

TRANSMITTAL

To: Bureau of Design and Environment
Attention: Tom Brooks
From: Illinois Natural History Survey
Regarding: Wetland monitoring report

Title and Location:

Title: FAP 310 (US 67)
Section: 104RS-2, (104B)BR, (104B-1)BR, 105RS-2
County: Mercer
Contract Number: 88146
IDOT District: 4

Survey Conducted By: Mary Ann Feist, Jesse Kurylo, and Paul Tessene
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Date Conducted: 3 August 2006

Project Summary:

We monitored one wetland mitigation site for FAP 310 (US 67) in Mercer County, IL. The attached report includes an explanation of the monitoring methods and results for the eighth year of monitoring. Progress towards attaining project goals is also discussed. Photographs of the sites are included.

Signed: _____
Dr. Allen E. Plocher
INHS/IDOT Project Coordinator

Signed: _____
Dr. Edward Heske
INHS/IDOT Project Principal Investigator

Date: _____

Date: _____

WETLAND MITIGATION SITE MONITORING REPORT-2005

FAP 310 (US 67) Mercer County

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Introduction

This report details the eighth year monitoring for the wetland mitigation site created to compensate for impact to wetlands by construction on FAP 310 (US 67) in Mercer County. Details of the first seven years of monitoring can be found in the seven previously submitted reports (Feist et al. 1999, Feist et al. 2000, Feist et al. 2001, Feist et al. 2002, Feist et al. 2003, Feist et al. 2004, and Feist et al. 2005). The site is divided into two parts, a wetland creation (Site 1) approximately 0.69 ha (1.7 ac) in size and a wetland restoration (Site 2) approximately 0.28 ha (0.7 ac) in size. Monitoring of Site 2 was completed in 2003, however, monitoring of Site 1 will continue until 2007. The wetland creation (Site 1) is located in the southeast quarter of the intersection of U S Route 67 and the Edwards River. The legal location is NE 1/4, SW 1/4, Section 35, T. 15 N., R. 2 W. The Illinois Department of Transportation (IDOT) completed construction of the site on 12 August 1997. Trees were planted during the fall of 1998 (T. Brooks, IDOT Wetlands Unit, memo to Allen Plocher, 10 February 1999). Additional trees were planted at the site on 18 November 2004 in order to meet the performance standard of an 80% tree survival rate (Joseph E. Crowe, Deputy IDOT Director of Highways, memo to Donna M. Jones, Chief, Enforcement Section, USACE, 18 January, 2005). The eighth year of onsite monitoring was conducted on 3 August 2006.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and a discussion and recommendations based on the results. Methods and results are discussed by performance criteria for each goal.

Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those specified in the monitoring plan (T. Brooks, IDOT Wetlands Unit, 1999) and the wetland compensation plan (C. Perino, IDOT Wetlands Unit, 1996) developed for this site. Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and in *Guidelines for Developing Mitigation Proposals* (USACE 1993). Each goal was to be attained by the end of the initial five-year monitoring period. Wetland hydrology was not achieved within this time period. Alterations were made to the site in 2004 and the monitoring period was extended for three years (until 2007). Goals, objectives, and performance criteria are listed below.

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

Objective: The created wetland should compensate for the loss of 0.31 ha (0.76 ac) of floodplain forest and 0.09 ha (0.23 ac) of emergent wetland at a 1.5:1 ratio.

Performance criteria:

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

b. Presence of wetland hydrology: The area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.

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

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

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

Performance criteria:

a. Establishment of tree seedlings: Planted or volunteer tree seedlings should be established at each site. There should be at least an 80% survival rate for planted trees.

b. Floristic Quality Assessment: The floristic quality index (FQI) and mean coefficient of conservatism (\bar{c}) for both sites should meet or exceed the FQI and \bar{c} values of the filled wetlands, 7.0 and 2.0, respectively.

c. Dominance of vegetation: None of the three most dominant plant species in either site may be non-native species, cattails (*Typha* spp.), or reed canary grass (*Phalaris arundinacea*).

Project goal 3: The created wetland should function to remove sediments from the floodwaters of the Edwards River.

Objectives: The wetland creation site should retain floodwater and allow sediments to settle out of suspension.

Performance criteria:

a. Sediment removal: Sediments in the wetland should accumulate at a rate of 0.3 to 1.1 in/yr.

