WETLAND MITIGATION SITE MONITORING REPORT
FAP 316 (IL 26) Stephenson County, 2001

INTRODUCTION

This report details monitoring of the wetland mitigation site created to compensate for wetland loss and disturbance caused by the relocation of Illinois Route 26 near Orangeville in Stephenson County. The compensation site consists of approximately 3.4 ha (8.5 acres) of wetland creation (Site 1) and 3.3 ha (8.2 acres) of wetland enhancement (Site 2). The wetland creation is located north of West St. James Road, west of the Wisconsin and Calumet Railroad right-of-way (Jane Addams bike trail), and east of the realignment of Illinois Route 26 (legal location S/2, SW/4, Sect. 36, T 29 N, R 7 E). The wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26 (legal location E/2, NW/4, Sect. 1, T 28 N, R 7 E). Emergent wetland vegetation was planted at Site 1 on 28 July 2000, and a seeding mixture was planted at Site 2, and around the perimeter of Site 1, in late August 2000. On-site monitoring was conducted on 22 and 23 August 2001.

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 wetland compensation plan that the IDOT Wetlands Unit developed for this site. Each goal should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

Project goal 1: The created and enhanced wetland communities should be jurisdictional wetlands as defined by current federal standards.

Objective: The created wetland should compensate for the loss of 1.82 ha (4.5 acres) of emergent wetland and 0.08 ha (0.2 acres) of farmed wetland at a 1.8:1 ratio. The enhanced wetland should compensate for an additional 1.32 ha (3.25 acres) at a 2.5:1

ratio, which may be required by the recent Draft of Wetlands Administrative Rules (IDOT Wetlands Unit, Wetland Compensation Plan).

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 a standard for vegetation cover.

Objectives: An emergent marsh will be created, and a wet meadow will be enhanced, by planting native wetland vegetation.

Performance criterion: Planted vegetation should account for at least 50% of the ground cover at each of the sites.

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). The relative Importance Value, a combination of relative coverage and relative frequency, of each species was determined by quantitatively sampling vegetation at each site (see project goal 2, below). Species were then arranged by Importance Value in decreasing order, and Importance Values were sequentially summed, starting with the most prevalent species, until the total reached 0.5. Those species included in the summation were considered dominant species. Each of the dominant plant species was then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter (*i.e.*, FAC, FAC+, FACW, or 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

In April 2001, Illinois State Geological Survey (ISGS) personnel installed nine soil-zone monitoring wells, three stage gauges, a rain gauge, a sonic water-level data logger, and an RDS water-level data logger. Locations for these instruments can be found in the ISGS report *Orangeville Wetland Compensation Site* (Weaver and Carr 2001). Methods are further described in the ISGS document *Annual Water-level Report for Active IDOT Sites* (Fucciolo et al. 2001).

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

Vegetation at the wetland enhancement and created wetland was quantitatively sampled using 0.5-m x 0.5-m (0.25 m^2) quadrats placed every 30.5 m (100 ft) along transects. For the created marsh, the emergent zone was sampled separately from the higher elevation wet prairie border. Nine parallel transects placed every 30.5 m (100 ft) and running east to west were used to sample the emergent marsh zone, and a single transect running along the north and east sides of the created wetland was used to sample the wet prairie border zone. Fifteen parallel transects placed every 30.5 m (100 ft) and running southeast to northwest were used to sample the wetland enhancement site. All plant species in each quadrat were recorded and each species was assigned a cover class (Table 1), an estimate of the amount of area within the sample quadrat that is covered by that species. Data from quadrats were used to calculate frequency (per cent of quadrats in which the species is present), relative frequency (frequency relative to other species), average cover per quadrat, relative cover, and Importance Value (average of relative frequency and relative cover) for each sampled species. Trees planted around the borders of both sites were censused to assess their survival.

Table 1: Cover classes used to estimate aerial cover by plant species in sample quadrats

Cover class	Range of aerial cover	Midpoint of range
r	<1%, solitary	0%
+	<1%, seldom	0%
1	1-5%	3%
2	5-25%	15%
3	25-50%	37.5%
4	50-75%	62.5%
5	75-95%	85%
6	95-100%	97.50%

Floristic quality assessment

The Floristic Quality Assessment (Taft et al. 1997) was applied to the plant community at the site to evaluate ecological integrity. 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). Plant species not native to Illinois are not included in the FQI. Each native plant species is assigned a coefficient of conservatism (C) ranging from 0 to 10. Lower numbers have been assigned to species that tend to be more tolerant of disturbance and higher numbers to species that are generally found in less disturbed natural areas. A mean coefficient value (mCv) is determined by summing the coefficients of conservatism (C) and dividing by the total number of native species (N). The Floristic Quality Index (FQI) is then determined by multiplying the mean coefficient (mCv) by the square root of N. This calculation is done to incorporate numerical species diversity into the FQI value. Sites with FQI values less than 10 indicate that the area has been highly disturbed or is in an early successional stage. Sites with FQI values of 20 or more possess some evidence of natural character and may be considered environmental assets. Sites with values of 35 or more are considered to be of natural area quality.

RESULTS

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for the created marsh (Site 1A), the wet prairie border (Site 1B) surrounding the marsh, and the wetland enhancement (Site 2) are shown in Tables 2, 3, and

4, respectively. At all sites, greater than 50 per cent of the dominant species are rated OBL, FACW or FAC, and therefore, the dominant vegetation is hydrophytic.

Table 2. Dominant plant species by stratum and wetland indicator status for the created wetland

Dominant plant species	Stratum	Indicator status
1. *Alisma plantago-aquatica*	herb	OBL
2. *Amaranthus tuberculatus*	herb	OBL
3. *Eleocharis obtusa*	herb	OBL
4. *Phalaris arundinacea*	herb	FACW+
5. *Polygonum lapathifolium*	herb	FACW+

Table 3. Dominant plant species by stratum and wetland indicator status for the wet prairie border of the created wetland

Dominant plant species	Stratum	Indicator status
1. *Eleocharis obtusa*	herb	OBL
2. *Lolium perenne*	herb	FACU
3. *Panicum dichotomiflorum*	herb	FACW-
4. *Phalaris arundinacea*	herb	FACW+
5. *Polygonum hydropiper*	herb	OBL

Table 4. Dominant plant species by stratum and wetland indicator status for the wetland enhancement

Dominant plant species	Stratum	Indicator status
1. *Amaranthus tuberculatus*	herb	OBL
2. *Epilobium coloratum*	herb	OBL
3. *Leersia oryzoides*	herb	OBL
4. *Lolium perenne*	herb	FACU
5. *Phalaris arundinacea*	herb	FACW+
6. *Polygonum lapathifolium*	herb	FACW+
7. *Salix nigra*	herb	OBL

b. Presence of wetland hydrology

Hydrologic data for the created wetland for April through August 2001 is presented in Appendix B (Weaver and Carr 2001). An estimated 3.25 of 3.40 ha (8.03 of 8.50 acres) at Site 1, and 3.28 of 3.30 ha (8.10 of 8.20 acres) at Site 2 conclusively satisfied the wetland hydrology criterion during 2001 (Fig. 1). Groundwater-level elevations are shown in Figure 2.

