TRANSMITTAL

To: Bureau of Design and Environment
Attn: Matthew J. Sunderland
From: Illinois Natural History Survey
Topic: Mitigation Monitoring

Route and Location

Project Name: FAP 301 (US 20)(west Freeport bypass)
County: Stephenson
Job Number: P92-029-02
Sequence Number: 10487
Section Number: 177-2
Location: At the wetland compensation site near the Jane Addams Bike Trail; ISGS Site 6W

Surveys Conducted by: Jesse Kurylo, Paul Tessene, Jeff Matthews, Mary Ann Feist, and Brad Zercher
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Date Conducted: 11 August and 17 October 2008

Project Summary:

We conducted the second year of monitoring of a site for wetland impact mitigation resulting from proposed construction and addition of lanes on the west Freeport bypass on US 20 in Stephenson County. The site involves the creation, restoration, and preservation of wetlands. The Illinois Department of Transportation established the site in 2006, planting trees. The attached report includes an explanation of monitoring methods and results. We also discuss the progress toward attaining project goals.

Signed: _____ Signed: _____

Dr. Allen E. Plocher
INHS/IDOT Project Coordinator

Dr. Edward J. Heske
INHS/IDOT Project Principal Investigator

Date: _____ Date: _____

Wetland Mitigation Monitoring Report for the FAP 301 (US 20 – Freeport bypass) site near the Jane Addams Trail (ISGS Site 6W), Stephenson County, Illinois

(Second monitoring year--2008)

Introduction

This report describes the second year of monitoring of a wetland created to mitigate for wetlands affected by the construction of another set of lanes for the FAP 301 (US 20) bypass around Freeport. The entire compensation site is 9.6 ha (23.6 acre) and the majority of that area is monitored for wetland creation (Figure 1, Appendix 2). Trees were planted on former agricultural fields in the floodplain of the Pecatonica River on 25 May 2006. A drainage-way was plugged with dirt and rocks near its outlet into the oxbow at the west edge of the site. This was completed on 27 September 2006. Its purpose was to hold water on the site for longer periods.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results. Methods and results are discussed for performance criteria for each goal. Photo stations were established and photos can be found in Appendix 3.

Goals, Objectives, and Performance Criteria

The goals, objectives, and performance criteria described below follow those listed in the request to monitor the site (Matthew J. Sunderland, IDOT, 9 November 2006). Each goal should be attained by the end of a five-year monitoring period.

Project Goal 1: The created wetland community should be a jurisdictional wetland as defined by current federal standards.

Objective: The created wetland will be formed through plugging a ditch that drained former crop fields on the site.

Performance criteria:

a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic.

b. Presence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site.

c. Presence of wetland hydrology: The area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or be saturated to the surface for at least 5% of the growing season when the site also meets the soils and vegetation criteria or 12.5% of the growing season if the other two criteria are not met.

Project Goal 2: The created wetland community should meet standards for floristic composition and vegetation cover.

Objective: A floodplain forest will be created by planting native woody species. Herbaceous vegetation will be allowed to colonize the site naturally.

Performance criteria:

a. Planted species survivorship: At the end of the five-year monitoring period, at least 55 planted trees per acre will be present and healthy in the created wetland site.

b. Native species composition: At the end of the five-year monitoring period, at least 50% of total species should be non-weedy, native perennial species.

c. Dominant plant species: None of the three most dominant plant species in the planned wetland should be non-native or weedy species, such as cattail, sandbar willow, or reed canary grass.

Methods

Project Goal 1

a) Predominance of hydrophytic vegetation

The method for determining dominant hydrophytic vegetation at a wetland site is described in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), based on areal coverage estimates for individual plant species. Each of the dominant plant species is assigned its wetland indicator rating (Reed 1988). A plant species that is rated facultative or wetter (FAC, FAC+, FACW, or OBL) is considered to be hydrophytic. If more than 50% of the dominant species present are hydrophytic, this criterion of wetlands is met.

b) Occurrence of hydric soils

To monitor hydric soil development, the soil was sampled at various locations within each cover type in 2007. Soil profile morphology, including horizon color, texture, and structure was analyzed at representative points throughout the site. Additionally, the presence, type, size, and abundance of redoximorphic features were recorded. In the absence of hydric soil indicators, hydrologic data can be used to confirm that conditions favorable for hydric soil formation persist at the site (Environmental Laboratory 1987).

