EXHIBIT 3

TO CONSOLIDATED APPLICATION OF

VANTAGE PIPELINE US LP for

CERTIFICATE OF CORRIDOR COMPATIBILITY AND ROUTE PERMIT

PSC Case No. PU-11-109

Wetlands and Riparian Zone Surveys

February 2012

EXHIBIT 3: WETLANDS AND RIPARIAN ZONE SURVEYS

An initial wetland inventory was completed in July and August of 2010 by wetland biologists at SEH. Wetlands in the vicinity of the pipeline were identified based on dominant vegetative cover, observable hydrology, and hydric soil indicators. Subsequent to the initial survey, surveys were completed in June 2011 to address approximately 32 miles of re-routes and in September – November, 2011 to address smaller sections of re-routes.

SCOPE OF WORK

A field survey to ground truth, classify, and map wetlands was conducted within a 500-foot corridor along the approximately 80-mile pipeline route. Preliminary meetings and correspondence with the U.S. Army Corps of Engineers (USACE) indicated that formal wetland delineations were not necessary for pipeline route planning. Rather, a conservative and approximate wetland boundary based on visible hydrology and vegetation would be appropriate for impact avoidance and minimization efforts. For this reason, full jurisdictional wetland delineations were not completed during the preliminary field surveys.

METHODOLOGY

Vantage completed a pre-field survey inventory of wetlands along the proposed pipeline route utilizing aerial photography, the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), and the Soil Surveys for Divide and Williams Counties. These data sources were used to create GIS field maps, which were the primary resources used to locate and confirm potential wetland habitats during the field surveys.

Wetland classification follows the methods described in *Wetlands and Deepwater Habitats of the United States* (Cowardin, *et al.* 1979) used by the USFWS NWI. The Circular 39 classification (Shaw and Fredine 1956) is also provided. Primary and secondary indicators of wetland hydrology are defined in the *Regional Supplement to the USACE Wetland Delineation Manual: Great Plains Region* (USACE 2010), a supplement to the 1987 Corps Wetland Delineation Manual.

Furthermore, wetlands are defined in federal Executive Order 11990 as follows:

> *"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

According to the USACE *Wetlands Delineation Manual* (USACE 1987) and the 2010 *Regional Supplement*, one positive indicator (except in certain situations) from each of three elements must be present in order to make a positive wetland determination. Wetland indicators are as follows:

- Greater than 50 percent dominance of hydrophytic plant species
- Presence of hydric soil
- The area is either permanently or periodically inundated, or soil is saturated to the surface during the growing season of the dominant vegetation

FIELD PROCEDURES

The pipeline route, 500-foot survey corridor, and the NWI were loaded into a Magellan Mobile Mapper global positioning system (GPS) to aid in field navigation and identification of potential wetland areas. Wetlands were identified primarily by vegetation and surficial hydrology indicators. As the wetland

survey was not a formal jurisdictional wetland delineation, soil data was not collected during the field survey. Wetlands were classified and photographed, dominant vegetation was documented, and approximate wetland boundaries were mapped using GPS. Wetland plant species nomenclature and wetland indicator status following the *National List of Plant Species that Occur in Wetlands* (U.S. Department of the Interior 1988) *for the Mountain-Prairie Region (Region 6).* Identification was supplemented when necessary with field guides for the region.

Although the field surveys were completed in the fall, the active growing season for the area had not yet ended. The *Regional Supplement* describes several criteria for an active growing season which includes fresh growth on wetland herbaceous vegetative species and/or active flowering plants. Water smartweed (*Polygonom amphibium*), an obligate wetland plant, was flowering at the time of the delineation and other herbs and forbs were still detectable due to the wet and warm growing seasons in 2010 and 2011.

Each wetland was assigned a unique alphanumeric ID. The letter corresponds to the field team that identified the wetland and the number indicates each individual wetland identified by that survey team. Letters correspond to field surveys as outlined below:

- "A" wetlands were surveyed August 25–September 2, 2010.
- "B" wetlands were surveyed August 25–September 2, 2010 and September 7–10, 2010.
- "C" wetlands were surveyed October 26–30, 2010.
- "D" wetlands were surveyed on October 11–16, 2010.
- "E" and "F" wetlands were surveyed June 13–19, 2011.
- "G" wetlands were surveyed between September 18–22, 2011.
- "H" wetlands were surveyed November 8, 2011.

RESULTS

The wetland investigations resulted in the identification and mapping of 201 wetlands within the survey corridor. Table 3-1 summarizes the wetlands within the 500-foot corridor by wetland type. The attached table (see Attachment 3-1) provides a complete summary of the classification and dominant species of all surveyed wetlands in the project area. Brief descriptions of the vegetation and hydrology characteristics for each wetland type observed throughout the project corridor are provided below.

