June 18, 2003

Brad Scheib
Hoisington Koegler Group, Inc.
123 North Third Street, Suite 100
Minneapolis, MN 55401-1659

Subject: Wetland Delineation for Town and Country Development
W ½ of NE ¼ of Section 27 Township 116N Range 23W
Chanhassen, Minnesota
PEC Project No. 2003-016

Dear Brad:

Peterson Environmental Consulting, Inc. (PEC) has completed the delineation of wetlands on the above-described property shown in **Figure 1**. All wetland boundaries were flagged on the dates of our fieldwork between June 6 and June 13, 2003. We will review the site in the field with the Local Government Unit (LGU) at the earliest possible date. We will request a written finding of fact documenting that concurrence when this report is submitted to the LGU. The following is a summary of our methodology and delineation results.

METHODOLOGY

The potential presence of jurisdictional wetland on the subject property was investigated using the routine determination methodology set forth in the 1987 U.S. Army Corps of Engineers *Wetlands Delineation Manual*. Use of the 1987 Manual is required under both the Corps of Engineers Section 404 Rules and the Minnesota Wetland Conservation Act (WCA). The presence and distribution of wetlands were determined through a routine analysis of the vegetation, soils and hydrology. The plant species within the parcel were catalogued and assigned a wetland indicator status according the *National List of Plant Species that Occur in Wetlands; North Central Region 3* (USFWS Biological Report 88(26.3); May 1988). In the text of this report and on the enclosed data forms, the plant indicator status follows the plant's scientific name unless a status has not been assigned. The hydrophytic plant criteria are met when 50 percent or more of the dominant species within the vegetative strata were assigned an obligate (OBL)[1], facultative wet (FACW), and/or facultative (FAC) wetland status.

[1] OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67%-99% probability of occurrence in wetlands. FAC = Facultative, is equally likely to occur in wetlands and non-wetlands 34%-66% probability. FACU = Facultative Upland, occurs in wetlands only occasionally 1%-23% probability. UPL = Upland, almost never occurs in wetlands <1% probability. NI = No Indicator, insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency toward higher (+) or lower (-) frequency of occurrence within a category.

The break between hydric and non-hydric soils was determined by excavating random soil pits to a depth of at least 18 inches within the wetland/upland ecotone and evaluating the soil colors, texture and presence or absence of redoximorphic indicators (e.g. mottles, gley, oxidized rhizospheres). The presence or absence of wetland hydrology was determined through direct observation of free water in the excavated soil pit, saturated soil pedons and soil redoximorphic features. Data sheets were prepared detailing the vegetation, soil and hydrology of all wetlands on the site. Wetland boundaries were demarcated using sequentially numbered pin flags located using a Global Positioning System (GPS) unit. Wetland boundaries are to be surveyed by others following submittal of this report and concurrence by the LGU.

Wetland classifications discussed in the text are set forth in **Wetlands and Deepwater Habitats of the United States** (FWS/OBS Publication 79/31; Cowardin et al. 1979) and **Wetlands of the United States** (USFWS Circular 39; Shaw and Fredine 1971). Throughout this narrative, "Cowardin" wetland types are given first with Cowardin abbreviations and "Circular 39" types are given parenthetically.

RESULTS

PEC delineated eleven jurisdictional wetlands on the subject property, designated as wetlands A through K (**Figure 2**). The locations of the delineated wetlands are roughly consistent with wetlands shown on the National Wetlands Inventory (**Figure 3A**). **Figure 3B** shows the portion of the Chanhassen Wetland Inventory that encompasses the project site. City wetland identification numbers and functional classifications are discussed in the wetland-by-wetland descriptions below. None of the wetlands appear on the DNR Protected Waters Inventory (**Figure 4)**. However, this map indicates that the channelized portion of Bluff Creek that runs along the property boundary along the northeast corner of the site is a protected watercourse. The NRCS Soil Survey for Carver County is shown in **Figure 5**. Most soils on the site are upland Lester and Kilkenny soils. The larger wetland basins lie within hydric units mapped as Houghton, Glencoe and Hamel.

Wetland A is a grassed waterway surrounded by cropped fields (**Figure 6**). We classified Wetland A as a ditched/drained temporarily flooded to saturated palustrine emergent wetland (PEMA/Bd; Circular 39 Type 1/2 seasonally flooded flat/wet meadow). The basin is heavily dominated by reed canary grass. Wetland A has well-established individual green ash and black willow trees scattered throughout, and scattered native vegetation (*Onoclea sensibilis* and *Silphium perfoliatum*). The wetland appears to be surface water fed from adjacent upland farm fields and runoff from the grassed waterway to the west. It appears as though this grassed waterway is receiving large influxes of "flashy" stormwater from surrounding uplands. The northern portion of the wetland is severely eroded with twelve-foot deep gully exiting the property through a culvert.

Wetland B is a relatively high quality combination of saturated to seasonally flooded palustrine emergent and forested wetlands (PEM/PFO1B/C; Circular 39 Type 2 sedge meadow and Type 7 wooded swamp). Wetland B has a rich diversity of sedges with a

forested fringe along the northern portion of the basin (**Figure 6**). Reed canary grass dominates the southern portion of wetland B where channelized streams have deposited relatively recent overwash over the native soils. The deep-water portions of the wetland are dominated by cattails and manna grass. The northern edge of this basin is forested with black ash and cottonwood as dominants. Along the eastern edge of the basin, Bluff Creek has been channelized. The portion of Wetland B adjacent to the creek along this portion is topographically higher and hydrologically drier than the rest of the basin.

Wetland C is a closed, elevated depression surrounded by steep slopes vegetated by mesic maple-basswood forest (**Figure 7**). This basin is a high quality seasonally to semi-permanently flooded emergent wetland (PEMC/F; Circular 39 Types 3 and 4 shallow and deep marsh) with a floating mat of sedge and Canada bluejoint along the western portion and open water along the eastern portion. The fringe of the wetland is vegetated by black ash and sugar maple, but these species do not represent a significant portion of the delineated wetland area.

Wetlands D, E, F, and G are all ditched/drained temporarily flooded palustrine emergent wetlands (PEMAd; Circular 39 Type 1 seasonally flooded flats) located along a single grassed waterway that runs to the south across the center of the site (**Figures 7, 8 and 9**). These basins were separated into individual wetlands due to the nature of the water movement down the waterway. Each of the basins has an elevated saddle that separates it from adjacent basins. The areas between the basins showed no sign of retaining hydrology within 12 inches of the ground surface for the requisite period during the growing season (about 8 days). These basins are all dominated by reed canary grass with scattered willows, boxelder, red osier dogwoods and stinging nettle. All of these basins are surrounded by cropped fields.

Wetland H is an intermittent meandering stream with emergent vegetation along the western edge of the site and almost no vegetation within the channel as it runs through mesic woods to the east (**Figure 10**). We classified the emergent portion at the west end of wetland H as a saturated to seasonally flooded palustrine emergent wetland (PEMB/C; Circular 39 Types 2/3 wet meadow/shallow marsh). The eroded creek bed was classified as an intermittent riverine cobble-gravel streambed (R4SB3; no equivalent Circular 39 type). The stream is heavily sedimented as it meanders from the culvert under County Highway 17 and becomes deeply incised near the property boundary as it flows east. Natural soils in the portions by County Highway 17 contain at least 4 inches of sand and cobble overwash. This portion has seen development of both residences and road expansion across County Highway 17 with direct outlets into the stream. The lower portions of the stream are deeply incised and severely eroded, with almost no vegetation in the stream channel itself.

Wetland I is a segment of intermittent stream corridor that drains into Wetland B. This stream has a very “flashy” hydrologic regime. The delineated portion of the corridor had standing water during the June site visits. Soils under this portion are hydric, thick loam. The lower portion of this corridor has a cobbled sandy bottom where water disperses.

Soil pits indicated that the lower portions drain rapidly. We classified Wetland I as an intermittent riverine mud/cobble-gravel streambed (R4SB5/3; no equivalent Circular 39 Type).

Wetland J is a small isolated depression surrounded by cropped fields and dominated by reed canary grass. We classified it as a temporarily flooded palustrine emergent wetland (PEMA; Circular 39 Type 1 seasonally flooded flat).