Methods

Project goal 1

a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter, *i.e.*, FAC, FAC+, FACW, and OBL, is considered a hydrophyte. A predominance of vegetation in the wetland plant community exists if more than 50% of the dominant species present are hydrophytic.

b. Presence of wetland hydrology

Illinois State Geological Survey (ISGS) personnel installed seven ground water monitoring wells and one stage gauge at the created wetland site (Site 1) in 1999. In 2001, one RDS surface-water data logger, one stage gauge, and three very shallow (VS) soil zone wells were added. In April 2002 three soil-zone monitoring wells were added along the base of the US 67 embankment. A figure showing the locations of these sites can be found in Appendix A. Water-level data was collected monthly throughout the year and biweekly during April and May. Methods are further described in the ISGS document *Annual report for active IDOT wetland compensation and hydrologic monitoring sites: September 1, 2003 to September 1, 2004* (Fucciolo et al. 2004).

c. Occurrence of hydric soils

The soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described at various points throughout the site. Additionally, the presence, type, size, and abundance of redoximorphic features were noted.

Hydric soils typically develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soil indicators at the end of the five-year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

Project goal 2

a. Establishment of trees (five-foot whips)

In order to help create and restore floodplain forest, five-foot whips were planted at the mitigation site. According to the tasking order for this project (T. Brooks, IDOT Wetlands Unit, memo to Allen Plocher, 10 February 1999), the following number of trees was planted at Site 1 in the fall of 1998:

Table 1. Species planted in the wetland creation (Site 1) in 1998.

Species	Common Name	Number
<i>Acer rubrum</i>	red maple	60
<i>Betula nigra</i>	river birch	60
<i>Quercus bicolor</i>	swamp white oak	60
<i>Quercus palustris</i>	pin oak	60

According to a memo from Joseph E. Crowe, Deputy IDOT, Director of Highways, to Donna M. Jones, Chief, Enforcement Section, USACE on 18 January 2005, additional trees were planted at the site on 18 November 2004 in order to meet the performance standard of an 80% tree survival rate. The number and species of trees planted in 2004 are shown in Table 2.

Table 2. Species planted in the wetland creation (Site 1) in 2004.

Species	Common Name	Number
<i>Betula nigra</i>	river birch	25
<i>Carya illinoensis</i>	pecan	25
<i>Fraxinus pennsylvanica</i>	Green ash	50
<i>Quercus bicolor</i>	swamp white oak	50

Survivorship and density of planted trees was determined by censusing. All live planted trees were counted. Volunteer seedlings were designated as occasional or abundant by species.

Density of live planted trees is given as the number of live planted trees/ha. Survival was calculated as a percentage of the number of expected live individuals: (Total number of live planted trees/the number of known planted trees) x 100.

b. Floristic Quality Assessment

The Floristic Quality Assessment (Taft et al. 1997) was applied to the plant community at the site to evaluate floristic quality and nativity. The assessment methodology is used to identify natural areas and facilitate floristic comparisons among sites. This technique is part of the procedure for the long-term monitoring of natural areas and the monitoring of restored or created wetlands (Swink and Wilhelm 1994). The premise of the method is that each native plant species is assigned a conservatism coefficient (C) ranging from 0 to 10. Individual conservatism coefficients are ranks of species behavior and reflect the committee's (Taft et al. 1997) confidence level for a taxon's correspondence to anthropogenic disturbances. Coefficient values range from 0 to 10. Plant species assigned 0 have low affinities for natural areas, whereas those assigned 10 have very high affinities. When a complete species list is assembled for a wetland site, the overall average conservatism coefficient (\bar{c}) and a site floristic quality index (FQI) can be calculated. These values provide a measure of site floristic quality. Floristic quality index values (FQI values) less than 5 indicate that the area is extremely weedy or in an early successional stage (Swink and Wilhelm 1994). FQI values between 20 and 35 ($\bar{c} = 3.0$) indicate that the area has evidence of native character and can

be considered a botanical asset. FQI values between 35 and 50 ($\bar{c} = 3.5$) indicate that the area has significant native character.

c. Dominance of vegetation

Plant species dominance was determined as in Project Goal 1, a. Predominance of hydrophytic vegetation. The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989).

In addition, three permanent photography stations were established so that photographs could be used to document changes in plant community size and composition. The locations of the photo stations are indicated on the enclosed aerial photograph (Appendix D). Arrows indicate the direction in which the photos were taken.

Project goal 3

a. Sediment removal

ISGS personnel installed 12 sediment traps in the wetland creation site (Site 1) in fall 1999. Trap locations are shown in the figure in Appendix A.