Table 3-1. Wetlands by Type within the Project Area (500-ft Corridor) [1]

CLASSIFICATION		WETLANDS OBSERVED	
Circular 39[2]	Cowardin[3]	Number	Area (acres)
1	PEMA	25	5.18
1/2	PAMA/B	1	0.50
2	PEMB	101	40.90
2/3	PEMB/C	40	28.10
2/5	PEMB/PUBx	1	0.12
3	PEMC	20	13.21
3/4	PEMC/F	8	8.38
4	PEMF	2	2.10
4/5	PEMF/ PUB	1	0.21
5	PUB	1	3.59
6	PSS1B	1	0.08
Totals		201	102.36

[1] Includes only wetland area within the 500-foot pipeline corridor. Actual wetland boundaries may extend past the project limits and may be larger than indicated.
[2] *Wetlands of the United States, Circular 39.* (Shaw and Fredine, United States Fish and Wildlife Service, 1956)
[3] *Classification of Wetlands and Deepwater Habitats of the United States.* (Cowardin *et al.*, December 1979)

Type 1 (Palustrine Emergent A): Seasonally Flooded Basins

A total of 25 Type 1 wetlands, encompassing approximately 5.18 acres, were identified in the project area. Additional Type 1 wetlands were also identified as occurring with Type 2 wetlands. Seasonally flooded basins are shallow depressions that may have standing water for a small portion of the growing season, but are usually dry for a portion to a majority of the growing season. This type of wetland is very common throughout the prairie pothole region. Many of the seasonally flooded basins observed in the project area were cultivated with a variety of crops, although those basins that were fallow developed a dominance of wetland vegetation. Dominant vegetation in the seasonally flooded basins included water smartweed (*Polygonom amphibium*), reed canary grass (*Phalaris arundinacea*), foxtail barley (*Hordeum jubatum*), curly dock (*Rumex crispus*), field mint (*Mentha arvensis*), field sowthistle (*Sonchus arvensis*), and barnyard grass (*Echinochloa crus-gali*).

No primary indicators of wetland hydrology were observed in the seasonally flooded basins. However, several secondary indicators were observed including surface soil cracks, sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Figure 1 illustrates a typical PEMA wetland.

