

# ***Wetland Delineation Report***

***Spirit Lake Sediment Site  
Former U. S. Steel Duluth Works  
St. Louis River  
Duluth, Minnesota***

***Prepared for  
U. S. Steel and  
U.S. EPA Great Lakes National Program Office***

***April 2013***

# Wetland Delineation Report

## Spirit Lake Sediment Site – Former U.S. Steel Duluth Works St. Louis River Duluth, Minnesota

April 2013

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# 1.0 Introduction

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This Wetland Delineation Report, prepared on behalf of United States Steel Corporation (U. S. Steel) and U.S. Environmental Protection Agency – Great Lakes National Program Office (GLNPO), presents the results of the habitat evaluation and wetland delineation work for the Spirit Lake Sediment Site (Site) in the St. Louis River, Duluth, Minnesota. This work task was performed as part of the Feasibility Study (FS) work outlined in the FS Work Plan (Barr, 2012a) and Sampling and Analysis Plan (SAP) (Barr, 2012b) submitted to the GLNPO and Minnesota Pollution Control Agency (MPCA) in August 2012.



## 2.0 General Environmental Setting

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The Site is located in an open reach of the St. Louis River estuary referred to as Spirit Lake, near the Morgan Park neighborhood of Duluth, Minnesota (Figure D-1). The Site layout and relation to the former U. S. Steel Duluth Works are shown on Figure D-2.

The Site is comprised of two main areas along the western shore of Spirit Lake: the Wire Mill Delta and the Unnamed Creek Delta, as shown on Figure D-2. The Wire Mill Delta area is near the former discharge pond associated with the former Duluth Works Wire Mill operational area. The Unnamed Creek Delta is north of the Wire Mill Delta at the outlet of Unnamed Creek, where it empties into Spirit Lake. A man-made spit of land separates the two delta areas.

The Remedial Investigation (RI) provides information about sediment quality, texture and bathymetry in the western Spirit Lake study area (Barr, 2013). This site information is summarized on Figure D-3, and was used to plan the wetland delineation scope.

## 3.0 Wetland Delineation and Functional Assessment

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This wetland delineation was conducted along with a habitat evaluation (Barr 2012 Habitat Characterization Report) to evaluate opportunities for incorporating habitat enhancements into future sediment management activities. In addition, the wetland delineation will provide information needed for permitting in support of eventual sediment management and/or habitat enhancement projects at the Site.

For the current planning needs of the project, the wetland delineation was completed on areas from the shoreline inland (westward) to the railroad track, but not more than 100 meters inland, and in the nearshore of the Unnamed Creek and the Wire Mill delta areas where the water depth is less than 2.0 meters (8 feet 2.5 inches).

### 3.1 Wetland Delineation and Classification Methods

The wetlands were identified and delineated on August 31, 2012. The wetland delineations were performed according to the Routine On-Site Determination Method specified in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (USACE, 2012)

Precipitation data were reviewed from the Minnesota Climatology Working Group (2012) based on data from a gridded database using a point location from within the Review Area. These data were analyzed in comparison to the statistical climatic WETS table data developed by the Natural Resources Conservation Service (NRCS, 1995) specifically for evaluating climatic normalcy in conducting wetland delineations (Table 1). According to the NRCS protocol for determining the antecedent climatic conditions at the time of the delineation, the conditions at the time of the delineation were within normal for that time of year.

The delineations were conducted during the 2011-2012 water year (defined as October 1 through September 30). The overall precipitation conditions for the 2011-2012 water year were above normal (Table 2).

Prior to conducting the field delineations, numerous sources of existing information were gathered and reviewed to assist in developing a strategy for evaluating wetlands within the Review Area. Aerial photographs and other data were compiled including:

- 1991 USGS digital quadrangle map (Figure D-1),

- NWI wetland data (USFWS, 2008) (Figure D-4),
- NRCS Soil Survey data (NRCS, 1996) (Figure D-5), and
- 2003, 2006, 2008, 2009, 2009, and 2010 Farm Services Association (FSA) aerial imagery.

Soil borings were reviewed at data points shown in Figure D-6. Representative soil samples from each boring were examined for hydric soil indicators. Soil colors (e.g., 7.5YR 4/2, etc.) were determined with the aid of a Munsell<sup>®</sup> soil color chart and noted on the Wetland Data Forms (Appendix D-1).

The wetland boundaries were mapped in the field with Global Positioning System (GPS) accurate to within approximately one meter to establish wetland delineation locations. The wetland boundaries were later mapped using ArcMap<sup>©</sup> Geographic Information System (GIS) software.

The delineated wetlands were classified using the USFWS Circular 39 Classification System (Shaw and Fredine, 1956), the USFWS Cowardin Classification System (Cowardin et al., 1979), and Eggers and Reed Plant Community Classification System (Eggers and Reed, 1997). The dominant plant species in each wetland type were identified and recorded on Wetland Data Forms (Appendix D-1). Watershed boundaries and waterbodies are shown in Figure D-7. Photos taken during the August 2012 site visit are provided as Appendix A in the 2012 Habitat Characterization Report.

In addition, the delineated wetland areas were characterized according to the Minnesota Routine Assessment Method (MnRAM) (MN BWSR, 2009) for evaluating wetland functions (Appendix D-2).

### **3.2 Summary of Wetland Resources**

All wetland areas delineated within the Site are shown on Figure D-6. A comparison of the total area of each wetland community is shown in Table 3. Table 4 summarizes vegetation found during the August 2012 site visit for each wetland community. Additional information on the field-delineated wetland, including dominant vegetation, soil type, and hydrologic information, is provided on the wetland data sheets in Appendix D-1.

One wetland complex was delineated within the Site. The portion of this wetland delineated within the Site is approximately 308 acres (Figure D-6). The wetland extends beyond the project Site boundary. Observed wetland communities within the delineated boundary were documented in the field and mapped on Figure D-8.

## Shallow Open Water Community

The majority of the delineated wetland within the Site was comprised of shallow open water wetland (Type 5 PUBH). This wetland community was approximately 229 acres within the Site boundary. Dominant vegetation within the shallow open water was water celery (*Vallisneria americana*). Additional vegetation within this community includes coontail (*Ceratophyllum demersum*), flexuous naiad (*Najas flexilis*), variegated yellow pond lily (*Nuphar lutea ssp. variegata*), white waterlily (*Nymphaea odorata*), and pondweeds (*Potamogeton epihydrus*, *Potamogeton nodosus*, *Potamogeton richardsonii*, and *Stuckenia pectinata*). The vegetative index was rated “low” for this community in the MnRAM evaluation. The shallow open water community had water depths of 18 inches to 6 feet during the August 31, 2012 site visit. Soils observed at the surface were fine sand with silt.

## Deep Marsh

The deep marsh (Type 4 PEMF/PUBG) portion of the delineated wetland within the Site comprised approximately 25 acres. Dominant vegetation within the deep marsh includes giant bur-reed (*Sparganium eurycarpum*), broad-leaved arrowhead (*Sagittaria latifolia*), and soft stem bulrush (*Schoenoplectus tabernaemontani*). Additional species including rushes (*Juncus*), spikerushes (*Eleocharis*), and waterlilies were also present within the deep marsh areas. The vegetative index was rated “high” for this community in the MnRAM evaluation. Portions of the deep marsh included unvegetated mud flats. The deep marsh community was inundated with 12 to 18 inches during the August 31, 2012 site visit. Soils observed at the surface were fine sand with silt.

## Shallow Marsh

The shallow marsh (Type 3 PEMC) portion of the delineated wetland within the Site comprised approximately 17 acres. The shallow marsh wetland communities were dominated by narrow-leaved cattail (*Typha angustifolia*) and purple loosestrife (*Lythrum salicaria*) giving it a “low” vegetative index rating in the MnRAM evaluation. Additional species within the shallow marsh areas included reed canary grass (*Phalaris arundinacea*), common reed grass (*Phragmites australis*), manna grass (*Glyceria striata*), rice cut grass (*Leersia oryzoides*), river bulrush (*Schoenoplectus fluviatilis*), soft stem bulrush, broad-leaved arrowhead, giant bur-reed, beggarticks (*Bidens connata*), and jewelweed (*Impatiens capensis*). The shallow marsh communities had water depths as deep as 12 inches during the August 31, 2012 site visit. Soils observed at the surface were fine sand with silt.

## Alder Thicket and Shrub Carr

The alder thicket and shrub-carr (Type 6 PSS1B) portions of the delineated wetland within the Site totaled approximately 26 acres. Dominant vegetation within the shrub-carr areas included willows (*Salix spp.*), balsam poplar (*Populus balsamifera*), scouring rush (*Equisetum*), red raspberry (*Rubus*

*idaeus*), and sedges (*Carex spp.*). One unique portion of shrub-carr located in the northwestern part of the site (north of Unnamed Creek and south of the railroad tracks) was dominated by scouring rush with bog birch (*Betula pumila*), balsam willow (*Salix pyrifolia*), tamarack (*Larix laricina*), and black spruce (*Picea mariana*) also present and muck surface soils. The shrub-carr had a vegetative index of “high” in the MnRAM evaluation. The alder thicket areas were dominated by alder (*Alnus incana*), balsam poplar, Canada bluejoint (*Calamagrostis canadensis*), sedges, scouring rush, and reed canary grass. The alder thicket had a vegetative index of “moderate” in the MnRAM evaluation. Surface soils in the majority of the alder thicket and shrub-carr areas were peat above fill which includes non-native fine sandy material. Soils meet the F1 loamy mucky mineral hydric soil indicator and were saturated at a depth of 10 inches during the August 31, 2012 site visit.

### **Floodplain Forest**

The floodplain forest (Type 1 PFO1A) portions of the delineated wetland within the Site totaled 7.4 acres. Trees within the floodplain forest areas included aspen (*Populus tremuloides*), willows, black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), and balsam poplar. Red-osier dogwood (*Cornus sericea*), sandbar willow (*Salix interior*), honeysuckle (*Lonicera tatarica*), and common buckthorn (*Rhamnus cathartica*) were the prominent shrub species. The herbaceous layer was dominated by scouring rush. The floodplain forest community had a vegetative index rating of “high” in the MnRAM evaluation. Surface soils within the floodplain forest areas were primarily sand or sandy clay and were saturated at a depth of 12 inches during the August 31, 2012 site visit. The soil was non-native fill. The non-native fill has dark coloration which potentially masks observations of redox features.

### **Sedge Meadow and Fresh Wet Meadow**

The sedge meadow and fresh wet meadow (Type 2 PEMB) portions of the delineated wetland within the Site totaled 2.9 acres. The fresh wet meadow areas were dominated by purple loosestrife and bluejoint and had a vegetative index rating of “moderate” in the MnRAM evaluation. Dominant vegetation within the sedge meadow areas included lake sedge (*Carex lacustris*) and soft stem bulrush giving it a vegetative index rating of “high” in the MnRAM evaluation. Surface soils within the sedge meadow and fresh wet meadow areas were primarily non-native sandy-fill. Soils in these communities were not saturated within the upper 12 inches during the August 31, 2012 site visit; however secondary indicators of hydrology were met with geomorphic position and the FAC-Neutral test.

### 3.3 MnRAM Evaluation

The MnRAM results of the vegetative index ratings were evaluated for each of the wetland communities within the delineated wetland area as described in the previous section. The overall vegetative diversity and integrity rating is “excellent” due to the special feature designation of a Rare Natural Community Minnesota County Biological Survey (MCBS) site with “high” biodiversity significance within the St. Louis River Channel from Bear Island to Smithville. During the site evaluation in August 2012, high biodiversity was not observed. The site evaluation determined that the individual wetland vegetation communities ranged from “low” to “high” with a weighted average wetland rating of “low”. Based on disturbance from fill at the site, it might be more appropriate to re-designate the MCBS rating for this area and give it a Biodiversity Significance rank of “Below” since some of the native plant communities at the site have been altered by the effects of industrial development. For comparison, the MnRAM was re-evaluated by removing this Rare Natural Community special feature designation for the wetlands at the site. Summaries of both evaluations are provided in Appendix D-2.

Based on the MnRAM results, the majority of the functions and values for this site are rated as “moderate” including:

- maintenance of hydrologic regime
- flood/stormwater attenuation
- downstream water quality
- shoreline protection
- maintenance of characteristic fish habitat
- aesthetics/recreation/education/cultural, and
- wetland sensitivity to stormwater and urban development.

The maintenance of wetland water quality and the additional stormwater treatment needs would be rated “high” if the MCBS “high” biodiversity rating was appropriate. If it were re-designated to a rating of “below” as suggested above, these two functional ratings would be rated as “moderate”.

The wetland was rated “low” for maintenance of characteristic amphibian habitat due to the presence of predatory fish.

The maintenance of characteristic wildlife habitat structure is rated as “exceptional” due to the DNR Natural Heritage identification of state listed species of special concern within the vicinity of the

Site. These species include creek heelsplitter mussel (*Lasmigona compressa*), lake sturgeon (*Acipenser fulvescens*), and bald eagle (*Haliaeetus leucocephalus*).

### **3.3.1 Conclusions Regarding Data Quality Objectives**

The results of the wetland delineation met the objectives of the SAP (Barr, 2012b) and the measurements, observations and data were obtained in accordance with the SAP methods and procedures. Based on this and the review of the results; the measurements, observations and data are of sufficient quality and quantity to satisfy the data quality objectives and purpose for the wetland delineation.

## 4.0 References

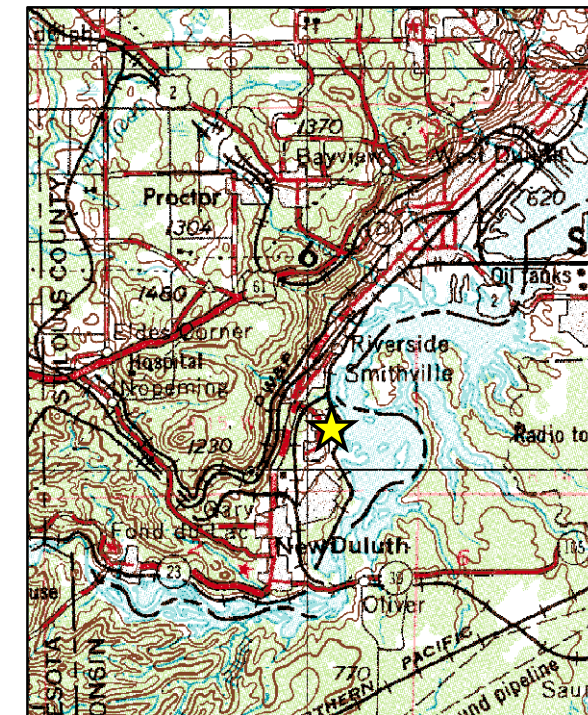
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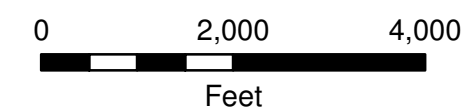


## Figures





-  Approximate U. S. Steel Operations Area (URS, 2008)
-  State Boundary







1 Inch = 2,000 Feet

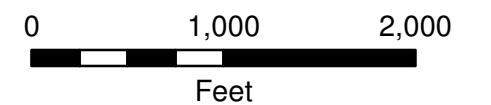
Figure D-1

**SITE LOCATION MAP  
FOR SPIRIT LAKE**  
Spirit Lake Sediment Site -  
Former U. S. Steel Duluth Works  
Saint Louis River  
Duluth, Minnesota





-  Approximate Unnamed Creek Delta Sediment Investigation Area
-  Approximate Wire Mill Delta Sediment Investigation Area
-  Approximate U. S. Steel Operations Area (URS, 2008)
-  State Boundary



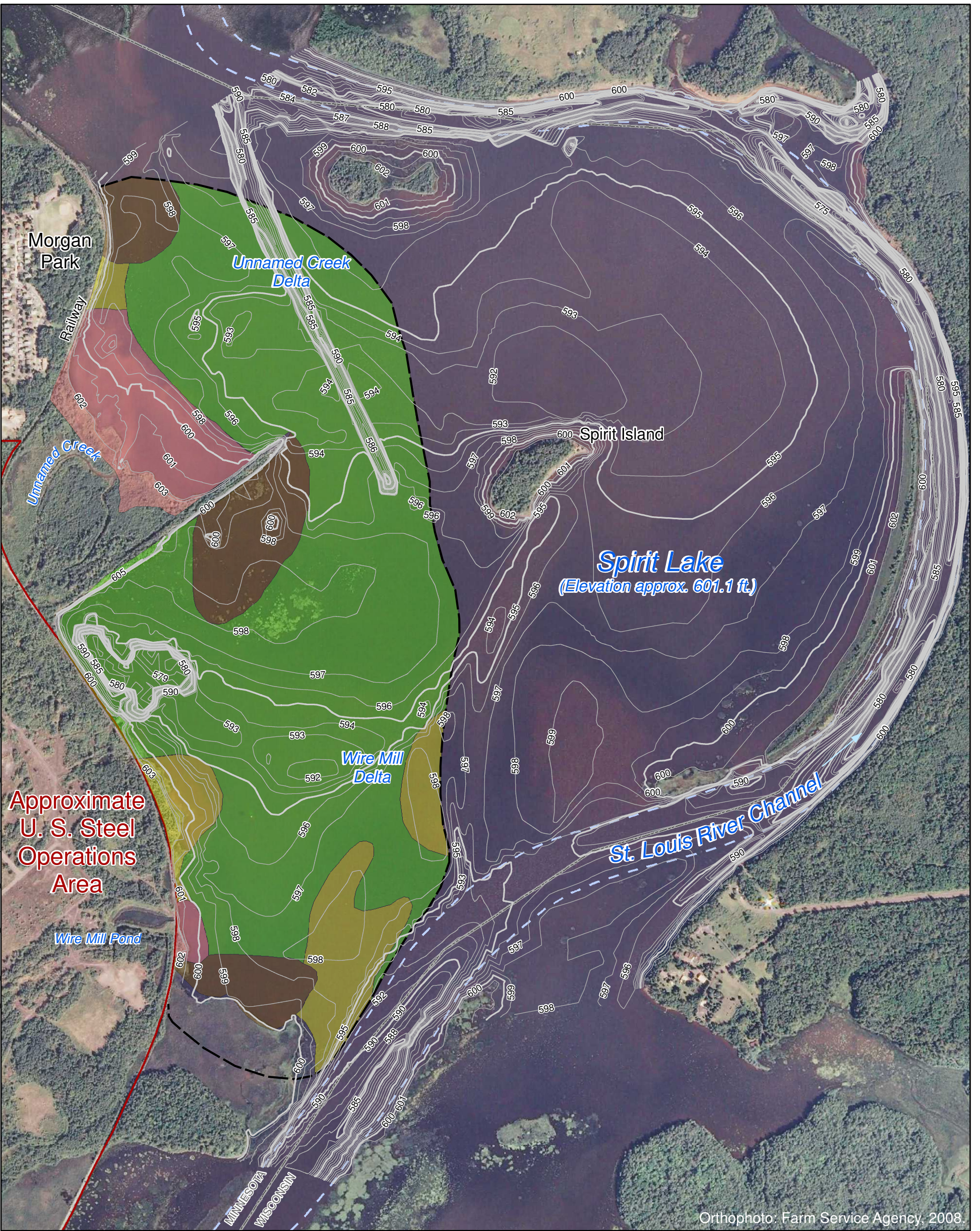
1 Inch = 1,000 Feet

Figure D-2

**SITE LAYOUT**  
 Spirit Lake Sediment Site -  
 Former U. S. Steel Duluth Works  
 Saint Louis River  
 Duluth, Minnesota



Barr Footer: ArcGIS 10.1, 2013-02-18 10:53 File: I:\Client\USS Duluth Works\Work Orders\Fall 2012\Maps\Reports\Wetland Delineation Report\Figure D-3 Sediment Composition Overview.mxd User: jlc



Orthophoto: Farm Service Agency, 2008.

