INTERAGENCY MEMORANDUM

TO: Allison Bussler, Director of Public Works, Waukesha County
Gary Evans, P.E., Highway Engineering Division Manager, Waukesha County
Linda Mathews, Southeast Region Environmental Coordinator, WisDOT
Doug Cain, Project Manager, WisDOT

FROM: Kenneth R. Yunker, P.E., Executive Director, SEWRPC
Michael G. Hahn, P.E., P.H., Deputy Director, SEWRPC
Donald M. Reed, Ph.D., Former Chief Biologist, SEWRPC
Christopher J. Jors, Senior Specialist-Biologist, SEWRPC

DATE: November 14, 2016

SUBJECT: WAUKESHA WEST BYPASS SEDGE FENS

Pursuant to a discussion at a November 8, 2016, meeting involving Waukesha County, the Wisconsin Department of Transportation, and the Southeastern Wisconsin Regional Planning Commission, the Commission is providing wetland information collected during Commission work along the Waukesha West Bypass route in 2011 and 2016. The information provided here is specifically intended to provide data gathered in three wetland areas of concern discussed during the meeting. These areas include:

1. Wetland located southeast of the intersection of Hawthorne Hollow Drive and Hazelwood Place (see Map 1). Two areas of concern were identified within this wetland in 2016 including a sedge fen and a degraded sedge fen. Pertinent information gathered in 2016 and provided here includes: "Wetland Determination Data Form – Northcentral and Northeast Region" for Sample Site Numbers 22 and 23 and "Bypass Fen Plant Community Area Number 4A. Information gathered in 2011 and provided here includes: "Rapid Assessment Methodology for Evaluating Wetland Functional Values" form for PCA 4, "Wetland Determination Data Form – Northcentral and Northeast Region" for Sample Site Number 6, and a "Preliminary Vegetation Survey" for PCA number 4. Information provided on these 2011 forms is generally consistent with, and not significantly different from, the findings of the 2016 determinations. In particular, on Page 7 of the Rapid Assessment form under the "Groundwater Recharge and Discharge" section, it states: ***"Commission staff observed that part of this wetland may have been a peat mound at one time – an area where ground water wells up to the surface significantly slowing the decay of plant matter which forms a mound. Plants present which are indicators of groundwater discharge include Ciliated brome grass, Skunk cabbage, Water-cress, and Angelica."*** Further, under "Remarks" in the Hydrology section on the first page of the Wetland Determination Data Form for Sample Site Number 6, it states: "***Seasonal groundwater discharge area. Possible old fen mound."*** It should also be noted that Sample Site Number 6 was recorded when precipitation was below normal for 90 days leading up to the August 25, 2011, field inspection. This would explain why saturation and a water table were not observed in the soil column at that time. Further, relatively recent shrub cutting and clearing to accommodate soil sampling equipment, has opened the shrub layer "canopy" allowing fen-type herbaceous vegetation to recolonize the degraded fen site. Finally, groundwater discharge areas were identified for the Draft Environmental Impact Statement prepared in 2012. Attached Exhibit 3-12, titled "Area of

Overland Groundwater Flow West of Pebble Creek", indicates that sedge fens identified by SEWRPC in 2016 are located in an area highlighted as "Field Identified Wetland Supported by Root Zone Groundwater" and just downslope of "Field Identified Groundwater Discharge Areas". As the Commission staff noted during the presentation of Exhibit 3-12 at the interagency meetings in 2011, the entire field- and consultant-identified groundwater discharge and root zone groundwater areas could be expected to revert back to sedge fen and possibly a prairie fen condition with shrub layer removal and related burn management. This is reinforced by what was observed in 2016 in areas where shrubs had been cleared to accommodate the heavy equipment brought in to sample soils.

2. Wetland located immediately north of Sunset Drive (see Map 2). One area of concern, a degraded sedge fen, was identified within this wetland in 2016. Pertinent information gathered in 2016 and provided here includes "Wetland Determination Data Form – Northcentral and Northeast Region" for Sample Site Number 10 and "Bypass Fen Plant Community Area Number 11A". Pertinent information gathered in 2011 and provided here includes: "Rapid Assessment Methodology for Evaluating Wetland Functional Values" form for PCA 11, "Wetland Determination Data Form – Northcentral and Northeast Region" for Sample Site Number 22, which is contained in PCA 11, and a "Preliminary Vegetation Survey" for PCA number 11. The recent fen designation covers a very small area of degraded fen which was not sampled in 2011. However, information provided on the 2011 attachments is generally consistent with, and not significantly different from, the findings of the 2016 determinations. The Rapid Assessment form for PCA 11 noted groundwater discharge observations: "Springs reported and observed throughout the Pebble Creek watershed". Also, "yes" was checked to answer the question: "Related to discharge, may the wetland contribute to the maintenance of base flow in the stream?"

3. Wetland located immediately south of Sunset Drive (CTH D). The following information is provided for comparison purposes. Identified as PCA Number 8 on the attached Map 2, pertinent information gathered in 2011 and provided here includes: "Rapid Assessment Methodology for Evaluating Wetland Functional Values" form for PCA 8, and a "Preliminary Vegetation Survey" for PCA number 8. A wetland sample site was not recorded within this plant community area in 2011. This wetland (designated as W-8) was characterized as a fen in 2011, and was addressed in establishing the current alignment (Rotated Pebble Creek West) for the West Waukesha Bypass (designated as W-8). Additional information was not gathered in W-8 in 2016 since the current project boundary does not include W-8.

Dr. Donald M. Reed, retired Chief Biologist of the Commission staff, visited the newly identified sedge fens within the project area on November 11, 2016. Based upon the field inspection, Dr. Reed concurred with Commission staff sedge fen designations. It should be noted that Dr. Reed has been involved with the West Waukesha Bypass project since it was first proposed. Further, Dr. Reed has studied fens for much of his career, culminating in his M.S. thesis entitled "Composition and Distribution of Calcareous Fens in Relation to Environmental Conditions in Southeastern Wisconsin" and his dissertation entitled "Environmental Correlates of Vegetation Types in Southeastern Wisconsin Fens". Table 1 from Dr. Reed's dissertation, which is attached, presents plant associations for three types of fens: calcareous fen, prairie fen, and sedge fen. The fens identified in 2016 fit the diagnostic description for sedge fen in Table 1.

Dr. Reed mentioned that of the three fen types mentioned above, sedge fens are the most common fen

type in southeastern Wisconsin. Rare plant species that occur almost exclusively in calcareous fens, may not be present in sedge fens. Sedge fens tend to contain plant species that occur in other open wetland types such as sedge meadow. For example, typical sedge fen plants such as Angelica (*Angelica atropurpurea),* a groundwater associate; and Mountain mint (*Pycnanthemum virginianum)*, a fen associate, are relatively common plants in Southeastern Wisconsin because they also occur outside of sedge fens (see range maps attached after Table 1 for these species).

Larry Leitner, retired SEWRPC Principal Biologist**,** visited both sites with the Commission staff and agreed that they are sedge-fens.

Additional Fen Definitions and Guidance:

Fens are a set of peat/muck forming wetlands that receive nutrients from sources other than precipitation: usually from upslope sources through mineral-rich drainage from surrounding soils and from groundwater movement (Brinson 1993, Godwin et al 2002, and U.S. EPA 2016). The term fen, as it is used in the context of North American wetlands, is a hydrogeomorphic concept that describes the environmental "driver" of a particular wetland system. Also, Reed (1985) noted that fens may vary considerably in their plant community associations based on both climate and the mineral and nutrient content of their supporting groundwaters. Accordingly, fens may be further classified by the particular plant community association that they support (e.g., sedge fen, prairie fen, calciphilic or calcareous fen) and/or the water chemistry and pH of the supporting groundwaters (e.g., acidic or poor fen, alkaline or rich fen, mineraltrophic fen).

Definition from Carpenter (1995), which is referred to in the WDNR RAPID Assessment of Wetland Functional Values guidance: 1) Groundwater discharge, 2) Organic soils, either "high organic" or "high carbonate," 3) Vegetation adapted to those conditions

NatureServe: "Upright sedge-fen," 1) typically on hillsides, 2) organic soils, 3) dominated by tussock sedge and spotted Joe-Pye weed. Among other fen associates, the fens identified in 2016 by SEWRPC staff have swamp aster, boneset, mountain mint, pussy willow, turtlehead, wild strawberry, yellow ovens, winged loosestrife, swamp saxifrage, and marsh fern.

Wisconsin Natural Heritage inventory on the more degraded area north of Sunset Drive**:**
Ryan O'Connor, WDNR NHI: "Given the hydrology and landscape position you describe, I would lean toward degraded fen. Angelica is certain a groundwater seepage-lover, and Pycnanthemum is a classic fen species, even if it doesn't rise to the level of "indicator" like Parnassia, Valeriana, etc." He also noted that this doesn't fit neatly into Wisconsin NHI vegetation categories, but "seems Iowa and Minnesota consider these fens."

Definition of Sedge Meadows:
Sedge meadows are wetland plant communities dominated by sedges growing on saturated soils, usually peat or muck (Eggers and Reed 2015). They tend to occur in depressional areas or along lakes and streams where spring melt water ponds or drains slowly (Hoffman 2002). Sedge meadows, not fed primarily by groundwater, tend to dry down by late summer (ibid). However, sedge meadows may also occur as floating mats along lake edges (Eggers and Reed 2015) or on shallow groundwater and/or groundwater discharge areas located on slopes adjacent to lakes and streams. Some further differentiate or subdivide such sedge meadow communities by their primary water sources. For

example, Naturserve refers groundwater supported sedge meadows with fen associates to the "upright sedge-fen" community defined above. While sedge meadows in southeastern Wisconsin often contain plant species considered fen associates, the Commission staff has not observed large numbers of such associates in these wetland plant communities (typically much less than 20 percent of the total cover).

References**:**

Brinson, Mark M. 1993. A Hydrogeomorphic Classification for Wetlands. Wetlands Research Program Technical Report ; WRP-DE-4. VI. Series: U.S. Army Engineer Waterways Experiment Station; WRP-DE-4. TA7 W34 no.WRP-DE-4.

Carpenter, Q. J. 1995. Toward a new definition of calcareous fen for Wisconsin (USA). Ph.D. Dissertation. University of Wisconsin–Madison, Madison.

Eggers, Steve D. and Donald M. Reed 2015. Wetland Plants and Plant Communities of Minnesota and Wisconsin, Version 3.2, U.S. Army Corps of Engineers, St. Paul District, 478 pages.

Godwin, Kevin S., James P. Shallenberger, Donald J. Leopold and Barbara L. Bedford 2002. Linking landscape properties to local hydrogeologic gradients and plant species occurrence in New York fens: a hydrogeologic setting (HGS) framework. Wetlands*. 22 (4): 722–737*.

Hoffman, R. 2002. Wisconsin's Natural Communities: How to Recognize them, Where to Find Them. University of Wisconsin Press, Madison.

NatureServe. (2016, November 4). Ecological Association Comprehensive Report. *Carex stricta – Valeriana edulis – Parnassia glauca herbaceous vegetation*. Retrieved from http://explorer.natureserve.org/servlet/NatureServe?searchCommunityUid=ELEMENT_GLOBAL.2.686204

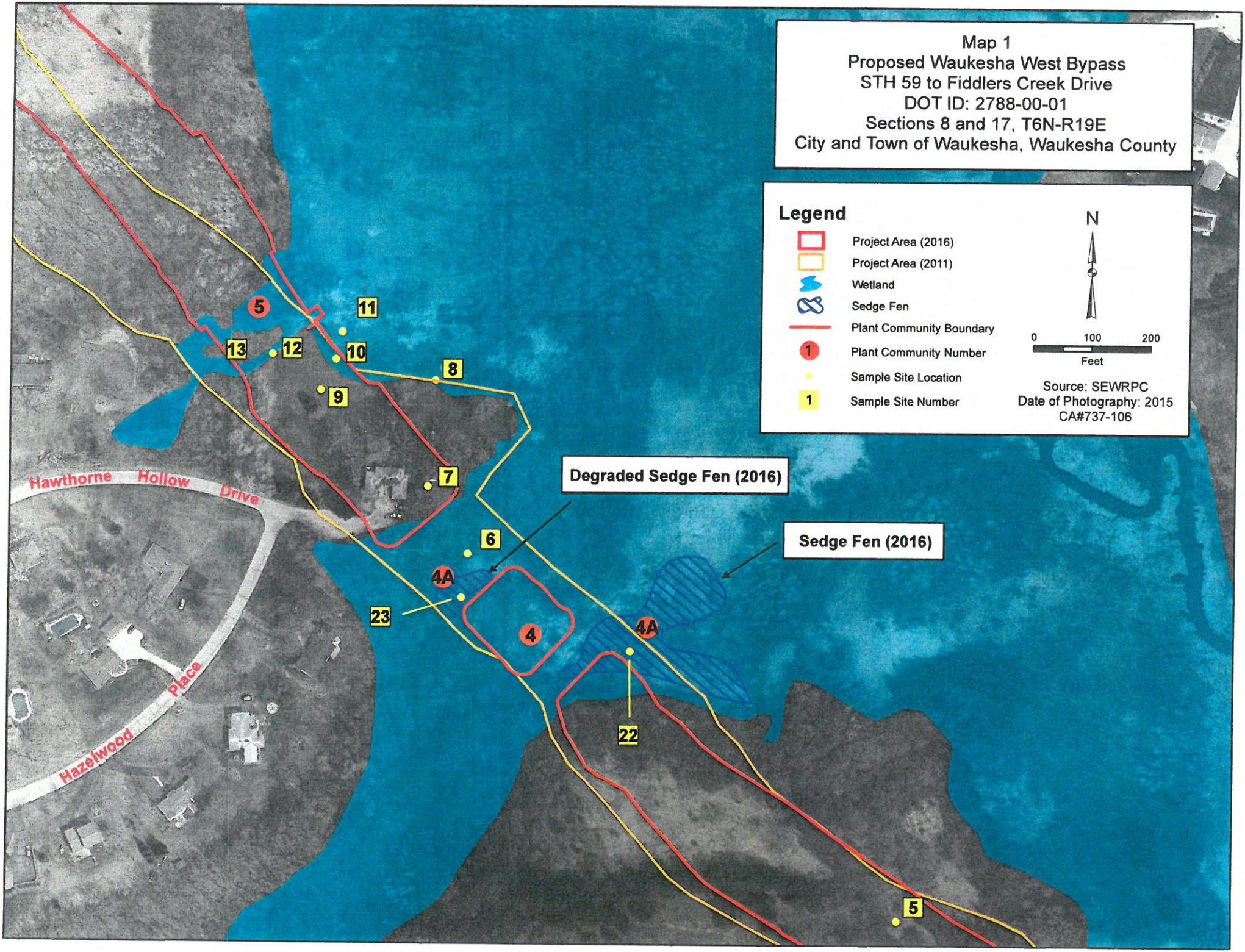
Reed, Donald M. 2002. Environmental Correlates of Vegetation Types in Southeastern Wiscosin Fens. Ph.D. Dissertation. University of Wisconsin-Milwaukee, Milwaukee.

Reed, Donald M. 1985. Composition and Distribution of Calcareous Fens in Relation to Environmental Conditions in Southeastern Wisconsin. M.S. Thesis. University of Wisconsin – Milwaukee.