Illinois State Geological Survey personnel determined that additional soil-zone monitoring wells should be installed at both sites, and are planning topographic surveys of both sites to provide post-construction base maps for the sites (Weaver and Carr 2001).

c. Occurrence of hydric soils

Soils on both the wetland enhancement and the wetland creation were removed exposing a lower substratum, thus the soils at both sites were disturbed. One year after establishment, hydric features are developing throughout both sites.

The soils on the low elevation emergent marsh zone of the wetland creation site are highly disturbed. The soils are much sandier towards the creek outlet. The following is a description of a typical pedon within the emergent marsh zone.

Table 5. Description of the soils at the created marsh (Site 1A).

Depth (in)	Matrix Color	Concentrations	Depletions	Texture	Structure
0 – 4	10YR 2/1	7.5YR 3/4		Silt Loam	Granular
4 - 20	10YR 4/1	7.5YR 3/4 & 5YR 4/6		Clay	Massive
20 – 36	10G 4.5/0			Sandy Clay to Clay	Massive

The soils along the wet prairie border of the wetland creation site are also disturbed. The soils here have not been excavated as deeply as the adjacent lower area. Although this area is elevated above the emergent marsh zone it still shows prominent hydric features. The following is a description of a typical pedon within the wet prairie border.

Table 6. Description of the soils at the border of the created marsh (Site 1B).

Depth (in)	Matrix Color	Concentrations	Depletions	Texture	Structure
0 – 10	10YR 2/1	7.5YR 3/4		Silt Loam	Granular to Sub-Blocky
10 - 18	10YR 2.5/1	7.5YR 3/4 & 5YR 4/6		Silty Clay Loam	Massive
18 – 24	10YR 4/1	10YR 4/6	10YR 5/1	Clay	Massive
24 – 32	10YR 4/1 & 4/6	7.5YR 3/1 & 10YR 2/1		Clay to Sandy Clay	Massive

At the wetland enhancement site the soils were excavated less than 0.3 m (2 ft). No other type of anthropogenic disturbance is evident within the profile. A buried A horizon was found at 0.6 m (23 in). Even though the soil is disturbed, hydric soil indicators are present. A typical pedon is described below.

Table 7. Description of the soils at the enhanced wetland (Site 2).

Depth (in)	Matrix Color	Concentrations	Depletions	Texture	Structure
0 – 3	10YR 3/1.5			Silt Loam	Granular
3 – 16	10YR 3/1	7.5YR 3/4 & 10YR 4/6	10YR 5/2 & 5/3	Clay Loam	Sub-Blocky
16 – 23	10YR 2/1	10YR 4/6	10YR 5/2	Clay Loam	Massive
23 – 26	N 2.5/0			Silty Clay Loam	Granular
26 – 36	10YR 2/1			Silty Clay Loam	Sub-Blocky

Project goal 2

The results of quantitative vegetation sampling for the emergent marsh zone of the created wetland, the wet prairie border of the created wetland, and the wetland enhancement are presented in Appendix C. In the emergent marsh zone of the created wetland five planted wetland species were present in sampled quadrats: *Alisma plantago-aquatica, Eleocharis obtusa, Sagittaria latifolia, Scirpus americanus*, and *Scirpus fluviatilis*. These species, combined, covered approximately 47.7% of the site. *Alisma plantago-aquatica* and *Eleocharis obtusa* were the most frequently encountered species at the site and covered 24.5% and 19%, respectively, of the sampled area. The remaining three planted species account for a very small amount of the vegetative coverage for the entire site, but appeared to be spreading from where originally planted. Large areas of the site were occupied by open water (average cover per quadrat 10.3%) or bare soil (average cover per quadrat 25.0%).

Three planted species were present in quadrats in the wet prairie border of the created wetland: *Eleocharis obtusa, Bidens cernua*, and *Rudbeckia hirta.* Together these species account for 25.1% of the cover at the site, with *Eleocharis obtusa* alone making up 22% of site coverage.

Four planted wetland species were present in quadrats in the wetland enhancement: *Eleocharis obtusa, Carex vulpinoidea, Glyceria striata*, and *Leersia oryzoides*. These species account for only 6.1% of the cover at the site, and the remaining 93.9% is by volunteer species and *Lolium perrene*, which was planted as a cover crop. Some areas were occupied by bare soil (average cover per quadrat 22.1%)

All planted trees on the southeast border of the wetland enhancement site have survived through the first growing season. Five trees (4.8% of those planted at the site) along the border of the created wetland did not survive. Surviving trees are listed by species in Table 8.

Table 8: Surviving trees at the wetland enhancement and created marsh

Common name	Botanical name	Number at enhancement	Number at created marsh
River birch	*Betula nigra*	0	10
Green ash	*Fraxinus pennsylvanica*	4	0
Eastern cottonwood	*Populus deltoides*	10	20
Swamp white oak	*Quercus bicolor*	10	60
Burr oak	*Quercus macrocarpa*	0	10

Photographs illustrating vegetation at both sites are presented in Appendix D.

Floristic Quality Assessment

Mean coefficient of conservatism and FQI values were calculated for each site from the species lists included in Appendix A. For each site, mCv and FQI values were calculated using only species that became established on the site naturally, and then recalculated to include planted species (Table 9).

Table 9: Mean coefficient of conservatism (mCv) and Floristic Quality Index (FQI) values for wetland creation and enhancement sites

	Volunteer species		Volunteer plus planted species	
Site	MCv	FQI	mCv	FQI
1A. Created marsh	1.9	14.4	2.3	18.4
1B. Wet prairie border	1.7	11.1	2.1	15.3
2. Wetland enhancement	2.1	17.8	2.2	20.0

DISCUSSION

After one year, these sites show progress towards wetland establishment. There is a high probability that the sites will comply with project goals, objectives, and performance standards by the end of the monitoring period. The sites have hydrophytic vegetation, hydric soils, and wetland hydrology, and therefore currently meet the criteria for jurisdictional wetlands.

Soils at both sites were seriously disturbed during the wetland creation process. Even so, soils at both the wetland enhancement and the created wetland have developed hydric soil indicators and meet the jurisdictional hydric soil criterion.

At the wetland enhancement site, the tributary to Richland Creek was intentionally diverted from its original channel and now flows southwest along the southern edge of the site. The new channel is a shallow, braided stream (see Appendix D, Fig. 8). It is possible that the tributary will revert to its old, deeply cut channel, which flows west into Richland Creek. This would shorten water retention time on the site, and possibly alter site hydrology and wetland function.