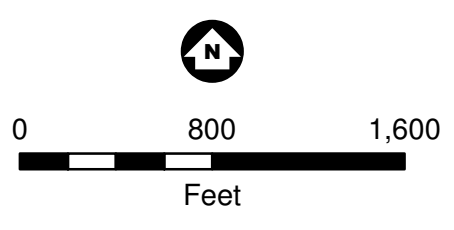
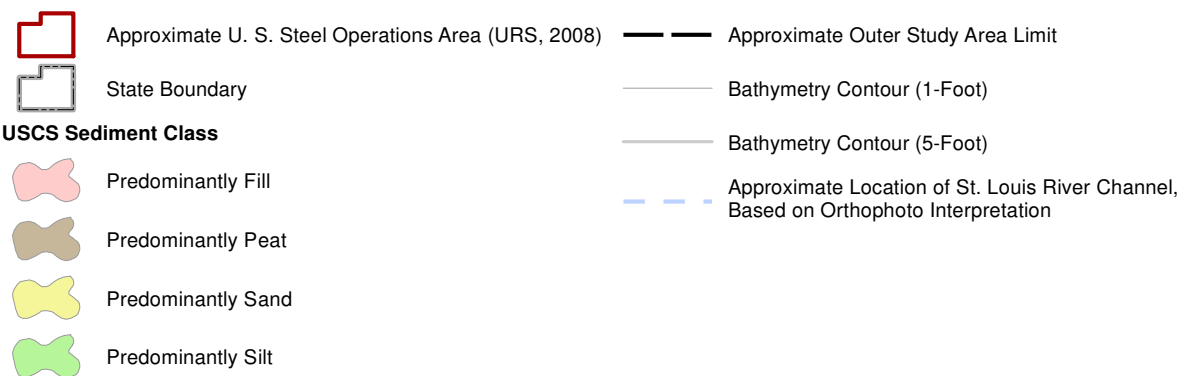
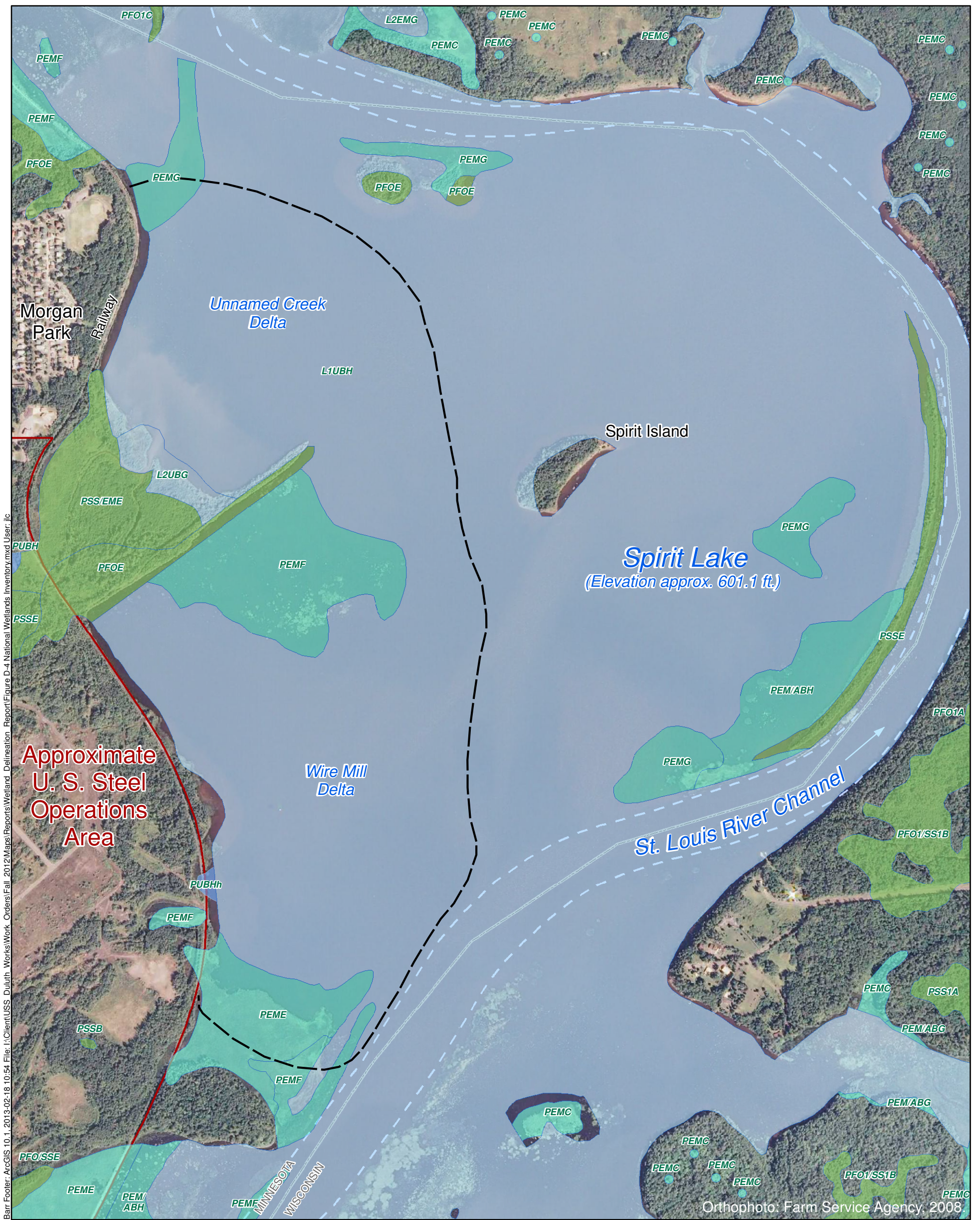


Figure D-3  
**SEDIMENT COMPOSITION OVERVIEW**  
 Spirit Lake Sediment Site -  
 Former U. S. Steel Duluth Works  
 Saint Louis River  
 Duluth, Minnesota





Barr Footer: ArcGIS 10.1, 2013-02-18 10:54 File: I:\Client\USS Duluth Works\Work Orders\Fall 2012\Maps\Reports\Wetland Delineation Report\Figure D-4 National Wetlands Inventory.mxd User: ic

Orthophoto: Farm Service Agency, 2008.

- |                                    |                                   |   |
|------------------------------------|-----------------------------------|---|
| <b>National Wetlands Inventory</b> |                                   | Approximate U. S. Steel Operations Area (URS, 2008)                                 |
|                                    | Freshwater Emergent Wetland       | State Boundary  |
|                                    | Freshwater Forested/Shrub Wetland | Approximate Outer Study Area Limit  |
|                                    | Freshwater Pond                   | Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation |
|                                    | Lake                              |   |
|                                    | Other                             |   |
|                                    | Riverine                          |   |

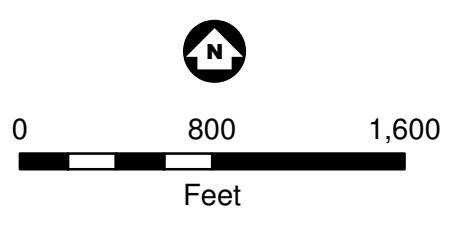
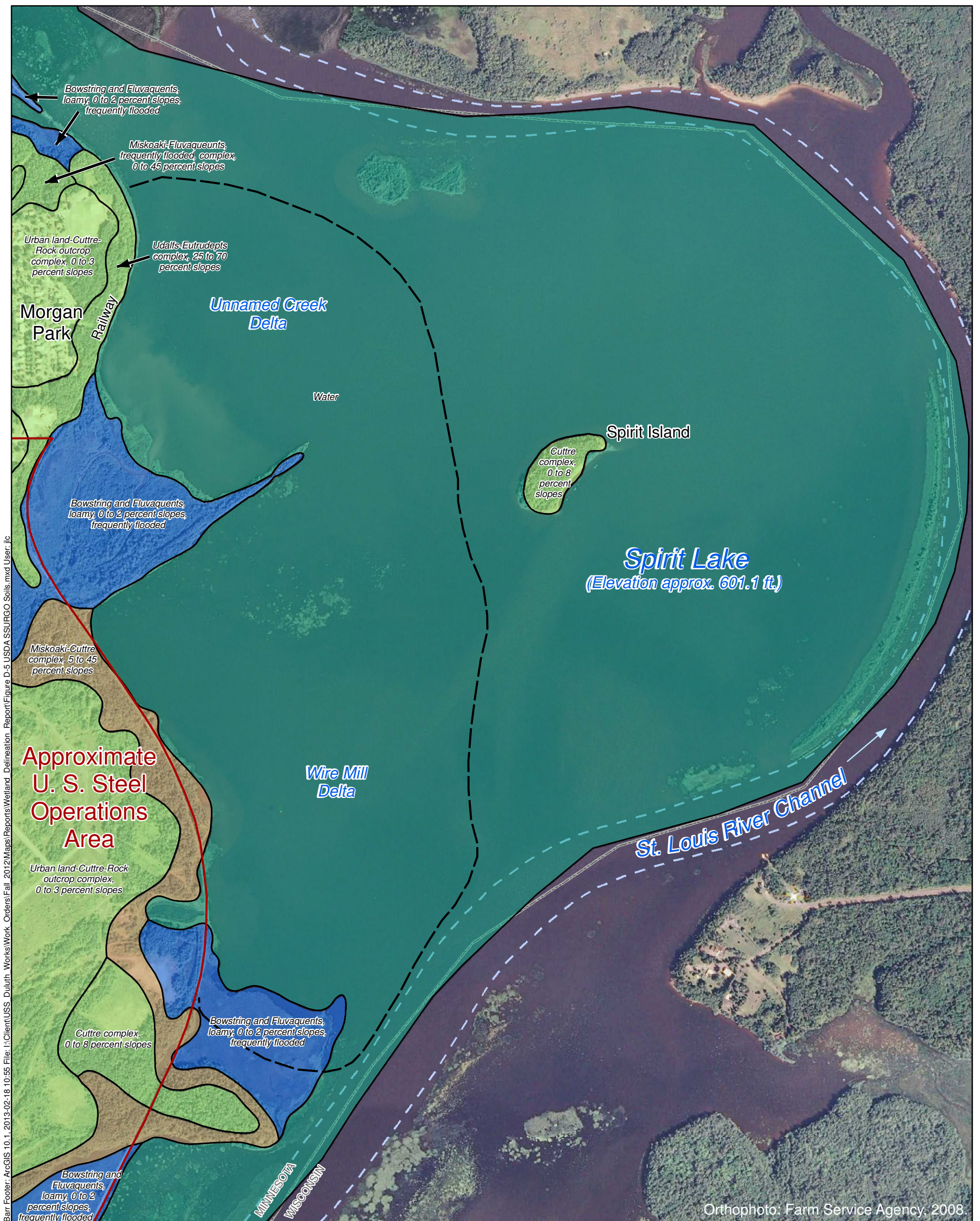


Figure D-4





**NATIONAL WETLANDS INVENTORY**  
 Spirit Lake Sediment Site -  
 Former U. S. Steel Duluth Works  
 Saint Louis River  
 Duluth, Minnesota





**Hydric Rating**

-  All Hydric
-  Partially Hydric
-  Not Hydric
-  Unknown Hydric
-  Not rated or not available

-  Approximate U. S. Steel Operations Area (URS, 2008)
-  State Boundary
-  Approximate Outer Study Area Limit
-  Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation

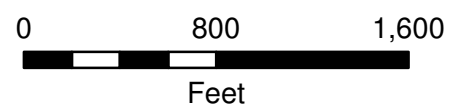
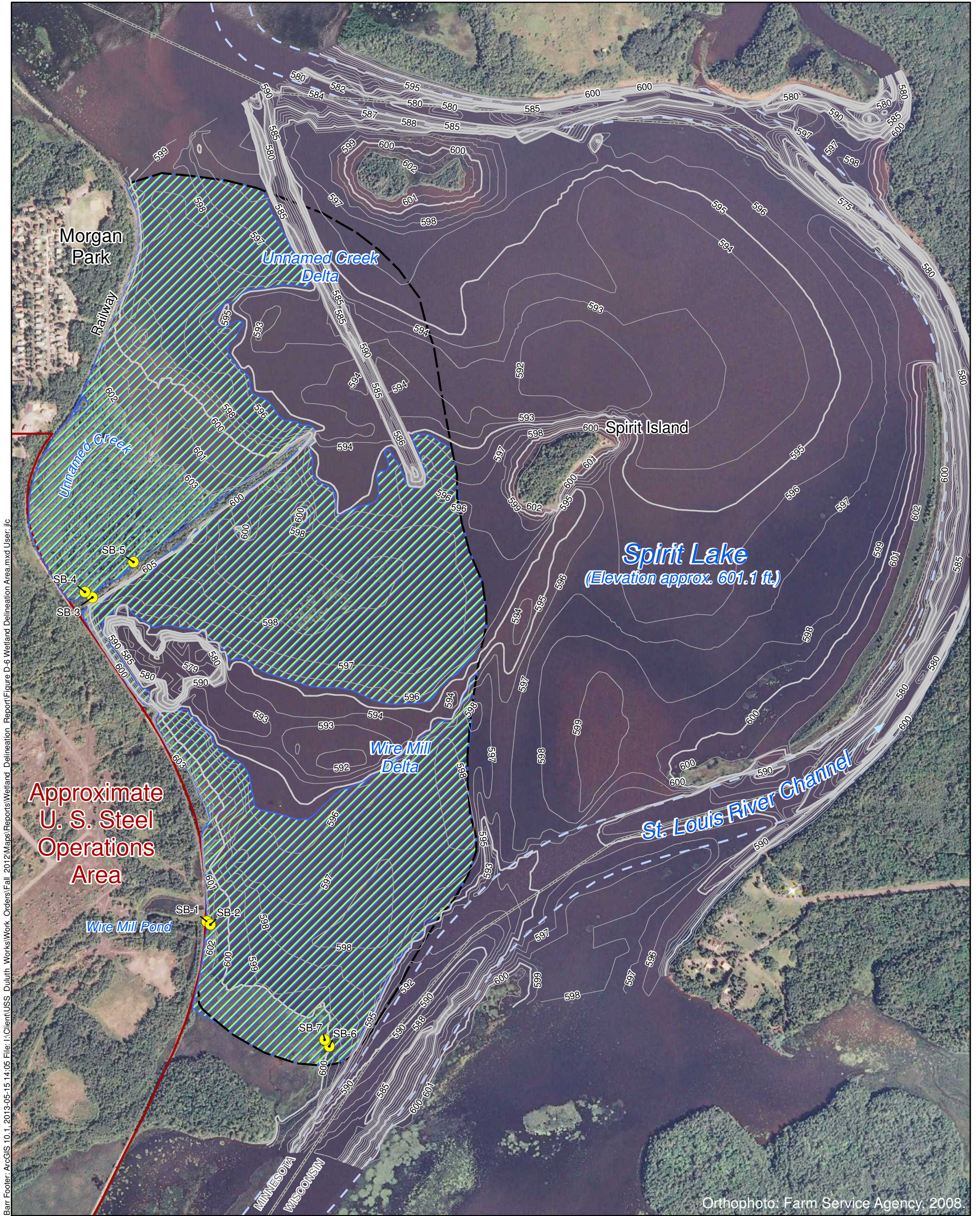


Figure D-5

**USDA SSURGO SOILS**  
 Spirit Lake Sediment Site -  
 Former U. S. Steel Duluth Works  
 Saint Louis River  
 Duluth, Minnesota





Barr Footer: ArcGIS 10.1, 2013-05-15 14:05 File: I:\Client\USS Duluth Works\Work Orders\Fall 2012\Maps\Reports\Wetland Delineation Report\Figure D-6 Wetland Delineation Area.mxd User: lc

Orthophoto: Farm Service Agency, 2008.

