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

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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.

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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. 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[®] 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[©] 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.

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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*), varigated 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 nonnative 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.

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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 redesignate 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

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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.

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Figures



Barr Footer: ArcGIS 10.1, 2013-02-18 10:49 File: I:\Client\USS_Duluth_Works\Work_Orders\Fall_2012\Maps\Reports\Wetland_Delineation_Report\Figure D-1 Site Location Map for Spirit Lake.mxd User: jlc C-S3-06af







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



Barr Footer: ArcGIS 10.1, 2013-02-18 10:52 File: 1:\Client\USS_Duluth_Works\Work_Orders\Fall_2012\Maps\Reports\Wetland_Delineation_Report\Figure D-2 Site Layout.mxd User: jlc

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- Approximate Unnamed Creek Delta Sediment Investigation Area
- \bigcirc

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





Approximate U. S. Steel Operations Area (URS, 2008) - Approximate Outer Study Area Limit

State Boundary

USCS Sediment Class



Predominantly Fill



Predominantly Peat



Predominantly Sand



Predominantly Silt

Bathymetry Contour (1-Foot)

Bathymetry Contour (5-Foot)

Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation





SEDIMENT COMPOSITION OVERVIEW









Other



Riverine

Based on Orthophoto Interpretation



NATIONAL WETLANDS INVENTORY





Hydric Rating







Not Hydric



Unknown Hydric

Not rated or not available



Approximate Outer Study Area Limit

Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation



Orthophoto: Farm Service Agency, 200

Figure D-5

USDA SSURGO SOILS





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





WETLAND DELINEATION AREA











WATERSHEDS AND WATERBODIES









OBSERVED WETLAND COMMUNITIES

Tables

Table 1Precipitation Prior to Wetland Delineation

Precipitation Worksheet Using Gridded DatabasePrecipitation data for target wetland location:
county: Saint Louistownship nu
range numb
section numtownship name: unnamedrange numb
section num

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

Score using 1981-2010 normal period

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

Table 2Monthly 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: Steelton | 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 |

P:\Duluth\23 MN\69\23691125 St Louis River Duluth Works Sediment\WorkFiles\P_Feasibility Study\FS-Veg Survey Sampling and Analysis Plan (SAP)\2012 Report\Appendices\Appendix F - Wetland Delineation Report Appendices\Spirit Lake WETS precip.xlsxTable 2

Table 3Wetland Community Summary

| Eggers and Reed Wetland Type ¹ | Circular 39 ² | Cowardin ³ | Area (acres) |
|---|--------------------------|-----------------------|--------------|
| 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 |
| | | | 308.15 |

¹Eggers and Reed. 1997. Wetland Plants and Plant Communities of Minnesota and Wisconsin.

²U.S. Fish and Wildlife Service. 1956. Wetland of the United States Circular 39.

³Cowardin et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States.

*Wetland extends beyond the evaluation area

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

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

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

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

Appendices

Appendix D-1

Wetland Data Forms

| Project/Site: | <u>USS Spir</u> | rit Lake | | | Applicant/ | Owner: USS | City/County: Duluth/St. I | Louis | State: | MN | Sampling Date: 08/31/12 | |
|--------------------------------|--------------------------------|-------------|------------|------------------|-----------------------|-----------------------------|--|----------------------|----------------------|--------------------------|--|------------|
| Investigator(s): Land Form: | <u>KSW</u> <u>Hillslope</u> | 1 | | | Section: Local Rel | <u>2</u> lief: | Township: <u>48</u> Slope %: <u>0-2</u> | | Range: Soil Ma | <u>15</u> p Unit Nan | Sampling Point: <u>SB1</u> ne: <u>Bowstring and Fluvaquer</u> | <u>nts</u> |
| Subregion (LRR) | : <u>K</u> | | | | Latitude: | <u>394023</u> | Longitude: <u>2850292</u> | | Datum: | State Pla | ne MN North | |
| NWI/Cowardin C | lassificatior | n: <u>U</u> | pland | | Circular | 39 Classification: Upland | | | | | | |
| Are climatic/hydro | ologic cond | itions o | n the site | typical for this | time of ye | ar? <u>Yes</u> (If no, expl | ain in remarks) | Eggers & | Reed (| primary): | <u>Upland</u> | |
| Are vegetation | No | Soil | Yes | Hydrology | <u>No</u> | significantly disturbed? | Are "normal <u>Yes</u> circumstances" | Eggers & Eggers & | & Reed (& Reed (| secondary, tertiary): |): | |
| Are vegetation | No | Soil | <u>No</u> | Hydrology | No | naturally problematic? | present? | Eggers & | Reed (| quaternary |): | |

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

| Hydrophytic vegetation present? | Yes | General Remarks (explain any answers if needed): |
|--|-----------|--|
| Hydric soil present? | <u>NA</u> | Soils are fill and contaminated with tar. |
| Indicators of wetland hydrology present? | No | |
| Is the sampled area within a wetland? | No | If yes, optional Wetland Site ID:: |

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VEGETATION

| | | | | | <u>Absolute</u> | <u>Dominant</u> | Indicator | 50/20 Thresholds: | | | <u>20%</u> | <u>50%</u> |
|-----|-----------------------------|-------------|--------------|-------------------|-----------------|-----------------|---------------|---|------------------------------------|-----------------------------|----------------------------|------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u> |) | <u>% Cover</u> | Species? | <u>Status</u> | Tree Stratum | | | 9 | 22.5 |
| 1 | Fraxinus pennsylvanica | | | | 5 | No | FACW | Sapling/Shrub Stra | tum | | 12.2 | 30.5 |
| 2 | Salix franilis | | | | 10 | Yes | FAC | Herb Stratum | | | 1.8 | 4.5 |
| 2. | Fravinus nigra | | | | 30 | Yes | EACW | Woody Vine Stratu | m | | 0 | 0 |
| J. | | | | | | | TACI | Dominance Test W | orksheet: | | | |
| 4. | | | | Total Cover | 45 | | | Number of Domine | nt Spaciaa | | | |
| | | | | Total Cover. | <u>45</u> | | | That Are OBL, FAC | W or FAC: | | 4 <i>(</i> A) | |
| | Sapling/Shrub Stratum | (Plot Size: | <u>15 ft</u> |) | | | | Total Number of Dr | minant | | | |
| 1. | Cornus sericea | | | | 10 | No | FACW | Species Across All | Strata: | | 5 (B) | |
| 2. | Rubus idaeus | | | | 10 | No | FAC | Percent of Dominal | nt Species | | | |
| 3. | Spiraea alba | | | | 1 | No | FACW | That Are OBL, FAC | W or FAC: | 80.00 | % <mark>(A/B</mark>) | |
| 4. | Alnus incana | | | | 20 | Yes | FACW | | | | | |
| 5. | Lonicera tatarica | | | | 20 | Yes | FACU | Prevalence Index W | /orksheet: | | | |
| | | | | Total Cover: | <u>61</u> | | | Total % Cov | ver of: | | Multiply by: | |
| | Herb Stratum | (Plot Size: | <u>5 ft</u> |) | | | | OBL Species | 6 | X 1 | | 6 |
| 1. | Tanacetum vulgare | | | | 1 | No | FACU | FACW Species | 68 | X 2 | 1 | 36 |
| 2. | Solidago gigantea | | | | 2 | No | FACW | FAC Species | 20 | Х З | | 60 |
| 3. | Calamagrostis canadensis | | | | 1 | No | OBL | FACU Species | 21 | X 4 | | 84 |
| 4. | Carex stricta | | | | 5 | Yes | OBL | UPI Species | 0 | X 5 | | 0 |
| 5. | | | | | 0 | | | Column Totolou | 115 | (A) | 2 | 86 (B) |
| 6. | | | | | 0 | | | Prov | alence Index = | R/A = | | 10 |
| 7. | | | | | 0 | | | | | D/A | 2. | +3 |
| 8. | | | | | 0 | | | Hydropnytic Vegeta | tion indicators: | | | |
| | | | | Total Cover: | <u>9</u> | | | No Rapid Te | est for Hydroph | ytic Vegeta | tion | |
| | Woody Vine Stratum | (Plot Size: | <u>30 ft</u> |) | | | | Yes Dominar | nce Test is >50% | 6 | | |
| 1. | | | | | 0 | | | Yes Prevelan | ice index ≤ 3.0 | [1] | | e |
| 2. | | | | | 0 | | | | ogical Adaptati ation remarks d | ons [1] (pro r on a sepa | vide suppo. rate sheet) | rting data |
| | | | | Total Cover: | <u>0</u> | | | No Problem | atic Hydrophyt | ic Vegetatio | n [1] (Explai | n) |
| % B | are Ground in Herb Stratum | ı: <u>9</u> | 1 | | | | | [1] Indicators of hydric disturbed or problemat | soil & wetland hy ic. | drology must | be present, ur | nless |
| Veg | etation Remarks: (include p | hoto number | rs here o | r on a separate s | sheet) | | | Hydrophytic vegetati | ion present? | Yes | | |
| - | • | | | - | - | | | | | | | |
| | | | | | | | | | | | | |

| | | | | | | Sampling F | Point: |
|--|---|---|---|--|----------------|---|---|
| rofile Description: (Describe to the de Depth Matrix | epth needed to docui | nent the indicator or o Rec | onfirm th lox Featu | e abscence o res | of indicators) | | |
| (inches) Color (moist) 0 - 17 10YR 2/1 17 - 25 10YR 2/1 - - - - - - | % | Color (moist) | % | Type [1] | Loc [2] | Texture fine sand gravel | Remarks fill with tar fill with tar |
| Type: C=Concentration, D=Depletio | on, RM=Reduced Mat | rix, CS=Covered or Cc | ated San | d Grains [| 2] Location: | PL=Pore Lining, M=Matrix. | |
| vdric Soil Indicators: (applicable to a | ll LRRs, unless other | wise noted) | | | Ind | icators for Problematic Hydric So | oils [3]: |
| Finstosof (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Indicators of hydrophytic vegetation and the second seco | ☐ Our ☐ Dar ☐ Pol ☐ Thii ☐ Loa ☐ Dep ☐ Rec ☐ Dep ☐ Rec ☐ Dep | k Surface (S7) (LRR R, vvalue Below Surface (S n Dark Surface (S9) (LR my Mucky Mineral (F1) my Gleyed Matrix (F2) oleted Matrix (F3) fox Dark Surface (F6) oleted Dark Surface (F7) fox Depressions (F8) nust be present, unless of | MLRA 14 S8) (LRR F RR R, MLR (LRR K, L)) | 9B of LRRS) R, MLRA 149E A 149B))) | | Coast Prairie Redox (A16) (LRR K 5 cm Mucky Peat or Peat (S3) (LR Dark Surface (S7) (LRR K, L) Polyvalue Below Surface (S8) (LR Thin Dark Surface (S9) (LRR K, L) Iron-Manganese Masses (F12) (L Piedmont Floodplain Soils (F19) (Mesic Spodic (TA6) (MLRA 144A, Red Parent Material (F21) Very Shallow Dark Surface (TF12) | K, L, R) RR K, L, R)) RR K, L, R) (MLRA 149B) , 145, 149B) Other (explain in sol |
| in the second se | e: | Dept | h (inches |): | | Hydric soil present? | <u>NA</u> |
| bil Remarks: Soils are fill and contain | e: | Dept | h (inches |): | | Hydric soil present? | <u>NA</u> |
| estrictive Layer (if present): Type bil Remarks: Soils are fill and contam /DROLOGY etland Hydrology Indicators: | e: | Dept | h (inches |): | | Hydric soil present? | <u>NA</u> |
| estrictive Layer (if present): Type bil Remarks: Soils are fill and contam /DROLOGY fetland Hydrology Indicators: fimary Indicators (minimum of one red | e: | apply) | h (inches |): | Secondal | Hydric soil present? | <u>NA</u> quired) |

| Project/Site: USS Spirit Lake | Applicant/Ov | wner: <u>USS</u> | City/County: Duluth/St. Lo | <u>ouis</u> State: <u>MN</u> Sa | ampling Date: <u>08/31/12</u> |
|---|---|----------------------------|-------------------------------------|---|-------------------------------|
| Investigator(s): KSW | Section: | <u>2</u> | Township: <u>48</u> | Range: <u>15</u> Sa | ampling Point: <u>SB2</u> |
| Land Form: | Local Relief | | Slope %: 0-2 | Soil Map Unit Name. | Bowstring and Fluvaquents |
| Subregion (LRR): <u>K</u> | Latitude: | <u>393999</u> | Longitude: <u>2850322</u> | Datum: State Plane | e MN North |
| NWI/Cowardin Classification: PSS | <u>1B</u> Circular 39 | Classification: <u>6</u> | | | |
| Are climatic/hydrologic conditions on t | the site typical for this time of year? | ? <u>Yes</u> (If no, expla | in in remarks) E | Eggers & Reed (primary): | Shrub-Carr |
| Are vegetation No Soil | <u>Yes</u> Hydrology <u>No</u> s | significantly disturbed? | Are "normal Yes E circumstances" | Eggers & Reed (secondary): Eggers & Reed (tertiary): | <u>Alder Thicket</u> |
| Are vegetation <u>No</u> Soil <u>N</u> | <u>No</u> Hydrology <u>No</u> na | aturally problematic? | present? | Eggers & Reed (quaternary): | |