Results

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for the mitigation site in 2006 are shown in Table 3. At Site 1, 83.3% of the dominant species are rated OBL, FACW+, FAC+, or FAC and are hydrophytic. Hydrophytic vegetation was dominant over an area of 0.48 ha (1.2 ac) in 2006. The extent of this vegetation is shown on the enclosed aerial photograph (Appendix D).

Table 3. Dominant plant species by stratum and wetland indicator status for the wetland creation (Site 1).

Dominant Plant Species	Indicator Status	Stratum
1. <i>Acer saccharinum</i>	FACW	sapling/shrub
2. <i>Populus deltoides</i>	FAC+	sapling/shrub
3. <i>Aster simplex</i>	FACW	herb
4. <i>Phalaris arundinacea</i>	FACW+	herb
5. <i>Solidago canadensis</i>	FACU	herb
6. <i>Solidago gigantea</i>	FACW	herb

b. Presence of wetland hydrology

The figure in Appendix A shows the areal extent of wetland hydrology at Site 1 in 2006. Benton and Carr (2005) found that there was no part of the wetland that satisfied the wetland criteria for greater than either 5% or 12.5% of the growing season in 2006. Water levels measured in no wells conclusively satisfied the wetland hydrology criteria for either 5% or

12.5% of the growing season (Benton and Carr 2006). There was no surface-water inundation event recorded in the wetland basin in 2006. For a more detailed account of the hydrology of this site, see *Edwards River/Mercer County Wetland Compensation Site, I.S.G.S. #50* (Benton and Carr 2006).

c. Occurrence of hydric soils

Soil sampling was again much easier on the creation site than in the first years of monitoring. This improvement and continued horizonation is evidence of continued soil development on the site. Evidence of disturbance within the soil profile was again less obvious this year.

Hydric soil indicators are present. Following is a soil description of a typical pedon for the majority of the site.

Table 5. Description of the soils at the created wetland (site 1).

<u>Depth</u> (inches)	<u>Matrix</u> <u>Color</u>	<u>Concre</u> <u>-tions</u>	<u>Pore</u> <u>linings</u>	<u>Iron</u> <u>Deplet.</u>	<u>Clay</u> <u>Deplet.</u>	<u>Texture</u>	<u>Structure</u>
0-5	10YR 2.5/1	7.5YR 2.5/3	None	None	None	Silty Clay Loam	Granular to Subangular- Blocky
5-16	10YR 2.5/1	5YR 3/4	None	None	None	Silty Clay Loam	Subangular- Blocky
16-30	10YR 2.5/1	2.5YR 4/6	None	None	None	Silty Clay Loam	Subangular- Blocky

Project goal 2

a. Establishment of tree seedlings

Table 5 shows the 2006 results of the censusing of trees planted in 1998 at Site 1. No *Acer rubrum* were ever found at the created wetland site. Most likely, the reported number of *Acer rubrum* was never planted at the site. Therefore, I have calculated percent survival both with and without *Acer rubrum* included. Numbers in parentheses in Table 5 and the text below were calculated without *Acer rubrum* included. Of the trees planted in 1998, a total of 122 live planted trees are present for a survival rate of approximately 50.8% (76.3%)

Table 5. Tree establishment at the wetland creation (Site 1) for 2006 of trees planted in 1998.

Species	Number planted	Number live trees	Percent survival
<i>Acer rubrum</i>	60	0	0.0%
<i>Betula nigra</i>	60	51	85%
<i>Quercus bicolor</i>	60	44	73.3%
<i>Quercus palustris</i>	60	27	45.0%
Total	240 (180)	122 (122)	50.8% (76.3%)

Table 6 shows the results of the 2006 censusing of trees planted in 2004 at Site 1. Of the trees planted in 2004, a total of 55 live planted trees are present for a survival rate of 36.7%. The combined total of live planted trees present at the site is 177, 73.8% of the total number

of trees reported as planted in 1998. This is just under the performance criterion of 80% survival of live planted trees.

Table 6. Tree establishment at the wetland creation (Site 1) for 2006 of trees planted in 2004.

