Inwood Ave North

Lake Elmo, Minnesota

Wetland Delineation Report

Prepared for Hans Hagen Homes

by **Kjolhaug Environmental Services Company, Inc.**(KES Project No. 2014-032)

July 3, 2014

WETLAND DELINEATION SUMMARY

- The Inwood Ave N site was inspected on June 17, 2014 for the presence and extent of wetland.
- The NWI map showed 3 wetlands within site boundaries.
- The soil survey showed Barronett silt loam as the hydric soils present within site boundaries.
- The DNR Protected Waters map showed a DNR Protected Waterway within the southwest corner of the site boundaries.
- Two Type 1 (PEMAf) farmed, seasonally flooded wetland, and one Type 1 (PEMA) fresh meadow wetland were delineated within site boundaries.

Inwood Avenue North

Lake Elmo, Minnesota

Wetland Delineation Report

I. INTRODUCTION

The Inwood Avenue North site was examined on June 17, 2014 for the presence and extent of wetland. The 154-acre site was located in Section 33, Township 29N, Range 21W, City of Lake Elmo, Washington County, Minnesota. Generally the site was located east of the terminus of Inwood Avenue North and south of 10th Street N (**Figure 1**). Site limits were comprised of Washington County PID 3302921110001, 3302921110002, 3302921120001 and 3302921120003.

The site consists primarily of cropland. For the 2014 growing season the site was planted with corn (**Figure 2**). Two wetlands were located in the north area of the cropland. Along the eastern 300 feet of the property exists a woodland of various planted conifer and deciduous species. A wetland was located in the northeast corner of the site within the woodland. An abandoned farmstead site is located within the northwest corner of the site. In the southwest corner of the site is a DNR Protected Waterway (Unamed).

Generally topography was higher on the north half of the site. The site topo sloped gradually downhill toward the west and south.

Adjacent to the eastern boundary of the site is a single family residential development. On the western boundary is the Oak Marsh Golf Course. To the south is commercial industrial facility. North of the site north of 10th Street North is additional cropland.

II. METHODS

Wetlands were identified using Routine Determination methodology described in the *Corps of Engineers Wetlands Delineation Manual* (Waterways Experiment Station, 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: North Central-Northeast Region (Version 2.0) as required by Section 404 of the Clean Water Act and the Minnesota Wetland Conservation Act.

Wetland boundaries were identified as the upper-most extent of wetlands, which met criteria for hydric soils, hydrophytic vegetation, and wetland hydrology. Wetland-upland boundaries were marked with pin flags and were located by E.G. Rudd.

Soils, vegetation, and hydrology were documented at representative locations along the wetlandupland boundary. Plant species dominance was estimated based on the percent aerial or basal coverage visually estimated within a 30-foot radius for trees and vines, 15-foot radius for the shrub layer, and a 5-foot radius for the herbaceous layer within the community type being sampled.

Soils were characterized to a minimum depth of 18-20 inches (unless otherwise noted) utilizing Munsell Soil Color Charts and standard soil texturing methodology. Hydric soil indicators used in reporting are from the NTCHS Field Indicators of Hydric Soils in the United States (USDA Natural Resources Conservation Service Version 7, 2010) which are commonly found in the Midwest.

Plants were identified using standard regional plant keys. Taxonomy and indicator status of plant species was taken from the 2012 National Wetland Plant List (Lichvar, R.W. and Kartesz, J.T. 2009. North American Digital Flora: National Wetland Plant List, version 2.4.0 (https://wetland_plants.usace.army.mil). U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapel Hill, NC.).

A review of available Farm Service (FSA) Agency photographs followed the protocol outlined in the document - Atypical Procedure: Offsite Hydrology Determination by Using Rainfall Data with Farm Service Agency Imagery, Adapted from NRCS-Minnesota Guidance (August, 1994).

III. RESULTS

Review of Soils, NWI, and DNR Information

The *National Wetland Inventory Map (NWI)* (Lake Elmo Quadrangle, U.S. Fish & Wildlife Service 1991) showed 3 wetlands within site boundaries (**Figure 3**).

The Soil Survey of Washington County, Minnesota

(http://soils.usda.gov/survey/geography/ssurgo/) showed the following soil types within or near site boundaries (**Figure 4**). For information regarding soil series present on site, refer to **Table 1**. below.

The *DNR Protected Waters Map, Washinton County* (http://deli.dnr.state.mn.us/) showed a DNR Protected Waterway within site boundaries (**Figure 5**).

Table 1. Soil Series Information

| SMU | Map Unit Name | Acres in AOI | Percentage of AOI | Hydric Percent of Map Unit | Hyric Category |
|------|---|--------------------|-------------------|-------------------------------|----------------------------|
| 49 | Antigo silt loam, 0 to 2 percent slopes | 0.8 | 0.55% | 1 | Predominantly Nonhydric |
| 49B | Antigo silt loam, 2 to 6 percent slopes | 26.8 | 17.74% | 1 | Predominantly Nonhydric |
| 120 | Brill silt loam | 6.8 | 4.53% | 5 | Predominantly Nonhydric |
| 153B | Santiago silt loam, 2 to 6 percent slopes | 41.5 | 27.49% | 0 | Nonhydric |
| 153C | Santiago silt loam, 6 to 15 percent slopes | 11.0 | 7.26% | 0 | Nonhydric |
| 264 | Freeon silt loam, 1 to 4 percent slopes | 55.4 | 36.71% | 2 | Predominantly Nonhydric |
| 266 | Freer silt loam | 2.5 | 1.68% | 5 | Predominantly Nonhydric |
| 342B | Kingsley sandy loam, 2 to 6 percent slopes | 4.5 | 2.99% | 3 | Predominantly Nonhydric |
| 342C | Kingsley sandy loam, 6 to 12 percent slopes | 0.2 | 0.11% | 0 | Nonhydric |
| 1847 | Barronett silt loam, sandy substratum | 1.4 | 0.95% | 90 | Predominantly Hydric |

Wetland Determinations and Delineations

Potential wetlands were evaluated in greater detail during field observations on June 17, 2014. Two wetlands were identified on the subject site (**Figure 2**). Corresponding data forms are included in **Appendix A**. The following description of the wetlands and adjacent upland reflects conditions observed at the time of the field visit. At that date, herbaceous vegetation and crops were actively growing and climatic/hydrologic conditions were assumed to be normal based on available precipitation data (**Appendix B**). A survey of the wetland boundaries is included as **Appendix C**.

Wetland 1 was a Type 1 (PEMAf) farmed, seasonally flooded wetland dominated by witch grass with lesser amounts of velvetleaf and smartweed. The majority of the wetland had shallow standing water with a saturated fringe.

Adjacent upland was cropped with healthy corn and had lamb's quarter in between the rows.

The delineated boundary followed a change in vegetation composition, cropping patterns and landscape position was supported by signatures on aerial photos. Wetland 1 corresponded to a PEM1Af wetland on the NWI map, but mapped in a non-hydric soil (Freeon) on the soil survey.

Wetland 2 was a Type 1 (PEMA) fresh meadow wetland dominated by a green ash saplings and inundated with reed canary grass, Kentucky bluegrass, red-osier dogwood and giant goldenrod.

Adjacent upland at the sample location were cropped with corn and had giant goldenrod, thistle and horsetail between the rows near the wetland boundary.

The delineated boundary followed a flat and gradual change in vegetation composition. Wetland 2 corresponded to a mapped PEM1A wetland on the NWI-map. However it was mapped in a non-hydric soil (Freeon) on the soil survey.

Wetland 3 was a Type 1 (PEMAf) farmed, seasonally flooded wetland dominated by witch grass with lesser amounts of smartweed. The majority of the wetland had shallow standing water with a saturated fringe.

Adjacent upland was cropped with healthy corn and had lamb's quarter in between the rows.

The delineated boundary followed a change in vegetation composition, cropping patterns and landscape position was supported by signatures on aerial photos. Wetland 3 corresponded to a PEM1Af wetland on the NWI map, but mapped in a non-hydric soil (Freeon) on the soil survey.

FSA Photography Review

FSA photos from the years 1979 through 2000, 2003, 2006, 2008, 2009, and 2010 were available for review. Each year was assessed for wet/normal/dry climatic conditions using the online Minnesota Climatology Working Group, Wetland Delineation Precipitation Data Retrieval from a Gridded Database using a date of July 1 for the year assessed. Using this tool, only the years 1983,1989, 1992, 1995, 1996, 1997, 2000, 2006 and 2008 were calculated have normal precipitation during the 3 months preceding the assumed photo date. Areas showing wetland signatures in normal precipitation years were included in the FSA review.

Wetland 1 and 3, as well as three (3) additional areas exhibiting potential wetland signatures were reviewed (**Figure 6**) and results of the review are included in **Table 1** below. Area A is within the delineated boundary of Wetland 3 and Area B is within the delineated boundary of Wetland 1. None of the reviewed areas are located within hydric soils.

Table 1. FSA Review Inwood Avenue North

| Normal Precipitation Year | Area A | Area B | Area C | Area D | Area E |
|------------------------------------|---------|---------|--------|--------|--------|
| 1983 | C | SW | C | AP | AP |
| 1989 | DO | DO | С | AP | AP |
| 1992 | DO | DO | С | AP | AP |
| 1995 | SW | DO | С | AP | AP |
| 1996 | C | CS | C | AP | AP |
| 1997 | CS | DO | С | AP | AP |
| 2000 | CS | CS | С | AP | AP |
| 2006 | C | DO | C | AP | AP |
| 2008 | C | DO | C | AP | AP |
| Number of Significant Signatures | 5 | 9 | 0 | 0 | 0 |
| Percent Signatures in Normal Years | 56% | 100% | 0% | 0% | 0% |
| Determination | Wetland | Wetland | Upland | Upland | Upland |

Note:

Area D is a vegetative swale with steep sloped sides.

Area E is a hilltop covered in trees.

According to protocol, areas exhibiting wetland signatures in 50% or more of normal climatic years meet wetland hydrology criteria, and areas with wetland signatures in 30% to 50% of normal climatic years must be field investigated. Based on FSA aerial photo review for this site, only Areas A and B meet wetland hydrology criteria. Area A is encompassed within the delineated boundary of Wetland 3 and Area B is encompassed within the delineated boundary of Wetland 1.

Other Areas

A DNR Protected Waterway is located within the southwest corner of the site. This waterways is an unnamed creek that flows to Wilmes Lake. The banks of the waterway are steep sloped and lacked wetland fringe.

No other areas with wetland vegetation or hydrology were observed on the site. No other areas were shown with hydric soil on the soil survey map, or as wetland on the NWI map.

V. CERTIFICATION OF DELINEATION

The procedures utilized in the described delineation are based on the COE 1987 Wetland Delineation Manual as required by Section 404 of the Clean Water Act and the Minnesota Wetland Conservation Act. Both the delineation and report were conducted in compliance with regulatory standards in place at the time the work was completed.

All site boundaries indicated on figures within this report are approximate and do not constitute an official survey product.

| Delineation Completed by | y: Melissa | Lauterbach- | -Barrett, | Soil | Scienti | st |
|--------------------------|------------|-------------|-----------|------|---------|----|
| | | | | | | |

Certified Wetland Delineator No. 1085 Professional Soil Scientist No. 45067

Report reviewed by: ______ Date: July 3, 2013

Mark Kjolhaug, Professional Wetland Scientist No. 000845

Inwood Avenue North

Wetland Delineation Report

Figures:

- Figure 1 Site Location Map
- Figure 2 Aerial Photograph
- Figure 3 NWI Map
- Figure 4 Soil Survey Map
- Figure 5 DNR Protected Waters Map
- Figure 6 FSA Review Areas
- Figure 7 FSA Aerial Wetland Signatures

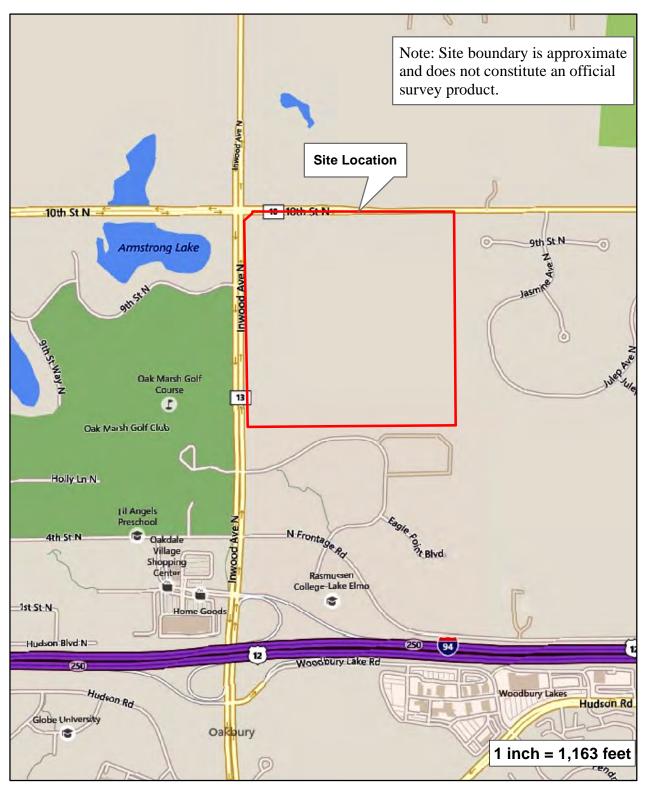


Figure 1 - Site Location Map (Bing Maps)



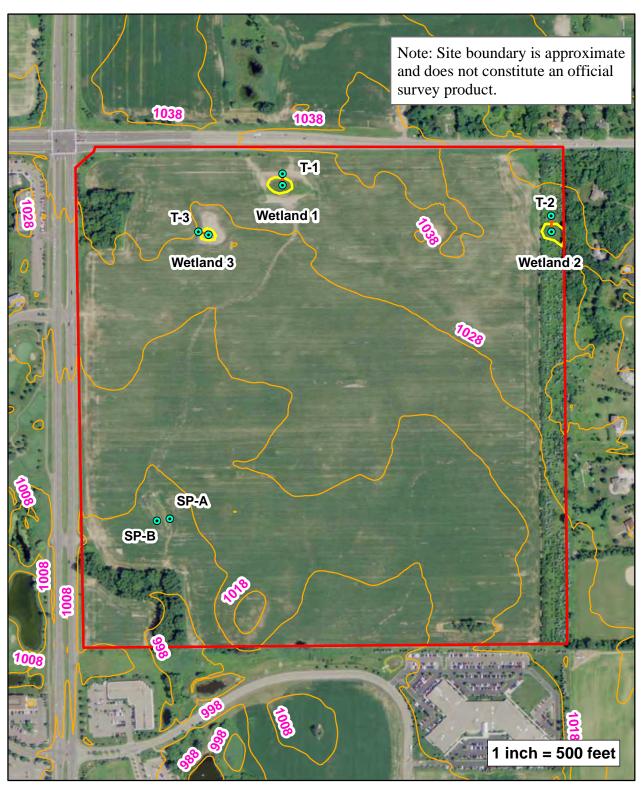
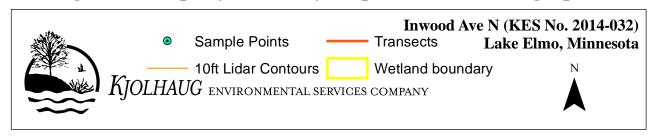


Figure 2 - Property Boundary Map (2013 FSA Photograph)



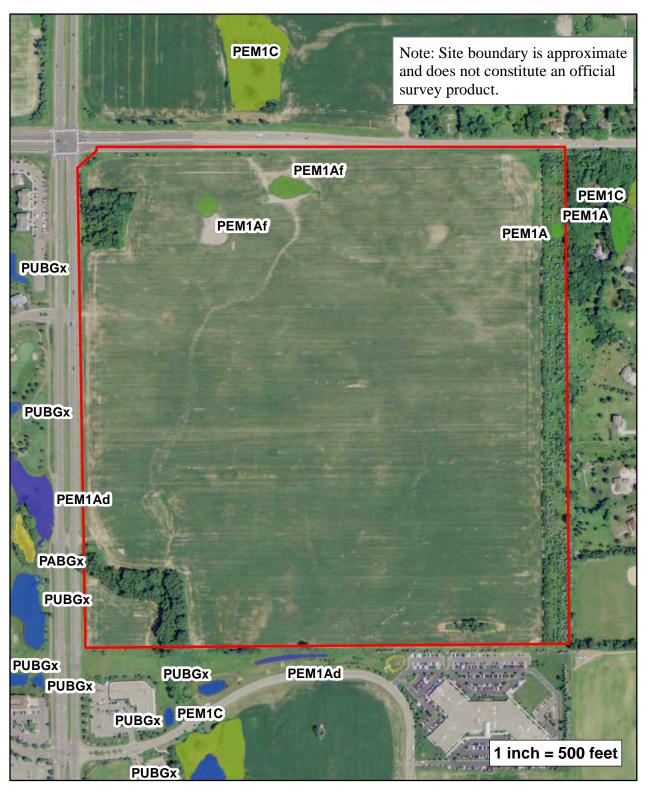


Figure 3 - NWI Map (2013 MN DNR)



