a local watershed and downstream communities, existing wetland resources and wetland restoration opportunities should be considered in watershed planning efforts. The VRWJPO has identified wetland protection and restoration as a watershed goal in its watershed plan[1]. This project helps fulfill those goals specific to promoting wetland restoration. It also relates to the VRWJPO's educational goal to offer information that facilitates the understanding of watershed principles such as soil types and hydrology.

II. INVENTORY OBJECTIVES

This Drained Wetland Inventory is focused on the Upper Vermillion and South Branch Drainage Areas (Figure 1). Other drainage areas within the Vermillion River Watershed are more developed or include significantly less hydric soil conditions and subsequently less chance of historical wetlands. Drained wetland inventories in other portions of the Vermillion River Watershed may occur at a future time.

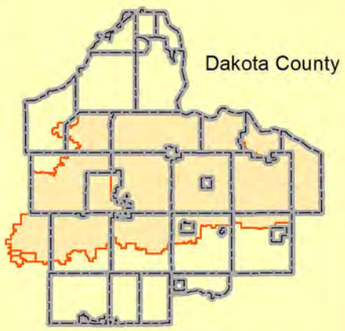
Project objectives include (1) identifying hydric soils that when unaltered have the ability to retain water, (2) evaluating current land use within hydric soils, (3) identifying locations where water is being removed off the landscape through surface and subsurface drainage methods and (4) prioritizing wetland restoration opportunities based on soil types and existing land use. The project provides the foundation for identifying wetland restoration opportunities that based on soil type would be most likely to be self-sustaining and successful over time.

Special Notes:

- ✓ Drained wetland means a former natural wetland that has been altered by draining, filling, excavation, cultivation, leveling or other alterations sufficient to reduce its natural function.
- ✓ This inventory does not consider existing wetland areas that may be partially drained due to hydrology modifications.
- ✓ Total acres identified in Figures and Tables may vary slightly due to minor differences in the boundaries of the drainage areas. Drainage area boundaries were generated using local GIS source data at a smaller scale. Hydrologic Unit boundaries were generated at a larger scale using GIS source data from the Minnesota Department of Natural Resources.
- ✓ The inventory is intended to identify locations where wetland restorations are most suitable based on soil conditions and does not consider the method of drainage or alteration occurring on the landscape.
- ✓ This inventory does not consider all factors necessary to determine a feasible wetland restoration project. A more detailed level of assessment such as topographical surveys, parcel boundaries and resulting upstream or downstream impacts are necessary.

Drainage Areas

Vermillion River Watershed



Vermillion River watershed reflecting life

Dakota County Soil & Water Conservation District
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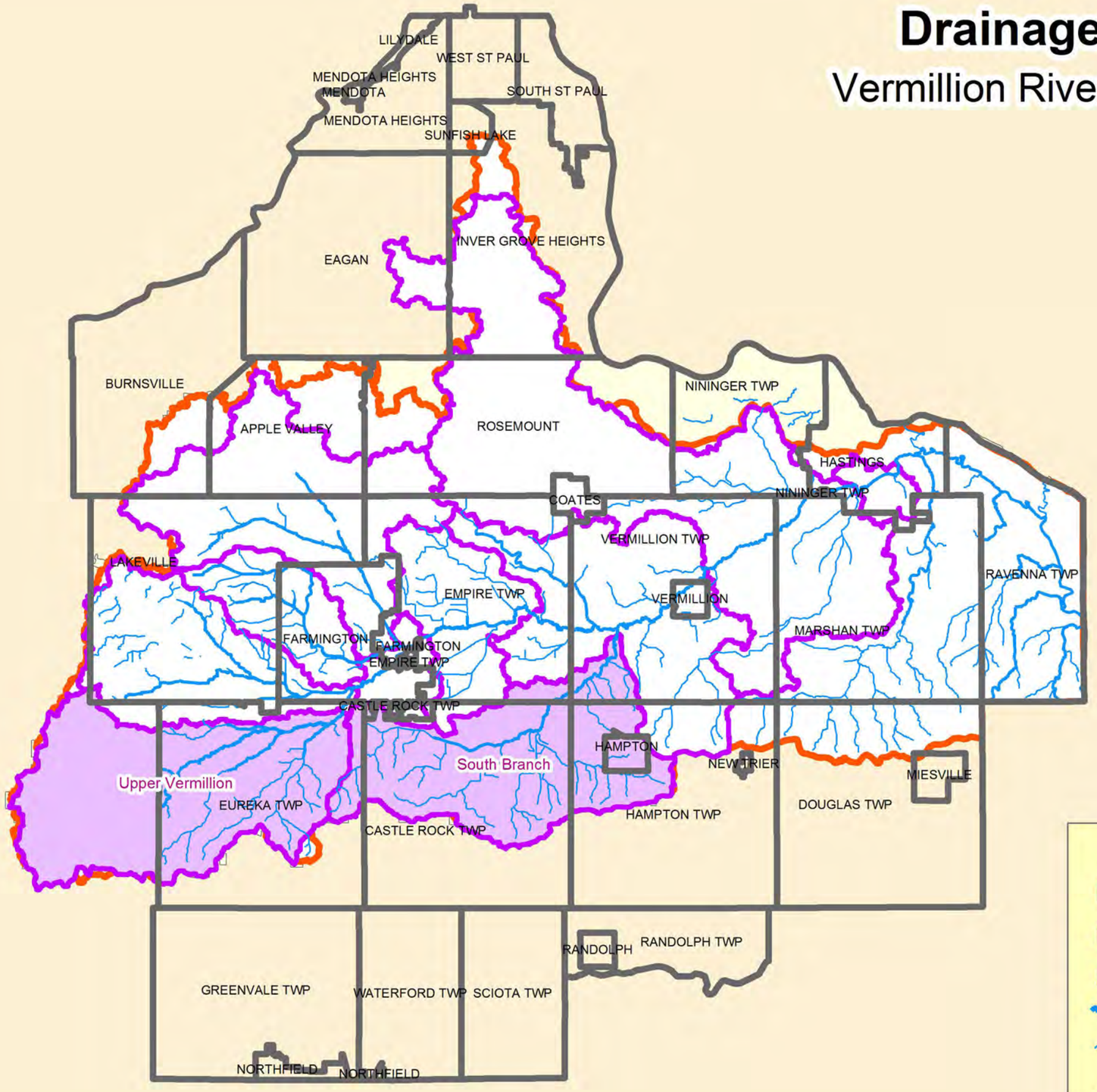