c) Presence of wetland hydrology

The extent of wetland hydrology at the Freeport Bypass West Potential Wetland Compensation Site 6W was monitored by the Illinois State Geological Survey and is shown on the accompanying figure (Fucciolo et al. 2008)(Appendix 2 in this report). Wetland hydrology occurs when inundation or saturation to land surface is present for greater than 5% of the growing season (9 days at this site) where the soils and vegetation parameters in the Corps of Engineers Wetland Delineation Manual also are met; if either is lacking, then inundation or saturation must be present for greater than 12.5% of the growing season (23 days at this site) to satisfy wetland hydrology criteria (Environmental Laboratory 1987 [http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf]). Inundation and saturation at the site were monitored using a combination of 20 monitoring wells and 3 stage gauges. Water levels were measured at least biweekly during April and May, and monthly during the remainder of the year. Manual readings were supplemented by 2 dataloggers, which measure surface- and ground-water levels at regular intervals to document all hydrologic events. Additional

details regarding site conditions and monitoring results for wetland hydrology in 2008 are summarized in ISGS Annual Report for Active IDOT Wetland Compensation and Hydrologic Monitoring Sites, September 1, 2007 to September 1, 2008 (Fucciolo et al. 2008).

Project Goal 2

a) Planted species survivorship
In May 2006, saplings were planted on the two former crop fields within the wetland mitigation site at the rate of 100 per acre (IDOT Conceptual Wetland Compensation Plan, FAP 301, Section 177-2, March 2005, amended). All living planted trees were counted and assigned to species. Apparent dead stems of the planted species were also counted. Planted tree species tallied on the site were *Carya illinoensis, Fraxinus pennsylvanica, Platanus occidentalis, Quercus bicolor,* and *Quercus palustris. Juglans cinerea* had also been planted on the site, although it was not specifically listed.

b) Native species composition, and
c) Dominant plant species

The entire wetland mitigation site is comprised of two former crop fields, with existing wetland and buffer areas also present. Areas of existing wetland (flood plain forest and a wet meadow drainage-way) and areas where no efforts are being made to restore or create wetlands were excluded from monitoring. Therefore, only the two former crop fields where trees are planted were monitored this year.

A separate plant species list was made for each of the wetland determination sites, representing the different vegetation cover types of the site. Dominant plant species for each wetland determination site were determined by visual assessment of each area. Planted tree species were added to the species lists for the two wetland determination sites, except for *Fraxinus*, which also occurred as volunteers on each site from nearby floodplain forest.

To calculate percent perennial, non-weedy native (PNWN) species, the total number of native perennials was divided by the total number of species on the site. Trees were included as perennials, but biennials were excluded.

Included with the assessment of a site is the site's Floristic Quality Index, as described by Swink and Wilhelm (1994) and Taft *et al.* (1997). Although the Index is not a substitute for quantitative vegetation analysis in assessing plant communities, it provides a measure of the floristic integrity or level of disturbance of a site. Each plant species native to Illinois is assigned a rating between 0 and 10 (the Coefficient of Conservatism) that is a subjective indicator of how likely a plant may be found on an undisturbed site in a natural plant community. A plant species that has a low Coefficient of Conservatism (c) is likely to tolerate disturbed conditions; a species with a high c is likely to require specific, undisturbed habitats. Species that are not native to Illinois are not rated.

The Florisitic Quality Index (FQI) is calculated as follows: $FQI = R/\sqrt{N}$, where R represents the sum of the numerical ratings (C) for all species recorded for a site, and N represents the number of native plant species on the site. The mean C value (also known as mean rated quality) was

also calculated for each site. This value is calculated as follows: mCv = R/N. The C value for each species is shown in the species list for the site. Species not native to Illinois (indicated by ** in the species list for each site) are not included in calculations. An Index score below 10 suggests a site of low natural quality; below five, a highly disturbed site. A FQI value of 20 or more (mCv > 3.0) suggests that a site has evidence of native character and may be considered an environmental asset. Sites with FQI values of 35 of more (mCv > 3.5) are considered to be of natural area quality.

Results and discussion

Project goal 1

a) Predominance of hydrophytic vegetation

Dominant plant species for each of the wetland determination sites are presented in Tables 1 and 2. A full list of plant species observed is presented in the wetland determination forms at the end of this report (Appendix 1).

Table 1. Dominant plant species in the non-native grassland at wetland determination Site 1.

Dominant Plant Species	Indicator Status	Stratum
1. *Conzya canadensis*	FAC-	herb
2. *Poa pratensis*	FAC-	herb

Site 1 did not have dominant hydrophytic vegetation this year. This site occurs at a higher an elevation than the rest of the wetland creation site.

Table 2. Dominant plant species in the wet meadow at wetland determination Site 2.

Dominant Plant Species	Indicator Status	Stratum
1. *Echinochloa muricata*	OBL	herb
2. *Phalaris arundinacea*	FACW+	herb
3. *Polygonum pensylvanicum*	FACW+	herb

b) Presence of hydric soils

The NRCS mapped the poorly drained Sawmill silty clay loam and a wetter version of that series over the vast majority of the site. The somewhat poorly drained Lawson silt loam was mapped in the very northeast portion of the project area (Ray et al. 1976), but was not found during any of the field investigations. Soil borings were made in 2003 by the ISGS and a rough soils map was compiled in January of 2006 by INHS personnel (Plankell and Weaver-Miner 2007). The findings of the ISGS and INHS personnel from that 2007 report were consistent with each other. The soils map provided by INHS personnel in Plankell and Weaver-Miner (2007) shows the poorly drained Otter silt loam over a large portion of the site and the well drained Batavia silt loam on the western and southern portions of the site.