Wetland K is a forested depression located within a larger grassed waterway (**Figure 11**). The basin receives water directly from channelized road runoff and a culvert crossing County Highway 17. The wetland had some standing water at the time of delineation. The floristic communities of this basin can be divided into three sections. Just below the County Highway 17 culvert, flashy stormwater has created an incised channel with minimal vegetation within a thick layer of buckthorn and boxelder. Downstream from this area, the basin enters an open powerline corridor dominated by reed canary grass. Downslope from the opening the wetland becomes forested with boxelders and has a ground layer dominated by sedges. We classified this wetland as a temporarily flooded palustrine emergent wetland and a floodplain forest (PEMA and PFOA: Circular 39 Type 1 wet meadow and Type 1L floodplain forest). Soils are highly disturbed throughout this basin with overwash from cropped fields and road sediments entering from the south, north and west. The original soils are Hamel loams.

Data sheets are provided for all delineated wetlands in **Appendix A**.

We appreciate the opportunity to be of assistance on this project. If this report meets with your approval, we will move forward in obtaining concurrence on the delineation from the Local Unit of Government. Should there be any questions, please feel free to contact our office.

Sincerely,

Peterson Environmental Consulting, Inc.

Anthony J. Randazzo
Restoration Ecologist

Ronald P. Peterson
President
Professional Wetland Scientist No. 001118

Enclosures

Peterson Environmental Consulting, Inc.

⇧ North

No Scale

Project Location

Town and Country Development

Chanhassen, Minnesota

FIGURE 1

PEC Project No. 2003-016

Peterson Environmental Consulting, Inc.