Species	Number planted	Number live trees	Percent survival
<i>Betula nigra</i>	25	8	32 %
<i>Carya illinoensis</i>	25	10	40 %
<i>Fraxinus pennsylvanica</i>	50	17	34 %
<i>Quercus bicolor</i>	50	20	40 %
Total	150	55	36.7 %

Both planted tree seedlings and volunteers are becoming established the site. There is a density of 253 live planted trees/ha (104 live planted trees/ac). Volunteer silver maple and cottonwood saplings and shrubs now outnumber the planted trees and are dominant at this site. Volunteer sandbar willow and black willow shrubs are present in thick patches along the borders of the site.

b. Floristic Quality Assessment

Two FQI values were calculated from the species lists included in Appendix B. The first FQI value is calculated from only species that became established on the site naturally; the second FQI value includes the planted tree species. The created wetland (Site 1) has an FQI value of 18.8 and a \bar{c} of 2.2 when only natural vegetation is included. When the planted tree species are added, the FQI value is raised to 20.7 with a \bar{c} value of 2.4. In both cases, the FQI values exceed the requirement of 7.0, and the \bar{c} values are higher than the required 2.0. FQI and \bar{c} values have increased steadily over the past six years of monitoring.

c. Dominance of vegetation

Site 1 no longer meets the performance criterion for dominance of vegetation. As reported previously (Feist et al. 2001, Feist et al. 2002, Feist et al. 2003), the amount of *Phalaris arundinacea* (reed canary grass) at the site has steadily increased over the past five years. It is now the most dominant herbaceous species at the site (Table 3). As a result, the performance criterion that none of the three most dominant plant species may be non-native species, cattails (*Typha* sp.), or reed canary grass (*Phalaris arundinacea*), is violated.

Photographs were taken from the permanent photography stations and are included in Appendix C of this report.

Project goal 3

a. Sediment removal

Benton and Carr (2006) reported that the Edwards River did not exceed the elevation necessary to flood the site, therefore, no riverine sediments were deposited on the site during the monitoring period.

Discussion

After the eighth year of monitoring, the created wetland site (Site 1) does not comply with all of the project goals, objectives, and performance standards. Although the planted trees and other hydrophytic vegetation are becoming established and hydric soil indicators were found, an exotic species (reed canary grass) has become established as a dominant and the wetland hydrology criteria have not been met in most years. The criteria for wetland hydrology were

met for the entire excavated basin in 2001 (Weaver and Carr 2001) and for a portion of the basin in 2002 (26%) and 2004 (52%) (Weaver and Carr 2002, Weaver and Carr 2004). However, in 2000 and 2003 only a small area around one well (1S and 3S respectively) met the criteria (Carr and Weaver 2000, Weaver and Carr 2003), and in 1999 and 2005 no portion of the site did (Miner 1999; Benton and Carr 2005). Once again in 2006, no portion of the site met the criteria for wetland hydrology (Benton and Carr 2006)

The problem with wetland hydrology at this site was believed to be the inlet/outlet located at the northwest corner of the site. The elevation of this inlet/outlet allowed the site to drain too quickly after flooding events. In April 2005 a berm was constructed at the northwest corner of the site to solve this problem and increase the amount of water retention in the wetland basin. However, precipitation during the 2005 and 2006 growing seasons were only 61% and 85% of normal, respectively, and no flood events of the Edwards River occurred during these times (Benton and Carr 2006, Benton and Carr 2005). Therefore, the effectiveness of the berm was impossible to determine in 2005 or 2006.

Volunteer and planted tree species are becoming well established at Site 1. The survival rate for the planted trees was 73.8% and numerous cottonwoods and silver maples have colonized the site. The dominant vegetation is hydrophytic and the FQI and \bar{c} values are above the required level. However, a non-native invasive, reed canary grass, is now the most dominant herbaceous species at the site. This invasive grass has the potential to take over the site and exclude other species. It may not be a problem in the future because once a dense forest canopy is established it should be shaded out, however, its progress should be monitored.

Soils have been seriously disturbed. Even so, the soils at the created wetland (Site 1) contain hydric soil indicators, and therefore can be characterized as hydric.

In summary, the site has adequate floristic quality, hydrophytic vegetation, and hydric soils. Hydrophytic vegetation was dominant over an area of 0.48 ha (1.2 ac) in 2006. The site also has wetland hydrology in some years. Hydrologic alterations were carried out in 2005 and additional trees were planted that brought the number of live planted trees to very close to 80% of the original number reported as planted at the site. Considerable natural vegetation is also present including sapling-sized cottonwoods and silver maples. Although reed canary grass is now dominant, we feel that after eight years, this marginal site is now very close to adequate performance.