Much effort was made this year to create a more accurate soils map of the monitoring area. The break between hydric and non-hydric remains largely the same as was reported in Plankell and Weaver-Miner (2007). In the northeast corner of the site is a well drained soil, Dickinson sandy loam (Table 3). This sloping area has a low likelihood of becoming hydric. Batavia silt loam (Table 4) is well to moderately-well drained soil mapped on the western portion of the monitoring area. Batavia covers the largest extent of all the soil mapping units within the monitored areas. The likelihood of this soil becoming hydric is undetermined and would be largely dependant on the duration of wetland hydrology on the site. The minor amount of redox concnetrations present in this soil surface horizon are the likely result of flooding this year and will not continue to develop without wetland hydrology. Sawmill silty clay loam, a poorly drained soil, is mapped within and along the wet meadow drainage-way running through the northeast corner and along the eastern side of the monitoring area. Thorpe silt loam (Table 5), a poorly drained soil, is mapped between the Sawmill and Batavia soils. This soil makes up the majority of the hydric soils within the monitored areas. The approximate extent of hydric soils within the monitored area can be found on Figure 1.

Table 3. Soil from the northeast corner of the tree planting area (Site 1) (Dickinson sandy loam)

Depth [cm]	Matrix Color	Redox Concentrations	Redox Depletions	Texture	Structure
0-25	10YR 2/2	-	-	sandy loam	granular
25-38	10YR 3/3	-	-	silt loam	very weak subangular blocky
38-56	10YR 3.5/4	-	-	silt loam	weak subangular blocky
56-91	10YR 4/6 & 10YR 3/3	-	-	sandy loam	weak subangular blocky

Table 4. Dominant non-hydric soil from the larger tree planting area (Site 2) (Batavia silt loam)

Depth [cm]	Matrix Color	Redox Concentrations	Redox Depletions	Texture	Structure
0-20	10YR 2/1	10YR 4/6, less than <2%	-	silty clay loam	subangular blocky
20-76	10YR 4/3	-	10YR 4/2 in small root zones	clay loam to silty clay loam	subangular blocky
76-102	10YR 4/3 & 10YR 3/3	-	10YR 4/2 in small root zones	silty clay loam	subangular blocky

Table 5. Dominant hydric soil from the tree planting areas (Site 2) (Thorpe silt loam)

Depth [cm]	Matrix Color	Redox Concentrations	Redox Depletions	Texture	Structure
0-25	10YR 2/1	-	-	silty clay loam	subangular blocky
25–38	10YR 4/2	7.5YR 3/3	-	silty clay loam	subangular blocky
38-89	10YR 4/2	10YR 4/8	-	silty clay loam	subangular blocky
89-102	10YR 5/2	7.5YR 4/6 & 10B 5/0 soft	-	silty clay	subangular blocky

masses

c) Presence of wetland hydrology

The berm placed across the wooded drainage-way up-stream from the oxbow pond was holding during site visits on 11 August and 17 October 2008 and likely contributed to increasing the period of wetland hydrology on site.

Field evidence of wetland hydrology included low landscape position over portions of the site, drift and drift lines, wetland drainage patterns, and areas of saturated soils and shallow inundation in existing wetlands adjacent to the restoration areas. Water marks were observed (17 October 2008) on trees at a height of 1.7 m (5.5 ft) along the eastern side of the project area and at about 1.2 m (4 ft) on the western side of the project area.
Well data from instruments placed by ISGS personnel estimated that 9.5 ha (23.3 acres) of the site met the wetland hydrology criterion for at least 12.5% of the 2008 growing season. The remaining 0.1 ha (0.3 ac) of the site, in the extreme northeast corner (within Site 1), only met the wetland hydrology criterion for 5% of growing season. An above normal amount of rain and flooding on the Pecatonica River contributed to the wetland hydrology of this site. The ISGS estimates of areas that met the 5% and 12.5% benchmarks for wetland hydrology are shown in Appendix 2.

Project Goal 2

a) Survival of planted trees

Table 6 presents data for planted tree survival, with numbers of observed live and apparent dead stems. Density of live stems of each species is also listed.