U.S. Department of Transportation, Federal Highway Administration, State of Wisconsin Department of Transportation, and the Waukesha County Department of Public Works, 2012. Draft Environmental Impact Statement, Project I.D. 2788-01-00, West Waukesha Bypass, FHWA-WISC-EIS-12-01-D.

U.S. EPA 2016. Wetlands Classification and Types. U.S. EPA Wetlands Website.

Voss, E.G. and A. A. Reznicek. 2012. Field Manual of Michigan Flora. The Univerrsity of Michigan Press, Ann Arbor.


Map 1
Proposed Waukesha West Bypass
STH 59 to Fiddlers Creek Drive
DOT ID: 2788-00-01
Sections 8 and 17, T6N-R19E
City and Town of Waukesha, Waukesha County
Legend
Project Area (2016)
Project Area (2011)
Wetland
Sedge Fen
Plant Community Boundary
Plant Community Number
Sample Site Location
Sample Site Number
N
0
100
200
Feet
Source: SEWRPC
Date of Photography: 2015
CA#737-106
Degraded Sedge Fen (2016)
Sedge Fen (2016)
Hawthorne Hollow Drive
Hazelwood Place
5
11
13
12
10
8
9
7
6
4A
23
4
4A
22
5

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Proposed Waukesha West Bypass City/County: Town of Waukesha/Waukesha County Sampling Date: 11/03/2016
Applicant/Owner: ____ State: WI Sampling Point: 22
Investigator(s): Chris Jors, Jen Dietl, Dan Carter; SEWRPC Section, Township, Range: Section 17, T6N, R19E
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): linear Slope (%): 2-6%
Subregion (LRR or MLRA): LRR K Lat: ____ Long: ____ Datum: ____
Soil Map Unit Name: Houghton muck (HtB) NWI classification: S3/E2K
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ **No** ☒ (If no, explain in Remarks)
Are Vegetation____, Soil____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? **Yes** ☒ No ☐
Are Vegetation____, Soil____, or Hydrology ____ naturally problematic? (If, needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	☒**Yes**	☐No	**Is the Sampled Area within a Wetland?**	☒ **Yes**	☐No
Hydric Soils Present?	☒**Yes**	☐No			
Wetland Hydrology Present?	☒**Yes**	☐No	If yes, optional Wetland Site ID: PCA		

Remarks: (Explain alternative procedures here or in a separate report.) Antecedent hydrologic conditions wetter than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☒ **High Water Table (A2)**
- ☒ **Saturation (A3)**
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ **Water-Stained Leaves (B9)**
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☒ **Hydrogen Sulfide Odor (C1)**
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☒ **FAC-Neutral Test (D5)**

Field Observations:

Surface Water Present?	Yes ☐	**No** ☒	Depth (inches): ____	
Water Table Present?	**Yes** ☒	No ☐	Depth (inches): 10	
Saturation Present? (includes capillary fringe)	**Yes** ☒	No ☐	Depth (inches): 0 (at surface)	**Wetland Hydrology Present?** **Yes** ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Topo Map (Exhibit 1), WWI Map (Exhibit 2), Soils Map (Exhibit 3), Aerial Photos (Exhibit 4).

Remarks: Hillside groundwater discharge area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' radius)			
1. Cornus alba	**35**	☒	**FACW**
2. Salix bebbiana	5	☐	FACW
3. Frangula alnus	2	☐	FAC
4.		☐	
5.		☐	
6.		☐	
7.		☐	
	42	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Carex stricta	**80**	☒	**OBL**
2. Angelica atropurpurea	20	☐	OBL
3. Eutrocium maculatum	15	☐	OBL
4. Bromus ciliatus	10	☐	FACW
5. Symphyotrichum lanceolatum	10	☐	FACW
6. Calamagrostis canadensis	5	☐	OBL
7. Solidago gigantea	2	☐	FACW
8.		☐	
9.		☐	
10.		☐	
11.		☐	
12.		☐	
	142	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ **Dominance Test is >50%**
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must Be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1 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

Hydrophytic Vegetation Present? **Yes** ☒ No ☐

Remarks: (include photo number here or on a separate sheet.) Sedge fen.

SOIL

Sampling Point: 22

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	N 1/0	100					Muck	
13-21	7.5YR 2.5/1	100					Mucky peat	
21-25	10YR 5/2	100					Sandy mucky peat	
25-32	7.5YR 2.5/1	100					Peat	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS= Masked Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☒ **Histosol (A1)**
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ **Hydrogen Sulfide (A4)**
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ☐ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ☐ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ☐ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ☐ Coast Prairie Redox (A16) **(LLR K, L, R)**
- ☐ 5 cm Mucky Peat or Peat (S3) **(LLR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Polyvalue Below Surface (S8) **(LRR K, L)**
- ☐ Thin Dark Surface (S9) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ☐ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Proposed Waukesha West Bypass City/County: City Town of Waukesha/Waukesha County Sampling Date: 11/10/2016
State: WI Sampling Point: 23
Applicant/Owner: ____
Investigator(s): Chris Jors, Dan Carter, Don Reed; SEWRPC Section, Township, Range: Section 17, T6N, R19E
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): linear Slope (%): 1-4%
Subregion (LRR or MLRA): LRR K Lat: ____ Long: ____ Datum: ____
Soil Map Unit Name: Lamartine silt loam (LmB) NWI classification: S3/E2K
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ **No** ☒ (If no, explain in Remarks)
Are Vegetation____, Soil____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? **Yes** ☒ No ☐
Are Vegetation____, Soil____, or Hydrology ____ naturally problematic? (If, needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	☒**Yes**	☐No	**Is the Sampled Area within a Wetland?**	☒ **Yes**	☐No
Hydric Soils Present?	☒**Yes**	☐No			
Wetland Hydrology Present?	☒**Yes**	☐No	If yes, optional Wetland Site ID: ____		

Remarks: (Explain alternative procedures here or in a separate report.) Antecedent hydrologic conditions wetter than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☒ **High Water Table (A2)**
- ☒ **Saturation (A3)**
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ **Water-Stained Leaves (B9)**
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☒ **FAC-Neutral Test (D5)**

Field Observations:

Surface Water Present? Yes ☐ **No** ☒ Depth (inches): ____
Water Table Present? **Yes** ☒ No ☐ Depth (inches): 6
Saturation Present? (includes capillary fringe) **Yes** ☒ No ☐ Depth (inches): 0 (at surface)

Wetland Hydrology Present? **Yes** ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Topo Map (Exhibit 1), WWI Map (Exhibit 2), Soils Map (Exhibit 3), Aerial Photos (Exhibit 4).

Remarks: Groundwater discharge area.

VEGETATION – Use scientific names of plants.

Sampling Point: 23

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.		☐	
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' radius)			
1. Cornus alba	**15**	☒	**FACW**
2. Cornus racemosa	2	☐	FAC
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
	17	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Carex trichocarpa	**50**	☒	**OBL**
2. Solidago altissima	**15**	☒	**FACU**
3. Symphyotrichum lanceolatum	**15**	☒	**FACW**
4. Carex stricta	10	☐	OBL
5. Eutrochium maculatum	10	☐	OBL
6. Angelica atropurpurea	5	☐	OBL
7. Cirsium arvense	3	☐	FACU
8. Monarda fistulosa	3	☐	FACU
9. Typha angustifolia	3	☐	OBL
10. Lathyrus palustris	2	☐	FACW
11. Viola nephrophylla (in flower)	1	☐	FACW
12.		☐	
	117	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ **Dominance Test is >50%**
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must Be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1 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

Hydrophytic Vegetation Present? **Yes** ☒ No ☐

Remarks: (include photo number here or on a separate sheet.) Degraded sedge fen.

SOIL

Sampling Point: 23

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-11	10YR 2/1	100					Muck	
11-16	10YR 2/1	65	7.5YR 3/3	15	C	PL M	Muck	
	2.5YR 2.5/4	20					Peat (inclusions)	
16-20	5Y 2.5/1	100					Silty clay	
20+								Too wet to pull below 20.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS= Masked Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☒ **Histosol (A1)**
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ☐ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ☐ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ☐ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ☐ Coast Prairie Redox (A16) **(LLR K, L, R)**
- ☐ 5 cm Mucky Peat or Peat (S3) **(LLR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Polyvalue Below Surface (S8) **(LRR K, L)**
- ☐ Thin Dark Surface (S9) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ☐ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Bypass Sedge Fen Plant Community Area No. 4A

Bold = co-dominant species, *Italic* = exotic species, A = typical upright sedge-fen co-dominant species, B = fen associate, B+ fen indicators from Carpenter (1995), C = groundwater associate

Associations with fens and groundwater are based on NatureServe definition of "upright sedge-fen," Voss & Reznick (2012) species descriptions, Carpenter (1995), Hoffman (2002), Reed (2002), and the experience of the SEWRPC staff. Most species associated with fens also occur in other community types, but the landscape/hydrological context and large number of fen associates present support designating these community areas as fens rather than sedge meadow, which occur in valleys, along lakes, and depressions in glacial outwash rather than over hillside groundwater discharge.

Sedge fen and degraded sedge fen near Hawthorne Hollow Drive (10/17/16, 11/3/16, and 11/10/16)

Angelica atropurpurea—Angelica (C)
Bromus ciliatus—Cilated brome (B+)
Calamagrostis canadensis—Canada blue-joint grass (A)
Caltha palustris—Marsh marigold (C)
Cardamine bulbosa—Spring cress (C)
Carex granularis—Limestone meadow sedge
Carex leptalea—Slender sedge (B+)
Carex stricta—Tussock sedge (A)
Carex trichocarpa—Hairy-fruited sedge
Cicuta maculata—Spotted water-hemlock
Cornus alba—Red-osier dogwood (B)
Cornus racemosa—Gray dogwood
Elymus trachycaulis—Slender wheatgrass (B)
Epilobium coloratum—Willow-herb
Equisetum fluviatile--Pipes
Eupatorium perfoliatum—Boneset (A)
Eutrochium maculatum—Spotted Joe-Pye weed (A)
Frangula alnus—Glossy buckthorn
Geum aleppicum—Yellow avens (B)
Geum laciniatum—Rough avens
Glyceria striata—Fowl manna grass (B)
Impatiens capensis--Jewelweed
Lathyrus palustris – Marsh vetchling (B)
Lycopus uniflorus—Northern bugleweed (B)
Lythrum alatum—Winged loosestrife (B)
Mentha arvensis—Mint
Micranthes pennsylvanica—Swamp saxifrage (B)
Pilea fontana—Black-fruited clearweed (C)
Polemonium reptans—Jacob's ladder (B)
Pycnanthemum virginianum—Mountain mint (B)
Phalaris arundinacea—Reed canary grass

Rhamnus cathartica—Common buckthorn
Ribes americanum—Wild currant
Rubus pubescens—Dwarf raspberry
Rumex brittanica—Great water dock
Salix bebbiana—Bebb's willow (B)
Salix discolor—Pussy willow (B)
Salix petiolaris—Meadow willow
Scirpus atrovirens—Black bulrush (B)
Symphyotrichum firmum—Shining aster (A)
Symphyotrichum lanceolatum—Panicled aster (B)
Symplocarpus foetidus—Skunk cabbage(C)
Thelypteris palustris—Marsh fern (B)
Viola nephrophylla – Northern bog violet (B+)

Of the 44 species present, 28 are fen and groundwater-associated species. Disturbances include past ditching adjacent to this plant community area, cultivation evident on historical aerial imagery between the degraded and less degraded portions of the plant community area, recent clearing of vegetation for soil borings, and the soil borings themselves (some of which are discharging groundwater to the surface). Soils are organic. Landscape position is over a hillside seep.

Wisconsin Department of Natural Resources

RAPID ASSESSMENT METHODOLOGY FOR EVALUATING WETLAND FUNCTIONAL VALUES

GENERAL INFORMATION

Name of Wetland: **Plant Community Area No. 4**
Owner(s): **Robert F. & Carol O. Smart Revocable Trust – Tax Key No. WAKT1361975** **Christine K. Whitstone – Tax Key No. WAKT1362981**
Location: **Waukesha** County; **NW** ¼ Section **17**, Township **6N**, Range **19E**
Project Name: **Proposed Waukesha West Bypass**
Evaluator(s): **Donald M. Reed, PhD., Chief Biologist; Lawrence A. Leitner, PhD., Principal Biologist; Christopher J. Jors, Biologist, Southeastern Wisconsin Regional Planning Commission**
Date(s) of Site Visit(s): **August 4 and 25, 2011; April 3, 2012**

Description of seasonality limitations of this inspection due to time of year of the evaluation and/or current hydrologic and climatologic conditions (e.g. after heavy rains, snow or ice cover, during drought year, during spring flood, during bird migration): **Precipitation records in 2011 indicate normal to below normal precipitation (0 to -1 inches) for June, below normal (-1 to -2 inches) for July, and below normal (-2 to -3 inches) for August. Precipitation records for 2012 indicate normal precipitation (-0.5 to +0.5 inches) for February and slightly above normal (+0.5 to +1 inches) for March.**

WETLAND DESCRIPTION

Wisconsin Wetlands Inventory classification: **S3/E2K & T3/S3K**
Wetland Type: shallow open water deep marsh **(shallow marsh)** seasonally flooded basin bog floodplain forest alder thicket **(sedge meadow)** coniferous swamp fen **(wet meadow)** shrub-carr low prairie **(hardwood swamp)**
Estimated size of wetland in acres: **Study area wetland = 2.2 acres**

SUMMARY OF FUNCTIONAL VALUES

Based on the results of the attached functional assessment, rate the significance of each of the functional values for the subject wetland and check the appropriate box. Complete the table as a summary.

FUNCTION	SIGNIFICANCE				
	Low	Medium	High	Exceptional	N/A
Floral Diversity			X		
Wildlife Habitat			X		
Fishery Habitat			X		
Flood/Stormwater Attenuation		X			
Water Quality Protection			X		
Shoreline Protection		X			
Groundwater			X		
Aesthetics/Recreation/Education		X			

List any Special Features/"Red Flags": **Part of this plant community area is identified as a Natural Area of local significance (NA-3) known as Pebble Creek Wetlands. Butler's gartersnake (*Thamnophis butleri*), a State-designated Threatened species, observed by Commission staff at this location.**

Blanding's turtle (*Emydoidea blandingii),* a State-designated Threatened species, recorded by Retzer Nature Center staff northwest of this location. In addition, Natural Heritage Inventory (NHI) identifies a broad area (Waukesha Township, T6N R19E), as having the potential to contain Rough rattlesnake root (*Prenanthes aspera),* a State-designated Endangered species. See page 5 for details.