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Appendix A
Hydrological Map

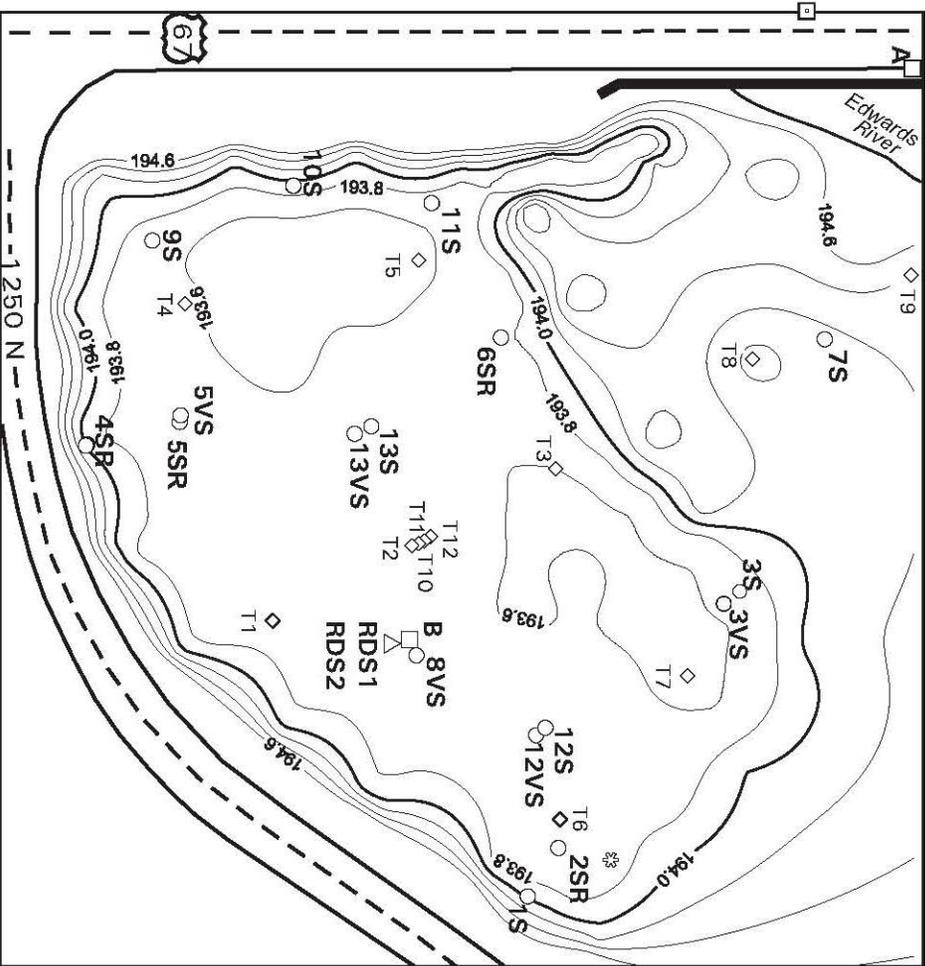
Edwards River, Mercer County Wetland Compensation Site (FAP 310)

Estimated Areal Extent of 2006 Wetland Hydrology

based on data collected between September 1, 2005 and September 1, 2006

Map based on 2002 ISGS elevation survey referenced to NGVD, 1929

contour interval is 0.2 meters



2006 Wetland Hydrology

-  > 12.5% of the growing season
-  > 5% of the growing season

	soil-zone wells
	Infinities sonic data logger
	stage gauge
	RDS data logger
	rain gauge
	T6 sediment trap

0 20 m
0 60 ft

N

Appendix B

Wetland Determination Forms

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 1 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

Do normal environmental conditions exist at this site?

Yes: No:

Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No:

VEGETATION

Dominant Plant Species

Indicator Status

Stratum

1. <i>Acer saccharinum</i>	FACW	sapling/shrub
2. <i>Populus deltoides</i>	FAC+	sapling/shrub
3. <i>Aster simplex</i>	FACW	herb
4. <i>Phalaris arundinacea</i>	FACW+	herb
5. <i>Solidago canadensis</i>	FACU	herb
6. <i>Solidago gigantea</i>	FACW	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 83.3%

Hydrophytic vegetation: Yes: No:

Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined.