Table 6. Observed survival of planted trees in 2008

Species	Total stems Observed	(north field)	(south field)	Total density live/acre (live/ha)
Carya illinoensis	261	225	36	15.24 (37.63)
Fraxinus pennsylvanica	295	270	25	17.22 (42.54)
Platanus occidentalis	243	221	22	14.19 (35.04)
Quercus bicolor	229	205	24	13.37 (33.02)
Quercus palustris	311	291	20	18.16 (44.84)
Total live stems	1339	1212	127	78.17 (193.07)
Dead	268	240	28	

In the second year of observation, most of the planted trees seem to still be doing well. Survival exceeds the project goal of 55 established planted trees/acre. Continued establishment of many saplings along the northern portion of the drainage-way, in particular, appear hampered by the wire cages installed to help protect them. These cages are rubbing bark and causing wounds or have become mangled and are thwarting resprouting.

Seedlings and small shrub-sized individuals of native trees were also observed on the tree planting areas. These will continue to come in from surrounding woodlands and hasten the development of the planned wetland areas on the mitigation site as floodplain forest.

b) Native species composition and

c) Dominant plant species

Among the project goals for the mitigation site are that a majority of species on the site be native, non-weedy perennials, and that none of the dominant species be non-native or weedy species such as reed canary grass, cattail, or sandbar willow. Table 7 presents the total number of plant species, number of native species, perennial non-weedy native species (PNWN) and percent of PNWN species for each of the wetland determination sites within the wetland mitigation site.

Table 7. Percent perennial, non-weedy native species (PNWN)

Site #	Total species	Native	PNWN	% PNWN
1 non-native grassland	34	22	9	26.5
2 wet meadow	50	43	21	42.0

Neither Sites 1 or 2 have percentages for perennial native species that meet project goals. However for Site 1 there was a 16.5% increase from 2007 and Site 2 had a 16.6% increase. The number of perennial native species would normally be expected to increase over time. At this time all dominant species are either non-native or weedy native species.

The existing wet meadow drainage-way continues to have *Phalaris arundinacea* (reed canary grass) as a dominant. This non-native, aggressive perennial grass can spread quickly by seed and rhizomes under suitable conditions, and is very likely to invade the former crop fields. This species was common before the mitigation site was established (Plankell and Weaver-Miner 2007). The project goal that more than 50% native, non-weedy species dominate the site is threatened by this species, as well as the goal that *Phalaris* not be a dominant on the site. Control with herbicides and or well-timed mowings should be considered, being careful to avoid other, more desirable, vegetation.

Summary and Recommendations

Both 2007 and 2008 were unusual years hydrologically, with above average precipitation and subsequent flooding on the Pecatonica River. The berm across the wooded drainage-way up-stream from the oxbow pond appears to be helping to retain water on the site for longer periods, contributing to wetland hydrology.

Planted tree species appeared to be doing well, exceeding project goals. Natural colonization by woody species growing in the surrounding wetlands will add to tree density. Effort should be made to remove the wire cages from the trees along the wet meadow drainage-way in the northeastern portion of the site. Many of the trees have severe bark rubbing or the cage is disfigured enough to impede the growth of the trees. Additionally, all the *Juglans cinerea* that were planted in the northwest portion of the site appear to be dead.

Phalaris arundinacea (reed canary grass) is a potential threat to project goals for native species richness and dominance, since it is common in the field between US 20 and the site and within

the existing wet meadow drainage-way along the east side of the site, it could easily spread into the disturbed ground of the former crop fields. Some effort to control it using herbicide and/or mowing should be made.

From Figure 1, the area meeting all three wetland criteria can be discerned by locating the area of hydric soil. This area is approximately 2.3 ha (5.8 ac).

Literature Cited

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Appendix 1

Wetland Determination Forms

ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 1 of 3)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
Job No.: P92-029-02 **Project Name**: FAP 301 (US 20-Freeport bypass)
State: Illinois **County**: Stephenson **Applicant**: IDOT District 2
Site name: non-native grassland
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: Former crop field in the northeast corner of the mitigation site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Conzya canadensis*	FAC-	herb
2. *Poa pratensis*	FAC-	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 0%

Hydrophytic vegetation: Yes: No: X
Rationale: Fewer than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS
Series and phase: NRCS mapped as Lawson silt loam, revised to Dickinson sandy loam
On Stephenson County hydric soils list? Yes: No: X
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox concentrations? Yes: No: X Color: N/A
Redox depletions? Yes: No: X Color: N/A
Matrix color: 10YR 2/2 over 10YR 3/3
Other indicators: The site is situated on a slope above the rest of the project area.

Hydric soils: Yes: No: X
Rationale: The Natural Resources Conservation Service classifies Dickinson as having well drained conditions. This soil has a subsurface matrix color too bright to be considered hydric and the soil lacks any redoximorphic features.

ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 2 of 3)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
Job No.: P92-029-02 **Project Name**: FAP 301 (US 20-Freeport bypass)
State: Illinois **County**: Stephenson **Applicant**: IDOT District 2
Site name: non-native grassland
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: Former crop field in the northeast corner of the mitigation site

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: None
Depth to saturated soil: More than 0.9 m (36 in)
Overview of hydrologic flow through system: Precipitation, sheet flow, and rare overflow from the Pecatonica River contribute water to this site. Water leaves the site by evapotranspiration, soil infiltration, and sheet flow to Site 2 and the drainage-way running through the project area.
Size of watershed: About 3367 km^2 (1300 mi^2)
Other field evidence observed: This site is located on a slope at the edge of a floodplain.

Wetland hydrology: Yes: No: Undetermined: X
Rationale: This site is on a slope and at an elevation that appears to rarely flood in normal years. This site did not meet the wetland hydrology criterion in 2007. The ISGS found the whole site to have wetland hydrology during 5% of the growing season and about half the site to also meet the wetland hydrology criterion for 12.5% of the growing season.

WETLAND DETERMINATION AND RATIONALE

Is the site a wetland? Yes: No: X
Rationale: This site is not likely to become a wetland despite having made wetland hydrology during this past year.

Determined by: Jesse Kurylo (soils and hydrology)
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ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 3 of 3)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
Job No.: P92-029-02 **Project Name**: FAP 301 (US 20-Freeport bypass)
State: Illinois **County**: Stephenson **Applicant**: IDOT District 2
Site name: non-native grassland
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: Former crop field in the northeast corner of the mitigation site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland Indicator	C*
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer saccharinum	silver maple	herb	FACW	1
Agropyron repens	quack grass	herb	FACU	**
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Apocynum cannabinum	dogbane	herb	FAC	2
Aster ontarionis	Ontario aster	herb	FAC	4
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Bromus inermis	smooth brome	herb	UPL	**
Cichorium intybus	chicory	herb	UPL	**
Cirsium vulgare	bull thistle	herb	FACU-	**
Conyza canadensis	horseweed	herb	FAC-	0
Daucus carota	Queen Anne's lace	herb	UPL	**
Echinochloa muricata	barnyard grass	herb	OBL	0
Erigeron annuus	daisy fleabane	herb	FAC-	1
Fraxinus pennsylvanica	green ash	(sapling), shrub, herb	FACW	2
Lolium perenne	perennial ryegrass	herb	FACU	**
Oenothera biennis	evening primrose	herb	FACU	1
Phalaris arundinacea	reed canary grass	herb	FACW+	**
Phleum pratense	timothy	herb	FACU	**
Poa pratensis	Kentucky bluegrass	herb	FAC-	**
Polygonum pensylvanicum	smooth smartweed	herb	FACW+	1
Populus deltoides	cottonwood	shrub, herb	FAC+	2
Potentilla norvegica	rough cinquefoil	herb	FAC	0
Rorippa islandica	yellow marsh cress	herb	OBL	4
Setaria faberi	giant foxtail	herb	FACU+	**
Solanum caroliniense	horse nettle	herb	FACU-	0
Taraxacum officinale	dandelion	herb	FACU	**
Trifolium pratense	red clover	herb	FACU+	**
Ulmus americana	American elm	shrub, herb	FACW-	5

* Coefficient of Conservatism (see introduction) ** Species not native to Illinois
Mean c value = $\sum C/N = 23/18 = 1.3$ FQI = $\sum C/\sqrt{N} = 23/\sqrt{18} = 5.4$

Including planted tree species:

Scientific name	Common name	Stratum	Wetland Indicator	C*
Carya illinoensis	pecan	sapling	FACW	6
Platanus occidentalis	sycamore	sapling	FACW	3
Quercus bicolor	swamp white oak	sapling	FACW+	7
Quercus palustris	pin oak	sapling	FACW	4

* Coefficient of Conservatism (see introduction)
Mean c value = $\sum C/N = 43/22 = 2.0$ FQI = $\sum C/\sqrt{N} = 43/\sqrt{22} = 9.2$

ROUTINE ONSITE WETLAND DETERMINATION
Site 2 (page 1 of 4)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
Job No.: P92-029-02 **Project Name**: FAP 301 (US 20-Freeport bypass)
State: Illinois **County**: Stephenson **Applicant**: IDOT District 2
Site name: wet meadow
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: The majority of the former crop fields away from the drainageway running along the east side of the mitigation site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Echinochloa muricata*	OBL	herb
2. *Phalaris arundinacea*	FACW+	herb
3. *Polygonum pensylvanicum*	FACW+	herb

Comment: Hydrophytic tree species are planted across the site, but no woody species dominates.