SITE DESCRIPTION

I. HYDROLOGIC SETTING

A. Describe the geomorphology of the wetland:

- [X] Depressional (includes slopes, potholes, small lakes, kettles, etc.)
- [ ] Riverine
- [ ] Lake Fringe
- [ ] Extensive Peatland

B. (Y) N Has the wetland hydrology been altered by (ditching), tiles, dams, (culverts), well pumping, (diversion of surface flow), or changes to runoff within the watershed (circle those that apply)? **Residential development along western fringe of this wetland.**

C. (Y) N Does the wetland have an (inlet), outlet, or both (circle those that apply)? **Spring fed wetland. Inlet includes a roadside ditch.**

D. (Y) N Is there any field evidence of wetland hydrology such as buttressed tree trunks, adventitious roots, (drift lines), (water marks), water stained leaves, (soil mottling/gleying), (organic soils layer), or (oxidized rhizospheres) (circle those that apply)? **Groundwater discharge area. Soil saturation at surface as well as a high water table (see sample site data numbers 6, 8, 10 and 11)**

E. Y (N) Does the wetland have standing water, and if so what is the average depth in inches? Approximately how much of the wetland is inundated? **No standing water observed during field inspection. However, parts of wetland likely inundated in early growing season.**

F. How is the hydroperiod (seasonal water level pattern) of the wetland classified?

- [ ] Permanently Flooded
- [X] Seasonally Flooded (water absent at end of growing season)
- [ ] Saturated (surface water seldom present)
- [ ] Artificially Flooded
- [ ] Artificially Drained

G. Y (N) Is the wetland a navigable body of water or is a portion of the wetland below the ordinary high-water mark of a navigable water body? List any surface waters associated with the wetland or in proximity to the wetland (note approximate distance from the wetland and navigability determination). Note if there is a surface water connection to other wetlands. **This plant community area portion of the wetland complex is not part of a navigable body of water. Nor is it below the Ordinary High Water Mark. However, this wetland is part of the larger Pebble Creek wetland complex and is approximately 800 feet from the navigable portion of Pebble Creek.**

II. VEGETATION

A. Identify the vegetation communities present and the dominant species.

	floating leaved community dominated by:
	submerged aquatic community dominated by:
X	emergent community dominated by: **Phalaris arundinacea; Typha latifolia present in scattered shallow marsh areas but not listed as dominant in this plant community area**
	shrub community dominated by:
X	deciduous broad-leaved tree community dominated by: **Populus tremuloides, Acer negundo and Impatiens capensis**
	coniferous tree community dominated by:
	open sphagnum mat or bog
X	sedge meadow/wet prairie community dominated by: **Carex stricta**
	other (explain)

B. Other plant species identified during site visit:
See attached species list

III. SOILS

A. NRCS Soil Map Classification: **Wallkill silt loam (Wa) - Poorly Drained, Houghton muck (HtB) – Very Poorly Drained, Brookston silt loam (BsA) – Poorly Drained, Lamartine silt loam (LmB) – Somewhat Poorly Drained, and Pistakee silt loam (PrA) – Somewhat Poorly Drained**

B. Field description: **Four sample sites recorded in this plant community area with varying results– see Sample Site Nos. 6, 8, 10 and 11**

❑ Organic (histosol)? If so, is it a muck or a peat?

❑ Mineral soil?

- Mottling, gleying, sulfidic materials, iron or manganese concretions, organic streaking (circle those that apply)
- Soil Description:
- Depth of mottling/gleying:
- Depth of A Horizon:
- Munsell Color of matrix and mottles
  -Matrix below the A horizon:
  -Mottles:

V. SURROUNDING LAND USES

A. What is the estimated area of the wetland watershed in acres? **87**

B. What are the surrounding land uses?

LAND-USE	ESTIMATED % OF WETLAND WATERSHED
Developed (Industrial/Commercial/Residential)	**48**
Agricultural/cropland	--
Agricultural/grazing	--
Forested (Upland)	**22**
Grassed recreation areas/parks	--
Old field	--
Highways or roads	**4**
Other (specify) : Wetland	**13**

VI. SITE SKETCH

See attached aerial map exhibit

FUNCTIONAL ASSESSMENT

The following assessment requires the evaluator to examine site conditions that provide evidence that a given functional value is present and to assess the significance of the wetland to perform those functions. Positive answers to questions indicate the presence of factors important for the function. The questions are not definitive and are only provided to guide the evaluation. After completing each section, the evaluator should consider the factors observed and use best professional judgement to rate the significance. The ratings should be recorded on page 1 of the assessment.

SPECIAL FEATURES/"RED FLAGS"

1. (Y)N Is the wetland in or adjacent to an area of special natural resource interest (NR 103.04, Wis. Adm. Code)? If so, check those that apply:

- ☐ Cold water community as defined in s. NR 102.04(3)(b), Wis. Adm. Code, including trout streams, their tributaries, and trout lakes
- ☐ Lakes Michigan and Superior and the Mississippi River
- ☐ State or federal designated wild and scenic river
- ☐ Designated state riverway
- ☐ Designated state scenic urban waterway
- ☒ Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study – **Part of subject plant community area identified as a Natural Area of local significance (NA-3) known as the Pebble Creek Wetlands; contained entirely within a Primary environmental corridor; and ADID wetland**
- ☐ Calcareous fen
- ☐ State park, forest, trail or recreation area
- ☐ State and federal fish and wildlife refuges and fish and wildlife management areas
- ☐ State or federal designated wilderness area
- ☐ Designated or dedicated state natural area
- ☐ Wild rice water listed in ch. NR 19.09, Wis. Adm. Code
- ☐ Surface water identified as an outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code

2. (Y)N According to the Natural Heritage Inventory (Bureau of Endangered Resources) or direct observations, are there any rare, endangered, or threatened plant or animal species in, near, or using the wetland or adjacent lands? If so, list the species of concern: **Butler's gartersnake (*Thamnophis butleri*), a State-designated Threatened species, observed by Commission staff at this location. Blanding's turtle (*Emydoidea blandingii),* a State-designated Threatened species, recorded by Retzer Nature Center staff upstream of this location. In addition, Natural Heritage Inventory (NHI) identifies a broad area (Waukesha Township, T6N R19E), as having the potential to contain Rough rattlesnake root (*Prenanthes aspera),* a State-designated Endangered species. This broad NHI finding is based upon an 1845 record for this species typically found in dry prairies. Accordingly, it is very unlikely that this plant community area would support this species.**

3. Y(N) Is the project located in an area that requires a State Coastal Zone Management Plan consistency determination?

Floral Diversity

1. (Y)N Does the wetland support a variety of native plant species (i.e. not a monotypic stand of cattail or giant reed grass and/or not dominated by exotic species such as reed canary grass, brome grass, buckthorn, purple loosestrife, etc.)?

2. Y(N) Is the wetland plant community regionally scarce or rare?

Wildlife and Fishery Habitat

1. List any species observed, evidenced (e.g. tracks, scat, nest/burrow, calls), or expected to utilize the wetland: **Raccoon and White-tailed deer; female Marsh hawk observed on a "kill" during the field inspection. Redwinged black bird, Green heron, and Gold finch also observed.**

2. (Y)N Does the wetland contain a number of diverse vegetative cover types and a high degree of interspersion of those vegetation types?

3. Y(N) Is the estimated ratio of open water to cover between 30 and 70 percent? What is the estimated ratio? **Outside of narrow, spring-fed ditch entering wetland, standing water is limited to early growing season.**

4. (Y)N Does the surrounding upland habitat likely support a variety of animal species?
   Class I Wildlife Habitat
5. (Y)N Is the wetland part of or associated with a wildlife corridor or designated environmental corridor?
   Class I Wildlife Habitat & Primary environmental corridor
6. Y(N) Is the surrounding habitat and/or the wetland itself a large tract of undeveloped land important for wildlife that requires large home ranges (e.g. bear, woodland passerines)?

7. (Y)N Is the surrounding habitat and/or the wetland itself a relatively large tract of undeveloped land within an urbanized environment that is important for wildlife?

8. (Y)N Are there other wetland areas near the subject wetland that may be important to wildlife?
   Important wetlands for wildlife along the Pebble Creek corridor
9. (Y)N Is the wetland contiguous with a permanent waterbody or periodically inundated for sufficient periods of time to provide spawning/nursery habitat for fish? **This plant community area is located along the western edge of the Pebble Creek wetland complex that provides this function.**

10. (Y)N Can the wetland provide significant food base for fish and (wildlife) (e.g. (insects, crustaceans, voles, forage fish, amphibians, reptiles, shrews) wild rice, wild celery, duckweed, pondweeds, watermeal, bulrushes, bur reeds, arrowhead, smartweeds, millets...)?

11. Y(N) Is the wetland located in a priority watershed/township as identified in the Upper Mississippi and Great Lakes Joint Venture of the North American Waterfowl Management Plan?

12. Y(N) Is the wetland providing habitat that is scarce to the region?

Flood and Stormwater Storage/Attenuation

1. (Y)N Are there steep slopes, (large impervious areas), moderate slopes with row cropping, or areas with severe overgrazing within the watershed (circle those that apply)? **Impervious surfaces due to suburban development including subdivision roadways to west of wetland**

2. (Y)N Does the wetland significantly reduce run-off velocity due to its size, configuration, braided flow patterns, or vegetation type and density? **Runoff velocity is reduced when stormwater enters the subject wetland**

3. Y(N) Does the wetland show evidence of flashy water level responses to storm events (debris marks, erosion lines, stormwater inputs, channelized inflow)?

4. Y(N) Is there a natural feature or human-made structure impeding drainage from the wetland that causes backwater conditions?

5. Y(N) Considering the size of the wetland area in relation to the size of its watershed, at any time during the year is water likely to reach the wetland's storage capacity (i.e. the level of easily observable wetland vegetation)? [For some cases where greater documentation is required, one should determine if the wetland has capacity to hold 25% of the run-off from a 2 year-24 hour storm event.]

6. (Y)N Considering the location of the wetland in relation to the associated surface water watershed, is the wetland important for attenuating or storing flood or stormwater peaks (i.e. is the wetland located in the mid or lower reaches of the watershed)?

Water Quality Protection

1. (Y)N Does the wetland receive overland flow or direct discharge of stormwater as a primary source of water (circle that which applies)? **Largely groundwater fed with some discharge of stormwater from roadside ditches.**

2. (Y)N Do the surrounding land uses have the potential to deliver significant nutrient and/or sediment loads to the wetland? **Road salt from subdivision roads and nutrient loading from adjacent residential development**

3. (Y)N Based on your answers to the flood/stormwater section above, does the wetland perform significant flood/stormwater attenuation (residence time to allow settling)?

4. (Y)N Does the wetland have significant vegetative density to decrease water energy and allow settling of suspended materials?

5. (Y)N Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface water?

6. Y(N) Are algal blooms, heavy macrophyte growth, or other signs of excess nutrient loading to the wetland apparent (or historically reported)?

Shoreline Protection

1. (Y)N Is the wetland in a lake fringe or riverine setting? If NO, STOP and enter "not applicable" for this function. If YES, then answer the applicable questions. **This wetland plant community area is located along the western edge of a wetland complex associated with Pebble Creek.**

2. Y(N) Is the shoreline exposed to constant wave action caused by long wind fetch or boat traffic?

3. (Y)N Is the shoreline and shallow littoral zone vegetated with submerged or emergent vegetation in the swash zone that decrease wave energy or perennial wetland species that form dense root mats and/or species that have strong stems that are resistant to erosive forces? **This wetland plant community area is part of a wetland complex that provides this function.**

4. (Y)N Is the stream bank prone to erosion due to unstable soils, land uses, or ice floes? **This wetland plant community area is part of a wetland complex, the shoreline edge of which may experience ice flows.**

5. (Y)N Is the stream bank vegetated with densely rooted shrubs that provide upper bank stability? **This wetland plant community area is part of a wetland complex that provides this function.**

Groundwater Recharge and Discharge

1. (Y)N Related to discharge, are there observable (or reported) springs located in the wetland, physical indicators of springs such as marl soil, or vegetation indicators such as watercress or marsh marigold present that tend to indicate the presence of groundwater springs? **Springs reported and observed throughout Pebble Creek watershed. Specifically, Commission staff observed that part of this wetland may have been a peat mound at one time – an area where ground water wells up to the surface significantly slowing the decay of plant matter which forms a mound. Plants present which are indicators of groundwater discharge include Ciliated brome grass, Skunk cabbage, Water-cress, and Angelica.**

2. (Y)N Related to discharge, may the wetland contribute to the maintenance of base flow in a stream?

3. (Y)N Related to recharge, is the wetland located on or near a groundwater divide (e.g. a topographic high)? **A portion of Plant Community Area No. 4 is identified in SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin, Volumes 1 and 2,* as having a high groundwater recharge potential (See map).**

Aesthetics/Recreation/Education and Science

1. (Y) N Is the wetland visible from any of the following kinds of vantage points: (roads) (public lands) (houses) and/or businesses? (Circle all that apply.) **Waukesha County park lands nearby.**

2. (Y) N Is the wetland in or near any population centers? **City of Waukesha**

3. Y (N) Is any part of the wetland in public or conservation ownership?

4. Y (N) Does the public have direct access to the wetland from public roads or waterways? (Circle those that apply.)

5. Is the wetland itself relatively free of obvious human influences, such as:

   a. Y (N) Buildings?
   b. Y (N) Roads?
   c. (Y) N Other structures?
   d. Y (N) Trash?
   e. Y (N) Pollution?
   f. Y (N) Filling?
   g. Y (N) Dredging/draining?
   h. Y (N) Domination by non-native vegetation?

6. Is the surrounding viewshed relatively free of obvious human influences, such as:
   a. Y (N) Buildings?
   b. Y (N) Roads?
   c. (Y) N Other structures?

7. (Y) N Is the wetland organized into a variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water)?

8. (Y) N Does the wetland add to the variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water) within the landscape as a whole?

9. Does the wetland encourage exploration because any of the following factors are present:
   a. (Y) N Long views within the wetland?
   b. (Y) N Long views in the viewshed adjacent to the wetland?
   c. (Y) N Convoluted edges within and/or around the wetland border?
   d. (Y) N The wetland provides a different (and perhaps more natural/complex) kind of environment from the surrounding land covers?

10. (Y) N Is the wetland currently being used for (or does it have the potential to be used for) the following recreational activities? (Check all that apply.) **This plant community area is entirely in private ownership.**

ACTIVITY	CURRENT USE	POTENTIAL USE
Nature study/photography		X
Hiking/biking/skiing		X
Hunting/fishing/trapping		X
Boating/canoeing		
Food harvesting		
Others (list)		

11. (Y) N Is the wetland currently being used, and/or does it have the potential for use for (educational) or (scientific study) purposes (circle that which applies)? **This plant community area is currently in private ownership. However, the potential is there for these activities.**

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: STH 59 West Bypass | City/County: City and Town of Waukesha, Waukesha County | Sampling Date: 08/25/2011
Applicant/Owner: ____ | State: WI | Sampling Point: 6
Investigator(s): Donald M. Reed, PhD., SEWRPC | Section, Township, Range: NW 1/4 Section 17, T6N, R19E
Landform (hillslope, terrace, etc.): terrace | Local relief (concave, convex, none): none
Slope (%): 0-3% | Lat: ____ | Long: ____ | Datum: ____
Soil Map Unit Name: Brookston silt loam (BsA) Pd | NWI classification: T3/S3K
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks)
Are Vegetation____, Soil____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation____, Soil____, or Hydrology ____ naturally problematic? (If, needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	☒Yes	☐No	**Is the Sampled Area within a Wetland?**	☒ **Yes**	☐**No**
Hydric Soils Present?	☒Yes	☐No			
Wetland Hydrology Present?	☒Yes	☐No	If yes, optional Wetland Site ID: PCA No. 4		

Remarks: (Explain alternative procedures here or in a separate report.) Below normal precipitation for the past 90 days.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☒ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? **Yes** ☐ **No** ☒ Depth (inches): ____
Water Table Present? **Yes** ☐ **No** ☒ Depth (inches): ____
Saturation Present? (includes capillary fringe) **Yes** ☐ **No** ☒ Depth (inches): ____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Seasonal groundwater discharge area. Possible old fen mound.