On county hydric soils list? Yes: No: Undetermined:

Is the soil a histosol? Yes: No:

Histic epipedon present? Yes: No:

Redox concentrations: Yes: No: Color: 7.5YR 2.5/3 and 5YR 3/4

Redox depletions: Yes: No:

Matrix color: 10YR 2.5/1

Other indicators: None.

Hydric soils: Yes: No:

Rationale: This soil has a low chroma matrix and redox concentrations. Therefore, this is a hydric soil. This soil meets the hydric soil indicator F6 – Redox Dark Surface from the NRCS.

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 2 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

HYDROLOGY

Inundated: Yes:

No: X

Depth of standing water: NA

Depth to saturated soil: > 0.46 m (18 in)

Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from the Edwards River, precipitation, and runoff from surrounding higher ground. Water leaves the site primarily through evapotranspiration and soil infiltration.

Size of Watershed: 699 km² (270 mi²)

Other field evidence observed: This site is a low area in the floodplain of a fairly large river.

Wetland hydrology: Yes:

No: X

Rationale: Over eight years of monitoring, no well or portion of this site met the wetland hydrology criteria for more than three out of eight years. The criteria for wetland hydrology were met for the entire excavated basin in 2001 (Weaver and Carr 2001) and for a portion of the basin in 2002 (26%) and 2004 (52%) (Weaver and Carr 2002). However, in 2000 and 2003 only a small area around one well (1S and 3S respectively) met the criteria (Carr and Weaver 2000, Weaver and Carr 2003), and in 1999, 2005, and 2006 no portion of the site satisfied the wetland hydrology criteria (Miner 1999, Benton and Carr 2005, Benton and Carr 2006).

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes:

No: X

Rationale: Although dominant hydrophytic vegetation and hydric soils are present throughout this site, wetland hydrology is not. The NWI did not code this site as a wetland.

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 3 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer saccharinum</i>	silver maple	sapling, shrub	FACW	1
<i>Agropyron repens</i>	quack grass	herb	FACU	*
<i>Alliaria petiolata</i>	garlic mustard	herb	FAC	*
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Apocynum sibiricum</i>	Indian hemp	herb	FAC+	2
<i>Asclepias syriaca</i>	common milkweed	herb	UPL	0
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster praealtus</i>	willow-leaved aster	herb	FACW	4
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Bidens frondosa</i>	common beggar's ticks	herb	FACW	1
<i>Brassica kaber</i>	charlock	herb	UPL	0
<i>Calystegia sepium</i>	American bindweed	herb	FAC	1
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex cephalophora</i>	sedge	herb	FACU	3
<i>Carex conjuncta</i>	green-headed fox sedge	herb	FACW	5
<i>Carex cristatella</i>	sedge	herb	FACW+	3
<i>Carex davisii</i>	Davis sedge	herb	FAC+	3
<i>Carex normalis</i>	sedge	herb	FACW	4
<i>Carex sp.</i>	sedge	herb	----	--
<i>Carex stipata</i>	prickly sedge	herb	OBL	2
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	*
<i>Cichorium intybus</i>	chickory	herb	UPL	*
<i>Cirsium discolor</i>	pasture thistle	herb	UPL	3
<i>Conium maculatum</i>	poison hemlock	herb	FACW	*

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 4 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

SPECIES LIST *continued*

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Cornus drummondii</i>	rough-leaved dogwood	shrub	FAC	2
<i>Cryptotaenia canadensis</i>	honestwort	herb	FAC	1
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Eupatorium rugosum</i>	white snakeroot	herb	FACU	2
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Festuca pratensis</i>	meadow fescue	herb	FACU-	*
<i>Fraxinus pennsylvanica</i>	green ash	shrub	FACW	2
<i>Galium aparine</i>	annual bedstraw	herb	FACU	0
<i>Geranium carolinianum</i>	wild cranesbill	herb	UPL	2
<i>Geum canadense</i>	white avens	herb	FAC	2
<i>Glechoma hederacea</i>	ground ivy	herb	FACU	*
<i>Hackelia virginiana</i>	stickseed	herb	FAC-	1
<i>Helianthus strumosus</i>	pale-leaved sunflower	herb	UPL	3
<i>Helianthus tuberosus</i>	Jerusalem artichoke	herb	FAC	3
<i>Hordeum jubatum</i>	squirrel-tail	herb	FAC+	*
<i>Hypericum sphaerocarpum</i>	round-fruited St. Johns-wort	herb	FACU	5
<i>Impatiens capensis</i>	jewelweed	herb	FACW	2
<i>Ipomoea lacunosa</i>	small white morning-glory	herb	FACW	1
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Lactuca biennis</i>	biennial lettuce	herb	FAC	4
<i>Lactuca serriola</i>	prickly lettuce	herb	FAC	*
<i>Lycopus americanus</i>	common water horehound	herb	OBL	3
<i>Lycopus virginicus</i>	bugle weed	herb	OBL	5
<i>Lysimachia ciliata</i>	fringed loosestrife	herb	FACW	4
<i>Mentha arvensis villosa</i>	field mint	herb	FACW	4
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 5 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