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS
Series and phase: Thorpe silt loam (eastern part of site) and Batavia silt loam (western part of site)
On Stephenson County hydric soils list? Yes: X (Thorpe) No: X (Batavia)
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox concentrations? Yes: X No: (Thorpe)
Redox depletions? Yes: No: X
Matrix color: 10YR 2/1 over 10YR 4/2 (Thorpe) and 10YR 3/1 over 10YR 4/3 (Batavia)
Other indicators: Soft masses in the subsurface horizons were found in the Thorpe soils.
Hydric soils: Yes: No: Undetermined: X
Rationale: The Natural Resources Conservation Service classifies Thorpe as having poorly drained conditions and Batavia as a well to moderately well drained soil. Thorpe soils have a low chroma over depleted matrix with prominent redox concentrations. These characteristics are evidence of a hydric soil and they meet the A11 hydric soil indicator from the NRCS. Batavia is not a hydric soil.

ROUTINE ONSITE WETLAND DETERMINATION
Site 2 (page 2 of 4)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
Job No.: P92-029-02 **Project Name**: FAP 301 (US 20-Freeport bypass)
State: Illinois **County**: Stephenson **Applicant**: IDOT District 2
Site name: wet meadow
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: The majority of the former crop fields away from the drainageway running along the east side of the mitigation site

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: None
Depth to saturated soil: At surface to below 0.6 m (24 in)
Overview of hydrologic flow through system: Precipitation, sheet flow, and overflow from the Pecatonica River and drainage-way running through the compensation site contribute water to this site. Water leaves the site by evapotranspiration, soil infiltration, and sheetflow to the drainage-way that runs through and along the compensation site.
Size of watershed: About 3367 km^2 (1300 mi^2)
Other field evidence observed: This site is within a floodplain. Saturated areas are present on the site adjacent to the drainage-way. We observed drift and a few drift lines.

Wetland hydrology: Yes: No: Undetermined: X
Rationale: ISGS calculations suggest that the site was flooded or saturated for at least 12.5% of the growing season this year. Last year the western part of the site only met the wetland hydrology criterion for 5% of the growing season. Both 2007 and 2008 were considered unusual for hydrology, so an accurate estimation of hydrology is premature.

WETLAND DETERMINATION AND RATIONALE

Is the site a wetland? Yes: No: Undetermined: X
Rationale: Despite dominant hydrophytic vegetation and wetland hydrology over the whole site, hydric soils do not exist over the whole site. Additionally, it is unknown if wetland hydrology will continue in coming years.

Determined by: Jesse Kurylo (soils and hydrology)
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(vegetation and hydrology)
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ROUTINE ONSITE WETLAND DETERMINATION
Site 2 (page 3 of 4)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
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Site name: wet meadow
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: The majority of the former crop fields away from the drainage-way running along the east side of the mitigation site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland Indicator	C*
Acer saccharinum	silver maple	shrub, herb	FACW	1
Alisma plantago-aquatica	water plantain	herb	OBL	2
Amaranthus tuberculatus	water hemp	herb	OBL	1
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Ammania coccinea	scarlet loosestrife	herb	OBL	5
Apocynum cannabinum	dogbane	herb	FAC	2
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster simplex	panicled aster	herb	FACW	3
Bidens comosa	swamp tickseed	herb	FACW	2
Bidens frondosa	beggar's ticks	herb	FACW	1
Boltonia asteroides	false aster	herb	FACW	5
Cardamine pensylvanica	Pennsylvania bittercress	herb	FACW+	3
Cyperus acuminatus	sedge	herb	OBL	2
Cyperus esculentus	yellow nutsedge	herb	FACW	0
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis obtusa	spike rush	herb	OBL	2
Eragrostis pectinacea	love grass	herb	FAC	0
Fraxinus pennsylvanica	green ash	shrub, herb	FACW	2
Gleditsia triacanthos	honey locust	herb	FAC	2
Hibiscus trionum	flower-of-an-hour	herb	UPL	**
Iris shrevei	blue flag iris	herb	OBL	5
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lemna minor	duckweed	herb	OBL	3
Lindernia dubia	false pimpernel	herb	OBL	5
Lysimachia nummularia	moneywort	herb	FACW+	**
Mentha arvensis	field mint	herb	FACW	4
Phalaris arundinacea	reed canary grass	herb	FACW+	**
Polygonum amphibium	water smartweed	herb	OBL	3
Polygonum hydropiper	water pepper	herb	OBL	**
Polygonum persicaria	lady's-thumb	herb	FACW	**
Polygonum pensylvanicum	smooth smartweed	herb	FACW+	1
Populus deltoides	cottonwood	shrub, herb	FAC+	2
Potentilla norvegica	rough cinquefoil	herb	FAC	0
Ranunculus abortivus	kidneyleaf buttercup	herb	FACW-	1
Ranunculus sceleratus	mud crowfoot	herb	OBL	3
Rorippa islandica	yellow marsh cress	herb	OBL	4

Species list continues on next page…

ROUTINE ONSITE WETLAND DETERMINATION
Site 2 (page 4 of 4)