North

No Scale

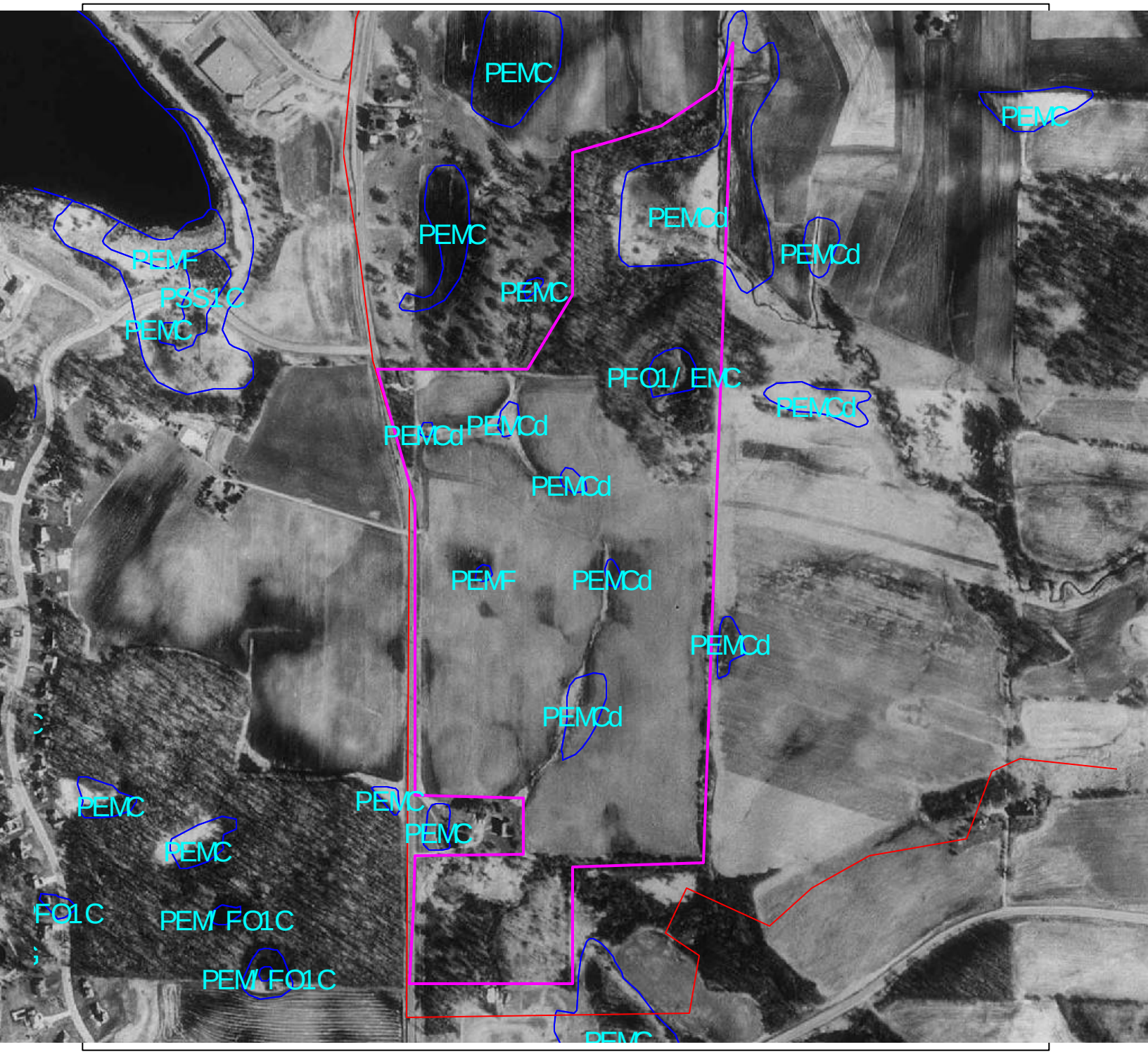
Delineated Wetland Boundaries

Town and Country Development

Chanhassen, Minnesota

FIGURE 2

PEC Project No. 2003-016



National Wetlands Inventory Map

Town and Country Development

Chanhassen, Minnesota

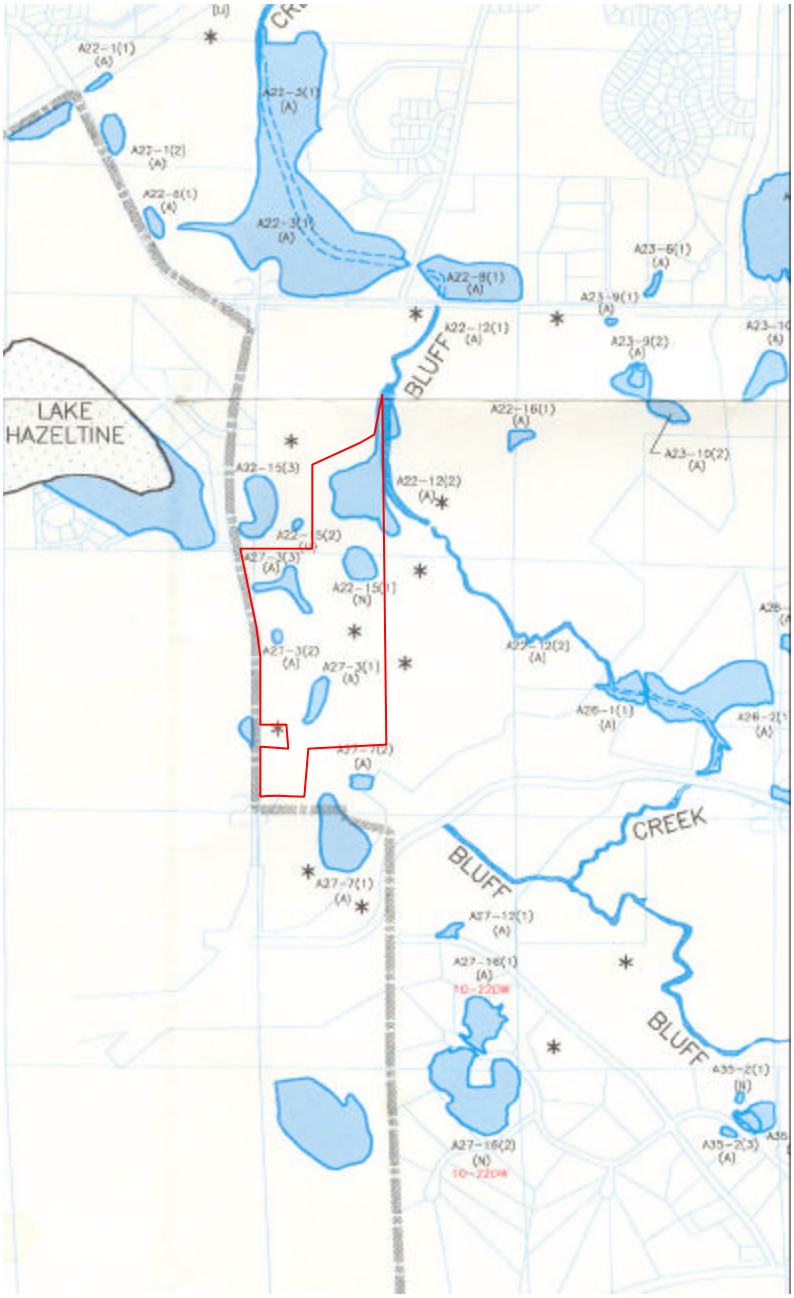
North

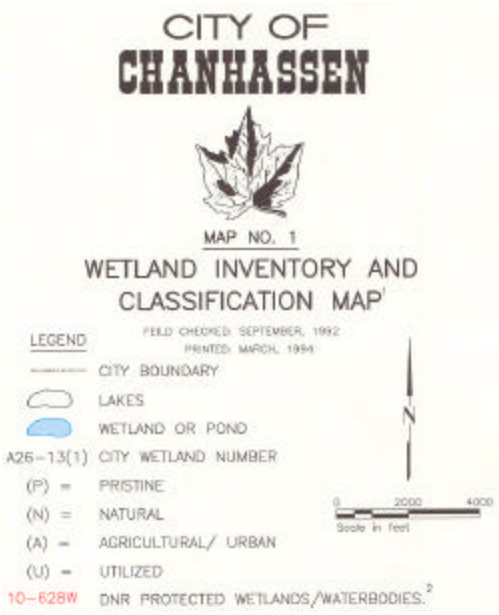
No Scale

FIGURE 3A

PEC Project No. 2003-016

Peterson Environmental Consulting, Inc.





City of Chanhassen Wetland Inventory and Classification Map

City of Chanhassen Wetland Inventory Map

Town and Country Development

North

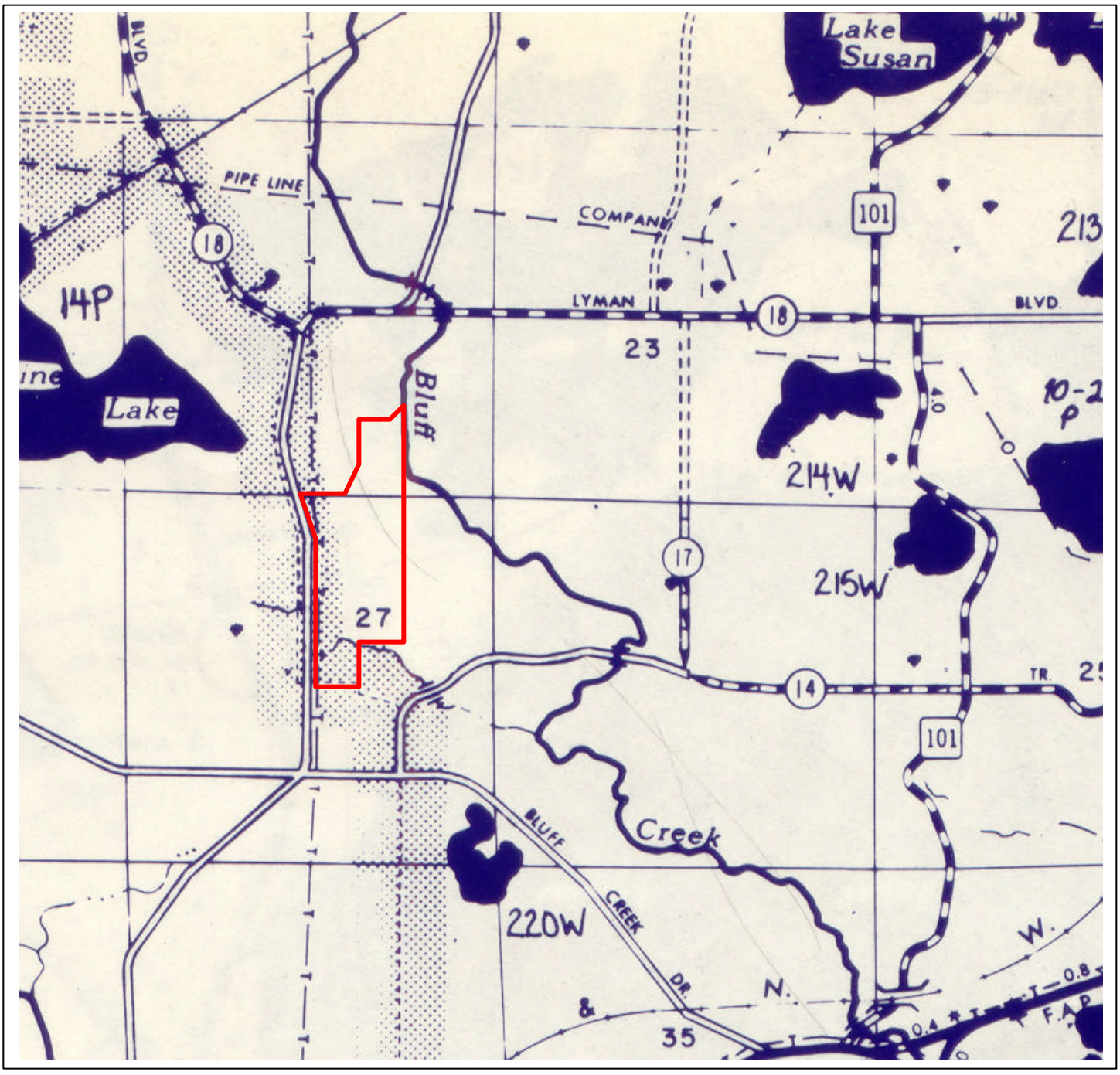
No Scale

Chanhassen, Minnesota

FIGURE 3B

PEC Project No. 2003-016

Peterson Environmental Consulting, Inc.



Peterson Environmental Consulting, Inc.