-  Approximate U. S. Steel Operations Area (URS, 2008)
-  State Boundary
-  Field-Delineated Wetland Area ( $z < 2.0$  m)
-  Wetland Delineation Sample Points
-  Approximate Outer Study Area Limit
-  Bathymetry Contour (1-Foot)
-  Bathymetry Contour (5-Foot)
-  Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation

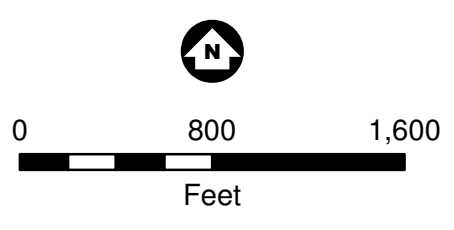







Figure D-6

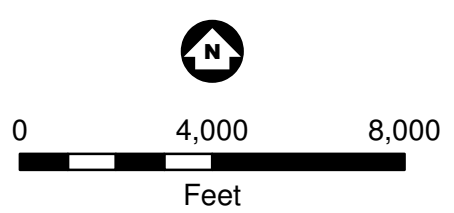
**WETLAND DELINEATION AREA**  
 Spirit Lake Sediment Site -  
 Former U. S. Steel Duluth Works  
 Saint Louis River  
 Duluth, Minnesota



Barr Footer: ArcGIS 10.1, 2013-02-18 11:07 File: I:\Client\USS Duluth Works\Work Orders\Fall 2012\Maps\Reports\Wetland Delineation Report\Figure D-7 Watersheds and Waterbodies.mxd User: jlc



-  Streams, Rivers, and Ditches
-  Rivers and Lakes
-  Watersheds (MN DNR Level 8)
-  Approximate U. S. Steel Operations Area (URS, 2008)
-  State Boundary

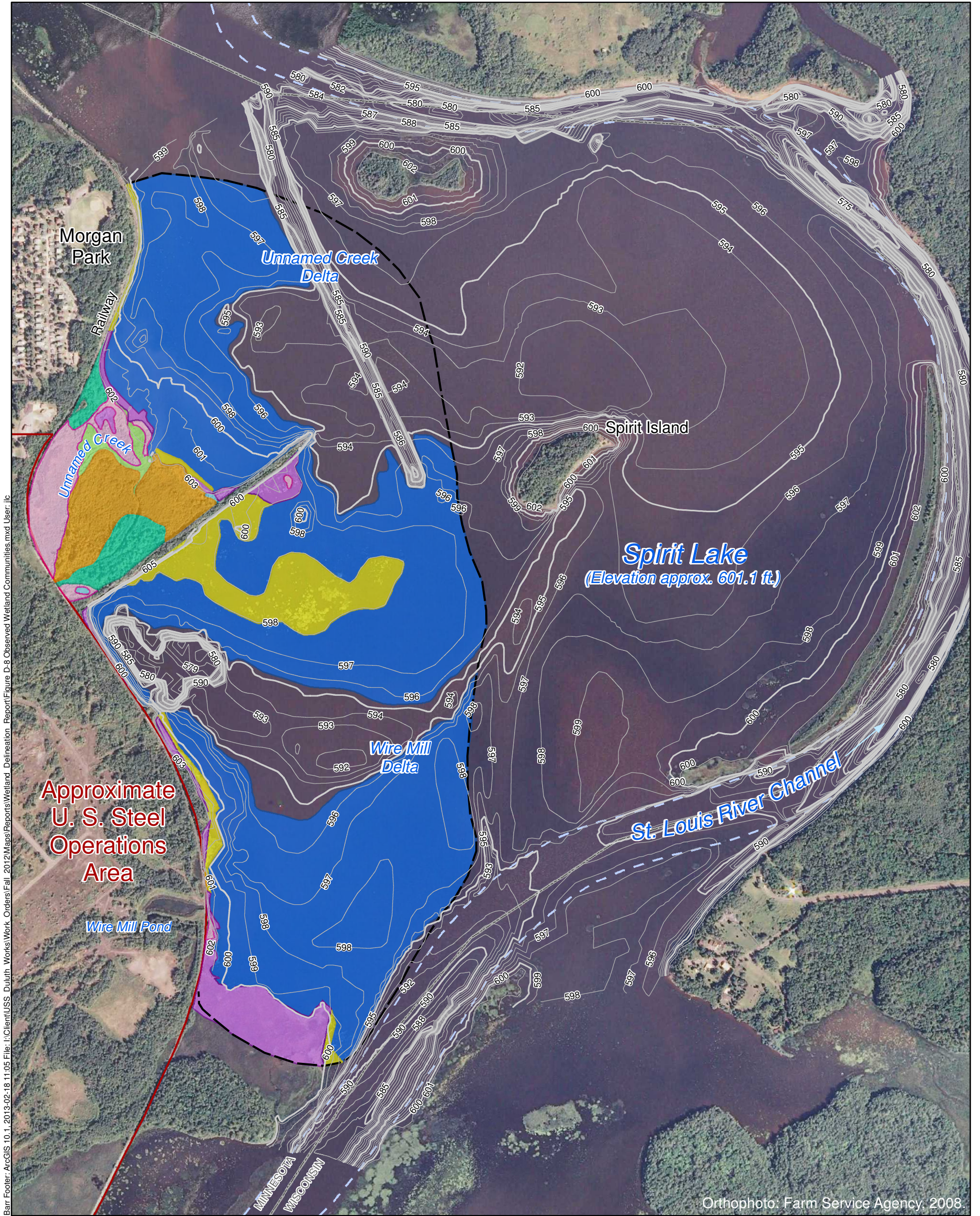


Orthophoto: Bing Maps Image Service, circa 2011

Figure D-7

**WATERSHEDS AND WATERBODIES**  
 Spirit Lake Sediment Site -  
 Former U. S. Steel Duluth Works  
 Saint Louis River  
 Duluth, Minnesota











Barr Footer: ArcGIS 10.1, 2013-02-18 11:05 File: I:\Client\USS Duluth Works\Work Orders\Fall 2012\Maps\Reports\Wetland Delineation Report\Figure D-8 Observed Wetland Communities.mxd User: lc

Orthophoto: Farm Service Agency, 2008.

**Wetland Communities**

-  Alder Thicket
-  Deep Marsh
-  Floodplain Forest
-  Open Water
-  Sedge Meadow
-  Shallow Marsh
-  Shrub Carr
-  Wet Meadow

-  Approximate U. S. Steel Operations Area (URS, 2008)
-  State Boundary
-  Approximate Outer Study Area Limit
-  Bathymetry Contour (1-Foot)
-  Bathymetry Contour (5-Foot)
-  Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation

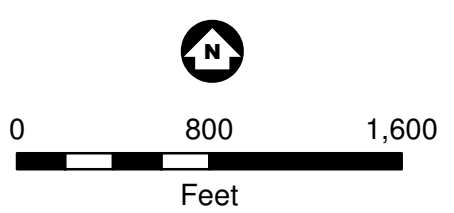


Figure D-8

**OBSERVED WETLAND COMMUNITIES**  
Spirit Lake Sediment Site -  
Former U. S. Steel Duluth Works  
Saint Louis River  
Duluth, Minnesota



## Tables

**Table 1  
Precipitation Prior to Wetland Delineation**

**Precipitation Worksheet Using Gridded Database**

**Precipitation data for target wetland location:**

county: **Saint Louis**

township name: **unnamed**

nearest community: **Steelton**

township number: **48N**

range number: **15W**

section number: **2**

**Aerial photograph or site visit date:**

**Friday, August 31, 2012**

**Score using 1971-2000 normal period**

(values are in inches)	first prior month: <b>Aug-12</b>	second prior month: <b>Jul-12</b>	third prior month: <b>Jun-12</b>
<b>estimated precipitation total for this location:</b>	<b>2.06</b>	<b>3.24</b>	<b>11.10</b>
<b>there is a 30% chance this location will have less than: *</b>	2.95	2.76	2.93
<b>there is a 30% chance this location will have more than: *</b>	4.92	4.78	4.75
<b>type of month: dry normal wet</b>	<b>dry</b>	<b>normal</b>	<b>wet</b>
<b>monthly score</b>	<b>3 * 1 = 3</b>	<b>2 * 2 = 4</b>	<b>1 * 3 = 3</b>
<b>multi-month score:</b> 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)			
<b>10 (Normal)</b>			

**Score using 1981-2010 normal period**

(values are in inches)	first prior month: <b>Aug-12</b>	second prior month: <b>Jul-12</b>	third prior month: <b>Jun-12</b>
<b>estimated precipitation total for this location:</b>	<b>2.06</b>	<b>3.24</b>	<b>11.10</b>
<b>there is a 30% chance this location will have less than: *</b>	2.57	2.79	2.83
<b>there is a 30% chance this location will have more than: *</b>	4.40	4.71	4.83
<b>type of month: dry normal wet</b>	<b>dry</b>	<b>normal</b>	<b>wet</b>
<b>monthly score</b>	<b>3 * 1 = 3</b>	<b>2 * 2 = 4</b>	<b>1 * 3 = 3</b>
<b>multi-month score:</b> 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)			
<b>10 (Normal)</b>			

**Table 2**  
**Monthly Precipitation in Comparison to Normal Range**

**Precipitation data for target wetland location:**

county: **Saint Louis**                      township number: **48N**  
 township name: **unnamed**                range number: **15W**  
 nearest community: **Stelton**            section number: **2**

Period-of-Record Summary Statistics																
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT	
30%	0.60	0.44	0.99	1.35	2.31	3.10	2.61	2.36	2.12	1.40	0.89	0.64	15.64	26.41	26.13	
70%	1.24	1.07	1.95	2.66	4.00	4.79	4.63	4.52	3.99	2.94	2.04	1.40	20.25	31.25	31.31	
mean	0.99	0.87	1.57	2.21	3.31	3.99	3.78	3.60	3.34	2.38	1.67	1.10	18.01	28.80	28.86	
1981-2010 Summary Statistics																
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT	
30%	0.55	0.44	1.10	1.55	2.32	2.99	3.09	2.11	3.30	1.98	1.17	0.80	16.15	28.72	27.84	
70%	1.34	1.01	1.91	2.87	3.73	4.88	4.85	4.55	5.09	3.36	2.52	1.66	20.65	33.15	32.73	
mean	0.98	0.86	1.53	2.44	3.05	4.07	3.97	3.70	4.17	2.98	2.06	1.23	18.95	31.02	30.80	
Year-to-Year Data																
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	WARM	ANN	WAT	
2012	0.50	1.19	1.88	3.89	8.75	11.10	3.24	2.06	0.84				23.09	33.45	36.19	
2011	0.95	0.16	0.90	3.12	3.27	4.00	5.55	5.74	1.19	1.52	0.58	0.64	19.75	27.62	34.25	
2010	1.06	0.44	0.73	1.02	3.22	6.10	3.89	7.50	3.68	4.89	2.38	2.10	24.39	37.01	37.06	
2009	0.52	1.09	3.19	1.31	1.57	2.39	3.93	5.73	0.60	6.03	0.93	2.46	14.22	29.75	26.86	
2008	0.03	0.43	1.04	4.06	3.43	6.49	4.03	3.06	5.85	3.46	1.27	1.80	22.86	34.95	38.94	
2007	0.33	1.30	2.23	3.18	3.10	2.73	1.75	1.72	6.04	7.45	0.64	2.43	15.34	32.90	27.56	
2006	0.73	0.68	1.95	1.78	4.20	2.88	4.80	1.85	2.66	2.01	1.57	1.60	16.39	26.71	33.23	
2005	2.53	1.15	0.66	1.80	3.59	6.42	1.80	2.16	3.52	6.57	3.17	1.96	17.49	35.33	29.72	
2004	1.18	1.95	1.79	1.39	4.55	1.65	4.64	3.86	5.12	3.71	0.49	1.89	19.82	32.22	29.51	
2003	0.14	0.35	1.25	2.03	4.12	3.80	4.77	1.52	3.68	1.16	1.67	0.55	17.89	25.04	25.98	
2002	0.31	1.03	2.23	3.18	2.24	4.33	5.37	4.99	3.68	3.19	0.27	0.86	20.61	31.68	33.33	
2001	1.40	2.26	0.76	8.62	3.72	3.03	3.27	2.83	1.23	2.58	2.68	0.71	14.08	33.09	35.27	
2000	0.65	1.41	2.63	1.20	2.82	4.23	3.20	4.17	1.37	1.99	5.14	1.02	15.79	29.83	25.14	
1999	1.09	0.77	1.13	3.20	2.88	4.82	7.90	6.78	3.75	2.56	0.70	0.20	26.13	35.78	41.55	
1998	1.61	2.81	2.51	1.07	2.48	4.57	2.65	2.67	2.69	4.00	3.58	1.65	15.06	32.29	27.14	
1997	2.09	0.69	1.44	0.82	1.64	4.83	5.03	1.84	2.11	2.33	1.34	0.41	15.45	24.57	30.58	
1996	1.64	1.00	0.62	1.73	1.53	4.60	7.39	2.00	5.03	3.32	4.86	1.91	20.55	35.63	30.86	
1995	1.32	0.80	1.57	1.29	3.59	0.84	6.72	7.00	3.75	2.80	1.23	1.29	21.90	32.20	30.91	
1994	1.43	0.61	1.29	4.46	2.35	4.84	2.13	4.48	6.95	1.94	1.77	0.32	20.75	32.57	32.51	
1993	1.91	0.34	0.48	2.68	4.35	5.60	3.23	4.31	1.70	0.57	2.26	1.14	19.19	28.57	29.61	
1992	0.71	0.65	1.12	2.74	1.86	5.63	3.50	3.09	4.00	1.49	2.45	1.07	18.08	28.31	31.37	
1991	0.27	0.66	2.08	2.54	4.44	4.98	5.08	1.97	8.04	2.41	4.82	0.84	24.51	38.13	34.61	
1990	0.46	0.62	3.09	3.27	1.87	4.48	2.82	3.76	8.37	3.23	0.68	0.64	21.30	33.29	31.33	

**Table 3**  
**Wetland Community Summary**

<b>Eggers and Reed Wetland Type<sup>1</sup></b>	<b>Circular 39<sup>2</sup></b>	<b>Cowardin<sup>3</sup></b>	<b>Area (acres)</b>
Shallow Open Water	5	PUBH	229.30
Deep Marsh	4	PEMF/PUBG	24.87
Shallow Marsh	3	PEMC	17.33
Alder Thicket	6	PSS1B	15.39
Shrub Carr	6	PSSB	10.93
Floodplain Forest	1	PFO1A	7.43
Sedge Meadow	2	PEMB	2.66
Wet Meadow	2	PEMB	0.25
			<b>308.15</b>
			<b>Total</b>

<sup>1</sup>Eggers and Reed. 1997. *Wetland Plants and Plant Communities of Minnesota and Wisconsin*.

<sup>2</sup>U.S. Fish and Wildlife Service. 1956. *Wetland of the United States Circular 39*.

<sup>3</sup>Cowardin et al. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*.

\*Wetland extends beyond the evaluation area

**Table 4**  
**Wetland Vegetation Community Summary**

<b>Wetland Plant Community</b>	<b>Vegetation Observed (Scientific Name)</b>	<b>Vegetation Observed (Common Name)</b>	<b>Percent Cover</b>
Alder Thicket	<i>Alnus incana</i>	Speckled alder	>75-100%
	<i>Asclepias syriaca</i>	Common milkweed	0-3%
	<i>Calamagrostis canadensis</i>	Bluejoint	>25-50%
	<i>Carex stricta</i>	Tussock sedge	>10-25%
	<i>Chelone glabra</i>	White turtlehead	0-3%
	<i>Cornus sericea</i>	Red-osier dogwood	>3-<10%
	<i>Equisetum hyemale var. affine</i>	Tall scouring rush	>25-50%
	<i>Impatiens capensis</i>	Spotted touch-me-not	0-3%
	<i>Iris versicolor</i>	Northern blue flag	0-3%
	<i>Lycopus uniflorus</i>	Northern bugleweed	>3-<10%
	<i>Lythrum salicaria</i>	Purple loosestrife	>3-<10%
	<i>Onoclea sensibilis</i>	Sensitive fern	0-3%
	<i>Phalaris arundinacea</i>	Reed canary grass	>25-50%
	<i>Poa pratensis ssp. Pratensis</i>	Kentucky bluegrass	0-3%
	<i>Populus balsamifera ssp. balsamifera</i>	Balsam poplar	>10-25%
	<i>Rhamnus cathartica</i>	Common buckthorn	>3-<10%
	<i>Rubus idaeus ssp. strigosus</i>	Red raspberry	>10-25%
	<i>Salix interior</i>	Sandbar willow	>10-25%
	<i>Salix fragilis</i>	Crack willow	>3-<10%
	<i>Salix lucida ssp. lucida</i>	Shining willow	>3-<10%
	<i>Salix petiolaris</i>	Slender willow	>3-<10%
	<i>Solidago canadensis</i>	Canada goldenrod	0-3%
	<i>Spiraea alba</i>	White meadowsweet	>3-<10%
<i>Typha angustifolia</i>	Narrow-leaved cattail	0-3%	
Deep Marsh	<i>Eleocharis acicularis var. acicularis</i>	Least spikerush	>3-<10%
	<i>Juncus canadensis</i>	Canada rush	>3-<10%
	<i>Nuphar microphylla</i>	Yellow pond lily	>3-<10%
	<i>Nymphaea odorata</i>	American white waterlily	>3-<10%
	<i>Sagittaria latifolia</i>	Broad-leaved arrowhead	>10-25%
	<i>Sagittaria rigida</i>	Sessile-fruited arrowhead	0-3%
	<i>Schoenoplectus fluviatilis</i>	River bulrush	>3-<10%
	<i>Schoenoplectus tabernaemontani</i>	Soft stem bulrush	>10-25%
	<i>Sparganium americanum</i>	Nuttall's bur reed	0-3%
	<i>Sparganium angustifolium</i>	Narrow-leaved bur reed	0-3%
	<i>Sparganium eurycarpum</i>	Giant bur reed	>50-75%
Floodplain Forest	<i>Anemone canadensis</i>	Canada anemone	0-3%
	<i>Bidens frondosa</i>	Leafy beggarticks	>3-<10%
	<i>Calamagrostis canadensis</i>	Bluejoint	0-3%
	<i>Carex stricta</i>	Tussock sedge	>3-<10%
	<i>Cornus sericea ssp. sericea</i>	Red-osier dogwood	>3-<10%
	<i>Equisetum hyemale var. affine</i>	Tall scouring rush	>10-25%