SCALE 1" = 1 mile

1 0.5 0 1 2 Miles

LEGEND

- DNR Hydrologic Units
- Drainage Areas
- Drainage Areas Inventoried
- Vermillion River and DNR Watercourses
- Tributaries

Figure 1. Vermillion River Drainage Areas

III. INVENTORY METHODS

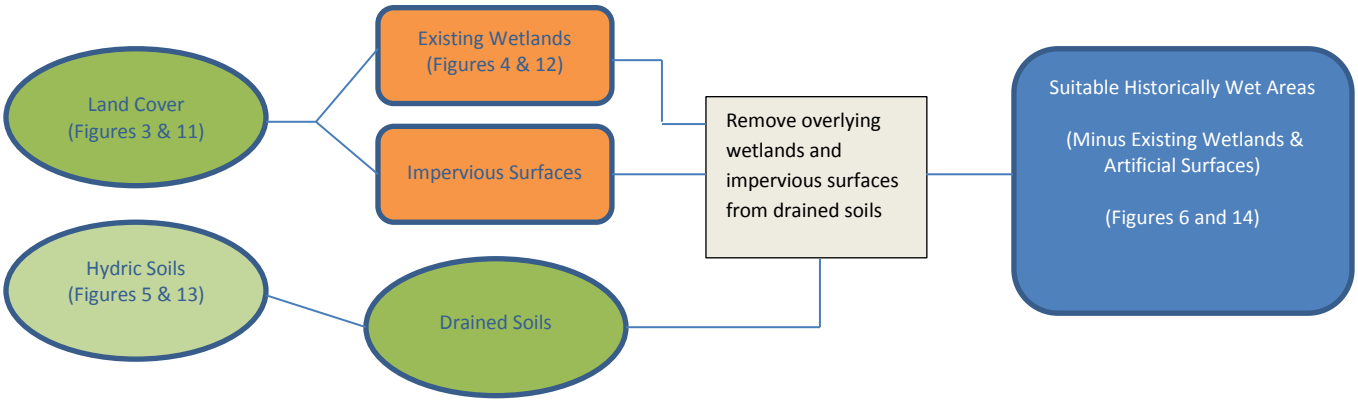
A GIS assessment to determine the probable location of historical wetland areas was conducted for both drainage areas. The assessment used hydric soils, or those soils with a very poorly drained or poorly drained classification, as the primary indicator to determine historical wetland locations since wetlands typically form on hydric soils under natural conditions.

Very poorly drained and poorly drained soil types were identified from the Dakota County Soil Survey Geographic Database[2] (SSURGO). A GIS analysis in ESRI's ArcMap[3] involved identifying existing wetlands and impervious surfaces from the Dakota County Land Cover database created using the Minnesota Land Cover Classification System (MLCCS). The MLCCS based wetland inventory was used in favor of the state-wide National Wetland Inventory (NWI) because Minnesota's NWI Wetlands were derived in the early 1980's while Dakota County's MLCCS data was last updated in 2010 for the Vermillion River Watershed.

A drained hydric soil GIS layer was generated by removing existing wetlands and impervious surfaces from the data set. The remaining very poorly drained and poorly drained soils represent general locations with a potential for wetland restoration efforts since existing land cover suggests either drainage or alterations.

Potential locations for restoring wetlands within the Upper Vermillion and South Branch Drainage Areas were further broken down into smaller subwatersheds or hydrologic unit codes as identified by the Minnesota Department of Natural Resources[4] to aid in identification and prioritization.

Methodology Flow Chart



UPPER VERMILLION DRAINAGE AREA

General Information

The Upper Vermillion Drainage Area is approximately 24,597 acres and includes the Elko – New Market region and most of Eureka Township that lies within the Vermillion River Watershed (Figure 2). This drainage area includes the main stem of the Vermillion River as well as several tributary streams that flow northeasterly. Three subwatersheds are identified within the Upper Vermillion Drainage Area.

Land Cover

The largest land use within the Upper Vermillion drainage area is planted vegetation such as row crops, vegetable farms, sod fields or nursery's (Figure 3). Approximately 12,073 acres or 49% of the drainage area has an identified land use of planted vegetation and another 5,117 acres or 21% of the drainage area has artificial surfaces such as roads, houses with lawns, or other buildings. Table 1 summarizes land cover attributes within the Upper Vermillion Drainage Area based on MLCCS data from 2010.

Table 1: Land Cover – Upper Vermillion River Drainage Area

Land Cover Type	Area (Acres)	Area (%)
Planted Vegetation	12,073	49.1
Artificial Surfaces	5,117	20.8
Grassland	4,277	17.4
Forest/Woodland	2,316	9.4
Open Water	444	1.8
Shrubland	379	1.5

Existing Wetlands

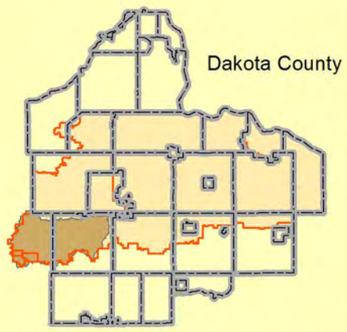
The Upper Vermillion Drainage Area includes sizeable and diverse wetland types (Figure 4). Together, these existing wetlands account for approximately 3,624 acres or 15% of the entire drainage area. Existing wetlands are primarily dominated by grass or other herbaceous vegetation such as reed canary grass, sedge or cattail. Table 2 describes the vegetation cover types and extent of existing wetlands with the Upper Vermillion Drainage Area.