North

No Scale

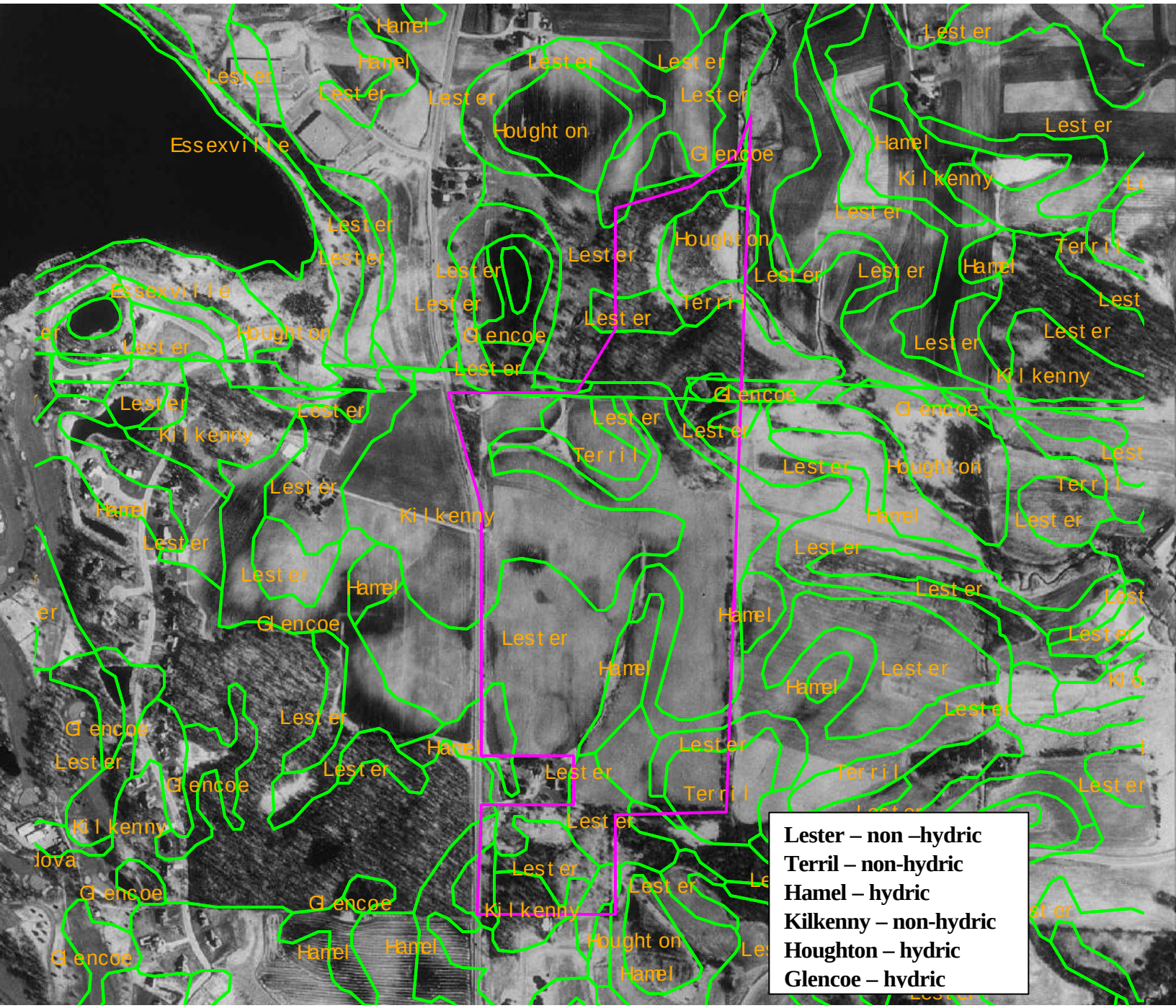
DNR Public Waters Inventory

Town and Country Development

Chanhassen, Minnesota

FIGURE 4

PEC Project No. 2003-016



NRCS Carver County Soil Suvey

Town and Country Development

Chanhassen, Minnesota

North

No Scale

FIGURE 5

PEC Project No. 2003-016

Peterson Environmental Consulting, Inc.

Wetland A

Wetland B

Peterson Environmental Consulting, Inc.

⇧ **North**

No Scale

Site Photographs - Wetlands A & B

Town and Country Development

Chanhassen, Minnesota

FIGURE 6

PEC Project No. 2003-016

Wetland C

Wetland D

Peterson Environmental Consulting, Inc.

⇧ **North**

No Scale

Site Photographs – Wetlands C & D

Town and Country Development

Chanhassen, Minnesota

FIGURE 7

PEC Project No. 2003-016

Wetland E

Wetland F

Peterson Environmental Consulting, Inc.

⇧ **North**

No Scale

Site Photographs - Wetlands E & F

Town and Country Development

Chanhassen, Minnesota

FIGURE 8

PEC Project No. 2003-016

Wetland G

Peterson Environmental Consulting, Inc.

⇧ **North**

No Scale

Site Photograph – Wetland G

Town and Country Development

Chanhassen, Minnesota

FIGURE 9

PEC Project No. 2003-016

Wetland H

Wetland H channel erosion

Peterson Environmental Consulting, Inc.

⇧ **North**

No Scale

Site Photographs – Wetland H photos

Town and Country Development

Chanhassen, Minnesota

FIGURE 10

PEC Project No. 2003-016

Wetland K – Wetland K receives direct channelized runoff from County Highway 17 (Audubon Road). Downstream effects are apparent in the area between Wetland K and Wetland A.

Peterson Environmental Consulting, Inc.

⇧ **North**

No Scale

Site Photographs – Wetland K

Town and Country Development

Chanhassen, Minnesota

FIGURE 11

PEC Project No. 2003-016

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/02/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR/JDM	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland A

Wetland Classification

Cowardin Classification:	PEMA / Bd	***DNR PWI:***	NA
Circular 39 Classification:	Type 1 / 2	***City/Watershed Identifier:***	A27 - 3(3)
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	PEMCd	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Silphium perfoliatum	*cup plant*		*1*	*FACW-*
Phalaris arundinacea	*reed canarygrass*	*H*	*6*	*FACW+*
Typha latifolia	*broadleaf cattail*	*H*	*2*	*OBL*
Urtica dioica	*stinging nettle*	*H*	*2*	*FAC+*
Zea maize	*corn*	*H*	*2*	*NI*
Asclepias syriaca	*common milkweed*	*H*	*1*	*NI*
Equisetum arvense	*field horsetail*	*H*	*1*	*FAC*
Onoclea sensibilis	*sensitive fern*	*H*	*1*	*FACW*
Salix exigua	*sandbar willow*	*S*	*1*	*OBL*
Acer negundo	*boxelder*	*T*	*2*	*FACW-*
Fraxinus pennsylvanica	*green ash*	*T*	*2*	*FACW*
Salix nigra	*black willow*	*T*	*2*	*OBL*
Ulmus americana	*American elm*	*T*	*1*	*FACW-*

Upland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Silphium perfoliatum	*cup plant*		*1*	*FACW-*
Phalaris arundinacea	*reed canarygrass*	*H*	*4*	*FACW+*
Zea maize	*corn*	*H*	*4*	*NI*

Wetland Soil

MUID [5]	Description
TB	Terril loam, 0 to 6 percent slopes

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
F6	Redox Dark Surface	A layer at least 10 cm (4 in.) thick entirely within the upper 30 cm (12 in.) of the mineral soil that has: a. matrix value 3 or less and chroma 1 or less and 2% or more distinct or prominent redox concentrations as soft masses or pore linings, or b. matrix value 3 or less and chroma 2 or less and 5% or more distinct or prominent redox concentrations as soft masses or pore linings.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF SOIL SATURATION	FAC NEUTRAL
	OXIDIZED ROOT CHANNELS

Upland Soils

Muid [5]	Description
KB2	lester-kilkenny loams, 2 to 6 percent slopes, eroded

Series Name	Classification [6]	Drainage Class
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators -* *Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	- 0-6 inches	2		Yes	Yes
	2	Yes	- 6-12 inches	5		Yes	Yes
	3	No	- >12 inches	NA		No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

5 From Map Unit Indentifiacation Directory

6 Soil Survey Staff. Keys to Soil Taxonomy, Sixth Edition. US Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 1994.

7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Severe erosion noted entering this basin from the west, downstream end of Wetland K. Very severe erosion noted at the northern end in a gully, as the drainage leaves the property. Upland fields planted to corn, plowed and tilled annually.

Floristic Features

Reed canary grass dominates the basin. Wet, hydric soils delineated as wetland on fringes of corn fields on eastern edge of basin.

Soil Factors

Approximately 8" sediment overwash over organic soils in the center of the basin.

Hydrology Factors

There is standing water in the center of this basin. Upper areas of basin appear to be prone to flashy storm and runoff events Northern portion of basin has an approximately 10 foot deep eroded gully flowing northerly.

Other Comments

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	**Date of Survey:**	06/02/2003
Applicant/Owner:	Hoisington Koegler Group	**County:**	Carver
Investigator:	AJR/JDM	**State:**	Minnesota
Legal Description:	SW 1/4 of SE 1/4 Sec 22 T116N R23W	**ID:**	Wetland B

Wetland Classification

Cowardin Classification:	PEM / PFO1B/C	**DNR PWI:**	Bluff Creek
Circular 39 Classification:	Type 2 / 7	**City/Watershed Identifier:**	A22 - 12(2)
NRCS Identifier:[2]	NA	**Watershed District:**	Riley - Purgatory Creek
NWI Classification:	PEMCd	**Hydrologic Unit Major:** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	Common Name	Stratum	Cover Class[3]	Indicator[4]
Carex lacustris	*hairy sedge*	*H*	*4*	*OBL*
Phalaris arundinacea	*reed canarygrass*	*H*	*4*	*FACW+*
Typha latifolia	*broadleaf cattail*	*H*	*3*	*OBL*
Carex stricta	*uptight sedge*	*H*	*2*	*OBL*
Glyceria sp.	*manna grass*	*H*	*2*	
Equisetum palustre	*marsh horsetail*	*H*	*1*	*FACW*
Scirpus cyperinus	*woolgrass*	*H*	*1*	*OBL*
Urtica dioica	*stinging nettle*	*H*	*1*	*FAC+*
Viola sororia	*common blue violet*	*H*	*1*	*FAC-*
Salix exigua	*sandbar willow*	*S*	*2*	*OBL*
Ribes americanum	*American black currant*	*S*	*1*	*FACW*
Acer negundo	*boxelder*	*T*	*2*	*FACW-*
Fraxinus pennsylvanica	*green ash*	*T*	*2*	*FACW*
Populus deltoides	*eastern cottonwood*	*T*	*2*	*FAC+*
Fraxinus nigra	*black ash*	*T*	*1*	*FACW+*
Salix nigra	*black willow*	*T*	*1*	*OBL*