**Table 4**  
**Wetland Vegetation Community Summary**

<b>Wetland Plant Community</b>	<b>Vegetation Observed (Scientific Name)</b>	<b>Vegetation Observed (Common Name)</b>	<b>Percent Cover</b>
	<i>Fraxinus nigra</i>	Black ash	>3-<10%
	<i>Fraxinus pennsylvanica</i>	Green ash	>3-<10%
	<i>Hypericum majus</i>	Large St. John's wort	0-3%
	<i>Lonicera tatarica</i>	Tartarian honeysuckle	>3-<10%
	<i>Lythrum salicaria</i>	Purple loosestrife	0-3%
	<i>Poa palustris</i>	Fowl bluegrass	0-3%
	<i>Populus balsamifera ssp. balsamifera</i>	Balsam poplar	0-3%
	<i>Populus tremuloides</i>	Quaking aspen	>25-50%
	<i>Rhamnus cathartica</i>	Common buckthorn	>3-<10%
	<i>Rubus idaeus ssp. strigosus</i>	Red raspberry	>3-<10%
	<i>Salix amygdaloides</i>	Peach-leaved willow	>10-25%
	<i>Salix interior</i>	Sandbar willow	>3-<10%
	<i>Salix fragilis</i>	Crack willow	>10-25%
	<i>Solidago gigantea</i>	Giant goldenrod	0-3%
	<i>Spiraea alba</i>	White meadowsweet	0-3%
Fresh (Wet) Meadow	<i>Asclepias incarnata ssp. Incarnata</i>	Swamp milkweed	0-3%
	<i>Betula papyrifera</i>	Paper birch	0-3%
	<i>Calamagrostis canadensis</i>	Bluejoint	>10-25%
	<i>Cornus sericea ssp. sericea</i>	Red-osier dogwood	0-3%
	<i>Eupatoriadelphus maculatus</i>	Spotted Joe pye weed	>3-<10%
	<i>Eupatorium perfoliatum var. perfoliatum</i>	Common boneset	0-3%
	<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	>3-<10%
	<i>Gentiana andrewsii</i>	Bottle gentian	0-3%
	<i>Iris versicolor</i>	Northern blue flag	0-3%
	<i>Lythrum salicaria</i>	Purple loosestrife	>10-25%
	<i>Phalaris arundinacea</i>	Reed canary grass	>3-<10%
	<i>Populus balsamifera ssp. balsamifera</i>	Balsam poplar	0-3%
	<i>Salix bebbiana</i>	Bebb's willow	0-3%
Sedge Meadow	<i>Alnus incana</i>	Speckled alder	0-3%
	<i>Bidens cernua</i>	Nodding bur marigold	0-3%
	<i>Carex lacustris</i>	Lake sedge	>25-50%
	<i>Cornus sericea ssp. sericea</i>	Red-osier dogwood	0-3%
	<i>Eupatoriadelphus maculatus</i>	Spotted Joe pye weed	0-3%
	<i>Eupatorium perfoliatum var. perfoliatum</i>	Common boneset	0-3%
	<i>Fraxinus nigra</i>	Black ash	0-3%
	<i>Impatiens capensis</i>	Spotted touch-me-not	0-3%
	<i>Juncus tenuis</i>	Path rush	>3-<10%
	<i>Juncus torreyi</i>	Torrey's rush	>3-<10%
	<i>Leersia oryzoides</i>	Rice cut grass	0-3%
	<i>Lycopus uniflorus</i>	Northern bugleweed	0-3%
	<i>Lythrum salicaria</i>	Purple loosestrife	0-3%

**Table 4**  
**Wetland Vegetation Community Summary**

<b>Wetland Plant Community</b>	<b>Vegetation Observed (Scientific Name)</b>	<b>Vegetation Observed (Common Name)</b>	<b>Percent Cover</b>
	<i>Mentha arvensis</i>	Common mint	0-3%
	<i>Onoclea sensibilis</i>	Sensitive fern	0-3%
	<i>Phalaris arundinacea</i>	Reed canary grass	0-3%
	<i>Poa pratensis ssp. Pratensis</i>	Kentucky bluegrass	0-3%
	<i>Polygonum amphibium</i>	Water smartweed	0-3%
	<i>Rhamnus cathartica</i>	Common buckthorn	0-3%
	<i>Rumex crispus ssp. Crispus</i>	Curly dock	0-3%
	<i>Salix discolor</i>	Pussy willow	0-3%
	<i>Salix interior</i>	Sandbar willow	0-3%
	<i>Schoenoplectus tabernaemontani</i>	Soft stem bulrush	>10-25%
	<i>Scirpus atrovirens</i>	Dark green bulrush	0-3%
	<i>Solidago canadensis</i>	Canada goldenrod	0-3%
	<i>Sparganium eurycarpum</i>	Giant bur reed	0-3%
	<i>Tanacetum vulgare</i>	Tansey	0-3%
	<i>Typha latifolia</i>	Broad-leaved cattail	0-3%
	<i>Xanthium strumarium</i>	Cocklebur	0-3%
Shallow Marsh	<i>Bidens connata</i>	Swamp beggarticks	0-3%
	<i>Glyceria striata</i>	Fowl manna grass	0-3%
	<i>Impatiens capensis</i>	Spotted touch-me-not	0-3%
	<i>Leersia oryzoides</i>	Rice cut grass	0-3%
	<i>Lythrum salicaria</i>	Purple loosestrife	>10-25%
	<i>Phalaris arundinacea</i>	Reed canary grass	0-3%
	<i>Phragmites australis</i>	Common reed grass	0-3%
	<i>Sagittaria latifolia</i>	Broad-leaved arrowhead	0-3%
	<i>Salix interior</i>	Sandbar willow	0-3%
	<i>Schoenoplectus fluviatilis</i>	River bulrush	0-3%
	<i>Schoenoplectus tabernaemontani</i>	Soft stem bulrush	0-3%
	<i>Sparganium eurycarpum</i>	Giant bur reed	0-3%
	<i>Typha angustifolia</i>	Narrow-leaved cattail	>75-100%
Shallow, Open Water Communities	<i>Ceratophyllum demersum</i>	Common coontail	0-3%
	<i>Najas flexilis</i>	Flexuous naiad	0-3%
	<i>Nuphar microphylla</i>	Yellow pond lily	0-3%
	<i>Nymphaea odorata</i>	American white waterlily	0-3%
	<i>Potamogeton epihydrus</i>	Ribbon-leaved pondweed	0-3%
	<i>Potamogeton nodosus</i>	American pondweed	0-3%
	<i>Potamogeton richardsonii</i>	Richardson's pondweed	0-3%
	<i>Stuckenia pectinata</i>	Sago pondweed	0-3%
	<i>Vallisneria americana</i>	Eelgrass	>3-<10%
Shrub Carr	<i>Alnus incana</i>	Speckled alder	>3-<10%
	<i>Betula pumila var. glandulifera</i>	Bog birch	0-3%



**Table 4**  
**Wetland Vegetation Community Summary**

<b>Wetland Plant Community</b>	<b>Vegetation Observed (Scientific Name)</b>	<b>Vegetation Observed (Common Name)</b>	<b>Percent Cover</b>
	<i>Carex lacustris</i>	Lake sedge	>25-50%
	<i>Carex stricta</i>	Tussock sedge	>10-25%
	<i>Carex vulpinoidea</i>	Fox sedge	0-3%
	<i>Cirsium arvense</i>	Canada thistle	0-3%
	<i>Equisetum hyemale</i> var. <i>affine</i>	Tall scouring rush	>10-25%
	<i>Eupatoriadelphus maculatus</i>	Spotted Joe pye weed	0-3%
	<i>Larix laricina</i>	Tamarack	0-3%
	<i>Lythrum salicaria</i>	Purple loosestrife	0-3%
	<i>Phalaris arundinacea</i>	Reed canary grass	0-3%
	<i>Picea mariana</i>	Black spruce	0-3%
	<i>Poa pratensis</i> ssp. <i>Pratensis</i>	Kentucky bluegrass	0-3%
	<i>Populus balsamifera</i> ssp. <i>balsamifera</i>	Balsam poplar	>10-25%
	<i>Rhamnus cathartica</i>	Common buckthorn	0-3%
	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Red raspberry	>3-<10%
	<i>Salix interior</i>	Sandbar willow	>25-50%
	<i>Salix fragilis</i>	Crack willow	>3-<10%
	<i>Salix lucida</i> ssp. <i>lucida</i>	Shining willow	0-3%
	<i>Salix pyrifolia</i>	Balsam willow	0-3%
	<i>Scirpus cyperinus</i>	Woolgrass	0-3%
	<i>Solidago canadensis</i>	Canada goldenrod	>3-<10%
	<i>Tanacetum vulgare</i>	Tansey	0-3%
	<i>Typha angustifolia</i>	Narrow-leaved cattail	0-3%

## **Appendices**

**Appendix D-1**  
**Wetland Data Forms**



# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SB1

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

	Depth (inches)	Matrix		Redox Features			Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]		
1.	0 - 17	10YR 2/1					fine sand	fill with tar
2.	17 - 25	10YR 2/1					gravel	fill with tar
3.	-							
4.	-							
5.	-							
6.	-							

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)             |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |  |  |
|--|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)       | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)  | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Red Parent Material (F21)                   | <input type="checkbox"/> Other (explain in soil remarks)             |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)            |  |

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

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b> <u>NA</u>
<b>Soil Remarks:</b> Soils are fill and contaminated with tar.			

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |   |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |   |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |   |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |   |
| <input type="checkbox"/> Geomorphic Position (D2)                  |   |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |   |
| <input type="checkbox"/> Microtopographic Relief (D4)              |   |

**Field Observations:**

- |  |  |
|--|--|
| <b>Surface water present?</b>                          | <input type="checkbox"/> Surface Water Depth (inches): _____             |
| <b>Water table present?</b>                            | <input type="checkbox"/> Water Table Depth (inches): _____               |
| <b>Saturation present? (includes capillary fringe)</b> | <input checked="" type="checkbox"/> Saturation Depth (inches): <u>17</u> |

**Indicators of wetland hydrology present?** No
**Describe Recorded Data:**
**Recorded Data:**     Aerial Photo     Monitoring Well     Stream Gauge     Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:07 PM

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: USS Spirit Lake      Applicant/Owner: USS      City/County: Duluth/St. Louis      State: MN      Sampling Date: 08/31/12  
 Investigator(s): KSW      Section: 2      Township: 48      Range: 15      Sampling Point: SB2  
 Land Form:      Local Relief:      Slope %: 0-2      Soil Map Unit Name: Bowstring and Fluvaquents  
 Subregion (LRR): K      Latitude: 393999      Longitude: 2850322      Datum: State Plane MN North  
 NWI/Cowardin Classification: PSS1B      Circular 39 Classification: 6

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in remarks)      Eggers & Reed (primary): Shrub-Carr  
 Are vegetation No Soil Yes Hydrology No significantly disturbed?      Are "normal circumstances" present? Yes      Eggers & Reed (secondary): Alder Thicket  
 Are vegetation No Soil No Hydrology No naturally problematic?      Eggers & Reed (tertiary):  
 Eggers & Reed (quaternary):

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	<u>Yes</u>	General Remarks (explain any answers if needed):
Hydric soil present?	<u>Yes</u>	Soils are fill and contaminated with tar.
Indicators of wetland hydrology present?	<u>Yes</u>	
Is the sampled area within a wetland?	<u>Yes</u>	If yes, optional Wetland Site ID::

## VEGETATION

	<u>Tree Stratum</u>	(Plot Size: <u>30 ft</u> )	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1.	Salix lucida		10	Yes	FACW
2.	Salix fragilis		5	Yes	FAC
3.			0		
4.			0		
<b>Total Cover:</b>			<b>15</b>		
<b><u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u>)</b>					
1.	Rubus idaeus		20	Yes	FAC
2.	Alnus incana		70	Yes	FACW
3.			0		
4.			0		
5.			0		
<b>Total Cover:</b>			<b>90</b>		
<b><u>Herb Stratum</u> (Plot Size: <u>5 ft</u>)</b>					
1.	Carex stricta		20	Yes	OBL
2.			0		
3.			0		
4.			0		
5.			0		
6.			0		
7.			0		
8.			0		
<b>Total Cover:</b>			<b>20</b>		
<b><u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u>)</b>					
1.			0		
2.			0		
<b>Total Cover:</b>			<b>0</b>		

% Bare Ground in Herb Stratum: 80

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

<u>50/20 Thresholds:</u>	<u>20%</u>	<u>50%</u>	
Tree Stratum	3	7.5	
Sapling/Shrub Stratum	18	45	
Herb Stratum	4	10	
Woody Vine Stratum	0	0	
<b><u>Dominance Test Worksheet:</u></b>			
Number of Dominant Species That Are OBL, FACW or FAC:	<u>5</u>	(A)	
Total Number of Dominant Species Across All Strata:	<u>5</u>	(B)	
Percent of Dominant Species That Are OBL, FACW or FAC:	<u>100.00%</u>	(A/B)	
<b><u>Prevalence Index Worksheet:</u></b>			
<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL Species	<u>20</u>	<u>X 1</u>	<u>20</u>
FACW Species	<u>80</u>	<u>X 2</u>	<u>160</u>
FAC Species	<u>25</u>	<u>X 3</u>	<u>75</u>
FACU Species	<u>0</u>	<u>X 4</u>	<u>0</u>
UPL Species	<u>0</u>	<u>X 5</u>	<u>0</u>
<b>Column Totals:</b>	<b><u>125</u></b>	<b><u>(A)</u></b>	<b><u>255</u></b>
Prevalence Index = B/A =			<b><u>2.04</u></b>
<b><u>Hydrophytic Vegetation Indicators:</u></b>			
<u>No</u>	<b>Rapid Test for Hydrophytic Vegetation</b>		
<u>Yes</u>	<b>Dominance Test is &gt;50%</b>		
<u>Yes</u>	<b>Prevalence Index ≤ 3.0 [1]</b>		
<u>No</u>	<b>Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)</b>		
<u>No</u>	<b>Problematic Hydrophytic Vegetation [1] (Explain)</b>		
<small>[1] Indicators of hydric soil &amp; wetland hydrology must be present, unless disturbed or problematic.</small>			
Hydrophytic vegetation present?			<u>Yes</u>

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SB2

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

	Depth (inches)	Matrix		Redox Features			Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]		
1.	0 - 6	10YR 3/1						peat w/ 5% clay
2.	6 - 10	10YR 2/1						sand fill with tar
3.	10 - 16	10YR 2/1						sand w/ 10% peat fill with tar
4.	16 - 24	10YR 2/1						peat w/ sand fill with tar
5.	-							
6.	-							

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input checked="" type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)  |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |   |  |
|---|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)      | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)    | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)  | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)  | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)           | <input type="checkbox"/> Other (explain in soil remarks)             |

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b>	<u>Yes</u>
<b>Soil Remarks:</b> Soils are fill and contaminated with tar.				

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |   |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |   |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |   |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |   |
| <input type="checkbox"/> Geomorphic Position (D2)                  |   |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |   |
| <input type="checkbox"/> Microtopographic Relief (D4)              |   |

**Field Observations:**

- |  |   |
|--|---|
| <b>Surface water present?</b>                          | <input type="checkbox"/> Surface Water Depth (inches): _____      |
| <b>Water table present?</b>                            | <input type="checkbox"/> Water Table Depth (inches): _____        |
| <b>Saturation present? (includes capillary fringe)</b> | <input checked="" type="checkbox"/> Saturation Depth (inches): 10 |

**Indicators of wetland hydrology present?**
Yes
**Describe Recorded Data:**
**Recorded Data:**  Aerial Photo  Monitoring Well  Stream Gauge  Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:07 PM

c-s3-06af





# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SB3

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

	Depth (inches)	Matrix		Redox Features				Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1.	0 - 3	10YR 3/1						sand	
2.	-								
3.	-								
4.	-								
5.	-								
6.	-								

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)             |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |  |  |
|--|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)       | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)  | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Red Parent Material (F21)                   | <input type="checkbox"/> Other (explain in soil remarks)             |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)            |  |

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

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b> <u>NA</u>
<b>Soil Remarks:</b> auger refusal at 3" slag and fill soils			

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |  |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |  |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |  |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |  |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |  |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |  |
| <input type="checkbox"/> Geomorphic Position (D2)                  |  |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |  |
| <input type="checkbox"/> Microtopographic Relief (D4)              |  |

**Field Observations:**

- |  |   |
|--|---|
| <b>Surface water present?</b>                          | <input type="checkbox"/> <b>Surface Water Depth (inches):</b> _____ |
| <b>Water table present?</b>                            | <input type="checkbox"/> <b>Water Table Depth (inches):</b> _____   |
| <b>Saturation present? (includes capillary fringe)</b> | <input type="checkbox"/> <b>Saturation Depth (inches):</b> _____    |

**Indicators of wetland hydrology present?**
**No**
**Describe Recorded Data:**
**Recorded Data:**     Aerial Photo     Monitoring Well     Stream Gauge     Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:07 PM

c-s3-06af



# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SB4

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

	Depth (inches)	Matrix		Redox Features			Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]		
1.	0 - 25	10YR 3/3					sand	fill with tar
2.	25 - 26	10YR 2/1					sand	fill with tar
3.	-							
4.	-							
5.	-							
6.	-							

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)             |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |  |  |
|--|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)       | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)  | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Red Parent Material (F21)                   | <input type="checkbox"/> Other (explain in soil remarks)             |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)            |  |

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

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b> <u>NA</u>
<b>Soil Remarks:</b> Soils are fill and contaminated with tar.			