Planted wetland vegetation is not yet well established at either site. Although planted species account for close to 50% of the vegetative cover at the created marsh, most coverage by the two most dominant species, *Alisma plantago-aquatica* and *Eleocharis obtusa*, is likely due to natural establishment rather than intentional planting. Mature individuals of both species were established at the site, outside of rootstock planting cages, in September 2000 (Matthews et al. 2000), shortly after the site was planted. Both species are annuals that produce abundant seed, and should continue to be present in large numbers until crowded out by larger, perennial species. Several of the species planted at the created marsh persist, and may become well established with time. However, some of the deepwater emergent plants such as *Nuphar luteum*, *Nymphaea tuberosa*, and *Pontederia cordata* that were planted in 2000 were not observed at the site in 2001. The border of the created marsh and the wetland

enhancement site, which were planted with seed rather than rootstock, have little coverage by planted species.

Floristic Quality Index values at the created marsh and the wetland enhancement sites, when planted species are included, approach those indicative of fairly high natural quality. The fairly high FQI values are largely the result of a high diversity of volunteer species at both sites. If planted vegetation becomes established, and the disturbance-adapted species are replaced by more conservative species, the mCv and FQI values should increase. However, if invasive species become well established, species diversity, and likewise FQI, will decrease. *Phalaris arundinacea* is already a dominant species at both sites, and this aggressive, invasive grass dominates large areas adjacent to the mitigation sites. Within the sites, *P. arundinacea* is most prevalent along the tributary running through the wetland enhancement, and along the border of the created marsh. Encroachment by *P. arundinacea* represents the major threat to the success of these wetlands. *Cirisium arvense*, creeping thistle, is present in the created wetland and may present a future problem. There is also a relatively small, still manageable, patch of *Phragmites australis* on the edge of the wetland enhancement. Care must be taken to ensure that these invasive species do not become well established at the mitigation sites. Herbicide control of *Phalaris arundinacea* should be a management priority.

Literature Cited

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APPENDIX A: WETLAND DETERMINATION FORMS

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1A (page 1 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:
Comment: The site has been recently excavated, affecting soils and hydrology.

VEGETATION

Dominant Plant Species	**Indicator Status**	**Stratum**
1. *Alisma plantago-aquatica*	OBL	herb
2. *Amaranthus tuberculatus*	OBL	herb
3. *Eleocharis obtusa*	OBL	herb
4. *Phalaris arundinacea*	FACW+	herb
5. *Polygonum lapathifolium*	FACW+	herb

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: Mapped as Dorchester silt loam, revised to Typic Udorthent

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 5YR 4/6 and 7.5YR 3/4
Redox Depletions?	Yes:	No: X	

Matrix color: 10YR 2/1 over 10YR 4/1
Other indicators: Soils are in a level to depressional area.
Hydric soils? Yes: X No:
Rationale: This is an excavated site where soils were stripped away exposing a lower substratum. While the colors may be relict, the soils are developing prominent hydric features. This soil has a low chroma matrix and iron masses.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1A (page 2 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26.

HYDROLOGY

Inundated: Yes: X(parts) No: Depth of standing water: 0 to 0.3 m (0 to 12 in)
Depth to saturated soil: Varies from surface to >0.9 m (36 in)
Overview of hydrological flow through the system: This site receives water through precipitation and sheet flow from surrounding higher ground. Water leaves the site via evapotranspiration and stream flow via a culvert at the south end.
Size of Watershed: <100 km^2 (38.6 mi^2)
Other field evidence observed: Water-borne sediment deposits on vegetation

Wetland hydrology: Yes: X No:
Rationale: This site is located in an excavated depression and holds water for a long or very long time during the growing season; therefore, it is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: This site supports dominant hydrophytic vegetation, hydric soils, and wetland hydrology. We determined that this site is a wetland.

Determined by: Jeff Matthews, Dan Busemeyer, and Paul Tessene
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 3 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Abutilon theophrasti	velvet-leaf	herb	FACU-	*
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Amaranthus retroflexus	rough pigweed	herb	FACU+	*
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ambrosia trifida	giant ragweed	herb	FAC+	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Aster pilosus	hairy aster	herb	FACU+	0
Bidens cernua	nodding beggar's ticks	herb	OBL	2
Bidens frondosa	common beggar's ticks	herb	FACW	1
Bidens tripartita	beggar's ticks	herb	OBL	2
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Carduus acanthoides	acanthus bristle thistle	herb	UPL	*
Carex vulpinoidea	fox sedge	herb	OBL	3
Cassia fasciculata	partridge pea	herb	FACU-	1
Chamaesyce supina	milk spurge	herb	UPL	0
Chenopodium glaucum	oak-leaved goosefoot	herb	FACW	*
Cirsium arvense	Canada thistle	herb	FACU	*
Cirsium vulgare	bull thistle	herb	FACU-	*
Conyza canadensis	horseweed	herb	FAC-	0
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis acicularis	needle spike rush	herb	OBL	3
Eleocharis erythropoda	spike rush	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Elodea nuttallii	elodea	herb	OBL	6
Epilobium coloratum	cinnamon willow herb	herb	OBL	3

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 4 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Eragrostis hypnoides	creeping love grass	herb	OBL	5
Erigeron annuus	annual fleabane	herb	FAC-	1
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Glechoma hederacea	ground ivy	herb	FACU	*
Glyceria striata	fowl manna grass	herb	OBL	4
Helenium autumnale	autumn sneezeweed	herb	FACW+	3
Juncus tenuis	path rush	herb	FAC	0
Lactuca serriola	prickly lettuce	herb	FAC	*
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lemna minor	common duckweed	herb	OBL	3
Lindernia dubia	false pimpernel	herb	OBL	5
Lycopus americanus	common water horehound	herb	OBL	3
Mimulus ringens	monkey flower	herb	OBL	5
Morus alba	white mulberry	herb	FAC	*
Muhlenbergia frondosa	common satin grass	herb	FACW	3
Oenothera biennis	evening primrose	herb	FACU	1
Panicum capillare	witch grass	herb	FAC	0
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Plantago rugelii	red-stalked plantain	herb	FAC	0
Polygonum hydropiper	common smartweed	herb	OBL	*
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Populus deltoides	eastern cottonwood	herb	FAC+	2
Potentilla norvegica	rough cinquefoil	herb	FAC	0
Ranunculus sceleratus	cursed crowfoot	herb	OBL	3
Rorippa islandica	marsh yellow cress	herb	OBL	4

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1A (page 5 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Rudbeckia hirta	black-eyed Susan	herb	FACU	2
Rumex crispus	curly dock	herb	FAC+	*
Salix exigua	sandbar willow	herb	OBL	1
Salix nigra	black willow	herb	OBL	3
Setaria faberi	giant foxtail	herb	FACU+	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Sonchus asper	prickly sowthistle	herb	FAC	*
Taraxacum officinale	common dandelion	herb	FACU	*
Trifolium hybridum	alsike clover	herb	FAC-	*
Trifolium repens	white clover	herb	FACU+	*
Typha latifolia	cattail	herb	OBL	1
Vernonia fasciculata	common ironweed	herb	FACW	5
Veronica peregrina	purslane speedwell	herb	FACW+	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 107/55 = 1.9$
$FQI = \sum C/\sqrt{N} = 107/\sqrt{55} = 14.4$

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 6 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created marsh is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26.