SPECIES LIST *continued*

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Pastinaca sativa</i>	parsnip	herb	UPL	*
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Physostegia virginiana</i>	false dragonhead	herb	FACW	6
<i>Plantago rugelii</i>	red-stalked plantain	herb	FAC	0
<i>Poa pratensis</i>	Kentucky bluegrass	herb	FAC-	*
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum scandens</i>	climbing buckwheat	herb	FAC	2
<i>Polygonum sp.</i>	smartweed	herb	----	--
<i>Populus deltoides</i>	eastern cottonwood	sapling, shrub	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Prunella vulgaris</i>	self-heal	herb	FAC	*
<i>Ranunculus abortivus</i>	little-leaf buttercup	herb	FACW-	1
<i>Rorippa palustris</i>	marsh yellow cress	herb	OBL	4
<i>Rosa multiflora</i>	multiflora rose	herb	FACU	*
<i>Rubus allegheniensis</i>	common blackberry	herb	FACU+	2
<i>Rudbeckia laciniata</i>	cutleaf coneflower	herb	FACW+	3
<i>Rumex altissimus</i>	pale dock	herb	FACW-	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix amygdaloides</i>	peach-leaved willow	shrub	FACW	4
<i>Salix exigua</i>	sandbar willow	shrub	OBL	1
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Sanicula gregaria</i>	common snakeroot	herb	FAC+	2
<i>Sicyos angulatus</i>	bur cucumber	herb	FACW-	3
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Solidago gigantea</i>	late goldenrod	herb	FACW	3
<i>Sonchus arvensis</i>	field sowthistle	herb	FAC-	*
<i>Taraxacum officinale</i>	common dandelion	herb	FACU	*
<i>Teucrium canadense</i>	American germander	herb	FACW-	3

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 6 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

SPECIES LIST *continued*

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Thlaspi arvense</i>	field penny cress	herb	UPL	*
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Ulmus americana</i>	American elm	shrub	FACW-	5
<i>Urtica dioica</i>	stinging nettle	herb	FAC+	2
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Veronica peregrina</i>	purslane speedwell	herb	FACW+	0
<i>Vitis riparia</i>	riverbank grape	woody vine	FACW-	2

†Coefficient of Conservatism (Taft et al. 1997)

*Non-native species

$$\bar{C} = \sum C/N = 158/71 = 2.2$$

$$FQI = \bar{C} / \sqrt{N} = 158 / \sqrt{71} = 18.8$$

PLANTED TREES

Scientific name	Common name	Stratum	Wetland indicator status	C†
<i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Quercus bicolor</i>	swamp white oak	tree	FACW+	7
<i>Carya illinoensis</i>	pecan	tree	FACW	6
<i>Betula nigra</i>	red birch	tree	FACW	4

†Coefficient of Conservatism (Taft et al. 1997)

*Non-native species

$$\bar{C} = \sum C/N = 179/75 = 2.4$$

$$FQI = \bar{C} / \sqrt{N} = 179 / \sqrt{75} = 20.7$$

ROUTINE ONSITE WETLAND DETERMINATION

Site 1 (page 7 of 7)

Field Investigators: Feist, Kurylo, and Tessene

Date: 3 August 2006

Project Name: FAP 310 (US 67)

Section No.: 104RS-2, (104)BR, (104-1)BR, 105RS-2

State: Illinois

County: Mercer

Applicant: IDOT District 4

Site Name: Wetland creation

Legal Description: NE 1/4, SW 1/4, Sec. 35, T. 15 N., R. 2 W

Location: This wetland creation site is located 38.1 m (125 ft) south of the Edwards River and 15.2 m (50 ft) east of US 67.