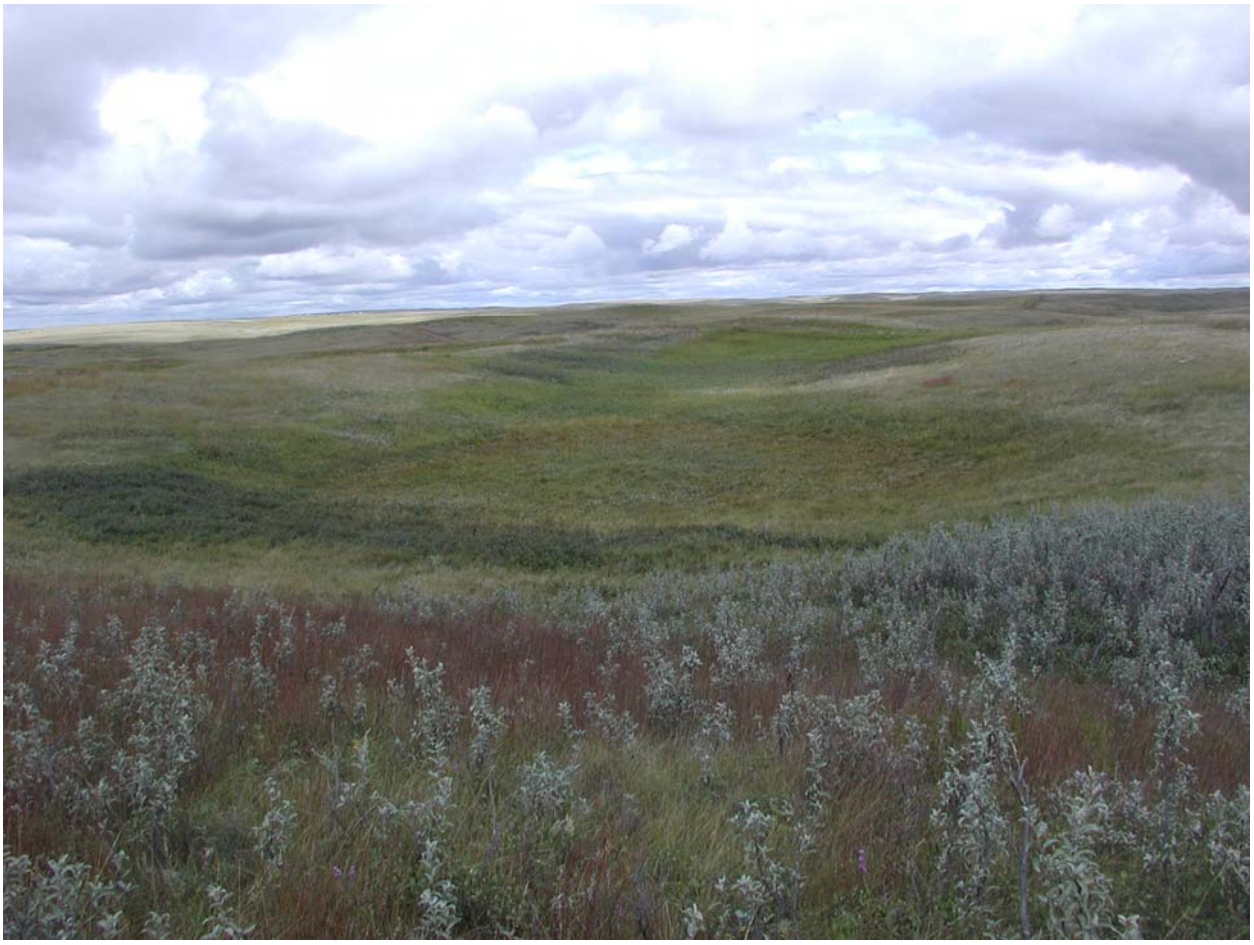

Figure 1. PEMA Seasonally Flooded Basins

Type 2 (Palustrine Emergent B): Fresh Wet Meadows

A total of 101 Type 2 wetlands, encompassing approximately 40.90 acres, were identified in the project area. Additional Type 2 wetlands were also identified as occurring with Type 1, Type 3, and Type 5 wetlands. Fresh wet meadows are depressions that may contain standing water for a short duration early in the growing season, but typically are saturated within 12 inches of the surface and lack surface water for most of the growing season. Fresh wet meadows are usually dominated by grasses, sedges, and forbs with little woody species present. Many of these wetlands observed in the project area were cultivated but crops showed evidence of stress due to the long duration of saturation. Dominant vegetation in the fresh wet meadows included water smartweed, reed canary grass, various species of sedges (*Carex spp.*) and rushes (*Juncus spp.*), and field sow thistle.

Primary indicators of wetland hydrology as defined by the Great Plains Regional Supplement to the USACE Wetland Delineation Manual were observed in few of the fresh wet meadows where the wetlands were saturated to the surface, but saturation would most likely have been observed if subsurface soils were investigated. Secondary indicators observed in the fresh wet meadows included sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Figure 2 illustrates a typical PEMB wetland.

Figure 2. PEMB Fresh Wet Meadows

Type 3 (Palustrine Emergent C): Shallow Marshes

A total of 20 Type 3 wetlands, encompassing approximately 13.21 acres, were identified in the project area. Additional Type 3 wetlands were also identified as occurring in complexes with Type 2 and Type 4 wetlands. Shallow marshes have soils that are saturated and are usually inundated with up to six inches of standing water throughout the growing season. Most of the shallow marshes observed within the project area were adjacent to areas of deeper water, although several of the shallow marshes were deep, inundated depressions. Dominant vegetation in the shallow marshes included broad-leaved cattail (*Typha latifolia*) and softstem bulrush (*Scirpus validus*) with water smartweed in areas with drawn-down hydrology.

Surface water was the primary indicator of hydrology that was observed in the shallow marsh wetlands. The shallow marshes in the project area varied in the amount of standing water. Several wetlands did not have visible standing water but were saturated to the surface, had a thin muck surface, and contained vegetation typical of a shallow marsh. These wetlands were likely drawn down as the growing season progressed and were still considered shallow marshes.

Type 4 (Palustrine Emergent F): Deep Marshes

A total of two Type 4 wetlands, encompassing approximately 2.10 acres, were identified in the project area. Additional Type 4 wetlands were also identified as occurring in complexes with Type 3 wetlands. Deep marshes are typically inundated with between six inches and three or more feet of standing water throughout the growing season. They are dominated by emergent vegetation but may also be composed of floating-leaved and submergent vegetation. Both of the deep marshes observed in the project area were open water with a Type 2 or Type 3 fringes. Broad-leaved cattail and lake sedge (*Carex lacustris*) were dominant in the deep marsh habitats.

Surface water was the primary indicator of hydrology that was observed in the deep marsh wetlands. Deep marshes rarely draw down to expose the aquatic bed and standing water should be expected throughout the growing season.

Type 5 (Palustrine Unconsolidated Bottom): Shallow Open Water

One Type 5 wetland encompassing approximately 3.59 acres was identified within the project area. Additional Type 5 wetlands identified in the project area were complexes with Type 4 wetlands or had Type 2 fringes. Shallow open water communities have water depths of less than 6.6 ft. Water bodies with a depth greater than 6 ft. are deep water habitat and are not considered wetlands. Shallow open water communities differ from deep marshes in that floating-leaved and submergent vegetation is dominant rather than emergent vegetation, as in a deep marsh. Typical dominant species in shallow open water habitats include duckweed (*Lemna spp.*), pondweed (*Potamogeton spp.*), and various species of water lilies (*Nymphaea sp.* and *Nuphar sp.*). Both of the shallow open water communities observed within the project area showed historical evidence of excavation.

Surface water was the primary indicator of hydrology that was observed in the shallow open water wetlands. Shallow open water communities persist throughout growing season.

Type 6 (Palustrine Scrub-Shrub Broad-leaved Deciduous [PSS1B[): Shrub-carrs

One Type 6 shrub-carr community was identified within the study corridor, encompassing approximately 0.08 acres. Shrub-carrs are plant communities composed of tall, deciduous shrubs growing on saturated to seasonally flooded soils. They are typically dominated by willows (*Salix spp.*) or dogwood (*Cornus spp.*) shrub canopy with a ground layer of ferns, sedges, grasses and forbs of sedge meadow and fresh (wet) meadow communities. The diversity of species composing the ground layer is dependent on degree of shrub canopy cover, degree of disturbance, and water source. The observed Shrub-carr wetland was dominated by a mixed species willow shrub canopy.