PLANTED SPECIES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Calamagrostis canadensis	bluejoint grass	herb	OBL	3
Caltha palustris	cowslip	herb	OBL	7
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Iris shrevei	southern blue flag	herb	OBL	5
Lolium perenne	crested rye grass	herb	FACU	*
Polygonum amphibium	water smartweed	herb	OBL	3
Sagittaria latifolia	arrowhead	herb	OBL	4
Scirpus americanus	chairmaker's rush	herb	OBL	3
Scirpus cyperinus	wool grass	herb	OBL	5
Scirpus fluviatilis	river bulrush	herb	OBL	3
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Spartina pectinata	freshwater cord grass	herb	FACW+	4

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 148/65 = 2.3$**
$FQI = \sum C/\sqrt{N} = 148/\sqrt{65} = 18.4$**

**These calculations include the complete species list above, as well as the planted species.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 1 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26. It borders site 1A, the created marsh.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:
Comment: The site has been recently excavated, affecting soils and hydrology.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Eleocharis obtusa*	OBL	herb
2. *Lolium perenne*	FACU	herb
3. *Panicum dichotomiflorum*	FACW-	herb
4. *Phalaris arundinacea*	FACW+	herb
5. *Polygonum hydropiper*	OBL	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 80%

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

SOILS

Series and phase: Mapped as Dorchester silt loam, revised to Typic Udorthent

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 5YR 4/6 and 7.5YR 3/4
Redox Depletions?	Yes:	No: X	

Matrix color: 10YR 2/1 over 10YR 2.5/1
Other indicators: None.
Hydric soils? Yes: X No:
Rationale: This is an excavated site where soils were stripped away exposing a lower substratum. While the colors may be relict they are developing prominent hydric features. This soil has a low chroma matrix and iron masses.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 2 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26. It borders site 1A, the created marsh.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: N/A
Depth to saturated soil: >0.9 m (36 in)
Overview of hydrological flow through the system: This site receives water through precipitation and sheet flow from surrounding higher ground. Water leaves the site via evapotranspiration and stream flow via a culvert at the south end.
Size of Watershed: <100 km^2 (38.6 mi^2)
Other field evidence observed: Water-borne sediment deposits on vegetation

Wetland hydrology: Yes: X No:
Rationale: This site is in an excavated depression and holds water for a long or very long time during the growing season; therefore, it is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: This site supports dominant hydrophytic vegetation, hydric soils, and wetland hydrology. We determined that this site is a wetland.

Determined by: Jeff Matthews, Dan Busemeyer, and Paul Tessene
(vegetation and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 3 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26. It borders site 1A, the created marsh.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Abutilon theophrasti	velvet-leaf	herb	FACU-	*
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Agrostis alba	red top	herb	FACW	0
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Amaranthus retroflexus	rough pigweed	herb	FACU+	*
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Anthemis cotula	dog fennel	herb	FACU	*
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Artemisia annua	annual wormwood	herb	FACU	*
Asclepias syriaca	common milkweed	herb	UPL	0
Aster novae-angliae	New England aster	herb	FACW	4
Bidens frondosa	common beggar's ticks	herb	FACW	1
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Bromus japonicus	Japanese brome	herb	FACU	*
Carduus acanthoides	acanthus bristle thistle	herb	UPL	*
Carex vulpinoidea	fox sedge	herb	OBL	3
Cassia fasciculata	partridge pea	herb	FACU-	1
Cirsium arvense	Canada thistle	herb	FACU	*
Cirsium vulgare	bull thistle	herb	FACU-	*
Conyza canadensis	horseweed	herb	FAC-	0
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Epilobium coloratum	cinnamon willow herb	herb	OBL	3
Equisetum arvense	common horsetail	herb	FAC	0

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 4 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26. It borders site 1A, the created marsh.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Erigeron annuus	annual fleabane	herb	FAC-	1
Helianthus annuus	common sunflower	herb	FAC-	*
Lactuca serriola	prickly lettuce	herb	FAC	*
Lindernia dubia	false pimpernel	herb	OBL	5
Lycopus americanus	common water horehound	herb	OBL	3
Medicago lupulina	black medic	herb	FAC-	*
Melilotus sp.	sweet clover	herb	FACU	*
Mimulus ringens	monkey flower	herb	OBL	5
Morus alba	white mulberry	herb	FAC	*
Oenothera biennis	evening primrose	herb	FACU	1
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phleum pratense	timothy	herb	FACU	*
Polygonum amphibium	water smartweed	herb	OBL	3
Polygonum arenastrum	knotweed	herb	UPL	*
Polygonum hydropiper	common smartweed	herb	OBL	*
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Populus deltoides	eastern cottonwood	herb	FAC+	2
Ratibida pinnata	drooping coneflower	herb	UPL	4
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rumex crispus	curly dock	herb	FAC+	*
Salix exigua	sandbar willow	shrub	OBL	1
Salix nigra	black willow	herb	OBL	3
Scirpus fluviatilis	river bulrush	herb	OBL	3
Setaria glauca	pigeon grass	herb	FAC	*
Solidago gigantea	late goldenrod	herb	FACW	3

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 5 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26. It borders site 1A, the created marsh.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Sonchus asper	prickly sowthistle	herb	FAC	*
Taraxacum officinale	common dandelion	herb	FACU	*
Thlaspi arvense	field penny cress	herb	UPL	*
Trifolium hybridum	alsike clover	herb	FAC-	*
Trifolium pratense	red clover	herb	FACU+	*
Trifolium repens	white clover	herb	FACU+	*
Ulmus rubra	slippery elm	herb	FAC	3
Verbena hastata	blue vervain	herb	FACW+	3
Vernonia fasciculata	common ironweed	herb	FACW	5
Veronica peregrina	purslane speedwell	herb	FACW+	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 72/42 = 1.7$
$FQI = \sum C/\sqrt{N} = 72/\sqrt{42} = 11.1$

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 6 of 6)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 23 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wet prairie border of created marsh
Legal Description: S/2, SW/4, Sect. 36, T 29 N, R 7 E
Location: This created wetland is located north of West St. James Rd., west of the Wisconsin and Calumet Railroad, and east of Illinois Route 26. It borders site 1A, the created marsh.