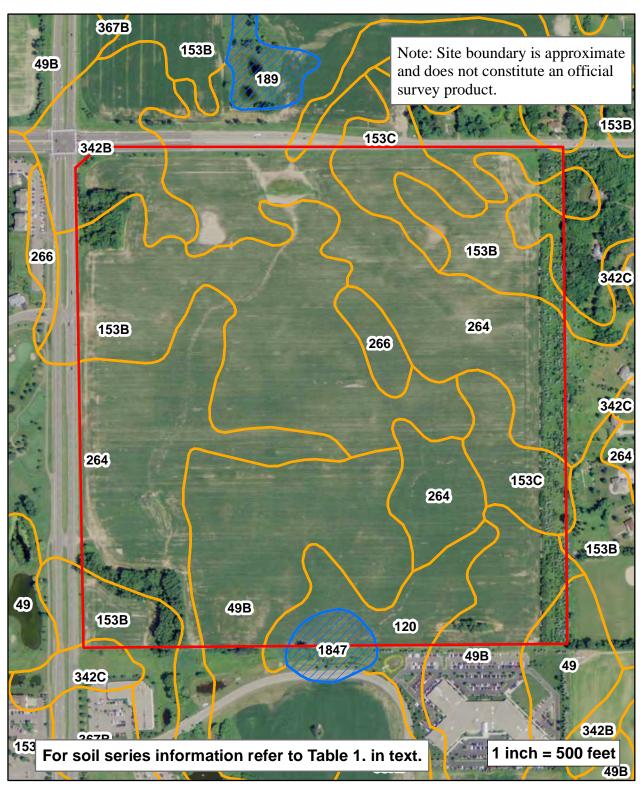


Figure 4 - Soil Survey Map

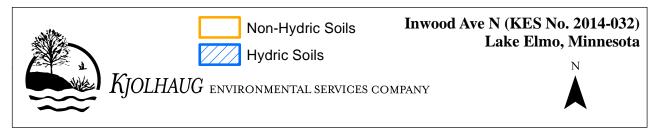
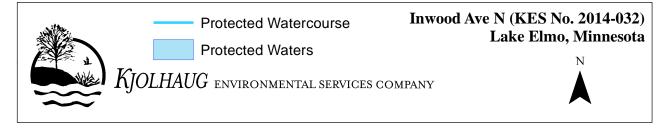




Figure 5 - DNR Protected Waters Map



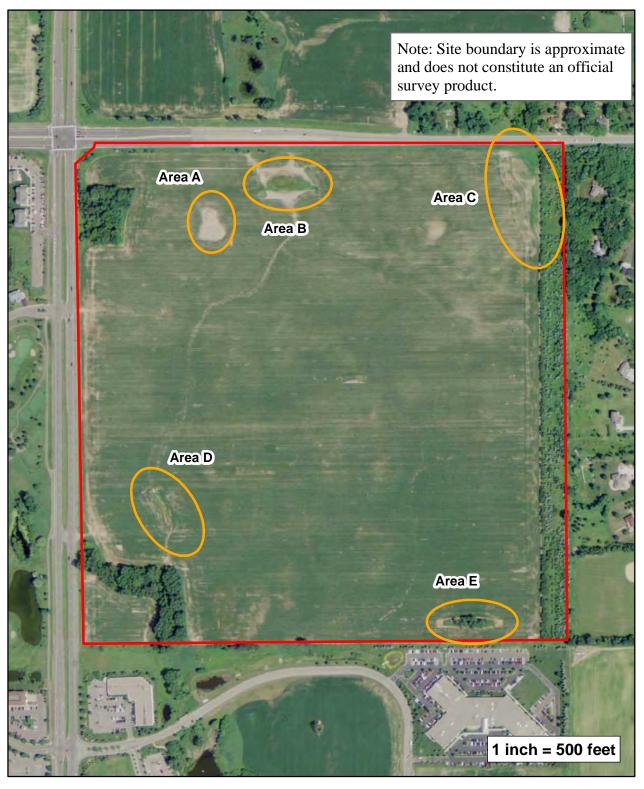
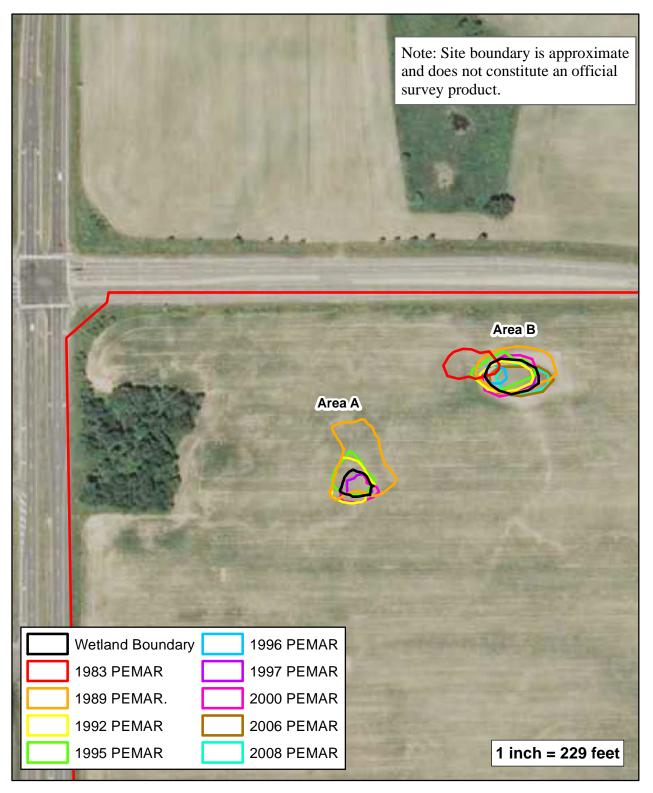


Figure 6 - FSA Review Areas (2013 FSA Photograph)





FSA Aerial Wetland Signatures - (2013 FSA Photograph)



Inwood Ave North

Wetland Delineation Report

Appendix A: Data Forms

| Project/Site: Inwood Ave N | С | ity/County: | Lake E | lmo | Sampling Date | : 6/17/14 | |
|--|--------------------|------------------------------|-------------|-------------|---------------------|-------------|----------|
| Applicant/Owner: Hans Hagen | | | State: | MN | Sampling F | Point: | 1-1U |
| Investigator(s): M Lauterbach-Barrett, A Krinl | ke | | Section | n, Townshi | p, Range: S33 T2 | 29 R21 | |
| Landform (hillslope, terrace, etc.): Hillslope | | Lo | cal relief | f (concave, | convex, none): | None | |
| Slope (%): 2 to 3 Lat.: | Long.: | | Da | itum: | | | |
| Soil Map Unit NameFreeon silt loam | | | | | Classification: PE | :M1Af | |
| Are climatic/hydrologic conditions of the site t | | | | | , explain in remar | ks) | |
| | ydrology | | | | Are "normal | | |
| | ydrology | naturally p | roblema | tic? | circumstances | " present? | No No |
| (If needed, explain any answers in remarks) | | | | | | | |
| | | | | | | | |
| SUMMARY OF FINDINGS | | | | | | | |
| COMMISSION OF THE BINGS | | | | | | | |
| Hydrophytic vegetation present? | | the sample | ed area v | vithin a we | etland? | N | |
| Hydric soil present? | N | | | | | | |
| Indicators of wetland hydrology present? | N If | yes, optiona | I wetland | site ID: | | | |
| | | | | | | | |
| Remarks: (Explain alternative procedures her | re or in a separat | e report.) | | | | | |
| | | | | | | | |
| Climatic conditions wetter than norm | | | g precip | oitation av | /erage. Croppii | ng consid | dered no |
| normal circumstances, hence vegeta | ation is disturbe | ed. | | | | | |
| | | | | | | | |
| IIVDDOLOOV | | | | | | | |
| HYDROLOGY | | | | | | | |
| 1 | | | | | ndary Indicators (| minimum | of two |
| Primary Indicators (minimum of one is require | | | | requi | | | |
| Surface Water (A1) | Water-Stained | | | | urface Soil Cracks | | |
| High Water Table (A2) | Aquatic Fauna | | | | rainage Patterns (| | |
| Saturation (A3) | Marl Deposits | | | | loss Trim Lines (B | | |
| Water Marks (B1) | Hydrogen Sulf | | | | ry-Season Water | | |
| Sediment Deposits (B2) | Oxidized Rhizo | ospheres on l | Living | | rayfish Burrows (C | | |
| Drift Deposits (B3) | Roots (C3) | | | | aturation Visible o | n Aerial Im | agery |
| Algal Mat or Crust (B4) | Presence of R | | ' | | C9) | | |
| Iron Deposits (B5) | Recent Iron Re | eduction in Ti | lled | | tunted or Stressed | | 1) |
| Inundation Visible on Aerial | Soils (C6) | | | | eomorphic Positio | | |
| Imagery (B7) | Thin Muck Sur | | | | hallow Aquitard (D | | |
| Sparsely Vegetated Concave | Other (Explain | in Remarks) | | | AC-Neutral Test ([| , | |
| Surface (B8) | | | | N | licrotopographic R | elief (D4) | |
| Field Observations: | | | | 1 | | | |
| Surface water present? Yes | No X D | epth (inches | ١. | | Indicators of | | |
| Water table present? Yes | | epth (inches epth (inches | | | wetland | | |
| Saturation present? Yes | | epth (inches | | | hydrology | | |
| (includes capillary fringe) | NOD | eptii (iiiciies |)· <u> </u> | _ | present? | N | |
| (includes capillary filinge) | | | | | present? | | |
| Describe recorded data (stream gauge, moni- | toring well acric | Inhotoe pro | vioue inc | nections) | if available: | | |
| Describe recorded data (Stream gauge, moni | toring well, aella | i priotos, pre | vious ills | pections), | ıı avallable. | | |
| | | | | | | | |
| | | | | | | | |
| Remarks: | | | | | | | |
| Nemans. | | | | | | | |
| İ | | | | | | | |
| | | | | | | | |

US Army Corps of Engineers Northcentral and Northeast Region

| Tree Stratum 1 2 3 4 5 6 7 8 9 | Plot Size (| 30 |) | Absolute % Cover | Dominant Species | Indicator Status | 50/20 Thresholds |
|---|-----------------|------------|-------------------|---------------------------------|--------------------------|------------------------------------|--|
| Sapling/Shrub Stratum | Plot Size (| 15 |) | Absolute % Cover | Dominant Species | Indicator Status | Species that are OBL, FACW, or FAC: 50.00% (A/B) Prevalence Index Worksheet |
| 2 3 4 5 6 6 7 7 8 8 9 | | | | 0 = | = Total Cover | | Trevalence index worksheet Total % Cover of: OBL species 0 x1 = 0 FACW species 0 x2 = 0 FAC species 30 x3 = 90 FACU species 15 x4 = 60 UPL species 0 x5 = 0 Column totals 45 (A) 150 (B) Prevalence Index = B/A = 3.33 |
| Herb Stratum 1 Panicum virgat 2 Chenopodium : 3 4 | | 5 |) | Absolute % Cover 30 15 | Dominant Species Y | Indicator Status FAC FACU | Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation Dominance test is >50% Prevalence index is \$3.0* Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) |
| 6 7 8 | | | | | | <u> </u> | Problematic hydrophytic vegetation* (explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic |
| 9 0 1 2 3 4 | | | _ : _ : _ : | | \equiv | | Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter a breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and |
| 5 | | | — : | 45 = | Total Cover | | greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plants, regardless of |
| Woody Vine Stratum 1 | Plot Size (| 30 |) | Absolute % Cover | Dominant Species | Indicator Status | size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. |
| 3 4 5 | | | : : : | 0 = | = Total Cover | | Hydrophytic vegetation present? N |
| Remarks: (Include ph | noto numbers he | re or on a | separat | e sheet) | | | , |

Sampling Point:

VEGETATION - Use scientific names of plants

| | | | | | | | Sampling Point: | 1-1U |
|---|---|---|---|--|--|--|---|--|
| | | | | | | | | |
| | be to the | | | | indicato | or or confirm the abser | nce of indicators.) | |
| | % | | | | L oc** | Texture | Remar | ks |
| | | Color (moist) | /0 | Туре | LUC | 1 | + | |
| | | | | + | $\vdash \vdash \vdash$ | | + | |
| 10110 4/3 | 100 | | | + | $\vdash \vdash \vdash$ | | + | |
| + | \vdash | | | + | $\vdash \vdash \vdash$ | | + | |
| + | | | | + | $\vdash \vdash \vdash$ | | + | |
| † | | | | + | | | 1 | |
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| † | | | | 1 | | | | |
| † | | | | † | | | 1 | |
| | | | ed Matri | x, CS=C | overed o | or Coated Sand Grains | 3 | |
| oil Indicators: | 111-111-1 | | | | | Indicators for Pro | oblematic Hydric S | oils: |
| ack Histic (A3) ydrogen Sulfide (Aratified Layers (A- ratified Layers) pieted Below Da nick Dark Surface andy Mucky Miner andy Gleyed Matr andy Redox (S5) ripped Matrix (S6 ark Surface (S7) (198) | A4) 5) irk Surfa (A12) ral (S1) rix (S4) (LRR R, | Thir (LR Loa Dep Reco | n Dark S RR R, M amy Muc RR K, L) amy Gle pleted M dox Dar pleted D dox Dep | Surface (ILRA 149 cky Mine) eyed Matr Matrix (F3 rk Surface Dark Surface pressions | (S9) 9B eral (F1) rix (F2) 3) ee (F6) Face (F7) s (F8) | 5 cm Mucky F Dark Surface Polyvalue Bel Thin Dark Sur Iron-Mangane Piedmont Flot Mesic Spodic Red Parent M Very Shallow Other (Explair | Peat or Peat (S3) (LF (S7) (LRR K, L ow Surface (S8) (LR face (S9) (LRR K, L see Masses (F12) (I (TA6) (MLRA 144A laterial (F21) Dark Surface (TF12 n in Remarks) | RR K, L, R) RR K, L) PRR K, L, R) RR K, L, R) MLRA 149B) PRR K, L, R) |
| Layer (if observe | ∍d): | | <u> </u> | - - | | Hydric soil pres | ent? <u>N</u> | |
| | | | | | | | | |
| | Matrix Color (moist) 10YR 3/2 10YR 4/3 10YR 5/3 | Matrix Color (moist) % 10YR 3/2 100 10YR 4/3 100 10YR 4/3 100 10YR 4/3 100 Concentration, D=Deplete PL=Pore Lining, M=Mat ill Indicators: stosol (A1) stic Epipedon (A2) ack Histic (A3) /drogen Sulfide (A4) ratified Layers (A5) andy Mucky Mineral (S1) andy Gleyad Matrix (S4) andy Redox (S5) ripped Matrix (S4) andy Redox (S5) ripped Matrix (S6) andy Redox (S7) (LRR R, 198) s of hydrophytic vegetatio | Matrix Red Color (moist) % Color (moist) 10YR 3/2 100 10YR 4/3 100 10YR 4/3 100 Concentration, D=Depletion, RM=Reduce PL=Pore Lining, M=Matrix ill Indicators: stosol (A1) Polysic Epipedon (A2) (S8 ack Histic (A3) Thin ydrogen Sulfide (A4) (LR ratified Layers (A5) Loa pleted Below Dark Surface (A11) Loa andy Mucky Mineral (S1) Dep andy Gleyed Matrix (S4) Rec andy Redox (S5) Dep ripped Matrix (S4) Rec ard Surface (S7) (LRR R, MLRA 198) of hydrophytic vegetation and wetland hy be Layer (if observed): | Matrix Redox Fear Color (moist) % Color (moist) % Color (moist) % 10YR 3/2 100 10YR 4/3 1 | Matrix Color (moist) % Color (moist) % Type* 10YR 3/2 100 10YR 4/3 100 Concentration, D=Depletion, RM=Reduced Matrix, CS=C: PL=Pore Lining, M=Matrix iil Indicators: stosol (A1) Polyvalue Below St (S8) (LRR R, MLRA* iil Layers (A5) (Matrix (LRR K, L) Loamy Mucky Mine Publick Dark Surface (A11) Loamy Gleyed Matrix (A1) Loamy Gleyed Matrix (A1) Loamy Gleyed Matrix (A1) Loamy Gleyed Matrix (A1) Redox Dark Surface (A11) Redox Dark Surface (A12) Redox Dark Surface (A12) Redox Dark Surface (A13) Redox Dark Surface (A14) Redox Dark Surface (A15) Redox Dark Surface (A17) R | Matrix Color (moist) % Color (moist) % Type* Loc** 10YR 3/2 100 10YR 4/3 100 10YR 4/3 100 Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered of the color of the co | Autrix Color (moist) Matrix Color (moist) Color (moist) Matrix Texture Texture L L L L L L L L L L L L L | Color (moist) % Color (moist) % Type* Loc** lexture Remark 10YR 3/2 100 |

