

Wetland Mitigation Monitoring for FAP 312 /IL 3 (Sugar Camp Creek) - 2005

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Introduction

Road construction along IL 3 will result in impacts to 1.41 ha (3.49 acres) of wetland, including a site with Floristic Quality > 20.0 and harboring the State Threatened rice rat (*Oryzomys palustris*). A compensation plan was prepared which called for floodplain forest and emergent wetland restoration at a ratio of 5.5:1 (7.77 ha (19.19 acres)) at a site along Sugar Camp Creek near Benton, IL in Franklin Co. (Legal location: T 5 S, R 4 E, Sect. 32, SE/4 SE/4). Sugar Camp Creek enters the Middle Fork of the Big Muddy River 0.91 km (0.57 mi) south of the property. Over 405 ha (1000 ac) of floodplain forest, including one contiguous 600 acre block along the Middle Fork, occur within 7.25 km (4.5 mi) of the tract. The site consists of a wet, fallow agricultural field surrounding a straightened and ditched section of the creek. Hydrologic alterations will involve blocking a scratch ditch, which drains an abandoned oxbow in the field. The compensation plan calls restoration of 16.5 acres of floodplain forest and 2.6 acres of emergent wetland (the oxbow). The forest restoration is to involve the planting of bare root seedlings of nine species at a rate of 562 per acre. The understory is to be seeded with red top (*Agrostis alba*). The emergent restoration is to revegetate naturally. The site is to be monitored annually for the potential presence of *Oryzomys palustris* (rice rat). The wetland restoration site was completed in spring 2005* (Taft et al. 1997, IDOT 2005).

*Following observation of discrepancies, it was revealed that only 11.3 acres of forest restoration was planted. Additional acreage will be planted in 2006 (IDOT, pers. comm.).

In 2005, field monitoring was conducted on 20 and 21 September, and mammal surveys on 18, 19 and 20 October. This report details results of the 2005 monitoring. Project goals, objectives and performance criteria are included, as are monitoring methods, monitoring results, summary information and recommendations. This project has no monitoring plan.

Project Goals, Objectives and Performance Criteria

Proposed goals and objectives are based on information contained in the original IDOT project request (Sunderlind 2005) and the project wetland compensation plan (IDOT 2005). Performance criteria are based on those specified in the U. S. C. O. E. Wetland Delineation Manual (Environmental Laboratory, 1987), and Guidelines for Developing Mitigation Proposals (USACOE, 1993). Each goal should be attained by the end of the five year monitoring period. Project goals, objectives and performance criteria are listed below.

Project goal 1: The wetland restoration site should be determined to be jurisdictional by current federal standards.

Objective: The wetland restoration should compensate for the loss of 3.49 acres of forested wetland, swamp, marsh and scrub-shrub wetland at a replacement ratio of 5.5:1, for a total requirement of 19.19 acres.

Performance Criteria: The entire wetland restoration should satisfy the three criteria of the federal wetland definition: hydrophytic vegetation, hydric soils and wetland hydrology.

A. Predominance of hydrophytic vegetation - More than 50% of the dominant plant species must be hydrophytic.

B. Presence of hydric soils - Hydric soil characteristics must be present, or conditions favorable to the formation of hydric soil must persist at the site.

C. Presence of wetland hydrology - the site must be inundated at an average depth of less than 2 m (6.6 ft) or have soils saturated to the surface for at least 12.5 % of the growing season.

Project goal 2: The wetland restoration should meet minimum standards as to planted tree survival and floristic composition.

Objective: The wetland restoration should compensate in-kind for loss of forested and emergent wetlands. The wetland compensation should be composed of vegetation characteristic of forested and emergent wetlands.

Performance Criteria: At the end of the five year monitoring period $\geq 80\%$ of the planted trees should be alive (450 out of 562 per acre). At least 50% of the plant species present should be native and non-weedy. None of the three most dominant species in any stratum may be nonnative or weedy.