Table 2: Wetlands – Upper Vermillion Drainage Area

Wetland Vegetation	Area (Acres)	Area (%)
Grass or Herbaceous	2,466	68.0
Open Water	444	12.3
Forest	400	11.0
Shrubland	314	8.7

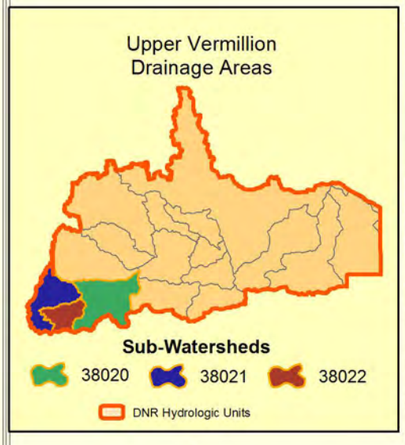
Upper Vermillion Drainage Area

Vermillion River Watershed



Vermillion River watershed
reflecting life

Dakota County Soil & Water Conservation District



SCALE 1" = 4,400 Feet

4,400 2,200 0 4,400 Feet

Image Source: 2010 Dakota County

LAKEVILLE
FARMINGTON
NEW MARKET TWP
EUREKA TWP
GREENVALE TWP
CHUB LAKE
RICE LAKE
Vermillion River
North Branch Chub Creek
SCOTT CO
DAKOTA CO
VERNON AVE
MONTEREY AVE
AKIN RD
FLAGSTAFF AVE
DODD BLVD
CEDAR AVE
HAMBURG AVE
HIGHVIEW AVE
IPAVA AVE
DENMARK AVE
LOGAN AVE
NATCHEZ AVE
XERXES TR
UNKNOWN OR NO STREETNAME
225TH ST E
230TH ST E
240TH ST E
245TH ST E
275TH ST E
225TH ST W
235TH ST W
240TH ST W
265TH ST W
285TH ST W
68
8
46
91
80
35
2
33
86