Upland Vegetation

Scientific Name	Common Name	Stratum	Cover Class[3]	Indicator[4]
Phalaris arundinacea	*reed canarygrass*	*H*	*3*	*FACW+*
Laportea canadensis	*Canadian woodnettle*	*H*	*2*	*FACW*
Solidago sp.	*goldenrod sp.*	*H*	*2*	
Urtica dioica	*stinging nettle*	*H*	*1*	*FAC+*
Salix exigua	*sandbar willow*	*S*	*2*	*OBL*
Acer negundo	*boxelder*	*T*	*3*	*FACW-*
Fraxinus pennsylvanica	*green ash*	*T*	*3*	*FACW*

Fraxinus nigra	*black ash*	*T*	*1*	*FACW+*
Tilia americana	*American basswood*	*T*	*1*	*FACU*

Wetland Soil

MUID [5]	Description
MK	Houghton and Muskego mucks

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
F5	Thick Dark Surface	A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less (or a gleyed matrix) starting below 30 cm (12 in.) of the surface. The layer(s) above the depleted or gleyed matrix have hue N and value 3 or less to a depth of 30 cm (12 in.) and value 3 or less and chroma 1 or less in the remainder of the epipedon.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF INUNDATION	WATER-STAINED LEAVES
	OXIDIZED ROOT CHANNELS
	FAC NEUTRAL

Upland Soils

Muid [5]	Description
KE2	Lester-Kilkenny loams, 18 to 25 percent slopes, erod

Series Name	Classification [6]	Drainage Class
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators -* *Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	+ 0-6 inches	1	10	Yes	Yes
	2	Yes	- 0-6 inches	2	10	Yes	Yes
	3	No	- >12 inches	NA		No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

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6 Soil Survey Staff. Keys to Soil Taxonomy, Sixth Edition. US Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 1994.

7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Severe erosion and sedimentation coming into basin from two western watercourses. These two areas have deposited a gre deal of overwash on top of wetland basin. Eastern edge of wetland basin is adjacent to Bluff Creek. Along this portion, the Creek has been straightened and acts as a ditch, lowering water table along the edge.

Floristic Features

This basin is a mix of aggressive invasive Reed Canary Grass and a high quality sedge meadow with good quality wooded wetlands along the northern edge.

Soil Factors

Soils in the center of the basin appear relatively undisturbed. Sedimentation and overwash have reduced the size of this basi

Hydrology Factors

Basin B lies adjacent to, and appears to be drained by the channelized portion of the creek. Increased hydrologic influxes on the northern and eastern ends of this basin appear to favor invasive species and increased sedimentation.

Other Comments

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/02/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR/JDM	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland C

Wetland Classification

Cowardin Classification:	PEMC/F	***DNR PWI:***	NA
Circular 39 Classification:	Type 3 / 4	***City/Watershed Identifier:***	A22-15(1)
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	PFO1/EMC	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Carex lacustris	*hairy sedge*	*H*	*4*	*OBL*
Carex spp.	*sedge spp.*	*H*	*4*	
Impatiens capensis	*jewelweed*	*H*	*4*	*FACW*
Calamagrostis canadensis	*bluejoint*	*H*	*3*	*OBL*
Lemna minor	*common duckweed*	*H*	*3*	*OBL*
Carex suberecta	*prairie straw sedge*	*H*	*2*	*OBL*
Glyceria sp.	*manna grass*	*H*	*2*	
Phalaris arundinacea	*reed canarygrass*	*H*	*2*	*FACW+*
Onoclea sensibilis	*sensitive fern*	*H*	*1*	*FACW*
Pontederia cordata	*pickerelweed*	*H*	*1*	*OBL*
Vitis riparia	*riverbank grape*	*S*	*2*	*FACW-*
Acer saccharum var. trilobum	*sugar maple*	*T*	*4*	*FACU*
Acer negundo	*boxelder*	*T*	*2*	*FACW-*
Fraxinus nigra	*black ash*	*T*	*2*	*FACW+*

Upland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Ranunculus sp.	*buttercup sp.*		*3*	
Hydrophyllum virginianum	*Shawnee salad*	*H*	*5*	*FACW-*
Onoclea sensibilis	*sensitive fern*	*H*	*2*	*FACW*
Phalaris arundinacea	*reed canarygrass*	*H*	*1*	*FACW+*
Rhamnus cathartica	*common buckthorn*	*S*	*2*	*FACU*
Ribes americanum	*American black currant*	*S*	*1*	*FACW*
Acer saccharinum	*silver maple*	*T*	*5*	*FACW*
Acer saccharum var. trilobum	*sugar maple*	*T*	*2*	*FACU*
Ostrya virginiana	*eastern hophornbeam*	*T*	*2*	*FACU-*

Ulmus americana	*American elm*	*T*	*2*	*FACW-*

Wetland Soil

MUID [5]	Description
GL	Glencoe loam

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]
yes	LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	WELL DRAINED	

Indicator [8]	Short Name	Description of the Field Indicator
F2	Loamy Gleyed Matrix	A gleyed matrix that occupies 60% or more of a layer starting within 30 cm (12 in.) of the soil surface.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF INUNDATION	OXIDIZED ROOT CHANNELS FAC NEUTRAL

Upland Soils

Muid [5]	Description
KC2	lester-kilkenny loams, 6 to 12 percent slopes, eroded

Series Name	Classification [6]	Drainage Class
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	Pit Locatio	Hydric Soil [8]	Water Depth [9]	Hydrology Indicators - Primary [10]	Hydrology Indicators - Secondary [11]	FAC Neutral Test [12]	Jurisdictional Wetland?
1							
	1	Yes	0	1	7	Yes	Yes
	2	Yes	- 6-12 inches	2	8	Yes	Yes
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

5 From Map Unit Indentifiacation Directory

6 Soil Survey Staff. Keys to Soil Taxonomy, Sixth Edition. US Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 1994.

7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Basin C is a closed basin with little evidence of major disturbance.

Floristic Features

Wetland vegetation varied from floating open water sedge-dominated community to forested wetland edge. Forested edges are dominated by floodplain and swamp trees transitioning to mesic forest of sugar maple, basswood and oak on the steep hillsides. Wetland C has a variety of native, herbaceous plant species and relatively little reed canary grass.

Soil Factors

Soils were organic with mottles and gleyed soils in the wetland. Mesic forest soils are present near wetland edge since most basin has steep slopes leading to deep depression.

Hydrology Factors

Basin C is a bowl of water > 12 inches. There is a possible drainage outlet from this basin to the east, but it appears that this basin is generally of a closed nature.

Other Comments

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/05/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland D

Wetland Classification

Cowardin Classification:	PEMAd	***DNR PWI:***	NA
Circular 39 Classification:	Type 1	***City/Watershed Identifier:***	Not on inventory
NRCS Identifier: [2]	NA	***Watershed District:***	Riley -Purgatory Creek
NWI Classification:	PEMCd	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*6*	*FACW+*
Polygonum pensylvanicum	*Pennsylvania smartweed*	*H*	*2*	*FACW+*
Solidago sp.	*goldenrod sp.*	*H*	*2*	
Vernonia fasciculata	*prairie ironweed*	*H*	*1*	*FACW*

Upland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Zea maize	*corn*	*H*	*6*	*NI*
Phalaris arundinacea	*reed canarygrass*	*H*	*2*	*FACW+*

Wetland Soil

MUID [5]	Description
KD2	lester-kilkenny loams, 12 to 18 percent slopes, eroded

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]
yes	LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	WELL DRAINED	

Indicator [8]	Short Name	Description of the Field Indicator
F6	Redox Dark Surface	A layer at least 10 cm (4 in.) thick entirely within the upper 30 cm (12 in.) of the mineral soil that has: a. matrix value 3 or less and chroma 1 or less and 2% or more distinct or prominent redox concentrations as soft masses or pore linings, or b. matrix value 3 or less and chroma 2 or less and 5% or more distinct or prominent redox concentrations as soft masses or pore linings.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF SOIL SATURATION	WATER-STAINED LEAVES
	FAC NEUTRAL

Upland Soils

Muid [5]	Description	
KB	Kilkenny-Lester loams, 2 to 6 percent slopes	
Series Name	**Classification [6]**	**Drainage Class**
KILKENNY	FINE, SMECTITIC, MESIC OXYAQUIC VERTIC HAPLUDALFS	moderately well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators -* *Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	- >12 inches	3	7, 10	Yes	Yes
	2	Yes	- >12 inches	3	7	Yes	Yes
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

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7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

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9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

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12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Grassed waterway comprised almost entirely of Reed Canary Grass. Upland is planted in corn and appears to be cropped an tilled yearly.