Primary indicators of wetland hydrology as defined by the *Regional Supplement* were not directly observed in the Type 6 shrub swamp basin, but saturation would most likely have been observed if subsurface soils were investigated. Secondary indicators observed in the shrub swamp included a sparsely vegetated concave surface, saturation visible on aerial imagery, geomorphic position, and vegetation type.

Wetland Complexes

Wetland complexes are wetlands that are comprised of more than one wetland community type. Wetlands plant communities are dependent upon hydrology present. Depressional wetlands often have more than one wetland community type due to variation in topography, water depth, and hydrology patterns. Deeper water wetland types are often located in the central portions of the basins with shallower wetland types on

the fringes or edges of these complexes. Wetland complexes were frequently observed throughout the project area with shallow marsh/fresh wet meadow complexes being the most frequently encountered along with several deep marsh/ shallow marsh and shallow open water/fresh wet meadow complexes observed as well. These complexes are comprised of vegetation characteristic of each wetland type present and are often indicative of a transition between two wetland types. Figure 3 illustrates a typical PEMB/C wetland complex:

Figure 3. PEMB/C Wetland Complex

USFWS Wetland Easements

The USFWS Wetland Easement program pays landowners to enter wetlands in this permanent protection program. Wetlands protected under a wetland easement are regulated by the USFWS and cannot be drained, filled, graded, or burned. The Vantage Pipeline does cross parcels enrolled in the wetlands protection program, and has avoided any wetlands protected by a wetland easement where possible. (USFWS 2011)

Vantage has been working closely with the USFWS to identify wetlands under easement. In areas where wetland easements have been identified, the temporary construction right-of-way will be narrowed and oak matting may be used to avoid impact to any wetlands protected by a wetland easement.

Wetland Reserve Program

The Wetlands Reserve Program (WRP) provides landowner assistance in protecting, restoring, and enhancing wetlands in an effort to preserve wildlife habitat. There are no WRP tracts within the Vantage Pipeline corridor (NRCS 2010).

WETLANDS REFERENCES

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. 131 pp.

Shaw, S. P. and C. G. Fredine. 1956. Wetlands of the United States. U.S. Fish and Wildlife Service, Circular 39. 67 pp.

Dewald, David. “Information Request for Reserve Programs in Divide and Williams Counties, North Dakota” Email correspondence. 9/1/2010 <dave.dewald@nd.usda.gov>

U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1*. Waterways Experiment Station, Vicksburg, Mississippi.

U.S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0).* 128 pp. plus appendices.

U.S. Department of the Interior. 1988. National List of Plant Species that Occur in Wetlands: Mountain Prairie (Region 6). Biological Report 88 (26.3), Fish and Wildlife Service. In cooperation with the National and Regional Interagency Review Panels. Washington, D.C

U.S. Fish and Wildlife Service, Lostwood Wetland Management District Complex. Ongoing correspondence. 6/7/2010-Present.

ATTACHMENT 3-1: SUMMARY OF SURVEYED WETLANDS

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
A1	2	PEMB	Isolated	Mix of *Phalaris arundinacea, Rumex crispus, Polygonum amphibium,Carex sp.*
A22	2	PEMB	Isolated	*P. amphibium, P. arundinacea*
A24	3	PEMC	Isolated	Water present with *T. latifolia* edges
A29	3	PEMC	Isolated	*P. amphibium, Echinochloa crus-gali*
A33	3	PEMC	Isolated	Deep water in middle with mix of *T. latifolia, P. amphibium, P. arundinacea*
A35	3	PEMC	Isolated	All *T. latfolia*
A36	3	PEMC	Isolated	Surrounded by wheat fields; middle is all water with *T. latifolia, Scirpus sp., P. arundinacea*
A37	3	PEMC	Isolated	Bottom of wheat field; mostly *T. latifolia with P. arundinacea edges*
A38	3	PEMC	Isolated	Mostly *P. amphibium* with some *R. crispus, Scirpus sp.* surrounded by wheat field
A4	2	PEMB	Isolated	*P. amphibium, P. arundinacea, R. crispus, Carex sp.*
A4	2	PEMB	Isolated	*P. amphibium, P. arundinacea, R. crispus, Carex sp.*
A44	2	PEMB	Isolated	*P. amphibium, Carex sp.*
A50	2	PEMB	Isolated	*P. amphibium and P. arundinacea*
A51	2/3	PEMB/C	Isolated	Middle is *P. arundinacea* and *Carex sp.* with evidence of high water
A57	2	PEMB	Isolated	*Carex sp., P. arundinacea*
A58	2	PEMB	Isolated	*Carex sp., P. arundinacea,* recently grazed
A60	2	PEMB	Isolated	*Carex sp.*
A69	2	PEMB	Isolated	*P. amphibium;* more of a depression than A68
A70	1	PEMA	Isolated	*R. crispus*
A71	1	PEMA	Isolated	*Mentha sp., R. crispus*
A73	2/3	PEMB/C	Potentially Isolated Complex	Appears to have seasonal flow through it. Pockets of *T. latifolia* with a strip of *P. arundinacea* following drainage. Surrounded by wheat field.
A74	2/3	PEMB/C	Isolated	*P. amphibium, P. arundinacea*
A75	2/3	PEMB/C	Potentially Isolated Complex	*Pockets of T. latifolia,* standing water and *A. alba*
A76	2	PEMB	Potentially Isolated Complex	Strip of *P. arundinacea connecting A 75 to A 77* which appears to have seasonal flow
B10	2	PEMB	Isolated	*E. crus-gali* and *P. amphibium,* larger than NWI
B100	3	PEMC	Isolated	*T. latifolia, P. amphibium, Scirpus sp.*
B101	2	PEMB	Isolated	*P. amphibium, S. arvensis*
B102	3/4	PEMC/F	Potentially Isolated Complex	*T. latifolia* and standing water