| Applicant/Owner: Hans Hagen | | City/County: | Lake E | lmo | Sampling Date: 6/17/ | 14 |
|--|---------------------|-------------------------------|------------|------------|------------------------------------|----------------|
| | | _ | State: | MN | Sampling Point: | 1-1W |
| Investigator(s): M Lauterbach-Barrett, A | Krinke | | Section | , Townshi | ip, Range: S33 T29 R21 | |
| Landform (hillslope, terrace, etc.): Dep | ression | Lo | cal relief | (concave | , convex, none): Conc | ave |
| Slope (%): 1 to 2 Lat.: | Long.: | | Dat | tum: | | |
| Soil Map Unit NameFreeon silt loam | | | | NWI | Classification: PEM1Af | |
| Are climatic/hydrologic conditions of the | | time of the year | r? No | (If no | , explain in remarks) | |
| Are vegetation X, soil | , or hydrology | significantl | | | Are "normal | |
| Are vegetation , soil | , or hydrology | naturally p | roblemat | ic? | circumstances" prese | ent? N |
| If needed, explain any answers in rema | rks) | | | | | |
| SUMMARY OF FINDINGS | | | | | | |
| Hydrophytic vegetation present? Hydric soil present? | | Is the sample | d area w | ithin a we | etland? Y | _ |
| Indicators of wetland hydrology present? | Y Y | If yes, optional | l wetland | site ID: | Wetland 1 | |
| Remarks: (Explain alternative procedure | s here or in a sepa | arate report.) | | | | |
| Climatic conditions watter than n | armal based on | 20 day rallia | ~ ~~~~ | itation o | vorone Crenning co | |
| Climatic conditions wetter than n | | | y precip | itation a | verage. Gropping cor | isiaerea |
| normal circumstances, hence ve | getation is distu | irbed. | | | | |
| | | | | | | |
| HYDROLOGY | | | | | | |
| ITTERCECOT | | | | Cooo | ndary Indicators (minimu | um of huo |
| Primary Indicators (minimum of one is re | auired: check all t | hat annly) | | requi | | ulli Ol two |
| Surface Water (A1) | | ned Leaves (B9) | | | Surface Soil Cracks (B6) | |
| X High Water Table (A2) | Aquatic Fa | | | | Orainage Patterns (B10) | |
| X Saturation (A3) | Marl Depos | | | | Moss Trim Lines (B16) | |
| Water Marks (B1) | | Sulfide Odor (C1) | | | ory-Season Water Table (| C3) |
| Sediment Deposits (B2) | | hizospheres on L | | | Crayfish Burrows (C8) | 02) |
| Drift Deposits (B3) | Roots (C3) | | iving | | Saturation Visible on Aeria | l lasa a a a . |
| Algal Mat or Crust (B4) | | of Reduced Iron (| C4) | | celuration visible on Aeria C9) | imagery |
| Iron Deposits (B5) | | n Reduced IIon (| , | | Stunted or Stressed Plants | (D1) |
| Inundation Visible on Aerial | Soils (C6) | 1 Reduction in Til | iea | | Geomorphic Position (D2) | |
| | | Surface (C7) | | | Shallow Aquitard (D3) | |
| Imagery (B7) | | lain in Remarks) | | | AC-Neutral Test (D5) | |
| Sparsely Vegetated Concave | Other (Exp | idiii iii Keiiidiks) | | | | 4) |
| | | | | | licrotopographic Relief (D | 4) |
| Surface (B8) | | | | | | |
| <u> </u> | | | | | | |
| Field Observations: | No. V | Donth (inches) | | | Indicators of | |
| Field Observations: Surface water present? Yes | No X | _ Depth (inches) | | | Indicators of | |
| Field Observations: Surface water present? Yes Water table present? Yes X | No | Depth (inches) |): 4 | _ | wetland | |
| Field Observations: Surface water present? | No | |): 4 | _ | wetland hydrology | |
| Field Observations: Surface water present? | No | Depth (inches) |): 4 | _ | wetland | |
| Field Observations: Surface water present? Water table present? Saturation present? Yes X (includes capillary fringe) | No No | Depth (inches) Depth (inches) |): 4 | | wetland hydrology present? Y | |
| Field Observations: Surface water present? Water table present? Saturation present? Yes X (includes capillary fringe) | No No | Depth (inches) Depth (inches) |): 4 | pections), | wetland hydrology present? Y | _ |
| Field Observations: Surface water present? Yes Water table present? Yes X Saturation present? Yes X (includes capillary fringe) | No No | Depth (inches) Depth (inches) |): 4 | pections), | wetland hydrology present? Y | _ |
| Field Observations: Surface water present? Water table present? Yes X Saturation present? Yes | No No | Depth (inches) Depth (inches) |): 4 | pections), | wetland hydrology present? Y | _ |
| Field Observations: Surface water present? Yes Water table present? Yes Xaturation present? Yes X (includes capillary fringe) Describe recorded data (stream gauge, | No No | Depth (inches) Depth (inches) |): 4 | pections), | wetland hydrology present? Y | _ |
| Field Observations: Surface water present? Water table present? Saturation present? Yes X (includes capillary fringe) | No No | Depth (inches) Depth (inches) |): 4 | pections), | wetland hydrology present? Y | _ |

US Army Corps of Engineers Northcentral and Northeast Region

| | | | | | | 50/20 Thresholds | |
|-----------------------|-------------|----|---------------------|---------------------------------|---------------------|--|---|
| | | | Absolute | Dominant | Indicator | | 20% 50% |
| ree Stratum | Plot Size (| 30 |) % Cover | Species | Status | Tree Stratum | 0 0 |
| | | | 70 00101 | Ороскоо | Otatao | Sapling/Shrub Stratum | 0 0 |
| | | | | | | Herb Stratum | 14 35 |
| | | | | | | | 0 0 |
| | | | | | | Woody Vine Stratum | 0 0 |
| | | | | | | Dominance Test Worksheet | |
| | | | | | | Number of Dominant | |
| | | | | | | Species that are OBL, | |
| | | | | | | FACW, or FAC: | 1 (A |
| | | | | | | Total Number of Dominant | . (// |
| | | | | | | Species Across all Strata: | 1 (B) |
| | | | 0 | = Total Cover | | _ | |
| | | | | | | Percent of Dominant Species that are OBL, | |
| apling/Shrub | | | Absolute | Dominant | Indicator | | 00.00% (A |
| Stratum | Plot Size (| 15 |) % Cover | Species | Status | TACW, GITAC. | 00.00 % (A |
| Stratum | | | /8 COVE | Species | Status | | |
| | | | | | | Prevalence Index Worksheet | |
| | | | | | | Total % Cover of: | |
| | | | | | | OBL species 0 x 1 = | 0 |
| | | | | | | FACW species 0 x 2 = | 0 |
| | | | | | | FAC species 70 x 3 = | 210 |
| | | | | | | FACU species 0 x 4 = | 0 |
| | | | | | | UPL species 0 x 5 = | 0 |
| | | | | | | Column totals 70 (A) | 210 (B) |
| | | | | | | Prevalence Index = B/A = | 3.00 |
| | | | | | | _ | |
| | | | 0 | = Total Cover | | | |
| | | | | | | Hydrophytic Vegetation Indi | cators: |
| lerb Stratum | Plot Size (| 5 |) Absolute | Dominant | Indicator | Rapid test for hydrophytic | vegetation |
| iero Siratum | PIUL SIZE (| 5 | % Cover | Species | Status | X Dominance test is >50% | |
| Panicum capilla | are | | 65 | Y | FAC | X Prevalence index is ≤3.0* | |
| Populus deltoid | les | | 5 | N | FAC | Morphological adaptations | * (provide |
| | | | | | | supporting data in Remark | |
| | | | | | | separate sheet) | |
| | | | | | | Problematic hydrophytic ve | egetation* |
| | | | | | | (explain) | |
| | | | | | | *Indicators of hydric soil and wetland | hudrologu must |
| | | | | | | present, unless disturbed or problema | |
| | | | | | | , , | |
| | | | | | | | |
| | | | | | | Definitions of Vegetation Str | ata: |
| | | | | | | | |
| | | | | | | Definitions of Vegetation Str Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he | more in diamet |
| | | | | | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he | more in diamet |
| | | | | | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th | more in diamet |
| | | | 70 | = Total Cover | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. | more in diamet ight. nan 3 in. DBH a |
| | | | 70 | = Total Cover | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less the greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) p | more in diamet ight. nan 3 in. DBH a lants, regardles |
| Woody Vine | | | Absolute | | Indicator | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. | more in diamet ight. nan 3 in. DBH a lants, regardles |
| Woody Vine Stratum | Plot Size (| 30 | | = Total Cover Dominant Species | Indicator Status | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) p size, and woody plants less than 3.28 | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute | Dominant | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less the greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) p | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute | Dominant | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) psize, and woody plants less than 3.28 tize, and woody vines - All woody vines great | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute | Dominant | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) psize, and woody plants less than 3.28 tize, and woody vines - All woody vines great | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute | Dominant | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/strub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) psize, and woody plants less than 3.25 woody vines - All woody vines great height. | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute | Dominant | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) psize, and woody plants less than 3.28 tize, and woody vines - All woody vines great | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute | Dominant | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapling/shrub - Woody plants less th greater than 3.28 ft (1m)tall. Herb - All herbaceous (non-woody) p size, and woody plants less than 3.28 Woody vines - All woody vines great height. Hydrophytic | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | Plot Size (| 30 | Absolute % Cover | Dominant Species | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapiling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plate, and woody plants less than 3.28 Woody vines - All woody vines great height. Hydrophytic vegetation | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| | | | Absolute % Cover | Dominant Species | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapiling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plate, and woody plants less than 3.28 Woody vines - All woody vines great height. Hydrophytic vegetation | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| Stratum | | | Absolute % Cover | Dominant Species | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapiling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plate, and woody plants less than 3.28 Woody vines - All woody vines great height. Hydrophytic vegetation | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| Stratum | | | Absolute % Cover | Dominant Species | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapiling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plate, and woody plants less than 3.28 Woody vines - All woody vines great height. Hydrophytic vegetation | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |
| Stratum | | | Absolute % Cover | Dominant Species | | Tree - Woody plants 3 in. (7.6 cm) or breast height (DBH), regardless of he Sapiling/shrub - Woody plants less th greater than 3.28 ft (1 m) tall. Herb - All herbaceous (non-woody) plate, and woody plants less than 3.28 Woody vines - All woody vines great height. Hydrophytic vegetation | more in diamet ight. nan 3 in. DBH a lants, regardles tft tall. |

| SOIL | | | | | | | S | ampling Point: | 1-1W |
|---|--|---|---|--|--|--|---|------------------------------------|---|
| | , | | | | | | | | |
| | | | | | | indicate | or or confirm the absen | ce of indicators.) | |
| Depth | Matrix | | | dox Feat | | 1** | Texture | Remar | ks: |
| (Inches) | Color (moist) | % | Color (moist) | % | Type* | Loc** | | | |
| 0-12 | 10YR 3/2 | 100 | 40)/D 4/0 | 10 | + | | L | | |
| 12-24 | 10YR 4/2 | 10 | 10YR 4/6 | 10 | С | М | CL | | |
| | | \vdash | | ├── | $+\!-\!\!-\!\!\!-$ | | | | |
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| | | | + | | + | | | † | |
| *Type: C=C | Concentration, D | =Deplet | ion, RM=Reduce | ed Matri | ix, CS=C | covered | or Coated Sand Grains | _1 | |
| | PL=Pore Lining | | | | | | | | |
| Hydric Soi | I Indicators: | | | | | | Indicators for Pro | blematic Hydric S | ioils: |
| His Bla Hyv Stra X Dep Thi Sar Sar Sar Stri Dar 145 | of hydrophytic v | A4) 5) irk Surfa (A12) ral (S1) rix (S4) (LRR R, | (S8 Thin (LR Loa ace (A11) (LR Loa — Dep Rec — Rec — Rec , MLRA | 8) (LRR n Dark S RR R, Mi amy Muo RR K, L) amy Gle pleted M dox Darl pleted D dox Dep | eyed Matrix Matrix (F3 rk Surface Dark Surface pressions | A 149B) (S9) 9B eral (F1) rix (F2) 3) ee (F6) face (F7) s (F8) | Coast Prairie F 5 cm Mucky P. Dark Surface (Polyvalue Belc Thin Dark Surf Iron-Manganes Piedmont Floo Mesic Spodic (Red Parent Me | Dark Surface (TF12) in Remarks) | K, L, R) RR K, L, R) RR K, L) -) RR K, L, R) MLRA 149B) -, 145, 149B) |
| Restrictive Type: Depth (inch | Layer (if observe | ∌d): | | <u>—</u> | _ | | Hydric soil prese | ent? <u>Y</u> | |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

| Applicant/Owner: Hans Hagen | | ity/County: | Lake Elr | no | Sampling Date: | : 6/17/14 | |
|---|--|---|---------------------|-------------------|---|---|----------|
| | | | State: | MN | Sampling P | oint: | 2-1U |
| Investigator(s): M Lauterbach-Barrett, A | Krinke | | Section, | Townshi | p, Range: S33 T2 | 9 R21 | |
| Landform (hillslope, terrace, etc.): Flat | | Lo | cal relief (| concave, | convex, none): | None | |
| Slope (%): 1 to 3 Lat.: | Long.: | | Dati | ım: | | | |
| Soil Map Unit NameFreeon silt loam | | | | NWI (| Classification: PE | M1A | |
| Are climatic/hydrologic conditions of the | site typical for this tim | ne of the year | ? No | (If no. | explain in remark | ks) | |
| Are vegetation X , soil | , or hydrology | significantl | y disturbe | d? | Are "normal | | |
| | , or hydrology | naturally p | | | circumstances" | present? | ? No |
| (If needed, explain any answers in rema | rks) | | | | | | |
| | | | | | | | |
| SUMMARY OF FINDINGS | | | | | | | |
| SUMMART OF FINDINGS | | | | | | | |
| Hydrophytic vegetation present? | Y Is | the sample | d area wi | thin a we | tland? | N | |
| Hydric soil present? | N | | | | | | |
| Indicators of wetland hydrology present | ? N If | yes, optional | wetland s | site ID: | | | |
| ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | , , . , | | _ | | | _ |
| Remarks: (Explain alternative procedure | es here or in a separat | te report.) | | | | | |
| | | , | | | | | |
| Climatic conditions wetter than r | ormal based on 30 | O-day rolling | precipi | tation av | erage, Croppin | na consi | dered no |
| normal circumstances, hence ve | | | , р. ос.р. | | olugoi oloppii | .g 000. | ao.oa |
| nonnai circumstances, nence ve | getation is disturbe | eu. | | | | | |
| | | | | | | | |
| HYDROLOGY | | | | | | | |
| THE ROLLOCK | | | | Casa | ndary Indicators (r | no in inc. uno | of huo |
| Primary Indicators (minimum of one is re | aguired: abook all that | opply) | | requir | | minimum | OI IWO |
| Surface Water (A1) | equired, check all that Water-Stained | | | | ed) urface Soil Cracks | (DC) | |
| High Water Table (A2) | | | | | | | |
| ` ` ` ' | Aquatic Fauna Marl Deposits | | | | rainage Patterns (E | | |
| 0 - 1 1' (40) | | | | | | | |
| Saturation (A3) | | | | | loss Trim Lines (B1 | | |
| Water Marks (B1) | Hydrogen Sulf | ide Odor (C1) | | D | ry-Season Water T | able (C2) | |
| Water Marks (B1) Sediment Deposits (B2) | Hydrogen Sulf Oxidized Rhize | ide Odor (C1) | | C | ry-Season Water T rayfish Burrows (C | able (C2) 8) | |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) | Hydrogen Sulf Oxidized Rhize Roots (C3) | ide Odor (C1) ospheres on L | iving | D C s | ry-Season Water T rayfish Burrows (C aturation Visible on | able (C2) 8) | |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R | ide Odor (C1) ospheres on L educed Iron (0 | iving C4) | | ry-Season Water T rayfish Burrows (C aturation Visible on C9) | Table (C2) 8) Aerial Im | nagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R Recent Iron Re | ide Odor (C1) ospheres on L educed Iron (0 | iving C4) | D s (0 | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed | Table (C2) 8) n Aerial Im Plants (D | nagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R Recent Iron Re Soils (C6) | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till | iving C4) | D s (0 s | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed eomorphic Position | Table (C2) 8) n Aerial Im Plants (D n (D2) | nagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R Recent Iron Re Soils (C6) Thin Muck Sur | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till | iving C4) | | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed eomorphic Position hallow Aquitard (D | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) | nagery |
| 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 | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R Recent Iron Re Soils (C6) | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till | iving C4) | | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed eomorphic Position hallow Aquitard (D: AC-Neutral Test (D | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R Recent Iron Re Soils (C6) Thin Muck Sur | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till | iving C4) | | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed eomorphic Position hallow Aquitard (D | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| 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) | Hydrogen Sulf Oxidized Rhize Roots (C3) Presence of R Recent Iron Re Soils (C6) Thin Muck Sur | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till | iving C4) | | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed eomorphic Position hallow Aquitard (D: AC-Neutral Test (D | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| 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: | Hydrogen Sulf Oxidized Rhize Roots (Cri) Presence of R Recent Iron Ri Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till fface (C7) in Remarks) | iving C4) led | | ry-Season Water T rayfish Burrows (C aturation Visible or C9) tunted or Stressed eomorphic Position hallow Aquitard (D: AC-Neutral Test (D licrotopographic Re | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| 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? Yes | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron RR Solls (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till rface (C7) in Remarks) | iving C4) led | | ry-Season Water T rayfish Burrows (C aturation Visible or 79) tunted or Stressed eomorphic Positior hallow Aquitard (Di AC-Neutral Test (D licrotopographic Re | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| 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? Yes Water table present? Yes | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr. Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till fface (C7) in Remarks) eepth (inches) eepth (inches) | iving C4) ded | | ry-Season Water T rayfish Burrows (C duration Visible or C9) tunted or Stressed eomorphic Positior hallow Aquitard (D: AC-Neutral Test (D licrotopographic Re Indicators of wetland | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| 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? Water table present? Yes Saturation present? Yes | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr. Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till rface (C7) in Remarks) | iving C4) ded | | ny-Season Water T rayfish Burrows (C aturation Visible or 9.9) tunted or Stressed eomorphic Position hallow Aquitard (D: AC-Neutral Test (D icrotopographic Re Indicators of wetland hydrology | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr. Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron (Ceduction in Till fface (C7) in Remarks) eepth (inches) eepth (inches) | iving C4) ded | | ry-Season Water T rayfish Burrows (C duration Visible or C9) tunted or Stressed eomorphic Positior hallow Aquitard (D: AC-Neutral Test (D licrotopographic Re Indicators of wetland | Table (C2) 8) n Aerial Im Plants (D n (D2) 3) 05) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) Describe recorded data (stream gauge, | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |
| 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? Yes Water table present? Yes Saturation present? Yes (includes capillary fringe) Describe recorded data (stream gauge, | Hydrogen Sulf Oxidized Rhizis Roots (C3) Presence of R Recent Iron Rr Soils (C6) Thin Muck Sur Other (Explain | ide Odor (C1) ospheres on L educed Iron ((eduction in Till fface (C7) in Remarks) epth (inches) epth (inches) | :: 14 | | ny-Season Water T rayfish Burrows (C rayfish Burrows (C rayfish C | Fable (C2) 8) n Aerial Im Plants (D n (D2) 3) 95) elief (D4) | nagery |