Floristic Features

Wetland D has corn on three sides and is predominantly a Reed Canary Grass monotype.

Soil Factors

Organic soils in wetland basin with faint mottles near the surface.

Hydrology Factors

Hydrology was at 18 inches. Wetland D appears to be entirely surface water driven and to drain rapidly after storm events.

Other Comments

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/05/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland E

Wetland Classification

Cowardin Classification:	PEMAd	***DNR PWI:***	NA
Circular 39 Classification:	Type 1	***City/Watershed Identifier:***	Not on inventory
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgtory Creek
NWI Classification:	NA	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*6*	*FACW+*

Upland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Zea maize	*corn*	*H*	*6*	*NI*
Phalaris arundinacea	*reed canarygrass*	*H*	*3*	*FACW+*

Wetland Soil

MUID [5]	Description
HM	Hamel loam

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
F4	Depleted Below Dark Surface	A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less starting within 30 cm (12 in.) of the surface. The layer(s) above the depleted matrix have value 3 or less and chroma 2 or less.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF SOIL SATURATION	FAC NEUTRAL

Upland Soils

Muid [5]	Description	
KB2	lester-kilkenny loams, 2 to 6 percent slopes, eroded	
Series Name	**Classification [6]**	**Drainage Class**
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	Pit Locatio	Hydric Soil [8]	Water Depth [9]	- Hydrology Indicators - Primary [10]	Secondary [11]	FAC Neutral Test [12]	Jurisdictional Wetland?
1							
	1	Yes	- >12 inches	2	10	Yes	Yes
	2	Yes	- >12 inches	6	10	Yes	Yes
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

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8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

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12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Basin E is a depression within a grassed waterway.

Floristic Features

Reed canary grass dominates the basin, with cropped fields lyingon both the east and west sides.

Soil Factors

Hamel soils in the wetland with Lester soils in uplands.

Hydrology Factors

Free water encountered at 22 inches below the surface in the basin. This wetland appears to be entirely surface water drive and to drain rapidly after storm events.

Other Comments

This small depression lies along a relatively well drained grass waterway with a slight (6") concave earthern slope at the lowe end. This small basin had ponded water in wheel ruts during a week of field investigation. However, pits excavated through dense, clayey soils showed hydrology at 22".

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/05/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland F

Wetland Classification

Cowardin Classification:	PEMAd	***DNR PWI:***	NA
Circular 39 Classification:	Type 1	***City/Watershed Identifier:***	A27 - 3(1)
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	PEMCd	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*6*	*FACW+*
Urtica dioica	*stinging nettle*	*H*	*2*	*FAC+*
Equisetum arvense	*field horsetail*	*H*	*1*	*FAC*
Salix spp.	*undifferentiated willows*	*S*	*2*	
Populus deltoides	*eastern cottonwood*	*T*	*1*	*FAC+*

Upland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Zea maize	*corn*	*H*	*6*	*NI*
Phalaris arundinacea	*reed canarygrass*	*H*	*3*	*FACW+*
Polygonum pensylvanicum	*Pennsylvania smartweed*	*H*	*2*	*FACW+*
Thlaspi arvense	*field pennycress*	*H*	*2*	*NI*
Equisetum arvense	*field horsetail*	*H*	*1*	*FAC*

Wetland Soil

MUID [5]	Description
HM	Hamel loam

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
F1	Loamy Mucky Mineral	A mucky modified mineral layer 10 cm (4 in.) or more thick starting within 15 cm (6 in.) of the soil surface.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF INUNDATION	FAC NEUTRAL
	LOCAL SOIL SURVEY HYDROLOGY DATA FOR HYDRI

Upland Soils

Muid [5]	Description
KB2	lester-kilkenny loams, 2 to 6 percent slopes, eroded

Series Name	Classification [6]	Drainage Class
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators -* *Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	- 6-12 inches	2		Yes	Yes
	2	Yes	- >12 inches	2		Yes	Yes
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

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12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Grassed waterway with flashy storm events. Soil contains upland overwash from adjacent cornfields.

Floristic Features

Reed Canary Grass monotype.

Soil Factors

Organic soils with mineral content (10yr 4/1) at the surface in the center of the basin.

Hydrology Factors

Flashy small basin with standing water in wheel ruts. Free-water at 10". Hydrology similar to Wetlands D and E.

Other Comments

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/11/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland G

Wetland Classification

Cowardin Classification:	PEMAd	***DNR PWI:***	NA
Circular 39 Classification:	Type 1	***City/Watershed Identifier:***	Not in inventory
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	NA	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*5*	*FACW+*
Parthenocissus quinquefolia	*Virginia creeper*	*H*	*2*	*FAC-*
Solidago sp.	*goldenrod sp.*	*H*	*2*	
Equisetum arvense	*field horsetail*	*H*	*1*	*FAC*
Cornus stolonifera	*red osier dogwood*	*S*	*1*	*FACW*
Salix exigua	*sandbar willow*	*S*	*1*	*OBL*

Upland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*4*	*FACW+*
Zea maize	*corn*	*H*	*4*	*NI*
Cirsium vulgare	*bull thistle*	*H*	*2*	*FACU-*
Solidago sp.	*goldenrod sp.*	*H*	*2*	
Arctium minus	*burdock*	*H*	*1*	

Wetland Soil

MUID [5]	Description
HM	Hamel loam

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
F5	Thick Dark Surface	A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less (or a gleyed matrix) starting below 30 cm (12 in.) of the surface. The layer(s) above the depleted or gleyed matrix have hue N and value 3 or less to a depth of 30 cm (12 in.) and value 3 or less and chroma 1 or less in the remainder of the epipedon.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF SOIL SATURATION	FAC NEUTRAL
	WATER-STAINED LEAVES

Upland Soils

Muid [5]	Description
KB2	lester-kilkenny loams, 2 to 6 percent slopes, eroded

Series Name	Classification [6]	Drainage Class
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	Pit Locatio	Hydric Soil [8]	Water Depth [9]	Hydrology Indicators - Primary [10]	Hydrology Indicators - Secondary [11]	FAC Neutral Test [12]	Jurisdictional Wetland?
1							
	1	Yes	- >12 inches	1	8, 10	Yes	Yes
	2	Yes	- >12 inches	2	10	Yes	Yes
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

5 From Map Unit Indentifiacation Directory

6 Soil Survey Staff. Keys to Soil Taxonomy, Sixth Edition. US Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 1994.

7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

This basin lies at the lower end of a long grassed waterway. It is predominantly Reed Canary Grass. Soils within the basin have overwash in the upper surface from upland agricultural fields.

Floristic Features

Reed Canary grass dominates the basin.

Soil Factors

Soils in Wetland G were dark loamy to sandy loam. Approximately 4" of overwash lies over the native soils

Hydrology Factors

Wetland G is a marginal wetland driven entirely by surfacewater draining from adjacent uplands and wetland D, E and F. One hour after the transitional pit(within wetland line) was dug, groundwater was at 33 inches.

Other Comments

This basin appears marginally wet with flashy events following substantial rainfall.