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

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

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VEGETATION

| | | | | <u>Absolute</u> | <u>Dominant</u> | Indicator | <u>50/20 Thresholds:</u> | | | <u>20%</u> | <u>50%</u> |
|----------|-----------------------------|-------------|-------------------------|-----------------|-----------------|---------------|--|--------------------|--------------|---------------|-------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u>) | <u>% Cover</u> | <u>Species?</u> | <u>Status</u> | Tree Stratum | | | 3 | 7.5 |
| 1 | Salix lucida | | | 10 | Voc | | Sapling/Shrub Stratum | | | 18 | 45 |
| 1. | Salix Iuciua | | | 10 | Ves | FAC | Herb Stratum | | | 4 | 10 |
| 2. | | | | 5 | 165 | FAG | Woody Vine Stratum | | | 0 | 0 |
| 3. | | | | 0 | | | Dominanco Tost Work | shoot: | | | |
| 4. | | | | 0 | | | Dominance rest work | Sileet. | | | |
| | | | Total Cover: | <u>15</u> | | | Number of Dominant | Species | | 5 (A) | |
| | Sapling/Shrub Stratum | (Plot Size: | <u>15 ft</u>) | | | | | DI FAC. | | | |
| 1. | Rubus idaeus | | | 20 | Yes | FAC | Total Number of Domi Species Across All St | nant rata: | | 5 (B) | |
| 2. | Alnus incana | | | 70 | Yes | FACW | | | | | |
| 3. | | | | 0 | | | That Are OBL FACW | Species or FAC: | 100.00 | % (A/B) | |
| 4. | | | | 0 | | | | | | | |
| 5. | | | | 0 | | | Prevalence Index Worl | <u>(sheet:</u> | | | |
| | | | Total Cover: | <u>90</u> | | | Total % Cover | of: | | Multiply by | : |
| | Herb Stratum | (Plot Size: | <u>5 ft</u> | | | | OBL Species | 20 | X 1 | | 20 |
| 1. | Carex stricta | | , | 20 | Yes | OBL | FACW Species | 80 | X 2 | 1 | 60 |
| 2. | | | | 0 | | | FAC Species | 25 | Х З | | 75 |
| 3. | | | | 0 | | | FACIL Species | 0 | X 4 | | 0 |
| 4. | | | | 0 | | | | 0 | X 5 | | 0 |
| 5. | | | | 0 | | | OrL species | 125 | (A) | | 255 (B) |
| 6. | | | | 0 | | | Column Totals: | 120 | D/A - | | |
| 7. | | | | 0 | | | Prevale | ice index - | D/A - | 2 | .04 |
| 8. | | | | 0 | | | Hydrophytic Vegetation | n Indicators | | | |
| | | | Total Cover: | 20 | | | No Rapid Test | for Hydroph | ytic Vegeta | tion | |
| | Woody Vine Stratum | (Plot Size: | <u>30 ft</u>) | _ | | | Yes Dominance | Test is >50 | % | | |
| 1 | | | | | | | Yes Prevelance | Index ≤ 3.0 | [1] | | |
| 1. | | | | | | | No Morphologi | cal Adaptat | ions [1] (pr | ovide suppo | orting data |
| Ζ. | | | Total Covers | | | | in vegetatio | n remarks o | or on a sepa | rate sheet) | |
| | | | Total Cover: | <u>u</u> | | | | : Hyaropnyı | ic vegetatio | n [1] (Expla | in) |
| % B | are Ground in Herb Stratun | 1: 8 |) | | | | [1] Indicators of hydric soil disturbed or problematic. | & wetland hy | drology must | be present, u | nless |
| Veg | etation Remarks: (include p | hoto number | s here or on a separate | sheet) | | | Hydrophytic vegetation | present? | Yes | | |
| <u> </u> | | | | | | | 11 | | | | |
| | | | | | | | | | | | |

| | | | Sampling | Point: |
|---|--|--|--|--|
| ofile Description: (Describe to the depth nee | ded to document the indicator or confirm the abscen | ce of indicators) | | |
| Depth Matrix | Redox Features Color (moist) % Type II | 1 00 [2] | Toxturo | Pomarks |
| | | | | |
| <u> </u> | | | sand | fill with tar |
| 10 - 16 10YR 2/1 | | | sand w/ 10% peat | fill with tar |
| 16 - 24 10YR 2/1 | | | peat w/ sand | fill with tar |
| | | | | |
| · | | | | |
| Type: C=Concentration, D=Depletion, RM=R | Reduced Matrix, CS=Covered or Coated Sand Grains | [2] Location: | PL=Pore Lining, M=Matrix. | |
| dric Soil Indicators: (applicable to all LRRs, | unless otherwise noted) | Ind | icators for Problematic Hydric S | oils [3]: |
| Histosol (A1) | Stripped Matrix (S6) | | 2 cm Muck (A10) (LRR K, L, MLI | RA 149B) |
| Histic Epipedon (A2) | Dark Surface (S7) (LRR R, MLRA 149B of LRF | S) | Coast Prairie Redox (A16) (LRR | K, L, R) |
| Black Histic (A3) | Polyvalue Below Surface (S8) (LRR R. MLRA | 49B) | 5 cm Mucky Peat or Peat (S3) (L | RR K. L. R) |
| Hydrogen Sulfide (A4) | Thin Dark Surface (S9) (I RR R MI RA 140R) | , _ | Dark Surface (S7) (I RR K 1) | · · / |
| Stratified Lavors (A5) | ✓ Loamy Mucky Minoral (E1) (LPD K, 1) | | Polyvalue Polow Surface (SP) // | PRKI) |
| Depleted Delew Darth Surfaces (A11) | | | This Dark Surface (OO) (LDD (| NNN, LJ |
| Depleted Below Dark Surface (A11) | Loamy Gleyed Matrix (F2) | | Thin Dark Surface (S9) (LRR K, | L) |
| Thick Dark Surface (A12) | Depleted Matrix (F3) | | Iron-Manganese Masses (F12) (| LRR K, L, R) |
| Sandy Mucky Mineral (S1) | Redox Dark Surface (F6) | | Piedmont Floodplain Soils (F19) | (MLRA 149B) |
| Sandy Gleyed Matrix (S4) | Depleted Dark Surface (F7) | | Mesic Spodic (TA6) (MLRA 1444 | A, 145, 149B) |
|] Sandy Redox (S5) | Redox Depressions (F8) | | Red Parent Material (F21) | Other (explain in soi |
| Indicators of hydrophytic vegetation and wetland | d hydrology must be present, upless disturbed ar problem | -11- | Very Shallow Dark Surface (TF1 | 2) remarks) |
| manators of hydrophytic vegetation and welland | i nyulology musi be present, unless disturbed of problem | alic. | | -) , |
| estrictive Layer (if present): Type: | <i>Depth (inches):</i> | | Hydric soil present? | Yes |
| bil Remarks: Soils are fill and contaminated w | Depth (inches): | | Hydric soil present? | Yes |
| bil Remarks: Soils are fill and contaminated w CDROLOGY fetland Hydrology Indicators: | <i>Depth (inches):</i> | | Hydric soil present? | Yes |
| Initialities of hydrophydre vegetation and wetland estrictive Layer (if present): Type: bil Remarks: Soils are fill and contaminated w /DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required; c | Depth (inches): ith tar. | Seconda | Hydric soil present? Ty Indicators (minimum of two ro | Yes Yes equired) EAC-Neutral Test (C |
| Initial construction of hydrophydre vegetation and wetland estrictive Layer (if present): Type: bil Remarks: Soils are fill and contaminated w /DROLOGY etland Hydrology Indicators: rimary Indicators (minimum of one required; c Surface Water (A1) | | Seconda | Hydric soil present? ry Indicators (minimum of two rece Soil Cracks (B6) | Yes Pequired) FAC-Neutral Test (E |
| astrictive Layer (if present): Type: bil Remarks: Soils are fill and contaminated w (DROLOGY fetland Hydrology Indicators: fimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2) | | Seconda | Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) | Yes equired) ✓ FAC-Neutral Test (D |
| astrictive Layer (if present): Type: | Thydrology must be present, unless distributed of problem Depth (inches): ith tar. heck all that apply) | Seconda Surfac Draina Moss | Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) | Yes equired) ✓ FAC-Neutral Test (L |
| Instactors of hydrophydre vegetation and wetland estrictive Layer (if present): Type: pil Remarks: Soils are fill and contaminated w /DROLOGY etland Hydrology Indicators: rimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1) | | Seconda Seconda Draina Dry-S Dry-S | Hydric soil present? ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) ieason Water Table (C2) | Yes equired) ▼ FAC-Neutral Test (D |
| astrictive Layer (if present): Type: bil Remarks: Soils are fill and contaminated w (DROLOGY fetland Hydrology Indicators: fimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2) | | Seconda Surfau Drainu Moss Dry-S Crayfu | Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) ceason Water Table (C2) ish Burrows (C8) | Yes equired) ✓ FAC-Neutral Test (L |
| astrictive Layer (if present): Type: | Depth (inches): Depth (inches): ith tar. | Seconda Surfaa Draina Moss Dry-S Crayfa Satura | Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) ieason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C9 | Yes equired) FAC-Neutral Test (E |
| astrictive Layer (if present): Type: bil Remarks: Soils are fill and contaminated w /DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4) | Instruction of problem Depth (inches): Depth (inches): ith tar. | Seconda Surfau Drainu Drainu Moss Dry-S Crayfu Saturu Saturu | Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) | Yes equired) ✓ FAC-Neutral Test (D |
| Instactors of hydrophydre vegetation and wetland estrictive Layer (if present): Type: bil Remarks: Soils are fill and contaminated w /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4)] Iron Deposits (B5) | Depth (inches): Depth (inches): ith tar. | Seconda Surfau Drainu Drainu Moss Dry-S Crayfu Saturnu Sturnu Sturnu Georr | Hydric soil present? ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) torphic Position (D2) | Yes equired) ✓ FAC-Neutral Test (L |
| astrictive Layer (if present): Type: | Depth (inches): | Seconda Surfaa Draina Moss Dry-S Crayfa Satura Sturate Georr Shalle | Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) reason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) horphic Position (D2) bw Aquitard (D3) | Yes equired) ✓ FAC-Neutral Test (D |
| Instactors of hydrophydro vogetalion and wetland estrictive Layer (if present): Type: iil Remarks: Soils are fill and contaminated w DROLOGY estland Hydrology Indicators: imary Indicators (minimum of one required; c Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) | Instruction Depth (inches): Depth (inches): | Seconda Surfau Drainu Drainu Moss Dry-S Crayfu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu | Hydric soil present? ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) topphic Position (D2) tow Aquitard (D3) topographic Relief (D4) | Yes equired) ✓ FAC-Neutral Test (L |
| Instactors of hydrophytic vegetation and wetland estrictive Layer (if present): Type: pil Remarks: Soils are fill and contaminated w /DROLOGY etland Hydrology Indicators: imary Indicators (minimum of one required; c Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) eld Observations: | Instruction Depth (inches): Depth (inches): ith tar. | Seconda Seconda Surfau Draini Moss Dry-S Crayfi Satura Sturte Geor Shalle Micro | Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) torphic Position (D2) tow Aquitard (D3) topographic Relief (D4) | <u>Yes</u> equired) ✓ FAC-Neutral Test (D |
| astrictive Layer (if present): Type: pil Remarks: Soils are fill and contaminated w /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4)] Iron Deposits (B5)] Inundation Visible on Aerial Imagery (B7)] Sparsely Vegetated Concave Surface (B8) eld Observations: urface water present? | | Seconda Surfau Drainu Drainu Moss Dry-S Crayfu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu Sturtu | Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) tish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) topphic Position (D2) tow Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data | <u>Yes</u> equired) ✓ FAC-Neutral Test (D)) ogy present? <u>Yes</u> |
| astrictive Layer (if present): Type: pil Remarks: Soils are fill and contaminated w /DROLOGY etland Hydrology Indicators: rimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4)] Iron Deposits (B5)] Inundation Visible on Aerial Imagery (B7)] Sparsely Vegetated Concave Surface (B8) eld Observations: urface water present? | | Seconda Surfa Draina Moss Dry-S Crayfa Stunta Stunta Georr Shalla Microo | Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) torphic Position (D2) tow Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | <u>Yes</u> equired) ▼ FAC-Neutral Test (D) ogy present? <u>Yes</u> |
| astrictive Layer (if present): Type: pil Remarks: Soils are fill and contaminated w /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4)] Iron Deposits (B5) l Inundation Visible on Aerial Imagery (B7)] Sparsely Vegetated Concave Surface (B8) eld Observations: urface water present? ater table present? ater table present? | | Seconda Seconda Draina Draina Moss Dry-S Crayfi Stunte Stunte Stunte Shalle | Hydric soil present? Hydric soil present? ry Indicators (minimum of two recession Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS) teason Water Table (D1) teason Water Table (D1) teason Water Table (D2) teason Water Table (D1) teason Visible on Aerial Imagery (CS) teason Water CB teason Visible on Aerial Imagery (CS) teason Visible on Aerial Imagery (D1) teason Visible on Aerial Imagery (D2) teason Visible on Aerial Imagery (D4) Indicators of wetland hydrol Describe Recorded Data: | <u>Yes</u> equired) ✓ FAC-Neutral Test (C)) ogy present? <u>Yes</u> |
| astrictive Layer (if present): Type: pil Remarks: Soils are fill and contaminated w /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one required; c] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4)] Iron Deposits (B5)] Inundation Visible on Aerial Imagery (B7)] Sparsely Vegetated Concave Surface (B8) eld Observations: urface water present? ater table present? ater table present? ater table present? Sorded Data: | | Seconda Seconda Surfa Drain Dry-S Crayfi Satura Stunte Geor Shalle Microo | Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C8) ed or Stressed Plants (D1) topphic Position (D2) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | <u>Yes</u> equired) ▼ FAC-Neutral Test (E) ogy present? <u>Yes</u> |

| Project/Site: | USS Spir | it Lake | | | Applicant/ | Owner: <u>USS</u> | City/County: Duluth/St. | Louis | State: | MN | Sampling Date: | <u>08/31/12</u> |
|---------------------------|--------------|------------|--------------|-----------------|------------|-----------------------------|---------------------------------------|----------------------|-----------------------|-------------------------|----------------------|-----------------|
| Investigator(s): <u>k</u> | KSW | | | | Section: | <u>35</u> | Township: <u>49</u> | | Range: | <u>15</u> | Sampling Point | : <u>SB3</u> |
| Land Form: | Terrace | | | | Local Rel | ief: <u>Convex</u> | Slope %: 0-2 | | Soil Ma | p Unit Nan | ne: <u>Bowstring</u> | and Fluvaquents |
| Subregion (LRR): | <u>K</u> | | | | Latitude: | <u>396732</u> | Longitude: <u>2849337</u> | | Datum: | State Pla | ine MN North | |
| NWI/Cowardin Cla | assification | : <u>U</u> | oland | | Circular | 39 Classification: Upland | | | | | | |
| Are climatic/hydrol | logic condi | itions o | n the site t | ypical for this | time of ye | ar? <u>Yes</u> (If no, expl | ain in remarks) | Eggers & | & Reed (| primary): | Upland | |
| Are vegetation | <u>No</u> | Soil | Yes | Hydrology | No | significantly disturbed? | Are "normal <u>Yes</u> circumstances" | Eggers & Eggers & | & Reed (& Reed (i | secondary tertiary): |): | |
| Are vegetation | No | Soil | No | Hydrology | No | naturally problematic? | present? | Eggers & | & Reed (| quaternary |): | |

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

| Hydrophytic vegetation present? | Yes | General Remarks (explain any answers if needed): |
|--|-----|--|
| Hydric soil present? | NA | Soils are slag and fill and contaminated with tar. |
| Indicators of wetland hydrology present? | No | |
| Is the sampled area within a wetland? | No | If yes, optional Wetland Site ID:: |