Field Investigators: Kurylo, Tessene, Matthews, and Feist **Date**: 11 August 2008
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State: Illinois **County**: Stephenson **Applicant**: IDOT District 2
Site name: wet meadow
Legal Description: SW/4, SW/4, SW/4, Sec. 14, T.27N., R.7E.
Location: The majority of the former crop fields away from the drainageway running along the east side of the mitigation site

SPECIES LIST (concluded)

Scientific name	Common name	Stratum	Wetland Indicator	C*
Rumex altissimus	pale dock	herb	FACW-	2
Rumex crispus	curly dock	herb	FAC+	**
Sagittaria latifolia	common arrowhead	herb	OBL	4
Salix nigra	black willow	shrub, herb	OBL	3
Setaria faberi	giant foxtail	herb	FACU+	**
Solanum caroliniense	horse nettle	herb	FACU-	0
Sparganium eurycarpum	common bur-reed	herb	OBL	5
Typha latifolia	common cattail	herb	OBL	1
Ulmus americana	American elm	shrub, herb	FACW-	5

*Coefficient of Conservatism (see introduction) ** Species not native to Illinois
Mean c value = ∑C/N = 91/39 = 2.3 FQI =∑C/√N = 91/√39 = 14.6

Including planted tree species:

Scientific name	Common name	Stratum	Wetland Indicator	C*
Carya illinoensis	pecan	sapling	FACW	6
Platanus occidentalis	sycamore	sapling	FACW	3
Quercus bicolor	swamp white oak	sapling	FACW+	7
Quercus palustris	pin oak	sapling	FACW	4

* Coefficient of Conservatism (see introduction)
Mean c value = ∑C/N = 111/43 = 2.6 FQI =∑C/√N = 111/√43 = 17.0