US Army Corps of Engineers Northcentral and Northeast Region

| | | | | 50/20 Thresholds | |
|--|--------------|---------------------------------|-----------|--------------------------------------|--------------------------|
| Tree Stratum Plot Size (30) | Absolute | Dominant | Indicator | | 20% 50% |
| Tree Stratum Plot Size (30) | % Cover | Species | Status | Tree Stratum | 4 10 |
| 1 Picea pungens | 15 | Y | FACU | Sapling/Shrub Stratum | 5 13 |
| 2 Populus tremuloides | 5 | Y | FAC | Herb Stratum | 31 78 |
| 3 | | | | Woody Vine Stratum | 1 3 |
| 4 | | | | viocay vino chatam | |
| 5 | | | | Dominance Test Workshe | n4 |
| | | | | | eı |
| 6 | | | | Number of Dominant | |
| 7 | | | | Species that are OBL, | |
| 8 | | | | FACW, or FAC: | 4 (A) |
| 9 | | | | Total Number of Dominant | |
| 10 | | | | Species Across all Strata: | 7 (B) |
| | 20 = | Total Cover | | Percent of Dominant | |
| | | | | Species that are OBL, | |
| Sapling/Shrub | Absolute | Dominant | Indicator | FACW, or FAC: | 57.14% (A/B) |
| | | | | FACW, OF FAC. | 37.14% (A/D) |
| Stratum Tiol Gize (15) | % Cover | Species | Status | | |
| 1 Fraxinus pennsylvanica | 15 | Y | FACW | Prevalence Index Workship | eet |
| 2 Comus alba | 10 | Y | FACW | Total % Cover of: | |
| 3 | | | | OBL species 0 x 1 | = 0 |
| 4 | | | | | |
| 7 | | | | FACW species 35 x 2 | |
| 5 | | | | FAC species 10 x 3 | |
| 6 | | | | FACU species 160 x 4 | |
| 7 | | | | UPL species 0 x 5 | |
| 8 | | | | Column totals 205 (A) | 740 (B) |
| 9 | | | | Prevalence Index = B/A = | 3.61 |
| 10 | | | | | |
| · | 25 = | Total Cover | | | |
| | | - Total Gover | | Hydrophytic Vegetation In | dicatore: |
| | | . | | | |
| Herb Stratum Plot Size (5) | Absolute | Dominant | Indicator | Rapid test for hydrophy | |
| , | % Cover | Species | Status | X Dominance test is >50% | |
| 1 Poa pratensis | 90 | Y | FACU | Prevalence index is ≤3.0 | O* |
| 2 Solidago canadensis | 50 | Y | FACU | Morphological adaptation | ns* (provide |
| 3 Phalaris arundinacea | 10 | N | FACW | supporting data in Rema | arks or on a |
| 4 Trifolium pratense | 5 | N | FACU | separate sheet) | |
| 5 | | | | Problematic hydrophytic | vegetation* |
| 6 | | | | (explain) | rogotation |
| 7 | | | | | |
| - | | | | *Indicators of hydric soil and wetla | |
| 8 | | | | present, unless disturbed or proble | ematic |
| 9 | | | | | |
| 10 | | | | Definitions of Vegetation | Strata: |
| l1 | | | | Tree - Woody plants 3 in. (7.6 cm | |
| 12 | | | | | |
| 13 | | | | breast height (DBH), regardless o | i neight. |
| 14 | | | | Sapling/shrub - Woody plants les | s than 3 in DBH and |
| 5 | | | | greater than 3.28 ft (1 m) tall. | |
| | 155 = | Total Cover | | 5 | |
| | 100 = | - Total Cover | | Herb - All herbaceous (non-wood) | y) plants, regardless of |
| | | | | size, and woody plants less than 3 | |
| Woody Vine Plot Size (30) | Absolute | Dominant | Indicator | | |
| Stratum | % Cover | Species | Status | Woody vines - All woody vines gr | eater than 3.28 ft in |
| 1 Vitis riparia | 5 | Y | FAC | height. | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| · | | | | Hydrophytic | |
| 5 | | | | vegetation | |
| | 5 = | Total Cover | | present? Y | |
| | | | | | - |
| Remarks: (Include photo numbers here or on a separ | ate sheet) | | | • | |
| comanio. (include priote flumbers fiere of off a separ | ato silicoty | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Sampling Point: 2-1U

VEGETATION - Use scientific names of plants

| SOIL | | | | | | | S | ampling Point: | 2-1U |
|---|--------------------------------------|--|----------------------------------|---|---|--|---|---|--|
| | | | | | | | | | |
| | | | | | | e indicato | or or confirm the absence | ce of indicators.) | |
| Depth | Matrix | | | lox Fea | | 1** | Texture | Remar | ks |
| (Inches) | Color (moist) | % | Color (moist) | % | Type* | Loc** | 0.1 | - | |
| 0-18 | 10YR 3/2 | 100 | ├ ─── | ├── | + | \vdash | SiL | - | |
| 18-24 | 10YR 4/4 | 100 | | | | ├ | SiL | | |
| | ļ | —— | ļ | <u> </u> | - | <u> </u> | | ļ | |
| | <u> </u> ! | ├ ── | ļ! | | ↓ | <u> </u> | | ļ | |
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| - 0.6 | | Ļ., | | | | لبسل | | L | |
| | Concentration, D: PL=Pore Lining. | | | ed Matri | ix, CS=C | overea o | or Coated Sand Grains | | |
| | il Indicators: | | | | | | Indicators for Pro | blematic Hydric S | oils: |
| Bla Hyo Stri Dej Thi Sai Sai Stri Dai 148 | | A4) .5) ark Surfa (A12) ral (S1) rix (S4) s) (LRR R, | Thir (LR Loa Dep Reconders, MLRA | n Dark S RR R, M amy Muc RR K, L) amy Gle pleted M dox Dar pleted D dox Dep | Peyed Matrix (F3 rk Surfact Dark Surfact Dark Surf | (S9) 9B eral (F1) trix (F2) 3) ee (F6) face (F7) s (F8) | 5 cm Mucky Pe Dark Surface (Polyvalue Belo Thin Dark Surf- Iron-Manganes Piedmont Floo Mesic Spodic (Red Parent Ma | ow Surface (S8) (LR K, L ace (S9) (LRR K, L se Masses (F12) (L dplain Soils (F19) (I TA6) (MLRA 144A aterial (F21) Dark Surface (TF12) in Remarks) | RR K, L, R) RR K, L) -) RR K, L, R) MLRA 149B) , 145, 149B) |
| Restrictive Type: Depth (inch | Layer (if observe | ∍d): | | | - - | | Hydric soil prese | nt? N | |
| Remarks: | | | | | | | | | |
| | | | | | | | | | |

| Project/Site: Inwood Ave N | City/C | County: Lake Elmo | Sampling Date: 6/17/14 |
|---|--------------------------|---------------------------|---------------------------------------|
| Applicant/Owner: Hans Hagen | | State: MN | Sampling Point: 2-1W |
| Investigator(s): M Lauterbach-Barrett, A Kri | nke | | nship, Range: S33 T29 R21 |
| Landform (hillslope, terrace, etc.): Depress | sion | Local relief (cond | cave, convex, none): None |
| Slope (%): 0 to 1 Lat.: | Long.: | Datum: | · · · · · · · · · · · · · · · · · · · |
| Soil Map Unit NameFreeon silt loam | ` | <u> </u> | NWI Classification: PEM1A |
| Are climatic/hydrologic conditions of the site | typical for this time of | f the year? No (| If no, explain in remarks) |
| Are vegetation , soil , or | hydrology si | gnificantly disturbed? | Are "normal |
| Are vegetation , soil , or | hydrology na | aturally problematic? | circumstances" present? Yes |
| (If needed, explain any answers in remarks) | · | | |
| | | | |
| SUMMARY OF FINDINGS | | | |
| Hydrophytic vegetation present? | Y Is the | sampled area within | a wetland? Y |
| Hydric soil present? Indicators of wetland hydrology present? | Y If yes | , optional wetland site I | D: Wetland 2 |
| indicators of wettand hydrology present? | i yes | , optional wetland site i | D. Wettarid 2 |
| Remarks: (Explain alternative procedures he | ere or in a separate re | port.) | |
| | | 1 / | |
| Oli | ! 00 - | | |
| Climatic conditions wetter than norn | nai based on 30-da | ay rolling precipitation | n average. |
| | | | |
| | | | |
| HYDROLOGY | | | |
| | | 5 | Secondary Indicators (minimum of two |
| Primary Indicators (minimum of one is requi | red; check all that app | oly) r | equired) |
| Surface Water (A1) | Water-Stained Lea | ives (B9) | Surface Soil Cracks (B6) |
| X High Water Table (A2) | Aquatic Fauna (B1 | 3) | Drainage Patterns (B10) |
| X Saturation (A3) | Marl Deposits (B15 | 5) | Moss Trim Lines (B16) |
| Water Marks (B1) | Hydrogen Sulfide (| Odor (C1) | Dry-Season Water Table (C2) |
| Sediment Deposits (B2) | Oxidized Rhizosph | eres on Living | Crayfish Burrows (C8) |
| Drift Deposits (B3) | Roots (C3) | _ | Saturation Visible on Aerial Imagery |
| Algal Mat or Crust (B4) | Presence of Reduc | ced Iron (C4) | (C9) |
| Iron Deposits (B5) | Recent Iron Reduc | | Stunted or Stressed Plants (D1) |
| Inundation Visible on Aerial | Soils (C6) | | X Geomorphic Position (D2) |
| Imagery (B7) | Thin Muck Surface | | Shallow Aquitard (D3) |
| Sparsely Vegetated Concave | Other (Explain in F | Remarks) | FAC-Neutral Test (D5) |
| Surface (B8) | | _ | Microtopographic Relief (D4) |
| Field Observations: | | | |
| Surface water present? Yes | No X Depth | (inches): | Indicators of |
| Water table present? Yes X | | (inches): Surface | wetland |
| · — | | | |
| | NoDepth | (inches): Surface | hydrology |
| (includes capillary fringe) | | | present? Y |
| Describe recorded data (stream gauge, mor | itoring well periol ph | ntoe previous inspectio | ine) if available: |
| Describe recorded data (stream gauge, mor | mornig wen, aenai pin | otos, previous mapeolio | nio,, ii available. |
| | | | |
| | | | |
| Remarks: | | | |
| | | | |
| | | | |
| | | | |

US Army Corps of Engineers Northcentral and Northeast Region

| So/20 Thresholds |
|---|
| Tree Stratum |
| Sapling/Shrub Stratum 3 8 Herb Stratum 24 60 Woody Vine Stratum 1 3 |
| Herb Stratum |
| Noody Vine Stratum 1 3 |
| Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: |
| Number of Dominant Species that are OBL, FACW, or FAC: |
| Number of Dominant Species that are OBL, FACW, or FAC: |
| Species that are OBL, FACW, or FAC: |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| Total Number of Dominant Species Across all Strata: 6 (B) Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/ Prevalence Index Worksheet Total % Cover of: 0BL species 0 x1 = 0 FACW species 110 x2 = 220 FAC species 0 x3 = 0 FAC species 50 x4 = 200 UPL species 50 x4 = 200 UPL species 50 x5 = 0 Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| Species Across all Strata: 6 (B) |
| Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/FACW, or FAC: 66.67%) Prevalence Index Worksheet Total % Cover of: OBL species 0 x1 = 0 FACW species 110 x2 = 220 FAC species 0 x3 = 0 FACU species 50 x4 = 200 UPL species 50 x 5 = 0 Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| Species that are OBL, |
| Prevalence Index Worksheet Total % Cover of: OBL species |
| Prevalence Index Worksheet |
| Total % Cover of: OBL species
| Total % Cover of: OBL species 0 x1 = 0 FACW species 110 x2 = 220 FAC species 0 x3 = 0 FACU species 0 x4 = 200 UPL species 0 x5 = 0 Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| OBL species 0 x 1 = 0 FACW species 110 x 2 = 220 FAC species 0 x 3 = 0 FACU species 50 x 4 = 200 UPL species 0 x 5 = 0 Column totals 160 (A) 420 Prevalence Index = B/A = 2.63 |
| FACW species 110 x 2 = 220 FAC species 0 x 3 = 0 FACU species 50 x 4 = 200 UPL species 0 x 5 = 0 Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| FAC species 0 x 3 = 0 FACU species 50 x 4 = 200 UPL species 0 x 5 = 0 Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| FACU species 50 x 4 = 200 ULS species 0 x 5 = 0 Column totals 160 (A) 420 Prevalence Index = B/A = 2.63 |
| UPL species 0 x 5 = 0 Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| Column totals 160 (A) 420 (B) Prevalence Index = B/A = 2.63 |
| Prevalence Index = B/A = 2.63 |
| Prevalence Index = B/A = 2.63 |
| |
| |
| |
| Hydrophytic Vegetation Indicators: |
| Rapid test for hydrophytic vegetation |
| X Dominance test is >50% |
| X Prevalence index is ≤3.0* |
| Morphological adaptations* (provide |
| supporting data in Remarks or on a |
| separate sheet) |
| Problematic hydrophytic vegetation* |
| (explain) |
| · — · · · · |
| *Indicators of hydric soil and wetland hydrology must present, unless disturbed or problematic |
| present, unless disturbed of problematic |
| Definitions of Vegetation Strata: |
| Tree - Woody plants 3 in. (7.6 cm) or more in diameter |
| breast height (DBH), regardless of height. |
| Sapling/shrub - Woody plants less than 3 in. DBH a |
| greater than 3.28 ft (1 m) tall. |
| Herb - All herbaceous (non-woody) plants, regardles |
| size, and woody plants less than 3.28 ft tall. |
| |
| Woody vines - All woody vines greater than 3.28 ft in |
| height. |
| |
| Hydrophytic |
| vegetation |
| present? Y |
| <u> </u> |
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| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth (Inches): Color (moist) % Color (moist) % Type* Loc** Texture Remarks 0-6 10 YR 3/2 100 L. | SOIL | | | | | | | S | Sampling Point: | 2-1W |
|--|---|--|---|--|--|--|--|---|---|---|
| Depth (Inches) Color (moist) % Color (moist) % Texture Remarks | | | | | | | | | | |
| (Inches) Color (moist) % Color (moist) % Type* Loc** 0-6 10YR 3/2 100 | | | | | | | indicate | or or confirm the absen | nce of indicators.) | |
| 6-18 10YR 3/2 100 10YR 4/6 10 C M CL 10YR 4/1 10 D M L 10YR 1/1 10 | | | | | | | Loc** | Texture | Remar | rks |
| 6-18 | | | | Color (moist) | 70 | Type | Loc | 1 | + | |
| Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains "Lecation: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) Histo Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Loamy Mucky Mineral (F1) X Depleted Below Dark Surface (A11) Thick Dark Surface (A11) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Redox Dark Surface (F6) Sandy Redox (S6) Dark Surface (S7) (LRR K, L) Stripped Matrix (S6) Redox Dark Surface (F7) Stripped Matrix (S6) Dark Surface (S7) (LRR K, L) Stripped Matrix (S6) Redox Dark Surface (F7) Redox Dark S | | | | 10VR 4/6 | 10 | - C | М | | + | |
| *Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | 0-10 | 10111 4/2 | - 00 | | | | | CL | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | | 10113 4/1 | 10 | - | ivi | | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | | + | | | | | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | | † | | + | | | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | | † | | + | | | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | | † | | † | | | 1 | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | | † | | † | | | 1 | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | † | | † | † | † * | | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | <u> </u> | † | <u> </u> | † | † | | + | |
| **Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: Histosol (A1) | | | † | † | † | † | † | | † | |
| Hydric Soil Indicators: Histosol (A1) Histic Epipedon (A2) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Loamy Mucky Mineral (S1) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Depleted Dark Surface (F6) Sandy Redox (S5) Depleted Dark Surface (F7) Stripped Matrix (S6) Redox Depressions (F8) Dark Surface (S7) (LRR K, L) Holicators for Problematic Hydric Soils: 2 cm Muck (A10) (LRR K, L, MLRA 149B Coast Prairie Redox (A16) (LRR K, L, R) 5 cm Mucky Peat or Peat (S3) (LRR K, L, L) Dark Surface (S7) (LRR K, L) Thick Dark Surface (A11) Depleted Below Dark Surface (S9) (LRR K, L) Tinon-Manganese Masses (F12) (LRR K, L) Fiedmont Floodplain Soils (F19) (MLRA 144A, 145, 1: Red Parent Material (F21) Stripped Matrix (S6) Person Redox Depressions (F8) Dark Surface (S7) (LRR R, MLRA 149B) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Hydric soil present? Hydric soil present? Y Hydric soil present? Y | | | | | ed Matri | x, CS=C | overed | or Coated Sand Grains | 3 | |
| Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) X Depleted Below Dark Surface (A11) Thin Dark Murchae (A12) Loamy Mucky Mineral (F1) Thin Dark Surface (B3) Loamy Mucky Mineral (F1) Thin Dark Surface (B3) Dark Surface (B3) (LRR K, L) Thin Dark Surface (B3) Sandy Mucky Mineral (B1) Sandy Gleyed Matrix (B4) Sandy Gleyed Matrix (B4) Sandy Redox (B5) Sandy Redox (B5) Depleted Dark Surface (F6) Dark Surface (F7) Stripped Matrix (B6) Dark Surface (B7) (LRR R, MLRA 149B) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Hydric soil present? Y Coast Prairie Redox (A16) (LRR K, L, R) 5 cm Mucky Peat or Peat (S3) (LRR K, L) Thin Dark Surface (S7) (LRR K, L) Thin Dark Surface (S9) (LRR K, L) Thin Dark Surface (F12) (MLRA 144A, 145, 1: Redox Dark Surface (F6) Mesic Spodic (TA6) (MLRA 144A, 145, 1: Red Parent Material (F21) Other (Explain in Remarks) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic Restrictive Layer (if observed): Type: Depth (inches): | | | , 141—141 | шх | | | | Indicators for Pre | oblematic Hydric S | Soils: |
| Type: Hydric soil present? Y Depth (inches): | Bla Hyd Stra X Dep Thi Sar Sar Sar Stra Dar | ack Histic (A3) drogen Sulfide (A atified Layers (A atified Layers) let ed Below Da ick Dark Surface ndy Mucky Minei ndy Gleyed Matr ndy Redox (S5) ipped Matrix (S6 rk Surface (S7) (9B) | A4) A5) Ark Surfa (A12) Aral (S1) Arix (S4) (LRR R, | Thir (LR Loa | n Dark S RR R, MI amy Muc RR K, L) amy Gle- pleted M dox Dark pleted D dox Dep | Surface (ILRA 149 cky Mine) eyed Matrix (F3 rk Surface Dark Surf pressions | (S9) 9B eral (F1) trix (F2) 3) ee (F6) face (F7) s (F8) | 5 cm Mucky P Dark Surface Polyvalue Bele Thin Dark Sur Iron-Mangane Piedmont Floc Mesic Spodic) Red Parent M Very Shallow Other (Explair | Peat or Peat (S3) (LF (S7) (LRR K, L low Surface (S8) (LR frace (S9) (LRR K, L see Masses (F12) (I (TA6) (MLRA 144A laterial (F21) Dark Surface (TF12 n in Remarks) | RR K, L, R) RR K, L) -) .RR K, L, R) (MLRA 149B) 1, 145, 149B) |
| Remarks: | Type: | , , | ed): | | | - - | | Hydric soil pres | ent? Y | |
| | Remarks: | | | | | | | | | |