Г

VEGETATION

| | | | | | Absolute | <u>Dominant</u> | Indicator | 50/20 Thresholds: | | | <u>20%</u> | <u>50%</u> |
|-----|-----------------------------|--------------|--------------|-------------------|----------------|-----------------|---------------|---|------------------------------------|--------------------|----------------|------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u> |) | <u>% Cover</u> | Species? | <u>Status</u> | Tree Stratum | | _ | 8 | 20 |
| 1. | Betula papyrifera | | | | 10 | Yes | FACU | Sapling/Shrub Stra | tum | - | 7 | 17.5 |
| 2. | Populus balsamifera | | | | 10 | Yes | FACW | Herb Stratum | | - | 0.6 | 1.5 |
| 3. | Populus tremuloides | | | | 20 | Yes | FAC | Woody Vine Stratu | m | - | 0 | 0 |
| 4. | | | | | 0 | | | Dominance Test W | orksheet: | | | |
| | | | | Total Cover: | 40 | | | Number of Domina | nt Species | | | |
| | Sapling/Shrub Stratum | (Plot Size: | 15 ft |) | _ | | | That Are OBL, FAC | W or FAC: | | 2 (A) | |
| 1 | Picea glauca | | | , | 5 | No | FACU | Total Number of Do | ominant | | 3 (B) | |
| 2 | Populus tremuloides | | | | 20 | Yes | FAC | Species Across All | Strata: | | | |
| 3. | Lonicera tatarica | | | | 5 | No | FACU | Percent of Dominal | nt Species W or FAC: | 66.67 | % (A/B) | |
| 4. | Rhamnus cathartica | | | | 5 | No | FAC | | | | | |
| 5. | | | | | 0 | | | <u>Prevalence Index W</u> | /orksheet: | | | |
| | | | | Total Cover: | <u>35</u> | | | Total % Cov | ver of: | / | Aultiply by: | |
| | Herb Stratum | (Plot Size: | <u>5 ft</u> |) | | | | OBL Species | 0 | X 1 | | 0 |
| 1. | Achillea millefolium | | | , | 1 | No | FACU | FACW Species | 10 | Х 2 | 2 | 20 |
| 2. | Erigeron strigosus | | | | 1 | No | FACU | FAC Species | 45 | Х З | 1: | 35 |
| 3. | Geranium maculatum | | | | 1 | No | FACU | FACU Species | 23 | X 4 | ç | 92 |
| 4. | | | | | 0 | | | UPL Species | 0 | X 5 | | 0 |
| 5. | | | | | 0 | | | Column Totals: | 78 | (A) | 24 | 7 (B) |
| 6. | | | | | 0 | | | Prev | alence Index = | B/A = | 3. | 7 |
| 7. | | | | | 0 | | | Hydrophytic Vegeta | tion Indicators | | | |
| 8. | | | | | 0 | | | No. Domid To | | | · | |
| | | | | Total Cover: | <u>3</u> | | | | st for nyaroph too Tost is >50° | ylic vegetati % | on | |
| | Woody Vine Stratum | (Plot Size: | <u>30 ft</u> |) | | | | No Prevelar | ice Index < 3.0 | [1] | | |
| 1. | | | | | 0 | | | No Morphol | ogical ∆dantati | ons [1] (nro | vide sunnoi | tina data |
| 2. | | | | | 0 | | | in vegeta | ation remarks o | r on a separ | ate sheet) | ung data |
| | | | | Total Cover: | <u>0</u> | | | No Problem | atic Hydrophyt | ic Vegetation | n [1] (Explai | 1) |
| % B | are Ground in Herb Stratun | n: <u>9</u> | 7 | | | | | [1] Indicators of hydric disturbed or problemat | soil & wetland hy ic. | drology must l | oe present, un | less |
| Veg | etation Remarks: (include p | ohoto number | s here o | r on a separate s | sheet) | | | Hydrophytic vegetati | ion present? | Yes | | |
| | | | | | | | | <u> </u> | - | | | |
| | | | | | | | | | | | | |
| UIL | | | Sampling | Point: |
|---|--|---|---|---|
| Profile Description: (Describe to the depth n | eeded to document the indicator or confirm the abscence | e of indicators) | | |
| Depth Matrix | Redox Features | | | |
| (inches) Color (moist) | % Color (moist) % Type [1] | Loc [2] | Texture | Remarks |
| 0 - 3 <u>10YR 3/1</u> | | | sand | |
| | · | · | | |
| · | | · | | |
| · | · · · · · · · · · · · · · · · · · · · _ · · _ · _ · _ · _ · _ · _ · _ · _ · _ · _ · _ · _ · · · · · _ = \cdot _ · _ = \cdot _ = \: = \: = \: = \: = \: = \: = \: = \: = \: = | · | | |
| - | | | | |
| · 1] Type: C=Concentration, D=Depletion, RM | I=Reduced Matrix, CS=Covered or Coated Sand Grains | [2] Location: | PL=Pore Lining, M=Matrix. | |
| lydric Soil Indicators: (applicable to all LRR | s, unless otherwise noted) | Indi | icators for Problematic Hydric S | Soils [3]: |
| Histosol (A1) | Stripped Matrix (S6) | | 2 cm Muck (A10) (LRR K, L, ML | RA 149B) |
|] Histic Epipedon (A2) | Dark Surface (S7) (LRR R, MLRA 149B of LRRS |) | Coast Prairie Redox (A16) (LRR | ^r K, L, R) |
| Black Histic (A3) | Polyvalue Below Surface (S8) (LRR R, MLRA 14 | 9B) | 5 cm Mucky Peat or Peat (S3) (L | .RR K, L, R) |
| Hydrogen Sulfide (A4) | Thin Dark Surface (S9) (LRR R, MLRA 149B) | · _ | Dark Surface (S7) (LRR K, L) | |
| Stratified Layers (A5) | Loamy Mucky Mineral (F1) (LRR K. L) | | Polyvalue Below Surface (S8) (L | .RR K. L) |
| Depleted Below Dark Surface (A11) | Loamy Gleved Matrix (F2) | | Thin Dark Surface (S9) (I RR K | 1) |
| Thick Dark Surface (A12) | Depleted Matrix (F3) | | Iron-Manganese Masses (F12) | / (IRR K I R) |
| Sandy Mucky Mineral (S1) | Beday Dark Surface (E6) | | Piedmont Eloodolain Soils (E10) | (MI RA 149R) |
| Sandy Macky Milleral (01) | | | Masia Spadia (TA6) (MLDA 144 | (MENA 145D) |
| Sandy Bodox (S5) | | | Red Derent Meterial (E21) | ч, 140, 149D) |
| | Redux Depressions (Fo) | | Keu Falelli Malellai (F21) | Other (explain in soil |
| Indicators of hydrophytic vegetation and wetla | and hydrology must be present, unless disturbed or problema | tic. | Very Shallow Dark Surface (TFT | 2) 10110110) |
| Restrictive Layer (if present): Type: | Depth (inches): | | Hydric soil present? | NA |
| Soil Remarks: auger refusal at 3" slag and fil | Il soils | | | |
| Soil Remarks: auger refusal at 3" slag and fil YDROLOGY | Il soils | | | |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: | Il soils | | | |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Netland Hydrology Indicators: Primary Indicators (minimum of one required | ll soils I; check all that apply) | Secondar | ry Indicators (minimum of two r | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required) Surface Water (A1) | II soils I; check all that apply) Water-Stained Leaves (B9) | Secondal | ry Indicators (minimum of two r ce Soil Cracks (B6) | equired) |
| toil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) | II soils I; check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) | <u>Seconda</u> Surfac Draina | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) | Il soils I; check all that apply) U Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) | Secondar Surfac Draina Moss | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) | Il soils I; check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) | Secondar Surfac Draina Moss Dry-S | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) | Il soils I; check all that apply) Quarter-Stained Leaves (B9) Quartic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Quidized Rhizospheres on Living Roots | Secondar Surface Draina Moss Dry-S Crayfi | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) | Il soils I; check all that apply) I; check all that apply I; check all | Secondai Surfac Draina Moss Dry-S Crayfi Satura | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C3 | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) | Il soils I: check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) | Secondau Surfac Draina Moss Dry-S Crayfi Satura | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (Ca ed or Stressed Plants (D1) | equired) FAC-Neutral Test (D5 |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) | Il soils Il soils I; check all that apply) U Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) | Secondai Surfac Draina Moss Dry-S Crayfi Satura Stunte Geom | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C: ad or Stressed Plants (D1) iorphic Position (D2) | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) | Il soils I; check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) | Secondau Surface Draina Moss Dry-S Crayfi Satura Stunte Geom Shallo | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C ed or Stressed Plants (D1) iorphic Position (D2) ow Aquitard (D3) | equired) FAC-Neutral Test (D5 |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) | Il soils If; check all that apply) If; check all that apply) Aquatic Fauna (B13) Aquatic Fauna (B13) Aquatic Fauna (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (explain in remarks) | Secondau Surface Surface Draina Moss Dry-S Crayfi Satura Stunte Geom Shalle Microb | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C: ed or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3) topographic Relief (D4) | equired) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Vetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Field Observations: | Il soils I; check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (explain in remarks) | Secondau Surfac Draina Moss Dry-S Crayfi Satura Stunte Geom Shallo Microt | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C3 ed or Stressed Plants (D1) torphic Position (D2) w Aquitard (D3) topographic Relief (D4) | equired) FAC-Neutral Test (D5, 9) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Field Observations: Surface water present? | Il soils I; check all that apply) I; check all that apply) Aquatic Fauna (B13) Aquatic Fauna (B13) Aquatic Fauna (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (explain in remarks) Surface Water Depth (inches): | Secondai Surface Draina Moss Dry-S Crayfi Satura Stunte Geom Shallo | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C ad or Stressed Plants (D1) topphic Position (D2) w Aquitard (D3) topographic Relief (D4) Indicators of wetland hydro Describe Recorded Data: | equired) FAC-Neutral Test (D5) 9) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Field Observations: Surface water present? Vater table present? | Il soils 1; check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (explain in remarks) | Secondau Surface Draina Moss Dry-S Crayfi Satura Stunte Geom Shalle | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C3 ation Visible on Aerial Imagery (C4 ation Visi | equired) FAC-Neutral Test (D5 9) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Netland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Field Observations: Surface water present? Nater table present? Saturation present? (includes capillary fringer | Il soils I; check all that apply) Is check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (explain in remarks) Water Table Depth (inches): Saturation Depth (inches): | Secondau Surfac Draina Moss Noss Crayfi Satura Stunte Geom Shallo | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C ed or Stressed Plants (D1) torphic Position (D2) torphic Position (D2) topographic Relief (D4) Indicators of wetland hydroi Describe Recorded Data: | equired) FAC-Neutral Test (D5 9) |
| Soil Remarks: auger refusal at 3" slag and fi YDROLOGY Netland Hydrology Indicators: Primary Indicators (minimum of one required Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Field Observations: Surface water present? Vater table present? Vater table present? Caturation present? (includes capillary fringer ecorded Data: Aerial Photo | Il soils I; check all that apply) Water-Stained Leaves (B9) Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Roots (where not tilled) (C3) Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Soils (C6) Thin Muck Surface (C7) Other (explain in remarks) Surface Water Depth (inches): Water Table Depth (inches): Saturation Depth (inches): Monitoring Well | Secondar | ry Indicators (minimum of two r ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C ad or Stressed Plants (D1) topphic Position (D2) topographic Relief (D4) Indicators of wetland hydroi Describe Recorded Data: | equired) FAC-Neutral Test (D5) 9) |

| Project/Site: | USS Spirit I | Lake | | | Applicant | t/Owner: <u>USS</u> | City/County: <u>Du</u> | uluth/St. I | Louis | State: | MN | Sampling Date: | <u>08/31/12</u> |
|---------------------------|----------------|--------|------------|------------------|------------|-------------------------------|-------------------------------|-------------|------------------|------------------------|--------------------------|----------------------|-----------------|
| Investigator(s): <u>k</u> | KSW | | | | Section: | <u>35</u> | Township: <u>49</u> | | | Range: | <u>15</u> | Sampling Point. | <u>SB4</u> |
| Land Form: | | | | | Local Re | elief: | Slope %: <u>0-2</u> | | | Soil Ma | o Unit Nan | ne: <u>Bowstring</u> | and Fluvaquents |
| Subregion (LRR): | <u>K</u> | | | | Latitude: | : <u>396777</u> | Longitude: 2849 | <u>9276</u> | | Datum: | State Pla | ine MN North | |
| NWI/Cowardin Cla | assification: | PE | MB | | Circular | r 39 Classification: <u>2</u> | | | | | | | |
| Are climatic/hydrol | logic conditio | ons or | n the site | typical for this | time of ye | ear? <u>Yes</u> (If no, exp | olain in remarks) | | Eggers | & Reed (| orimary): | Fresh (Wet |) Meadow |
| Are vegetation | <u>No</u> 5 | Soil | Yes | Hydrology | <u>No</u> | significantly disturbed? | Are "normal circumstances" | <u>Yes</u> | Eggers Eggers | & Reed (: & Reed (i | secondary, tertiary): |): | |
| Are vegetation | <u>No</u> S | Soil | <u>No</u> | Hydrology | <u>No</u> | naturally problematic? | present? | | Eggers | & Reed (| quaternary |): | |