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |   |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |   |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |   |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |   |
| <input checked="" type="checkbox"/> Geomorphic Position (D2)       |   |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |   |
| <input type="checkbox"/> Microtopographic Relief (D4)              |   |

**Field Observations:**

- |  |   |
|--|---|
| <b>Surface water present?</b>                          | <input type="checkbox"/> Surface Water Depth (inches): _____              |
| <b>Water table present?</b>                            | <input checked="" type="checkbox"/> Water Table Depth (inches): <u>23</u> |
| <b>Saturation present? (includes capillary fringe)</b> | <input checked="" type="checkbox"/> Saturation Depth (inches): <u>15</u>  |

**Indicators of wetland hydrology present?** Yes
**Describe Recorded Data:**
**Recorded Data:**     Aerial Photo     Monitoring Well     Stream Gauge     Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:07 PM

c-s3-06af

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: USS Spirit Lake      Applicant/Owner: USS      City/County: Duluth/St. Louis      State: MN      Sampling Date: 08/31/12  
 Investigator(s): KSW      Section: 35      Township: 49      Range: 15      Sampling Point: SB5  
 Land Form:      Local Relief:      Slope %: 0-2      Soil Map Unit Name: Bowstring and Fluvaquents  
 Subregion (LRR): K      Latitude: 397028      Longitude: 2849681      Datum: State Plane MN North  
 NWI/Cowardin Classification: PFO1A      Circular 39 Classification: 1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in remarks)      Eggers & Reed (primary): Floodplain Forest  
 Are vegetation No Soil Yes Hydrology No significantly disturbed?      Are "normal circumstances" present? Yes      Eggers & Reed (secondary):  
 Eggers & Reed (tertiary):  
 Eggers & Reed (quaternary):

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	<u>Yes</u>	General Remarks (explain any answers if needed): Soils are fill and contaminated with tar.
Hydric soil present?	<u>NA</u>	
Indicators of wetland hydrology present?	<u>Yes</u>	
Is the sampled area within a wetland?	<u>Yes</u>	
<u>If yes, optional Wetland Site ID::</u>		

## VEGETATION

	<u>Tree Stratum</u> (Plot Size: <u>30 ft</u> )	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1.	Populus tremuloides	50	Yes	FAC
2.	Salix amygdaloides	20	Yes	FACW
3.	Fraxinus pennsylvanica	10	No	FACW
4.		0		
<b>Total Cover:</b>		<b>80</b>		
	<u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u> )			
1.	Salix interior	10	Yes	FACW
2.	Comus sericea	20	Yes	FACW
3.		0		
4.		0		
5.		0		
<b>Total Cover:</b>		<b>30</b>		
	<u>Herb Stratum</u> (Plot Size: <u>5 ft</u> )			
1.	Equisetum hyemale	20	Yes	FAC
2.	Bidens frondosa	5	No	FACW
3.	Lythrum salicaria	1	No	OBL
4.	Hypericum majus	10	Yes	FACW
5.	Carex stricta	5	No	OBL
6.	Anemone canadensis	2	No	FACW
7.	Rhamnus cathartica	2	No	FAC
8.		0		
<b>Total Cover:</b>		<b>45</b>		
	<u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u> )			
1.		0		
2.		0		
<b>Total Cover:</b>		<b>0</b>		

% Bare Ground in Herb Stratum: 55

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

<b>50/20 Thresholds:</b>		<u>20%</u>	<u>50%</u>
Tree Stratum		16	40
Sapling/Shrub Stratum		6	15
Herb Stratum		9	22.5
Woody Vine Stratum		0	0
<b>Dominance Test Worksheet:</b>			
Number of Dominant Species That Are OBL, FACW or FAC:	<u>6</u>	(A)	
Total Number of Dominant Species Across All Strata:	<u>6</u>	(B)	
Percent of Dominant Species That Are OBL, FACW or FAC:	<u>100.00%</u>	(A/B)	
<b>Prevalence Index Worksheet:</b>			
Total % Cover of:		Multiply by:	
OBL Species	<u>6</u>	X 1	<u>6</u>
FACW Species	<u>77</u>	X 2	<u>154</u>
FAC Species	<u>72</u>	X 3	<u>216</u>
FACU Species	<u>0</u>	X 4	<u>0</u>
UPL Species	<u>0</u>	X 5	<u>0</u>
<b>Column Totals:</b>	<b><u>155</u></b>	(A)	<b><u>376</u></b>
Prevalence Index = B/A =			<b><u>2.43</u></b>
<b>Hydrophytic Vegetation Indicators:</b>			
<u>No</u>	Rapid Test for Hydrophytic Vegetation		
<u>Yes</u>	Dominance Test is >50%		
<u>Yes</u>	Prevalence Index ≤ 3.0 [1]		
<u>No</u>	Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)		
<u>No</u>	Problematic Hydrophytic Vegetation [1] (Explain)		
[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.			
Hydrophytic vegetation present?	<u>Yes</u>		

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SB5

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

	Depth (inches)	Matrix		Redox Features				Texture	Remarks
		Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1.	0 - 14	7.5YR 2.5/2						sandy clay	fill
2.	14 - 27	10YR 2/1		10YR 3/1	10			sand	fill
3.	-								
4.	-								
5.	-								
6.	-								

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)             |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |   |  |
|---|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)      | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)    | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)  | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)  | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)           | <input type="checkbox"/> Other (explain in soil remarks)             |

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b> <u>NA</u>
<b>Soil Remarks:</b> Soil is fill			

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |   |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |   |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |   |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |   |
| <input type="checkbox"/> Geomorphic Position (D2)                  |   |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |   |
| <input type="checkbox"/> Microtopographic Relief (D4)              |   |

**Field Observations:**

- |  |  |
|--|--|
| <b>Surface water present?</b>                          | <input type="checkbox"/> Surface Water Depth (inches): _____             |
| <b>Water table present?</b>                            | <input type="checkbox"/> Water Table Depth (inches): _____               |
| <b>Saturation present? (includes capillary fringe)</b> | <input checked="" type="checkbox"/> Saturation Depth (inches): <u>12</u> |

**Indicators of wetland hydrology present?** Yes
**Describe Recorded Data:**
**Recorded Data:**     Aerial Photo     Monitoring Well     Stream Gauge     Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:07 PM

c-s3-06af

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: USS Spirit Lake      Applicant/Owner: USS      City/County: Duluth/St. Louis      State: MN      Sampling Date: 08/31/12  
 Investigator(s): KSW      Section: 2      Township: 48      Range: 15      Sampling Point: SP6  
 Land Form:      Local Relief:      Slope %: 0-2      Soil Map Unit Name: Bowstring and Fluvaquents  
 Subregion (LRR): K      Latitude: 392981      Longitude: 2851314      Datum: State Plane MN North  
 NWI/Cowardin Classification: PEMF/PUBG      Circular 39 Classification: 4/5

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in remarks)      Eggers & Reed (primary): Deep Marsh  
 Are vegetation No Soil No Hydrology No significantly disturbed?      Are "normal circumstances" present? Yes      Eggers & Reed (secondary): Shallow, Open Water  
 Are vegetation No Soil No Hydrology No naturally problematic?      Eggers & Reed (tertiary):  
 Eggers & Reed (quaternary):

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	<u>Yes</u>	General Remarks (explain any answers if needed): Transition between deep marsh and open water
Hydric soil present?	<u>NA</u>	
Indicators of wetland hydrology present?	<u>Yes</u>	
Is the sampled area within a wetland?	<u>Yes</u>	
<u>If yes, optional Wetland Site ID::</u>		

## VEGETATION

	<u>Tree Stratum</u> (Plot Size: <u>30 ft</u> )	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1.		0		
2.		0		
3.		0		
4.		0		
<b>Total Cover:</b>		<b>0</b>		
	<u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u> )			
1.		0		
2.		0		
3.		0		
4.		0		
5.		0		
<b>Total Cover:</b>		<b>0</b>		
	<u>Herb Stratum</u> (Plot Size: <u>5 ft</u> )			
1.	Sparganium eurycarpum	60	Yes	OBL
2.	Nymphaea odorata	5	No	OBL
3.	Nuphar lutea	5	No	OBL
4.	Vallisneria americana	10	No	OBL
5.	Najas flexilis	1	No	OBL
6.	Potamogeton nodosus	5	No	OBL
7.	Potamogeton richardsonii	1	No	OBL
8.	Sagittaria latifolia	20	No	OBL
<b>Total Cover:</b>		<b>107</b>		
	<u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u> )			
1.		0		
2.		0		
<b>Total Cover:</b>		<b>0</b>		
<b>% Bare Ground in Herb Stratum:</b>		<u>0</u>		
<b>Vegetation Remarks: (include photo numbers here or on a separate sheet)</b>				

<b>50/20 Thresholds:</b>	<b>20%</b>	<b>50%</b>
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	21.4	53.5
Woody Vine Stratum	0	0
<b>Dominance Test Worksheet:</b>		
Number of Dominant Species That Are OBL, FACW or FAC:	<u>1</u>	(A)
Total Number of Dominant Species Across All Strata:	<u>1</u>	(B)
Percent of Dominant Species That Are OBL, FACW or FAC:	<u>100.00%</u>	(A/B)
<b>Prevalence Index Worksheet:</b>		
<b>Total % Cover of:</b>	<b>Multiply by:</b>	
OBL Species <u>107</u>	<u>X 1</u>	<u>107</u>
FACW Species <u>0</u>	<u>X 2</u>	<u>0</u>
FAC Species <u>0</u>	<u>X 3</u>	<u>0</u>
FACU Species <u>0</u>	<u>X 4</u>	<u>0</u>
UPL Species <u>0</u>	<u>X 5</u>	<u>0</u>
<b>Column Totals:</b> <u>107</u>	<b>(A)</b>	<b>107</b> (B)
<b>Prevalence Index = B/A =</b>		<b>1.00</b>
<b>Hydrophytic Vegetation Indicators:</b>		
<u>No</u>	<b>Rapid Test for Hydrophytic Vegetation</b>	
<u>Yes</u>	<b>Dominance Test is &gt;50%</b>	
<u>Yes</u>	<b>Prevalence Index ≤ 3.0 [1]</b>	
<u>No</u>	<b>Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)</b>	
<u>No</u>	<b>Problematic Hydrophytic Vegetation [1] (Explain)</b>	
<small>[1] Indicators of hydric soil &amp; wetland hydrology must be present, unless disturbed or problematic.</small>		
Hydrophytic vegetation present?	<u>Yes</u>	



# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SP6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1. 0 - 1							fine sand with silt	
2. -								
3. -								
4. -								
5. -								
6. -								

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)             |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |  |  |
|--|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)       | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)  | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Red Parent Material (F21)                   | <input type="checkbox"/> Other (explain in soil remarks)             |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)            |  |

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

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b> <u>NA</u>
<b>Soil Remarks:</b> soil not needed due to OBL vegetation and 1.5' inundation			

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Surface Water (A1)             | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input checked="" type="checkbox"/> High Water Table (A2)          | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |   |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |   |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |   |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |   |
| <input type="checkbox"/> Geomorphic Position (D2)                  |   |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |   |
| <input type="checkbox"/> Microtopographic Relief (D4)              |   |

**Field Observations:**

- |  |                                     |  |    |
|--|-------------------------------------|--|----|
| <b>Surface water present?</b>                          | <input checked="" type="checkbox"/> | <b>Surface Water Depth (inches):</b> _____ | 18 |
| <b>Water table present?</b>                            | <input checked="" type="checkbox"/> | <b>Water Table Depth (inches):</b> _____   | 0  |
| <b>Saturation present? (includes capillary fringe)</b> | <input checked="" type="checkbox"/> | <b>Saturation Depth (inches):</b> _____    | 0  |

**Indicators of wetland hydrology present?**
Yes
**Describe Recorded Data:**
**Recorded Data:**     Aerial Photo     Monitoring Well     Stream Gauge     Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:08 PM

c-s3-06af

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: USS Spirit Lake      Applicant/Owner: USS      City/County: Duluth/St. Louis      State: MN      Sampling Date: 08/31/12

Investigator(s): KSW      Section: 2      Township: 48      Range: 15      Sampling Point: SP7

Land Form:      Local Relief:      Slope %: 0-2      Soil Map Unit Name: Bowstring and Fluvaquents

Subregion (LRR): K      Latitude: 393037      Longitude: 2851276      Datum: State Plane MN North

NWI/Cowardin Classification: PEMC/PEMF      Circular 39 Classification: 3/4

Are climatic/hydrologic conditions on the site typical for this time of year?      Yes      (If no, explain in remarks)      Eggers & Reed (primary):      Shallow Marsh

Are vegetation      No      Soil      No      Hydrology      No      significantly disturbed?      Are "normal      Yes      Eggers & Reed (secondary):      Deep Marsh

Are vegetation      No      Soil      No      Hydrology      No      naturally problematic?      present?      Eggers & Reed (tertiary):

Eggers & Reed (quaternary):

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present?	<u>Yes</u>	General Remarks (explain any answers if needed):
Hydric soil present?	<u>NA</u>	Transition between shallow marsh and deep marsh
Indicators of wetland hydrology present?	<u>Yes</u>	
Is the sampled area within a wetland?	<u>Yes</u>	If yes, optional Wetland Site ID::

## VEGETATION

	<u>Tree Stratum</u>	(Plot Size: <u>30 ft</u> )	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>
1.			0		
2.			0		
3.			0		
4.			0		
<b>Total Cover:</b>			<b>0</b>		
<b><u>Sapling/Shrub Stratum</u> (Plot Size: <u>15 ft</u>)</b>					
1.			0		
2.			0		
3.			0		
4.			0		
5.			0		
<b>Total Cover:</b>			<b>0</b>		
<b><u>Herb Stratum</u> (Plot Size: <u>5 ft</u>)</b>					
1.	Typha angustifolia		60	Yes	OBL
2.	Sagittaria latifolia		30	Yes	OBL
3.	Lythrum salicaria		1	No	OBL
4.			0		
5.			0		
6.			0		
7.			0		
8.			0		
<b>Total Cover:</b>			<b>91</b>		
<b><u>Woody Vine Stratum</u> (Plot Size: <u>30 ft</u>)</b>					
1.			0		
2.			0		
<b>Total Cover:</b>			<b>0</b>		
<b>% Bare Ground in Herb Stratum:      <u>0</u></b>					
<b>Vegetation Remarks: (include photo numbers here or on a separate sheet)</b>					

<b><u>50/20 Thresholds:</u></b>	<b><u>20%</u></b>	<b><u>50%</u></b>
Tree Stratum	0	0
Sapling/Shrub Stratum	0	0
Herb Stratum	18.2	45.5
Woody Vine Stratum	0	0
<b><u>Dominance Test Worksheet:</u></b>		
Number of Dominant Species That Are OBL, FACW or FAC:	<u>2</u>	(A)
Total Number of Dominant Species Across All Strata:	<u>2</u>	(B)
Percent of Dominant Species That Are OBL, FACW or FAC:	<u>100.00%</u>	(A/B)
<b><u>Prevalence Index Worksheet:</u></b>		
<b>Total % Cover of:</b>		<b>Multiply by:</b>
OBL Species	<u>91</u>	<u>X 1</u>
FACW Species	<u>0</u>	<u>X 2</u>
FAC Species	<u>0</u>	<u>X 3</u>
FACU Species	<u>0</u>	<u>X 4</u>
UPL Species	<u>0</u>	<u>X 5</u>
<b>Column Totals:</b>	<b><u>91</u></b> (A)	<b><u>91</u></b> (B)
<b>Prevalence Index = B/A =</b>		<b><u>1.00</u></b>
<b><u>Hydrophytic Vegetation Indicators:</u></b>		
<u>No</u>	<b>Rapid Test for Hydrophytic Vegetation</b>	
<u>Yes</u>	<b>Dominance Test is &gt;50%</b>	
<u>Yes</u>	<b>Prevalence Index ≤ 3.0 [1]</b>	
<u>No</u>	<b>Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)</b>	
<u>No</u>	<b>Problematic Hydrophytic Vegetation [1] (Explain)</b>	
<small>[1] Indicators of hydric soil &amp; wetland hydrology must be present, unless disturbed or problematic.</small>		
Hydrophytic vegetation present?	<u>Yes</u>	



# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

## SOIL

Sampling Point:

SP7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]		
1. 0 - 1							fine sand with silt	
2. -								
3. -								
4. -								
5. -								
6. -								

**[1] Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains    **[2] Location:** PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:** (applicable to all LRRs, unless otherwise noted)

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Stripped Matrix (S6)                            |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B of LRRS)    |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)       |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)             |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                        |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Dark Surface (F6)                         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Depleted Dark Surface (F7)                      |
| <input type="checkbox"/> Sandy Redox (S5)                  | <input type="checkbox"/> Redox Depressions (F8)                          |

**Indicators for Problematic Hydric Soils [3]:**

- |  |  |
|--|--|
| <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)       | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)  | <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                |
| <input type="checkbox"/> Dark Surface (S7) (LRR K, L)                | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     |
| <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)     | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           |
| <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)           | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   |
| <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)   | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   |
| <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)   | <input type="checkbox"/> Red Parent Material (F21)                   |
| <input type="checkbox"/> Red Parent Material (F21)                   | <input type="checkbox"/> Other (explain in soil remarks)             |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12)            |  |

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b>	Type: _____	Depth (inches): _____	<b>Hydric soil present?</b> <u>NA</u>
<b>Soil Remarks:</b> soil not needed due to OBL vegetation and 1' inundation			

## HYDROLOGY

**Wetland Hydrology Indicators:**
**Primary Indicators (minimum of one required; check all that apply)**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Surface Water (A1)             | <input type="checkbox"/> Water-Stained Leaves (B9)                                     |
| <input checked="" type="checkbox"/> High Water Table (A2)          | <input type="checkbox"/> Aquatic Fauna (B13)   |
| <input checked="" type="checkbox"/> Saturation (A3)                | <input type="checkbox"/> Marl Deposits (B15)   |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                                    |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (where not tilled) (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                 |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                    |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (explain in remarks)                                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

**Secondary Indicators (minimum of two required)**

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Drainage Patterns (B10)                   |   |
| <input type="checkbox"/> Moss Trim Lines (B16)                     |   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |   |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |   |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |   |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |   |
| <input type="checkbox"/> Geomorphic Position (D2)                  |   |
| <input type="checkbox"/> Shallow Aquitard (D3)                     |   |
| <input type="checkbox"/> Microtopographic Relief (D4)              |   |

**Field Observations:**

- |  |                                     |  |    |
|--|-------------------------------------|--|----|
| <b>Surface water present?</b>                          | <input checked="" type="checkbox"/> | <b>Surface Water Depth (inches):</b> _____ | 12 |
| <b>Water table present?</b>                            | <input checked="" type="checkbox"/> | <b>Water Table Depth (inches):</b> _____   | 0  |
| <b>Saturation present? (includes capillary fringe)</b> | <input checked="" type="checkbox"/> | <b>Saturation Depth (inches):</b> _____    | 0  |

**Indicators of wetland hydrology present?**
Yes
**Describe Recorded Data:**
**Recorded Data:**     Aerial Photo     Monitoring Well     Stream Gauge     Previous Inspections

**Hydrology Remarks:**

9/21/2012 3:30:08 PM

c-s3-06af

**Appendix D-2**  
**MnRAM Summary Tables**

**Management Classification Report for US Steel Spirit Lake non-rare veg**

**US Steel Spirit Lake**

ID: 3

ST LOUIS County  
 St. Louis Watershed, # 3  
 Corps Bank Service Area 1

Based on the MnRAM data input from field and office review and using the classification settings as shown below, this wetland is classified as **Preserve**

<b>Functional rank of this wetland based on MnRAM data</b>	<b>Functional Category</b>	<b>Self-defined classification value settings for this management level</b>
Low	Vegetative Diversity/Integrity	Exceptional
Exceptional	Habitat Structure (wildlife)	Exceptional
Low	Amphibian Habitat	High
Moderate	Fish Habitat	Exceptional
Moderate	Shoreline Protection	High
Moderate	Aesthetic/Cultural/Rec/Ed and Habitat	Exceptional / High
Moderate	Stormwater/Urban Sensitivity and Vegetative Diversity	Exceptional / Moderate
Moderate	Wetland Water Quality and Vegetative Diversity	High / High
Moderate	Characteristic Hydrology and Vegetative Diversity	High / High
Moderate	Flood/Stormwater Attenuation*	-
Not Applicable	Commercial use*	-
Moderate	Downstream Water Quality*	-

The critical function that caused this wetland to rank as **Preserve** was **Maintenance of Characteristic Wildlife Habitat Structure**

Details of the formula for this action are shown below:

*This report was printed on:* Tuesday, October 02, 2012

\* The classification value settings for these functions are not adjustable

**Management Classification Report for US Steel Spirit Lake**

ID: 2

**US Steel Spirit Lake**

ST LOUIS County  
 St. Louis Watershed, # 3  
 Corps Bank Service Area 1

Based on the MnRAM data input from field and office review and using the classification settings as shown below, this wetland is classified as **Preserve**

<b>Functional rank of this wetland based on MnRAM data</b>	<b>Functional Category</b>	<b>Self-defined classification value settings for this management level</b>
Exceptional	Vegetative Diversity/Integrity	Exceptional
Exceptional	Habitat Structure (wildlife)	Exceptional
Low	Amphibian Habitat	High
Moderate	Fish Habitat	Exceptional
Moderate	Shoreline Protection	High
Moderate	Aesthetic/Cultural/Rec/Ed and Habitat	Exceptional / High
Moderate	Stormwater/Urban Sensitivity and Vegetative Diversity	Exceptional / Moderate
High	Wetland Water Quality and Vegetative Diversity	High / High
Moderate	Characteristic Hydrology and Vegetative Diversity	High / High
Moderate	Flood/Stormwater Attenuation*	-
Not Applicable	Commercial use*	-
Moderate	Downstream Water Quality*	-

The critical function that caused this wetland to rank as **Preserve** was **Vegetative Diversity**

Details of the formula for this action are shown below:

*This report was printed on:* Friday, September 21, 2012

\* The classification value settings for these functions are not adjustable

# MnRAM Site Assessment Report

Friday, September 21, 2012

**Wetland: US Steel Spirit Lake**

**Project: US Steel Spirit Lake**

Wetland ID: 2, Township 49, Section 35, Range 15

ST LOUIS County, St. Louis Watershed, Spirit Lake Subwatershed, Corps Bank Service Area #1

Assessment Purpose: Classification

A site visit was made to this wetland on 8/31/2012 by KSW. Site conditions were Normal. This wetland is estimated to cover 308 acres.