PLANTED SPECIES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Asclepias incarnata	swamp milkweed	herb	OBL	4
Betula nigra	river birch	tree	FACW	4
Bidens cernua	nodding beggar's ticks	herb	OBL	2
Coreopsis tinctoria	golden coreopsis	herb	FAC-	*
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Elymus canadensis	Canada wild rye	herb	FAC-	4
Helenium autumnale	autumn sneezeweed	herb	FACW+	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lolium perenne	crested rye grass	herb	FACU	*
Populus deltoides	eastern cottonwood	tree	FAC+	2
Quercus bicolor	swamp white oak	tree	FACW+	7
Quercus macrocarpa	burr oak	tree	FAC-	5
Rudbeckia hirta	black-eyed susan	herb	FACU	2
Secale cereale	rye	herb	UPL	*
Spartina pectinata	freshwater cord grass	herb	FACW+	4

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 110/52 = 2.1$**
$FQI = \sum C/\sqrt{N} = 110/\sqrt{52} = 15.3$**

**These calculations include the complete species list above, as well as the planted species.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: X No:
Comment: The site has been excavated recently and planted with oats, therefore affecting vegetation, soils, and hydrology.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Amaranthus tuberculatus*	OBL	herb
2. *Epilobium coloratum*	OBL	herb
3. *Leersia oryzoides*	OBL	herb
4. *Lolium perenne*	UPL	herb
5. *Phalaris arundinacea*	FACW+	herb
6. *Polygonum lapathifolium*	FACW+	herb
7. *Salix nigra*	OBL	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 85.7%

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

SOILS

Series and phase: Mapped as Dorchester silt loam, revised to Typic Udorthent

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 10YR 4/6, 7.5YR 3/4
Redox Depletions?	Yes: X	No:	Color: 10Y 5/2 and 5/3

Matrix color: 10YR 3/1.5, 10YR 3/1
Other indicators: Tributary has developed a new, meandering channel over part of site.
Hydric soils? Yes: X No:
Rationale: This is an excavated site where soils were stripped away, exposing a lower substratum. The colors are remnants of the old soil, but the soil has developed hydric indicators. Therefore this is a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 2 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

HYDROLOGY

Inundated: Yes: X(parts) No: Depth of standing water: 3 to 10 cm (1 to 4 in)
Depth to saturated soil: Surface to 0.6 m (24 in)
Overview of hydrological flow through the system: This site receives water through precipitation, sheet flow from surrounding higher ground, and occasional overflow from Richland Creek and a tributary. Water leaves the site via evapotranspiration and sheet flow into Richland Creek and a tributary.
Size of Watershed: <100 km^2 (38.6 mi^2)
Other field evidence observed: Water-borne sediment deposits on vegetation

Wetland hydrology: Yes: X No:
Rationale: This site is in an excavated area along Richland Creek and is occasionally inundated. It is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: This site supports hydrophytic vegetation, hydric soils, and wetland hydrology. We determined that this site is a wetland.

Determined by: Jeff Matthews, Dan Busemeyer, and Paul Tessene
(vegetation and hydrology)
Jessica Kurylo
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 3 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Abutilon theophrasti	velvet-leaf	herb	FACU-	*
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	herb	FACW-	1
Acer saccharinum	silver maple	herb	FACW	1
Agrostis alba	red top	herb	FACW	0
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Angelica atropurpurea	angelica	herb	OBL	6
Anthemis cotula	dog fennel	herb	FACU	*
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Artemisia annua	annual wormwood	herb	FACU	*
Aster pilosus	hairy aster	herb	FACU+	0
Barbarea vulgaris	winter cress	herb	FAC	*
Bidens cernua	nodding beggar's ticks	herb	OBL	2
Bidens frondosa	common beggar's ticks	herb	FACW	1
Bidens vulgata	tall beggar's ticks	herb	FACW	0
Boltonia asteroides	false aster	herb	FACW	5
Brassica kaber	charlock	herb	UPL	0
Bromus inermis	awnless brome grass	herb	UPL	*
Bromus japonicus	Japanese brome	herb	FACU	*
Calystegia sepium	American bindweed	herb	FAC	1
Carduus acanthoides	acanthus bristle thistle	herb	UPL	*
Chenopodium album	lamb's quarters	herb	FAC-	*
Chenopodium glaucum	oak-leaved goosefoot	herb	FACW	*
Cirsium vulgare	bull thistle	herb	FACU-	*
Conyza canadensis	horseweed	herb	FAC-	0
Cyperus esculentus	yellow nut-sedge	herb	FACW	0

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 4 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Echinochloa muricata	barnyard grass	herb	OBL	0
Echinocystis lobata	wild balsam-apple	herb	FACW-	4
Epilobium coloratum	cinnamon willow herb	herb	OBL	3
Equisetum arvense	common horsetail	herb	FAC	0
Eragrostis hypnoides	creeping love grass	herb	OBL	5
Erechtites hieracifolia	fire weed	herb	FACU	2
Erigeron annuus	annual fleabane	herb	FAC-	1
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Festuca arundinacea	tall fescue	herb	FACU+	*
Glechoma hederacea	ground ivy	herb	FACU	*
Hackelia virginiana	stickseed	herb	FAC-	1
Helenium autumnale	autumn sneezeweed	herb	FACW+	3
Hordeum jubatum	squirrel-tail	herb	FAC+	*
Impatiens capensis	jewelweed	herb	FACW	2
Iva annua	marsh elder	herb	FAC	0
Juncus dudleyi	Dudley's rush	herb	FAC	4
Lactuca serriola	prickly lettuce	herb	FAC	*
Lemna minor	common duckweed	herb	OBL	3
Lindernia dubia	false pimpernel	herb	OBL	5
Lobelia inflata	Indian tobacco	herb	FACU-	4
Lobelia siphilitica	blue cardinal-flower	herb	FACW+	4
Ludwigia peploides glabrescens	creeping primrose willow	herb	OBL	5
Lycopus americanus	common water horehound	herb	OBL	3
Medicago lupulina	black medic	herb	FAC-	*
Medicago sativa	alfalfa	herb	UPL	*
Melilotus sp.	sweet clover	herb	FACU	*
Mentha arvensis villosa	field mint	herb	FACW	4
Mimulus ringens	monkey flower	herb	OBL	5
Muhlenbergia frondosa	common satin grass	herb	FACW	3

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 5 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Myosoton aquaticum	giant chickweed	herb	FAC+	*
Nasturtium officinale	water cress	herb	OBL	*
Oenothera biennis	evening primrose	herb	FACU	1
Oxalis stricta	yellow wood sorrel	herb	FACU	0
Panicum capillare	witch grass	herb	FAC	0
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Pastinaca sativa	parsnip	herb	UPL	*
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phleum pratense	timothy	herb	FACU	*
Physalis subglabrata	smooth ground cherry	herb	UPL	0
Pilea pumila	Canada clearweed	herb	FACW	3
Plantago rugelii	red-stalked plantain	herb	FAC	0
Polygonum arenastrum	knotweed	herb	UPL	*
Polygonum hydropiper	common smartweed	herb	OBL	*
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Polygonum scandens	climbing buckwheat	herb	FAC	2
Populus deltoides	eastern cottonwood	herb	FAC+	2
Portulaca oleracea	purslane	herb	FAC-	*
Potentilla norvegica	rough cinquefoil	herb	FAC	0
Ranunculus pensylvanicus	bristly crowfoot	herb	OBL	5
Ranunculus sceleratus	cursed crowfoot	herb	OBL	3
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rudbeckia hirta	black-eyed susan	herb	FACU	2
Rumex altissimus	pale dock	herb	FACW-	2
Rumex crispus	curly dock	herb	FAC+	*
Rumex obtusifolius	bitter dock	herb	FACW	*

(continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 6 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix exigua	sandbar willow	herb	OBL	1
Salix nigra	black willow	herb	OBL	3
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Scrophularia marilandica	late figwort	herb	FACU-	4
Scutellaria lateriflora	mad-dog skullcap	herb	OBL	4
Setaria faberi	giant foxtail	herb	FACU+	*
Setaria glauca	pigeon grass	herb	FAC	*
Setaria viridis	common foxtail	herb	UPL	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Sisymbrium altissimum	tumble mustard	herb	FACU	*
Solanum dulcamara	false bittersweet	herb	FAC	*
Solanum ptycanthum	black nightshade	herb	FACU-	0
Solidago gigantea	late goldenrod	herb	FACW	3
Sonchus asper	prickly sowthistle	herb	FAC	*
Taraxacum officinale	common dandelion	herb	FACU	*
Teucrium canadense	American germander	herb	FACW-	3
Trifolium hybridum	alsike clover	herb	FAC-	*
Trifolium pratense	red clover	herb	FACU+	*
Typha latifolia	cattail	herb	OBL	1
Urtica dioica	stinging nettle	herb	FAC+	2
Verbascum thapsus	woolly mullein	herb	UPL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervian	herb	FAC+	3
Veronica peregrina	purslane speedwell	herb	FACW+	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 153/74 = 2.1$
$FQI = \sum C/\sqrt{N} = 153/\sqrt{74} = 17.8$

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 7 of 7)

Field Investigators: Matthews, Kurylo, Busemeyer, and Tessene
Date: 22 August 2001
Project Name: FAP 316
State: Illinois **County:** Stephenson **Applicant:** IDOT District 2
Site Name: Wetland enhancement
Legal Description: E/2, NW/4, Sect. 1, T 28 N, R 7 E
Location: This wetland enhancement is located south of West St. James Road, along the east and west sides of Richland Creek, upstream and downstream from the bridge on relocated Illinois Route 26.

PLANTED SPECIES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Carex vulpinoidea	fox sedge	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Fraxinus pennsylvanica	green ash	tree	FACW	2
Glyceria striata	fowl manna grass	herb	OBL	4
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lolium perenne	crested rye grass	herb	FACU	*
Populus deltoides	eastern cottonwood	tree	FAC+	2
Quercus bicolor	swamp white oak	tree	FACW+	7
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Secale cereale	rye	herb	UPL	*

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

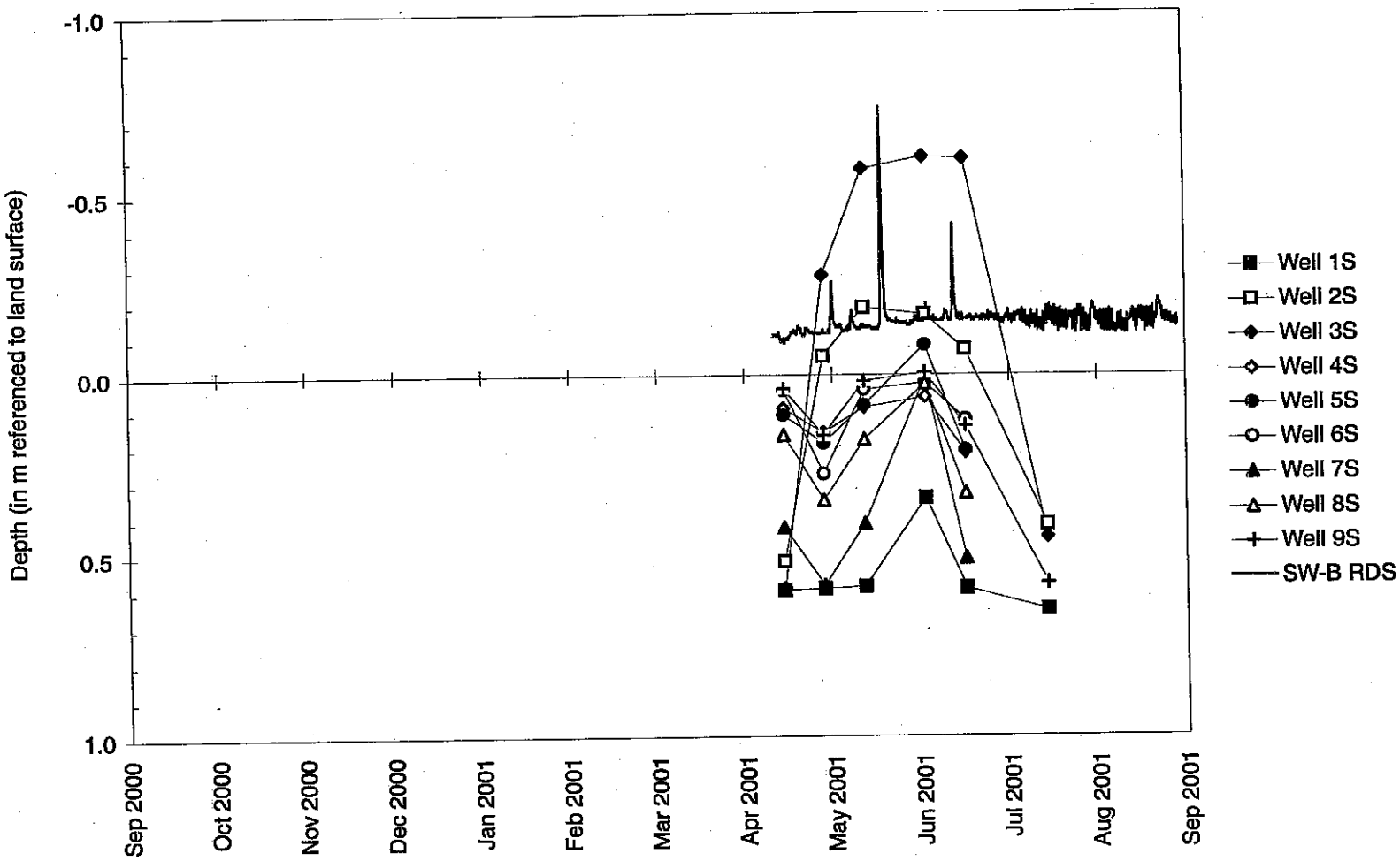
$mCv = \sum C/N = 181/82 = 2.2$**
$FQI = \sum C/\sqrt{N} = 181/\sqrt{82} = 20.0$**

**These calculations include the complete species list above, as well as the planted species.

APPENDIX B: HYDROLOGIC INFORMATION

Figure 1: Estimated extent of 2001 wetland hydrology (figure prepared by ISGS, from Weaver and Carr 2001).