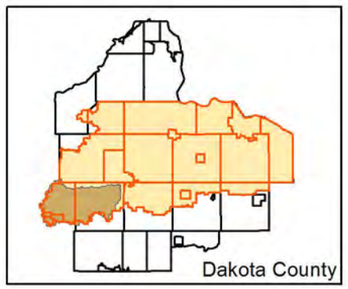
LEGEND

- Drainage Area (24,597 Acres)
- Vermillion River
- Tributaries

Figure 2. Upper Vermillion Drainage Area

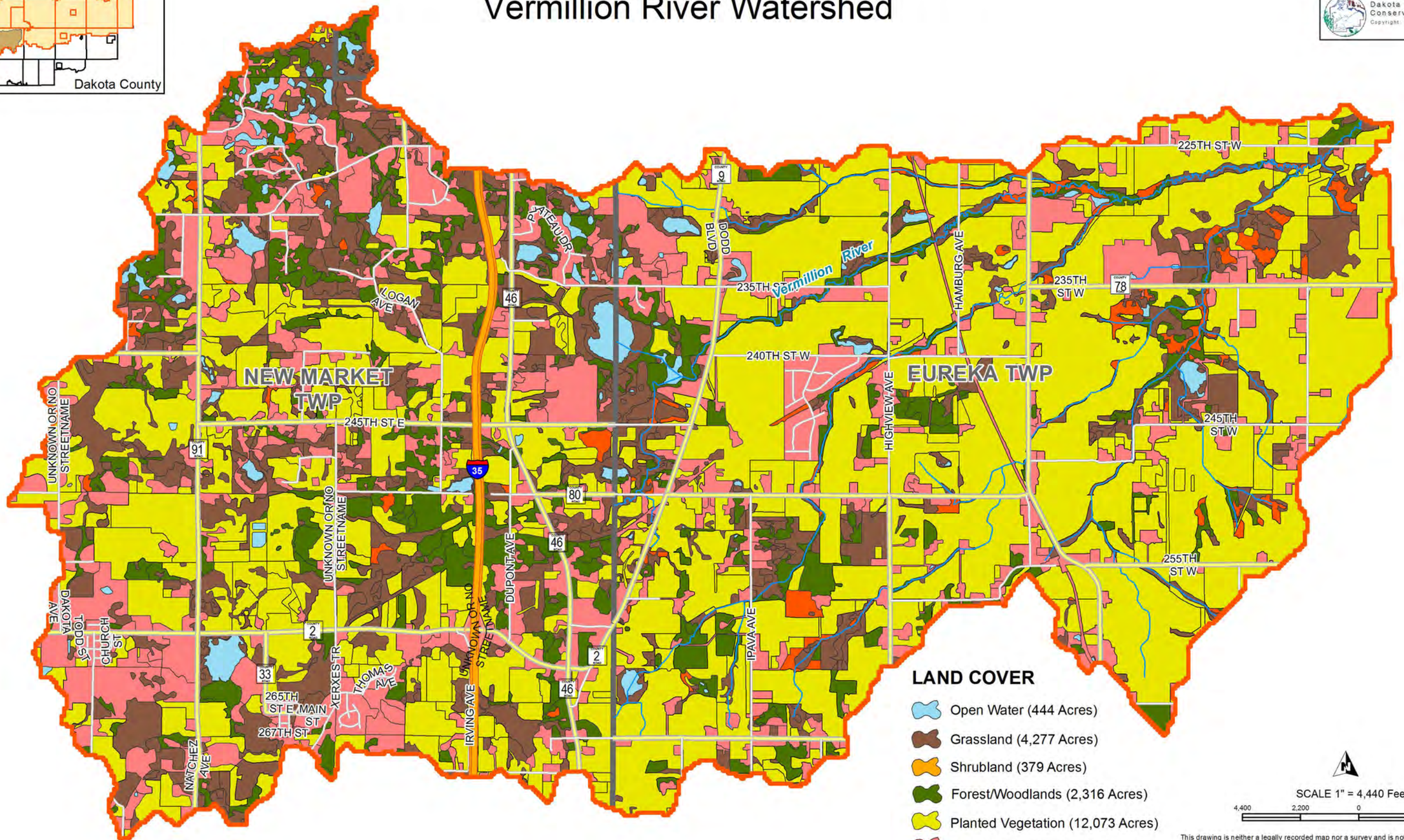
Upper Vermillion Drainage Area

Vermillion River Watershed



Vermillion River watershed
reflecting life

Dakota County Soil & Water Conservation District



LAND COVER

- Open Water (444 Acres)
- Grassland (4,277 Acres)
- Shrubland (379 Acres)
- Forest/Woodlands (2,316 Acres)
- Planted Vegetation (12,073 Acres)
- Artificial Surfaces (5,117 Acres)

SCALE 1" = 4,440 Feet

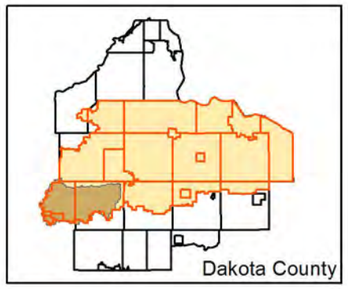
4,400 2,200 0 4,400 Feet

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data located in various City, County, and State Offices and other sources, affecting the area shown, and is to be used for reference purposes only. Dakota County SWCD is not responsible for any inaccuracies herein contained. If discrepencies are found please contact the Dakota County Soil & Water Conservation District at 651.480.7777.

Figure 3. Land Cover (MLCCS)

Upper Vermillion Drainage Area

Vermillion River Watershed



Vermillion River watershed reflecting life

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WETLANDS

- Open Water (444 Acres)
- Grassland (2,466 Acres)
- Shrubland (314 Acres)
- Forest (400 Acres)

SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data located in various City, County, and State Offices and other sources, affecting the area shown, and is to be used for reference purposes only. Dakota County SWCD is not responsible for any innaccuracies herein contained. If discrepencies are found please contact the Dakota County Soil & Water Conservation District at 651.480.7777.

Figure 4. Existing Wetlands (MLCCS)

Hydric Soils

According to the SSURGO database, the Upper Vermillion River Drainage Area contains 6,783 acres of hydric soil or those soils with a very poorly drained or poorly drained drainage class (Figure 5). These soils have the capacity to retain water in an unaltered situation.

Potential Wetland Restoration Areas

Based on review of hydric soil data in conjunction with subtracting existing wetlands and artificial surfaces within the Upper Vermillion River Drainage Area, there are approximately 3,237 acres of hydric soil that could potentially provide the capacity to restore wetland characteristics (Figure 6). Table 3 provides a breakdown of potential wetland restoration areas by subwatershed within the Upper Vermillion River Drainage Area.

Table 3: Potential Wetland Restoration Areas by Subwatershed - Upper Vermillion Drainage

Subwatershed Number	Total Size (acres)	Very Poorly Drained Soils (acres)	Poorly Drained Soils (acres)	Potential Wetland Restoration Areas as Percentage to Total Land Area
38020	12,000	109	1,199	10.9%
38021	8,331	714	370	13.0%
38022	4,273	330	377	16.5%

Subwatershed 38020

This subwatershed is approximately 12,000 acres in size and includes approximately 1,308 acres of drained hydric soil (Figure 7).

Subwatershed 38021

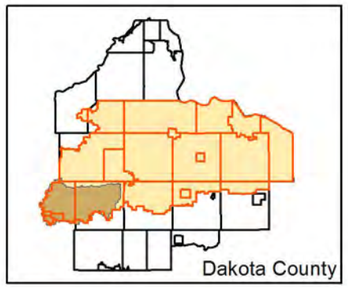
This sub-watershed is approximately 8,331 acres in size and includes approximately 1,084 acres of drained hydric soil (Figure 8).

Subwatershed 38022

This subwatershed is approximately 4,273 acres in size and includes approximately 707 acres of drained hydric soil (Figure 9).

Upper Vermillion Drainage Area

Vermillion River Watershed



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NEW MARKET TWP

EUREKA TWP

Vermillion River

225TH ST W
235TH ST W
240TH ST W
245TH ST W
247TH ST W
250TH ST W
255TH ST W
257TH ST W
265TH ST W
267TH ST W
245TH ST E

LOGAN AVE
PLATEAU DR
JERSEY CT
DODD BLVD
HAMBURG AVE
CEDAR AVE
FLAGSTAFF AVE
FAIRGREEN AVE
ESSEX AVE
IDALIA AVE W
HOLYOKE PATH
IBERIA AVE
HIGHVIEW AVE
FORDHAM AVE
GRANITE PATH W
GALAXIE AVE
IPAVA AVE
JACQUARD AVE
DUPONT AVE
IRVING AVE
NATCHEZ AVE
UNKNOWN OR NO STREETNAME

COUNTY ROAD 46
COUNTY ROAD 9
COUNTY ROAD 23
COUNTY ROAD 78
COUNTY ROAD 91
COUNTY ROAD 80
COUNTY ROAD 17
COUNTY ROAD 2
COUNTY ROAD 33
COUNTY ROAD 84
35

HYDRIC SOILS (SSURGO)

Hydric Soils (6,783 Acres)