Methods

Monitoring will be performed on the wetland restoration site. INHS personnel monitored the area in 2005 and will continue yearly monitoring through 2009 (five years). The Illinois State Geological Survey (ISGS) has been tasked to monitor hydrology. Monitoring reports on the status of the site will be submitted annually. The likelihood of meeting the proposed goals and performance criteria will be addressed. If evidence is discovered, indicating that the goals/performance criteria will not be met by the end of the five year monitoring period, written management recommendations will be submitted to IDOT in an effort to correct the problems.

Project Goal 1

A. Hydrophytic Vegetation - Using visual estimation, the dominant species of vegetation in each stratum are determined. Dominance is based on Importance Value, a numerical average of species' relative frequency, density and aerial coverage (or basal area) (Cox 1985). In each stratum dominant species include, starting with the most abundant, those species whose Importance Values, when summed in descending order, immediately exceed 50%, as well as any additional species whose Importance Values are 20% or greater (Federal Interagency Committee for Wetland Delineation, 1989). Dominant species are assigned wetland indicator status ratings (Reed 1988). Any plant rated facultative or wetter (FAC, FAC+, FACW-, FACW, FACW+ or OBL) is considered hydrophytic. Hydrophytic vegetation is determined to be present if greater than 50% of the dominant species are hydrophytic (Environmental Laboratory 1987).

B. Hydric Soils - Soil cores collected from the mitigation site are examined for the presence of redoximorphic features (Environmental Laboratory 1987). This site occurs, for the most part, on topographically unaltered land. Therefore, soil conditions are not expected to change over time.

C. Wetland Hydrology - The Illinois State Geological Survey has been tasked to monitor this site and monitoring wells have been installed. Information provided by the ISGS concerning hydrology of the site is included in this report. In addition, visual inspection of the site for field indicators of wetland hydrology, such as landscape position, inundation or surface saturation or wetland drainage and debris patterns will be used to determine the presence of wetland hydrology (Environmental Laboratory 1987).

Project Goal 2

A. Woody vegetation - Within the forest restoration site, quantitative sampling of planted tree species is conducted. Starting 500 ft in from the northeast corner of the site, and proceeding north to south then south to north on consecutive planted rows, the first 100 ft in each 1000 ft section of row is sampled (10.6 ft X 100 ft (0.024 acre) plot). This procedure results in a 10% sample (n = 40). Within each sampled section (plot) live trees are tallied by species. A minimum of 450 live, planted trees/acre (80% of 562/acre) must be present after five years. Importance Values of planted species are calculated as an average of relative frequency and relative density. The tree planting area is mapped using Trimble GPS (global positioning system) and overlaid on digital ortho quad imagery using Arcview 3.2.

B. Herbaceous vegetation - Dominant herbaceous species within the wetland compensation site will be determined annually by visual estimation in an attempt to ensure that none of the three most dominant species are nonnative or weedy*, and that at least 50% of the plant species present are native and non-weedy* through the fifth year of monitoring. A species list will be prepared annually and a Floristic Quality Index computed for the site (Taft et al. 1997).

* For our purposes here, certain native, early successional species (C=1) that commonly occur in healthy wetlands and do not tend to overwhelm plant communities are not considered weedy: *Acer saccharinum*, *Bidens frondosa*, *Polygonum pennsylvanicum*, *Ranunculus abortivus*, etc.

Faunal Surveys (Mammals)

In addition to the stated performance criteria, INHS personnel will conduct annual surveys of small mammals, in order to determine presence and abundance of *Oryzomys palustris* (rice rat).

Live trapping was conducted at the Sugar Camp Creek mitigation site on the nights of 18, 19, and 20 October 2005 by Joyce Hofmann, Steve Amundsen, and Jean Mengelkoch of the INHS. Folding, aluminum Sherman traps measuring 8 x 9 x 23 cm were used (H.B. Sherman Traps, Inc., Tallahassee, FL). The traps were baited with a mixture of rolled oats and peanut butter and placed on the ground at intervals of approximately 10 m. They were set during the afternoon and checked the following morning (beginning at 0800 h).