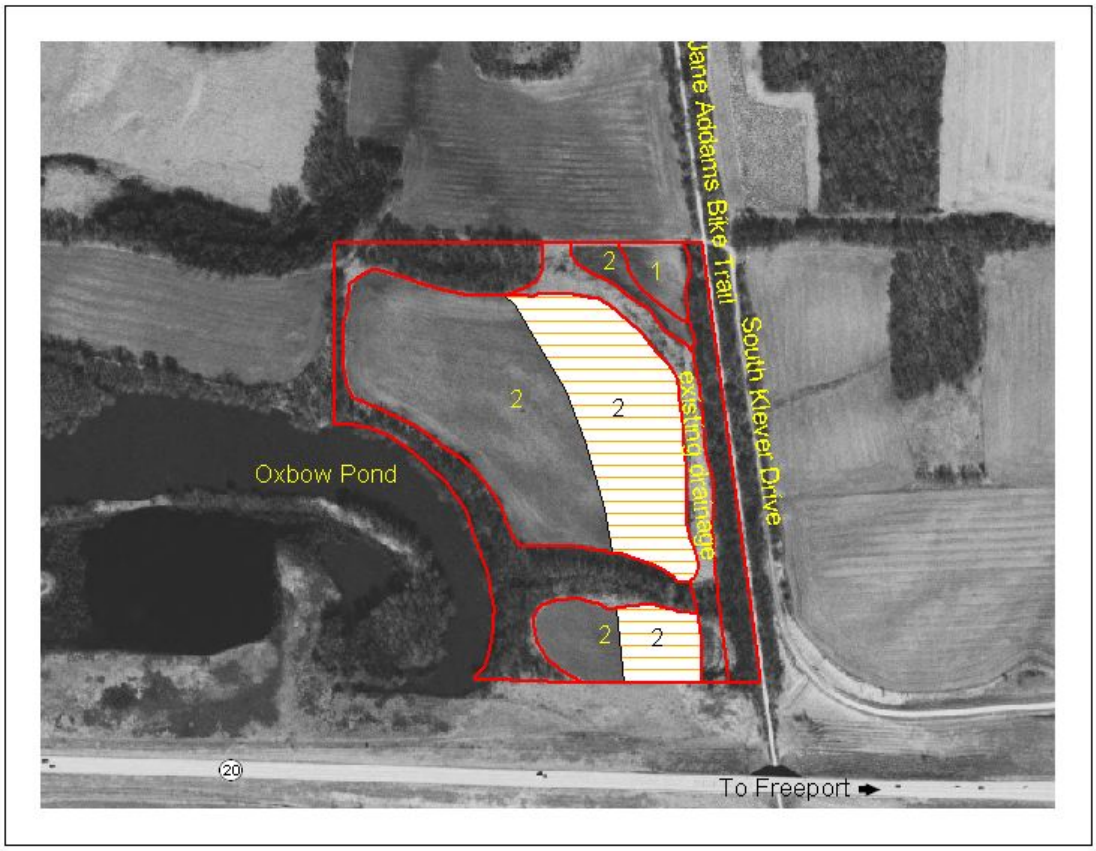
Appendix 2

Figures and Maps

Figure 1

Wetland Compensation Site Map

Jane Addams Bike Trail
Wetland Mitigation Site
Stephenson County - 2008



0 400 800 Feet

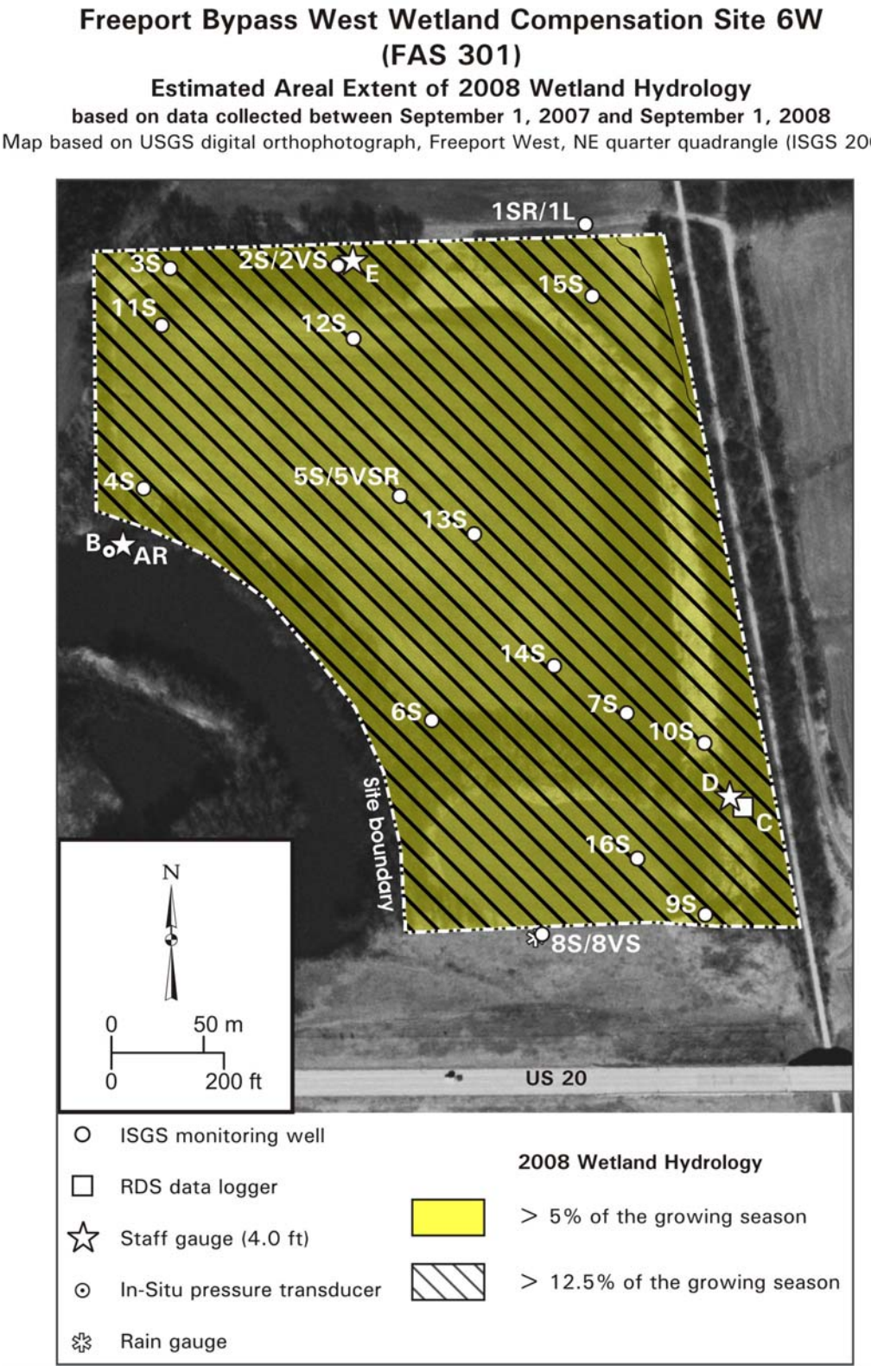
0 100 200 Meters

scale 1:4800
1 inch=400 ft

Project boundary and wetland sites
Hydric soil

01/09

Figure 2
ISGS Wetland Hydrology Map



Appendix 3
Photos

Photo Station 1 – South field, northeast corner looking southwest.

Photo Station 2 – South field, southwest corner looking northeast.

Photo Station 3 – North field, southwest corner looking northeast.

Photo Station 4 – North field, northwest corner looking southeast.

Photo Station 5 – North field, northeast corner looking southwest.

Photo Station 6 – North field, southeast corner looking northwest.