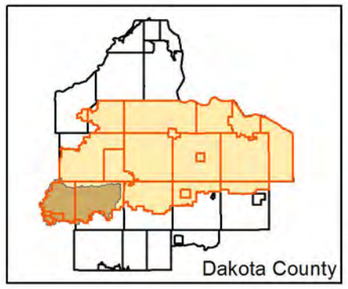
SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

Figure 5. Hydric Soils (SSURGO)

Upper Vermillion Drainage Area

Vermillion River Watershed



Vermillion River watershed reflecting life

Dakota County Soil & Water Conservation District

NEW MARKET TWP

EUREKA TWP

Vermillion River

UNKNOWN OR NO STREETNAME

LOGAN AVE

PLATEAU DR

JERSEY CT

DODD BLVD

DUPONT AVE

IRVING AVE

NATCHEZ AVE

IDALIA AVE W

HOLYOKE PATH

IBERIA AVE

HIGHVIEW AVE

IPAVA AVE

JACQUARD AVE

HAMBURG AVE

CEDAR AVE

FLAGSTAFF AVE

FAIRGREEN AVE

ESSEX AVE

FORDHAM AVE

GRANITE PATH W

GALAXIE AVE

225TH ST W

235TH ST W

240TH ST W

245TH ST E

245TH ST W

247TH ST W

250TH ST W

255TH ST W

257TH ST W

265TH ST W

267TH ST W

County 9, 46, 91, 35, 80, 2, 33, 23, 78, 17, 84

POTENTIAL WETLAND RESTORATION AREAS

(Minus Existing Wetlands & Impervious Surfaces)

Poorly Drained (2,070 Acres)

Very Poorly Drained (1,167 Acres)

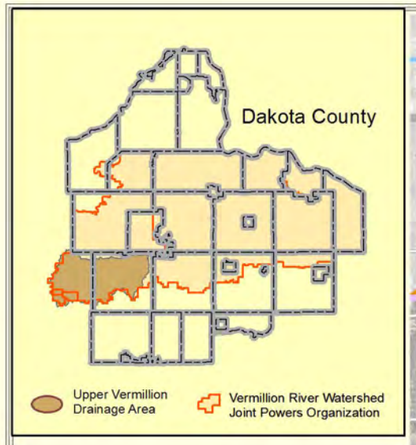
SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

Figure 6. Upper Vermillion Potential Wetland Restoration Sites

Subwatershed 38020

Upper Vermillion Drainage Area



Vermillion River watershed
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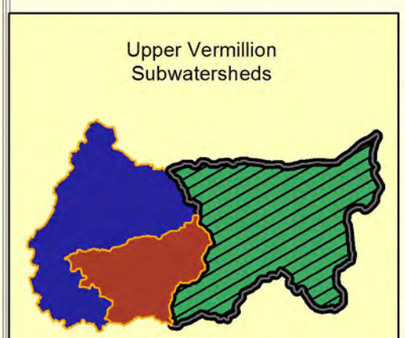


SCALE 1" = 3,000 Feet

3,000 1,500 0 3,000 Feet

Image Source: 2010 Dakota County

LAKEVILLE
FARMINGTON
NEW MARKET TWP
CASTLE ROCK TWP
EUREKA TWP
CHUB LAKE
RICE LAKE
Vermillion River
DODD BLVD
PLATEAU DR
HAMBURG AVE
CEDAR AVE
FLAGSTAFF AVE
CHIPPENDALE AVE
HIGHVIEW AVE
IPAVA AVE
GALAXIE AVE
FAIRGREEN AVE
ESSEX AVE
DENMARK AVE
220TH ST W
225TH ST W
235TH ST W
240TH ST W
245TH ST W
250TH ST W
255TH ST W
267TH ST W
COUNTY 23
COUNTY 9
COUNTY 78
COUNTY 80
COUNTY 46
COUNTY 2
3

LEGEND

- Drainage Area
- Common Landowner Parcels
- Subwatershed 38020 (12,000 Acres)
- Vermillion River
- Tributaries

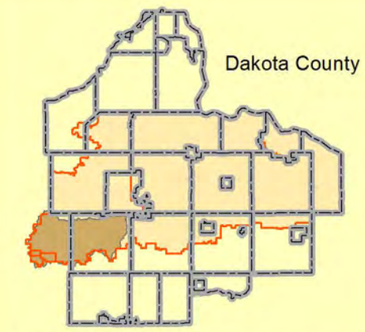
POTENTIAL WETLAND RESTORATION AREAS
(Minus Existing Wetlands & Impervious Surfaces)

- Poorly Drained (1,199 Acres)
- Very Poorly Drained (109 Acres)

Figure 7. Subwatershed 38020 Landowners

Subwatershed 38021

Upper Vermillion Drainage Area



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Upper Vermillion Subwatersheds

Subwatersheds
38020 38021 38022

SCALE 1" = 3,500 Feet

3,500 1,750 0 3,500 Feet

Image Source: 2010 Dakota County

LEGEND

- Drainage Area
- Common Landowner Parcels
- Subwatershed 38021 (8,331 Acres)
- Vermillion River
- Tributaries

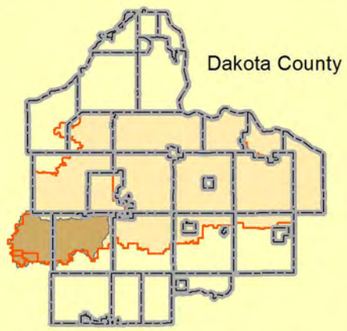
POTENTIAL WETLAND RESTORATION AREAS
(Minus Existing Wetlands & Impervious Surfaces)

- Poorly Drained (370 Acres)
- Very Poorly Drained (714 Acres)

Figure 8. Subwatershed 38021 Landowners

Subwatershed 38022

Upper Vermillion Drainage Area



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Upper Vermillion Subwatersheds

Subwatersheds
38020 38021 38022

SCALE 1" = 2,500 Feet

2,500 1,250 0 2,500 Feet

Image Source: 2010 Dakota County

LEGEND

- Drainage Area
- Common Landowner Parcels
- Subwatershed 38022 (4,273 Acres)
- Vermillion River
- Tributaries

POTENTIAL WETLAND RESTORATION AREAS
(Minus Existing Wetlands & Impervious Surfaces)

- Poorly Drained (377 Acres)
- Very Poorly Drained (330 Acres)

Figure 9. Subwatershed 38022 Landowners

IV. SOUTH BRANCH DRAINAGE AREA

General Information

The South Branch Drainage Area is approximately 21,027 acres and includes portions of Eureka, Castle Rock, Hampton, Empire and Vermillion Townships (Figure 10). This drainage area includes the South Branch Vermillion River as its centerpiece. Three subwatersheds are identified within the South Branch Drainage Area.