A line of 30 traps (A) was established in the dense vegetation (*Phalaris arundinacea*) along the top of the berm on the east side of Sugar Camp Creek. A second line of 77 traps (B) followed the edges of an old oxbow in the interior of the mitigation site. The first trap in this line was approximately 10 m from the last trap along the creek. The site was covered with a stand of *Panicum dichotomiflorum* and forbs. There was a small area of shallow standing water in the center, surrounded by areas with saturated soil.

The species, sex, and reproductive condition of captured animals were determined. The position of the testes (either abdominal or scrotal) was used as a general indicator of the reproductive condition of male rodents. Females were examined for pregnancy (by gentle palpation of the abdomen) or lactation (by examination of the teats). Animals were suspended from a Pesola scale and weighed to the nearest 0.5 g. To determine the number of individuals of each species captured at the site, every animal trapped for the first time on the first or second morning of the trapping session was marked temporarily by clipping a small patch of fur on its flank. This made it possible to distinguish individuals that were re-captured from those that were being caught for the first time. After examination animals were released near the trap location.

On the night of 18 October the sky was clear and the low temperature was approximately 9°C. There had been a full moon the previous night. The night of 19 October was partly cloudy, with an overnight low of approximately 12°C. It rained part of the night of 20 October; the low temperature was approximately 7°C.

Results

Project Goal 1: The wetland restoration should be determined to be jurisdictional by current federal standards.

This wetland mitigation site, in 2005, consisted of 4.57 ha (11.3 acres) of planted, forest restoration and 0.89 ha (2.2 acres) of naturally regenerating emergent restoration (an oxbow or abandoned meander left over from straightening the creek channel). The forest restoration area

is dominated by *Panicum dichotomiflorum* (FACW-), *Conyza canadensis* (FAC-) and *Rumex crispus* (FAC+), and the emergent restoration is dominated by *P. dichotomiflorum* (FACW-), *Amaranthus tuberculatus* (OBL), and *Echinochloa muricata* (OBL). Therefore, both of these areas support hydrophytic vegetation. Out of the total of 11.3 acres of forest restoration, 2.8 acres are underlain by non-hydric Belknap silt loam. The remainder of the forest restoration and the 2.2 acre emergent restoration are underlain by hydric, Bonnie silt loam. Therefore 3.44 ha (8.5 acres) of forest restoration and the entire emergent restoration (0.89 ha (2.2 acres)) possess hydric soil. Since little hydrologic alteration is planned, it is unlikely that soil conditions will change over time. The ISGS well data show that 1.38 ha (3.4 acres), the oxbow and a small additional area, may possess wetland hydrology for 2005 (fig. 1). This total area includes an additional 0.2 ha (0.6 acre) that was not reported by the ISGS in their 2005 Annual Report to IDOT. This additional area resulted from precipitation late in the growing season (ISGS, pers. comm.). However, April through June 2005 were extremely dry (precipitation 47% of normal). In addition, although precipitation increased in the fall, well data for the last 23 days of the growing season (6 October – 29 October) were not included in the calculation (Shofner and Pociask 2005). During the September site visit, virtually all of the hydric soil area was inundated or saturated to the surface, and driftlines and water borne debris were frequently observed. Therefore, we estimate that the wetland hydrology criterion is satisfied for this area. Out of 13.5 acres of restoration area, 10.7 acres meet the three criteria for wetlands – hydrophytic vegetation, hydric soils and wetland hydrology. In 2005, the aerial extent of wetland falls short of the stated objective of 19.19 acres (Appendix 1). However, an additional area of forest restoration will likely be planted in 2006 (IDOT, pers. comm.), and blocking the scratch ditch may continue to increase the area of the emergent restoration (oxbow).

Project goal 2: The wetland restoration should meet minimum standards as to planted tree survival and floristic composition.