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

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

r

VEGETATION

| | | | | Absolute | <u>Dominant</u> | Indicator | 50/20 Thresholds: | | | <u>20%</u> | <u>50%</u> |
|-----|-----------------------------|-------------|------------------------|------------------|-----------------|---------------|--------------------------|---------------------|--------------|----------------|------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u> |) <u>% Cover</u> | Species? | <u>Status</u> | Tree Stratum | | | 0 | 0 |
| | | | | | | | Sapling/Shrub Strat | um | | 2.6 | 6.5 |
| 1. | | | | 0 | | | Herb Stratum | | | 8.8 | 22 |
| 2. | | | | 0 | | | Woody Vine Stratur | n | | 0 | 0 |
| 3. | | | | 0 | | | Denter Territ | | | | |
| 4. | | | | 0 | | | Dominance Test Wo | <u>irksneet:</u> | | | |
| | | | Total Cover: | <u>0</u> | | | Number of Dominar | It Species | | 3 (A) | |
| | Sapling/Shrub Stratum | (Plot Size: | <u>15 ft</u> |) | | | That Are OBL, FACI | N OF FAC: | | <u> </u> | |
| 1. | Cornus sericea | | | 1 | No | FACW | Total Number of Do | minant Strata: | | 3 <i>(B)</i> | |
| 2. | Populus balsamifera | | | 10 | Yes | FACW | Boreent of Dominor | t Spacia | | _ | |
| 3. | Salix bebbiana | | | 1 | No | FACW | That Are OBL, FAC | N or FAC: | 100.00 | % (A/B) | |
| 4. | Betula papyrifera | | | 1 | No | FACU | | | | _ | |
| 5. | | | | 0 | | | Prevalence Index W | <u>orksheet:</u> | | | |
| | | | Total Cover: | <u>13</u> | | | Total % Cov | ər of: | | Multiply by: | |
| | Herb Stratum | (Plot Size: | <u>5 ft</u> |) | | | OBL Species | 37 | X 1 | | 37 |
| 1. | Lythrum salicaria | | | 20 | Yes | OBL | FACW Species | 14 | X 2 | | 28 |
| 2. | Euthamia graminifolia | | | 5 | No | FAC | FAC Species | 5 | Х З | | 15 |
| 3. | Iris versicolor | | | 1 | No | OBL | FACU Species | 1 | X 4 | | 4 |
| 4. | Calamagrostis canadensis | | | 10 | Yes | OBL | | 0 | X 5 | | 0 |
| 5. | Eutrochium maculatum | | | 5 | No | OBL | | 57 | (A) | | 84 (B) |
| 6. | Eupatorium perfoliatum | | | 1 | No | FACW | Column Totals: | Janaa Indax = | D/A - | | 47 |
| 7. | Gentiana clausa | | | 1 | No | FACW | Fleva | nence maex - | D/A - | 1. | 47 |
| 8. | Asclepias incarnata | | | 1 | No | OBL | Hydrophytic Vegetat | ion Indicators: | | | |
| | | | Total Cover: | <u>44</u> | | | No Rapid Te | st for Hydroph | ytic Vegetat | ion | |
| | Woody Vine Stratum | (Plot Size: | <u>30 ft</u> |) | | | Yes Dominan | ce Test is >50% | % | | |
| 1 | | | | 0 | | | Yes Prevelan | ce Index ≤ 3.0 | [1] | | |
| 2. | | | | 0 | | | No Morpholo | ogical Adaptati | ons [1] (pro | vide suppo | rting data |
| | | | Total Cover: | 0 | | | No Problema | atic Hvdrophvt | ic Vegetatio | n [1] (Explai | n) |
| | | | | - | | | It Indicators of hydrics | cil & wotland by | drology must | ho prosont w | |
| % B | are Ground in Herb Stratum | : 5 | 6 | | | | disturbed or problemati | c. | arology must | oe present, ui | 11033 |
| Veg | etation Remarks: (include p | hoto number | s here or on a separat | e sheet) | | | Hydrophytic vegetatio | on present? | Yes | | |
| | | | | | | | | | | | |

| rofile Description: (Describe to the depth need Depth Matrix | led to do | cument the indicator or c Red | onfirm th lox Featu | ne abscence o ires | f indicators) | | |
|--|--|---|---|--|---|--|---|
| (inches) Color (moist) 9 | % | Color (moist) | % | Type [1] | Loc [2] | Texture | Remarks |
| 0 - 25 10YR 3/3 | | | | | | sand | fill with tar |
| <u>25 - 26</u> <u>10YR 2/1</u> | | | | · | | sand | fill with tar |
| | | | | · | | | |
| - | | | | | | | |
| | | | | | | | |
| Type: C=Concentration, D=Depletion, RM=Re | educed N | latrix, CS=Covered or Co | ated San | d Grains [| 2] Location: | PL=Pore Lining, M=Matrix. | |
| dric Soil Indicators: (applicable to all LRRs, u | inless oti | herwise noted) | | | Indi | icators for Problematic Hydric So | oils [3]: |
| Histosol (A1) | <u> </u> | Stripped Matrix (S6) | | | | 2 cm Muck (A10) (LRR K, L, MLR | A 149B) |
| Histic Epipedon (A2) | | Dark Surface (S7) (LRR R, | MLRA 14 | 19B of LRRS) | | Coast Prairie Redox (A16) (LRR I | K, L, R) |
| Black Histic (A3) | F | Polyvalue Below Surface (S | 58) (LRR) | R, MLRA 149E | 3) | 5 cm Mucky Peat or Peat (S3) (LF | RR K, L, R) |
|] Hydrogen Sulfide (A4) | | Thin Dark Surface (S9) (LR | R R, MLF | RA 149B) | | Dark Surface (S7) (LRR K, L) | |
|] Stratified Layers (A5) | | oamy Mucky Mineral (F1) | (LRR K, L | _) | | Polyvalue Below Surface (S8) (LF | RR K, L) |
| Depleted Below Dark Surface (A11) | | .oamy Gleyed Matrix (F2) | | | | Thin Dark Surface (S9) (LRR K, L |) |
| Thick Dark Surface (A12) | | Depleted Matrix (F3) | | | | Iron-Manganese Masses (F12) (L | RR K, L, R) |
| Sandy Mucky Mineral (S1) | F | Redox Dark Surface (F6) | | | | Piedmont Floodplain Soils (F19) (| MLRA 149B) |
| Sandy Gleved Matrix (S4) | | Depleted Dark Surface (F7) |) | | | Mesic Spodic (TA6) (MLRA 144A | , 145, 149B) |
| Sandy Redox (S5) | F | Redox Depressions (F8) | | | | Red Parent Material (F21) | Other (explain in se |
| | | · · · · · · | | | | | |
| I Indicators of hydrophytic vagatation and watland | hudrolog | unust be present unless | dicturbod | or problematic | | Very Shallow Dark Surface (TF12 |) remarks) |
| Indicators of hydrophytic vegetation and wetland in estrictive Layer (if present): Type: | hydrology th tar. | y must be present, unless o Depti | disturbed h (inche : | or problematic s): | | Very Shallow Dark Surface (TF12 Hydric soil present? |) remarks) <u>NA</u> |
| Indicators of hydrophytic vegetation and wetland is estrictive Layer (if present): Type: poil Remarks: Soils are fill and contaminated with the second s | hydrology | y must be present, unless of Dept | disturbed h (inche: | or problematic | | Very Shallow Dark Surface (TF12 Hydric soil present? |) remarks) <u>NA</u> |
| Indicators of hydrophytic vegetation and wetland in estrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with VDROLOGY Vetland Hydrology Indicators: rimany Indicators (minimum of one required; chi | hydrology th tar. | y must be present, unless of Depti | disturbed h (inche: | or problematic | Seconda | Very Shallow Dark Surface (TF12 Hydric soil present? |) remarks) <u>NA</u> |
| Indicators of hydrophytic vegetation and wetland in estrictive Layer (if present): Type: poil Remarks: Soils are fill and contaminated with /DROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one required; ch | hydrology th tar. | y must be present, unless of Depti | disturbed h (inches | or problematic s): | Secondal | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re | y remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (I |
| Indicators of hydrophytic vegetation and wetland i estrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one required; ch Surface Water (A1) | hydrology h tar. heck all ti | y must be present, unless of Depting hat apply) Water-Stained Leaves Aquatic Fauna (B13) | disturbed h (inches (B9) | or problematic | Secondar | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) | ny remarks) <u>NA</u> quired) ↓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland i estrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with /DROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one required; ch] Surface Water (A1)] High Water Table (A2) | hydrology h tar. | y must be present, unless of Depting hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) | disturbed h (inches (B9) | or problematic s): | Secondar Surfac | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) |) remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland in testrictive Layer (if present): Type: | hydrology th tar. | wust be present, unless of Dept. | disturbed h (inches (B9) | or problematic s): | Secondar Surfac Draina Moss | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eacon Water Table (C2) |) remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| B) Indicators of hydrophytic vegetation and wetland in the setrictive Layer (if present): Type: coil Remarks: Soils are fill and contaminated with the set of th | hydrology h tar. | wust be present, unless of Deptimination of the present of the pre | listurbed h (inches (B9) | or problematic | Secondar Surfac Draina Moss Dry-S | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) |) remarks) <u>NA</u> quired) ☑ FAC-Neutral Test (I |
| Indicators of hydrophytic vegetation and wetland in testrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with the second | hydrology th tar. | v must be present, unless of Deptine hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) | disturbed h (inches (B9) (C1) c (C1) c on Living | or problematic s): g Roots | Secondau Surfac Draina Moss Dry-S Crayfi | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) |) remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland is testrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) | hydrology h tar. | wust be present, unless of Deptilies (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I | listurbed h (inches (B9) · (C1) · on Living ron (C4) | or problematic | Secondau Surfac Surfac Draina Moss Dry-S Crayfi Satura | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ad or Stressed Plants (D1) | ny remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland i estrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) | hydrology th tar. | v must be present, unless of Deptine hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I Recent Iron Reduction | listurbed h (inches (B9) (C1) con Living ron (C4) in Tilled S | or problematic s): y Roots Soils (C6) | Secondar Surfac Draina Moss Dry-S Crayfi Satura Stunte | Very Shallow Dark Surface (TF12 Hydric soil present? Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ed or Stressed Plants (D1) | ny remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland in testrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with the second | hydrology th tar. | wust be present, unless of Deptilies (B13) Marl Deposits (B15) Marl D | (B9) (C1) ron Living in Tilled S | or problematic s): g Roots Soils (C6) | Secondau Surface Surface Drainae Moss Dry-S Crayfi Saturae Stuntee Geom | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ed or Stressed Plants (D1) orphic Position (D2) | ny remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland i estrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with /DROLOGY (etland Hydrology Indicators: rimary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) | hydrology th tar. | wust be present, unless of Dept Dept Mat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I Recent Iron Reduction Thin Muck Surface (C7) Other (explain in remar | disturbed h (inches (B9) (C1) con Living ron (C4) in Tilled S) ks) | or problematic s): g Roots Soils (C6) | Secondar Surface Draina Moss Dry-S Crayfi Satura Stunte Stunte Stallo | Very Shallow Dark Surface (TF12 Hydric soil present? Hydric soil present? Ty Indicators (minimum of two re the Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ed or Stressed Plants (D1) orphic Position (D2) tw Aquitard (D3) | ny remarks) <u>NA</u> quired) ▼ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland i estrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one required; ch Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) | hydrology th tar. | <pre>y must be present, unless of Deptination bat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I Recent Iron Reduction Thin Muck Surface (C7) Other (explain in remarking)</pre> | disturbed h (inches (B9) (B9) ron Living ron (C4) in Tilled S) ks) | or problematic s): g Roots Soils (C6) | Secondan Surfac Surfac Surfac Draina Moss Dry-S Crayfi Satura Stunte Stunte Shallc Microt | Very Shallow Dark Surface (TF12 Hydric soil present? Ty Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ation Visible on Aerial Imagery (C9) od or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3) topographic Relief (D4) | ny remarks) <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland in testrictive Layer (if present): Type: oil Remarks: Soils are fill and contaminated with the second s | hydrolog; th tar. neck all th [[[[[[[[[[[[[[[[[[[| y must be present, unless of Deptide that apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I Recent Iron Reduction Thin Muck Surface (C7) Other (explain in remar | disturbed h (inches (B9) (C1) con Living ron (C4) in Tilled S) ks) | or problematic s): y Roots Soils (C6) | Secondau Surfac Surfac Draina Moss Dry-S Crayfi Satura Stunte Geom Shallc Microt | Very Shallow Dark Surface (TF12 Hydric soil present? Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ed or Stressed Plants (D1) orphic Position (D2) w Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrolo | <u>NA</u> quired) ✓ FAC-Neutral Test (L |
| Indicators of hydrophytic vegetation and wetland in testrictive Layer (if present): Type: ioil Remarks: Soils are fill and contaminated with the second sec | hydrolog; ih tar. neck all ti [[[[[[[[[[[[[[[[[[[| <pre>v must be present, unless of Depting hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I Recent Iron Reduction Thin Muck Surface (C7) Other (explain in remar Surface Water Depth (in Water Depth (in Comparison of the comparison of the comparis</pre> | disturbed h (inches) (B9) (B9) ron (C1) ron (C4) in Tilled S) ks) http://www.com/com/com/com/com/com/com/com/com/com/ | or problematic s): g Roots Soils (C6) | Secondau Surfac Draina Moss Dry-S Crayfi Satura Stunte Geom Shallo Microt | Very Shallow Dark Surface (TF12 Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ation Visible | i) remarks) NA quired) ✓ FAC-Neutral Test (I gy present? |
| Indicators of hydrophytic vegetation and wetland in testrictive Layer (if present): Type: foil Remarks: Soils are fill and contaminated with the sector of the | hydrolog; th tar. | y must be present, unless of Deptide that apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odor Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced I Recent Iron Reduction Thin Muck Surface (C7) Other (explain in remar Surface Water Depth (incle Water Table Depth (incle | disturbed h (inches) (B9) (B9) (C1) con Living ron (C4) in Tilled S) ks) hches): hes): | or problematic s): g Roots Soils (C6) | Secondau Surfac Surfac Draina Moss Dry-S Crayfi Satura Stunte Geom Shallc Microl | Very Shallow Dark Surface (TF12 Hydric soil present? Hydric soil present? Ty Indicators (minimum of two re the Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ed or Stressed Plants (D1) orphic Position (D2) tw Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrolog Describe Recorded Data: | <u>nA</u> <u>quired)</u> |

| Project/Site: USS Spirit Lake | Applicant/Owner: <u>USS</u> | City/County: Duluth/St. Louis | State: <u>MN</u> Sampling Date: <u>08/31/12</u> |
|--|--|---|---|
| Investigator(s): <u>KSW</u> | Section: <u>35</u> | Township: <u>49</u> | Range: <u>15</u> Sampling Point: <u>SB5</u> |
| Land Form: | Local Relief: | Slope %: <u>0-2</u> | Soil Map Unit Name: Bowstring and Fluvaquents |
| Subregion (LRR): <u>K</u> | Latitude: <u>397028</u> | Longitude: <u>2849681</u> | Datum: State Plane MN North |
| NWI/Cowardin Classification: PFO1A | Circular 39 Classification: <u>1</u> | | |
| Are climatic/hydrologic conditions on the site typical for thi | s time of year? <u>Yes</u> (If no, expla | in in remarks) Eggers | & Reed (primary): Floodplain Forest |
| Are vegetation <u>No</u> Soil <u>Yes</u> Hydrolog | y <u>No</u> significantly disturbed? | Are "normal Yes Eggers circumstances" Eggers | & Reed (secondary): & Reed (tertiary): |
| Are vegetation No Soil No Hydrology | y <u>No</u> naturally problematic? | present? Eggers | & Reed (quaternary): |