Land Cover

The largest percentage of land within the South Branch Drainage Area is being used for planted vegetation such as row crops, vegetable farms, sod fields or nursery's (Figure 11). Approximately 15,075 acres or 72% of the area has an identified land use of planted vegetation. Table 4 summarizes land cover attributes within the South Branch Drainage Area based on MLCCS data from 2010.

Table 4: Land Cover – South Branch Drainage Area

Land Cover	Area (Acres)	Area (%)
Planted Vegetation	15,075	71.7
Artificial Surfaces	2,377	11.3
Grassland	1,879	8.9
Forest/Woodland	1,401	6.6
Shrubland	224	1.1
Open Water	71	0.3

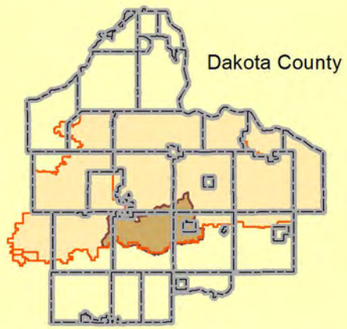
Existing Wetlands

The South Branch Drainage Area includes wetlands primarily adjacent to stream corridors (Figure 12). Existing wetlands account for approximately 1,327 acres or 6% of the entire drainage area. Existing wetlands are largely dominated by grass or other herbaceous vegetation such as reed canary grass, sedge or cattail. Table 5 describes the vegetation cover types and extent of existing wetlands with the South Branch Drainage Area.

Table 5: Wetlands – South Branch Drainage Area

Wetland Vegetation	Area (Acres)	Area (%)
Grass or Herbaceous	915	69.0
Shrubland	195	14.7
Forest	146	11.0
Open Water	71	5.3

South Branch Drainage Area
Vermillion River Watershed



Vermillion River watershed
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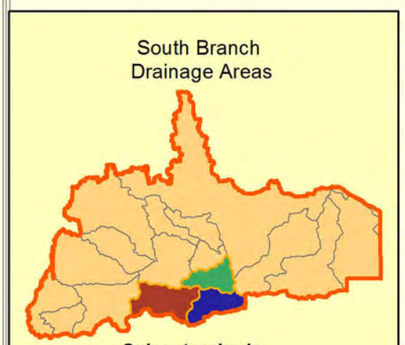


SCALE 1" = 4,400 Feet

4,400 2,200 0 4,400 Feet

Image Source: 2011 Dakota County

FARMINGTON
EUREKA TWP
EMPIRE TWP
CASTLE ROCK TWP
VERMILLION TWP
HAMPTON TWP

190TH ST W
210TH ST W
210TH ST E
215TH ST E
220TH ST E
222ND ST E
225TH ST W
230TH ST W
230TH ST E
232ND ST E
240TH ST W
250TH ST E
255TH ST W
260TH ST W
260TH ST E
265TH ST W
270TH ST W
270TH ST E

AKIN RD
CHIPPENDALE AVE
DENMARK AVE
BISCAYNE AVE
CAMBODIA AVE
AUDREY AVE
AKRON AVE
CLAYTON AVE
BLAINE AVE
COATES BLVD
EMERY AVE
NORTHFIELD BLVD
DONNELLY AVE
ROCHESTER BLVD
LEWISTON BLVD

Vermillion River
South Branch Vermillion River
North Branch Chub Creek

50
52
78
80
81

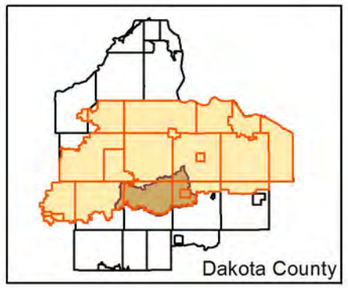
LEGEND

- Drainage Area (21,027 Acres)
- South Branch Vermillion River
- Tributaries

Figure 10. South Branch Drainage Area

South Branch Drainage Area

Vermillion River Watershed



Vermillion River watershed
reflecting life

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LAND COVER

- Open Water (71 Acres)
- Grassland (1,879 Acres)
- Shrubland (224 Acres)
- Forest/Woodland (1,401 Acres)
- Planted Vegetation (15,075 Acres)
- Impervious Surfaces (2,377 Acres)

EMPIRE TWP
VERMILLION TWP
CASTLE ROCK TWP
EUREKA TWP
HAMPTON TWP
215TH ST E
220TH ST E
230TH ST W
230TH ST E
245TH ST E
250TH ST E
BLAINE AVE
HAMPTON BLVD
CHIPPENDALE AVE
AUDREY AVE
DENMARK AVE
ALVERNO AVE
South Branch Vermillion River
50
31
78
3
80
56
79
53N

SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

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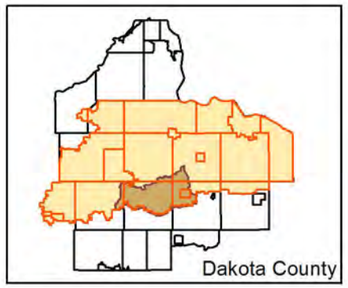
Figure 11. Land Cover (MLCCS)