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
B103	2	PEMB	Potentially Isolated Complex	Appears to be seasonal drainage that connects B102 to B104 and further south through culvert underneath road; *P. arundinacea*
B104	3/4	PEMC/F	Potentially Isolated Complex	*T. latifolia* and standing water
B105	2	PEMB	Potentially Isolated Complex	Mostly *P. amphibium* with *T. latifolia*
B106	2/3	PEMB/C	Isolated	*T. latifolia, Hordeum jubatum*
B107	2	PEMB	Isolated	*P. amphibium, P. arundinacea*
B108	1	PEMA	Isolated	*P. amphibium, R. crispus*
B109	2	PEMB	Isolated	*P. amphibium, Poa sp.*
B110	2	PEMB	Isolated	*P. amphibium, Poa sp.*
B111	2	PEMB	Isolated	*P. amphibium*
B112	2	PEMB	Isolated	*P. amphibium*
B113	2	PEMB	Isolated	*P. amphibium*
B114	2	PEMB	Isolated	*P. amphibium*
B124	2	PEMB	Isolated	*P. amphibium, S. arvensis* within a garbage pile
B125	1	PEMA	Isolated	Small depression with *P. amphibium*
B126	2	PEMB	Isolated	*Carex sp.* and *R. crispus*
B127	2	PEMB	Isolated	*P. amphibium, Carex sp. R. crispus*
B128	2	PEMB	Isolated	Mostly *P. amphibium*
B129	2	PEMB	Isolated	Mostly *P. amphibium*
B13	1	PEMA	Isolated	*Ambrosia artemisiifolia, E. crus-gali,* dried mud
B130	2	PEMB	Isolated	*Mostly P. amphibium* with some *P. arundinacea*
B131	2	PEMB	Isolated	*S. arvensis, P. amphibium,* grasses
B134	2	PEMB	Isolated	Along 105th Avenue: *P. amphibium*
B134	2	PEMB	Isolated	0
B135	1	PEMA	Isolated	*P. arundinacea,* portions hayed; very marginal
B14	2/3	PEMB/C	Isolated	*Carex sp., T. latifolia, P. amphibium.*
B16	1	PEMA	Isolated	*Carex sp., Poa sp.,* grazed
B18	2	PEMB	Isolated	*P. amphibium* and *Carex sp.*dominant
B24	2	PEMB	Isolated	*P. amphibium* and *Carex sp.*in ag field
B25	2/3	PEMB/C	Isolated	*Carex sp., T. latifolia*
B26	2	PEMB	Isolated	*P. amphibium* and *R. crispus* in lentil field
B27	2	PEMB	Isolated	*P. arundinacea* and *P. amphibium* in wheat field
B3	3/4	PEMC/F	Isolated	*Scirpus sp.* in center, *T. latifolia* near edge
B30	2/3	PEMB/C	Isolated	*P. arundinacea, P. amphibium,* some *T. latifolia*
B31	2	PEMB	Isolated	*P. amphibium, R. crispus, P. arundinacea*
B32	2	PEMB	Isolated	*P. amphibium* and *Carex sp*
B34	2	PEMB	Isolated	*P. amphibium* and *Carex sp,* adjacent to rock pile
B35	2	PEMB	Isolated	*P. arundinacea, P. amphibium* at road toe of slope
B36	2	PEMB	Isolated	*P. arundinacea, P. amphibium* at road toe of slope