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

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

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VEGETATION

| | | | | | Absolute | <u>Dominant</u> | Indicator | 50/20 Thresholds: | | | <u>20%</u> | <u>50%</u> |
|---------|-----------------------------|--------------|--------------|--------------------|----------------|-----------------|---------------|--|----------------------------------|-----------------------------|----------------------------|------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u> |) | <u>% Cover</u> | Species? | <u>Status</u> | Tree Stratum | | | 16 | 40 |
| 1. | Populus tremuloides | | | | 50 | Yes | FAC | Sapling/Shrub Strat | um | | 6 | 15 |
| 2. | Salix amvodaloides | | | | 20 | Yes | FACW | Herb Stratum | | | 9 | 22.5 |
| 3 | Fraxinus pennsylvanica | | | | 10 | No | FACW | Woody Vine Stratum | | | 0 | 0 |
| 4. | | | | | 0 | | | Dominance Test Wo | orksheet: | | | |
| | | | | Total Cover: | 80 | | | Number of Dominar | t Species | | | |
| | Sanling/Shrub Stratum | (Plot Size: | 15 # | | | | | That Are OBL, FAC | N or FAC: | | 6 (A) | |
| | | (F 101 3126. | <u>15 II</u> | / | 10 | N/ | 54014 | Total Number of Do | minant | | | |
| 1. | | | | | 10 | Yes | FACW | Species Across All | Strata: | | 6 (B) | |
| 2. | Cornus sericea | | | | 20 | Yes | FACW | Percent of Dominar | t Species | 100.00 | | |
| 3. | | | | | 0 | | | That Are OBL, FAC | N or FAC: | 100.00 | % (A/B) | |
| 4. 5 | | | | | 0 | | | Prevalence Index W | orksheet: | | | |
| υ. | | | | Total Cover: | 30 | | | Total % Cov | er of: | | Multiply by: | |
| | Herb Stratum | (Plot Size: | <u>5 ft</u> |) | _ | | | OBL Species | 6 | X 1 | | 6 |
| 1. | Equisetum hyemale | | | / | 20 | Yes | FAC | FACW Species | 77 | X 2 | 15 | 54 |
| 2. | Bidens frondosa | | | | 5 | No | FACW | FAC Species | 72 | Х З | 21 | 16 |
| 3. | Lythrum salicaria | | | | 1 | No | OBL | EACU Species | 0 | X 4 | | 0 |
| 4. | Hypericum majus | | | | 10 | Yes | FACW | | 0 | X 5 | | 0 |
| 5. | Carex stricta | | | | 5 | No | OBL | OPL Species | 155 | (Δ) | 3. | 76 (B) |
| 6. | Anemone canadensis | | | | 2 | No | FACW | Column Totals: | 155 | | | |
| 7. | Rhamnus cathartica | | | | 2 | No | FAC | Preva | lience index = | B/A = | 2.4 | 13 |
| 8. | | | | | 0 | | | Hydrophytic Vegetat | ion Indicators: | | | |
| | | | | Total Cover: | <u>45</u> | | | No Rapid Te | st for Hydroph | ytic Vegetat | ion | |
| | Woody Vine Stratum | (Plot Size: | <u>30 ft</u> |) | | | | Yes Dominan | ce Test is >509 | 6 | | |
| 1. | | | | | 0 | | | Yes Prevelan | ce Index ≤ 3.0 | [1] | | |
| 2. | | | | | 0 | | | No Morpholo | gical Adaptati tion remarks o | ons [1] (pro r on a sepa | vide suppor rate sheet) | ting data |
| | | | | Total Cover: | <u>0</u> | | | No Problema | tic Hydrophyt | ic Vegetatio | n [1] (Explai | n) |
| % B | are Ground in Herb Stratum | : 5 | 5 | | | | | [1] Indicators of hydric s disturbed or problemati | coil & wetland hy | drology must | be present, un | less |
| Veg | etation Remarks: (include p | hoto number | s here c | or on a separate s | sheet) | | | Hydrophytic vegetation | on present? | Yes | | |
| | | | | | | | | и | | | | |

| OIL | | | | | Sampling | Point: |
|---|---------------------------------------|-------------|---------------|---------------|--|------------------------------------|
| Profile Description: (Describe to the depth n | eeded to document the indicator or | confirm th | e abscence | of indicators | ;). | |
| Depth Matrix | Re | dox Featu | res | | _ | _ |
| (inches) Color (moist) | % Color (moist) | % | Type [1] | Loc [2] | Texture | Remarks |
| $\frac{0 - 14}{14 - 07} = \frac{7.5 \text{YR} 2.5/2}{40 \text{YR} 2.4}$ | | | | | sandy clay | - fill |
| | 101R 3/1 | 10 | | | sand | |
| | · · | | | | | |
| - | | | | | | |
| <u> </u> | · · | | | · | | |
|] Type: C=Concentration, D=Depletion, RM | =Reduced Matrix, CS=Covered or C | oated San | d Grains | [2] Location: | PL=Pore Lining, M=Matrix. | |
| vdric Soil Indicators: (applicable to all LRR | s, unless otherwise noted) | | | Inc | dicators for Problematic Hydric | Soils [3]: |
| Histosol (A1) | Stripped Matrix (S6) | | | |] 2 cm Muck (A10) (LRR K, L, ML | RA 149B) |
|] Histic Epipedon (A2) | Dark Surface (S7) (LRR R | , MLRA 14 | 9B of LRRS) | |] Coast Prairie Redox (A16) (LRR | R K, L, R) |
| Black Histic (A3) | Polyvalue Below Surface (| S8) (LRR | R, MLRA 149 |)B) | 5 cm Mucky Peat or Peat (S3) (I | LRR K, L, R) |
| Hydrogen Sulfide (A4) | Thin Dark Surface (S9) (LI | RR R. MLF | RA 149B) | , L | Dark Surface (S7) (LRR K, L) | , |
| Stratified Lavers (A5) | Loamy Mucky Mineral (F1) | (LRR K. L | .) | | Polyvalue Below Surface (S8) (L | LRR K. L) |
| Depleted Below Dark Surface (A11) | I oamy Gleved Matrix (F2) | (, - | 7 | | Thin Dark Surface (S9) (I RR K | 1) |
| Thick Dark Surface (A12) | Depleted Matrix (E3) | | | | Iron-Manganese Masses (F12) | -, (IRRKIR) |
| Sandy Mucky Mineral (S1) | Redox Dark Surface (F6) | | | | Piedmont Floodplain Soils (F19) |) (MI RA 149B) |
| Sandy Gleved Matrix (S4) | Depleted Dark Surface (F7 | 7) | | | Mesic Spodic (TA6) (MI RA 144 | A 145 149B) |
| Sandy Bodox (S5) | Beday Depressions (F8) | / | | | Bed Parent Material (F21) | |
| | | | | | Von Shallow Dark Surface (TE1 | Other (explain in soil remarks) |
| Indicators of hydrophytic vegetation and wetle | and hydrology must be present, unless | disturbed | or problemati | с | | |
| oil Remarks: Soil is fill | | | | | | |
| YDROLOGY | | | | | | |
| etland Hydrology Indicators: | 1 1 1 11. (1 1.) | | | 0 | and the first state of the second state of the | |
| rimary indicators (minimum of one required | i; cneck all that apply) | (00) | | Second | ary indicators (minimum of two r | |
| Surface Water (A1) | | (B9) | | | ace Soll Cracks (B6) | ✓ FAC-Neutral Test (D: |
| High Water Table (A2) | Aquatic Fauna (B13) | | | Draii | nage Patterns (B10) | |
| Saturation (A3) | Marl Deposits (B15) | | | Mos | s Trim Lines (B16) | |
| Water Marks (B1) | <u>Hydrogen Sulfide Odo</u> | r (C1) | | Dry- | Season Water Table (C2) | |
|] Sediment Deposits (B2) | Oxidized Rhizosphere | s on Living | Roots | Cray | fish Burrows (C8) | |
| Drift Deposits (B3) | | | | Satu | ration Visible on Aerial Imagery (C | 9) |
| Algal Mat or Crust (B4) | Presence of Reduced | Iron (C4) | | Stun | ted or Stressed Plants (D1) | |
| Iron Deposits (B5) | Recent Iron Reduction | in Tilled S | Soils (C6) | Geol | morphic Position (D2) | |
| Inundation Visible on Aerial Imagery (B7) | Thin Muck Surface (C | () | | Shal | low Aquitard (D3) | |
|] Sparsely Vegetated Concave Surface (B8) | Other (explain in rema | rks) | | Micro | otopographic Relief (D4) | |
| eld Observations: | | | | | Indicators of wetland hydro | logy present? Yes |
| urface water present? | Surface Water Depth (i | nches): | | | Describe Recorded Data: | |
| ater table present? | Water Table Depth (inc | hes): | | | | |
| aturation present? (includes capillary fringe | e) 🖌 Saturation Depth (inch | es): | 12 | | | |
| corded Data: Aerial Photo | Monitoring Well Stream Gau | ge 🖂 F | Previous Ins | pections | | |
| Ivdrology Remarks: | | | | | | |

| Project/Site: | <u>USS Spi</u> | rit Lake | <u>!</u> | | Applicant | 'Owner: <u>USS</u> | City/County: D | Ouluth/St. Lo | <u>ouis</u> | State: | <u>MN</u> | Sampling Date | e: <u>08/31/12</u> |
|--------------------|----------------|--------------|---------------|----------------|------------|-------------------------------|-------------------------------------|-------------------|----------------------|------------------------|-------------------------|--------------------|-------------------------------------|
| Investigator(s): | <u>KSW</u> | | | | Section: | <u>2</u> | Township: <u>48</u> Slope %: 0-2 | 2 | | Range: Soil Mai | <u>15</u> n Unit Na | Sampling Poil | nt: <u>SP6</u> g and Eluvaquents |
| Subregion (LRR) | : <u>K</u> | | | | Latitude: | <u>392981</u> | Longitude: <u>285</u> | <u>-</u> 51314 | | Datum: | State Pla | ane MN North | g and havaquente |
| NWI/Cowardin C | lassificatior | n: <u>Pl</u> | EMF/PUBG | | Circular | 39 Classification: <u>4/5</u> | | | | | | | |
| Are climatic/hydro | ologic cond | itions o | n the site ty | pical for this | time of ye | ar? <u>Yes</u> (If no, expl | ain in remarks) | E | Eggers & | Reed (| orimary): | <u>Deep Ma</u> | <u>rsh</u> |
| Are vegetation | <u>No</u> | Soil | <u>No</u> | Hydrology | <u>No</u> | significantly disturbed? | Are "normal circumstances" | <u>Yes</u> E | Eggers & Eggers & | & Reed (: & Reed (i | secondary tertiary): |): <u>Shallow,</u> | <u> Open Water</u> |
| Are vegetation | <u>No</u> | Soil | <u>No</u> | Hydrology | <u>No</u> | naturally problematic? | present? | E | Eggers & | Reed (| quaternar | /): | |