South Branch Drainage Area

Vermillion River Watershed



Vermillion River watershed reflecting life

Dakota County Soil & Water Conservation District

WETLANDS

- Open Water (71 Acres)
- Grassland (915 Acres)
- Shrubland (195 Acres)
- Forest (146 Acres)

EMPIRE TWP
VERMILLION TWP
CASTLE ROCK TWP
EUREKA TWP
HAMPTON TWP

DUBARRY TRL
DARSOW AVE
215TH ST E
220TH ST E
222ND ST E
HAMPTON BLVD
EMERY AVE
ANNETTE AVE
BLAINE AVE
230TH ST W
230TH ST E
South Branch Vermillion River
232ND ST E
ASPEN ST
WATER ST
MAIN ST
LEWISTON BLVD
CONRAD AVE
CHESLEY TRL
240TH ST E
240TH ST W
AUDREY AVE
BISCAYNE AVE
CHIPPENDALE AVE
245TH ST E
245TH ST W
AKRON AVE
PRIVATE ROAD
ROCHESTER BLVD
NORTHFIELD BLVD
250TH ST E
250TH ST W
ALVERNO AVE
260TH ST E
ESSEX AVE
235TH ST W
DENMARK AVE
PRIVATE ROAD
6TH ST

50 79 31 78 3 80 56 53N

SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

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Figure 12. Existing Wetlands (MLCCS)

Hydric Soils

According to the SSURGO database, the South Branch Drainage Area contains 3,692 acres of hydric soil or those soils with a very poorly drained or poorly drained drainage class (Figure 13). These soils have the capacity to retain water in an unaltered condition.

Potential Wetland Restoration Areas

Based on review of hydric soil data in conjunction with subtracting existing wetlands and artificial surfaces within the South Branch Drainage Area, there are approximately 2,330 acres of hydric soil that could potentially provide the capacity to restore wetland characteristics (Figure 14). Table 6 provides a breakdown of potential wetland restoration areas by subwatershed within the South Branch Drainage Area.

Table 6: Potential Wetland Restoration Areas by Subwatershed – South Branch Drainage

Subwatershed Number	Total Size (acres)	Very Poorly Drained Soils (acres)	Poorly Drained Soils (acres)	Potential Wetland Restoration Areas as Percentage to Total Land Area
38034	5,325	1	64	1.2%
38035	6,277	241	361	9.6%
38036	9,034	204	1,395	17.7%

Subwatershed 38034

This subwatershed is approximately 5,325 acres in size and includes approximately 65 acres of drained hydric soil (Figure 15).

Subwatershed 38035

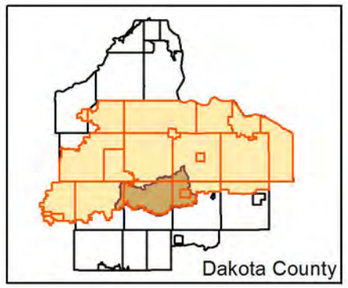
This subwatershed is approximately 6,277 acres in size and includes approximately 602 acres of drained hydric soil (Figure 16).

Subwatershed 38036

This subwatershed is approximately 9,034 acres in size and includes approximately 1,599 acres of drained hydric soil (Figure 17).

South Branch Drainage Area

Vermillion River Watershed



Vermillion River watershed
reflecting life

Dakota County Soil & Water Conservation District

HYDRIC SOILS (SSURGO)

Hydric Soils (3,692 Acres)

EMPIRE TWP
VERMILLION TWP
CASTLE ROCK TWP
EUREKA TWP
HAMPTON TWP
South Branch Vermillion River
215TH ST E
220TH ST E
222ND ST E
230TH ST W
230TH ST E
232ND ST E
240TH ST W
240TH ST E
245TH ST W
245TH ST E
250TH ST W
250TH ST E
260TH ST E
ASPEN ST
DENMARK AVE
ANNETTE AVE
BLAINE AVE
DARSOW AVE
HAMPTON BLVD
EMERY AVE
CHIPPENDALE AVE
BISCAYNE AVE
AUDREY AVE
AKRON AVE
PRIVATE ROAD
ALVERNO AVE
CONRAD AVE
CHESLEY TRL
WATER ST
MAIN ST
ROCHESTER BLVD
NORTHFIELD BLVD
31
79
50
78
3
80
56
53N

SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

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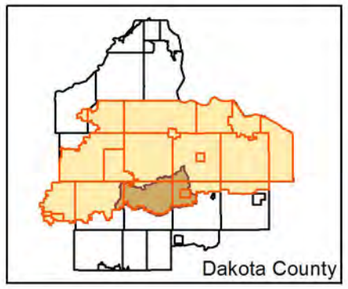
Figure 13. Hydric Soils (SSURGO)

South Branch Drainage Area

Vermillion River Watershed



Vermillion River watershed
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POTENTIAL WETLAND RESTORATION AREAS

(Minus Existing Wetlands & Artificial Surfaces)

- Poorly Drained (1,883 Acres)
- Very Poorly Drained (447 Acres)

EMPIRE TWP
VERMILLION TWP
CASTLE ROCK TWP
EUREKA TWP
HAMPTON TWP
DUBARRY TRL
DARSOW AVE
215TH ST E
220TH ST E
222ND ST E
HAMPTON BLVD
EMERY AVE
ANNETTE AVE
BLAINE AVE
230TH ST W
230TH ST E
South Branch Vermillion River
232ND ST E
ASPEN ST
WATER ST
MAIN ST
CONRAD AVE
CHESLEY TRL
240TH ST E
LEWISTON BLVD
ROCHESTER BLVD
NORTHFIELD BLVD
PRIVATE ROAD
6TH ST
DENMARK AVE
235TH ST W
245TH ST W
250TH ST W
CHIPPENDALE AVE
BISCAYNE AVE
AUDREY AVE
AKRON AVE
ALVERNO AVE
ESSEX AVE
240TH ST W
245TH ST E
250TH ST E
260TH ST E
79
50
31
78
3
80
56
53N