Sampling Point: 6

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus macrocarpa	50	☒	FAC
2. Acer negundo	25	☒	FACW
3. Juglans nigra	25	☒	NI
4. Prunus serotina	10	☐	FACU
5. ____	____	☐	____
6. ____	____	☐	____
7. ____	____	☐	____
	110	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30' radius)			
1. Acer negundo	15	☒	FACW
2. Rhamnus frangula	8	☒	FAC
3. Lonicera X bella	5	☐	NI
4. Syringia vulgare	5	☐	NI
5. ____	____	☐	____
6. ____	____	☐	____
7. ____	____	☐	____
	33	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. Impatiens capensis	50	☒	FACW
2. Phalaris arundinacea	33	☒	FACW
3. Geum aleppicum	10	☐	FAC
4. Rubus occidentalis	10	☐	NI
5. Verbena urticifolia	2	☐	FAC
6. ____	____	☐	____
7. ____	____	☐	____
8. ____	____	☐	____
9. ____	____	☐	____
10. ____	____	☐	____
11. ____	____	☐	____
12. ____	____	☐	____
	105	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1. Vitis riparia	5	☒	FACW
2. ____	____	☐	____
3. ____	____	☐	____
4. ____	____	☐	____
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 88 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x 1 =	____
FACW species	____	x 2 =	____
FAC species	____	x 3 =	____
FACU species	____	x 4 =	____
UPL species	____	x 5 =	____
Column Totals:	____	(A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ Dominance Test is >50%
- ☐ Prevalence Index is =3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must Be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1 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

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (include photo number here or on a separate sheet.) Lowland hardwoods. Photo 6.

SOIL

Sampling Point: 6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/1	100					Silty clay loam	
20-24	2.5Y 3/1	50	7.5YR 3/4	c/p	C	PL	Clay	
	10YR 2/1	50						
24-28	5Y 2.5/1	100	7.5YR 4/6	c/p	C	M	Clay	
			7.5YR 3/4	c/p	C	M		
28-34	10YR 4/1	100	7.5YR 4/6	m/p	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☒ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ☐ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ☐ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ☐ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ☐ Coast Prairie Redox (A16) **(LLR K, L, R)**
- ☐ 5 cm Mucky Peat or Peat (S3) **(LLR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Polyvalue Below Surface (S8) **(LRR K, L)**
- ☐ Thin Dark Surface (S9) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ☐ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Plant Community Area No. 4 (2011)

POLYPODIACEAE
- Thelypteris palustris--Marsh fern

TYPHACEAE
- Typha latifolia--Broad-leaved cat-tail

GRAMINEAE
- Bromus ciliatus--Ciliated brome grass
- Poa pratensis[1]--Kentucky bluegrass
- Calamagrostis canadensis--Canada bluejoint
- Spartina pectinata--Prairie cordgrass
- Phalaris arundinacea[1,2]--Reed canary grass
- Leersia oryzoides--Rice cut grass

CYPERACEAE
- Scirpus validus--Soft-stemmed bulrush
- Scirpus atrovirens--Green bulrush
- Carex vulpinoidea--Fox sedge
- Carex granularis--Pale sedge
- Carex pellita--Woolly sedge
- Carex stricta[2]--Tussock sedge
- Carex hystericina--Bottlebrush sedge
- Carex trichocarpa--Hairy-fruited lake sedge

ARACEAE
- Arisaema triphyllum--Jack-in-the-pulpit
- Symplocarpus foetidus--Skunk cabbage

JUNCACEAE
- Juncus dudleyi--Dudley's rush

IRIDACEAE
- Iris virginica--Virginia blueflag

SALICACEAE
- Populus tremuloides[2]--Quaking aspen

JUGLANDACEAE
- Juglans nigra--Black walnut

FAGACEAE
- Quercus macrocarpa--Bur oak
- Quercus bicolor--Swamp white oak

ULMACEAE
- Ulmus americana--American elm

URTICACEAE
- Urtica dioica--Stinging nettle
- Pilea pumila--Clearweed

POLYGONACEAE
- Rumex verticillatus--Water dock
- Rumex crispus[1]--Curly dock
- Polygonum persicaria[1]--Lady's thumb
- Polygonum virginianum--Jumpseed

CRUCIFERAE
- Nasturtium officinale[1]--Water-cress

SAXIFRAGACEAE
- Ribes americanum--Wild black currant

ROSACEAE
- Geum canadense--White avens
- Geum aleppicum--Yellow avens
- Rubus occidentalis--Black raspberry
- Rubus strigosus--Red raspberry
- Rosa carolina--Prairie rose
- Prunus serotina--Black cherry

FABACEAE
- Trifolium repens[1]--White clover

ACERACEAE
- Acer negundo[2]--Boxelder

BALSAMINACEAE
- Impatiens capensis[2]--Jewelweed

RHAMNACEAE
- Rhamnus cathartica[1]--Common buckthorn
- Rhamnus frangula[1]--Glossy buckthorn

VITACEAE
- Vitis riparia--Riverbank grape
- Parthenocissus quinquefolia--Virginia creeper

TILIACEAE
- Tilia americana--Basswood

ONAGRACEAE
- Epilobium coloratum--Willow-herb

UMBELLIFERAE
- Angelica atropurpurea--Angelica
- Oxypolis rigidior--Cowbane

CORNACEAE
- Cornus amomum--Silky dogwood
- Cornus stolonifera--Red-osier dogwood

OLEACEAE
- Syringa vulgaris[1]--Lilac

APOCYNACEAE
- Apocynum androsaemifolium--Dogbane

BORAGINACEAE
- Hackelia virginiana--Stickseed

VERBENACEAE
- Verbena urticifolia--White vervain
- Verbena hastata--Blue vervain

LABIATAE
- Stachys palustris--Hedge-nettle
- Pycnanthemum virginianum--Mountainmint
- Lycopus uniflorus--Northern bugleweed
- Lycopus americanus--Cutleaf bugleweed
- Mentha arvensis--Wild mint

SOLANACEAE
- Solanum dulcamara[1]--Deadly nightshade

SCROPHULARIACEAE
- Mimulus ringens--Monkey flower

PLANTAGINACEAE
- Plantago major[1]--Common plantain

RUBIACEAE
- Galium aparine--Annual bedstraw

CAPRIFOLIACEAE
- Viburnum opulus[1]--European highbush-cranberry
- Viburnum lentago--Nannyberry
- Sambucus canadensis--Elderberry
- Lonicera X bella[1]--Hybrid honeysuckle

DIPSACACEAE
- Dipsacus laciniatus[1]--Cut-leaved teasel

CUCURBITACEAE
- Echinocystis lobata--Wild cucumber

LOBELIACEAE
- Lobelia siphilitica--Great blue lobelia

COMPOSITAE
- Helianthus grosseserratus--Sawtooth sunflower
- Bidens sp.--Beggars-ticks
- Ambrosia trifida--Giant ragweed
- Solidago gigantea--Giant goldenrod
- Solidago altissima x gigantea--Hybrid goldenrod
- Solidago altissima--Tall goldenrod
- Solidago graminifolia--Grassleaf goldenrod
- Aster lucidulus--Swamp aster
- Eupatorium maculatum--Joe-Pye weed
- Eupatorium perfoliatum--Boneset
- Vernonia fasciculata--Common ironweed
- Arctium minus[1]--Common burdock
- Cirsium vulgare[1]--Bull thistle
- Taraxacum officinale[1]--Common dandelion
- Sonchus arvensis[1]--Sow thistle

Total number of plant species: 87
Number of alien, or non-native, plant species: 18 (21 percent)

This approximately 2.2-acre plant community area is part of the Pebble Creek floodplain-wetland complex and consists of a mosaic of shallow marsh, Southern sedge meadow, atypical (mowed) wetland, fresh (wet) meadow, and second growth, Southern wet to wet-mesic lowland hardwoods. Disturbances to the plant community area include clearing of vegetation, dumping, past filling, mowing, selective cutting of trees, siltation and sedimentation due to stormwater runoff from adjacent lands, and water level changes due to past ditching and draining. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

---

[1] Alien or non-native plant species
[2] Co-dominant plant species

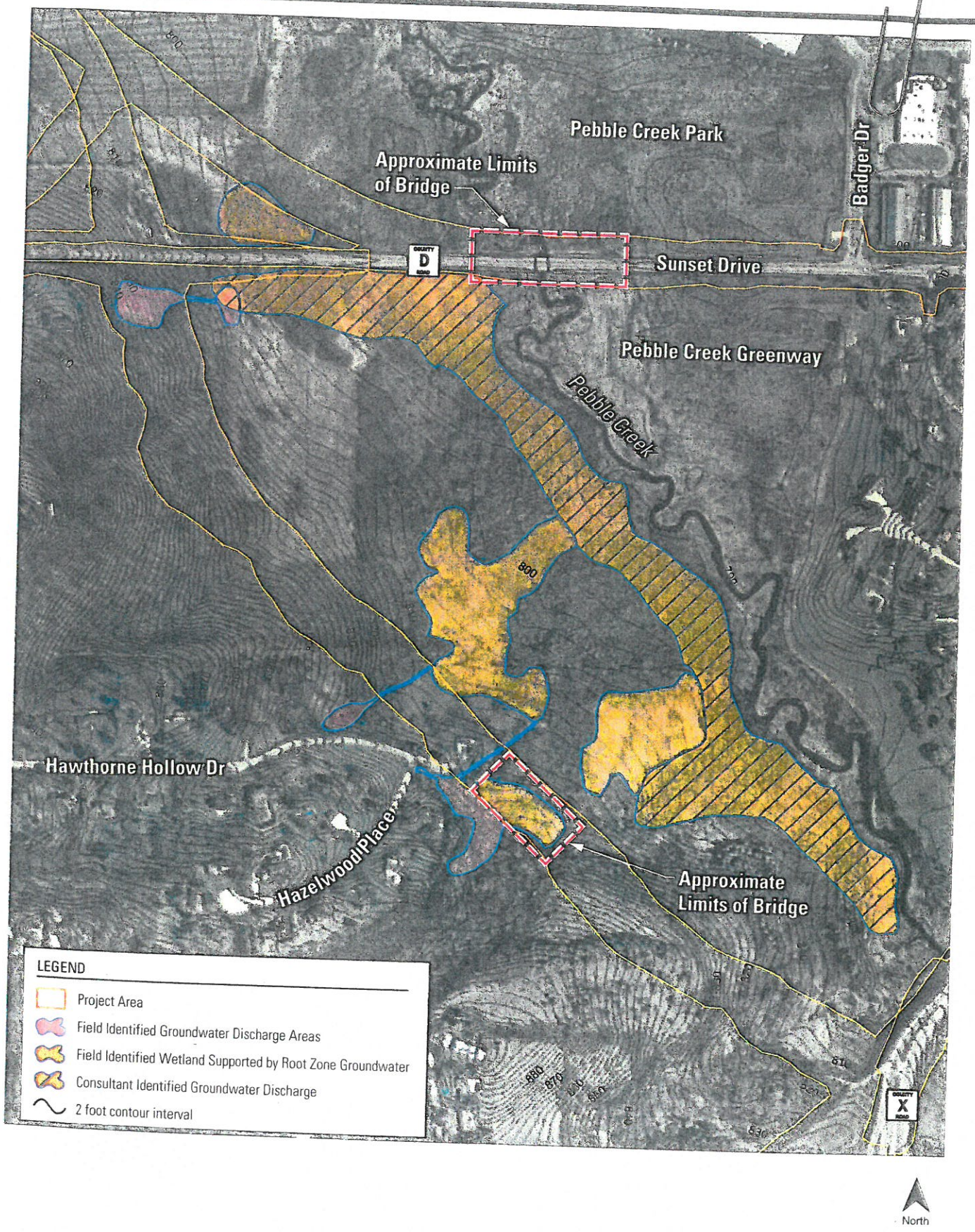
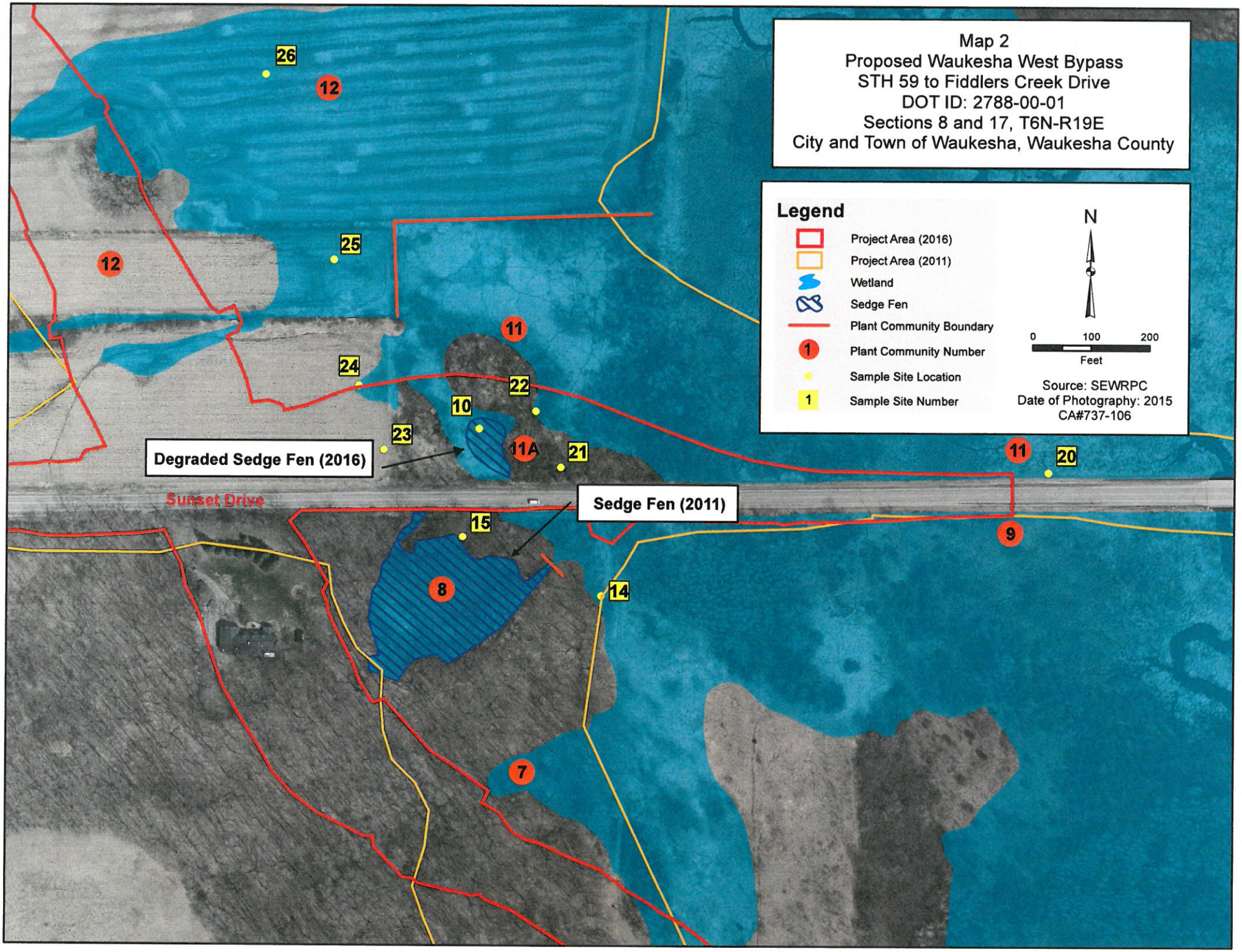