| Project/Site: Inwood Ave N | | City/County: | Lake E | lmo | Sampling Date | : 7/2/14 | |
|--|--------------------|-------------------|-------------|------------|-----------------------|-------------|-----------|
| Applicant/Owner: Hans Hagen | | | State: | MN | Sampling F | oint: | 3-1U |
| Investigator(s): M Lauterbach-Barrett, A | Krinke | | Section | n, Townsh | ip, Range: S33 T2 | 29 R21 | |
| Landform (hillslope, terrace, etc.): Hills | lope | Lo | ocal relie | f (concave | , convex, none): | None | |
| Slope (%): 1 to 2 Lat.: | Long.: | | Da | itum: | | | |
| Soil Map Unit NameFreeon silt loam | | | | NWI | Classification: PE | M1Af | |
| Are climatic/hydrologic conditions of the | | | | | , explain in remar | ks) | |
| Are vegetation X , soil | , or hydrology | significan | tly disturt | ed? | Are "normal | | |
| | , or hydrology | naturally | | | circumstances | " present | ? No |
| (If needed, explain any answers in rema | rks) | | | | | | |
| | | | | | | | |
| CLIMMA DV OF FINDINGS | | | | | | | |
| SUMMARY OF FINDINGS | | | | | | | |
| Hydrophytic vegetation present? | N | Is the sample | ed area v | vithin a w | etland? | N | |
| Hydric soil present? | N | | | | _ | | |
| Indicators of wetland hydrology present? | ? N | If yes, optiona | al wetland | site ID: | | | |
| maioatoro or motiana nyarology procont | · —— | ii yoo, opiione | | | | | _ |
| Remarks: (Explain alternative procedure | s here or in a sen | arate report) | | | | | |
| remarks. (Explain alternative procedure | o note of in a sep | urate report.) | | | | | |
| Climatic conditions wetter than n | ormal hasad or | 30-day rollin | a nrecir | nitation a | verage Cronni | na cons | dered no |
| normal circumstances, hence ve | | | ig procip | Jilalion a | verage. Groppii | ig cons | ucicu iic |
| normal circumstances, nence ve | getation is distr | irbea. | | | | | |
| | | | | | | | |
| HYDROLOGY | | | | | | | |
| III DROLOGI | | | | | | | |
| 5 | | | | | ndary Indicators (| minimum | of two |
| Primary Indicators (minimum of one is re | | | | requi | | (5.0) | |
| Surface Water (A1) | | ned Leaves (B9) | | | Surface Soil Cracks | | |
| High Water Table (A2) | | una (B13) | | | Orainage Patterns (| | |
| Saturation (A3) | Marl Depos | | | | Moss Trim Lines (B | | |
| Water Marks (B1) | | Sulfide Odor (C1 | , | | ory-Season Water | |) |
| Sediment Deposits (B2) | | hizospheres on | Living | | Crayfish Burrows (C | | |
| Drift Deposits (B3) | Roots (C3) | | | | Saturation Visible of | n Aerial In | nagery |
| Algal Mat or Crust (B4) | Presence of | of Reduced Iron | (C4) | | C9) | | |
| Iron Deposits (B5) | Recent Iron | n Reduction in T | illed | s | Stunted or Stressed | l Plants (D | 01) |
| Inundation Visible on Aerial | Soils (C6) | | | | Seomorphic Positio | | |
| Imagery (B7) | Thin Muck | Surface (C7) | | | Shallow Aquitard (D | 3) | |
| Sparsely Vegetated Concave | Other (Exp | lain in Remarks) | | F | AC-Neutral Test ([| 05) | |
| Surface (B8) | | | | | Microtopographic R | elief (D4) | |
| | | | | | | | |
| Field Observations: | | | | | - | | |
| Surface water present? Yes | No X | Depth (inches | s): | | Indicators of | | |
| Water table present? Yes | No X | Depth (inches | | _ | wetland | | |
| Saturation present? Yes | No X | Depth (inches | | _ | hydrology | | |
| (includes capillary fringe) | | - ' ' | · — | | present? | N | |
| . , , , , | | | | | • | | |
| Describe recorded data (stream gauge, | monitoring well. a | erial photos, pre | evious ins | pections). | if available: | | |
| (gaage) | | | | , , , | | | |
| | | | | | | | |
| | | | | | | | |
| Remarks: | | | | | | | |
| Nomano. | | | | | | | |
| | | | | | | | |
| | | | | | | | |

US Army Corps of Engineers Northcentral and Northeast Region

| Tree Stratum | Plot Size (| 30 | Absolute | Dominant | Indicator | 50/20 Thresholds | 20% 50% |
|-----------------------|-----------------|---------------|----------------|------------------------------|---------------|--|---------------------------|
| 4 | | | % Cover | Species | Status | Tree Stratum Sapling/Shrub Stratum | 0 0 |
| 2 | | | | | | Herb Stratum | 4 10 |
| 3 | | | | | | Woody Vine Stratum | 0 0 |
| 4 | | | | | | , | |
| 5 | | | | | | Dominance Test Worksho | et |
| 6 | | | | | | Number of Dominant | |
| 7 | | | | | | Species that are OBL, | 4 (4) |
| 8 | | | | | | FACW, or FAC: Total Number of Dominant | 1(A) |
| 10 | | | | $-\!\!\!-\!\!\!\!-\!\!\!\!-$ | | Species Across all Strata: | |
| | | | 0 : | = Total Cover | | | (5) |
| | | | | | | Percent of Dominant Species that are OBL, | |
| Sapling/Shrub | | | Absolute | Dominant | Indicator | FACW, or FAC: | 50.00% (A/B) |
| Stratum | Plot Size (| 15 |) % Cover | Species | Status | | , , , , |
| 1 | | | | | | Prevalence Index Worksh | eet |
| 2 | | | | | | Total % Cover of: | |
| 3 | | | | | | OBL species 0 x 1 | = 0 |
| 4 | | | | | | FACW species 0 x 2 | |
| 5 | | | | | | FAC species 5 x 3 | = 15 |
| 6 | | | | | | FACU species 15 x 4 | = 60 |
| 7 | | | | | | UPL species 0 x 5 | |
| 8 | | | | | | Column totals 20 (A) | |
| 9 | | | | | | Prevalence Index = B/A = | 3.75 |
| 10 | | | 0 = | Total Cover | | | |
| | | | | = Total Cover | | Hydrophytic Vegetation I | ndicatore: |
| | | | . Absolute | Dominant | Indicator | Rapid test for hydrophy | |
| Herb Stratum | Plot Size (| 5 |) % Cover | Species | Status | Dominance test is >50° | |
| 1 Chenopodium a | lbum | | 15 | Y | FACU | Prevalence index is ≤3. | |
| 2 Panicum capilla | | | 5 | Y | FAC | Morphological adaptati | ons* (provide |
| 3 | | | | | | supporting data in Rem | |
| 4 | | | | | | separate sheet) | |
| 5 | | | | | | Problematic hydrophyti | c vegetation* |
| 6 | | | | | | (explain) | |
| 7 | | | | | | *Indicators of hydric soil and wetl | |
| 9 | | | | | | present, unless disturbed or prob | lematic |
| 10 | | | | $\overline{}$ | $\overline{}$ | Definitions of Vegetation | Strata: |
| 11 | | | | $\underline{\hspace{1cm}}$ | | _ | |
| 12 | | | | | | Tree - Woody plants 3 in. (7.6 cm | |
| 13 | | | | | | breast height (DBH), regardless | or neight. |
| 14 | • | | | | | Sapling/shrub - Woody plants le | ss than 3 in. DBH and |
| 15 | | | | | | greater than 3.28 ft (1 m) tall. | |
| | | | 20 = | Total Cover | | Herb - All herbaceous (non-wood | lv) plants, regardless of |
| Moody Vino | | | . Absolute | Dominant | Indicator | size, and woody plants less than | |
| Woody Vine Stratum | Plot Size (| 30 |) % Cover | Species | Status | | |
| 1 | | | 70 OOVC1 | Орсско | Otatus | Woody vines - All woody vines g height. | reater than 3.28 ft in |
| 2 | | | | | | - 1 | |
| 3 | | | | | | | |
| 4 | | | | | | Hydrophytic | |
| 5 | | | | | | vegetation | |
| | | | 0 = | Total Cover | | present? N | |
| | | | | | | | |
| Remarks: (Include pho | oto numbers her | re or on a se | eparate sheet) | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 1 | | | | | | | |

Sampling Point: 3-1U

VEGETATION - Use scientific names of plants

| | | | | | | | Sampling Point: | 3-1U |
|---|---|---|---|--|---|--|--|--|
| | | | | | | | | |
| | be to the | | | | indicato | or or confirm the abser | nce of indicators.) | |
| | % | | | | L oc** | Texture | Remar | ks |
| | | Color (moist) | /0 | Турс | LUC | Qil . | + | |
| | | | | + | $\vdash \vdash \vdash$ | | + | |
| 1011(4/- | 100 | | | + | $\vdash \vdash \vdash$ | SIL | + | |
| + | | | | + | $\vdash \vdash \vdash$ | | + | |
| + | | | | + | $\vdash \vdash \vdash$ | | + | |
| † | | | | + | | i | † | |
| † | | | | + | | i | † | |
| † | | | | † | | | 1 | |
| † | | | | † | | | 1 | |
| † | | † | | \dagger | | I | + | |
| † | | | | 1 | | | + | |
| † | | | | † | | | † | |
| | | | ed Matri | x, CS=C | overed o | or Coated Sand Grains | 3 | |
| | 111-111-1 | | | | | Indicators for Pro | oblematic Hydric S | oils: |
| ack Histic (A3) ydrogen Sulfide (Aratified Layers (A- ratified Layers) pieted Below Da nick Dark Surface andy Mucky Miner andy Gleyed Matr andy Redox (S5) ripped Matrix (S6 ark Surface (S7) (198) | A4) 5) irk Surfa (A12) ral (S1) rix (S4) (LRR R, | Thir (LR Loa Dep Reco | n Dark S RR R, M amy Muc RR K, L) amy Gle pleted M dox Dar pleted D dox Dep | Surface (ILRA 149 cky Mine) eyed Matr Matrix (F3 rk Surface Dark Surface pressions | (S9) 9B eral (F1) rix (F2) 3) ee (F6) Face (F7) s (F8) | 5 cm Mucky F Dark Surface Polyvalue Bel Thin Dark Sur Iron-Mangane Piedmont Flot Mesic Spodic Red Parent M Very Shallow Other (Explair | Peat or Peat (S3) (LF (S7) (LRR K, L low Surface (S8) (LR frace (S9) (LRR K, L see Masses (F12) (I (TA6) (MLRA 144A laterial (F21) Dark Surface (TF12 n in Remarks) | RR K, L, R) RR K, L) -) RR K, L, R) MLRA 149B) , 145, 149B) |
| • | ed): | | | - - | | Hydric soil pres | ent? N | |
| | | | | | | | | |
| | Matrix Color (moist) 10YR 3/2 10YR 3/2 10YR 4/4 10YR 4/4 Concentration, D. PL=Pore Lining, Ill Indicators: stosol (A1) stic Epipedon (A2 aratified Layers (At appleted Below Da nick Dark Surface andy Mucky Miner andy Medya (Sts) ripped Matrix (S6 ark Surface (S7) (198) s of hydrophytic vi | Matrix Color (moist) % 10YR 3/2 100 10YR 4/4 100 10YR 4/4 100 Concentration, D=Deplete PL=Pore Lining, M=Mat ill Indicators: stosol (A1) stic Epipedon (A2) ack Histic (A3) /drogen Sulfide (A4) ratified Layers (A5) andy Mucky Mineral (S1) andy Gleyed Matrix (S4) andy Redox (S5) ripped Matrix (S4) andy Redox (S5) soft National Matrix (S6) and Surface (S7) (LRR R, 198) sof hydrophytic vegetatio | Matrix Red Color (moist) % Color (moist) 10YR 3/2 100 10YR 4/4 100 10YR 4/4 100 Concentration, D=Depletion, RM=Reduce PL=Pore Lining, M=Matrix ill Indicators: stosol (A1) Polysic Epipedon (A2) (S8 ack Histic (A3) Thin ydrogen Sulfide (A4) (LR ratified Layers (A5) Loa pleted Below Dark Surface (A11) Loa andy Mucky Mineral (S1) Dep andy Gleyed Matrix (S4) Rec andy Redox (S5) Dep ripped Matrix (S4) Rec ard Surface (S7) (LRR R, MLRA 198) of hydrophytic vegetation and wetland he be Layer (if observed): | Matrix Redox Fear Color (moist) % Color (moist) % Color (moist) % 10YR 3/2 100 10YR 4/4 10 | Matrix Color (moist) % Color (moist) % Type* 10YR 3/2 100 10YR 4/4 100 10YR 4/4 100 Concentration, D=Depletion, RM=Reduced Matrix, CS=C: PL=Pore Lining, M=Matrix iil Indicators: stosol (A1) Polyvalue Below St (S8) (LRR R, MLRA* iil Layers (A5) Polyvalue Below St (S8) (LRR R, MLRA* polyvalue Below St (S8) (LRR R, MLRA* Loamy Mucky Mineral (S1) andy Mucky Mineral (S1) andy Gleyed Matrix (S4) Redox Dark Surface and Surface (S7) (LRR R, MLRA* 198) s of hydrophytic vegetation and wetland hydrology must be be Layer (if observed): | Matrix Color (moist) % Color (moist) % Type* Loc** 10YR 3/2 100 10YR 4/4 100 10YR 4/4 100 Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered of the color of the co | Autrix Color (moist) Matrix Color (moist) Color (moist) Matrix Texture Texture SiL SiL SiL SiL Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains PL=Pore Lining, M=Matrix Indicators: Indicators for Prost Stosol (A1) Sit Sil Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Polyvalue Below Surface Stosol (A1) Sit Sil Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Polyvalue Below Surface Stosol (A1) Sit Sil Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Polyvalue Below Surface Stosol (A1) Sit Sil Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Polyvalue Below Surface (A2) Stosol (A1) Stosol (A1) Coast Prairie Stosol (A3) Thin Dark Surface (A9) Coast Prairie Stosol (A3) Matrix (F2) Dark Surface Polyvalue Below Dark Surface Polyvalue Below Dark Surface Polyvalue Bel Thin Dark Surface Thin Dark Surface Thin Dark Surface Polyvalue Bel Thin Dark Surface Color (moist) % Color (moist) % Type* Loc** I exture Remark 10YR 3/2 100 SiL 10YR 4/4 100 SiL Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains Indicators for Problematic Hydric S Stosol (A1) Polyvalue Below Surface Stosol (A1) Sit Indicators for Problematic Hydric S Stosol (A1) Sit Indicators for Problematic Hydric S Stosol (A1) Cast Prairie Redox (A16) (LRR K, L MLR A 149B) To and Lydrogen Sulfide (A4) Cast Prairie Redox (A16) (LRR K, L Polyvalue Below Surface (A16) (LRR K, L Polyvalue Below Surface (A17) Cast Prairie Redox (A16) (LRR K, L Polyvalue Below Surface (A17) Cast Prairie Redox (A16) (LRR K, L Polyvalue Below Surface (S8) (LRR K, L Polyvalue Below Surf |