Figure 2: Depth to water as measured by soil-zone monitoring wells and an RDS water-level data logger (from Weaver and Carr 2001)



APPENDIX C: RESULTS OF QUANTITATIVE VEGETATION SAMPLING

Table 1: Results of quantitative vegetation sampling at Site 1A (created marsh)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Alisma plantago-aquatica	43.8	9.4	23.7	24.5	17.0
Eleocharis obtusa	50.0	10.7	18.4	19.0	14.9
Amaranthus tuberculatus	37.5	8.1	5.2	5.3	6.7
Polygonum lapathifolium	18.8	4.0	7.4	7.7	5.9
Phalaris arundinacea	18.8	4.0	7.2	7.4	5.7
Lindernia dubia	25.0	5.4	4.1	4.3	4.8
Polygonum hydropiper	21.9	4.7	4.0	4.1	4.4
Rorrippa islandica	31.3	6.7	1.1	1.2	3.9
Polygonum persicaria	15.6	3.4	3.0	3.1	3.2
Lemna minor	25.0	5.4	0.8	0.8	3.1
Polygonum pensylvanicum	9.4	2.0	3.5	3.6	2.8
Taraxacum officinale	18.8	4.0	0.9	1.0	2.5
Panicum dichotomiflorum	9.4	2.0	2.1	2.2	2.1
Sagittaria latifolia	9.4	2.0	2.1	2.2	2.1
Salix exigua	12.5	2.7	1.1	1.2	1.9
Echinochloa muricata	6.3	1.3	2.0	2.1	1.7
Populus deltoides	12.5	2.7	0.8	0.8	1.7
Conyza canadensis	9.4	2.0	1.0	1.1	1.5
Trifolium hybridum	6.3	1.3	1.2	1.2	1.3
Scirpus americanus	6.3	1.3	0.9	1.0	1.2
Scirpus fluviatilis	6.3	1.3	0.9	1.0	1.2
Leersia oryzoides	6.3	1.3	0.6	0.6	1.0
Cirisium arvense	6.3	1.3	0.5	0.5	0.9
Acalypha rhomboidea	6.3	1.3	0.2	0.2	0.8
Ranunculus sceleratus	6.3	1.3	0.0	0.0	0.7
Bidens cernua	3.1	0.7	0.5	0.5	0.6
Carex vulpinoidea	3.1	0.7	0.5	0.5	0.6
Cyperus esculentus	3.1	0.7	0.5	0.5	0.6
Epilobium coloratum	3.1	0.7	0.5	0.5	0.6
Eupatorium perfoliatum	3.1	0.7	0.5	0.5	0.6
Lycopus americanus	3.1	0.7	0.5	0.5	0.6
Rudbeckia hirta	3.1	0.7	0.5	0.5	0.6
Acer negundo	3.1	0.7	0.1	0.1	0.4
Erigeron annuus	3.1	0.7	0.1	0.1	0.4
Lolium perenne	3.1	0.7	0.1	0.1	0.4
Penthorum sedoides	3.1	0.7	0.1	0.1	0.4
Potentilla norvegica	3.1	0.7	0.1	0.1	0.4
Salix nigra	3.1	0.7	0.1	0.1	0.4
Abutilon theophrasti	3.1	0.7	0.0	0.0	0.3
Morus alba	3.1	0.7	0.0	0.0	0.3
Sum	466	100	97	100	100

Table 2: Results of quantitative vegetation sampling at Site 1B (wet prairie border of created marsh)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Eleocharis obtusa	86.7	10.0	33.8	22.0	16.0
Polygonum hydropiper	86.7	10.0	18.3	11.9	10.9
Panicum dichotomiflorum	53.3	6.2	18.9	12.3	9.2
Lolium perenne	53.3	6.2	18.9	12.2	9.2
Phalaris arundinacea	60.0	6.9	15.2	9.8	8.4
Cyperus esculentus	53.3	6.2	7.1	4.6	5.4
Polygonum pensylvanicum	33.3	3.8	5.0	3.2	3.5
Rudbeckia hirta	26.7	3.1	3.9	2.5	2.8
Trifolium hybridum	26.7	3.1	3.2	2.1	2.6
Epilobium coloratum	20.0	2.3	3.0	1.9	2.1
Polygonum persicaria	20.0	2.3	3.0	1.9	2.1
Amaranthus tuberculatus	13.3	1.5	2.7	1.8	1.6
Ulmus rubra	20.0	2.3	1.4	0.9	1.6
Polygonum amphibium	13.3	1.5	2.0	1.3	1.4
Salix nigra	13.3	1.5	2.0	1.3	1.4
Erigeron anuus	20.0	2.3	0.6	0.4	1.3
Lindernia dubia	20.0	2.3	0.6	0.4	1.3
Penthorum sedoides	20.0	2.3	0.6	0.4	1.3
Populus deltoides	20.0	2.3	0.6	0.4	1.3
Solidago gigantea	20.0	2.3	0.6	0.4	1.3
Taraxacum officinale	20.0	2.3	0.6	0.4	1.3
Cyperus strigosus	6.7	0.8	2.5	1.6	1.2
Alisma plantago-aquatica	13.3	1.5	1.2	0.8	1.2
Rumex crispus	13.3	1.5	1.2	0.8	1.2
Acer negundo	13.3	1.5	0.4	0.3	0.9
Polygonum arenastrum	13.3	1.5	0.4	0.3	0.9
Rorippa islandica	13.3	1.5	0.4	0.3	0.9
Veronica peregrina	13.3	1.5	0.4	0.3	0.9
Bidens cernua	6.7	0.8	1.0	0.6	0.7
Bidens frondosa	6.7	0.8	1.0	0.6	0.7
Ratibita pinnata	6.7	0.8	1.0	0.6	0.7
Trifolium repens	6.7	0.8	1.0	0.6	0.7
Acalypha rhomboidea	6.7	0.8	0.2	0.1	0.4
Coreopsis tinctoria	6.7	0.8	0.2	0.1	0.4
Vernonia fasciculata	6.7	0.8	0.2	0.1	0.4
Sum	833	100	153	100	100

Table 3: Results of quantitative vegetation sampling at Site 2 (wetland enhancement)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Lolium perenne	43.2	9.8	22.3	19.4	14.6
Amaranthus tuberculatus	37.8	8.6	15.7	13.7	11.1
Salix nigra	27.0	6.1	9.4	8.1	7.1
Polygonum lapathifolium	18.9	4.3	8.2	7.1	5.7
Phalaris arundinacea	18.9	4.3	6.9	6.0	5.2
Leersia oryzoides	21.6	4.9	4.3	3.7	4.3
Epilobium coloratum	16.2	3.7	5.0	4.3	4.0
Agrostis alba	16.2	3.7	4.4	3.8	3.7
Rorippa islandica	18.9	4.3	3.4	3.0	3.6
Alisma plantago-aquatica	16.2	3.7	3.4	2.9	3.3
Echinochloa muricata	13.5	3.1	3.2	2.8	2.9
Rumex crispus	10.8	2.5	3.5	3.1	2.8
Festuca arundinacea	5.4	1.2	3.3	2.9	2.1
Trifolium hybridum	13.5	3.1	1.1	0.9	2.0
Conyza canadensis	10.8	2.5	1.3	1.1	1.8
Carex vulpinoidea	8.1	1.8	1.8	1.6	1.7
Taraxacum officinale	10.8	2.5	0.9	0.8	1.6
Populus deltoides	8.1	1.8	1.2	1.1	1.4
Setaria glauca	8.1	1.8	0.9	0.8	1.3
Sonchus asper	8.1	1.8	0.4	0.4	1.1
Phleum pratense	5.4	1.2	1.1	1.0	1.1
Chenopodium glaucum	5.4	1.2	1.0	0.9	1.1
Lemna minor	2.7	0.6	1.7	1.5	1.0
Cyperus esculentus	5.4	1.2	0.8	0.7	1.0
Polygonum pensylvanicum	5.4	1.2	0.8	0.7	1.0
Acer saccharinum	5.4	1.2	0.5	0.4	0.8
Glyceria striata	5.4	1.2	0.5	0.4	0.8
Muhlenbergia frondosa	5.4	1.2	0.5	0.4	0.8
Solidago gigantea	5.4	1.2	0.5	0.4	0.8
Echinocystis lobata	2.7	0.6	1.0	0.9	0.7
Abutilon theophrasti	2.7	0.6	0.4	0.4	0.5
Bidens frondosa	2.7	0.6	0.4	0.4	0.5
Bromus japonicus	2.7	0.6	0.4	0.4	0.5
Eleocharis obtusa	2.7	0.6	0.4	0.4	0.5
Glechoma hederacea	2.7	0.6	0.4	0.4	0.5
Impatiens capensis	2.7	0.6	0.4	0.4	0.5
Lindernia dubia	2.7	0.6	0.4	0.4	0.5
Medicago lupulina	2.7	0.6	0.4	0.4	0.5
Myosoton aquaticum	2.7	0.6	0.4	0.4	0.5
Oenothera biennis	2.7	0.6	0.4	0.4	0.5
Polygonum persicaria	2.7	0.6	0.4	0.4	0.5