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
B37	2/3	PEMB/C	Isolated	*P. arundinacea, T. latifolia* in center; *Cirsium arvense, Sonchus arvensis* invading
B4	2/5	PEMB/PUBx	Isolated	No vegetation, excavated cattle pond. Small T2 wetland adjacent, dominated by grasses.
B40	3/4	PEMC/F	Potentially Isolated Complex	Open water *T. latifolia, Scirpus sp.* in center*, P. arundinacea, P. amphibium* in fringe
B42	1	PEMA	Isolated	*P. arundinacea* monoculture
B43	2	PEMB	Isolated	*P. arundinacea, Agrostis alba,* some *R. crispus* in wheat field
B48	2/3	PEMB/C	Isolated Complex	*Carex sp., Scirpus sp.* NE corner of 151st and 107th intersection, culvert connection to B51
B49	2	PEMB	Potentially Isolated Complex	Excavated wet ditch connecting to a waterfowl area
B5	2	PEMB	Isolated	*P. arundinacea,* smaller than NWI shows
B51	3	PEMC	Isolated Complex	*T. latifolia, Scirpus sp.* SE corner of 151st and 107th intersection, culvert connection to B48
B52	1	PEMA	Isolated	*P. arundinacea,* some *R. crispus*
B54	2/3	PEMB/C	Isolated	*T. latifolia* in center with *P. arundinacea, P. amphibium, Carex sp.* in fringe
B60	2/3	PEMB/C	Isolated	*T. latifolia, P. amphibium* dominate
B75	1	PEMA	Isolated Complex	*P. arundinacea* and *H. jubatum,* 20–30' wide seasonal drainage swale in agriculture fields
B76	1	PEMA	Isolated Complex	*P. arundinacea* and *H. jubatum,* 20–30' wide seasonal drainage swale in agriculture fields
B77	1	PEMA	Isolated	*P. amphibium* monoculture surrounded by wheat field
B77	1	PEMA	Isolated	*P. amphibium* monoculture surrounded by wheat field
B78	1	PEMA	Isolated	*P. amphibium* with some *C. arvense* creeping in
B79	1	PEMA	Isolated	*P. amphibium* with some *C. arvense, S. arvensis*
B80	1	PEMA	Isolated	*Carex sp., P. amphibium* with some *C. arvense*
B81	2	PEMB	Isolated	*Carex sp., P. arundinacea,* some *P. amphibium*
B83	3	PEMC	Isolated Complex	*T. latifolia, P. amphibium*, part of swale to pond
B84	3	PEMC	Isolated Complex	*T. latifolia* drainage into pond, some *P. amphibium*
B85	4	PEMF	Isolated Complex	Mostly open water with *fringe of Carex sp., P. amphibium*
B86	2/3	PEMB/C	Isolated	*T. latifolia, Carex sp., P. arundinacea,* adjacent to road but no visible culverts
B87	2	PEMB	Isolated	*Carex sp.* depression surrounded by N/NN grassland
B88	2/3	PEMB/C	Isolated	*T. latifolia, Carex sp., P. amphibium, Scirpus sp.* in wheat field
B90	2	PEMB	Isolated	*Carex sp.* and *Scirpus sp.* Isolated portion of seasonal drainage pattern
B91	2	PEMB	Isolated	*P. arundinacea, P. amphibium* with some Carex sp. in sunflower field
B92	2	PEMB	Isolated	*Carex sp.* and *P. amphibium*

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
C16	2	PEMB	Isolated	0
C21	2	PEMB	Isolated	0
E13	5	PUB	Isolated	Mapped edge of water during flooding. Mostly open water with *Schoenoplectus sp.* and *T. latifolia* on western edge.
E15	4	PEMF	Isolated	Mapped edge of water during flooding. Large open water wetland with *T. latifolia and Scirpus sp.*
E16	2	PEMB	Isolated	Mapped largest extent of wetland hydrology during flooding. *P. amphibium and P. arundinacea.*
E17	2	PEMB	Isolated	Mapped largest extent of wetland hydrology during flooding. Both sides of road; *P. amphibium* and *P. arundinacea.*
E18	2/3	PEMB/C	Isolated	Mapped edge of water during flooding. 80% open water with *T. latifolia, P. amphibium, P. arundinacea* and *Echinochloa crus-gali* along fringe.
E19	2	PEMB	Isolated	Mapped edge of water during flooding; *Poa pratensis, Phleum pratense* and *R. crispus.*
E20	2	PEMB	Isolated	Mapped edge of water during flooding; 90% open water with *P. pratense* and *R. crispus*
E21	2	PEMB	Isolated	Mapped edge of water during flooding; shallow water with *P. pratense, Senecio Integerrimus,* and *Eleocharis sp.*
E22	2	PEMB	Isolated	Mapped edge of water during flooding. *P. amphibium, R. crispus, P. arundinacea* and *Scirpus sp.*
E23	2	PEMB	Isolated	Mapped edge of water during flooding; very small depression with *R. crispus* and *grasses*
E24	2	PEMB	Isolated	Mapped edge of water during flooding; very small depression with *R. crispus* and *grasses*
E25	2/3	PEMB/C	Potentially Isolated	Mapped edge of water during flooding; slightly flowing water into wetland with *Elecocharis sp., T. latifolia, R. crispus, Bromus inermis, P. arundinacea,* and *Carex sp.*
E26	2/3	PEMB/C	Isolated	Same basin as A29, but mapped edge of water during flooding; mostly open water with *P. amphibium* and scattered grasses
E26	2/3	PEMB/C	Isolated	Same basin as A29, but mapped edge of water during flooding; mostly open water with *P. amphibium* and scattered grasses
E27	2	PEMB	Isolated	Same basin as C25, but mapped edge of water during flooding; *Eleocharis sp., P. amphibium* and *Sonchus arvensis*
E28	2/3	PEMB/C	Isolated	Same basin as C24, but mapped edge of water during flooding; shallow water with *T. latifolia* edges
E29	3	PEMC	Isolated	Same basin as C23, but mapped edge of water during flooding; 95% open water with *P. arundinacea and P. amphibium*