Exhibit 3-12

Area of Overland Groundwater Flow West of Pebble Creek


Map 2
Proposed Waukesha West Bypass
STH 59 to Fiddlers Creek Drive
DOT ID: 2788-00-01
Sections 8 and 17, T6N-R19E
City and Town of Waukesha, Waukesha County
Legend
Project Area (2016)
Project Area (2011)
Wetland
Sedge Fen
Plant Community Boundary
Plant Community Number
Sample Site Location
Sample Site Number
N
0
100
200
Feet
Source: SEWRPC
Date of Photography: 2015
CA#737-106
Degraded Sedge Fen (2016)
Sedge Fen (2011)
Sunset Drive
26
12
25
12
11
24
22
10
23
11A
21
11
20
15
9
8
14
7

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Proposed Waukesha West Bypass City/County: Town of Waukesha/Waukesha County Sampling Date: 10/11/2016
Applicant/Owner: ____ State: WI Sampling Point: 10
Investigator(s): Chris Jors, Jen Dietl, Dan Carter; SEWRPC Section, Township, Range: SW 1/4 Section 8, T6N, R19E
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): linear to convex Slope (%): 6-12%
Subregion (LRR or MLRA): LRR K Lat: ____ Long: ____ Datum: ____
Soil Map Unit Name: Hochheim loam (HmC2) NWI classification: T3/E2K
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ **No** ☒ (If no, explain in Remarks)
Are Vegetation____, Soil____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? **Yes** ☒ No ☐
Are Vegetation____, Soil____, or Hydrology ____ naturally problematic? (If, needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	☒**Yes**	☐No	**Is the Sampled Area within a Wetland?**	☒ **Yes**	☐No
Hydric Soils Present?	☒**Yes**	☐No			
Wetland Hydrology Present?	☒**Yes**	☐No	If yes, optional Wetland Site ID: PCA		

Remarks: (Explain alternative procedures here or in a separate report.) Antecendent hydrologic conditions are wetter than normal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☒ **High Water Table (A2)**
- ☒ **Saturation (A3)**
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ **Water-Stained Leaves (B9)**
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☒ **FAC-Neutral Test (D5)**

Field Observations:

Surface Water Present? Yes ☐ **No** ☒ Depth (inches): ____
Water Table Present? **Yes** ☒ No ☐ Depth (inches): 0 (at surface)
Saturation Present? (includes capillary fringe) **Yes** ☒ No ☐ Depth (inches): 0 (at surface)

Wetland Hydrology Present? **Yes** ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Topo Map (Exhibit 1), WWI Map (Exhibit 2), Soils Map (Exhibit 3), Aerial Photos (Exhibit 4).

Remarks: 0.5 to 2.0 inches of water observed in between hummocks. Hillside groundwater discharge area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. **Populus tremuloides**	15	☒	FAC
2. **Fraxinus pennsylvanica**	5	☒	FACW
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
	20	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30' radius)			
1. **Rhamnus cathartica**	10	☒	FAC
2.		☐	
3.		☐	
4.		☐	
5.		☐	
6.		☐	
7.		☐	
	10	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. **Carex stricta**	60	☒	OBL
2. Symphyotrichum lanceolatum	20	☐	FACW
3. Phalaris arundinacea	15	☐	FACW
4. Eutrochium maculatum	10	☐	OBL
5. Solidago altissima	5	☐	FACU
6. Lycopus uniflorus	3	☐	OBL
7.		☐	
8.		☐	
9.		☐	
10.		☐	
11.		☐	
12.		☐	
	113	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.		☐	
2.		☐	
3.		☐	
4.		☐	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☒ **Dominance Test is >50%**
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must Be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1 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

Hydrophytic Vegetation Present? **Yes** ☒ No ☐

Remarks: (include photo number here or on a separate sheet.) Degraded sedge fen.

SOIL

Sampling Point: 10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	N 1/0	100					Muck	
16+								Too wet to pull up

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS= Masked Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☒ **Histosol (A1)**
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ☐ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ☐ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ☐ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ☐ Coast Prairie Redox (A16) **(LLR K, L, R)**
- ☐ 5 cm Mucky Peat or Peat (S3) **(LLR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Polyvalue Below Surface (S8) **(LRR K, L)**
- ☐ Thin Dark Surface (S9) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ☐ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ☐ Red Parent Material (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ☒ No ☐

Remarks:

Bypass Sedge Fen Plant Community Area No. 11A

Bold = co-dominant species, *Italic* = exotic species, A = typical upright sedge-fen co-dominant species, B = fen associate, B+ fen indicators from Carpenter (1995), C = groundwater associate

Associations with fens and groundwater are based on NatureServe definition of "upright sedge-fen," Voss & Reznick (2012) species descriptions, Carpenter (1995), Hoffman (2002), Reed (2002), and the experience of the SEWRPC staff. Most species associated with fens also occur in other community types, but the landscape/hydrological context and large number of fen associates present support designating these community areas as fens rather than sedge meadow, which occur in valleys, along lakes, and depressions in glacial outwash rather than over hillside groundwater discharge.

Degraded sedge-fen north of Sunset Drive (10/11/16; 11/3/16)

Angelica atropurpurea—Angelica (C)
Carex hystericina—Porcupine sedge
Carex stricta—Tussock sedge (A)
Eutrochium maculatum—Spotted Joe-Pye weed (A)
Lycopus uniflorus—Northern bugleweed (B)
Phalaris arundinacea—Reed canary grass
Pycnanthemum virginianum—Mountain mint (B)
Solidago altissima—Tall goldenrod
Symphyotrichum lanceolatum—Panicled aster (B)

6 (out of 9) Fen and groundwater species present in degraded community that essentially is a more degraded version of the sedge-fen near Hawthorne Hollow Drive (similar landscape/hydrological context). No recent disturbances are obvious, but hydrology may be somewhat altered by the presence of Sunset Drive. Soils are organic. Landscape position is over a hillside seep.

Wisconsin Department of Natural Resources

RAPID ASSESSMENT METHODOLOGY FOR EVALUATING WETLAND FUNCTIONAL VALUES

GENERAL INFORMATION

Name of Wetland: **Plant Community Area No. 11**
Owner(s): **City of Waukesha – Tax Key No. WAKC1328996** **Waukesha County Parks & Land Use – Tax Key No. WAKT1327996** **Christoph Family Trust – Tax Key No. WAKT1327998**
Location: **Waukesha** County; **SE ¼ & SW ¼**, Section **8**, Township **6N**, Range **19E**
Project Name: **Proposed Waukesha West Bypass**
Evaluator(s): **Donald M. Reed, PhD., Chief Biologist; Lawrence A. Leitner, PhD., Principal Biologist; Christopher J. Jors, Biologist, Southeastern Wisconsin Regional Planning Commission**
Date(s) of Site Visit(s): **August 30 and November 8, 2011**

Description of seasonality limitations of this inspection due to time of year of the evaluation and/or current hydrologic and climatologic conditions (e.g. after heavy rains, snow or ice cover, during drought year, during spring flood, during bird migration): **Precipitation records in 2011 indicate normal to below normal precipitation (0 to -1 inches) for June, below normal (-1 to -2 inches) for July, below normal (-2 to -3 inches) for August, above normal (+1 to +2 inches) for September, below normal (-1 to -2 inches) for October, and normal (-0.5 to +0.5 inches) for November.**

WETLAND DESCRIPTION

Wisconsin Wetlands Inventory classification: **S3/E1K**
Wetland Type: shallow open water, deep marsh, **shallow marsh**, seasonally flooded basin, bog, floodplain forest, alder thicket, **sedge meadow**, coniferous swamp, fen, **wet meadow**, **shrub-carr**, **low prairie**, **hardwood swamp**
Estimated size of wetland in acres: **Study area wetland = 8.9 acres**

SUMMARY OF FUNCTIONAL VALUES

Based on the results of the attached functional assessment, rate the significance of each of the functional values for the subject wetland and check the appropriate box. Complete the table as a summary.

FUNCTION	SIGNIFICANCE				
	Low	Medium	High	Exceptional	N/A
Floral Diversity			X		
Wildlife Habitat			X		
Fishery Habitat			X		
Flood/Stormwater Attenuation			X		
Water Quality Protection			X		
Shoreline Protection		X			
Groundwater			X		
Aesthetics/Recreation/Education			X		

List any Special Features/"Red Flags": **Part of this plant community area is identified as a Natural Area**

of local significance (NA-3) known as Pebble Creek Wetlands. Longear sunfish (*Lepomis megalotis*), a State-designated Threatened species, has been recorded by the Commission staff just south of CTH D in Pebble Creek. Seaside buttercup (*Ranunculus cymbalaria)*, a State-designated Threatened species, was identified by the Commission staff within this plant community area. Butler's gartersnake (*Thamnophis butleri*), a State-designated Threatened species, observed by Commission staff south of this location. Blanding's turtle (*Emydoidea blandingii),* a State-designated Threatened species, recorded by Retzer Nature Center staff northwest of this location. In addition, Natural Heritage Inventory (NHI) identifies a broad area (Waukesha Township, T6N R19E), as having the potential to contain Rough rattlesnake root (*Prenanthes aspera),* a State-designated Endangered species. See page 5 for details.

SITE DESCRIPTION

I. HYDROLOGIC SETTING

A. Describe the geomorphology of the wetland:

- ☐ Depressional (includes slopes, potholes, small lakes, kettles, etc.)
- ☒ Riverine
- ☐ Lake Fringe
- ☐ Extensive Peatland

B. (Y) N Has the wetland hydrology been altered by (ditching) tiles, dams, (culverts), well pumping, (diversion of surface flow), or changes to runoff within the watershed (circle those that apply)?
Past CTH D (Sunset Drive) construction through wetland complex impeding & redirecting (ditching) natural flows under CTH D bridge. Fill and a culvert placed at eastern edge of wetland.

C. (Y) N Does the wetland have an inlet, outlet, or (both) (circle those that apply)?
Pebble Creek inlet from north to CTH D bridge outlet to south

D. (Y) N Is there any field evidence of wetland hydrology such as (buttressed trunks), adventitious roots, drift lines, water marks, (water stained leaves), (soil mottling/gleying), (organic soils layer), or (oxidized rhizospheres) (circle those that apply)? **Wetland hydrology indicators observed at Sample Site No. 18 include crayfish burrows, geomorphic position, and a positive FAC-Neutral test. At Sample Site No. 20, indicators include saturation at surface, geomorphic position, a positive FAC-Neutral test, and organic soil (muck), a histosol. At Sample Site No. 22, indicators include saturation at the surface, dry season water table at 20 inches, water-stained leaves, and shallow roots and/or buttressing. At Sample Site No. 24, indicators include a high water table at 11 inches below surface, saturation at the surface, water-stained leaves, oxidized rhizospheres on living roots, and a positive FAC-Neutral test.**

E. (Y) N Does the wetland have standing water, and if so what is the average depth in inches? Approximately how much of the wetland is inundated?
No standing water observed at sample sites. However, surface water flow within Pebble Creek channel observed. Parts of wetland likely inundated in early growing season.

F. How is the hydroperiod (seasonal water level pattern) of the wetland classified?

- ☐ Permanently Flooded
- ☒ Seasonally Flooded (water absent at end of growing season)
- ☐ Saturated (surface water seldom present)
- ☐ Artificially Flooded
- ☐ Artificially Drained

G. (Y) N Is the wetland a navigable body of water or is a portion of the wetland below the ordinary high-water mark of a navigable water body? List any surface waters associated with the wetland or in proximity to the wetland (note approximate distance from the wetland and navigability determination). Note if there is a surface water connection to other wetlands.
Pebble Creek, which flows through the subject plant community area, is navigable. There is a surface water connection to other wetlands.

II. VEGETATION

A. Identify the vegetation communities present and the dominant species.

	floating leaved community dominated by:
	submerged aquatic community dominated by:
X	emergent community dominated by: **Phalaris arundinacea**
X	shrub community dominated by: **Salix bebbiana**
X	deciduous broad-leaved tree community dominated by: **While no tree species were listed as dominant, Fraxinus pennsylvanica, Ulmus Americana, and Acer negundo are present.**
	coniferous tree community dominated by:
	open sphagnum mat or bog
X	sedge meadow/wet prairie community dominated by: **Carex stricta**
	other (explain)

B. Other plant species identified during site visit:
See attached species list

III. SOILS

A. NRCS Soil Map Classification: **Lamartine silt loam (LmB) – Somewhat poorly drained; Sebewa silt loam (Sm) – Poorly drained; Palms muck (Pa) - Wet alluvial land (Ww); and Mundelein silt loam (MzfA) – Somewhat poorly drained.**

B. Field description:**4 Sample Sites recorded in this plant community area – See Sample Site Nos. 18, 20, 22 & 24.**

❑ Organic (histosol)? If so, is it a muck or a peat?

❑ Mineral soil?

- Mottling, gleying, sulfidic materials, iron or manganese concretions, organic streaking (circle those that apply)
- Soil Description:
- Depth of mottling/gleying:
- Depth of A Horizon:
- Munsell Color of matrix and mottles
  -Matrix below the A horizon: --
  -Mottles: --

V. SURROUNDING LAND USES

A. What is the estimated area of the wetland watershed in acres? **126**

B. What are the surrounding land uses?

LAND-USE	ESTIMATED % OF WETLAND WATERSHED
Developed (Industrial/Commercial/Residential)	**67%**
Agricultural/cropland	**1%**
Agricultural/grazing	**--**
Forested (Upland)	**<1%**
Grassed recreation areas/parks	**--**
Old field	**2%**
Highways or roads	**2%**
Other (specify) : Wetland	**28%**

VI. SITE SKETCH

See attached aerial map exhibit

FUNCTIONAL ASSESSMENT

The following assessment requires the evaluator to examine site conditions that provide evidence that a given functional value is present and to assess the significance of the wetland to perform those functions. Positive answers to questions indicate the presence of factors important for the function. The questions are not definitive and are only provided to guide the evaluation. After completing each section, the evaluator should consider the factors observed and use best professional judgement to rate the significance. The ratings should be recorded on page 1 of the assessment.