- A. Woody vegetation – At this site, nine species were listed for planting – *Betula nigra*, *Quercus palustris*, *Carya illinoensis*, *Q. bicolor*, *Platanus occidentalis*, *Fraxinus pennsylvanica*, *Q. shumardii*, *Taxodium distichum* and the shrub, *Cornus stolonifera*. The rate of stocking was specified as 562 stems/acre for 16.5 acres. All listed species except *Cornus stolonifera* were observed in the field. In addition, planted individuals of *Juglans nigra* and possibly *Diospyros virginiana* were noted. The listed, seeded ground cover, *Agrostis alba*, was noted as present. A 10.75 acre area was planted in parallel rows. Based on quantitative sampling, this area supports 424.3 live, planted trees/acre. Measurements seem to indicate a 10.63 ft row spacing and a 5.62 ft planting interval, resulting in an estimated original stocking of 728/acre. Therefore actual one year survival is estimated at 59%. An additional 0.55 acre strip supported 92 *Betula nigra*, bringing the total area planted to 11.3 acres. The dominant (most abundant and evenly distributed) surviving planted trees were *Betula nigra*, *Quercus palustris* and *Carya illinoensis*. Scattered natural regeneration of five native tree species (*Acer saccharinum*, *Celtis occidentalis*, *Fraxinus pennsylvanica*, *Populus deltoides* and *Ulmus americana*) was also observed. In 2005, the aerial extent of forest restoration falls short of the stated objective of 16.5 acres. The density of living planted trees is less than 450/acre (80% of the proposed 562/acre) (Table 1, Appendix 1).

B. Herbaceous vegetation – One year out of agriculture, the vegetation of the wetland restoration site is early successional in nature. The dominant herbaceous vegetation in the forest restoration was *Panicum dichotomiflorum*, *Conyza canadensis* and *Rumex*

Sugar Camp Creek Wetland Compensation Site (FAP 312)

Estimated Areal Extent of 2005 Wetland Hydrology
based on data collected between March 30, 2005 and October 6, 2005

Map based on USGS digital orthophotograph, Ewing SE quarter quadrangle,
aerial photography from April 1988 (ISGS 2000)