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
E30	1/2	PEMA/B	Isolated	Same basin as C22, but mapped edge of water during flooding; grasses, *R. crispus* and rose family species
E31	3	PEMC	Potentially Isolated	Same basin as C17, but mapped edge of water during flooding; part of larger T4/5 basin. *Poa pratensis, Phleum pratense* and *R. crispus.*
E32	3	PEMC	Isolated	Same basin as C18, but mapped edge of water during flooding; deep water with *P. amphibium* and *R. crispus.*
E34	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; part of larger T4/5 wetland; *Eleocharis sp., Carex sp.,* and *P. arundinacea* edges.
E35	3/4	PEMC/F	Isolated	Same basin as C19, but mapped edge of water during flooding; *T. latifolia* with some *P. amphibium* with lots of nesting songbirds in area.
E36	2	PEMB	Isolated	Same basin as A4, but mapped edge of water during flooding. *P. amphibium* with small patches of *P. arundinacea* and *R. crispus.*
E36	2	PEMB	Isolated	Same basin as A4, but mapped edge of water during flooding; *P. amphibium* with small patches of *P. arundinacea* and *R. crispus.*
E38	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; 40% open water with *P. amphibium* and *Bromus inermis.*
E39	2	PEMB	Isolated	Mapped edge of water during flooding; open water in middle with *P. arundinacea, P. amphibium, Poa pratensis, bromus inermis, Taraxacum officinale,* and *Glycyrrhiza lepidota.*
E40	3	PEMC	Isolated	Mapped edge of water during flooding; *P. amphibium, Carex sp., Poa pratensis,* and *R. crispus.*
E41	2/3	PEMB/C	Potentially Isolated	Mapped edge of water during flooding; long, linear wetland along U.S. 50 with *T. latifolia, Bromus inermis,* and *P. pratense.*
E42	2/3	PEMB/C	Potentially Isolated	Mapped edge of water during flooding. Linear ditch on south side of U.S. 50 with *T. latifolia, Bromus inermis,* and *P. pratense.*
E8	6	PSS1B	Isolated	Mapped edge of water during flooding; willow shrubs dominant.
F1	2	PEMB	Isolated	Mapped edge of water during flooding; *P. arundinacea*
F1	2	PEMB	Isolated	Mapped edge of water during flooding; *P. arundinacea*
F10	2	PEMB	Isolated	Mapped edge of water during flooding. *Eliocharis sp., Carex sp., R. crispus,* and *P. amphibium.*
F12	2	PEMB	Isolated	Mapped edge of water during flooding; *R. crispus, Carex sp., Juncus sp.*
F13	2	PEMB	Isolated	Same as C1, but mapped edge of water during flooding; *Juncus sp., Scirpus sp., P. arundinacea.* Mostly open water during flooding.

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
F14	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *P. arundinacea, P. amphibium,* and *R. crispus.*
F15	2	PEMB	Isolated	Same as C8, but mapped edge of water during flooding; *R. crispus, P. amphibium, P. arundinacea.*
F16	2	PEMB	Isolated	Same as C9, but mapped edge of water during flooding; *P. arundinacea* and *P. amphibium.*
F17	2/3	PEMB/C	Connected to Tioga Dam	Same as C6 and C7, but mapped edge of water during flooding; *T. latifolia* and flowing water through channel.
F18	2/3	PEMB/C	Isolated	Same as E37, mapped edge of water during flooding; *P. amphibium* and *T. latifolia* mix with small amounts of *Carex nebraskensis* and *Mentha sp.*
F19	2	PEMB	Isolated	Mapped edge of water during flooding; open water with *P. amphibium* and *P. arundinacea.*
F2	2	PEMB	Isolated	Same as B42, but mapped edge of water during flooding; *P. arundinacea*
F24	2	PEMB	Potentially Isolated	Mapped edge of water during flooding; wet ditch with *P. arundinacea* and *R. crispus.*
F25	1	PEMA	Isolated	Mapped edge of water during flooding; no vegetation; farmed during normal conditions
F26	2	PEMB	Isolated	Same as basin D1, but mapped edge of water during flooding; open water with *R. crispus, P. arundinacea,* and *P. amphibium*
F28	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *Carex sp., T. latifolia,* and *Scirpus sp with P. arundinacea, P. amphibium,* and *R. crispus* on fringe
F3	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *Carex sp.* and *Scirpus sp.*
F32	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; open water with *T. latifolia, Scirpus sp.*
F33	2	PEMB	Isolated	Mapped edge of water during flooding; *Carex sp., R. crispus, Scirpus sp* with open water.
F34	2	PEMB	Isolated	Mapped edge of water during flooding; open water with *P. arundinacea* and *R. crispus.*
F35	1	PEMA	Isolated	Mapped edge of water during flooding; probably not a wetland but has ~2' of open water and is dominated by upland grasses
F36	2	PEMB	Isolated	Mapped edge of water during flooding; open water with Carex sp., *P. amphibium,* and *P. arundinacea*
F37	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; *P. arundinacea, P. amphibium,* and *T. latifolia* with open water
F38	1	PEMA	Isolated	Mapped edge of water during flooding; *P. arundinacea* with very shallow open water
F39	2	PEMB	Isolated	Mapped edge of water during flooding; *P. arundinacea, P. amphibium* with shallow open water; very small depression