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

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

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VEGETATION

| | | | | Absolute | <u>Dominant</u> | Indicator | 50/20 Thresholds: | | | <u>20%</u> | <u>50%</u> |
|---------|-----------------------------|-------------|-------------------------|----------------|-----------------|---------------|---|--|--------------|-------------------|-------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u>) | <u>% Cover</u> | Species? | <u>Status</u> | Tree Stratum | | | 0 | 0 |
| 4 | | | | | | | Sapling/Shrub Stratur | n | | 0 | 0 |
| 1. | | | | 0 | | | Herb Stratum | | | 21.4 | 53.5 |
| Z. | | | | 0 | | | Woody Vine Stratum | | | 0 | 0 |
| 3. | | | | 0 | | | Dominanaa Taat Warl | | | | |
| 4. | | | | 0 | | | Dominance Test won | sneet: | | | |
| | | | Total Cover: | <u>0</u> | | | Number of Dominant | Species | | 1 (A) | |
| | Sapling/Shrub Stratum | (Plot Size: | <u>15 ft</u>) | | | | That Are OBL, FACW | JI FAC. | | | |
| 1. | | | | 0 | | | Total Number of Dom | nant | | 1 <i>(B</i>) | |
| 2. | | | | 0 | | | Species Across All St | ala. | | | |
| 3 | | | | 0 | | | Percent of Dominant | ipecies | 100.0 | 0% (<u>A/B</u>) | |
| 4 | | | | | | | That Are ODL, I ACW | <i>,,,,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | ``` | |
| 5 | | | | | | | Prevalence Index Wor | <u>ksheet:</u> | | | |
| ν. | | | Total Cover: | 0 | | | Total % Cover | of: | | Multiply by | |
| | Herb Stratum | (Plot Size: | 5 ft | - | | | OBL Species | 107 | X 1 | 1 | 07 |
| 1. | Sparganium eurycarpum | • | _ , | 60 | Yes | OBL | FACW Species | 0 | X 2 | | 0 |
| 2 | Nymphaea odorata | | | 5 | No | OBL | EAC Species | 0 | Х З | | 0 |
| 3 | Nunhar lutea | | | 5 | No | OBL | | 0 | X 4 | | 0 |
| 4 | Vallisneria americana | | | 10 | No | OBL | FACU Species | | X F | | 0 |
| 5. | Naias flexilis | | | 1 | No | OBL | UPL Species | 0 | X 5 | | 0 |
| 6. | Potamogeton nodosus | | | 5 | No | OBL | Column Totals: | 107 | (A) | 1 | 07 (B) |
| 7. | Potamogeton richardsonii | | | 1 | No | OBL | Prevale | nce Index = | B/A = | 1. | .00 |
| 8. | Sagittaria latifolia | | | 20 | No | OBL | Hydrophytic Vegetatio | 1 Indicators | : | | |
| | | | Total Cover: | 107 | | | No Rapid Test | for Hydroph | nytic Veget | ation | |
| | Woody Vine Stratum | (Plot Size: | 30 ft) | | | | Yes Dominance | Test is >50 | % | | |
| 1 | | • | | 0 | | | Yes Prevelance | Index ≤ 3.0 | [1] | | |
| 1. 2 | | | | | | | No Morpholog | cal Adaptat | ions [1] (p | rovide suppo | orting data |
| Ζ. | | | Tatal Carrow | 0 | | | in vegetatio | n remarks o | or on a sep | arate sheet) | |
| | | | Total Cover: | <u>u</u> | | | | : Hyaropnyı | lic vegetati | ion [1] (Expla | in) |
| % E | Bare Ground in Herb Stratum | | 0 | | | | [1] Indicators of hydric soi disturbed or problematic. | & wetland hy | drology mus | st be present, u | nless |
| Veg | etation Remarks: (include p | hoto number | s here or on a separate | sheet) | | | Hydrophytic vegetation | present? | Yes | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| U.L. | | | | | | | Sampling | Point: |
|--|---|--|--|---|--|---|---|---|
| rofile Description: (De | scribe to the depth n | eeded to do | cument the indicator or o | confirm th | he abscence | of indicators) | l. | |
| Depth | Matrix | | Red | dox Featu | ires | | | |
| (inches) | Color (moist) | % | Color (moist) | % | Type [1] | Loc [2] | Texture | Remarks |
| 0 - 1 | | | | | | | fine sand with silt | |
| | | | | | <u> </u> | | | |
| | | | | | | | | |
| - | | | | | | | | |
| - | | | | | | | | |
| Type: C=Concentrat | tion, D=Depletion, RM | I=Reduced I | Natrix, CS=Covered or Co | oated Sar | nd Grains | 2] Location: | PL=Pore Lining, M=Matrix. | |
| dric Soil Indicators: | (applicable to all LRR | s, unless ot | herwise noted) | | | Ind | icators for Problematic Hydric S | oils [3]: |
| Histosol (A1) | | | Stripped Matrix (S6) | | | | 2 cm Muck (A10) (LRR K, L, MLF | RA 149B) |
| Histic Epipedon (A2) | | | Dark Surface (S7) (LRR R, | MLRA 14 | 49B of LRRS) | | Coast Prairie Redox (A16) (LRR | K, L, R) |
| Black Histic (A3) | | | Polyvalue Below Surface (| S8) (LRR | R, MLRA 149 | 3) | 5 cm Mucky Peat or Peat (S3) (L | RR K, L, R) |
| Hvdroaen Sulfide (A4 | !) | | Thin Dark Surface (S9) (LF | RR R. MLF | RA 149B) | , | Dark Surface (S7) (LRR K. L) | , |
| Stratified Lavers (A5) | , , | | oamy Mucky Mineral (F1) | (I RR K I |) | | Polyvalue Below Surface (S8) (I | RR K I) |
| Depleted Below Dark | Surface (A11) | | oamy Gleved Matrix (E2) | (| -/ | | Thin Dark Surface (S9) (I RR K | () |
| Thick Dark Surface (A | 12) | | Depleted Matrix (E3) | | | | Iron-Manganese Masses (E12) (| -/ PRKIR) |
| Sandy Mucky Mineral | ((2) | | Redox Dark Surface (E6) | | | | Piedmont Eloodnlain Soils (E19) | (MIRA 149R) |
| Sandy Macky Milleral | (84) | | Doploted Dark Surface (F7 | 7) | | | Masia Spadia (TA6) (MLPA 144) | (MERA 1400) |
| Sandy Gleyeu Maurix | (34) | | Depleted Dark Suilace (17 Redex Depressions (E9) |) | | | Bed Derept Meterial (E21) | (, 140, 149D) |
| | | | | | | | Reu Falelli Malellai (F21) | Other (explain in soil |
| Sandy Redux (SS) | | | | | | | Very Challess Dards Conference (TE4 | ov remarks) |
| Indicators of hydrophy | tic vegetation and wetla | and hydrolog | y must be present, unless | disturbed | or problematio | | Very Shallow Dark Surface (TF1 | 2) remarks) |
| Indicators of hydrophynestrictive Layer (if pres | tic vegetation and wetle sent): Type: t needed due to OBL ve | and hydrolog | y must be present, unless Depu | disturbed t h (inche | or problemations): | | Very Shallow Dark Surface (TF1: Hydric soil present? | 2) remarks) <u>NA</u> |
| Indicators of hydrophylestrictive Layer (if pres il Remarks: soil not DROLOGY etland Hydrology Indi | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: | and hydrolog | y must be present, unless Depi 1.5' inundation | disturbed t h (inche | or problematic | | Very Shallow Dark Surface (TF1. Hydric soil present? | 2) remarks) <u>NA</u> |
| Indicators of hydrophyn estrictive Layer (if pres iil Remarks: soil not DROLOGY etland Hydrology Indi- imary Indicators (mini | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required | and hydrolog egetation and I; check all t | y must be present, unless Depu | disturbed th (inche | or problematic | Seconda | Very Shallow Dark Surface (TF1 Hydric soil present? ry Indicators (minimum of two re | 2) remarks) <u>NA</u> Poquired) |
| Indicators of hydrophyn strictive Layer (if pres il Remarks: soil not DROLOGY etland Hydrology Indi imary Indicators (mini Surface Water (A1) | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required | and hydrolog egetation and 1; check all t | y must be present, unless Depi 1.5' inundation hat apply) Water-Stained Leaves | disturbed th (inche (B9) | or problematic | Seconda | Very Shallow Dark Surface (TF1. Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) | 2) remarks) <u>NA</u> Pequired) ▼ FAC-Neutral Test (D |
| Indicators of hydrophyn Indicators of hydrophyn Istrictive Layer (if pres il Remarks: soil not DROLOGY Intal Hydrology Indi imary Indicators (mini Surface Water (A1) High Water Table (A2) | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required | and hydrolog egetation and I; check all t | y must be present, unless Depu 1.5' inundation hat apply) Water-Stained Leaves Aquatic Fauna (B13) | disturbed th (inche (B9) | or problematic | Seconda | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (D |
| Sandy Redox (SS) Indicators of hydrophyn estrictive Layer (if pres bil Remarks: soil not DROLOGY etland Hydrology Indi imary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required | and hydrolog egetation and I; check all t | y must be present, unless Depu 1.5' inundation hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) | disturbed th (inche (B9) | or problematic | Seconda Surfa Drain Moss | Very Shallow Dark Surface (TF1. Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) | 2) remarks) NA equired) FAC-Neutral Test (D |
| Sandy Redox (SS) Indicators of hydrophyn estrictive Layer (if pres il Remarks: soil not /DROLOGY etland Hydrology Indi imary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (R1) | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required | and hydrolog egetation and I; check all t | y must be present, unless Depu 1.5' inundation hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo | disturbed (h (inche (B9) r (C1) | or problematic | Seconda Seconda Surfa Drain Moss Dry-S | Very Shallow Dark Surface (TF1. Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) eason Water Table (C2) | 2) remarks) NA equired) ▼ FAC-Neutral Test (D |
| Sandy Redox (SS) Indicators of hydrophyn estrictive Layer (if pres fil Remarks: soil not DROLOGY etland Hydrology Indi imary Indicators (mini Surface Water (A1) Surface Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required ?) | and hydrolog egetation and I; check all t [[[| y must be present, unless Depu 1.5' inundation Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere: | disturbed th (inche (B9) r (C1) s on Living | or problematic s): | Seconda Surfa Surfa Drain Moss Dry-S Crayfi | Very Shallow Dark Surface (TF1. Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) ieason Water Table (C2) ish Burrows (C8) | 2) remarks) <u>NA</u> equired) ▼ FAC-Neutral Test (D |
| Indicators of hydrophyn Indicators of hydrophyn Istrictive Layer (if pres il Remarks: soil not IDROLOGY Indicators (mini Imary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required ?) | and hydrolog egetation and I; check all t | y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere: (where not tilled) (C3) | disturbed th (inches (B9) r (C1) s on Living | or problematic s): | Seconda Surfa Surfa Drain Moss Dry-S Crayft Saturt | Very Shallow Dark Surface (TF1. Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) ieason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C9 | 2) remarks) NA Pequired) ✓ FAC-Neutral Test (D |
| Indicators of hydrophyn Indicators of hydrophyn Istrictive Layer (if pres il Remarks: soil not IDROLOGY Itand Hydrology Indi imary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crurt (B) | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required ?) 12) | and hydrolog egetation and I; check all t [[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere: (where not tilled) (C3) Presence of Reduced | disturbed th (inches (B9) r (C1) s on Living Iron (C4) | or problematic s): | Seconda Surfa Surfa Drain Moss Dry-S Crayfi Saturt Stunt | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) ieason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) | 2) remarks) NA equired) ▼ FAC-Neutral Test (D |
| Indicators of hydrophyd Indicators of hydrophyd Indicators of hydrophyd Indicators of hydrophyd Indicators (Indicators) Indicators (Indicators) Indicators) Indicators (Indicators) Indicators) Indicators Indicators) Indicators Indicators) Indicators Indicators) Indicators Indicators) Indicators Indicators) Indicators Indicators) Indicators Indicators) Indicators | tic vegetation and wetk sent): Type: t needed due to OBL ve icators: imum of one required ?) 32) 1) | and hydrolog egetation and I; check all t [[[[[[[[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere: (where not tilled) (C3) Presence of Reduced Recent Iron Reduction | disturbed th (inches th (inches (B9) (B9) r (C1) s on Living Iron (C4) in Tilled S | or problematic s): g Roots Soils (C6) | Seconda Surfa Surfa Drain Moss Dry-S Crayfi Saturi Stunte Geon | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (C9 ed or Stressed Plants (D1) torphic Position (D2) | equired) ▼ FAC-Neutral Test (D |
| Indicators of hydrophyn Indicators of hydrophyn Istrictive Layer (if pres il Remarks: soil not IDROLOGY Itand Hydrology Indi imary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) | tic vegetation and wetle sent): Type: | and hydrolog egetation and I; check all t [[[[[[[[[[[[[[[[[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (C5) | disturbed th (inche th (inche (B9) (B9) (B9) r (C1) s on Living Iron (C4) in Tilled S 7) | or problematic s): g Roots Soils (C6) | Seconda Surfa Surfa Drain Moss Dry-S Crayfa Saturt Stunte Geon Shalk | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) torphic Position (D2) ow Aquitard (D3) | 2) remarks) NA equired) ✓ FAC-Neutral Test (D |
| Indicators of hydrophyn strictive Layer (if pres il Remarks: soil not DROLOGY tland Hydrology Indi mary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B Drift Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Inundation Visible on Sparsely Vegetated C | tic vegetation and wetk sent): Type: t needed due to OBL ve cators: imum of one required ?) 32) 4) Aerial Imagery (B7) Concave Surface (B8) | and hydrolog egetation and I; check all t [[[[[[[[[[[[[[[[[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere: (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (C3) Other (explain in rema | disturbed th (inches th (inches (B9) (B9) r (C1) s on Living lron (C4) in Tilled S 7) rks) | or problematic s): y Roots Soils (C6) | Seconda Surfa Surfa Surfa Drain Moss Dry-S Crayfi Saturt Stunte Geon Shalle Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) teophic Position (D2) tow Aquitard (D3) topographic Relief (D4) | 2) remarks) NA equired) ✓ FAC-Neutral Test (D |
| Indicators of hydrophyd strictive Layer (if pres il Remarks: soil not DROLOGY stland Hydrology Indi- imary Indicators (mini Surface Water (A1) High Water Table (A2 Saturation (A3) Water Marks (B1) Sediment Deposits (B Drift Deposits (B3) Algal Mat or Crust (B4 Iron Deposits (B5) Inundation Visible on Sparsely Vegetated C | tic vegetation and wetk sent): Type: t needed due to OBL ve icators: imum of one required ?) 32) 4) Aerial Imagery (B7) Concave Surface (B8) | and hydrolog egetation and I; check all t [[[[[[[[[[[[[[[[[[[| y must be present, unless Deput 1.5' inundation hat apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (C1) Other (explain in rema | disturbed th (inches th (inches (B9) (B9) (B9) rr (C1) s on Living Iron (C4) in Tilled S 7) rks) | or problematic s): g Roots Soils (C6) | Seconda Surfa Surfa Drain Moss Dry-S Crayfi Saturi Stunte Geon Shalke Micro | Very Shallow Dark Surface (TF1. Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) torphic Position (D2) ow Aquitard (D3) topographic Relief (D4) | equired) INA Pequired) INA FAC-Neutral Test (D)) pogy present? Yes |
| Sandy Redox (S5) Indicators of hydrophynestrictive Layer (if presonance) Saturation (if presonance) DROLOGY etland Hydrology Indicators (mining) etland Hydrology Indicators (mining) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on (Sparsely Vegetated Constructions: urface water present? | tic vegetation and wells sent): Type: | and hydrolog egetation and i; check all t [[[[[[[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (C1 Other (explain in rema Surface Water Depth (i | disturbed th (inches th (inches (B9) (B9) (B9) r (C1) s on Living in Tilled S 7) rks) nches): | or problematic s): g Roots Soils (C6) | Seconda Surfa Surfa Surfa Drain Moss Dry-S Crayfi Saturi Stunti Geon Shalle Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) teason W | 2) remarks) NA equired) ▼ FAC-Neutral Test (D)) ogy present? Yes |
| Sandy Redux (S5) Indicators of hydrophynestrictive Layer (if presold in the second s | tic vegetation and wetle sent): Type: t needed due to OBL ve cators: imum of one required ?) }2) 4) Aerial Imagery (B7) concave Surface (B8) | and hydrolog egetation and i; check all t [[[[[[[[[[[[[[[[[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizospheres (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (Ci Other (explain in rema Surface Water Depth (inc Water Table Depth (inc | disturbed th (inche (h) (inche (B9) (B9) (B9) r (C1) s on Living in Chies) r (C4) in Tilled S 7) rks) nches): hes): | or problematic s): g Roots Soils (C6) 18 | Seconda Surfa Surfa Drain Moss Dry-S Crayfi Saturt Stunte Geor Shalle Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) topphic Position (D2) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | 2) remarks) NA equired) Image: Comparison of the second |
| Sandy Redux (S5) Indicators of hydrophynestrictive Layer (if presonance) setrictive Layer (if presonance) soil Remarks: soil not /DROLOGY 'etland Hydrology Indicitive' 'imary Indicators (minulation Visible (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Sparsely Vegetated C eld Observations: urface water present? ater table present? turation present? | tic vegetation and wetle sent): Type: | and hydrolog egetation and i; check all t [[[[[[[[[[[[[[[[[[[| y must be present, unless Deput 1.5' inundation water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere: (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (C1 Other (explain in rema Surface Water Depth (inc Saturation Depth (inch | disturbed th (inches th (inches (B9) (B9) (B9) r (C1) s on Living in Tilled S 7) rks) nches): hes): es): | or problematic s): g Roots Soils (C6) | Seconda Surfa Surfa Drain Moss Dry-S Crayfi Saturi Stunt Geon Shalle Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) teason Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) topphic Position (D2) tow Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | 2) remarks) NA equired) Image: Sequired of the sequence o |

| Project/Site: | <u>USS Spi</u> | rit Lake | <u>!</u> | | Applicant | /Owner: <u>USS</u> | City/County: [| Duluth/St. L | ouis | State: | <u>MN</u> | Sampling Date: | 08/31/12 |
|--------------------------------|----------------|--------------|---------------|----------------|----------------------|-------------------------------|--|------------------------|----------------------|--------------------|-------------------------|--|---------------------------------|
| Investigator(s): Land Form: | <u>KSW</u> | | | | Section: Local Re | <u>2</u> lief: | Township: <u>48</u> Slope %: <u>0-1</u> | <u>8</u> - <u>2</u> | | Range: Soil Maj | <u>15</u> o Unit Nar | Sampling Point ne: <u>Bowstring</u> | : <u>SP7</u> and Fluvaquents |
| Subregion (LRR) | : <u>K</u> | | | | Latitude: | <u>393037</u> | Longitude: <u>28</u> | <u>851276</u> | | Datum: | State Pla | ane MN North | |
| NWI/Cowardin C | lassificatio | n: <u>Pl</u> | EMC/PEMF | <u>-</u> | Circular | 39 Classification: <u>3/4</u> | | | | | | | |
| Are climatic/hydro | ologic cond | litions o | n the site ty | pical for this | time of ye | ear? <u>Yes</u> (If no, expl | ain in remarks) | | Eggers & | Reed (| orimary): | Shallow Ma | arsh |
| Are vegetation | <u>No</u> | Soil | <u>No</u> | Hydrology | <u>No</u> | significantly disturbed? | Are "normal circumstances" | Yes. | Eggers & Eggers & | Reed (Reed (i | secondary tertiary): |): Deep Mars | <u>h</u> |
| Are vegetation | No | Soil | No | Hydrology | No | naturally problematic? | present? | | Eggers & | Reed (| quaternary | <i>ı):</i> | |