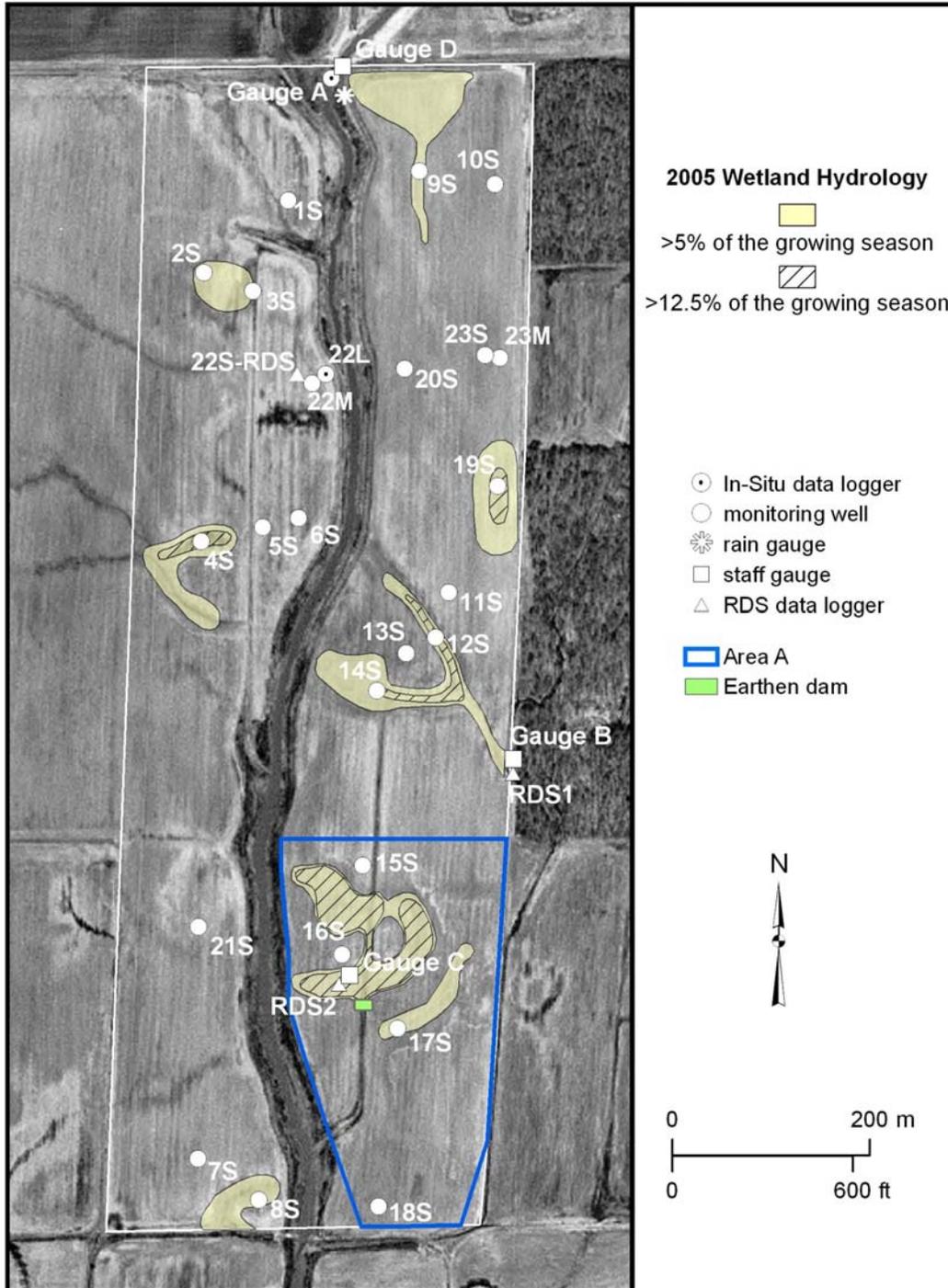


figure 1. Aerial extent of measured wetland hydrology, March 30 – October 6

crispus. The emergent restoration is dominated by *P. dichotomiflorum*, *Amaranthus tuberculatus* and *Echinochloa muricata*. All of these are either weedy native or nonnative species. In the forest restoration, 47.9% of the species present are nonnative weedy native species, while 35% are nonnative or weedy natives in the emergent restoration. Still, a total of 73 naturally occurring plant species appeared in the first year in the two sites combined and, in the forest and emergent restorations respectively, 78% and 95% of the species are native. In addition, Floristic Qualities of the two areas are fair (16.6 forested, 10.1 emergent) and a number of rather conservative wetland plant species have migrated onto the sites (*Pluchea camphorata* C=8, *Lobelia cardinalis* C=6, *Mimulus ringens* C=5). In 2005, the percentage of nonnative or weedy native species is less than 50% at both forested and emergent restoration sites and, therefore, meets this stated objective. However, neither site meets the requirement that the three most dominant species be native and nonweedy (Appendix 1).

Table 1. Planted Tree Species. stems/acre, Importance Value (IV), percent survival, n=40

	stems/acre	I.V.	percent survival
<i>Betula nigra</i>	107.9	20.97	
<i>Quercus palustris</i>	87.1	19.98	
<i>Carya illinoensis</i>	71.6	15.71	
<i>Quercus bicolor</i>	46.7	12.78	
<i>Fraxinus pennsylvanica</i>	40.5	9.62	
<i>Platanus occidentalis</i>	37.3	9.26	
<i>Quercus shumardii</i>	28.0	9.12	
<i>Taxodium distichum</i>	3.1	1.82	
<i>Diospyros virginiana</i>	2.1	0.73	
<i>Juglans nigra</i>	Present, not in sample		
Total (on 10.75 acres)	424.3	99.99	59% (estimated)
Total (plus 92 <i>Betula</i> on addit. 0.55 acre)	411.8		

Faunal Surveys (Mammals)

The total number of trap-nights (one trap-night = one trap set for one night) during the trapping session was 315 (corrected for six traps that were closed, but empty, when checked). Twenty-one small mammals were captured during the first night, 40 the second night, and 52 the third night. The total number of captures was 113, which represented an overall trapping success ([number of captures/number of trap-nights] x 100) of 35.9%.