This report reflects conditions on the ground at the date of the assessment and, unless noted or implicit in the standard questions, does not reflect speculation on the future or past conditions.

This wetland is located in or near the city of Duluth

## General Features

### *Hydrogeomorphology*

As a Depressional/Flow-through wetland, this site has an apparent inlet and outlet. As such,  
Placeholder for Depressional/Flow-through discussion

As a Riverine wetland, this site is within the river or stream banks. As such, its vegetation may serve to protect the banks from erosion and may harbor fish, amphibian, bird, and mammal species.

As a Lacustrine Fringe wetland, this site located at the edge of deepwater areas and may be considered shoreland. As such, it protects from possible erosive wave effects and may be used as a spawning area for fish.

As a Floodplain wetland, this site is outside waterbody banks. As such, it likely receives water on an irregular basis.

This wetland has been drained or altered 0% from its original size of 308 acres.

### *Soils*

## Vegetation and Upland Buffer

The extent of vegetation in this wetland is about 40 percent and the naturalized buffer width averages 200 feet. Vegetated buffers around wetlands provide multiple benefits including wildlife habitat, erosion protection, and a reduction in surface water runoff.

This buffer not only provides an excellent buffer for wetland water quality, it also serves as an important resources for wildlife habitat.

## Special Features

- D Rare natural community. A wetland native plant community mapped (or determined to be eligible for mapping) in the Natural Heritage Information System OR a wetland native plant community contained within an area mapped (or determined to be eligible for mapping) in the

NHIS as a Site of Outstanding or High Biological Diversity. Ratings for Vegetative Diversity/Integrity and Wildlife Habitat are Exceptional.

- J Wildlife species in or using the wetland that are: listed federally or by the State as endangered or threatened or a species of Special Concern. The Wildlife Habitat functional rating is Exceptional. The presence of this Special Feature warrants additional consideration.
- M Shoreland area identified in a zoning ordinance.
- N Floodplain area identified in a zoning ordinance or map.
- R Sensitive ground-water area (if Ground Water Interaction is Recharge, then Ground Water functional index is Exceptional).

### Vegetative Communities

The following plant communities were observed:

(See Appendix A for details on the Dominant Species per plant community)

Alder Thicket Type 6, PSS1B. This community had a vegetative index of moderate and comprised 5 percent of the entire area.

Deep Marsh Type 4, PUBG. This community had a vegetative index of high and comprised 8 percent of the entire area.

Floodplain Forest Type 1, PFO1A. This community had a vegetative index of high and comprised 2 percent of the entire area.

Fresh Wet Meadow Type 2, PEM1B. This community had a vegetative index of moderate and comprised 1 percent of the entire area.

Sedge Meadow Type 2, PEM1B. This community had a vegetative index of high and comprised 1 percent of the entire area.

Shallow Marsh Type 3, PEMC. This community had a vegetative index of low and comprised 5 percent of the entire area.

Shallow, Ow Communities Type 5, PUBH. This community had a vegetative index of low and comprised 75 percent of the entire area.

Shrub-carr Type 6, PSS1B. This community had a vegetative index of high and comprised 3 percent of the entire area.

The highest rated community was the Deep Marsh community rated at 1. Averaging all the communities together, the Vegetative Diversity and Integrity of this wetland is Exceptional. A more accurate look uses a weighted average; using this method, this site shows a Exceptional Vegetative Diversity and Integrity.

One or all three of the following are present: 1) highly diverse wetlands with virtually no non-native species, 2) rare or critically impaired wetland communities in the watershed, or 3) the presence or previous sighting of rare, threatened, or endangered plant species. Regardless of the quality or quantity of other communities, the presence of one of these will move the ranking of the entire site.

## Functional Ratings

<i>Function</i>	<i>Rating</i>	<i>Comment</i>
Vegetative Diversity	Exceptional	One or all three of the following are present: 1) highly diverse wetlands with virtually no non-native species, 2) rare or critically impaired wetland communities in the watershed, or 3) the presence or previous sighting of rare, threatened, or endangered plant species.
Additional stormwater treatment needs	High	Because the maintenance of wetland water quality index is high, no additional treatment is called for.
Maintenance of Hydrologic Regime	Moderate	There has been some degree of human alteration of the wetland hydrology, either by outlet control or by altering immediate watershed conditions. However, the wetland retains some of the hydrologic regime similar to the original wetland type, either in part of the wetland or overall to some extent. Because of the interference (whether active or inadvertant), some characteristic vegetative communities have likely been affected, as also have the functions of flood attenuation, water quality and groundwater interaction.
Flood/Stormwater/Attenuation	Moderate	The wetland provides some flood storage and/or flood wave attenuation. It may have either an altered or unrestricted outlet, disturbed wetland soils, thin or little emergent vegetation (with channels) or it may be situated high in a watershed with a low proportion of impervious surfaces, moderate runoff volumes, loamy upland soils, and one or more other wetlands present within the subwatershed.
Downstream Water Quality	Moderate	This wetland has some ability and opportunity to protect downstream resources. The ability of the wetland to remove sediment from stormwater is determined by emergent vegetation and overland flow characteristics. A high nutrient removal rating indicates dense vegetation and sheet flow to maximize nutrient uptake and residence time within the wetland. The opportunity for a wetland to protect a valuable water resource diminishes with distance from the wetland so wetlands with valuable waters within 0.5 miles downstream have the greatest opportunity to provide protection, as do those that receive more (and less-treated) runoff.
Maintenance of Wetland Water Quality	High	Wetland water quality is high, indicating little need for additional treatment. As long as upland land use and existing buffer conditions do not change, this wetland can be expected to sustain current characteristics.
Shoreline Protection	Moderate	This fringe site provides some protection against erosive action. Reducing the amount of buffer that is manicured would further protect the adjacent water resource, as would increasing the buffer width.
Maintenance of Characteristic Wildlife Habitat Structure	Exceptional	The site is known to be used by rare or state or federally-listed wildlife species OR has a scarce or rare wetland plant community and a high vegetative community quality rating. In either case, the wetland is exceptional for local priorities or under state or federal guidelines.

Maintenance of Characteristic Fish Habitat	Moderate	Permanently flooded but isolated wetlands can support native populations of minnows and some isolated deep marshes have intermittent populations of sunfish and northern pike after flood events. Poor water quality, due to runoff and insufficient buffer and vegetation, can affect the sustainability of fish populations.
Maintenance of Characteristic Amphibian Habitat	Low	Predatory fish are always present and winter habitat unsuitable as site often freezes to the bottom. High inputs of untreated stormwater or unfiltered runoff contribute to poor water quality and reproductive conditions.
Aesthetics/Recreation /Education/Cultural	Moderate	Many wetlands are visible from nearby buildings or roads and are accessible for some recreational activities. Excess negative human influence (such as trash or alteration) will reduce the ranking of well-used and highly-accessible sites.
Wetland restoration potential	Not Applicable	Because restoration would affect permanent structures or infrastructure (houses, roads, septic systems), this site is not suitable for restoration.
Wetland Sensitivity to Stormwater and Urban Development	Moderate	This wetland is moderately sensitive to stormwater; Floodplain forests, fresh wet meadows dominated by reed canary grass, shallow and deep marshes dominated by cattail, reed canary grass, giant reed or purple loosestrife, and shallow, open water communities with low to moderate vegetative diversity.



## Appendix A: Dominant Species By Plant Community

	<b>Wetland Type</b>	<b>Plant Community</b>	<b>Dominant Species</b>	<b>Percent Cover</b>
PSS1	Type 6	Alder Thicket	White meadowsweet	>3-<10%
			Balsam poplar	>10-25%
			White turtlehead	0-3%
			Tussock sedge	>10-25%
			Tall scouring rush	>25-50%
			Spotted touch-me-not	0-3%
			Speckled alder	>75-100%
			Slender willow	>3-<10%
			Shining willow	>3-<10%
			Sensitive fern	0-3%
			Sandbar willow	>10-25%
			Reed canary grass	>25-50%
			Common milkweed	0-3%
			Red-osier dogwood	>3-<10%
			Canada goldenrod	0-3%
			Common buckthorn	>3-<10%
			Crack willow	>3-<10%
			Kentucky bluegrass	0-3%
			Narrow-leaved cattail	0-3%
			Northern blue flag	0-3%
			Northern bugleweed	>3-<10%
			Purple loosestrife	>3-<10%
			Red raspberry	>10-25%
			Bluejoint	>25-50%
PUBG	Type 4	Deep Marsh	Least spikerush	>3-<10%
			American white waterlily	>3-<10%
			Yellow pond lily	>3-<10%
			Soft stem bulrush	>10-25%
			Sessile-fruited arrowhead	0-3%
			River bulrush	>3-<10%
			Giant bur reed	>50-75%
			Canada rush	>3-<10%
			Broad-leaved arrowhead	>10-25%
			Narrow-leaved bur reed	0-3%
			Nuttall's bur reed	0-3%
PFO1	Type 1	Floodplain Forest	Tussock sedge	>3-<10%
			Purple loosestrife	0-3%

Quaking aspen	>25-50%
Red raspberry	>3-<10%
Red-osier dogwood	>3-<10%
Sandbar willow	>3-<10%
Tartarian honeysuckle	>3-<10%
White meadowsweet	0-3%
Balsam poplar	0-3%
Peach-leaved willow	>10-25%
Tall scouring rush	>10-25%
Canada anemone	0-3%
Bluejoint	0-3%
Leafy beggarticks	>3-<10%
Black ash	>3-<10%
Common buckthorn	>3-<10%
Crack willow	>10-25%
Fowl bluegrass	0-3%
Giant goldenrod	0-3%
Green ash	>3-<10%
Large St. John's wort	0-3%

**PEM1 Type 2 Fresh Wet Meadow**

Bluejoint	>10-25%
Paper birch	0-3%
Spotted Joe pye weed	>3-<10%
Reed canary grass	>3-<10%
Red-osier dogwood	0-3%
Purple loosestrife	>10-25%
Swamp milkweed	0-3%
Northern blue flag	0-3%
Grass-leaved goldenrod	>3-<10%
Bottle gentian	0-3%
Bebb's willow	0-3%
Balsam poplar	0-3%
Common boneset	0-3%

**PEM1 Type 2 Sedge Meadow**

Canada goldenrod	0-3%
Black ash	0-3%
Cocklebur	0-3%
Reed canary grass	0-3%
Broad-leaved cattail	0-3%
Water smartweed	0-3%
Torrey's rush	>3-<10%
Tansey	0-3%
Spotted touch-me-not	0-3%
Spotted Joe pye weed	0-3%

		Speckled alder	0-3%
		Soft stem bulrush	>10-25%
		Sensitive fern	0-3%
		Rice cut grass	0-3%
		Red-osier dogwood	0-3%
		Pussy willow	0-3%
		Giant bur reed	0-3%
		Common boneset	0-3%
		Common buckthorn	0-3%
		Common mint	0-3%
		Sandbar willow	0-3%
		Dark green bulrush	0-3%
		Purple loosestrife	0-3%
		Kentucky bluegrass	0-3%
		Lake sedge	>25-50%
		Nodding bur marigold	0-3%
		Northern bugleweed	0-3%
		Path rush	>3-<10%
		Curly dock	0-3%
<b>PEMC</b>	<b>Type 3</b>	<b>Shallow Marsh</b>	
		Reed canary grass	0-3%
		Sandbar willow	0-3%
		Swamp beggarticks	0-3%
		Soft stem bulrush	0-3%
		River bulrush	0-3%
		Rice cut grass	0-3%
		Narrow-leaved cattail	>75-100%
		Giant bur reed	0-3%
		Spotted touch-me-not	0-3%
		Fowl manna grass	0-3%
		Common reed grass	0-3%
		Broad-leaved arrowhead	0-3%
		Purple loosestrife	>10-25%
<b>PUBH</b>	<b>Type 5</b>	<b>Shallow, Ow Communities</b>	
		Richardson's pondweed	0-3%
		Sago pondweed	0-3%
		Ribbon-leaved pondweed	0-3%
		Flexuous naiad	0-3%
		American pondweed	0-3%
		Common coontail	0-3%
		American white waterlily	0-3%
		Eelgrass	>3-<10%
		Yellow pond lily	0-3%
<b>PSS1</b>	<b>Type 6</b>	<b>Shrub-carr</b>	

Red raspberry	>3-<10%
Reed canary grass	0-3%
Sandbar willow	>25-50%
Shining willow	0-3%
Speckled alder	>3-<10%
Tussock sedge	>10-25%
Tall scouring rush	>10-25%
Tamarack	0-3%
Tansey	0-3%
Purple loosestrife	0-3%
Bog birch	0-3%
Spotted Joe pye weed	0-3%
Narrow-leaved cattail	0-3%
Lake sedge	>25-50%
Kentucky bluegrass	0-3%
Fox sedge	0-3%
Crack willow	>3-<10%
Common buckthorn	0-3%
Canada goldenrod	>3-<10%
Black spruce	0-3%
Balsam willow	0-3%
Balsam poplar	>10-25%
Woolgrass	0-3%
Canada thistle	0-3%

# MnRAM Site Assessment Report

Tuesday, October 02, 2012

**Wetland: US Steel Spirit Lake non-rare veg comm**

**Project: US Steel Spirit Lake**

Wetland ID: 3, Township 49, Section 35, Range 15, , ,

ST LOUIS County, St. Louis Watershed, Spirit Lake Subwatershed, Corps Bank Service Area #1

Assessment Purpose: Classification

A site visit was made to this wetland on 8/31/2012 by KSW. Site conditions were Normal. This wetland is estimated to cover 308 acres.

This report reflects conditions on the ground at the date of the assessment and, unless noted or implicit in the standard questions, does not reflect speculation on the future or past conditions.

This wetland is located in or near the city of Duluth

## General Features

### *Hydrogeomorphology*

As a Depressional/Flow-through wetland, this site has an apparent inlet and outlet. As such,  
Placeholder for Depressional/Flow-through discussion

As a Riverine wetland, this site is within the river or stream banks. As such, its vegetation may serve to protect the banks from erosion and may harbor fish, amphibian, bird, and mammal species.

As a Lacustrine Fringe wetland, this site located at the edge of deepwater areas and may be considered shoreland. As such, it protects from possible erosive wave effects and may be used as a spawning area for fish.

As a Floodplain wetland, this site is outside waterbody banks. As such, it likely receives water on an irregular basis.

This wetland has been drained or altered 0% from its original size of 308 acres.

### *Soils*

## Vegetation and Upland Buffer

The extent of vegetation in this wetland is about 40 percent and the naturalized buffer width averages 200 feet. Vegetated buffers around wetlands provide multiple benefits including wildlife habitat, erosion protection, and a reduction in surface water runoff.

This buffer not only provides an excellent buffer for wetland water quality, it also serves as an important resources for wildlife habitat.

## Special Features

J Wildlife species in or using the wetland that are: listed federally or by the State as endangered or threatened or a species of Special Concern. The Wildlife Habitat functional rating is Exceptional. The presence of this Special Feature warrants additional consideration.

- M Shoreland area identified in a zoning ordinance.
- N Floodplain area identified in a zoning ordinance or map.
- R Sensitive ground-water area (if Ground Water Interaction is Recharge, then Ground Water functional index is Exceptional).

## Vegetative Communities

The following plant communities were observed:

(See Appendix A for details on the Dominant Species per plant community)

**Alder Thicket** Type 6, PSS1B. This community had a vegetative index of moderate and comprised 5 percent of the entire area.

**Deep Marsh** Type 4, PUBG. This community had a vegetative index of high and comprised 8 percent of the entire area.

**Floodplain Forest** Type 1, PFO1A. This community had a vegetative index of high and comprised 2 percent of the entire area.

**Fresh Wet Meadow** Type 2, PEM1B. This community had a vegetative index of moderate and comprised 1 percent of the entire area.

**Sedge Meadow** Type 2, PEM1B. This community had a vegetative index of high and comprised 1 percent of the entire area.

**Shallow Marsh** Type 3, PEMC. This community had a vegetative index of low and comprised 5 percent of the entire area.

**Shallow, Ow Communities** Type 5, PUBH. This community had a vegetative index of low and comprised 75 percent of the entire area.

**Shrub-carr** Type 6, PSS1B. This community had a vegetative index of high and comprised 3 percent of the entire area.

The highest rated community was the Deep Marsh community rated at 1. Averaging all the communities together, the Vegetative Diversity and Integrity of this wetland is Moderate. A more accurate look uses a weighted average; using this method, this site shows a Low Vegetative Diversity and Integrity.