| Applicant/Owner: Hans Hagen | | City/County: | Lake El | mo | Sampling Date: 7/2/1 | 4 |
|---|---|--|--------------------------|---------------------------------------|---|----------------|
| | | _ | State: | MN | Sampling Point: | 3-1W |
| Investigator(s): M Lauterbach-Barrett, A | Krinke | | Section | , Townshi | p, Range: S33 T29 R21 | |
| Landform (hillslope, terrace, etc.): Dep | ression | Lo | cal relief | (concave, | convex, none): Conc | ave |
| Slope (%): 1 to 3 Lat.: | Long.: | : | Dat | um: | | |
| Soil Map Unit NameFreeon silt loam | | | | NWI | Classification: PEM1Af | |
| Are climatic/hydrologic conditions of the | | s time of the yea | r? No | (If no | , explain in remarks) | |
| Are vegetation X, soil | , or hydrology | significant | | | Are "normal | |
| Are vegetation , soil | , or hydrology | naturally p | roblemat | ic? | circumstances" prese | ent? N |
| If needed, explain any answers in rema | arks) | | | | | |
| SUMMARY OF FINDINGS | | | | | | |
| Hydrophytic vegetation present? Hydric soil present? | <u> </u> | Is the sample | d area w | ithin a we | etland? Y | _ |
| Indicators of wetland hydrology present | ? <u>Y</u> | If yes, optiona | l wetland | site ID: | Wetland 3 | |
| Remarks: (Explain alternative procedure | es here or in a sep | arate report.) | | | | |
| | • | | | | | |
| Climatic conditions wetter than r | normal based or | n 30-day rollin | g precip | itation av | verage. Cropping cor | nsidered |
| normal circumstances, hence ve | egetation is distu | urbed. | | | | |
| | | | | | | |
| IIVDDOLOGY | | | | | | |
| HYDROLOGY | | | | | | |
| | | | | | ndary Indicators (minimu | um of two |
| Primary Indicators (minimum of one is re | | | | requi | | |
| Surface Water (A1) | | ined Leaves (B9) | | | urface Soil Cracks (B6) | |
| X High Water Table (A2) | | una (B13) | | | rainage Patterns (B10) | |
| | | sits (B15) | | | loss Trim Lines (B16) | |
| X Saturation (A3) | | | | | | |
| Water Marks (B1) | Hydrogen | Sulfide Odor (C1) | | | ry-Season Water Table (| C2) |
| Water Marks (B1) Sediment Deposits (B2) | Hydrogen Oxidized F | Sulfide Odor (C1) Rhizospheres on I | | <u>_</u> c | ry-Season Water Table (Grayfish Burrows (C8) | • |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) | Hydrogen Oxidized F Roots (C3) | Sulfide Odor (C1) Rhizospheres on I) | iving | | ry-Season Water Table (6 rayfish Burrows (C8) aturation Visible on Aeria | • |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) | Hydrogen Oxidized F Roots (C3) | Sulfide Odor (C1) Rhizospheres on I | iving | | Pry-Season Water Table (Crayfish Burrows (C8) Laturation Visible on Aeria (C9) | l Imagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) | Hydrogen Oxidized R Roots (C3) Presence of Recent Iro | Sulfide Odor (C1) Rhizospheres on I) | iving C4) | | ry-Season Water Table (6 crayfish Burrows (C8) caturation Visible on Aeria C9) ctunted or Stressed Plants | I Imagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) | Hydrogen Oxidized R Roots (C3) Presence | Sulfide Odor (C1) Rhizospheres on L) of Reduced Iron (| iving C4) | | rry-Season Water Table (trayfish Burrows (C8) aturation Visible on Aeria C9) tunted or Stressed Plants deomorphic Position (D2) | I Imagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck | Sulfide Odor (C1) Rhizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) | Living C4) Iled | | ry-Season Water Table (6 crayfish Burrows (C8) caturation Visible on Aeria C9) ctunted or Stressed Plants | I Imagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck | Sulfide Odor (C1) Rhizospheres on I) of Reduced Iron (n Reduction in Ti | Living C4) Iled | | rry-Season Water Table (trayfish Burrows (C8) aturation Visible on Aeria C9) tunted or Stressed Plants deomorphic Position (D2) | I Imagery |
| Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck | Sulfide Odor (C1) Rhizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) | Living C4) Iled | | hry-Season Water Table (in trayfish Burrows (C8) atturation Visible on Aeria C9) tunted or Stressed Plants beomorphic Position (D2) shallow Aquitard (D3) | I Imagery |
| 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) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck | Sulfide Odor (C1) Rhizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) | Living C4) Iled | | Iny-Season Water Table (irrayfish Burrows (C8) aturation Visible on Aeria C9) itunted or Stressed Plants ieomorphic Position (D2) hallow Aquittard (D3) AC-Neutral Test (D5) | I Imagery |
| 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: | Hydrogen Oxidized R Roots (C3) Presence c Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) Rhizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) olain in Remarks) | Living C4) Illed | | Iny-Season Water Table (i rrayfish Burrows (C8) atturation Visible on Aeria D9) tunted or Stressed Plants ecomorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) licrotopographic Relief (D | I Imagery |
| 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? Yes | Hydrogen Oxidized F Roots (C3) Presence e Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) lain in Remarks) Depth (inches | Living C4) Illed | | Iny-Season Water Table (i rrayfish Burrows (C8) auturation Visible on Aeria 29) tunted or Stressed Plants teemorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) licrotopographic Relief (D | I Imagery |
| Water Marks (B1) Sediment Deposits (B3) 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? Yes Water table present? Yes | Hydrogen Oxidized F Roots (C3) Presence Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) thizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches | C4) lled | C C C C C C C C C C | Indicators of wetland | I Imagery |
| 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? Yes Water table present? Yes | Hydrogen Oxidized F Roots (C3) Presence Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) lain in Remarks) Depth (inches | C4) lled | C C C C C C C C C C | Iny-Season Water Table (i rrayfish Burrows (C8) auturation Visible on Aeria 29) tunted or Stressed Plants teemorphic Position (D2) hallow Aquitard (D3) AC-Neutral Test (D5) licrotopographic Relief (D | I Imagery |
| 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? Water table present? Saturation present? Yes Saturation present? Yes | Hydrogen Oxidized F Roots (C3) Presence Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) thizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches | C4) lled | C C C C C C C C C C | Indicators of wetland | I Imagery (D1) |
| 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? Water table present? Saturation present? Yes Saturation present? Yes | Hydrogen Oxidized F Roots (C3) Presence Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) thizospheres on I) of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches | C4) lled | C C C C C C C C C C | Indicators of wetland hydrology | I Imagery (D1) |
| Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B6) Field Observations: Surface water present? Water table present? Yes Water table present? Yes Saturation present? Yes includes capillary fringe) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches Depth (inches | C4) lled : : 12 : Surfa | C C C C C C C C C C | Indicators of wetland hydrology present? Y | I Imagery (D1) |
| Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B6) Field Observations: Surface water present? Water table present? Yes Water table present? Yes Saturation present? Yes includes capillary fringe) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches Depth (inches | C4) lled : : 12 : Surfa | C C C C C C C C C C | Indicators of wetland hydrology present? Y | I Imagery (D1) |
| 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? Water table present? Yes Water table present? Yes Saturation present? Ves (includes capillary fringe) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches Depth (inches | C4) lled : : 12 : Surfa | C | Indicators of wetland hydrology present? Y | I Imagery (D1) |
| Water Marks (B1) Sediment Deposits (B3) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B6) Field Observations: Surface water present? Water table present? Yes Water table present? Yes Saturation present? Yes includes capillary fringe) | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches Depth (inches | C4) lled): 12 Surfa | C | Indicators of wetland hydrology present? Y | I Imagery (D1) |
| 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? Yes Water table present? Yes | Hydrogen Oxidized F Roots (C3) Presence of Recent Iro Soils (C6) Thin Muck Other (Exp | Sulfide Odor (C1) khizospheres on I of Reduced Iron (n Reduction in Ti Surface (C7) Jalain in Remarks) Depth (inches Depth (inches Depth (inches | C4) lled): 12 Surfa | C | Indicators of wetland hydrology present? Y | I Imagery (D1) |

US Army Corps of Engineers Northcentral and Northeast Region

| | | | | | | | 50/20 Thresholds | |
|---------------------|---------------|-----------|----------|----------|---------------------------------|-----------|--|----------------|
| T Ot | DI-4 0: / | 20 | | Absolute | Dominant | Indicator | 20% | 6 50% |
| Free Stratum | Plot Size (| 30 |) | % Cover | Species | Status | Tree Stratum 0 | 0 |
| | | | | | | | Sapling/Shrub Stratum 0 | 0 |
| | | | | | | | Herb Stratum 13 | 33 |
| | | | | | | | Woody Vine Stratum 0 | 0 |
| | | | | | | | * | |
| | | | | | | | Dominance Test Worksheet | |
| | | | | | | | Number of Dominant | |
| | | | | | | | Species that are OBL, | |
| | | | | | | | | 1 (A) |
| | | | | | | | Total Number of Dominant | |
| | | | | ^ | | | Species Across all Strata: | 1 (B) |
| | | | _ | 0 | Total Cover | | Percent of Dominant | |
| | | | | | | | Species that are OBL, | |
| apling/Shrub | Plot Size (| 15 | | Absolute | Dominant | Indicator | FACW, or FAC: 100 | .00% (A/ |
| Stratum | | | , | % Cover | Species | Status | | |
| | | | | | | | Prevalence Index Worksheet | |
| | | | | | | | Total % Cover of: | |
| | | | | | | | OBL species 0 x 1 = | 0 |
| | | | | | | | FACW species 0 x 2 = | 0 |
| | | | | | | | FAC species 65 x 3 = | 195 |
| | | | | | | | FACU species 0 x 4 = | 0 |
| | | | | | | | UPL species 0 x 5 = | 0 |
| | | | | | | | Column totals 65 (A) | 195 (B) |
| | | | | | | | Prevalence Index = B/A = 3. | .00 |
| | | | | | | | | |
| | | | _ | 0 | Total Cover | | | |
| | | | | | | | Hydrophytic Vegetation Indicat | |
| lerb Stratum | Plot Size (| 5 | | Absolute | Dominant | Indicator | Rapid test for hydrophytic veg | getation |
| | | | | % Cover | Species | Status | X Dominance test is >50% | |
| Panicum capillar | | | | 60 | Y | FAC | X Prevalence index is ≤3.0* | |
| Populus deltoide | es | | | 5 | N | FAC | Morphological adaptations* (p | |
| | | | | | | | supporting data in Remarks of | r on a |
| | | | | | | | separate sheet) | |
| | | | | | | | Problematic hydrophytic vege (explain) | tation |
| | | | | | | | | |
| | | | | | | | *Indicators of hydric soil and wetland hyd present, unless disturbed or problematic | |
| | | | | | | | present, unless disturbed or problematic | |
| | | | | | | | Definitions of Vegetation Strata | : |
| | | | | | | | • | |
| | | | | | | | Tree - Woody plants 3 in. (7.6 cm) or mo breast height (DBH), regardless of height | |
| | | | | | | | | |
| | | | | | | | Sapling/shrub - Woody plants less than | 3 in. DBH a |
| | | | | 05 | T-4-LO- | | greater than 3.28 ft (1 m) tall. | |
| | | | _ | 65 | = Total Cover | | Herb - All herbaceous (non-woody) plant | s, regardles |
| Noody Vine | | | | Absolute | Dominant | Indicator | size, and woody plants less than 3.28 ft t | |
| Stratum | Plot Size (| 30 | | % Cover | Species | Status | l | |
| Statum | | | | ,5 00401 | Орсыса | Otatus | Woody vines - All woody vines greater to height. | nan 3.28 ft ir |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | Hydrophytic | |
| | | | | | | | vegetation | |
| | | | | 0 | = Total Cover | | present? Y | |
| | | | _ | | | | | |
| | | | | | | | | |
| narks: (Include pho | to numbers he | e or on a | separate | sheet) | | | | |
| narks: (Include pho | to numbers he | e or on a | separate | sheet) | | | | |
| narks: (Include pho | to numbers he | e or on a | separate | sheet) | | | | |

| SOIL | | | | | | | S | Sampling Point: | 3-1W | |
|---|---|----------|----------------------|----------|--|--|-----------------------|--------------------|-------|--|
| | | | | | | | | | | |
| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | | | |
| Depth (Inches) | Matrix | 0/ | | dox Fea | | 1 0 0 ** | Texture | Remar | ks | |
| (Inches) 0-12 | Color (moist) 10YR 3/1 | % 100 | Color (moist) | % | Type* | Loc** | SiL | - | | |
| 12-20 | 10YR 3/1 10YR 4/2 | 95 | 10YR 4/6 | - | С | PL | SiL | + | | |
| 20-24 | 10YR 4/2 10YR 4/2 | 95 75 | 10YR 4/6 10YR 4/6 | 5 25 | С | M | CL | + | | |
| 20-24 | 1011\4/2 | 70 | 1011/4/0 | 20 | | IVI | CL | + | | |
| | | | | | + | | | + | | |
| | | | 1 | † | | <u> </u> | | + | | |
| | | | | | † | † | | 1 | | |
| | † | | † | † | † | | | 1 | | |
| | | | | | 1 | <u> </u> | | 1 | | |
| | | | | | | † | | | | |
| | | | | | 1 | | | 1 | | |
| | | | | | | | | | | |
| | | | | ed Matri | x, CS=C | overed | or Coated Sand Grains | , | | |
| | PL=Pore Lining, I Indicators: | N=Na | Irix | | | | Indicators for Dr | oblematic Hydric S | oile: | |
| nyunc co. | i iliuicators. | | | | | | Illuicators for 1 is | Juleinano riyano o | ons. | |
| His Bla Hyv Stri X Dee Thi Sai Sai Sai Stri Dai *Indicators | Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Black Histic Epipedon (A2) Black Histic (A3) Thin Dark Surface (S9) Hydrogen Sulfide (A4) Strattified Layers (A5) Loamy Mucky Mineral (F1) Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Depleted Matrix (F3) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S4) Sandy Gleyed Matrix (S6) Bark Surface (F7) Stripped Matrix (S6) Dark Surface (S7) (LRR R, L, R) Piedmont Floodplain Soils (F19) (MLRA 149B) Red Ox Depressions (F8) Dark Surface (F7) Cyby Mesic Spodic (TA6) (MLRA 144A, 145, 149I) Red Ox Depressions (F8) Thin Cark Surface (TF12) Dark Surface (S7) (LRR R, MLRA 149B) *Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic | | | | | | | | | |
| Restrictive Type: Depth (inch | Layer (if observe | ed): | | | - - | | Hydric soil prese | ent? Y | | |
| Remarks: | | | | | | | | | | |
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| Project/Site: Inwood Ave N | | City/County: | Lake E | lmo | Sampling Date | : 6/17/14 | |
|---|----------------------|-------------------|-------------|-------------|---------------------|-------------|-------------|
| Applicant/Owner: Hans Hagen | | | State: | MN | Sampling I | Point: | SP-A |
| Investigator(s): M Lauterbach-Barrett, A | Krinke | | Section | n, Townshi | p, Range: S33 T2 | 29 R21 | |
| Landform (hillslope, terrace, etc.): Bas | in | Lo | ocal relief | f (concave | convex, none): | Concav | е |
| Slope (%): 0 to 1 Lat.: | Long.: | | Da | itum: | | | |
| Soil Map Unit NameFreeon silt loam | | | | | Classification: No | ne | |
| Are climatic/hydrologic conditions of the | | | | | , explain in remar | ks) | |
| | , or hydrology | | | | Are "normal | | |
| | , or hydrology | naturally | oroblema | tic? | circumstances | " present | ? <u>No</u> |
| (If needed, explain any answers in rema | rks) | | | | | | |
| | | | | | | | |
| SUMMARY OF FINDINGS | | | | | | | |
| | | | | | | | |
| Hydrophytic vegetation present? | <u>N</u> | Is the sample | ed area v | vithin a we | etland? | N | |
| Hydric soil present? | N | | | | | | |
| Indicators of wetland hydrology present | ? <u>N</u> | If yes, optiona | l wetland | site ID: | | | |
| | | | | | | | |
| Remarks: (Explain alternative procedure | es here or in a sepa | arate report.) | | | | | |
| | | | | | | | |
| Climatic conditions wetter than r | | | ig precip | oitation a | verage. Croppii | ng cons | idered no |
| normal circumstances, hence ve | getation is distu | ırbed. | | | | | |
| | | | | | | | |
| | | | | | | | |
| HYDROLOGY | | | | | | | |
| | | | | Seco | ndary Indicators (| minimum | of two |
| Primary Indicators (minimum of one is re | equired; check all t | hat apply) | | requi | red) | | |
| Surface Water (A1) | Water-Stai | ned Leaves (B9) | | S | urface Soil Cracks | (B6) | |
| High Water Table (A2) | Aquatic Fa | una (B13) | | | rainage Patterns (| B10) | |
| Saturation (A3) | Marl Depos | sits (B15) | | N | loss Trim Lines (B | 16) | |
| Water Marks (B1) | Hydrogen | Sulfide Odor (C1 |) | | ry-Season Water | |) |
| Sediment Deposits (B2) | Oxidized R | hizospheres on | Living | | rayfish Burrows (C | 28) | |
| Drift Deposits (B3) | Roots (C3) | | | s | aturation Visible o | n Aerial In | nagery |
| Algal Mat or Crust (B4) | Presence of | of Reduced Iron | (C4) | (| C9) | | |
| Iron Deposits (B5) | Recent Iron | n Reduction in T | illed | S | tunted or Stressed | i Plants (D | 01) |
| Inundation Visible on Aerial | Soils (C6) | | | | eomorphic Positio | | |
| Imagery (B7) | Thin Muck | Surface (C7) | | s | hallow Aquitard (D | 13) | |
| Sparsely Vegetated Concave | Other (Exp | lain in Remarks) | | F | AC-Neutral Test (I |) 5) | |
| Surface (B8) | | | | N | licrotopographic R | elief (D4) | |
| | | | | | | | |
| Field Observations: | | | | | | | |
| Surface water present? Yes | No X | Depth (inches | | | Indicators of | | |
| Water table present? Yes | No X | Depth (inches | | | wetland | | |
| Saturation present? Yes | No X | Depth (inches | s): | | hydrology | | |
| (includes capillary fringe) | | _ | _ | _ | present? | N | |
| | | | | | | | • |
| Describe recorded data (stream gauge, | monitoring well, as | erial photos, pre | vious ins | pections), | if available: | | |
| . 5 5 . | - ' | | | , | | | |
| | | | | | | | |
| | | | | | | | |
| Remarks: | | | | | | | |
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US Army Corps of Engineers Northcentral and Northeast Region

| Sapling/Shrub | 0 = | = Total Cover | Indicator | Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across all Strata: Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B) |
|--|------------------------------|---|---|---|
| Plot Size (15) | % Cover | Species Total Cover | Status | Prevalence Index Worksheet Total % Cover of: OBL species 0 |
| Herb Stratum Plot Size (5) Panicum virgatum Arctium minus Urtica dioica Chenopodium album | Absolute % Cover 50 35 20 10 | Dominant Species Y Y N N | Indicator Status FAC FACU FAC FACU | Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation Dominance test is >50.0* Prevalence index is \$3.0* Morphological adaptations' (provide supporting data in Remarks or on a separate sheet) Problematic hydrophytic vegetation' (explain) 'Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic Definitions of Vegetation Strata: Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub - Woody plants less than 3 in. DBH and |
| Woody Vine Plot Size (30) | Absolute % Cover | Dominant Species | Indicator Status | greater than 3.28 ft (f m) tall. Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines - All woody vines greater than 3.28 ft in height. |
| marks: (Include photo numbers here or on a sepa | | = Total Cover | | Hydrophytic vegetation present? N |