Five species of rodents were trapped at this site -- prairie vole (*Microtus ochrogaster*), deer mouse (*Peromyscus maniculatus*), white-footed mouse (*P. leucopus*), house mouse (*Mus musculus*), and marsh rice rat (*Oryzomys palustris*). The most frequently captured species were the prairie vole (24-32 individuals) and house mouse (24-26 individuals). Five marsh rice rats were captured (Table 2). Three animals were trapped in the southern portion of the mitigation site in the *Panicum* field (traps B7, B12, and B71), one within the *Phalaris* stand along the creek (A22), and one farther north in the *Panicum* (B33). One male weighed 55.5 g, but the other rice rats weighed 28-38.5 g. Although no reproductively active females were captured, the presence

of smaller individuals suggests that there might be a breeding population at the site. Alternatively, these five animals may have dispersed into the site.

Table 2. Marsh rice rats (*Oryzomys palustris*) captured at the Sugar Camp Creek mitigation site, Franklin County, Illinois, nights of 18-20 October 2005.

<u>date</u>	<u>trap #</u>	<u>sex</u>	<u>reprod.</u>	<u>weight (g)</u>
18 October	B7	male	NR	55.5
18 October	B71	female	NR	28.0
19 October	B12	male	NR	35.0
20 October	A22	female	NR	38.5
20 October	B33	female	NR	~ 37*

NR = nonreproductive (males: testes abdominal; females: not pregnant or lactating)

* animal escaped while being weighed

Summary and Recommendations

After one year, this wetland restoration site is making progress and shows good potential. The close proximity to significant acreages of forested and emergent wetland of good quality is very beneficial and has already resulted in colonization by *Oryzomys* (rice rats) and a few conservative plant species. Most of the site supports wetland hydrology and meets the three criteria of wetlands. Although the vegetation is early successional, with many nonnative and weedy native species typical of recently abandoned crop fields, none of the abundant species (fall panicum, horseweed, waterhemp, barnyard grass) typically persist as sites mature. It is likely that the quality of vegetation will improve over time, and that in a few years the dominant species will be desirable, nonweedy natives (although this is not yet the case). On the other hand, six species currently present in low numbers have the potential to persist and overwhelm some sites. These species (*Phalaris arundinacea*, *Ambrosia trifida*, *Cirsium arvense*, *Festuca pratensis*, *Solidago canadensis*, *Eleagnus umbellata*) bear close watching and may require management in the future.

Although less than the required 80% planted tree survival, the estimated 59% survival is not unusual for bare root seedlings in the first year under harsh field conditions. Therefore the tree planting appears to be performing adequately. A small amount of natural tree regeneration was observed as well. However, replanting will be necessary to bring planted tree density from 424/acre to the required 450/acre (or higher). Finally, only 11.3 acres have been planted, of which 8.5 acres have hydric soil. And currently only 13.5 acres are in restoration, of which 10.7 acres meet the three criteria of wetlands. An additional 3.24 ha (8.0 acres) will need to be planted in order to achieve 16.5 acres of forest restoration and approach 19.19 acres of total restored wetland.

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ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 5)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/forest restoration
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: Eastern portion of site

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Panicum dichotomiflorum</i>	herb	FACW-
2. <i>Conyza canadensis</i>	herb	FAC-
3. <i>Rumex crispus</i>	herb	FAC+

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 66.7%

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Bonnie silt loam (Typic Fluvaquent)

On county hydric soils list? Yes: X No:

Is the soil a histosol? Yes: No: X

Histic epipedon present? Yes: No: X

Redox Concentrations? Yes: X No: Color: 10YR 4/4, 4/3, and 4/6

Redox Depletions? Yes: X No: Color: 2.5Y 5/2

Matrix color: 10YR 4/3 over 2.5Y 7/1 and 5/2

Other indicators: This soil is found in a level to depressional area along a creek and was saturated to the surface in some areas.