The majority of vegetation at this site, such as it is, does not contribute to wetland function beyond water retention and flow resistance. However, because the weighted average can "hide" smaller communities, always check for even small patches of high-quality species.

## Functional Ratings

<i>Function</i>	<i>Rating</i>	<i>Comment</i>
Vegetative Diversity	High	High-functioning vegetative communities reflect the presence of diverse, native wetland species and a lack of non-native or invasive species.

Additional stormwater treatment needs	Moderate	Sediment removal would improve the ability of this site to maintain water quality.
Maintenance of Hydrologic Regime	Moderate	There has been some degree of human alteration of the wetland hydrology, either by outlet control or by altering immediate watershed conditions. However, the wetland retains some of the hydrologic regime similar to the original wetland type, either in part of the wetland or overall to some extent. Because of the interference (whether active or inadvertant), some characteristic vegetative communities have likely been affected, as also have the functions of flood attenuation, water quality and groundwater interaction.
Flood/Stormwater/Attenuation	Moderate	The wetland provides some flood storage and/or flood wave attenuation. It may have either an altered or unrestricted outlet, disturbed wetland soils, thin or little emergent vegetation (with channels) or it may be situated high in a watershed with a low proportion of impervious surfaces, moderate runoff volumes, loamy upland soils, and one or more other wetlands present within the subwatershed.
Downstream Water Quality	Moderate	This wetland has some ability and opportunity to protect downstream resources. The ability of the wetland to remove sediment from stormwater is determined by emergent vegetation and overland flow characteristics. A high nutrient removal rating indicates dense vegetation and sheet flow to maximize nutrient uptake and residence time within the wetland. The opportunity for a wetland to protect a valuable water resource diminishes with distance from the wetland so wetlands with valuable waters within 0.5 miles downstream have the greatest opportunity to provide protection, as do those that receive more (and less-treated) runoff.
Maintenance of Wetland Water Quality	Moderate	Wetland water quality is average. Sediment removal from incoming water would benefit the site. Also consider reducing the amount of stormwater directed at the site. Sustaining a diverse wetland may require additional control over upland land use and the buffer.
Shoreline Protection	Moderate	This fringe site provides some protection against erosive action. Reducing the amount of buffer that is manicured would further protect the adjacent water resource, as would increasing the buffer width.
Maintenance of Characteristic Wildlife Habitat Structure	Exceptional	The site is known to be used by rare or state or federally-listed wildlife species OR has a scarce or rare wetland plant community and a high vegetative community quality rating. In either case, the wetland is exceptional for local priorities or under state or federal guidelines.
Maintenance of Characteristic Fish Habitat	Moderate	Permanently flooded but isolated wetlands can support native populations of minnows and some isolated deep marshes have intermittent populations of sunfish and northern pike after flood events. Poor water quality, due to runoff and insufficient buffer and vegetation, can affect the sustainability of fish populations.
Maintenance of Characteristic Amphibian Habitat	Low	Predatory fish are always present and winter habitat unsuitable as site often freezes to the bottom. High inputs of untreated stormwater or unfiltered runoff contribute to poor water quality and reproductive conditions.



Aesthetics/Recreation /Education/Cultural	Moderate	Many wetlands are visible from nearby buildings or roads and are accessible for some recreational activities. Excess negative human influence (such as trash or alteration) will reduce the ranking of well-used and highly-accessible sites.
Wetland restoration potential	Not Applicable	Because restoration would affect permanent structures or infrastructure (houses, roads, septic systems), this site is not suitable for restoration.
Wetland Sensitivity to Stormwater and Urban Development	Moderate	This wetland is moderately sensitive to stormwater; Floodplain forests, fresh wet meadows dominated by reed canary grass, shallow and deep marshes dominated by cattail, reed canary grass, giant reed or purple loosestrife, and shallow, open water communities with low to moderate vegetative diversity.

## Wetland Functional Assessment Summary

Wetland Name	Hydrogeomorphology	Maintenance of Hydrologic Regime	Flood/Stormwater/Attenuation	Downstream Water Quality	Maintenance of Wetland Water Quality	Shoreline Protection
US Steel Spirit Lake	Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet), Riverine (within the river/stream banks), Lacustrine Fringe (edge of deepwater areas)/Shoreland, Floodplain (outside waterbody banks)	0.43	0.48	0.47	0.83	0.52
		Moderate	Moderate	Moderate	High	Moderate

### Additional Information

Wetland Name	Maintenance of Characteristic Wildlife Habitat Structure	Maintenance of Characteristic Fish Habitat	Maintenance of Characteristic Amphibian Habitat	Aesthetics/Recreation/Education/Cultural	Commercial Uses	Ground-Water Interaction	Wetland Restoration Potential	Wetland Sensitivity to Stormwater and Urban Development	Additional Stormwater Treatment Needs
US Steel Spirit Lake	2.00	0.65	0.05	0.47	0.00	Exceptional Recharge	0.00	1.00	0.83
	Exceptional	Moderate	Low	Moderate	Not Applicable		Not Applicable	Moderate	High

## Wetland Community Summary

		Vegetative Diversity/Integrity							
		Community			Wetland Proportion	Individual Community Rating	Highest Wetland Rating	Average Wetland Rating	Weighted Average Wetland Rating
Wetland Name	Location	Cowardin Classification	Circular 39	Plant Community					
US Steel Spirit Lake	69-049-15-35-001	PSS1B	Type 6	Alder Thicket	5	0.5	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PUBG	Type 4	Deep Marsh	8	1	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PFO1A	Type 1	Floodplain Forest	2	1	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PEM1B	Type 2	Fresh (Wet) Meadow	1	0.5	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PEM1B	Type 2	Sedge Meadow	1	1	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional

PEMC	Type 3	Shallow Marsh	5	0.1	2.00	2.00	2.00
					Exceptional	Exceptional	Exceptional
PUBH	Type 5	Shallow, Open Water Communities	75	0.1	2.00	2.00	2.00
					Exceptional	Exceptional	Exceptional
PSS1B	Type 6	Shrub Carr	3	1	2.00	2.00	2.00
					Exceptional	Exceptional	Exceptional
			100		2.00	2.00	2.00

*Denotes incomplete calculation data.*

## Wetland Functional Assessment Summary

Wetland Name	Hydrogeomorphology	Maintenance of Hydrologic Regime	Flood/Stormwater/Attenuation	Downstream Water Quality	Maintenance of Wetland Water Quality	Shoreline Protection
US Steel Spirit Lake non-rare	Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet), Riverine (within the river/stream banks), Lacustrine Fringe (edge of deepwater areas)/Shoreland, Floodplain (outside waterbody banks)	0.43	0.48	0.47	0.33	0.52
		Moderate	Moderate	Moderate	Moderate	Moderate

### Additional Information

Wetland Name	Maintenance of Characteristic Wildlife Habitat Structure	Maintenance of Characteristic Fish Habitat	Maintenance of Characteristic Amphibian Habitat	Aesthetics/Recreation/Education/Cultural	Commercial Uses	Ground-Water Interaction	Wetland Restoration Potential	Wetland Sensitivity to Stormwater and Urban Development	Additional Stormwater Treatment Needs
US Steel Spirit Lake no	2.00	0.65	0.05	0.47	0.00	Exceptional Recharge	0.00	1.00	0.33
	Exceptional	Moderate	Low	Moderate	Not Applicable		Not Applicable	Moderate	Moderate

## Wetland Community Summary

		Vegetative Diversity/Integrity							
		Community			Wetland Proportion	Individual Community Rating	Highest Wetland Rating	Average Wetland Rating	Weighted Average Wetland Rating
Wetland Name	Location	Cowardin Classification	Circular 39	Plant Community					
US Steel Spirit Lake non-rare	69-049-15-35-001	PSS1B	Type 6	Alder Thicket	5	0.5	1.00	0.65	0.25
							High	Moderate	Low
		PUBG	Type 4	Deep Marsh	8	1	1.00	0.65	0.25
							High	Moderate	Low
		PFO1A	Type 1	Floodplain Forest	2	1	1.00	0.65	0.25
							High	Moderate	Low
		PEM1B	Type 2	Fresh (Wet) Meadow	1	0.5	1.00	0.65	0.25
							High	Moderate	Low
		PEM1B	Type 2	Sedge Meadow	1	1	1.00	0.65	0.25
							High	Moderate	Low

PEMC	Type 3	Shallow Marsh	5	0.1	1.00	0.65	0.25
					High	Moderate	Low
PUBH	Type 5	Shallow, Open Water Communities	75	0.1	1.00	0.65	0.25
					High	Moderate	Low
PSS1B	Type 6	Shrub Carr	3	1	1.00	0.65	0.25
					High	Moderate	Low
			100		1.00	0.65	0.25

*Denotes incomplete calculation data.*

**Management Classification Report for US Steel Spirit Lake non-rare veg**

**US Steel Spirit Lake**

ID: 3

ST LOUIS County  
St. Louis Watershed, # 3  
Corps Bank Service Area 1

Based on the MnRAM data input from field and office review and using the classification settings as shown below, this wetland is classified as **Preserve**

<b>Functional rank of this wetland based on MnRAM data</b>	<b>Functional Category</b>	<b>Self-defined classification value settings for this management level</b>
Low	Vegetative Diversity/Integrity	Exceptional
Exceptional	Habitat Structure (wildlife)	Exceptional
Low	Amphibian Habitat	High
Moderate	Fish Habitat	Exceptional
Moderate	Shoreline Protection	High
Moderate	Aesthetic/Cultural/Rec/Ed and Habitat	Exceptional / High
Moderate	Stormwater/Urban Sensitivity and Vegetative Diversity	Exceptional / Moderate
Moderate	Wetland Water Quality and Vegetative Diversity	High / High
Moderate	Characteristic Hydrology and Vegetative Diversity	High / High
Moderate	Flood/Stormwater Attenuation*	-
Not Applicable	Commercial use*	-
Moderate	Downstream Water Quality*	-

The critical function that caused this wetland to rank as **Preserve** was **Maintenance of Characteristic Wildlife Habitat Structure**

Details of the formula for this action are shown below:

*This report was printed on:* Tuesday, October 02, 2012

\* The classification value settings for these functions are not adjustable

# Management Classification Report for US Steel Spirit Lake

ID: 2

# US Steel Spirit Lake

ST LOUIS County  
 St. Louis Watershed, # 3  
 Corps Bank Service Area 1

Based on the MnRAM data input from field and office review and using the classification settings as shown below, this wetland is classified as **Preserve**

Functional rank of this wetland based on MnRAM data	Functional Category	Self-defined classification value settings for this management level
Exceptional	Vegetative Diversity/Integrity	Exceptional
Exceptional	Habitat Structure (wildlife)	Exceptional
Low	Amphibian Habitat	High
Moderate	Fish Habitat	Exceptional
Moderate	Shoreline Protection	High
Moderate	Aesthetic/Cultural/Rec/Ed and Habitat	Exceptional / High
Moderate	Stormwater/Urban Sensitivity and Vegetative Diversity	Exceptional / Moderate
High	Wetland Water Quality and Vegetative Diversity	High / High
Moderate	Characteristic Hydrology and Vegetative Diversity	High / High
Moderate	Flood/Stormwater Attenuation*	-
Not Applicable	Commercial use*	-
Moderate	Downstream Water Quality*	-

The critical function that caused this wetland to rank as **Preserve** was **Vegetative Diversity**

Details of the formula for this action are shown below:

*This report was printed on:* Friday, September 21, 2012

\* The classification value settings for these functions are not adjustable

# MnRAM Site Assessment Report

Friday, September 21, 2012

**Wetland: US Steel Spirit Lake**

**Project: US Steel Spirit Lake**

Wetland ID: 2, Township 49, Section 35, Range 15

ST LOUIS County, St. Louis Watershed, Spirit Lake Subwatershed, Corps Bank Service Area #1

Assessment Purpose: Classification

A site visit was made to this wetland on 8/31/2012 by KSW. Site conditions were Normal. This wetland is estimated to cover 308 acres.

This report reflects conditions on the ground at the date of the assessment and, unless noted or implicit in the standard questions, does not reflect speculation on the future or past conditions.

This wetland is located in or near the city of Duluth

## General Features

### *Hydrogeomorphology*

As a Depressional/Flow-through wetland, this site has an apparent inlet and outlet. As such,  
Placeholder for Depressional/Flow-through discussion

As a Riverine wetland, this site is within the river or stream banks. As such, its vegetation may serve to protect the banks from erosion and may harbor fish, amphibian, bird, and mammal species.

As a Lacustrine Fringe wetland, this site located at the edge of deepwater areas and may be considered shoreland. As such, it protects from possible erosive wave effects and may be used as a spawning area for fish.

As a Floodplain wetland, this site is outside waterbody banks. As such, it likely receives water on an irregular basis.

This wetland has been drained or altered 0% from its original size of 308 acres.

### *Soils*

## Vegetation and Upland Buffer

The extent of vegetation in this wetland is about 40 percent and the naturalized buffer width averages 200 feet. Vegetated buffers around wetlands provide multiple benefits including wildlife habitat, erosion protection, and a reduction in surface water runoff.

This buffer not only provides an excellent buffer for wetland water quality, it also serves as an important resources for wildlife habitat.

## Special Features

- D Rare natural community. A wetland native plant community mapped (or determined to be eligible for mapping) in the Natural Heritage Information System OR a wetland native plant community contained within an area mapped (or determined to be eligible for mapping) in the



NHIS as a Site of Outstanding or High Biological Diversity. Ratings for Vegetative Diversity/Integrity and Wildlife Habitat are Exceptional.

- J Wildlife species in or using the wetland that are: listed federally or by the State as endangered or threatened or a species of Special Concern. The Wildlife Habitat functional rating is Exceptional. The presence of this Special Feature warrants additional consideration.
- M Shoreland area identified in a zoning ordinance.
- N Floodplain area identified in a zoning ordinance or map.
- R Sensitive ground-water area (if Ground Water Interaction is Recharge, then Ground Water functional index is Exceptional).

### Vegetative Communities

The following plant communities were observed:

(See Appendix A for details on the Dominant Species per plant community)

Alder Thicket Type 6, PSS1B. This community had a vegetative index of moderate and comprised 5 percent of the entire area.

Deep Marsh Type 4, PUBG. This community had a vegetative index of high and comprised 8 percent of the entire area.

Floodplain Forest Type 1, PFO1A. This community had a vegetative index of high and comprised 2 percent of the entire area.

Fresh Wet Meadow Type 2, PEM1B. This community had a vegetative index of moderate and comprised 1 percent of the entire area.

Sedge Meadow Type 2, PEM1B. This community had a vegetative index of high and comprised 1 percent of the entire area.

Shallow Marsh Type 3, PEMC. This community had a vegetative index of low and comprised 5 percent of the entire area.

Shallow, Ow Communities Type 5, PUBH. This community had a vegetative index of low and comprised 75 percent of the entire area.

Shrub-carr Type 6, PSS1B. This community had a vegetative index of high and comprised 3 percent of the entire area.

The highest rated community was the Deep Marsh community rated at 1. Averaging all the communities together, the Vegetative Diversity and Integrity of this wetland is Exceptional. A more accurate look uses a weighted average; using this method, this site shows a Exceptional Vegetative Diversity and Integrity.

One or all three of the following are present: 1) highly diverse wetlands with virtually no non-native species, 2) rare or critically impaired wetland communities in the watershed, or 3) the presence or previous sighting of rare, threatened, or endangered plant species. Regardless of the quality or quantity of other communities, the presence of one of these will move the ranking of the entire site.

## Functional Ratings

<i>Function</i>	<i>Rating</i>	<i>Comment</i>
Vegetative Diversity	Exceptional	One or all three of the following are present: 1) highly diverse wetlands with virtually no non-native species, 2) rare or critically impaired wetland communities in the watershed, or 3) the presence or previous sighting of rare, threatened, or endangered plant species.
Additional stormwater treatment needs	High	Because the maintenance of wetland water quality index is high, no additional treatment is called for.
Maintenance of Hydrologic Regime	Moderate	There has been some degree of human alteration of the wetland hydrology, either by outlet control or by altering immediate watershed conditions. However, the wetland retains some of the hydrologic regime similar to the original wetland type, either in part of the wetland or overall to some extent. Because of the interference (whether active or inadvertant), some characteristic vegetative communities have likely been affected, as also have the functions of flood attenuation, water quality and groundwater interaction.
Flood/Stormwater/Attenuation	Moderate	The wetland provides some flood storage and/or flood wave attenuation. It may have either an altered or unrestricted outlet, disturbed wetland soils, thin or little emergent vegetation (with channels) or it may be situated high in a watershed with a low proportion of impervious surfaces, moderate runoff volumes, loamy upland soils, and one or more other wetlands present within the subwatershed.
Downstream Water Quality	Moderate	This wetland has some ability and opportunity to protect downstream resources. The ability of the wetland to remove sediment from stormwater is determined by emergent vegetation and overland flow characteristics. A high nutrient removal rating indicates dense vegetation and sheet flow to maximize nutrient uptake and residence time within the wetland. The opportunity for a wetland to protect a valuable water resource diminishes with distance from the wetland so wetlands with valuable waters within 0.5 miles downstream have the greatest opportunity to provide protection, as do those that receive more (and less-treated) runoff.
Maintenance of Wetland Water Quality	High	Wetland water quality is high, indicating little need for additional treatment. As long as upland land use and existing buffer conditions do not change, this wetland can be expected to sustain current characteristics.
Shoreline Protection	Moderate	This fringe site provides some protection against erosive action. Reducing the amount of buffer that is manicured would further protect the adjacent water resource, as would increasing the buffer width.
Maintenance of Characteristic Wildlife Habitat Structure	Exceptional	The site is known to be used by rare or state or federally-listed wildlife species OR has a scarce or rare wetland plant community and a high vegetative community quality rating. In either case, the wetland is exceptional for local priorities or under state or federal guidelines.

Maintenance of Characteristic Fish Habitat	Moderate	Permanently flooded but isolated wetlands can support native populations of minnows and some isolated deep marshes have intermittent populations of sunfish and northern pike after flood events. Poor water quality, due to runoff and insufficient buffer and vegetation, can affect the sustainability of fish populations.
Maintenance of Characteristic Amphibian Habitat	Low	Predatory fish are always present and winter habitat unsuitable as site often freezes to the bottom. High inputs of untreated stormwater or unfiltered runoff contribute to poor water quality and reproductive conditions.
Aesthetics/Recreation /Education/Cultural	Moderate	Many wetlands are visible from nearby buildings or roads and are accessible for some recreational activities. Excess negative human influence (such as trash or alteration) will reduce the ranking of well-used and highly-accessible sites.
Wetland restoration potential	Not Applicable	Because restoration would affect permanent structures or infrastructure (houses, roads, septic systems), this site is not suitable for restoration.
Wetland Sensitivity to Stormwater and Urban Development	Moderate	This wetland is moderately sensitive to stormwater; Floodplain forests, fresh wet meadows dominated by reed canary grass, shallow and deep marshes dominated by cattail, reed canary grass, giant reed or purple loosestrife, and shallow, open water communities with low to moderate vegetative diversity.