SCALE 1" = 4,440 Feet

4,400 2,200 0 4,400 Feet

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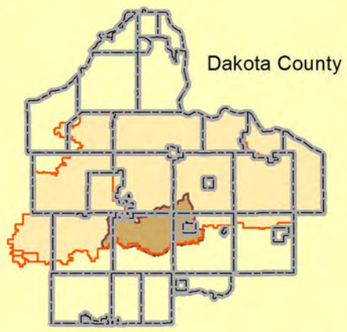
Figure 14. South Branch Potential Wetland Restoration Sites

Subwatershed 38034

South Branch Drainage Area



Vermillion River watershed
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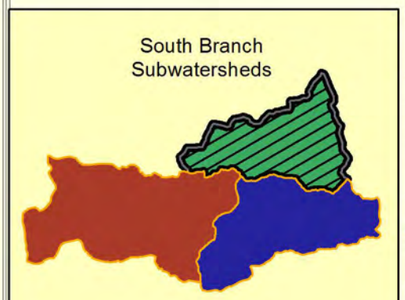
Dakota County Soil & Water Conservation District



SCALE 1" = 2,200 Feet

2,200 1,100 0 2,200 Feet

Image Source: 2011 Dakota County

LEGEND

- Drainage Area
- Common Landowner Parcels
- Subwatershed 38034 (5,325 Acres)
- South Branch Vermillion River
- Tributaries

POTENTIAL WETLAND RESTORATION AREAS

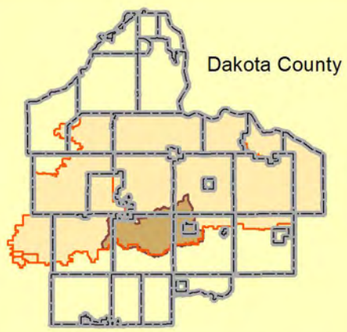
(Minus Existing Wetlands & Impervious Surfaces)

- Poorly Drained (64 Acres)
- Very Poorly Drained (1 Acre)

Figure 15. Subwatershed 38034 Landowners

Subwatershed 38035

South Branch Drainage Area



Vermillion River watershed
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South Branch Vermillion River

CASTLE ROCK TWP

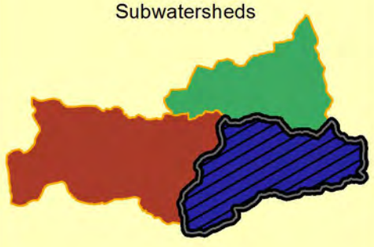
HAMPTON TWP

ANNETTE AVE
BLAINE AVE
AUDREY AVE
CONRAD AVE
CHESLEY TRL
DONNELLY AVE
EMERY AVE
MAIN ST
HAMPTON BLVD
NORTHFIELD BLVD
LEWISTON BLVD
ROCHESTER BLVD

222ND ST E
225TH ST E
230TH ST E
232ND ST E
240TH ST E
245TH ST E
250TH ST E
260TH ST E

County 79
County 80
County 47
County 83
52

South Branch Subwatersheds



Subwatersheds

38034 38035 38036

SCALE 1" = 2,200 Feet

2,200 1,100 0 2,200 Feet

Image Source: 2011 Dakota County

LEGEND

- Drainage Area
- Common Landowner Parcels
- Subwatershed 38035 (6,277 Acres)
- South Branch Vermillion River
- Tributaries

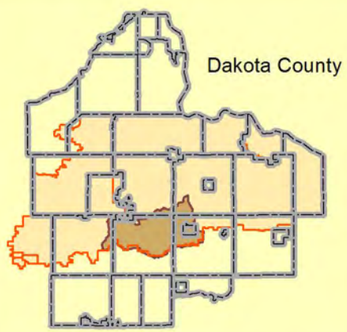
POTENTIAL WETLAND RESTORATION AREAS

(Minus Existing Wetlands & Impervious Surfaces)

- Poorly Drained (361 Acres)
- Very Poorly Drained (241 Acre)

Figure 16. Subwatershed 38035 Landowners

Subwatershed 38036
South Branch Drainage Area



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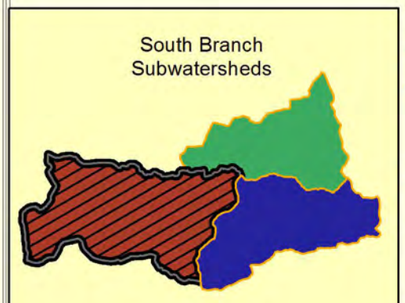

SCALE 1" = 2,600 Feet

2,200 1,100 0 2,200 Feet

Image Source: 2011 Dakota County

LEGEND

- Drainage Area
- Common Landowner Parcels
- Subwatershed 38036 (9,034 Acres)
- South Branch Vermillion River
- Tributaries

POTENTIAL WETLAND RESTORATION AREAS
(Minus Existing Wetlands & Impervious Surfaces)

- Poorly Drained (1,395 Acres)
- Very Poorly Drained (204 Acres)

Figure 17. Subwatershed 38036 Landowners

LIST OF TABLES

LIST OF FIGURES

REFERENCES

1. Amended Watershed Plan, Vermillion River Watershed Joint Powers Organization, 2008. Online at:http://vermillionriverwatershed.org/attachments/061_VRW_FinalPlanDocumentAmended2008.pdf
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3. Select by Location Geo-Processing Tool, ArcMap, ESRI. Online at: http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#/Select_By_Location_graphic_examples/0017000000tp000000/
4. Minnesota Department of Natural Resources Subwatersheds and Hydrologic Units at: http://www.dnr.state.md.us/watersheds/surf/indic/les/descrip/les_wetloss_des.html