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

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

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VEGETATION

| | | | | <u>Absolute</u> | <u>Dominant</u> | Indicator | 50/20 Thresholds: | 2 | <u>:0%</u> | <u>50%</u> |
|-----------------------|----------------------------|--------------|-------------------------|-----------------|-----------------|---------------|--|-------------------|-------------|------------|
| | Tree Stratum | (Plot Size: | <u>30 ft</u>) | <u>% Cover</u> | Species? | <u>Status</u> | Tree Stratum | | 0 | 0 |
| 4 | | | | | | | Sapling/Shrub Stratum | | 0 | 0 |
| 1. | | | | | | | Herb Stratum | 1 | 8.2 | 45.5 |
| 2. | | | | 0 | | | Woody Vine Stratum | | 0 | 0 |
| 3. | | | | 0 | | | | | | |
| 4. | | | | 0 | | | | | | |
| | | | Total Cover: | <u>0</u> | | | Number of Dominant Species | 2 | (A) | |
| | Sapling/Shrub Stratum | (Plot Size: | <u>15 ft</u>) | | | | That Are OBL, FACW of FAC: | | (**) | |
| 1. | | | | 0 | | | Total Number of Dominant | 2 | (B) | |
| 2 | | | | 0 | | | Species Across All Strata: | | (-) | |
| 3 | | | | 0 | | | Percent of Dominant Species | 100.00% | (A/B) | |
| ٥. ۸ | | | | | | | That Are OBL, FACW OF FAC. | | | |
| - - . 5 | | | | 0 | | | Prevalence Index Worksheet: | | | |
| • | | | Total Cover: | 0 | | | Total % Cover of: | Mu | Itiply by: | |
| | Herb Stratum | (Plot Size: | 5 ft | _ | | | OBL Species 91 | X 1 | Ę | 91 |
| 1 | Typha angustifolia | • | _) | 60 | Yes | OBL | FACW Species 0 | X 2 | | 0 |
| 2 | Sagittaria latifolia | | | 30 | Yes | OBL | | х з | | 0 |
| 2. | | | | 1 | No | OBL | PAC Species | × 4 | | 0 |
| J. | Lythum salicana | | | | | ODL | FACU Species 0 | ^ - | | 0 |
| 4. 5 | | | | 0 | | | UPL Species 0 | X 5 | | 0 |
| о. С | | | | 0 | | | Column Totals: 91 | (A) | ę | 91 (B) |
| 0. 7 | | | | 0 | | | Prevalence Index = | = B/A = | 1.0 | 00 |
| 7. 8 | | | | 0 | | | Hydrophytic Vegetation Indicators | <u>87</u> | | |
| 0. | | | Total Cover: | 01 | | | No Rapid Test for Hydrop | hytic Vegetatior | 1 | |
| | Woody Vino Stratum | (Plot Size: | 30# | <u>51</u> | | | Yes Dominance Test is >50 |)% | | |
| | woody vine Stratum | (1 101 0120. | <u>30 n</u>) | | | | Yes Prevelance Index ≤ 3.0 |) [1] | | |
| 1. | | | | 0 | | | No Morphological Adapta | tions [1] (provid | de suppor | ting data |
| 2. | | | | 0 | | | in vegetation remarks | or on a separate | e sheet) | |
| | | | Total Cover: | <u>0</u> | | | No Problematic Hydrophy | tic Vegetation [| 1] (Explaiı | 1) |
| % B | are Ground in Herb Stratun | n: | 0 | | | | [1] Indicators of hydric soil & wetland h disturbed or problematic. | ydrology must be | oresent, un | less |
| Veg | etation Remarks: (include | ohoto number | s here or on a separate | sheet) | | | Hydrophytic vegetation present? | Yes | | |
| - | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | | Sampling | Point: |
|--|---|--|--|---|--|--|--|
| Profile Description: (Describe to the d | epth needed to d | locument the indicator or | confirm th | he abscence | of indicators, |). | |
| Depth Matrix | K | Ree | dox Featu | ires | | | |
| (inches) Color (moist) | % | Color (moist) | % | Type [1] | Loc [2] | Texture | Remarks |
| 0 - 1 | | | | | | fine sand with silt | |
| | | | | | | | |
| | | | | | | | |
| - | | | | | | | |
| - | | | | | | | _ |
|] Type: C=Concentration, D=Depletion | on, RM=Reduced | Matrix, CS=Covered or Co | oated Sar | nd Grains | [2] Location: | PL=Pore Lining, M=Matrix. | |
| ydric Soil Indicators: (applicable to a | all LRRs, unless o | otherwise noted) | | | Ind | icators for Problematic Hydric S | oils [3]: |
|] Histosol (A1) | | Stripped Matrix (S6) | | | |] 2 cm Muck (A10) (LRR K, L, MLF | RA 149B) |
|] Histic Epipedon (A2) | | Dark Surface (S7) (LRR R | MLRA 14 | 49B of LRRS) | |] Coast Prairie Redox (A16) (LRR | K, L, R) |
| Black Histic (A3) | | Polyvalue Below Surface (| S8) (LRR | R, MLRA 149 | B) | 5 cm Mucky Peat or Peat (S3) (L | RR K, L, R) |
|] Hydrogen Sulfide (A4) | | Thin Dark Surface (S9) (LH | RR R, MLF | RA 149B) | |] Dark Surface (S7) (LRR K, L) | |
| Stratified Layers (A5) | | Loamy Mucky Mineral (F1) | (LRR K, I | L) | | Polyvalue Below Surface (S8) (L | RR K, L) |
| Depleted Below Dark Surface (A11) | | Loamy Gleved Matrix (F2) | . , | * | | Thin Dark Surface (S9) (LRR K. | L) |
| Thick Dark Surface (A12) | | Depleted Matrix (F3) | | | | Iron-Manganese Masses (F12) (I | , LRR K. L. R) |
| Sandy Mucky Mineral (S1) | | Redox Dark Surface (F6) | | | | Piedmont Floodplain Soils (F19) | (MLRA 149B) |
| Sandy Gleved Matrix (S4) | | Depleted Dark Surface (F7 | 7) | | | Mesic Spodic (TA6) (MLRA 1444 | A. 145. 149B) |
| Sandy Redox (S5) | | Redox Depressions (F8) | / | | | Red Parent Material (F21) | ., , |
| | | | | | |] | Uther (explain in soil |
| N ladiatan af buda ab dia waatatian a | , d Ala and la due la | | alla to sale a al | | | Very Shallow Dark Surface (TF1 | 2) remarks) |
|] Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to | nd wetland hydrolo e: OBL vegetation ar | ngy must be present, unless Depu | disturbed t h (inche | or problemati s): | c. | Very Shallow Dark Surface (TF1) | ₂₎ remarks) <u>NA</u> |
| B] Indicators of hydrophytic vegetation an Restrictive Layer (if present): Typ Soil Remarks: soil not needed due to YDROLOGY | nd wetland hydrolc e: OBL vegetation ar | ngy must be present, unless Depu | disturbed t h (inche | or problemati | c. | Very Shallow Dark Surface (TF1) | 2) remarks) <u>NA</u> |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: | nd wetland hydrolc e: OBL vegetation ar | ngy must be present, unless Depu | disturbed t h (inche | or problemati | c. | Very Shallow Dark Surface (TF1) | ₂₎ remarks) <u>NA</u> |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one re | nd wetland hydrolc e: OBL vegetation ar guired; check all | ngy must be present, unless Depu- nd 1' inundation | disturbed t h (inche | or problemati | c. |] Very Shallow Dark Surface (TF1 Hydric soil present? ry Indicators (minimum of two re | 2) remarks) <u>NA</u> equired) |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to /DROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) | nd wetland hydrolc e: OBL vegetation ar vquired; check all | ngy must be present, unless Depu | disturbed th (inches (B9) | or problemati | c | Very Shallow Dark Surface (TF1) Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (D: |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to /DROLOGY /etland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) Hich Water Table (A2) | nd wetland hydrolc e: OBL vegetation an uquired; check all | agy must be present, unless Deput I that apply) Water-Stained Leaves Aquatic Fauna (B13) | disturbed th (inches (B9) | or problemati | c | Very Shallow Dark Surface (TF1 Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) | 2) remarks) NA equired) FAC-Neutral Test (DS |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) | nd wetland hydrolc e: OBL vegetation ar oguired; check all | ngy must be present, unless Deparement Depar | disturbed th (inches (B9) | or problemati | c. Seconda | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (DS |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) | nd wetland hydrolc e: OBL vegetation an uquired; check all | agy must be present, unless Deput I that apply) Water-Stained Leaves Aquatic Fauna (B13) Ary Deposits (B15) Hydrogen Sulfide Odo | disturbed (h (inches (B9) r (C1) | or problemati | c. Seconda Seconda Surfa Drain Moss Dry-S | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) | 2) remarks) <u>NA</u> equired) ☑ FAC-Neutral Test (D: |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) | nd wetland hydrolc e: OBL vegetation ar | ngy must be present, unless Deput That apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. | disturbed th (inche: (B9) r (C1) s on Living | or problemati s): | c. Seconda Seconda Surfa Drain Moss Dry-S Crayf | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (De |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) | nd wetland hydrolc e: OBL vegetation an uquired; check all | agy must be present, unless Deput I that apply) U Water-Stained Leaves Aquatic Fauna (B13) Aquatic Fauna (B13) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) | disturbed (h (inches (B9) r (C1) s on Living | or problemati s): | C. Seconda | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two rd ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (DS)) |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Alnal Mat or Crust (B4) | nd wetland hydrolc e: OBL vegetation ar | agy must be present, unless Deput I that apply) U Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) Presence of Reduced | disturbed th (inche: (B9) r (C1) s on Living Iron (C4) | or problemati s): g Roots | c. Seconda Seconda Surfa Drain Moss Crayf Satur Stunt | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (D3)) |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (P5) | nd wetland hydrolc e: OBL vegetation ar | gy must be present, unless Department I that apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) Presence of Reduced Recent Iron Reduction | disturbed (h (inches (h) (B9) (B9) r (C1) s on Living Iron (C4) in Tilled S | or problemati s): g Roots Soils (C6) | c. Seconda Seconda Surfa Drain Moss Dry-S Crayf Satur Stunt Geon | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) norphic Position (D2) | 2) remarks) NA equired) ✓ FAC-Neutral Test (DS)) |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one reference) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) | nd wetland hydrolc e: OBL vegetation ar equired; check all | that apply) that apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Thin Muck Surface (C. | disturbed th (inches th (inches (B9) (B9) r (C1) s on Living Iron (C4) in Tilled S 7) | or problemati s): g Roots Soils (C6) | c. Seconda | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) norphic Position (D2) bw Aquitard (D3) | 2) remarks) <u>NA</u> equired) ✓ FAC-Neutral Test (D3)) |
| Indicators of hydrophytic vegetation ar estrictive Layer (if present): Typ bil Remarks: soil not needed due to /DROLOGY fetland Hydrology Indicators: rimary Indicators (minimum of one re] Surface Water (A1)] High Water Table (A2)] Saturation (A3)] Water Marks (B1)] Sediment Deposits (B2)] Drift Deposits (B3)] Algal Mat or Crust (B4)] Iron Deposits (B5) Inundation Visible on Aerial Imagery (| <pre>// wetland hydrolc // e: OBL vegetation a // optimized; check all // optimized; check all // // optimized; check all // // optimized; check all // optimized; chec</pre> | and 1' inundation and 1' inundation by that apply) by Water-Stained Leaves cy Aquatic Fauna (B13) cy Marl Deposits (B15) cy Hydrogen Sulfide Odo cy Oxidized Rhizosphere. (where not tilled) (C3) cy Presence of Reduced cy Recent Iron Reduction cy Other (explain in remain) | disturbed th (inches (B9) (B9) Iron (C4) in Tilled \$ 7) rks) | or problemati s): g Roots Soils (C6) | c. Seconda Seconda Surfa Drain Moss Crayf Satur Stunt Geon Shalle Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two ro ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) norphic Position (D2) pw Aquitard (D3) topographic Relief (D4) | 2) remarks) <u>NA</u> equired) |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Yetland Hydrology Indicators: rimary Indicators (minimum of one re Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (Sparsely Vegetated Concave Surface ield Observations: | <pre>// wetland hydrolc // e: OBL vegetation a // oquired; check all // oquired; check all // opuired; check all // opuired;</pre> | gy must be present, unless Department I that apply) Water-Stained Leavess Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Chin Muck Surface (C3) Other (explain in rema | disturbed (h (inches (b) (B9) (B9) (B9) (C1) s on Living in Tilled S (7) rks) | or problemati s): g Roots Soils (C6) | c. Seconda Seconda Surfa Drain Moss Dry-S Crayf Satur Stunt Stunt Geon Shalk Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) norphic Position (D2) bw Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol | 2) remarks) NA equired) ✓ FAC-Neutral Test (D:)) |
| 3] Indicators of hydrophytic vegetation ar Restrictive Layer (if present): Typ Soil Remarks: soil not needed due to YDROLOGY Yetland Hydrology Indicators: Primary Indicators (minimum of one reference) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (Sparsely Vegetated Concave Surface) Sparsely Vegetated Concave Surface) Surface water present? | <pre>// wetland hydrolc // e: OBL vegetation a // opuired; check all // fB7) // (B8) // (B8) // // // // // // // // // // // // //</pre> | and 1' inundation and 1' inundation by that apply) by Water-Stained Leaves by Water-Stained Leaves by Aquatic Fauna (B13) by Marl Deposits (B15) by Hydrogen Sulfide Odo by Oxidized Rhizosphere. (where not tilled) (C3) by Presence of Reduced context in Reduction by Thin Muck Surface (C3) by Context (C4) by Context | disturbed th (inche: (B9) (B9) r (C1) s on Living Iron (C4) in Tilled S 7) rks) nches): | or problemati s): g Roots Soils (C6) | c. Seconda Seconda Surfa Drain Moss Crayf Satur Stunt Geon Shalk Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two re ce Soil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS ed or Stressed Plants (D1) norphic Position (D2) bw Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | 2) remarks) <u>NA</u> equired) |
| B) Indicators of hydrophytic vegetation ar Restrictive Layer (if present): Typ Restrictive Layer (if present): Typ Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: Water Advisor (Minimum of one reference) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (C) Sparsely Vegetated Concave Surface Sinface water present? Water table present? Stater table present? | ad wetland hydrolc e: OBL vegetation ar aquired; check all aquired; check all (B7) (B8) | that apply) that apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere. (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Chin Muck Surface (C) Other (explain in rema Surface Water Depth (income time) | disturbed th (inche: (B9) r (C1) s on Living Iron (C4) in Tilled S 7) rks) nches): hes): | or problemati s): g Roots Soils (C6) | c. Seconda Seconda Surfa Surfa Drain Moss Dry-S Crayf Satur Stunt Geon Shalld Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two recession of the construction of two recession (Cracks (B6)) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS) ed or Stressed Plants (D1) norphic Position (D2) pw Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | 2) remarks) NA equired) FAC-Neutral Test (DS)) ogy present? Yes |
| Indicators of hydrophytic vegetation ar vestrictive Layer (if present): Typ oil Remarks: soil not needed due to YDROLOGY Vetland Hydrology Indicators: rimary Indicators (minimum of one reference) Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (Sparsely Vegetated Concave Surface) ield Observations: urface water present? // Ater table present? // Ater table present? | rd wetland hydrolc e: OBL vegetation a equired; check all (B7) ≥ (B8) ✓ ✓ ✓ ✓ ✓ ✓ | that apply) that apply) Water-Stained Leaves Aquatic Fauna (B13) Marl Deposits (B15) Hydrogen Sulfide Odo Oxidized Rhizosphere (where not tilled) (C3) Presence of Reduced Recent Iron Reduction Other (explain in rema Surface Water Depth (inc Saturation Depth (inch | disturbed th (inche: (B9) (B9) r (C1) s on Living lron (C4) in Tilled S 7) rks) nches): hes): es): | or problemati s): g Roots Soils (C6) 12 0 0 | c. Seconda Seconda Surfa Drain Moss Dry-S Crayf Satur Stunt Geon Shalk Micro | Very Shallow Dark Surface (TF1: Hydric soil present? ry Indicators (minimum of two recessoil Cracks (B6) age Patterns (B10) Trim Lines (B16) Season Water Table (C2) ish Burrows (C8) ation Visible on Aerial Imagery (CS) ed or Stressed Plants (D1) norphic Position (D2) pw Aquitard (D3) topographic Relief (D4) Indicators of wetland hydrol Describe Recorded Data: | 2) remarks) <u>NA</u> equired) |