Sampling Point:

VEGETATION - Use scientific names of plants

| Sampling Point: SP-A | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|
| d d and the distance \ | | | | | | | | | | |
| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features | | | | | | | | | | |
| xture Remarks | | | | | | | | | | |
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| Sand Grains | | | | | | | | | | |
| tors for Problematic Hydric Soils: | | | | | | | | | | |
| past Prairie Redox (A16) (LRR K, L, R) cm Mucky Peat or Peat (S3) (LRR K, L, R) cm Mucky Peat or Peat (S3) (LRR K, L) shyvalue Below Surface (S8) (LRR K, L) in Dark Surface (S9) (LRR K, L) in Dark Surface (S9) (LRR K, L, R) edmont Floodplain Soils (F19) (MLRA 149B) sic Spodic (TA6) (MLRA 144A, 145, 149B) of Parent Material (F21) cry Shallow Dark Surface (TF12) her (Explain in Remarks) iisturbed or problematic | | | | | | | | | | |
| c soil present? <u>N</u> | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Project/Site: Inwood Ave N | | City/County: | Lake E | lmo | Sampling Date | : 6/17/14 | |
|---|------------------------|-------------------|-------------|-------------|---------------------|-------------|-------------|
| Applicant/Owner: Hans Hagen | | | State: | MN | Sampling F | Point: | SP-B |
| Investigator(s): M Lauterbach-Barrett, | A Krinke | | Section | n, Townshi | p, Range: S33 T2 | 29 R21 | |
| Landform (hillslope, terrace, etc.): Hi | llslope | Lo | ocal relief | f (concave | convex, none): | Convex | |
| Slope (%): 2 to 3 Lat.: | Long.: | | Da | itum: | | | |
| Soil Map Unit NameFreeon silt loam | | | | | Classification: No | ne | |
| Are climatic/hydrologic conditions of the | | | | | , explain in remar | ks) | |
| | , or hydrology | | | | Are "normal | | |
| | , or hydrology | naturally | problema | tic? | circumstances | " present | ? <u>No</u> |
| (If needed, explain any answers in ren | narks) | | | | | | |
| | | | | | | | |
| SUMMARY OF FINDINGS | | | | | | | |
| I hadaaa hadaa aa aa ta tiraa aa aa aa 10 | N. | 1- 41 | | | | N | |
| Hydrophytic vegetation present? | <u>N</u> | Is the sample | ed area v | vithin a we | etland? | N | |
| Hydric soil present? | | | | | | | |
| Indicators of wetland hydrology preser | nt? N | If yes, optiona | al wetland | site ID: | | | |
| | | | | | | | |
| Remarks: (Explain alternative procedu | ires here or in a sepa | arate report.) | | | | | |
| 0 | | 00 1 11 | | | | | |
| Climatic conditions wetter than | | | ig precip | oitation a | verage. Croppii | ng cons | dered no |
| normal circumstances, hence v | ∕egetation is distu | ırbed. | | | | | |
| | | | | | | | |
| LIVEROL COV | | | | | | | |
| HYDROLOGY | | | | | | | |
| | | | | | ndary Indicators (| minimum | of two |
| Primary Indicators (minimum of one is | | | | requi | | | |
| Surface Water (A1) | | ned Leaves (B9) | | | urface Soil Cracks | | |
| High Water Table (A2) | | una (B13) | | | rainage Patterns (| | |
| Saturation (A3) | Marl Depos | | | | loss Trim Lines (B | | |
| Water Marks (B1) | | Sulfide Odor (C1 | , | | ry-Season Water | |) |
| Sediment Deposits (B2) | | hizospheres on | Living | | rayfish Burrows (C | | |
| Drift Deposits (B3) | Roots (C3) | | | | aturation Visible o | n Aerial In | nagery |
| Algal Mat or Crust (B4) | Presence of | of Reduced Iron | (C4) | | C9) | | |
| Iron Deposits (B5) | | n Reduction in T | illed | | tunted or Stressed | | 11) |
| Inundation Visible on Aerial | Soils (C6) | | | | eomorphic Positio | | |
| Imagery (B7) | | Surface (C7) | | | hallow Aquitard (D | | |
| Sparsely Vegetated Concave | Other (Exp | lain in Remarks) | | | AC-Neutral Test (I | , | |
| Surface (B8) | | | | N | licrotopographic R | elief (D4) | |
| Field Observations | | | | | | | |
| Field Observations: | | 5 4 6 1 | | | | | |
| Surface water present? Yes | No X | Depth (inches | | | Indicators of | | |
| Water table present? Yes | No X | Depth (inches | | | wetland | | |
| Saturation present? Yes | NoX | _ Depth (inches | s): | | hydrology | | |
| (includes capillary fringe) | | | | | present? | N | |
| | | | | | | | |
| Describe recorded data (stream gauge | e, monitoring well, a | erial photos, pre | evious ins | spections), | ıt available: | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Remarks: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

US Army Corps of Engineers Northcentral and Northeast Region

| Tree Stratum 1 | Plot Size (| 30 | Absolute % Cover | | Indicator Status | 50/20 Thresholds Tree Stratum Sapling/Shrub Stratum Herb Stratum Woody Vine Stratum Dominance Test Workshe Number of Dominant Species that are OBL, FACW, or FAC: Total Number of Dominant Species Across all Strata: Percent of Dominant Species that are OBL, | 20% 50% 0 0 0 0 2 5 0 0 |
|---|----------------------|--------------|-----------------------|---------------|-----------------------------|--|---|
| Sapling/Shrub Stratum | Plot Size (| 15 |) Absolute % Cover | | Indicator Status | FACW, or FAC: Prevalence Index Worksho | 0.00% (A/B) |
| 2 3 4 5 5 6 7 8 9 | | | | = Total Cover | | Total % Cover of: OBL species 0 x1 FACW species 0 x2 FAC species 0 x3 FACU species 0 x4 UPL species 0 x5 Column totals 10 (A) Prevalence Index = B/A = | = 0 = 0 = 40 |
| Herb Stratum 1 | Plot Size (album | 5 | Absolute % Cover 10 | Dominant | Indicator Status FACU | Hydrophytic Vegetation In Rapid test for hydrophyti Dominance test is >50% Prevalence index is \$3,0 Morphological adaptic supporting data in Remiseparate sheet) Problematic hydrophytic (explain) 'indicators of hydric soil and wetle present, unless disturbed or proble | ic vegetation o '* ns* (provide arks or on a vegetation* |
| 10 11 12 13 | | | | | | Definitions of Vegetation S Tree - Woody plants 3 in. (7.6 cm) breast height (DBH), regardless of | or more in diameter a height. |
| 14 15 | | | 10 | = Total Cover | | Sapling/shrub - Woody plants les greater than 3.28 ft (1 m) tall. | |
| Woody Vine Stratum 1 | Plot Size (| 30 |) Absolute % Cover | | Indicator Status | Herb - All herbaceous (non-woody size, and woody plants less than 3 Woody vines - All woody vines gr height. | .28 ft tall. |
| 3 4 5 | | | 0 | = Total Cover | = | Hydrophytic vegetation present? N | |
| Remarks: (Include pl | noto numbers he | re or on a s | separate sheet) | | | | |

Sampling Point:

VEGETATION - Use scientific names of plants

| | | | | | | | Sampling Point: | SP-B |
|---|--|--|---|--|---|--|--|--|
| | | | | | | | | |
| | be to th | | | | indicate | or or confirm the abse | ence of indicators.) | |
| | 0/ | | | | 1++ | Texture | ks | |
| | | Color (moist) | <u>%</u> | Type" | Loc*" | | - | |
| | | 40)/D 0/4 | 40 | | - DI | | - | |
| 10YK 4/4 | 90 | 10YR 3/1 | 10 | U | PL | SL | - | |
| | — | ļ | | | | | - | |
| + | — | | | | | - | + | |
| + | — | | | | | - | + | |
| + | | | | - | | | - | |
| + | | | | - | | | - | |
| + | — | | | - | | | - | |
| + | | | | | | | _ | |
| + | | | | | | | | |
| + | | | | | | | + | |
| Concentration, D: | =Deplet | ion. RM=Reduce | ed Matri | x. CS=C | covered | or Coated Sand Grain | ns | |
| | | | | , | | | - | |
| Il Indicators: | | | | | | Indicators for P | roblematic Hydric S | oils: |
| Histosol (A1) Polyvalue Below Surface Histosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 149B) Coast Prairie Redox (A16) (LRR K, L, MLRA 149B) Hydrogen Sulfide (A4) (LRR R, MLRA 149B) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Stratified Layers (A5) (LRR K, L) Dark Surface (S7) (LRR K, L) Thick Dark Surface (A11) (LRR K, L) Thin Dark Surface (S8) (LRR K, L) Thick Dark Surface (A12) Loamy Gleyed Matrix (F2) Iron-Manganese Masses (F12) (LRR K, L) Sandy Mucky Mineral (S1) Depleted Matrix (F3) Piedmont Floodplain Soils (F19) (MLRA 145, 145, 145, 145, 145, 145, 145, 145, | | | | | | | | K, L, R) RR K, L, R) RR K, L) -) RR K, L, R) MLRA 149B) , 145, 149B) |
| | ed): | | | - | | Hydric soil pre | sent? N | |
| | | | | | | | | |
| | Matrix Color (moist) 10YR 3/2 10YR 3/2 10YR 4/4 Loyre 4/4 Concentration, D. PL=Pore Lining, II Indicators: II Indicators: It is concentration (A2 II indicators: II indic | Matrix Color (moist) % 10YR 3/2 100 10YR 4/4 90 10YR 4/4 90 Concentration, D=Deplet PL=Pore Lining, M=Mat il Indicators: stosol (A1) stic Epipedon (A2) ack Histic (A3) drogen Sulfide (A4) attified Layers (A5) ndy Meye Matrix (S4) indy Gleyed Matrix (S4) indy Gedox (S5) ipped Matrix (S6) ipped Matrix (S6) indy Gleyed | Matrix Rec Color (moist) % Color (moist) 10YR 3/2 100 10YR 4/4 90 10YR 3/1 Concentration, D=Depletion, RM=Reduce PL=Pore Lining, M=Matrix il Indicators: stosol (A1) Pol stic Epipedon (A2) (S8 ack Histic (A3) Thi drogen Sulfide (A4) (LR attified Layers (A5) Loa pleted Below Dark Surface (A11) (LR ick Dark Surface (A12) Loa ndy Mucky Mineral (S1) Dep sipped Matrix (S4) Rec surf Surface (S7) (LRR R, MLRA 9B) of hydrophytic vegetation and wetland h | Matrix Redox Fear Color (moist) % Color (moist) % Color (moist) % Color (moist) % 10YR 3/2 100 10YR 3/1 10 10YR 4/4 90 10YR 3/1 10YR | Matrix Redox Features Color (moist) % Color (moist) % Type* 10YR 3/2 100 10YR 4/4 90 10YR 3/1 10 D Concentration, D=Depletion, RM=Reduced Matrix, CS=C PL=Pore Lining, M=Matrix ii Indicators: stosol (A1) Polyvalue Below St (S8) (LRR R, MLRA* Stosol (A2) (S8) (LRR R, MLRA* Loamy Mucky Mineral (S1) indy Gleyed Matrix (S4) indy Gleyed Matrix (S6) index Surface (S7) (LRR R, MLRA* g8) of hydrophytic vegetation and wetland hydrology must b Layer (if observed): | Matrix Redox Features Color (moist) % Type* Loc** 10YR 3/2 100 10YR 4/4 90 10YR 3/1 10 D PL Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered of PL=Pore Lining, M=Matrix il Indicators: stosol (A1) Polyvalue Below Surface (S8) (LRR R, MLRA 1498) Thin Dark Surface (S8) (LRR R, MLRA 1498) Loamy Mucky Mineral (S1) ndy Gleyed Matrix (S4) Redox Dark Surface (F5) undy Redox (S5) Depleted Dark Surface (A11) Loamy Gleyed Matrix (F2) Depleted Matrix (F3) Redox Dark Surface (F6) Depleted Dark Surface (F6) Depleted Dark Surface (F6) Thin Carl Surface (F6) Depleted Dark Surface (F7) Redox Depressions (F8) K Surface (S7) (LRR R, MLRA 98) Of hydrophytic vegetation and wetland hydrology must be preser | Adatrix Color (moist) % Color (moist) % Type* Loc** 10YR 3/2 100 10YR 4/4 90 10YR 3/1 10 D PL SL Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grain PL=Pore Lining, M=Matrix II Indicators: III Ind | Addrix Redox Features Remar Redox Remarks Remar Redox Remar Redox Remarks Remarks Remarks Remarks Remarks Remarks Remarks Redox Redo |

Inwood Ave North

Wetland Delineation Report

Appendix B: Precipitation Data

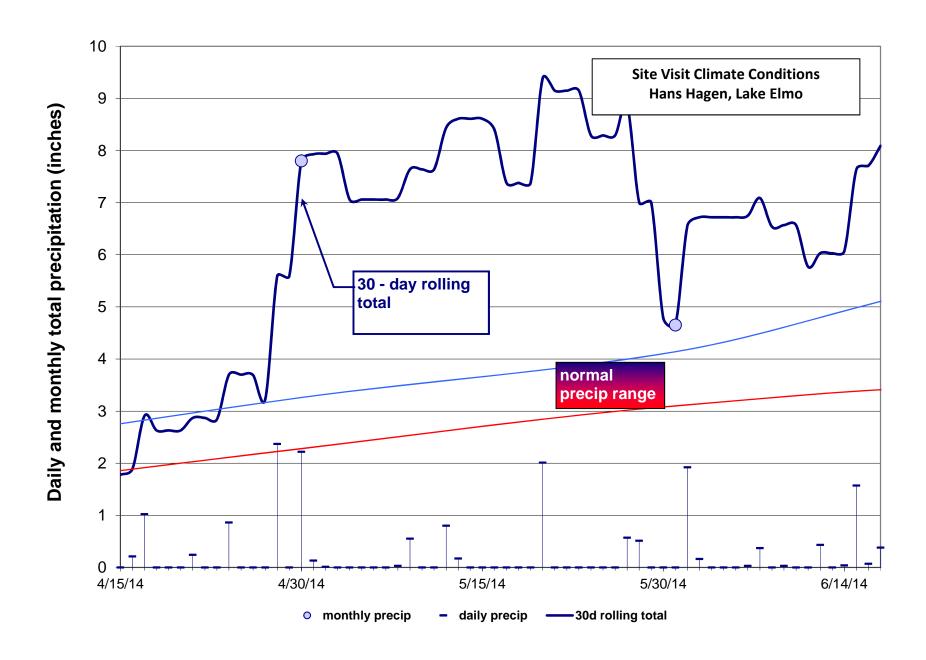
Inwood Ave, Lake Elmo: Precipitation Summary Source: Minnesota Climatology Working Group

Monthly Totals: 2014
Target: T29 R21 S33, Lat: 44.95597 Lon: 92.93401 Target: 129 R21 S33, Lat: 44.95597 Lon: mon year cc tttN rrW ss nnnn oooooooo pre Jan 2014 82 29N 21W 32 SWCD Feb 2014 82 29N 21W 32 SWCD Mar 2014 82 29N 21W 32 SWCD Apr 2014 82 29N 21W 32 SWCD May 2014 82 29N 21W 32 SWCD 1.31 1.10 .90 7.80 4.78