SPECIAL FEATURES/"RED FLAGS"

1. (Y) N Is the wetland in or adjacent to an area of special natural resource interest (NR 103.04, Wis. Adm. Code)? If so, check those that apply:

- [x] Cold water community as defined in s. NR 102.04(3)(b), Wis. Adm. Code, including trout streams, their tributaries, and trout lakes
- [ ] Lakes Michigan and Superior and the Mississippi River
- [ ] State or federal designated wild and scenic river
- [ ] Designated state riverway
- [ ] Designated state scenic urban waterway
- [x] Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study – **Part of this plant community area is identified as a Natural Area of local significance (NA-3) known as Pebble Creek Wetlands. Also Primary environmental corridor and ADID wetland**
- [ ] Calcareous fen
- [ ] State park, forest, trail or recreation area
- [ ] State and federal fish and wildlife refuges and fish and wildlife management areas
- [ ] State or federal designated wilderness area
- [ ] Designated or dedicated state natural area
- [ ] Wild rice water listed in ch. NR 19.09, Wis. Adm. Code
- [ ] Surface water identified as an outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code

2. (Y) N According to the Natural Heritage Inventory (Bureau of Endangered Resources) or direct observations, are there any rare, endangered, or threatened plant or animal species in, near, or using the wetland or adjacent lands? If so, list the species of concern: **Longear sunfish (*Lepomis megalotis*), a State-designated Threatened species, has been recorded by the Commission staff just south of CTH D in Pebble Creek. Seaside buttercup (*Ranunculus cymbalaria*), a State-designated Threatened species, was identified by the Commission staff within this plant community area. Butler's gartersnake (*Thamnophis butleri*), a State-designated Threatened species, observed by Commission staff south of this location. Blanding's turtle (*Emydoidea blandingii*), a State-designated Threatened species, recorded by Retzer Nature Center staff northwest of this location. In addition, Natural Heritage Inventory (NHI) identifies a broad area (Waukesha Township, T6N R19E), as having the potential to contain Rough rattlesnake root (*Prenanthes aspera*), a State-designated Endangered species. This broad NHI finding is based upon an 1845 record for this species typically found in dry prairies. Accordingly, it is very unlikely that this plant community area would support this species.**

3. Y (N) Is the project located in an area that requires a State Coastal Zone Management Plan consistency determination?

Floral Diversity

1. (Y) N Does the wetland support a variety of native plant species (i.e. not a monotypic stand of cattail or giant reed grass and/or not dominated by exotic species such as reed canary grass, brome grass, buckthorn, purple loosestrife, etc.)?

2. Y (N) Is the wetland plant community regionally scarce or rare?

Wildlife and Fishery Habitat

1. List any species observed, evidenced (e.g. tracks, scat, nest/burrow, calls), or expected to utilize the wetland: **Northern pike determined by the Commission staff to be a resident fish species in Pebble Creek. Total of 20 species of fish recorded at this location including primary coldwater, secondary coolwater, and warmwater fish assemblages. Macroinvertebrate**

abundance and diversity are indicative of very good water quality in this reach. Raccon, White-tailed deer, passerine birds, marsh birds, waterfowl, and muskrat to utilize this plant community area.

2. (Y) N Does the wetland contain a number of diverse vegetative cover types and a high degree of interspersion of those vegetation types?

3. Y (N) Is the estimated ratio of open water to cover between 30 and 70 percent? What is the estimated ratio? **5% - Open water in creek bed**

4. Y (N) Does the surrounding upland habitat likely support a variety of animal species?

5. (Y) N Is the wetland part of or associated with a wildlife corridor or designated environmental corridor? **Class I Wildlife Habitat & Primary environmental corridor**

6. Y (N) Is the surrounding habitat and/or the wetland itself a large tract of undeveloped land important for wildlife that requires large home ranges (e.g. bear, woodland passerines)?

7. (Y) N Is the surrounding habitat and/or the wetland itself a relatively large tract of undeveloped land within an urbanized environment that is important for wildlife?

8. (Y) N Are there other wetland areas near the subject wetland that may be important to wildlife? **Important wetlands for wildlife along the Pebble Creek corridor.**

9. (Y) N Is the wetland contiguous with a permanent waterbody or periodically inundated for sufficient periods of time to provide spawning/nursery habitat for fish? **Pebble Creek supports a resident population of Northern pike and portions of this area are within the modeled 2-year recurrence interval floodplain which is likely to support spawning habitat.**

10. (Y) N Can the wetland provide significant food base for fish and wildlife (e.g. insects, crustaceans, voles, forage fish, amphibians, reptiles, shrews, wild rice, wild celery, duckweed, pondweeds, watermeal, bulrushes, bur reeds, arrowhead, smartweeds, millets...)?

11. Y (N) Is the wetland located in a priority watershed/township as identified in the Upper Mississippi and Great Lakes Joint Venture of the North American Waterfowl Management Plan?

12. Y (N) Is the wetland providing habitat that is scarce to the region?

Flood and Stormwater Storage/Attenuation

1. (Y) N Are there steep slopes, large impervious areas, moderate slopes with row cropping, or areas with severe overgrazing within the watershed (circle those that apply)? **Large impervious areas in developed industrial lands to east and CTH D bordering the south edge of this plant community area. Row crops occur to the west.**

2. (Y) N Does the wetland significantly reduce run-off velocity due to its size, configuration, braided flow patterns, or vegetation type and density? **Runoff velocity is significantly reduced when stormwater enters the subject wetland**

3. Y (N) Does the wetland show evidence of flashy water level responses to storm events (debris marks, erosion lines, stormwater inputs, channelized inflow)?

4. (Y) N Is there a natural feature or human-made structure impeding drainage from the wetland that causes backwater conditions? **CTH D roadbed impedes natural southward flows. Ditches carry these flows to bridge under CTH D.**

5. Y (N) Considering the size of the wetland area in relation to the size of its watershed, at any time during the year is water likely to reach the wetland's storage capacity (i.e. the level of easily observable wetland vegetation)? [For some cases where greater documentation is required, one should determine if the wetland has capacity to hold 25% of the run-off from a 2 year-24 hour storm event.]

6. (Y)N Considering the location of the wetland in relation to the associated surface water watershed, is the wetland important for attenuating or storing flood or stormwater peaks (i.e. is the wetland located in the mid or lower reaches of the watershed)? **Portions of this area are within the modeled 100-year floodplain and floodway.**

Water Quality Protection

1. (Y)N Does the wetland receive (overland flow) or direct discharge of stormwater as a primary source of water (circle that which applies)? **Primary source of water contribution to wetland is from Pebble Creek, although stromwater from developed lands to east is significant.**

2. (Y)N Do the surrounding land uses have the potential to deliver significant nutrient and/or sediment loads to the wetland? **Road salt from CTH D and other roads and parking lots to east. Sediments & fertilizers come from agicultural lands to west. Fertilizers come from manicured turf grass to the east.**

3. (Y)N Based on your answers to the flood/stormwater section above, does the wetland perform significant flood/stormwater attenuation (residence time to allow settling)?

4. (Y)N Does the wetland have significant vegetative density to decrease water energy and allow settling of suspended materials?

5. (Y)N Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface water?

6. Y(N) Are algal blooms, heavy macrophyte growth, or other signs of excess nutrient loading to the wetland apparent (or historically reported)?

Shoreline Protection

1. (Y)N Is the wetland in a lake fringe or riverine setting? If NO, STOP and enter "not applicable" for this function. If YES, then answer the applicable questions.

2. Y(N) Is the shoreline exposed to constant wave action caused by long wind fetch or boat traffic?

3. (Y)N Is the shoreline and shallow littoral zone vegetated with submerged or emergent vegetation in the swash zone that decrease wave energy or perennial wetland species that form dense root mats and/or species that have strong stems that are resistant to erosive forces?

4. (Y)N Is the stream bank prone to erosion due to unstable soils, land uses, or (ice floes)?

5. (Y)N Is the stream bank vegetated with densely rooted shrubs that provide upper bank stability?

Groundwater Recharge and Discharge

1. (Y)N Related to discharge, are there observable (or reported) springs located in the wetland, physical indicators of springs such as marl soil, or vegetation indicators such as watercress or marsh marigold present that tend to indicate the presence of groundwater springs? **Springs reported and observed throughout Pebble Creek watershed**

2. (Y)N Related to discharge, may the wetland contribute to the maintenance of base flow in a stream?

3. (Y)N Related to recharge, is the wetland located on or near a groundwater divide (e.g. a topographic high)? **A large portion of this wetland area is identified in SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin, Volumes 1 and 2,* as having a high groundwater recharge potential (See map).**

Aesthetics/Recreation/Education and Science

1. (Y) N Is the wetland visible from any of the following kinds of vantage points: (roads) (public lands) (houses) and/or (businesses)? (Circle all that apply.)

2. (Y) N Is the wetland in or near any population centers? **City of Waukesha**

3. (Y) N Is any part of the wetland in (public) or conservation ownership? **City of Waukesha & Waukesha County Parks & Land Use**

4. (Y) N Does the public have direct access to the wetland from (public roads) or waterways? (Circle those that apply.) **Direct access to portion of wetland owned by City of Waukesha & Waukesha County.**

5. Is the wetland itself relatively free of obvious human influences, such as:

   a. Y (N) Buildings?
   b. Y (N) Roads?
   c. Y (N) Other structures?
   d. Y (N) Trash?
   e. Y (N) Pollution?
   f. Y (N) Filling?
   g. Y (N) Dredging/draining?
   h. Y (N) Domination by non-native vegetation?

6. Is the surrounding viewshed relatively free of obvious human influences, such as:
   a. Y (N) Buildings?
   b. Y (N) Roads?
   c. Y (N) Other structures?

7. (Y) N Is the wetland organized into a variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water)?

8. (Y) N Does the wetland add to the variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water) within the landscape as a whole?

9. Does the wetland encourage exploration because any of the following factors are present:
   a. (Y) N Long views within the wetland?
   b. (Y) N Long views in the viewshed adjacent to the wetland?
   c. (Y) N Convoluted edges within and/or around the wetland border?
   d. (Y) N The wetland provides a different (and perhaps more natural/complex) kind of environment from the surrounding land covers?

10. (Y) N Is the wetland currently being used for (or does it have the potential to be used for) the following recreational activities? (Check all that apply.)

ACTIVITY	CURRENT USE	POTENTIAL USE
Nature study/photography		X
Hiking/biking/skiing		X
Hunting/fishing/trapping		X
Boating/canoeing		X
Food harvesting		
Others (list)		

11. (Y) N Is the wetland currently being used, and/or does it have the potential for use for educational or scientific study purposes (circle that which applies)?

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: STH 59 West Bypass | City/County: City and Town of Waukesha, Waukesha County | Sampling Date: 08/30/2011
Applicant/Owner: ____ | State: WI | Sampling Point: 22
Investigator(s): Donald M. Reed, PhD., SEWRPC | Section, Township, Range: SW 1/4 Section 8, T6N, R19E
Landform (hillslope, terrace, etc.): toe of hillslope-terrace | Local relief (concave, convex, none): slightly convex to none
Slope (%): 1-4% | Lat: ____ | Long: ____ | Datum: ____
Soil Map Unit Name: Lamartine silt loam (LmB) Spd | NWI classification: T3/E2K
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks)
Are Vegetation____, Soil____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are VegetationX, Soil____, or Hydrology ____ naturally problematic? (If, needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	☒Yes	☐No	**Is the Sampled Area within a Wetland?**	☒ **Yes**	☐**No**
Hydric Soils Present?	☒Yes	☐No			
Wetland Hydrology Present?	☒Yes	☐No	If yes, optional Wetland Site ID: PCA No. 11		

Remarks: (Explain alternative procedures here or in a separate report.) Below normal precipitation for the past 90 days. Problematic vegetation in sample area - Rhamnus cathartica (FACU) dominated wetland. (Morphological Adaptations worksheet and Problematic Hydrophytic Vegetation worksheet attached.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	**Yes** ☐	**No** ☒	Depth (inches): ____
Water Table Present?	**Yes** ☒	**No** ☐	Depth (inches): 20
Saturation Present? (includes capillary fringe)	**Yes** ☒	**No** ☐	Depth (inches): 0 (at surface)

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Other indicators of hydrology include morphological adaptations, 100% of Rhamnus cathartica contain shallow roots and/or buttressing.

VEGETATION – Use scientific names of plants. Sampling Point: 22

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	20	☒	NI
2. Populus tremuloides	20	☒	FAC
3. ____	____	☐	____
4. ____	____	☐	____
5. ____	____	☐	____
6. ____	____	☐	____
7. ____	____	☐	____
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30' radius)			
1. Rhamnus cathartica	50	☒	FACU
2. Lonicera mackii	5	☐	NI
3. Fraxinus pennsylvanica	2	☐	FACW
4. ____	____	☐	____
5. ____	____	☐	____
6. ____	____	☐	____
7. ____	____	☐	____
	57	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Rhamnus cathartica	50	☒	FACU
2. Pilea pumula	20	☒	FACW
3. Lonicera mackii	10	☐	NI
4. Bidens vulgata	5	☐	FACW
5. Geum canadense	5	☐	FAC
6. Polygonum virginianum	2	☐	FAC
7. Parthenocissus quinquefolia	1	☐	FACU
8. ____	____	☐	____
9. ____	____	☐	____
10. ____	____	☐	____
11. ____	____	☐	____
12. ____	____	☐	____
	93	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. Vitis riparia	15	☒	FACW
2. ____	____	☐	____
3. ____	____	☐	____
4. ____	____	☐	____
	15	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:			Multiply by:	
OBL species	0	x 1 =	0	
FACW species	42	x 2 =	84	
FAC species	27	x 3 =	81	
FACU species	101	x 4 =	404	
UPL species	35	x 5 =	175	
Column Totals:	205	(A)	744	(B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☒ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☒ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must Be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1 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

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: (include photo number here or on a separate sheet.) Problematic Vegetation - Buckthorn thicket. 100% of Rhamnus cathartica show morphological adaptations (shallow roots and/or buttressing). See the following Morphological Adaptations and Problematic Hydrophytic Vegetation Worksheets. Photo 23.