Appendix D-2

MnRAM Summary Tables

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

ID: 3

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 we | etland | Self-defined classification value settings for this management leve | | |
|----------------------------|---|--|-------------|--|
| | Functional Category | 0 | <u> </u> | |
| 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 Diversi | ity 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 | Commericial 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 we based on MnRAM data | etland Functional Category ^{Si} | Self-defined classification value settings for this management leve | | | |
|---|--|---|-------------|--|--|
| 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 Diversit | ty 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 | Commericial 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

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

Page 1 of 8

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.

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Functional Ratings

| Function | Rating | Comment |
|---|-------------|--|
| 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/Att enuation | 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 | Туре 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 | Туре 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 | Туре 1 | Floodplain Forest | | |
| | | | Tussock sedge | >3-<10% |
| | | | Purple loosestrife | 0-3% |

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| | 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% |
| | Tansey Spotted touch-me-not | 0-3% 0-3% |

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| | | | 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% |
| PEMC | Type 3 | Shallow Marsh | | |
| | | | 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% |
| PUBH | Type 5 | Shallow, Ow Communities | | |
| | | | 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% |

PSS1 Type 6 Shrub-carr

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| 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% |

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MnRAM Site Assessment Report

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.

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- 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.

Comment

Functional Ratings

FunctionRatingVegetative DiversityHigh

High-functioning vegetative communities reflect the presence of diverse, native wetland species and a lack of non-native or invasive species.

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| 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/Att enuation | 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. |

| Vetland Functional Assessment Summary | | | | | Maintenan of | ce Flood/ | Downstream Water | Maintenance of Wetland | | |
|---------------------------------------|---|---|---|--|---------------------------|---------------------|---------------------------------|-------------------------------------|---|--|
| Wetland Name | Hydrogeomor | phology | | | | Hydrologi Regime | c Stormwater/ Attenuation | Quality | Water Quality | Shoreline Protection |
| US Steel Spirit Lake | Depressional/Fl inlet and outlet), areas)/Shorelan | ow-through (apparent i , Riverine (within the riv Id, Floodplain (outside v | nlet and outlet), Depress rer/stream banks), Lacus waterbody banks) | sional/Flow-through (strine Fringe (edge o | (apparent of deepwater | 0.43 | 0.48 | 0.47 | 0.83 | 0.52 |
| | | | | | | Moderate | Moderate | Moderate | High | Moderate |
| | | | | | | | | A | dditional Inform | ation |
| Wetland Name | Maintenance of Characteristic Wildlife Habitat Structure | Maintenance of Characteristic Fish Habitat | Maintenance of Characteristic Amphibian Habitat | Aesthetics/ Recreation/ Education/ Cultural | Commerc | cial Uses | Ground- Water Interaction | Wetland Restoration Potential | Wetland Sensitivit to Stormwater and Urban Development | y Additional Stormwater Treatment Needs |
| US Steel Spirit Lake | 2.00 | 0.65 | 0.05 | 0.47 | 0.0 | 00 | Exceptional Recharge | 0.00 | 1.00 | 0.83 |
| | Exceptional | Moderate | Low | Moderate | Not App | olicable | - | Not Applicable | Moderate | High |

Wetland Community Summary

| | 5 5 | | | Vege | tative Diversit | y/Integrity | | | |
|----------------------|------------------|----------------------------|----------------|----------------------|-----------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|
| | | | Со | mmunity | | | TT 1 (| | Weighted |
| Wetland Name | Location | Cowardin Classification | Circular 39 | · Plant Community | Wetland Proportion | Individual Community Rating | Highest Wetland Rating | Average Wetland Rating | Average Wetland Rating |
| 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 |
| | | | | | 1 | | 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 |

Friday, September 21, 2012

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

Denotes incomplete calculation data.

| Vetland Functional Assessment Summary | | | | | | Maintenan of | ce Flood/ Stormwater/ | Downstream Water | Maintenance of Wetland | |
|--|---|---|--|--|---------------------------|---------------------|---------------------------------|-------------------------------------|---|--|
| Wetland Name | Hydrogeomor | phology | | | | Hydrologi Regime | Attenuation | Quality | Quality | Shoreline Protection |
| US Steel Spirit Lake non-r | rare Depressional/Flinet and outlet), areas)/Shorelan | ow-through (apparent i , Riverine (within the riv Id, Floodplain (outside v | nlet and outlet), Depress er/stream banks), Lacus waterbody banks) | sional/Flow-through (strine Fringe (edge c | (apparent of deepwater | 0.43 | 0.48 | 0.47 | 0.33 | 0.52 |
| | | | | | | Moderate | Moderate | Moderate | Moderate | Moderate |
| | | | | | | | | A | dditional Inform | ation |
| Wetland Name | Maintenance of Characteristic Wildlife Habitat Structure | Maintenance of Characteristic Fish Habitat | Maintenance of Characteristic Amphibian Habitat | Aesthetics/ Recreation/ Education/ Cultural | Commerc | ial Uses | Ground- Water Interaction | Wetland Restoration Potential | Wetland Sensitivit to Stormwater and Urban Development | y Additional Stormwater Treatment Needs |
| US Steel Spirit Lake no | 2.00 | 0.65 | 0.05 | 0.47 | 0.0 | 00 | Exceptional Recharge | 0.00 | 1.00 | 0.33 |
| | Exceptional | Moderate | Low | Moderate | Not App | licable | | Not Applicable | Moderate | Moderate |

Wetland Community Summary

| | • | | | Veg | etative Diversit | y/Integrity | | | |
|-------------------------------|------------------|----------------------------|----------------|--------------------|-----------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|
| | | | Со | nmunity | | Individual Community Rating | | | Weighted |
| Wetland Name | Location | Cowardin Classification | Circular 39 | Plant Community | Wetland Proportion | | Highest Wetland Rating | Average Wetland Rating | Average Wetland Rating |
| 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 |

Tuesday, October 02, 2012

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| PEMC | Туре 3 | Shallow Marsh | 5 | 0.1 | 1.00 | 0.65 | 0.25 |
|-------|--------|---------------------|-----|-----|------|----------|------|
| | | | 1 | | High | Moderate | Low |
| PUBH | Туре 5 | Shallow, Open Water | 75 | 0.1 | 1.00 | 0.65 | 0.25 |
| | | Communities | | | | | |
| | | | | | 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

ID: 3

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 we | etland | Self-defined classification settings for this manageme | | | |
|----------------------------|---|---|-------------|--|--|
| | Functional Category | 0 | <u> </u> | | |
| 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 Diversi | ity 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 | Commericial 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 wet based on MnRAM data | land Functional Category ^S | Self-defined classif ettings for this mana | ication value gement 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 Diversi | ty 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 | Commericial 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

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

Page 1 of 8

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.

Page 2 of 8

Functional Ratings

| Function | Rating | Comment |
|---|-------------|--|
| 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/Att enuation | 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 | Туре 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 | Туре 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 | Туре 1 | Floodplain Forest | | |
| | | | Tussock sedge | >3-<10% |
| | | | Purple loosestrife | 0-3% |

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| 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 smartwood | 0-3% |
| water smaltweed | |
| Torrey's rush | >3-<10% |
| Torrey's rush | >3-<10% 0-3% |
| Torrey's rush Tansey Spotted touch-me-not | >3-<10% 0-3% 0-3% |

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| | | | 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% |
| PEMC | Type 3 | Shallow Marsh | | |
| | | | 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% |
| PUBH | Type 5 | Shallow, Ow Communities | | |
| | | | 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% |

PSS1 Type 6 Shrub-carr

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| 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% |

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MnRAM Site Assessment Report

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.

Page 1 of 8

- 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.

Comment

Functional Ratings

FunctionRatingVegetative DiversityHigh

High-functioning vegetative communities reflect the presence of diverse, native wetland species and a lack of non-native or invasive species.

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| 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/Att enuation | 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. |

c-s3-06af

| 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 | | | | | | Maintenan of | ce Flood/ | Downstream Water | Maintenance of Wetland | |
|---------------------------------------|---|---|---|--|---------------------------|---------------------|---------------------------------|-------------------------------------|---|--|
| Wetland Name | Hydrogeomor | phology | | | | Hydrologi Regime | c Stormwater/ Attenuation | Quality | Water Quality | Shoreline Protection |
| US Steel Spirit Lake | Depressional/Fl inlet and outlet), areas)/Shorelan | ow-through (apparent i , Riverine (within the riv Id, Floodplain (outside v | nlet and outlet), Depress rer/stream banks), Lacus waterbody banks) | sional/Flow-through (strine Fringe (edge o | (apparent of deepwater | 0.43 | 0.48 | 0.47 | 0.83 | 0.52 |
| | | | | | | Moderate | Moderate | Moderate | High | Moderate |
| | | | | | | | | A | dditional Inform | ation |
| Wetland Name | Maintenance of Characteristic Wildlife Habitat Structure | Maintenance of Characteristic Fish Habitat | Maintenance of Characteristic Amphibian Habitat | Aesthetics/ Recreation/ Education/ Cultural | Commerc | cial Uses | Ground- Water Interaction | Wetland Restoration Potential | Wetland Sensitivit to Stormwater and Urban Development | y Additional Stormwater Treatment Needs |
| US Steel Spirit Lake | 2.00 | 0.65 | 0.05 | 0.47 | 0.0 | 00 | Exceptional Recharge | 0.00 | 1.00 | 0.83 |
| | Exceptional | Moderate | Low | Moderate | Not App | licable | 2 | Not Applicable | Moderate | High |

Wetland Community Summary

| | 5 5 | | | Vege | tative Diversit | y/Integrity | | | |
|----------------------|------------------|----------------------------|----------------|----------------------|-----------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|
| | | | Со | mmunity | | | TT 1 (| | Weighted |
| Wetland Name | Location | Cowardin Classification | Circular 39 | · Plant Community | Wetland Proportion | Individual Community Rating | Highest Wetland Rating | Average Wetland Rating | Average Wetland Rating |
| US Steel Spirit Lake | 69-049-15-35-001 | PSS1B | Туре 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 |

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

Denotes incomplete calculation data.

| Wetland Functional Assessment Summary | | | | | | Maintenan of | ce Flood/ Stormwater/ | Downstream Water | Maintenance of Wetland | |
|---|---|--|--|--|---------------------------|---------------------|---------------------------------|-------------------------------------|---|--|
| Wetland Name | Hydrogeomor | phology | | | | Hydrologi Regime | Attenuation | Quality | Quality | Shoreline Protection |
| US Steel Spirit Lake non-rare Depressional/Flow-through (apparent inlet and outlet), Depression inlet and outlet), Riverine (within the river/stream banks), Lacustrir areas)/Shoreland, Floodplain (outside waterbody banks) | | | | sional/Flow-through (strine Fringe (edge c | (apparent of deepwater | 0.43 | 0.48 | 0.47 | 0.33 | 0.52 |
| | | | | | | Moderate | Moderate | Moderate | Moderate | Moderate |
| | | | | | | | | A | dditional Inform | ation |
| Wetland Name | Maintenance of Characteristic Wildlife Habitat Structure | Maintenance of Characteristic Fish Habitat | Maintenance of Characteristic Amphibian Habitat | Aesthetics/ Recreation/ Education/ Cultural | Commerc | ial Uses | Ground- Water Interaction | Wetland Restoration Potential | Wetland Sensitivit to Stormwater and Urban Development | y Additional Stormwater Treatment Needs |
| US Steel Spirit Lake no | 2.00 | 0.65 | 0.05 | 0.47 | 0.0 | 00 | Exceptional Recharge | 0.00 | 1.00 | 0.33 |
| | Exceptional | Moderate | Low | Moderate | Not App | licable | | Not Applicable | Moderate | Moderate |

Wetland Community Summary

| | | | | Veg | etative Diversit | y/Integrity | | | |
|-------------------------------|------------------|----------------------------|----------------|--------------------|-----------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|
| | | | Со | nmunity | | | | | Weighted |
| Wetland Name | Location | Cowardin Classification | Circular 39 | Plant Community | Wetland Proportion | Individual Community Rating | Highest Wetland Rating | Average Wetland Rating | Average Wetland Rating |
| 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 |

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| PEMC | Туре 3 | Shallow Marsh | 5 | 0.1 | 1.00 | 0.65 | 0.25 |
|-------|--------|---------------------|-----|-----|------|----------|------|
| | | | l. | | High | Moderate | Low |
| PUBH | Type 5 | Shallow, Open Water | 75 | 0.1 | 1.00 | 0.65 | 0.25 |
| | | Communities | | | | | |
| | | | | | 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.