Hydric soils? Yes: X No:

Rationale: The Natural Resources Conservation Service identifies Bonnie as a Typic Fluvaquent that is poorly drained. The presence of redox concentrations and depletions within a low chroma matrix indicates conditions of saturation for long duration during the growing season. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 – Depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 2 of 5)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
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Site Name: wet meadow/forest restoration
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: Eastern portion of site

HYDROLOGY

Inundated: Yes: X (in places) No: Depth of standing water: 0.1 m (4 in)

Depth to saturated soil: at surface

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch/creek overflow.

Evapotranspiration and sheetflow are the major outputs.

Size of watershed: 101 km² (39 mi²)

Other field evidence observed: This site is level to depression. Drifflines were observed.

Wetland hydrology: Yes: X No:

Rationale: Field evidence cited above indicates that the site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:

Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI as wetland.

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ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 5)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/forest restoration
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Location: Eastern portion of site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Acer saccharinum</i>	silver maple	seedling	FACW	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Andropogon virginicus</i>	broomsedge	herb	FAC-	1
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Asclepias syriaca</i>	common milkweed	herb	UPL	0
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Betula nigra</i>	river birch	seedling	planted	4
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carya illinoensis</i>	pecan	seedling	planted	6
<i>Celtis occidentalis</i>	hackberry	seedling	FAC-	3
<i>Chamaesyce humistrata</i>	milk spurge	herb	FACW	1
<i>Chamaesyce maculata</i>	nodding spurge	herb	FACU-	0
<i>Cirsium arvense</i>	Canada thistle	herb	FACU	*
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cyperus esculentus</i>	chufa	herb	FACW	0
<i>Cyperus strigosus</i>	yellow flat sedge	herb	FACW	0
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Digitaria ischaemum</i>	crab grass	herb	FACU	*
<i>Diospyros virginiana</i>	persimmon	seedling	planted	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleagnus umbellata</i>	autumn olive	seedling	UPL	*
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2

**Coefficient of conservatism, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

* nonnative species

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 4 of 5)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005

Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)

State: Illinois **County:** Franklin **Applicant:** IDOT District 9

Site Name: wet meadow/forest restoration

Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4

Location: Eastern portion of site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Festuca pratensis</i>	English bluegrass	herb	FACU-	*
<i>Fraxinus pennsylvanica</i>	green ash	seedling	FACW	2
<i>Ipomoea hederacea</i>	ivy leaf morning glory	herb	FAC	*
<i>Ipomoea lacunosa</i>	small white morning glory	herb	FACW	1
<i>Juglans nigra</i>	black walnut	seedling	planted	4
<i>Lobelia cardinalis</i>	cardinal flower	herb	OBL	6
<i>Ludwigia alternifolia</i>	alternate leaf seedbox	herb	OBL	5
<i>Lycopus americanus</i>	water horehound	herb	OBL	3
<i>Mimulus ringens</i>	monkey flower	herb	OBL	5
<i>Morus alba</i>	white mulberry	seedling	FAC	*
<i>Muhlenbergia frondosa</i>	satin grass	herb	FACW	3
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phalaris arundinacea</i>	reed canarygrass	herb	FACW+	*
<i>Phytolacca americana</i>	pokeweed	herb	FAC-	1
<i>Plantago rugelli</i>	Rugel's plantain	herb	FAC	0
<i>Platanus occidentalis</i>	sycamore	seedling	planted	3
<i>Pluchea camphorata</i>	camphorweed	herb	FACW	8
<i>Polygonum aviculare</i>	knotweed	herb	FAC-	*
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Populus deltoides</i>	cottonwood	seedling	FAC+	2
<i>Quercus bicolor</i>	swamp white oak	seedling	planted	7
<i>Quercus palustris</i>	pin oak	seedling	planted	4
<i>Quercus shumardii</i>	Shumard oak	seedling	planted	7
<i>Rubus allegheniensis</i>	blackberry	herb	FACU+	2

**Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and

L. Masters (1997)

* nonnative species

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 5 of 5)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/forest restoration
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: Eastern portion of site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Rubus flagellaris</i>	dewberry	herb	FACU-	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Senecio glabellus</i>	butterweed	herb	OBL	0
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sorghum halapense</i>	Johnson grass	herb	FACU	*
<i>Taraxacum officinalis</i>	dandelion	herb	FACU	*
<i>Taxodium distichum</i>	bald cypress	seedling	planted	*
<i>Tridens flavus</i>	grease grass	herb	UPL	1
<i>Ulmus americana</i>	American elm	seedling	FACW-	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

**Coefficient of conservatism, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

* nonnative species

FQI (with planted species) = $125/\sqrt{57} = 16.6$, mean rated quality = $125/57 = 2.19$

FQI (without planted species) = $88/\sqrt{48} = 12.7$, mean rated quality = $88/48 = 1.83$

Percent nonnative or weedy native (perennial or annual) species – $35/73 = 47.9\%$

Percent native species – 78.1%

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 3)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/oxbow
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: Northern portion of site

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Panicum dichotomiflorum</i>	herb	FACW-
2. <i>Amaranthus tuberculatus</i>	herb	OBL
3. <i>Echinochloa muricata</i>	herb	OBL

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

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Bonnie silt loam (Typic Fluvaquent)

On county hydric soils list? Yes: X No:

Is the soil a histosol? Yes: No: X

Histic epipedon present? Yes: No: X

Redox Concentrations? Yes: X No: Color: 10YR 4/4, 4/3, and 4/6

Redox Depletions? Yes: X No: Color: 2.5Y 5/2

Matrix color: 10YR 4/3 over 2.5Y 7/1 and 5/2

Other indicators: This soil is found in a depressional area along a creek and is inundated.

Hydric soils? Yes: X No:

Rationale: The Natural Resources Conservation Service identifies Bonnie as a Typic Fluvaquent that is poorly drained. The presence of redox concentrations and depletions within a low chroma matrix indicates conditions of saturation for long duration during the growing season. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 – Depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 2 of 3)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
Sect. No.: 102 (RS – 5, W – 1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/oxbow
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: Northern portion of site

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0.3 m (12 in)
Depth to saturated soil: at surface
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch/creek overflow. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 101 km² (39 mi²)
Other field evidence observed: This site is depressional. Driftlines were observed.
Wetland hydrology: Yes: X No:
Rationale: Field evidence sited above indicates that the site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: No:
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI as wetland.

Determined by: Allen Plocher (vegetation and hydrology)
Scott Wiesbrook (soils and hydrology)
Brad Zercher (GPS and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 3 of 3)

Field Investigators: Plocher, Wiesbrook, Zercher **Date:** 20 September 2005
Sect. No.: 102 (RS – 5, W –1) **Project Name:** FAP 312 (IL 3)
State: Illinois **County:** Franklin **Applicant:** IDOT District 9
Site Name: wet meadow/oxbow
Legal Description: T. 5 S., R. 4 E., Sect. 32, SE/4 SE/4
Location: Northern portion of site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C**
<i>Agalinus tenuifolia</i>	slender false foxglove	herb	FACW	5
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Ammannia coccinea</i>	ammannia	herb	OBL	5
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis erythropoda</i>	red rooted spikerush	herb	OBL	3
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Helenium autumnale</i>	sneezeweed	herb	FACW+	3
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Polygonum lapathifolium</i>	nodding smartweed	herb	FACW+	0
<i>Polygonum pennsylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum punctatum</i>	dotted smartweed	herb	OBL	3
<i>Ranunculus abortivus</i>	kidney leaf buttercup	herb	FACW-	1
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Rumex verticillatus</i>	swamp dock	herb	OBL	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Xanthium strumarium</i>	cockle bur	herb	FAC	0

**Coefficient of conservatism, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

* nonnative species

FQI = $44/\sqrt{19} = 10.1$, mean rated quality = $44/19 = 2.32$

Percent nonnative or weedy native (perennial or annual) species – $7/20 = 35.0\%$

Percent native species – 95.0%