SOIL

Sampling Point: 22

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-13	N 1/0	100					Silty clay loam	
13-22	10YR 4/1	80	10YR 5/6	c/p	C	M	Clay	
	10YR 5/1	20	10GY 5/1	c/p	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☒ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ☐ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ☐ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ☐ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ☐ Coast Prairie Redox (A16) **(LLR K, L, R)**
- ☐ 5 cm Mucky Peat or Peat (S3) **(LLR K, L, R)**
- ☐ Dark Surface (S7) **(LRR K, L)**
- ☐ Polyvalue Below Surface (S8) **(LRR K, L)**
- ☐ Thin Dark Surface (S9) **(LRR K, L)**
- ☐ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ☐ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** ☒ **No** ☐

Remarks:

Plant Community Area No. 11 (2011)

EQUISETACEAE
- Equisetum arvense--Common horsetail

TYPHACEAE
- Typha latifolia[1]--Broad-leaved cat-tail
- Typha angustifolia--Narrow-leaved cat-tail

ALISMATACEAE
- Sagittaria latifolia--Common arrowhead

GRAMINEAE
- Bromus inermis[2]--Smooth brome grass
- Glyceria striata--Fowl manna grass
- Poa pratensis[2]--Kentucky bluegrass
- Poa palustris--Marsh bluegrass
- Dactylis glomerata[2]--Orchard grass
- Agrostis stolonifera[2]--Redtop grass
- Phalaris arundinacea[1,2]--Reed canary grass
- Leersia oryzoides--Rice cut grass
- Setaria sp.[2]--Foxtail

CYPERACEAE
- Cyperus esculentus--Chufa
- Scirpus atrovirens--Green bulrush
- Scirpus pendulus--Red bulrush
- Carex blanda--Wood sedge
- Carex granularis--Pale sedge
- Carex pellita--Woolly sedge
- Carex stricta--Tussock sedge
- Carex trichocarpa--Hairy-fruited lake sedge

ARACEAE
- Arisaema triphyllum--Jack-in-the-pulpit

LEMNACEAE
- Lemna minor--Lesser duckweed

JUNCACEAE
- Juncus dudleyi--Dudley's rush
- Juncus torreyi--Torrey's rush

LILIACEAE
- Smilacina stellata--Starry Solomons plume

SALICACEAE
- Populus tremuloides--Quaking aspen
- Populus deltoides--Cottonwood
- Salix nigra--Black willow
- Salix interior[1]--Sandbar willow
- Salix bebbiana--Beaked willow
- Salix discolor--Pussy willow

JUGLANDACEAE
- Juglans nigra--Black walnut

ULMACEAE
- Ulmus americana--American elm

URTICACEAE
- Pilea pumila--Clearweed

POLYGONACEAE
- *Polygonum amphibium*--Water smartweed
- *Polygonum persicaria*[2]--Lady's thumb
- *Polygonum virginianum*--Jumpseed
- *Polygonum convolvulus*[2]--Black bindweed

AMARANTHACEAE
- *Amaranthus retroflexus*[2]--Redroot pigweed

RANUNCULACEAE
- *Ranunculus cymbalaria*[3]--Seaside buttercup
- *Anemone virginiana*--Thimbleweed
- *Anemone canadensis*--Canada anemone

SAXIFRAGACEAE
- *Ribes americanum*--Wild black currant

ROSACEAE
- *Fragaria virginiana*--Wild strawberry
- *Geum canadense*--White avens
- *Geum aleppicum*--Yellow avens
- *Rubus occidentalis*--Black raspberry
- *Rosa multiflora*[2]--Multiflora rose

FABACEAE
- *Melilotus alba*[2]--White sweet clover

OXALIDACEAE
- *Oxalis stricta*--Common wood sorrel

RUTACEAE
- *Zanthoxylum americanum*--Prickly-ash

ANACARDIACEAE
- *Rhus radicans*--Poison ivy

ACERACEAE
- *Acer saccharinum*--Silver maple
- *Acer negundo*--Boxelder

BALSAMINACEAE
- *Impatiens capensis*--Jewelweed

RHAMNACEAE
- *Rhamnus cathartica*[1,2]--Common buckthorn
- *Rhamnus frangula*[2]--Glossy buckthorn

VITACEAE
- *Vitis riparia*--Riverbank grape
- *Parthenocissus quinquefolia*--Virginia creeper

LYTHRACEAE
- *Lythrum salicaria*[2]--Purple loosestrife

ONAGRACEAE
- *Epilobium coloratum*--Willow-herb
- *Oenothera biennis*--Evening-primrose

UMBELLIFERAE
- *Daucus carota*[2]--Queen Anne's lace
- *Cicuta maculata*--Spotted water-hemlock
- *Angelica atropurpurea*--Angelica
- *Oxypolis rigidior*--Cowbane

UMBELLIFERAE cont'
Pastinaca sativa[2]--Wild parsnip

CORNACEAE
Cornus amomum--Silky dogwood
Cornus stolonifera--Red-osier dogwood

OLEACEAE
Fraxinus pennsylvanica--Green ash

APOCYNACEAE
Apocynum cannabinum--Indian hemp

ASCLEPIADACEAE
Asclepias incarnata--Marsh milkweed
Asclepias syriaca--Common milkweed

BORAGINACEAE
Hackelia virginiana--Stickseed

VERBENACEAE
Verbena urticifolia--White vervain
Verbena hastata--Blue vervain

LABIATAE
Prunella vulgaris--Selfheal
Monarda fistulosa--Wild bergamot
Lycopus americanus--Cutleaf bugleweed
Mentha arvensis--Wild mint

SOLANACEAE
Solanum dulcamara[2]--Deadly nightshade

SCROPHULARIACEAE
Linaria vulgaris[2]--Butter-and-eggs

PLANTAGINACEAE
Plantago major[2]--Common plantain

CAPRIFOLIACEAE
Viburnum opulus[2]--European highbush-cranberry
Viburnum lentago--Nannyberry
Sambucus canadensis--Elderberry
Lonicera maackii[2]--Amur honeysuckle
Lonicera X bella[2]--Hybrid honeysuckle

CUCURBITACEAE
Echinocystis lobata--Wild cucumber

COMPOSITAE
Helianthus grosseserratus--Sawtooth sunflower
Rudbeckia hirta--Black-eyed Susan
Bidens vulgata--Tall beggars-ticks
Bidens sp.--Beggars-ticks
Ambrosia trifida--Giant ragweed
Ambrosia artemisiifolia--Common ragweed
Solidago gigantea--Giant goldenrod
Solidago altissima[1]--Tall goldenrod
Solidago rigida--Stiff goldenrod
Solidago riddellii--Riddell's goldenrod
Solidago graminifolia--Grassleaf goldenrod
Aster novae-angliae--New England aster
Aster lucidulus--Swamp aster

COMPOSITAE cont'

Aster pilosus--Frost aster
Aster simplex--Marsh aster
Eupatorium maculatum--Joe-Pye weed
Eupatorium perfoliatum--Boneset
Sonchus arvensis[2]--Sow thistle
Lactuca canadensis--Wild lettuce
Lactuca serriola[2]--Prickly wild lettuce

Total number of plant species: 110
Number of alien, or non-native, plant species: 24 (22 percent)

This approximately 8.9-acre plant community area is part of the Pebble Creek floodplain-wetland complex and consists of shallow marsh, Southern sedge meadow, fresh (wet) meadow, wet-mesic prairie, shrub-carr (willow thicket), and second growth, Southern wet to wet-mesic lowland hardwoods. Disturbances to the plant community area include agricultural land management activities, dumping, filling, mowing, selective cutting of trees, siltation and sedimentation due to stormwater runoff from adjacent lands, and water level changes due to past ditching and draining. Two State-designated Threatened species, Seaside buttercup (*Ranunculus cymbalaria*), and Butler's gartersnake (*Thamnophis butleri*), were observed during both the recent and past field inspections. It should be mentioned that portions of this plant community are part of the Pebble Creek Wetlands, a Natural Area of local significance (NA-3).

---

[1] Co-dominant plant species
[2] Alien or non-native plant species
[3] A State-designated Threatened plant species

Wisconsin Department of Natural Resources

RAPID ASSESSMENT METHODOLOGY FOR EVALUATING WETLAND FUNCTIONAL VALUES

GENERAL INFORMATION

Name of Wetland: **Plant Community Area No. 8** Owner(s): **Leesley B. & Joan J. Hardy Living Trust – Tax Key No. WAKT1362999003** **Deborah Thiem Rollo – WAKT1362998**
Location: **Waukesha** County; **NW** ¼ Section **17**, Township **6N**, Range **19E**
Project Name: **Proposed Waukesha West Bypass**
Evaluator(s): **Donald M. Reed, PhD., Chief Biologist; Lawrence A. Leitner, PhD., Principal Biologist; Christopher J. Jors, Biologist, Southeastern Wisconsin Regional Planning Commission**
Date(s) of Site Visit(s): **August 4, 2011**

Description of seasonality limitations of this inspection due to time of year of the evaluation and/or current hydrologic and climatologic conditions (e.g. after heavy rains, snow or ice cover, during drought year, during spring flood, during bird migration): **Precipitation records in 2011 indicate normal to below normal precipitation (0 to -1 inches) for June, below normal (-1 to -2 inches) for July, and below normal (-2 to -3 inches) for August.**

WETLAND DESCRIPTION

Wisconsin Wetlands Inventory classification: **S3/E2K**
Wetland Type: shallow open water deep marsh shallow marsh seasonally flooded basin bog floodplain forest alder thicket sedge meadow coniferous swamp (fen) wet meadow shrub-carr low prairie (hardwood swamp)
Estimated size of wetland in acres: **Study area wetland = 1.1 acres**

SUMMARY OF FUNCTIONAL VALUES

Based on the results of the attached functional assessment, rate the significance of each of the functional values for the subject wetland and check the appropriate box. Complete the table as a summary.

FUNCTION	SIGNIFICANCE				
	Low	Medium	High	Exceptional	N/A
Floral Diversity		X			
Wildlife Habitat		X			
Fishery Habitat		X			
Flood/Stormwater Attenuation	X				
Water Quality Protection		X			
Shoreline Protection	X				
Groundwater			X		
Aesthetics/Recreation/Education		X			

List any Special Features/"Red Flags": **Butler's gartersnake (*Thamnophis butleri*), a State-designated Threatened species, observed by Commission staff in plant community area southeast of this location. Blanding's turtle (*Emydoidea blandingii*), a State-designated Threatened species, recorded by Retzer Nature Center staff northwest of this location. In addition, Natural Heritage Inventory (NHI)**

identifies a broad area (Waukesha Township, T6N R19E), as having the potential to contain Rough rattlesnake root (*Prenanthes aspera),* a State-designated Endangered species. See page 5 for details.

SITE DESCRIPTION

I. HYDROLOGIC SETTING

A. Describe the geomorphology of the wetland:

- [X] Depressional (includes slopes, potholes, small lakes, kettles, etc.)
- [ ] Riverine
- [ ] Lake Fringe
- [ ] Extensive Peatland

B. Y (N) Has the wetland hydrology been altered by ditching, tiles, dams, culverts, well pumping, diversion of surface flow, or changes to runoff within the watershed (circle those that apply)?

C. (Y) N Does the wetland have an inlet, (outlet) or both (circle those that apply)?

D. (Y) N Is there any field evidence of wetland hydrology such as buttressed tree trunks, adventitious roots, drift lines, water marks, water stained leaves, soil mottling/gleying, organic soils layer, or oxidized rhizospheres (circle those that apply)? **Groundwater seepage evident during field inspection.**

E. Y (N) Does the wetland have standing water, and if so what is the average depth in inches? Approximately how much of the wetland is inundated?
No standing water observed during field inspection. However, large portions of subject wetland with soils saturated at surface.

F. How is the hydroperiod (seasonal water level pattern) of the wetland classified?

- [ ] Permanently Flooded
- [ ] Seasonally Flooded (water absent at end of growing season)
- [X] Saturated (surface water seldom present)
- [ ] Artificially Flooded
- [ ] Artificially Drained

G. Y (N) Is the wetland a navigable body of water or is a portion of the wetland below the ordinary high-water mark of a navigable water body? List any surface waters associated with the wetland or in proximity to the wetland (note approximate distance from the wetland and navigability determination). Note if there is a surface water connection to other wetlands. **This plant community area portion of the wetland complex is not part of a navigable body of water. Nor is it below the Ordinary High Water Mark. However, this wetland is part of the larger Pebble Creek wetland complex and is approximately 1200 feet from the navigable portion of Pebble Creek.**

II. VEGETATION

A. Identify the vegetation communities present and the dominant species.

	floating leaved community dominated by:
	submerged aquatic community dominated by:
	emergent community dominated by:
	shrub community dominated by:
X	deciduous broad-leaved tree community dominated by: **Fraxinus pennsylvanica, Impatiens capensis, and Phalaris arundinacea**
	coniferous tree community dominated by:
	open sphagnum mat or bog
	sedge meadow/wet prairie community dominated by:
X	other (explain): Fen community dominated by **Symplocarpus foetidus**

B. Other plant species identified during site visit:
See attached species list

III. SOILS

A. NRCS Soil Map Classification: **Brookston silt loam (BsA) – Poorly Drained**

B. Field description: **None recorded. Although muck soil observed at the surface.**

☒ Organic (histosol)? If so, is it a muck or a peat?

☐ Mineral soil?

- Mottling, gleying, sulfidic materials, iron or manganese concretions, organic streaking (circle those that apply)
- Soil Description:
- Depth of mottling/gleying:
- Depth of A Horizon:
- Munsell Color of matrix and mottles
  - -Matrix below the A horizon:
  - -Mottles:

V. SURROUNDING LAND USES

A. What is the estimated area of the wetland watershed in acres? **22**

B. What are the surrounding land uses?

LAND-USE	ESTIMATED % OF WETLAND WATERSHED
Developed (Industrial/Commercial/Residential)	**9**
Agricultural/cropland	**--**
Agricultural/grazing	**--**
Forested (Upland)	**10**
Grassed recreation areas/parks	**--**
Old field	**--**
Highways or roads	**2**
Other (specify) : Wetland	**1**

VI. SITE SKETCH

See attached aerial map exhibit

FUNCTIONAL ASSESSMENT

The following assessment requires the evaluator to examine site conditions that provide evidence that a given functional value is present and to assess the significance of the wetland to perform those functions. Positive answers to questions indicate the presence of factors important for the function. The questions are not definitive and are only provided to guide the evaluation. After completing each section, the evaluator should consider the factors observed and use best professional judgement to rate the significance. The ratings should be recorded on page 1 of the assessment.

SPECIAL FEATURES/"RED FLAGS"

1. (Y)N Is the wetland in or adjacent to an area of special natural resource interest (NR 103.04, Wis. Adm. Code)? If so, check those that apply:

- ☐ Cold water community as defined in s. NR 102.04(3)(b), Wis. Adm. Code, including trout streams, their tributaries, and trout lakes
- ☐ Lakes Michigan and Superior and the Mississippi River
- ☐ State or federal designated wild and scenic river
- ☐ Designated state riverway
- ☐ Designated state scenic urban waterway
- ☒ Environmentally sensitive area or environmental corridor identified in an area-wide water quality management plan, special area management plan, special wetland inventory study, or an advanced delineation and identification study – **Contained entirely within a primary environmental corridor**
- ☐ Calcareous fen
- ☐ State park, forest, trail or recreation area
- ☐ State and federal fish and wildlife refuges and fish and wildlife management areas
- ☐ State or federal designated wilderness area
- ☐ Designated or dedicated state natural area
- ☐ Wild rice water listed in ch. NR 19.09, Wis. Adm. Code
- ☐ Surface water identified as an outstanding or exceptional resource water in ch. NR 102, Wis. Adm. Code

2. (Y)N According to the Natural Heritage Inventory (Bureau of Endangered Resources) or direct observations, are there any rare, endangered, or threatened plant or animal species in, near, or using the wetland or adjacent lands? If so, list the species of concern: **Butler's gartersnake (*Thamnophis butleri*), a State-designated Threatened species, observed in plant community area southeast of this location. Blanding's turtle (*Emydoidea blandingii*), a State-designated Threatened species, recorded by Retzer Nature Center staff northwest of this location. In addition, Natural Heritage Inventory (NHI) identifies a broad area (Waukesha Township, T6N R19E), as having the potential to contain Rough rattlesnake root (*Prenanthes aspera*), a State-designated Endangered species. This broad NHI finding is based upon an 1845 record for this species typically found in dry prairies. Accordingly, it is very unlikely that this plant community area would support this species.**

3. Y(N) Is the project located in an area that requires a State Coastal Zone Management Plan consistency determination?

Floral Diversity

1. (Y)N Does the wetland support a variety of native plant species (i.e. not a monotypic stand of cattail or giant reed grass and/or not dominated by exotic species such as reed canary grass, brome grass, buckthorn, purple loosestrife, etc.)?