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Table 3 (continued)

Species	Frequency (%)	Relative frequency (%)	Average cover (%)	Relative cover (%)	Importance value
Polygonum scandens	2.7	0.6	0.4	0.4	0.5
Setaria faberi	2.7	0.6	0.4	0.4	0.5
Typha latifolia	2.7	0.6	0.4	0.4	0.5
Acalypha rhomboidea	2.7	0.6	0.1	0.1	0.3
Acer negundo	2.7	0.6	0.1	0.1	0.3
Bromus inermis	2.7	0.6	0.1	0.1	0.3
Lactuca serriola	2.7	0.6	0.1	0.1	0.3
Pentohrum sedoides	2.7	0.6	0.1	0.1	0.3
Polygonum arenastrum	2.7	0.6	0.1	0.1	0.3
Urtica dioica	2.7	0.6	0.1	0.1	0.3
Veronica peregrina	2.7	0.6	0.0	0.0	0.3
Sum	441	100	115	100	100

APPENDIX D: PHOTOGRAPHS OF WETLAND MITIGATION SITES

PHOTOGRAPH LEGENDS

Figure 1: View of Site 1 to the west from the northeastern corner of the site.

Figure 2: View of Site 1 to the west from the eastern edge of the site.

Figure 3: View of Site 1 to the south.

Figure 4: View of Site 1 to the north.

Figure 5: View of Site 2 to the west from the bridge over Richland Creek.

Figure 6: View of Site 2 to the southwest from the bridge over Richland Creek.

Figure 7: View of Site 2 to the southeast from the bridge over Richland Creek.

Figure 8: View of tributary to Richland Creek at Site 2.

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

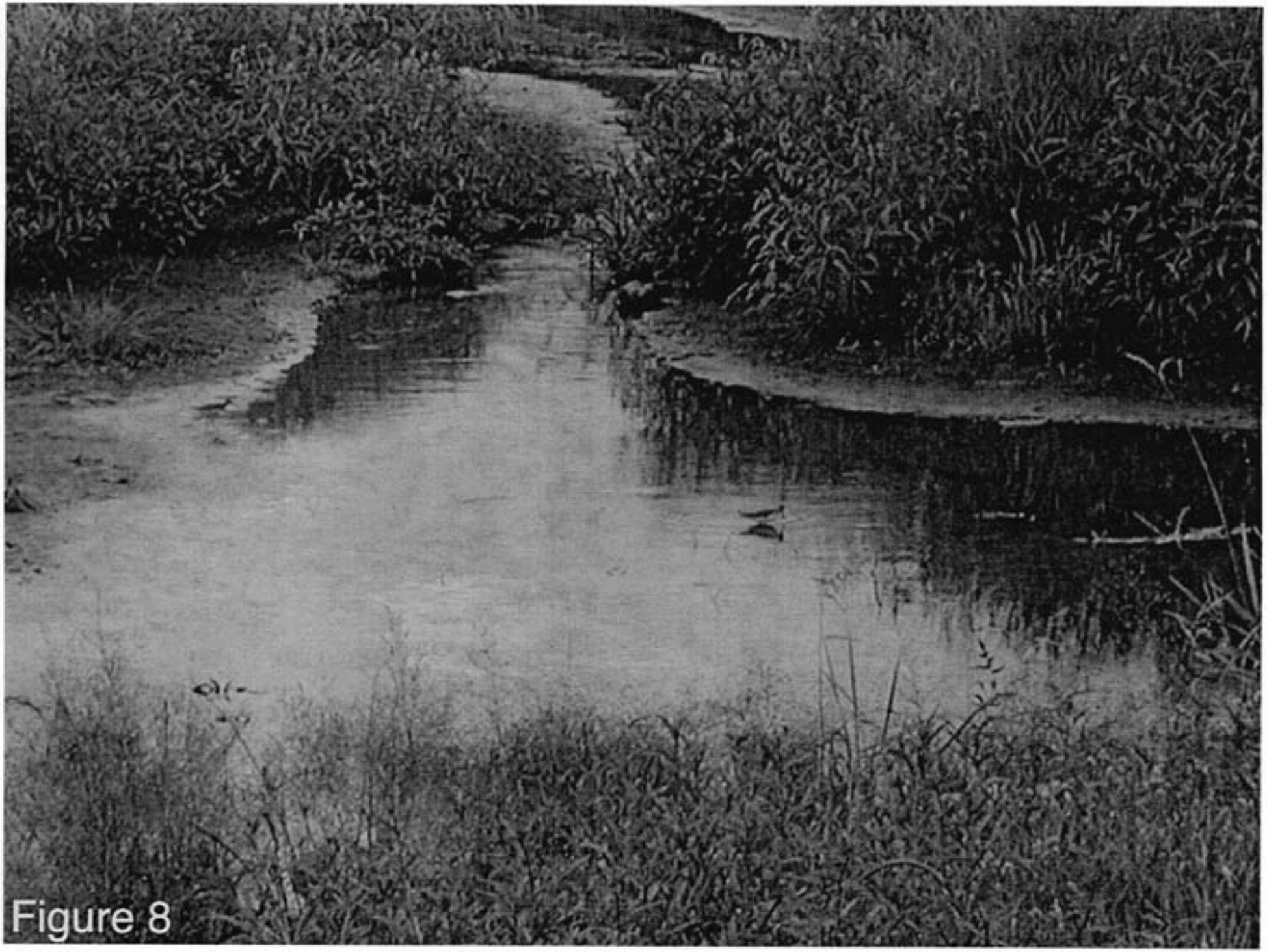

Figure 8