Determined by: Mary Ann Feist, Jeff Matthews, and Paul Tessene
(vegetation and hydrology)

Jesse Kurylo

(soils and hydrology)

Illinois Natural History Survey

1816 South Oak St.

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Appendix C

Photographs of Wetland Mitigation Sites

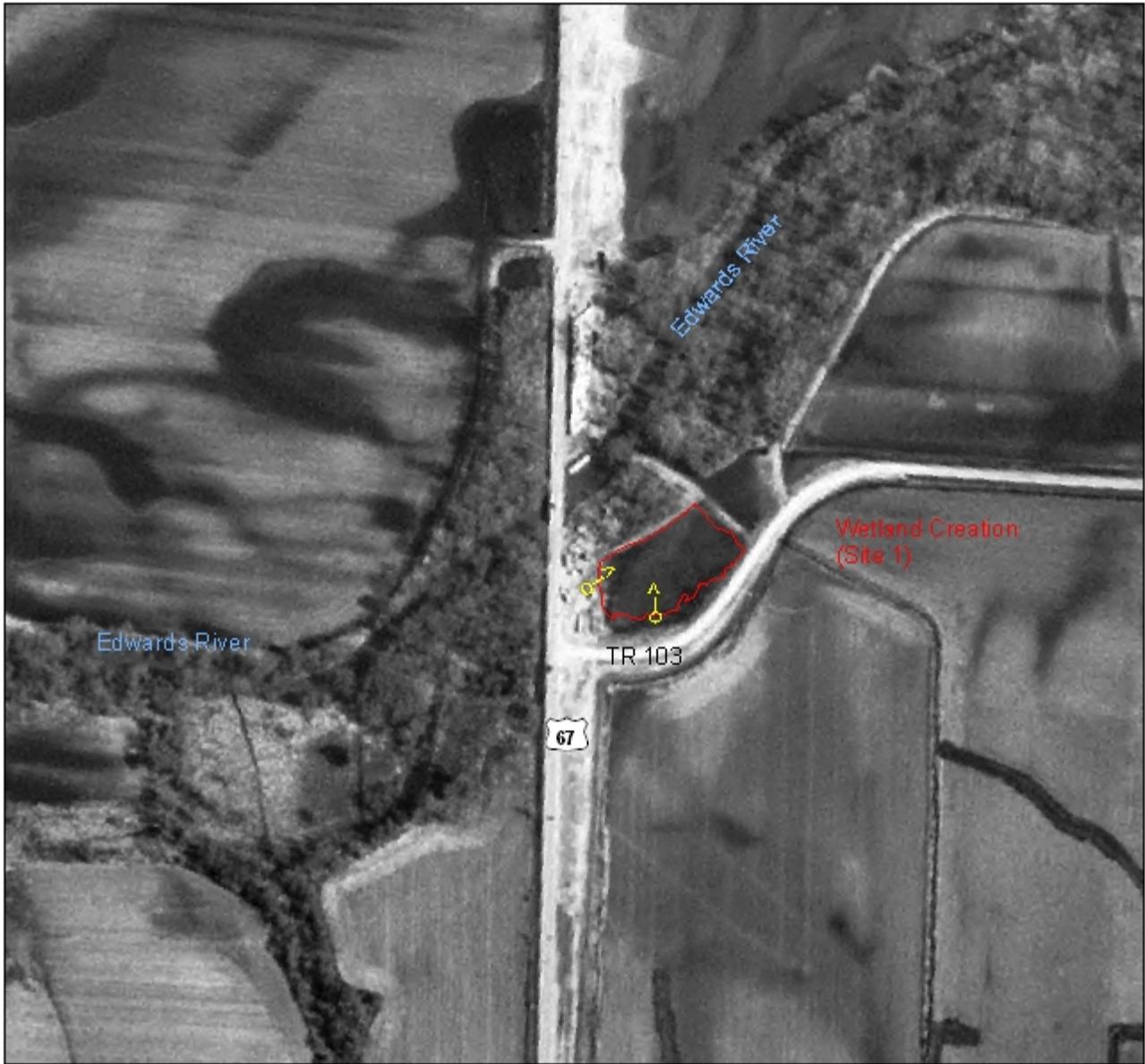


Photo-station 1. View of wetland creation (Site 1) facing northeast.



Photo-station 2. View of wetland creation (Site 1) facing north.

Edwards River Mitigation Site FAP 310, Mercer County



Scale: 1:4800
1 inch = 400 feet

Legend

 Wetland Creation Site

 Photo Station



0 40 80 160 240 320
Meters

0 137.5 275 550 825 1,100
Feet

Aug 2006 sg
doq 1998