2. (Y)N Is the wetland plant community regionally scarce or rare? **In general fens are considered a rare plant community area. Although this is not considered a calcareous fen.**

Wildlife and Fishery Habitat

1. List any species observed, evidenced (e.g. tracks, scat, nest/burrow, calls), or expected to utilize the wetland: **Raccoon, White-tailed deer, and passerine birds utilize this area.**

2. Y(N) Does the wetland contain a number of diverse vegetative cover types and a high degree of interspersion of those vegetation types?

3. Y(N) Is the estimated ratio of open water to cover between 30 and 70 percent? What is the estimated ratio? **Lower portions of wetland may have standing water early in growing season.**

4. (Y)N Does the surrounding upland habitat likely support a variety of animal species?
Class II Wildlife Habitat
5. (Y)N Is the wetland part of or associated with a wildlife corridor or designated environmental corridor?
Class II Wildlife Habitat & Primary environmental corridor
6. Y(N) Is the surrounding habitat and/or the wetland itself a large tract of undeveloped land important for wildlife that requires large home ranges (e.g. bear, woodland passerines)?

7. (Y)N Is the surrounding habitat and/or the wetland itself a relatively large tract of undeveloped land within an urbanized environment that is important for wildlife?

8. (Y)N Are there other wetland areas near the subject wetland that may be important to wildlife?
Important wetlands for wildlife along the Pebble Creek corridor
9. (Y)N Is the wetland contiguous with a permanent waterbody or periodically inundated for sufficient periods of time to provide spawning/nursery habitat for fish? **This plant community area is located along the western edge of the Pebble Creek wetland complex that provides this function.**

10. (Y)N Can the wetland provide significant food base for fish and wildlife (e.g. insects, crustaceans, voles, forage fish, amphibians, reptiles, shrews, wild rice, wild celery, duckweed, pondweeds, watermeal, bulrushes, bur reeds, arrowhead, smartweeds, millets...)?

11. Y(N) Is the wetland located in a priority watershed/township as identified in the Upper Mississippi and Great Lakes Joint Venture of the North American Waterfowl Management Plan?

12. Y(N) Is the wetland providing habitat that is scarce to the region?

Flood and Stormwater Storage/Attenuation

1. (Y)N Are there steep slopes, large impervious areas, moderate slopes with row cropping, or areas with severe overgrazing within the watershed (circle those that apply)?

2. Y(N) Does the wetland significantly reduce run-off velocity due to its size, configuration, braided flow patterns, or vegetation type and density?

3. Y(N) Does the wetland show evidence of flashy water level responses to storm events (debris marks, erosion lines, stormwater inputs, channelized inflow)?

4. Y(N) Is there a natural feature or human-made structure impeding drainage from the wetland that causes backwater conditions?

5. Y(N) Considering the size of the wetland area in relation to the size of its watershed, at any time during the year is water likely to reach the wetland's storage capacity (i.e. the level of easily observable wetland vegetation)? [For some cases where greater documentation is required, one should determine if the wetland has capacity to hold 25% of the run-off from a 2 year-24 hour storm event.]

6. Y(N) Considering the location of the wetland in relation to the associated surface water watershed, is the wetland important for attenuating or storing flood or stormwater peaks (i.e. is the wetland located in the mid or lower reaches of the watershed)?

Water Quality Protection

1. Y(N) Does the wetland receive overland flow or direct discharge of stormwater as a primary source of water (circle that which applies)? **Primary source from groundwater discharge**

2. Y(N) Do the surrounding land uses have the potential to deliver significant nutrient and/or sediment loads to the wetland?

3. Y(N) Based on your answers to the flood/stormwater section above, does the wetland perform significant flood/stormwater attenuation (residence time to allow settling)?

4. Y(N) Does the wetland have significant vegetative density to decrease water energy and allow settling of suspended materials?

5. (Y)N Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface water?

6. Y(N) Are algal blooms, heavy macrophyte growth, or other signs of excess nutrient loading to the wetland apparent (or historically reported)?

Shoreline Protection

1. (Y)N Is the wetland in a lake fringe or riverine setting? If NO, STOP and enter "not applicable" for this function. If YES, then answer the applicable questions. **This wetland plant community area is located along the western edge of a wetland complex associated with Pebble Creek.**

2. Y(N) Is the shoreline exposed to constant wave action caused by long wind fetch or boat traffic?

3. (Y)N Is the shoreline and shallow littoral zone vegetated with submerged or emergent vegetation in the swash zone that decrease wave energy or perennial wetland species that form dense root mats and/or species that have strong stems that are resistant to erosive forces? **This wetland plant community area is part of a wetland complex that provides this function.**

4. (Y)N Is the stream bank prone to erosion due to unstable soils, land uses, or ice floes? **This wetland plant community area is part of a wetland complex, the shoreline edge of which may experience ice flows.**

5. (Y)N Is the stream bank vegetated with densely rooted shrubs that provide upper bank stability? **This wetland plant community area is part of a wetland complex that provides this function.**

Groundwater Recharge and Discharge

1. (Y)N Related to discharge, are there observable (or reported) springs located in the wetland, physical indicators of springs such as marl soil, or vegetation indicators such as watercress or marsh marigold present that tend to indicate the presence of groundwater springs? **Groundwater discharge evident on slopes. Skunk cabbage listed as a sub-dominant species.**

2. (Y)N Related to discharge, may the wetland contribute to the maintenance of base flow in a stream?

3. (Y)N Related to recharge, is the wetland located on or near a groundwater divide (e.g. a topographic high)? **Plant Community Area No. 8 is identified in SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin, Volumes 1 and 2,* as having a high groundwater recharge potential (See map).**

Aesthetics/Recreation/Education and Science

1. (Y)N Is the wetland visible from any of the following kinds of vantage points: (roads,) public lands, houses, and/or businesses? (Circle all that apply.)

2. (Y)N Is the wetland in or near any population centers? **City of Waukesha**

3. Y(N) Is any part of the wetland in public or conservation ownership?

4. Y (N) Does the public have direct access to the wetland from public roads or waterways? (Circle those that apply.)

5. Is the wetland itself relatively free of obvious human influences, such as:

a. (Y) N Buildings?
b. Y (N) Roads?
c. (Y) N Other structures?
d. Y (N) Trash?
e. Y (N) Pollution?
f. Y (N) Filling?
g. Y (N) Dredging/draining?
h. Y (N) Domination by non-native vegetation?

6. Is the surrounding viewshed relatively free of obvious human influences, such as:

a. (Y) N Buildings?
b. Y (N) Roads?
c. (Y) N Other structures?

7. (Y) N Is the wetland organized into a variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water)?

8. (Y) N Does the wetland add to the variety of visibly separate areas of similar vegetation, color, and/or texture (including areas of open water) within the landscape as a whole?

9. Does the wetland encourage exploration because any of the following factors are present:

a. Y (N) Long views within the wetland?
b. Y (N) Long views in the viewshed adjacent to the wetland?
c. (Y) N Convoluted edges within and/or around the wetland border?
d. (Y) N The wetland provides a different (and perhaps more natural/complex) kind of environment from the surrounding land covers?

10 (Y) N Is the wetland currently being used for (or does it have the potential to be used for) the following recreational activities? (Check all that apply.) **This plant community area is entirely in private ownership**

ACTIVITY	CURRENT USE	POTENTIAL USE
Nature study/photography		X
Hiking/biking/skiing		X
Hunting/fishing/trapping		X
Boating/canoeing		
Food harvesting		
Others (list)		

11 (Y) N Is the wetland currently being used, and/or does it have the potential for use for educational or scientific study purposes (circle that which applies)? **This plant community area is currently in private ownership. However, the potential is there for these types of activity**

Plant Community Area No. 8 (2011)

GRAMINEAE
- Poa pratensis[1]--Kentucky bluegrass
- Dactylis glomerata[1]--Orchard grass
- Muhlenbergia mexicana x racemosa--Muhly grass
- Phalaris arundinacea[1,2]--Reed canary grass

CYPERACEAE
- Carex blanda--Wood sedge

ARACEAE
- Symplocarpus foetidus[3]--Skunk cabbage

SALICACEAE
- Populus tremuloides--Quaking aspen
- Salix nigra--Black willow

JUGLANDACEAE
- Juglans nigra--Black walnut

FAGACEAE
- Quercus rubra[4]--Northern red oak

CRUCIFERAE
- Hesperis matronalis[1]--Dames rocket
- Alliaria officinalis[1]--Garlic-mustard

ROSACEAE
- Geum canadense--White avens
- Geum aleppicum--Yellow avens
- Rubus occidentalis--Black raspberry
- Rosa multiflora[1]--Multiflora rose

RUTACEAE
- Zanthoxylum americanum[3]--Prickly-ash

ACERACEAE
- Acer negundo--Boxelder

BALSAMINACEAE
- Impatiens capensis[2]--Jewelweed

RHAMNACEAE
- Rhamnus cathartica[1]--Common buckthorn

VITACEAE
- Vitis riparia--Riverbank grape

ONAGRACEAE
- Epilobium coloratum--Willow-herb

UMBELLIFERAE
- Torilis japonica[1]--Japanese hedge parsley

CORNACEAE
- Cornus amomum--Silky dogwood
- Cornus stolonifera--Red-osier dogwood

OLEACEAE
- Fraxinus pennsylvanica[2]--Green ash

BORAGINACEAE
Hackelia virginiana--Stickseed

LABIATAE
Monarda fistulosa--Wild bergamot

CAPRIFOLIACEAE
Viburnum lentago--Nannyberry
Sambucus canadensis--Elderberry
Lonicera X bella[1]--Hybrid honeysuckle

COMPOSITAE
Solidago gigantea--Giant goldenrod
Aster lateriflorus--Calico aster

Total number of plant species: 33
Number of alien, or non-native, plant species: 9 (27 percent)

This approximately 1.1-acre plant community area is part of a larger wetland complex and consists of sedge fen and second growth, Southern wet to wet-mesic lowland hardwoods. Disturbances to the plant community area include selective cutting of trees and siltation and sedimentation due to stormwater runoff from adjacent lands. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

---

[1] Alien or non-native plant species
[2] Co-dominant plant species
[3] Sub-Dominant plant species
[4] Growing along the wetland edge

Table 1. Apparent Fen Plant Associations In Southeastern Wisconsin

Plant Association	Diagnostic Description
Calcareous fen	A wet and springy grassland site whose predominant plant species[a] are reported calciphiles, such as *Carex sterilis, Muhlenbergia glomerata, Parnassia glauca, Potentilla fruticosa, Lobelia kalmii, Solidago ohioensis, Eleocharis rostellata,* and *Gentiana procera.*
Prairie fen	A wet and springy grassland site whose predominant plant species[a] are a mixture of calciphiles, as noted above, and wet prairie species such as *Andropogan gerardii, Muhlenbergia mexicana, Cirsium muticum, Solidago riddellii, Solidago graminifolia,* and *Aster novae-angliae.* The wet prairie species typically represent between 10% and 50% of the cover.
Sedge fen	A wet and springy grassland site whose predominant plant species[a] are typical of the southern sedge meadow, such as *Carex stricta* and *Calamagrostis canadensis.* A few calciphiles (notably *Potentilla fruticosa*) and/or wet prairie species may be present, but usually constitute less than 20% of the cover.

[a]Predominant plant species refer to those species that individually or collectively comprise 50% or more of the vegetative cover.

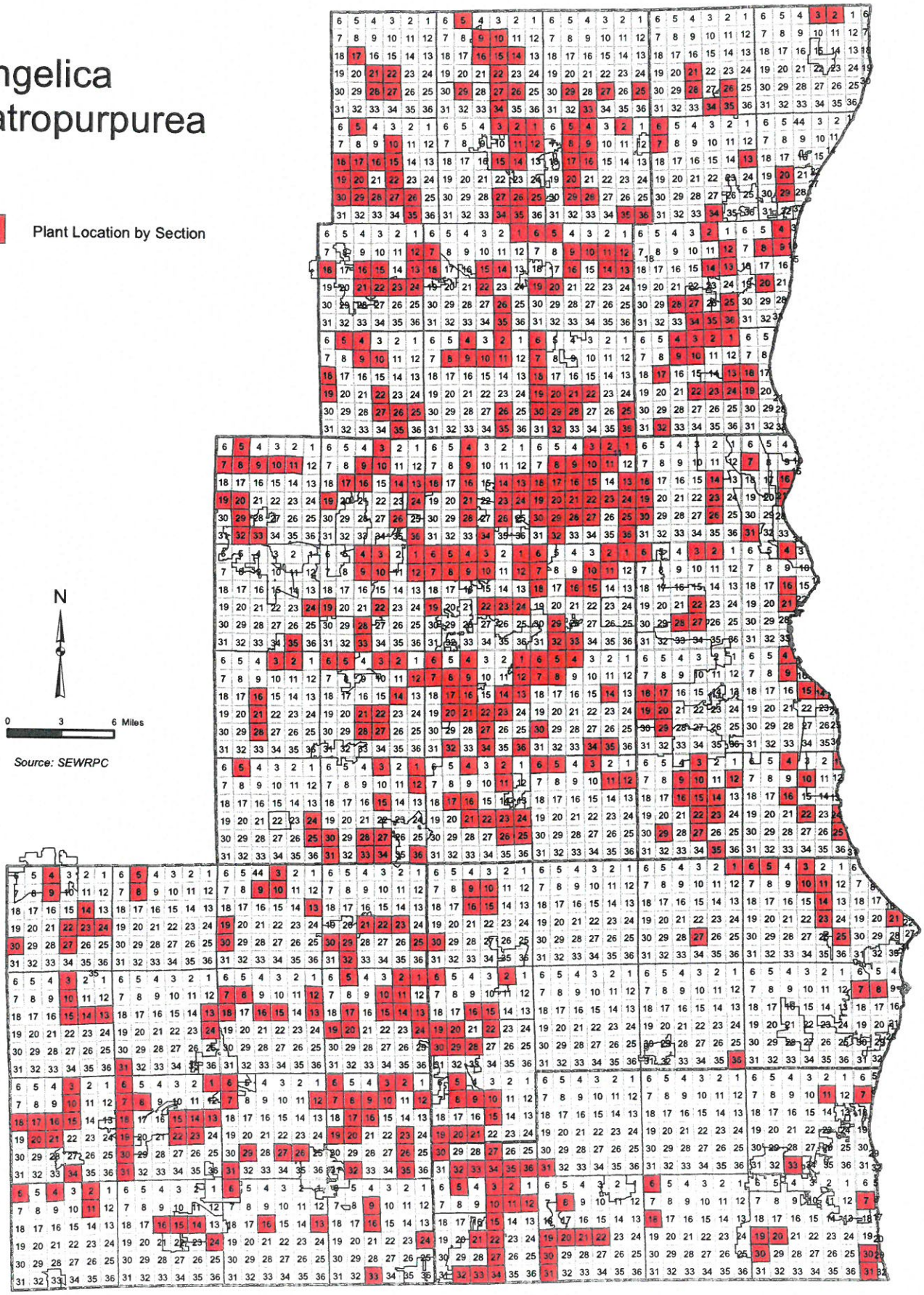
Angelica atropurpurea

Plant Location by Section

N

0 3 6 Miles

Source: SEWRPC



Pycnanthemum virginianum