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
F4	2/3	PEMB/C	Isolated	Mapped edge of water during flooding; open water with *P. amphibium*
F46	2	PEMB	Isolated	Mapped edge of water during flooding; *P. amphibium* and *P. arundinacea; Bromus inermis* at edge of water
F51	2/3	PEMB/C	Connected to Tioga Dam	Mapped edge of water during flooding; drainage with mixed wetland/upland during normal conditions; *Juncus sp., Carex sp*., and various grasses; channelized
F8	2	PEMB	Isolated	Same as C27, but mapped edge of water during flooding *Carex sp., Juncus sp., R. crispus, P. amphibium*
F9	2	PEMB	Isolated	Same as C26, but mapped edge of water during flooding; *Carex sp., Scirpus sp., P. amphibium, R. crispus*
G1	1	PEMA	Isolated	*P. arundinacea, R. crispus, S. pectinata, Carex sp.*
G10	2/3	PEMB/C	Isolated	*T. latifolia* and open water from flooding
G11	2	PEMB	Isolated	*P. amphibium* and *P. arundinacea*
G12	2/3	PEMB/C	Isolated	*C. stricta, Scirpus sp., and P. amphibium;* approximately 1' standing water
G14	2	PEMB	Isolated	*Bidens sp., P. arundinacea,* and *Carex sp.* on fringe
G15	1	PEMA	Isolated	*R. crispus, P. amphibium,* thistle in fringe
G16	2	PEMB	Isolated	*R. crispus, P. amphibium,* with *T. latifolia* and 6" of standing water in center.
G17	3/4	PEMC/F	Isolated	*T. latifolia* with 2–3' of standing water in center; *P. arundinacea, C.stricta,* and *P. amphibium* on fringe
G18	2	PEMB	Isolated	*Polygonum monoculture*
G19	2/3	PEMB/C	Potentially Isolated	*T. latifolia* in center, *P. arundinace and P. amphibium* in fringe
G2	2	PEMB	Isolated	Small drainage swale dominated by *P. arundinacea, T. latifolia,* and *C. arvense* on the fringe
G20	2	PEMB	Isolated	*R. crispus, P. arundinacea, P, amphibium*
G22	2	PEMB	Isolated	*P. amphibium* and *P. arundiacea*
G23	2	PEMB	Isolated	*R. crispus, Carex sp., P. arundinacea*
G25	1	PEMA	Isolated	*P. amphibium* and *R. Crispus*
G26	1	PEMA	Isolated	*Carex sp.* and *R. crispus*
G27	3/4	PEMC/F	Isolated	*Scirpus sp.* in center with *P. arundinacea and Carex sp.* in fringe. 2–3' of standing water in center
G28	2	PEMB	Isolated	*Carex sp.* with *P. arundinacea* fringe
G29	2	PEMB	Isolated	*Carex sp.* and *R. crispus*
G3	2	PEMB		Drainage swale dominated by *P. arundinacea* and *R. crispus*
G30	3	PEMC	Isolated	*Carex sp., P. amphibium* in 1–2' of standing water; wetland to toe of slope of road

Basin ID	Circular 39[2] Classification	Cowardin[1] Classification	Hydrologic[3] Connectivity	Comments
G31	3	PEMC	Isolated	*Carex sp.* and *T. latifolia* with 1' of standing water; wet to toe of slope of road
G32	2/3	PEMB/C	Isolated	Grazed Carex sp. and *T. latifolia* with approximately 1' of standing water
G33	4/5	PUB	Isolated	Open water in grazed area, *T. latifolia and P. arundinacea* on fringe
G34	3	PEMC	Isolated	*T. latifolia* and *Eleocharis sp.,* 1–2' of standing water
G35	1	PEMA	Isolated	*P. amphibium and Carex sp.*
G36	1	PEMA	Isolated	*P. amphibium* and *R. crispus; v*ery small depression, no visible hydrology
G37	2	PEMB	Isolated	*P. amphibium* with some *Carex sp.*; approximately 6" of standing water in center
G38	2	PEMB	Isolated	*P. amphibium* monoculture
G39	2	PEMB	Isolated	*P. amphibium and Carex sp.*; approximately 6" of standing water in center
G4	2/3	PEMB/C	Isolated	*P. amphibium* and bare ground, appears to have been plowed 1–2 seasons ago
G40	2	PEMB	Isolated	*Carex sp. Monoculture; a*pproximately 6" standing water in center
G41	2	PEMB	Isolated	0
G42	2/3	PEMB/C	Connected to Cottonwood Lake	*T. latifolia, Spartina pectinata,* flows into road ditch system
G5	2	PEMB	Isolated	*P. amphibium* monoculture
G6	2/3	PEMB/C	Isolated	*Carex sp., T. latifolia,* and *Scirpus sp.*
G7/8	2/3	PEMB/C	Potentially Isolated Complex	*T. latifolia, P. arundinacea, Carex sp.,* and *Eliocharis sp.*
G9	3/4	PEMC/F	Isolated	*T. latifolia, Scirpus sp.,* and *P. amphibium;* 2–3' of standing water from flooding
H1	3	PEMC	Connected to drainage/creek	*T. latifolia, Scirpus spp., Carex spp.* on fringe
H1	3	PEMC	Connected to drainage/creek	*T. latifolia, Scirpus spp., Carex spp.* on fringe
H2	2	PEMB	Isolated	*Carex spp., T. latifolia, Scirpus americana*
H3	2	PEMB	Isolated	*Polygonum amphibium, Carex spp.*
H4	2	PEMA	Isolated	*Carex spp., T. laifolia, Polygonum*

ATTACHMENT 3-2: WETLAND MAPS

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