## Appendix A: Dominant Species By Plant Community

	Wetland Type	Plant Community	Dominant Species	Percent Cover
PSS1	Type 6	Alder Thicket	White meadowsweet	>3-<10%
			Balsam poplar	>10-25%
			White turtlehead	0-3%
			Tussock sedge	>10-25%
			Tall scouring rush	>25-50%
			Spotted touch-me-not	0-3%
			Speckled alder	>75-100%
			Slender willow	>3-<10%
			Shining willow	>3-<10%
			Sensitive fern	0-3%
			Sandbar willow	>10-25%
			Reed canary grass	>25-50%
			Common milkweed	0-3%
			Red-osier dogwood	>3-<10%
			Canada goldenrod	0-3%
			Common buckthorn	>3-<10%
			Crack willow	>3-<10%
			Kentucky bluegrass	0-3%
			Narrow-leaved cattail	0-3%
			Northern blue flag	0-3%
			Northern bugleweed	>3-<10%
			Purple loosestrife	>3-<10%
			Red raspberry	>10-25%
			Bluejoint	>25-50%
PUBG	Type 4	Deep Marsh	Least spikerush	>3-<10%
			American white waterlily	>3-<10%
			Yellow pond lily	>3-<10%
			Soft stem bulrush	>10-25%
			Sessile-fruited arrowhead	0-3%
			River bulrush	>3-<10%
			Giant bur reed	>50-75%
			Canada rush	>3-<10%
			Broad-leaved arrowhead	>10-25%
			Narrow-leaved bur reed	0-3%
			Nuttall's bur reed	0-3%
PFO1	Type 1	Floodplain Forest	Tussock sedge	>3-<10%
			Purple loosestrife	0-3%

Quaking aspen	>25-50%
Red raspberry	>3-<10%
Red-osier dogwood	>3-<10%
Sandbar willow	>3-<10%
Tartarian honeysuckle	>3-<10%
White meadowsweet	0-3%
Balsam poplar	0-3%
Peach-leaved willow	>10-25%
Tall scouring rush	>10-25%
Canada anemone	0-3%
Bluejoint	0-3%
Leafy beggarticks	>3-<10%
Black ash	>3-<10%
Common buckthorn	>3-<10%
Crack willow	>10-25%
Fowl bluegrass	0-3%
Giant goldenrod	0-3%
Green ash	>3-<10%
Large St. John's wort	0-3%

**PEM1 Type 2 Fresh Wet Meadow**

Bluejoint	>10-25%
Paper birch	0-3%
Spotted Joe pye weed	>3-<10%
Reed canary grass	>3-<10%
Red-osier dogwood	0-3%
Purple loosestrife	>10-25%
Swamp milkweed	0-3%
Northern blue flag	0-3%
Grass-leaved goldenrod	>3-<10%
Bottle gentian	0-3%
Bebb's willow	0-3%
Balsam poplar	0-3%
Common boneset	0-3%

**PEM1 Type 2 Sedge Meadow**

Canada goldenrod	0-3%
Black ash	0-3%
Cocklebur	0-3%
Reed canary grass	0-3%
Broad-leaved cattail	0-3%
Water smartweed	0-3%
Torrey's rush	>3-<10%
Tansey	0-3%
Spotted touch-me-not	0-3%
Spotted Joe pye weed	0-3%

		Speckled alder	0-3%
		Soft stem bulrush	>10-25%
		Sensitive fern	0-3%
		Rice cut grass	0-3%
		Red-osier dogwood	0-3%
		Pussy willow	0-3%
		Giant bur reed	0-3%
		Common boneset	0-3%
		Common buckthorn	0-3%
		Common mint	0-3%
		Sandbar willow	0-3%
		Dark green bulrush	0-3%
		Purple loosestrife	0-3%
		Kentucky bluegrass	0-3%
		Lake sedge	>25-50%
		Nodding bur marigold	0-3%
		Northern bugleweed	0-3%
		Path rush	>3-<10%
		Curly dock	0-3%
<b>PEMC</b>	<b>Type 3</b>	<b>Shallow Marsh</b>	
		Reed canary grass	0-3%
		Sandbar willow	0-3%
		Swamp beggarticks	0-3%
		Soft stem bulrush	0-3%
		River bulrush	0-3%
		Rice cut grass	0-3%
		Narrow-leaved cattail	>75-100%
		Giant bur reed	0-3%
		Spotted touch-me-not	0-3%
		Fowl manna grass	0-3%
		Common reed grass	0-3%
		Broad-leaved arrowhead	0-3%
		Purple loosestrife	>10-25%
<b>PUBH</b>	<b>Type 5</b>	<b>Shallow, Ow Communities</b>	
		Richardson's pondweed	0-3%
		Sago pondweed	0-3%
		Ribbon-leaved pondweed	0-3%
		Flexuous naiad	0-3%
		American pondweed	0-3%
		Common coontail	0-3%
		American white waterlily	0-3%
		Eelgrass	>3-<10%
		Yellow pond lily	0-3%
<b>PSS1</b>	<b>Type 6</b>	<b>Shrub-carr</b>	

Red raspberry	>3-<10%
Reed canary grass	0-3%
Sandbar willow	>25-50%
Shining willow	0-3%
Speckled alder	>3-<10%
Tussock sedge	>10-25%
Tall scouring rush	>10-25%
Tamarack	0-3%
Tansey	0-3%
Purple loosestrife	0-3%
Bog birch	0-3%
Spotted Joe pye weed	0-3%
Narrow-leaved cattail	0-3%
Lake sedge	>25-50%
Kentucky bluegrass	0-3%
Fox sedge	0-3%
Crack willow	>3-<10%
Common buckthorn	0-3%
Canada goldenrod	>3-<10%
Black spruce	0-3%
Balsam willow	0-3%
Balsam poplar	>10-25%
Woolgrass	0-3%
Canada thistle	0-3%

# MnRAM Site Assessment Report

Tuesday, October 02, 2012

**Wetland: US Steel Spirit Lake non-rare veg comm**

**Project: US Steel Spirit Lake**

Wetland ID: 3, Township 49, Section 35, Range 15, , ,

ST LOUIS County, St. Louis Watershed, Spirit Lake Subwatershed, Corps Bank Service Area #1

Assessment Purpose: Classification

A site visit was made to this wetland on 8/31/2012 by KSW. Site conditions were Normal. This wetland is estimated to cover 308 acres.

This report reflects conditions on the ground at the date of the assessment and, unless noted or implicit in the standard questions, does not reflect speculation on the future or past conditions.

This wetland is located in or near the city of Duluth

## General Features

### *Hydrogeomorphology*

As a Depressional/Flow-through wetland, this site has an apparent inlet and outlet. As such,  
Placeholder for Depressional/Flow-through discussion

As a Riverine wetland, this site is within the river or stream banks. As such, its vegetation may serve to protect the banks from erosion and may harbor fish, amphibian, bird, and mammal species.

As a Lacustrine Fringe wetland, this site located at the edge of deepwater areas and may be considered shoreland. As such, it protects from possible erosive wave effects and may be used as a spawning area for fish.

As a Floodplain wetland, this site is outside waterbody banks. As such, it likely receives water on an irregular basis.

This wetland has been drained or altered 0% from its original size of 308 acres.

### *Soils*

## Vegetation and Upland Buffer

The extent of vegetation in this wetland is about 40 percent and the naturalized buffer width averages 200 feet. Vegetated buffers around wetlands provide multiple benefits including wildlife habitat, erosion protection, and a reduction in surface water runoff.

This buffer not only provides an excellent buffer for wetland water quality, it also serves as an important resources for wildlife habitat.

## Special Features

J Wildlife species in or using the wetland that are: listed federally or by the State as endangered or threatened or a species of Special Concern. The Wildlife Habitat functional rating is Exceptional. The presence of this Special Feature warrants additional consideration.



- M Shoreland area identified in a zoning ordinance.
- N Floodplain area identified in a zoning ordinance or map.
- R Sensitive ground-water area (if Ground Water Interaction is Recharge, then Ground Water functional index is Exceptional).

Vegetative Communities

The following plant communities were observed:

(See Appendix A for details on the Dominant Species per plant community)

Alder Thicket Type 6, PSS1B. This community had a vegetative index of moderate and comprised 5 percent of the entire area.

Deep Marsh Type 4, PUBG. This community had a vegetative index of high and comprised 8 percent of the entire area.

Floodplain Forest Type 1, PFO1A. This community had a vegetative index of high and comprised 2 percent of the entire area.

Fresh Wet Meadow Type 2, PEM1B. This community had a vegetative index of moderate and comprised 1 percent of the entire area.

Sedge Meadow Type 2, PEM1B. This community had a vegetative index of high and comprised 1 percent of the entire area.

Shallow Marsh Type 3, PEMC. This community had a vegetative index of low and comprised 5 percent of the entire area.

Shallow, Ow Communities Type 5, PUBH. This community had a vegetative index of low and comprised 75 percent of the entire area.

Shrub-carr Type 6, PSS1B. This community had a vegetative index of high and comprised 3 percent of the entire area.

The highest rated community was the Deep Marsh community rated at 1. Averaging all the communities together, the Vegetative Diversity and Integrity of this wetland is Moderate. A more accurate look uses a weighted average; using this method, this site shows a Low Vegetative Diversity and Integrity.

The majority of vegetation at this site, such as it is, does not contribute to wetland function beyond water retention and flow resistance. However, because the weighted average can "hide" smaller communities, always check for even small patches of high-quality species.

Functional Ratings

<i>Function</i>	<i>Rating</i>	<i>Comment</i>
Vegetative Diversity	High	High-functioning vegetative communities reflect the presence of diverse, native wetland species and a lack of non-native or invasive species.

Additional stormwater treatment needs	Moderate	Sediment removal would improve the ability of this site to maintain water quality.
Maintenance of Hydrologic Regime	Moderate	There has been some degree of human alteration of the wetland hydrology, either by outlet control or by altering immediate watershed conditions. However, the wetland retains some of the hydrologic regime similar to the original wetland type, either in part of the wetland or overall to some extent. Because of the interference (whether active or inadvertant), some characteristic vegetative communities have likely been affected, as also have the functions of flood attenuation, water quality and groundwater interaction.
Flood/Stormwater/Attenuation	Moderate	The wetland provides some flood storage and/or flood wave attenuation. It may have either an altered or unrestricted outlet, disturbed wetland soils, thin or little emergent vegetation (with channels) or it may be situated high in a watershed with a low proportion of impervious surfaces, moderate runoff volumes, loamy upland soils, and one or more other wetlands present within the subwatershed.
Downstream Water Quality	Moderate	This wetland has some ability and opportunity to protect downstream resources. The ability of the wetland to remove sediment from stormwater is determined by emergent vegetation and overland flow characteristics. A high nutrient removal rating indicates dense vegetation and sheet flow to maximize nutrient uptake and residence time within the wetland. The opportunity for a wetland to protect a valuable water resource diminishes with distance from the wetland so wetlands with valuable waters within 0.5 miles downstream have the greatest opportunity to provide protection, as do those that receive more (and less-treated) runoff.
Maintenance of Wetland Water Quality	Moderate	Wetland water quality is average. Sediment removal from incoming water would benefit the site. Also consider reducing the amount of stormwater directed at the site. Sustaining a diverse wetland may require additional control over upland land use and the buffer.
Shoreline Protection	Moderate	This fringe site provides some protection against erosive action. Reducing the amount of buffer that is manicured would further protect the adjacent water resource, as would increasing the buffer width.
Maintenance of Characteristic Wildlife Habitat Structure	Exceptional	The site is known to be used by rare or state or federally-listed wildlife species OR has a scarce or rare wetland plant community and a high vegetative community quality rating. In either case, the wetland is exceptional for local priorities or under state or federal guidelines.
Maintenance of Characteristic Fish Habitat	Moderate	Permanently flooded but isolated wetlands can support native populations of minnows and some isolated deep marshes have intermittent populations of sunfish and northern pike after flood events. Poor water quality, due to runoff and insufficient buffer and vegetation, can affect the sustainability of fish populations.
Maintenance of Characteristic Amphibian Habitat	Low	Predatory fish are always present and winter habitat unsuitable as site often freezes to the bottom. High inputs of untreated stormwater or unfiltered runoff contribute to poor water quality and reproductive conditions.

Aesthetics/Recreation /Education/Cultural	Moderate	Many wetlands are visible from nearby buildings or roads and are accessible for some recreational activities. Excess negative human influence (such as trash or alteration) will reduce the ranking of well-used and highly-accessible sites.
Wetland restoration potential	Not Applicable	Because restoration would affect permanent structures or infrastructure (houses, roads, septic systems), this site is not suitable for restoration.
Wetland Sensitivity to Stormwater and Urban Development	Moderate	This wetland is moderately sensitive to stormwater; Floodplain forests, fresh wet meadows dominated by reed canary grass, shallow and deep marshes dominated by cattail, reed canary grass, giant reed or purple loosestrife, and shallow, open water communities with low to moderate vegetative diversity.

## Wetland Functional Assessment Summary

Wetland Name	Hydrogeomorphology	Maintenance of Hydrologic Regime	Flood/Stormwater/Attenuation	Downstream Water Quality	Maintenance of Wetland Water Quality	Shoreline Protection
US Steel Spirit Lake	Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet), Riverine (within the river/stream banks), Lacustrine Fringe (edge of deepwater areas)/Shoreland, Floodplain (outside waterbody banks)	0.43	0.48	0.47	0.83	0.52
		Moderate	Moderate	Moderate	High	Moderate

### Additional Information

Wetland Name	Maintenance of Characteristic Wildlife Habitat Structure	Maintenance of Characteristic Fish Habitat	Maintenance of Characteristic Amphibian Habitat	Aesthetics/Recreation/Education/Cultural	Commercial Uses	Ground-Water Interaction	Wetland Restoration Potential	Wetland Sensitivity to Stormwater and Urban Development	Additional Stormwater Treatment Needs
US Steel Spirit Lake	2.00	0.65	0.05	0.47	0.00	Exceptional Recharge	0.00	1.00	0.83
	Exceptional	Moderate	Low	Moderate	Not Applicable		Not Applicable	Moderate	High

## Wetland Community Summary

		Vegetative Diversity/Integrity							
		Community			Wetland Proportion	Individual Community Rating	Highest Wetland Rating	Average Wetland Rating	Weighted Average Wetland Rating
Wetland Name	Location	Cowardin Classification	Circular 39	Plant Community					
US Steel Spirit Lake	69-049-15-35-001	PSS1B	Type 6	Alder Thicket	5	0.5	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PUBG	Type 4	Deep Marsh	8	1	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PFO1A	Type 1	Floodplain Forest	2	1	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PEM1B	Type 2	Fresh (Wet) Meadow	1	0.5	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional
		PEM1B	Type 2	Sedge Meadow	1	1	2.00	2.00	2.00
							Exceptional	Exceptional	Exceptional

PEMC	Type 3	Shallow Marsh	5	0.1	2.00	2.00	2.00
					Exceptional	Exceptional	Exceptional
PUBH	Type 5	Shallow, Open Water Communities	75	0.1	2.00	2.00	2.00
					Exceptional	Exceptional	Exceptional
PSS1B	Type 6	Shrub Carr	3	1	2.00	2.00	2.00
					Exceptional	Exceptional	Exceptional
			100		2.00	2.00	2.00

*Denotes incomplete calculation data.*

## Wetland Functional Assessment Summary

Wetland Name	Hydrogeomorphology	Maintenance of Hydrologic Regime	Flood/Stormwater/Attenuation	Downstream Water Quality	Maintenance of Wetland Water Quality	Shoreline Protection
US Steel Spirit Lake non-rare	Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet), Riverine (within the river/stream banks), Lacustrine Fringe (edge of deepwater areas)/Shoreland, Floodplain (outside waterbody banks)	0.43	0.48	0.47	0.33	0.52
		Moderate	Moderate	Moderate	Moderate	Moderate

### Additional Information

Wetland Name	Maintenance of Characteristic Wildlife Habitat Structure	Maintenance of Characteristic Fish Habitat	Maintenance of Characteristic Amphibian Habitat	Aesthetics/Recreation/Education/Cultural	Commercial Uses	Ground-Water Interaction	Wetland Restoration Potential	Wetland Sensitivity to Stormwater and Urban Development	Additional Stormwater Treatment Needs
US Steel Spirit Lake no	2.00	0.65	0.05	0.47	0.00	Exceptional Recharge	0.00	1.00	0.33
	Exceptional	Moderate	Low	Moderate	Not Applicable		Not Applicable	Moderate	Moderate

## Wetland Community Summary

		Vegetative Diversity/Integrity							
		Community			Wetland Proportion	Individual Community Rating	Highest Wetland Rating	Average Wetland Rating	Weighted Average Wetland Rating
Wetland Name	Location	Cowardin Classification	Circular 39	Plant Community					
US Steel Spirit Lake non-rare	69-049-15-35-001	PSS1B	Type 6	Alder Thicket	5	0.5	1.00	0.65	0.25
							High	Moderate	Low
		PUBG	Type 4	Deep Marsh	8	1	1.00	0.65	0.25
							High	Moderate	Low
		PFO1A	Type 1	Floodplain Forest	2	1	1.00	0.65	0.25
							High	Moderate	Low
		PEM1B	Type 2	Fresh (Wet) Meadow	1	0.5	1.00	0.65	0.25
							High	Moderate	Low
		PEM1B	Type 2	Sedge Meadow	1	1	1.00	0.65	0.25
							High	Moderate	Low

PEMC	Type 3	Shallow Marsh	5	0.1	1.00	0.65	0.25
					High	Moderate	Low
PUBH	Type 5	Shallow, Open Water Communities	75	0.1	1.00	0.65	0.25
					High	Moderate	Low
PSS1B	Type 6	Shrub Carr	3	1	1.00	0.65	0.25
					High	Moderate	Low
			100		1.00	0.65	0.25

*Denotes incomplete calculation data.*