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/12/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland H

Wetland Classification

Cowardin Classification:	PEMB/C; R4SB3	***DNR PWI:***	NA
Circular 39 Classification:	Type 2 / 3	***City/Watershed Identifier:***	Not in inventory
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	NA	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*4*	*FACW+*
Impatiens capensis	*jewelweed*	*H*	*2*	*FACW*
Carex lurida	*shallow sedge*	*H*	*1*	*OBL*
Typha X glauca	*white cattail*	*H*	*1*	*OBL*
Salix spp.	*undifferentiated willows*	*S*	*1*	
Acer negundo	*boxelder*	*T*	*1*	*FACW-*
Quercus macrocarpa	*bur oak*	*T*	*1*	*FAC-*

Upland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Rhus glabra	*smooth sumac*		*3*	
Equisetum palustre	*marsh horsetail*	*H*	*3*	*FACW*
Poa pratensis	*Kentucky bluegrass*	*H*	*3*	*FAC-*
Solidago sp.	*goldenrod sp.*	*H*	*2*	
Cornus racemosa	*panicled dogwood*	*S*	*2*	*NI*
Acer saccharum var. trilobum	*sugar maple*	*T*	*4*	*FACU*
Quercus rubra	*northern red oak*	*T*	*3*	*FACU*
Acer negundo	*boxelder*	*T*	*2*	*FACW-*
Quercus macrocarpa	*bur oak*	*T*	*1*	*FAC-*
Tilia americana	*American basswood*	*T*	*1*	*FACU*

Wetland Soil

MUID [5]	Description
KB	Kilkenny-Lester loams, 2 to 6 percent slopes

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
S4	Sandy Gleyed Matrix	A gleyed matrix which occupies 60% or more of a layer starting within 15 cm (6 in.) of the soil surface.
F2	Loamy Gleyed Matrix	A gleyed matrix that occupies 60% or more of a layer starting within 30 cm (12 in.) of the soil surface.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF INUNDATION	FAC NEUTRAL
	OXIDIZED ROOT CHANNELS

Upland Soils

Muid [5]	Description	
KB2	lester-kilkenny loams, 2 to 6 percent slopes, eroded	
Series Name	**Classification [6]**	**Drainage Class**
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators - Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	+ 0-6 inches	1	10	Yes	Yes
	2	No	+ >12 inches	2	8	No	No
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

5 From Map Unit Indentifiacation Directory

6 Soil Survey Staff. Keys to Soil Taxonomy, Sixth Edition. US Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 1994.

7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

Wetland H is a highly eroded intermittent stream. The banks are incised and much overwash is evident from upstream. This basin and stream receive water from both the culvert under Highway 17, but also stormwater from the highway itself. At the eastern property boundary, the stream is incised approximately 12 -15 feet below the upland surface. Judging from plant communities, exposed roots, and slope sloughing, this appears to be a recent trend.

Floristic Features

Most of the recorded wetland vegetation occurs near the culvert adjacent to Highway 17. This area has a low stream gradien with shifting meanders and thick vegetation over new sediment. Downstream, the stream is incised, and vegetation is sparse within the stream channel.

Soil Factors

The area near County Highway 17 has approximately 4" of sand and cobble overwash over hydric muck. Downstream, soils are stream bottom sand and cobble.

Hydrology Factors

Basin H appears to be a historic waterway that has been significantly impacted by adjacent residential and road developments. Severe erosion is prevalent as the stream moves off property to the east.

Other Comments

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/12/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	SW 1/4 of SE 1/4 Sec 22 T116N R23W	***ID:***	Wetland I

Wetland Classification

Cowardin Classification:	R4SB5/3	***DNR PWI:***	NA
Circular 39 Classification:	NA	***City/Watershed Identifier:***	Not on inventory
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	NA	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Upland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Laportea canadensis	*Canadian woodnettle*	*H*	*3*	*FACW*
Carex spp.	*sedge spp.*	*H*	*2*	
Impatiens capensis	*jewelweed*	*H*	*2*	*FACW*
Arisaema triphyllum	*Jack in the pulpit*	*H*	*1*	*FACW-*
Rhamnus cathartica	*common buckthorn*	*S*	*1*	*FACU*
Sambucus canadensis	*American elder*	*S*	*1*	*FACW-*
Acer saccharum var. trilobum	*sugar maple*	*T*	*5*	*FACU*
Fraxinus pennsylvanica	*green ash*	*T*	*2*	*FACW*
Ulmus americana	*American elm*	*T*	*1*	*FACW-*

Wetland Soil

MUID [5]	Description
KE2	Lester-Kilkenny loams, 18 to 25 percent slopes, eroded

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]

Indicator [8]	Short Name	Description of the Field Indicator
TF7	Thick Dark Surface 2/1	A layer at least 15cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less (or a gleyed a matrix) starting below 30 cm (12 in.) of the soil surface. The layer(s) above the depleted or gleyed matrix have hue 10YR or yellower, value 2.5 or less to a depth of 30 cm (12 in.) and value 3 or less and chroma 1 or less in the remainder of the epipedon.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF INUNDATION	

Upland Soils

Muid [5]	Description
KD	Lester-Kilkenny loams, 12 to 18 percent slopes

Series Name	Classification [6]	Drainage Class
LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators - Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	+ 6-12 inches	1		No	Yes
	2	No	- >12 inches			No	No
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

5 From Map Unit Indentifiacation Directory

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7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

This is a stream with flashy influxes of water following storm events. This stream is fed from upland agricultural fields as wel as the expanded residential and road developments to the west.

Floristic Features

No vegetation is present within the boundaries of the incised stream. Upland is mesic woods dominated by sugar maple.

Soil Factors

Sand and cobble streambed in the lower portion. Upper portion is a dark hydric loam.

Hydrology Factors

In the upper portion, before this stream enters wetland B, stream gradient is sufficiently shallow to allow for pooling water. Th lower portion is sand and cobble, and no water was present at or to 12" below the surface.

Other Comments

Downstream delineation ended where sand and cobbles allowed for infiltration of water. At this lower portion of the stream, t primary hydrologic parameter appears to be present only following major storm events.

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/11/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland J

Wetland Classification

Cowardin Classification:	PEMA	***DNR PWI:***	NA
Circular 39 Classification:	Type 1	***City/Watershed Identifier:***	A27 - 3(2)
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	PEMF	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Phalaris arundinacea	*reed canarygrass*	*H*	*5*	*FACW+*
Daucus carota	*Queen anne's lace*	*H*	*2*	*NI*
Equisetum arvense	*field horsetail*	*H*	*1*	*FAC*
Polygonum pensylvanicum	*Pennsylvania smartweed*	*H*	*1*	*FACW+*

Upland Vegetation

Scientific Name	*Common Name*	*Stratum*	*Cover Class* [3]	*Indicator* [4]
Zea maize	*corn*	*H*	*5*	*NI*
Equisetum arvense	*field horsetail*	*H*	*2*	*FAC*

Wetland Soil

MUID [5]	Description
KB2	lester-kilkenny loams, 2 to 6 percent slopes, eroded

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]
yes	KILKENNY	FINE, SMECTITIC, MESIC OXYAQUIC VERTIC HAPLUDALFS	MODERATELY WELL DRAINED	

Indicator [8]	Short Name	Description of the Field Indicator
F6	Redox Dark Surface	A layer at least 10 cm (4 in.) thick entirely within the upper 30 cm (12 in.) of the mineral soil that has: a. matrix value 3 or less and chroma 1 or less and 2% or more distinct or prominent redox concentrations as soft masses or pore linings, or b. matrix value 3 or less and chroma 2 or less and 5% or more distinct or prominent redox concentrations as soft masses or pore linings.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF SOIL SATURATION WATER MARKS	FAC NEUTRAL

Upland Soils

Muid [5]	Description	
KB	Kilkenny-Lester loams, 2 to 6 percent slopes	
Series Name	**Classification [6]**	**Drainage Class**
KILKENNY	FINE, SMECTITIC, MESIC OXYAQUIC VERTIC HAPLUDALFS	moderately well drained

Decision Matrix

Transect	Pit Locatio	Hydric Soil [8]	Water Depth [9]	Hydrology Indicators - Primary [10]	Hydrology Indicators - Secondary [11]	FAC Neutral Test [12]	Jurisdictional Wetland?
1							
	1	Yes	- >12 inches	3, 2	10	Yes	Yes
	2	Yes	- >12 inches	2	F5	Yes	Yes
	3	No	- >12 inches			No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

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7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

The boundaries of this depression are ill defined due to continuous farming.

Floristic Features

This basin is of marginal quality dominated by Reed Canary Grass and a few additional agricultural weeds species. The basin is surrounded on all sides by cropped corn fields.

Soil Factors

Transition pit had a chroma of 1 with faint mottles from 0"-17", meeting the hydric soil parameter, however, no groundwater was observed on multiple visits between rain events.. The upland sample pit had gleyed soil at > 23 inches.