April/May/June Daily Records

| Date Precip. | Date Precip. | Date Precip. |
|---|---|-------------------|
| Apr 1, 2014 T | May 1, 2014 .13 | Jun 1, 2014 1.92 |
| Apr 2, 2014 0 | May 2, 2014 .01 | Jun 2, 2014 .16 |
| Apr 2, 2014 0 Apr 3, 2014 T | l мау 3 2014 – | Jun 3, 2014 0 |
| Apr 4, 2014 .88 | May 4, 2014 - | Jun 4, 2014 0 |
| Apr 5, 2014 0 | May 5, 2014 T | Jun 5, 2014 0 |
| Apr 6, 2014 0 | May 4, 2014 - May 5, 2014 T May 6, 2014 0 | Jun 6, 2014 .03 |
| | May 7, 2014 0 | Jun 7, 2014 .37 |
| Apr 7, 2014 0 | May 7, 2014 0 May 8, 2014 .03 | Jun 8, 2014 0 |
| Apr 8, 2014 0 | May 8, 2014 .03 | Jun 9, 2014 .03 |
| Apr 9, 2014 0 | May 9, 2014 .55 | |
| Apr 10, 2014 0 | May 10, 2014 - May 11, 2014 - | |
| Apr 10, 2014 0 Apr 11, 2014 0 Apr 12, 2014 - Apr 13, 2014 - Apr 14, 2014 - Apr 15, 2014 - | May 11, 2014 - | Jun 11, 2014 0 |
| Apr 12, 2014 - | May 12, 2014 .80 | Jun 12, 2014 .43 |
| Apr 13, 2014 - | May 13, 2014 .17 | Jun 13, 2014 0 |
| Apr 14, 2014 - | May 14, 2014 0 | Jun 14, 2014 .04 |
| Apr 15, 2014 - | May 15, 2014 0 | Jun 15, 2014 1.57 |
| Apr 16, 2014 .21 | May 16, 2014 0 | Jun 16, 2014 .07 |
| Apr 17, 2014 1.02 | May 17, 2014 0 | Jun 17, 2014 |
| Apr 18, 2014 0 | May 18, 2014 0 | |
| Apr 19, 2014 - Apr 20, 2014 - | May 19, 2014 0 | |
| | May 20, 2014 2.01 | |
| Apr 21, 2014 .24 | May 21, 2014 | |
| Apr 22, 2014 0 | May 22, 2014 | |
| Apr 23, 2014 - | May 23, 2014 0 | |
| Apr 23, 2014 - Apr 24, 2014 .86 | May 24, 2014 0 May 25, 2014 0 | |
| Apr 25, 2014 0 | May 25, 2014 0 | |
| Apr 26, 2014 - | May 26, 2014 0 | |
| Apr 26, 2014 - Apr 27, 2014 - | May 27, 2014 .57 | |
| Apr 28, 2014 2.37 | May 28, 2014 .51 | |
| Apr 29, 2014 - | May 29, 2014 0 | |
| Apr 30, 2014 2.22 | May 30, 2014 0 | |
| | May 31, 2014 - | |
| | , 51, 201. | |
| | | |

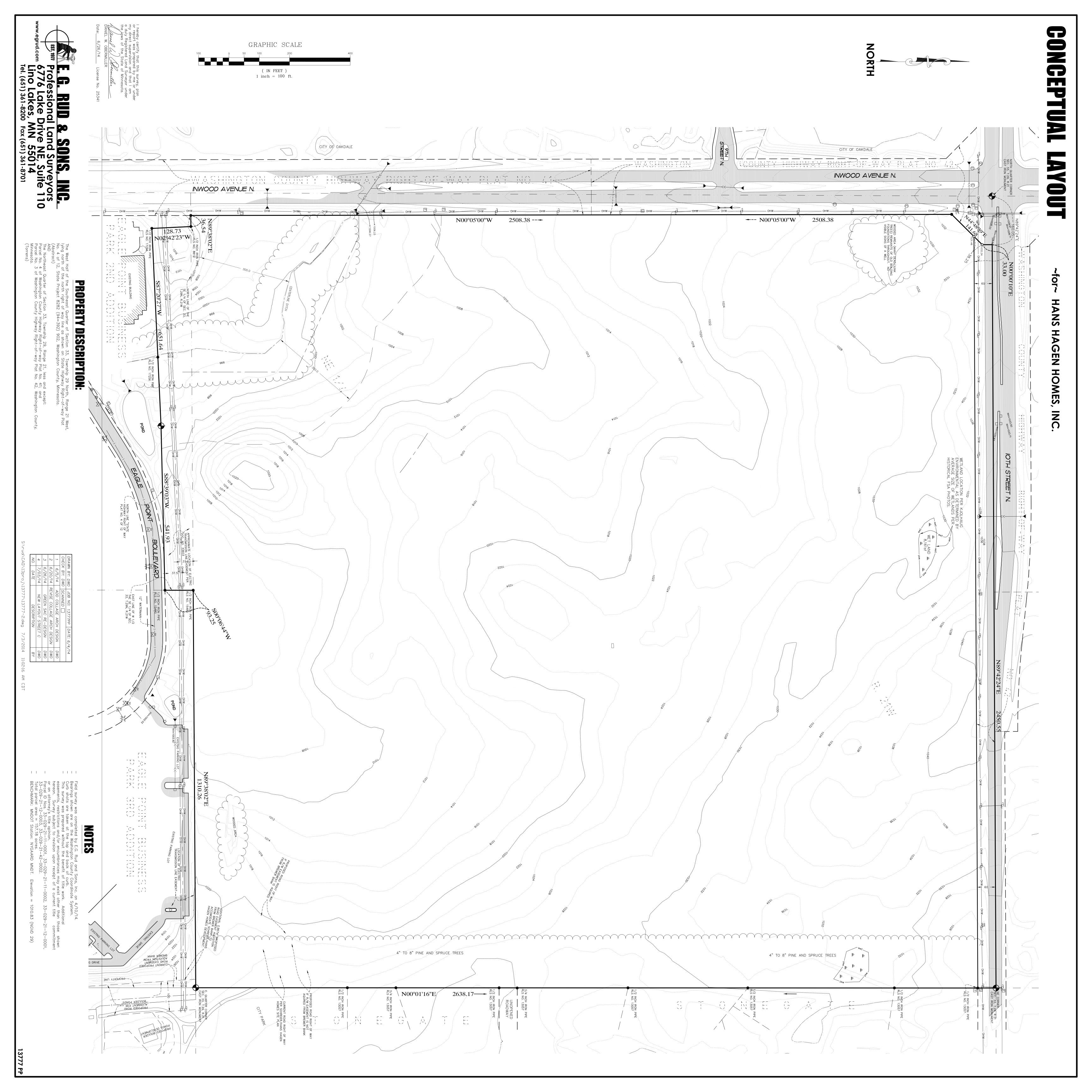
| 1981-2010 Summary Statistics | | | | | | | | | | | | | | | |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | WARM | ANN | WAT |
| 30% | 0.56 | 0.55 | 1.43 | 2.28 | 3.10 | 3.44 | 2.47 | 3.29 | 2.55 | 1.74 | 1.14 | 0.72 | 18.88 | 30.90 | 29.16 |
| 70% | 1.34 | 1.05 | 2.22 | 3.26 | 4.14 | 5.61 | 4.73 | 5.21 | 4.31 | 3.55 | 2.42 | 1.62 | 21.59 | 35.13 | 35.44 |
| mean | 0.99 | 0.85 | 1.92 | 2.80 | 3.79 | 4.58 | 4.00 | 4.43 | 3.54 | 2.90 | 1.94 | 1.30 | 20.34 | 33.04 | 32.84 |



Inwood Ave North

Wetland Delineation Report

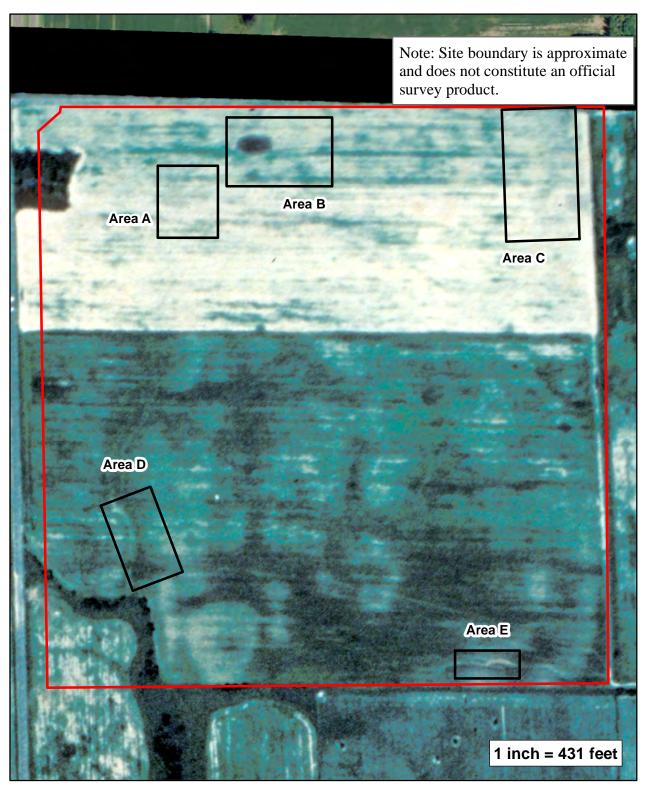
Appendix C: Wetland Boundary Survey



Inwood Ave North

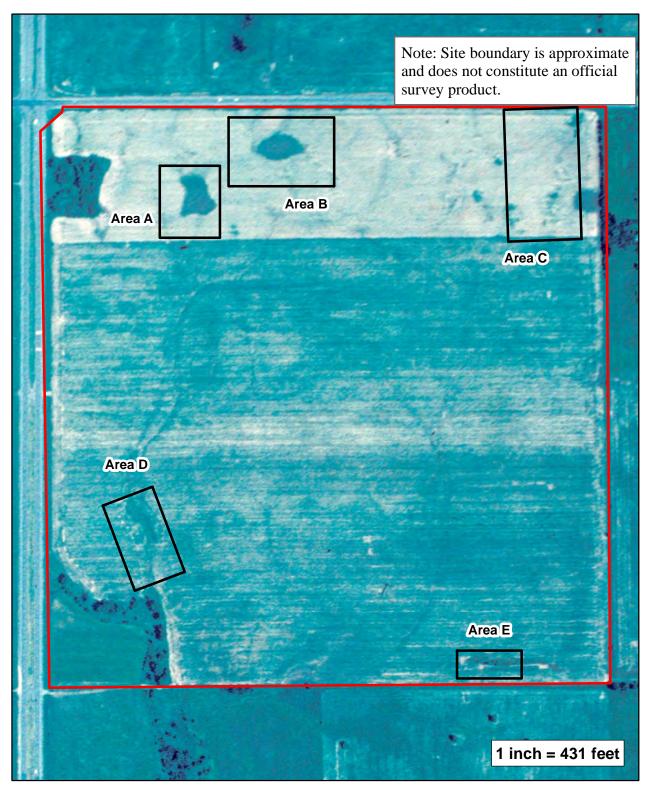
Wetland Delineation Report

Appendix D: FSA Review Photographs



Appendix D: FSA Photo Review - (1983 FSA Photograph)





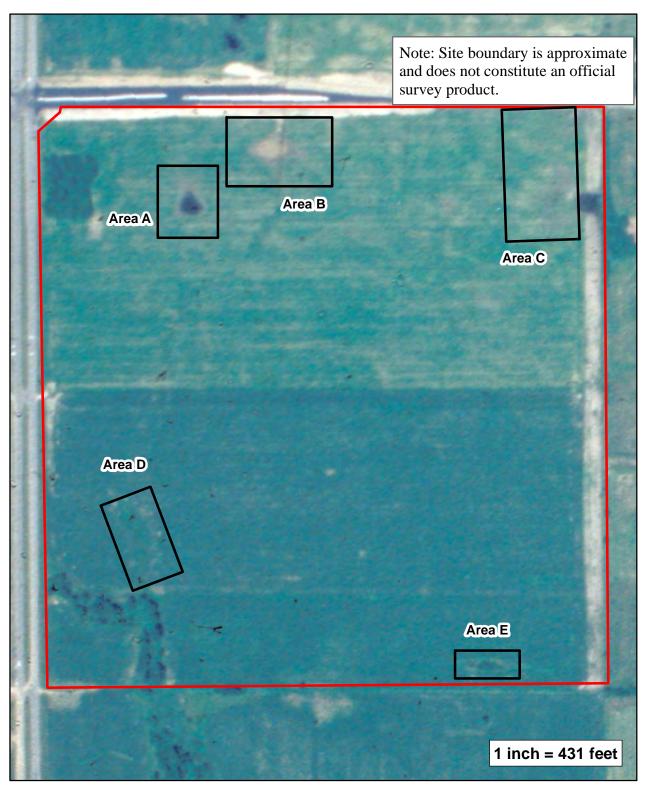
Appendix D: FSA Photo Review - (1989 FSA Photograph)





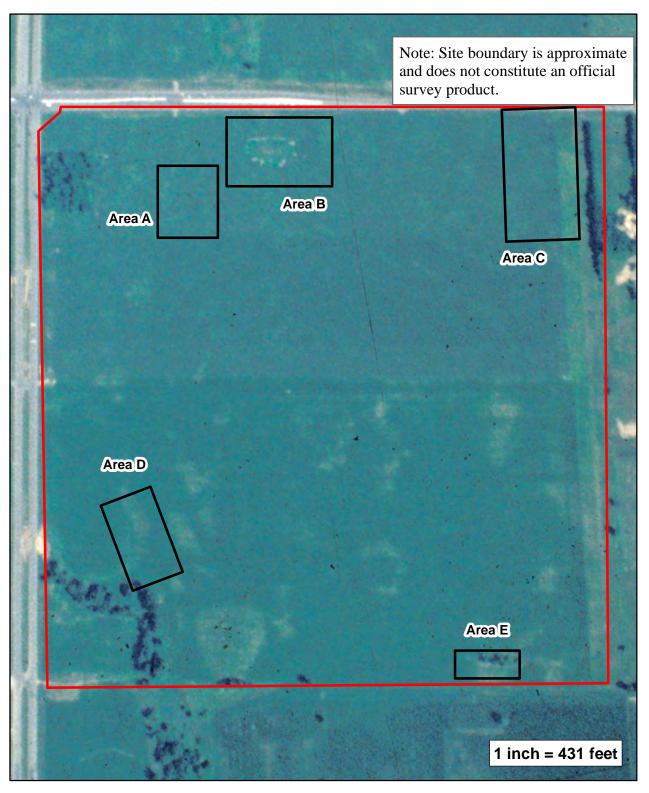
Appendix D: FSA Photo Review - (1992 FSA Photograph)





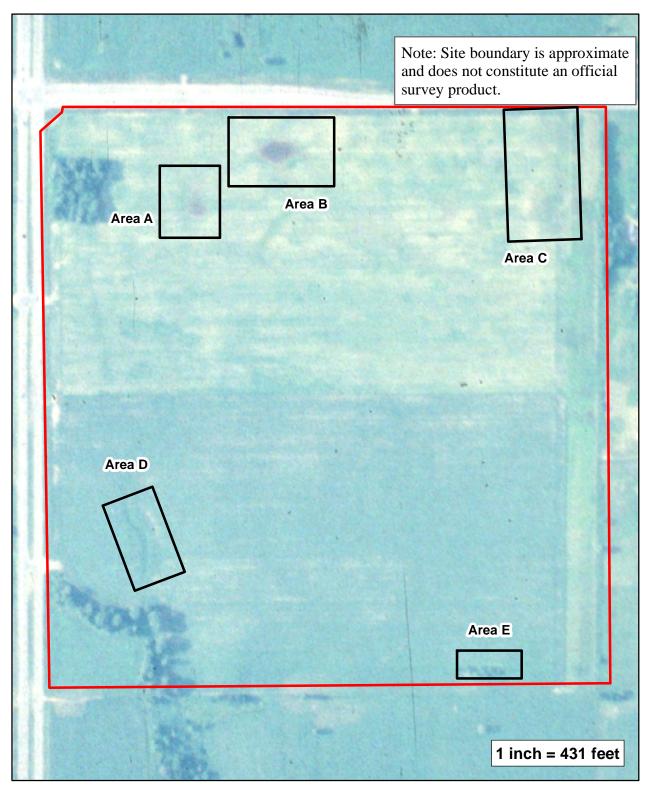
Appendix D: FSA Photo Review - (1995 FSA Photograph)





Appendix D: FSA Photo Review - (1996 FSA Photograph)





Appendix D: FSA Photo Review - (1997 FSA Photograph)





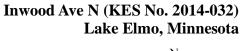
Appendix D: FSA Photo Review - (2000 FSA Photograph)



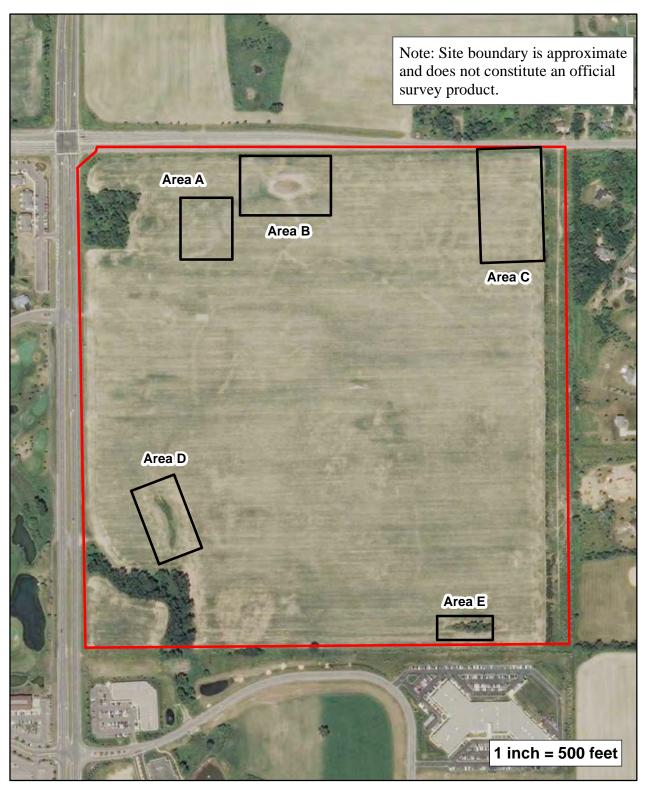


Appendix D: FSA Photo Review - (2006 FSA Photograph)









Appendix D: FSA Photo Review - (2008 FSA Photograph)