Hydrology Factors

No hydrology noted at 30"+ in either the wetland or the transition soils pits.

Other Comments

Wetland J is a marginal wetland.

Peterson Environmental Consulting, Inc.

Data Form
Routine Wetland Determination

Project/Site:	Town and Country Development	***Date of Survey:***	06/12/2003
Applicant/Owner:	Hoisington Koegler Group	***County:***	Carver
Investigator:	AJR	***State:***	Minnesota
Legal Description:	W 1/2 of NE 1/4 Sec 27 T116N R23W	***ID:***	Wetland K

Wetland Classification

Cowardin Classification:	PEMA / PFOA	***DNR PWI:***	NA
Circular 39 Classification:	Type 1 / 1L	***City/Watershed Identifier:***	A27 - 3(3)
NRCS Identifier: [2]	NA	***Watershed District:***	Riley - Purgatory Creek
NWI Classification:	NA	***Hydrologic Unit Major:*** [1]	33 Minnesota River - Shakopee

Wetland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Coreopsis lanceolata	*lanceleaf tickseed*		*2*	*FACU*
Ranunculus sp.	*buttercup sp.*		*2*	
Phalaris arundinacea	*reed canarygrass*	*H*	*5*	*FACW+*
Carex scoparia	*broom sedge*	*H*	*3*	*FACW*
Solidago sp.	*goldenrod sp.*	*H*	*3*	
Parthenocissus quinquefolia	*Virginia creeper*	*H*	*2*	*FAC-*
Bromus inermis	*smooth brome*	*H*	*1*	*NI*
Rhamnus cathartica	*common buckthorn*	*S*	*2*	*FACU*
Fraxinus pennsylvanica	*green ash*	*T*	*3*	*FACW*

Upland Vegetation

Scientific Name	***Common Name***	***Stratum***	***Cover Class*** [3]	***Indicator*** [4]
Silphium perfoliatum	*cup plant*		*1*	*FACW-*
Phalaris arundinacea	*reed canarygrass*	*H*	*4*	*FACW+*
Zea maize	*corn*	*H*	*4*	*NI*
Arctium minus	*burdock*	*H*	*2*	
Cirsium arvense	*Canadian thistle*	*H*	*2*	*FACU*
Solidago sp.	*goldenrod sp.*	*H*	*2*	
Sanguinaria canadensis	*bloodroot*	*H*	*1*	*FACU-**
Toxicodendron radicans	*eastern poison ivy*	*H*	*1*	*FAC+*
Rhamnus cathartica	*common buckthorn*	*S*	*2*	*FACU*
Acer negundo	*boxelder*	*T*	*2*	*FACW-*
Fraxinus pennsylvanica	*green ash*	*T*	*1*	*FACW*

Wetland Soil

MUID [5]	Description
KC2	lester-kilkenny loams, 6 to 12 percent slopes, eroded

Inclusion	Series Name	Classification [6]	Drainage Class	Hydric Criteria [7]
yes	LESTER	FINE-LOAMY, MIXED, SUPERACTIVE, MESIC MOLLIC HAPLUDALFS	WELL DRAINED	

Indicator [8]	Short Name	Description of the Field Indicator
F5	Thick Dark Surface	A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less (or a gleyed matrix) starting below 30 cm (12 in.) of the surface. The layer(s) above the depleted or gleyed matrix have hue N and value 3 or less to a depth of 30 cm (12 in.) and value 3 or less and chroma 1 or less in the remainder of the epipedon.

Hydrology

Primary Indicators:	Secondary Indicators:
VISUAL OBSERVATION OF INUNDATION	FAC NEUTRAL
DRAINAGE PATTERNS IN WETLAND	OXIDIZED ROOT CHANNELS

Upland Soils

Muid [5]	Description
KB	Kilkenny-Lester loams, 2 to 6 percent slopes

Series Name	Classification [6]	Drainage Class
KILKENNY	FINE, SMECTITIC, MESIC OXYAQUIC VERTIC HAPLUDALFS	moderately well drained

Decision Matrix

Transect	*Pit Locatio*	*Hydric Soil* [8]	*Water Depth* [9]	*- Hydrology Indicators -* *Primary* [10]	*Secondary* [11]	*FAC Neutral Test* [12]	*Jurisdictional Wetland?*
1							
	1	Yes	0	1	7	Yes	Yes
	2	Yes	- >12 inches	NA	NA	No	No
	3	No	- >12 inches	NA	NA	No	No

1 From USGS Hydrologic Unit Map. See also Minnesota Rules 8420.0540 Subpart 10 (Figure 2).

2 From NRCS Determination under the Food Security Act of 1985 (if applicable). FW=Farmed Wetland; PC=Prior Converted Cropland; NW=Non-Wetland; W= Wetland; N

3 Daubenmire scale: 6 = 95-100% cover, 5 = 75-95% cover, 4 = 50-75% cover, 3 = 25-50% cover, 2 = 5-25% cover, 1 = 0-5% cover.

4 OBL = Obligate Wetland, occurs an estimated 99% in wetlands. FACW = Facultative Wetland, has an estimated 67-99% probability of occurrence in wetlands; FAC = Facultative, is equally likely to occur in wetlands and non wetlands (34-66% probability); FACU = Facultative Upland has an estimated 1-33% probability of occurrence; NI = No Indicator, denotes insufficient information available to determine an indicator status. Positive or negative signs indicate a frequency towards higher (+) or lower (- frequency of occurrence in wetland within a category. Blanks in this column are due to genus level identification only.

5 From Map Unit Indentifiacation Directory

6 Soil Survey Staff. Keys to Soil Taxonomy, Sixth Edition. US Department of Agriculture, Natural Resources Conservation Service, Washington, D.C. 1994.

7 US Department of Agriculture, Soil Conservation Service. Hydric Soils of the United States, Third Edition. National Technical Committee for Hydric Soils. Lincoln, NE. 1

8 US Department of Agriculture, Natural Resources Conservation Service. Field Indicators of Hydric Soils in the United States. G.W Hurt, P.M. Whited., and R.F. Pringle, (eds.). US Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX. 1996.

9 Positive Number indicates depth of inundation; Negative Number indicates depth to free water.

10 Primary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual: 1= Visual observation of inundation; 2= Visual observation of soil saturation; 3= Watermar 4= Drift lines; 5= Sediment Deposits; 6= Drainage Patterns in Wetland

11 Secondary Hydrology Indicators Per 1987 Corps Wetland Delineation Manual (two or more are required in absence of a primary indicator): 7= oxidized rhizospheres in upper 12 inches; 8= water-stained leaves; 9= Local Soil Survey hydrology data for hydric soils; 10= FAC Neutral test. Note: Local soil survey hydrology data for hydric are not a valid secondary indicator of wetland hydrology "...if the site being delineated has been subject to substantial hydrologic alteration". See Guidelines for Submit Wetland Delineations to the St. Paul District Corps of Engineers and Local Units of Government in the State of Minnesota, USACE Public Notice 96-01078-SDE, April 1996, Page 25. Also see Clarification and Interpretation of the 1987 Manual, HQUSACE Memorandum, March 6, 1992, Page MI-14.

12 FAC-Neutral Test per 1987 Corps Wetland Delineation Manual Part III, Indicators of Hydrophytic Vegetation

Comments

Disturbance Factors

This basin is a low area in a larger grassed waterway. Standing water is located within deep tire ruts. The basin recieves water directly from channelized road runoff and culvert crossing Highway 17. The portion of the wetland adjacent to the highway is channelized with marginal vegetation over recent sedimentation.

Floristic Features

The floristic communities of this basin can be divided into three sections. Just below the Highway 17 culvert, flashy stormwat has created an incised channel with marginal vegetation within a thick layer of buckthorn and Boxelder. Downstream from this the basin enters a open power corridor area dominated by Reed Canary Grass. Below the opening, woods dominated by boxelders continue the wetland basin to the east. The ground layer is dominated by wetland sedges until water is channelized into a 18" deep intermittent rut leading to Basin A.

Soil Factors

Soils are highly disturbed throughout this basin with approximately 5 inches of overwash from cropped fields and road sediments entering from the south, north and west. Original soils were a dark, highly organic type typical of a low depression.

Hydrology Factors

Wetland K is a swale that appears to receive large, flashy influxes of stormwater from both adjacent roadways and cropped fields.

Other Comments