

**Second Year Wetland Mitigation Site Monitoring for the Tamms Site,
FAS 1907 (IL 127), Alexander County, Illinois – 2005**

Paul Marcum, Dennis Keene,
Rick Larimore, and Brad Zercher
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

Introduction

Wetland compensation activity has been initiated along Illinois Route 127, one mile north of Tamms, Alexander County, Illinois. The legal location of the site is NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ and the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 31, T. 14 S., R. 1 W. (Mill Creek, IL Quad). This site is mitigation for wetland impacts [0.704 ha (1.739 ac)] incurred during the widening of IL 127 in Union and Alexander counties. The total mitigation required for this project is 1.750 ha (4.325 ac). Prior to wetland construction this mitigation site was mostly in row crops with some abandoned railroad embankments (IDOT Wetland Conceptual Plan). This site is located within the Bottomlands Section of the Coastal Plain Division of Illinois. The pre-settlement forests of this section were primarily bottomland oak-hickory forests (*Quercus bicolor*, *Q. lyrata*, *Q. michauxii*, *Q. pagoda*, *Q. palustris*, *Q. shumardii*, *Carya laciniosa*, *C. ovata*, *C. cordiformis* as well as *Fraxinus* spp., *Liquidambar styraciflua*, *Nyssa sylvatica*, and many others) (Schwegman *et al.* 1973). The wetland conceptual plan for this area suggests that emergent ponds, wet meadow, and a wetland tree planting would be the most likely development for this site (IDOT Wetland Conceptual Plan).

Illinois Natural History Survey (INHS) personnel began field monitoring of this area in 2004 and will continue for five years, as requested by the Illinois Department of Transportation (IDOT) (Marlow 2003). The Illinois State Geological Survey (ISGS) was also tasked to monitor the hydrology of this site. Project goals, objectives, and performance criteria are included in this report, as are monitoring methods, monitoring results, summary information and recommendations.

Project Goals, Objectives, and Performance Criteria

Proposed goals and objectives for this wetland mitigation project are based on information contained in the original wetland conceptual plan for this site (IDOT Wetland Conceptual Plan). Performance criteria are based on those specified in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), *Guidelines for Developing Mitigation Proposals* (USACOE 1993), and *Assessment of Created Wetland Performance in Illinois* (Plocher and Matthews 2004). 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: At the end of the five-year monitoring period the created wetland communities should be jurisdictional wetlands as defined by current federal standards.

Objective: The created wetlands should comprise 1.750 hectares (4.325 acres) of jurisdictional wetland.

Performance Criteria: The created wetlands should satisfy the three criteria of the federal wetland definition: dominant 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 should be present, or conditions favorable for hydric soil formation should persist at this site.
- C. Presence of Wetland Hydrology – The compensation 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.*

Project Goal #2: A native, non-weedy, emergent wetland community will be created (Sites 1, 2, and 3).

Objective: Planting the area with high quality native emergent vegetation should reduce the pressures from early successional, non-native, weedy species.

Table 1. Proposed emergent species to be planted at FAS 1907 (IL 127) wetland monitoring site.

Quantity	Scientific Name	Common Name	Size
500	<i>Acorus calamus</i>	Sweet Flag	2" x 3" pots
500	<i>Iris shrevei</i>	Blue Flag Iris	2" x 3" pots
500	<i>Pontederia cordata</i>	Pickerelweed	2" x 3" pots
500	<i>Scirpus acutus</i>	Hardstem Bulrush	2" x 3" pots
500	<i>Sagittaria latifolia</i>	Arrowhead	2" x 3" pots

In addition to these species it appears that an unknown quantity of *Juncus effusus* was also planted at the mitigation area.

Performance Criteria:

- A. At least 50% of the planted emergent species should be represented by live, healthy individuals at the end of five years of monitoring.
- B. At least 50% of the plant species present should be native and non-weedy species.
- C. Furthermore, none of the dominant plant species may be non-native.

* In some cases wetland hydrology can be met when a site is inundated or saturated for 5% to 12.5% of the growing season (Environmental Laboratory 1987).

Project Goal #3: A floodplain forest wetland community will be created (Site 4).

Objective: Planting the area with hydrophytic tree species should compensate for the loss of previously altered wetlands.

Performance Criterion: Seventy-five percent of the planted trees should be in a live and healthy condition each year for five years.

Methods

Monitoring of this wetland mitigation site began in 2004 and will continue for the standard five-year monitoring period. INHS personnel will monitor the biological parameters and ISGS personnel will monitor hydrology. The project area has been divided into four sites based on the original wetland conceptual plan (IDOT). Site 1, located at the north end of the mitigation area, was proposed as an emergent pond community. In 2005, it was decided that Site 1 be divided into two parts, 1A (west side; wet meadow) and 1B (east side; emergent pond). Herbaceous vegetation in both parcels of Site 1 will be monitored annually using standard sampling techniques (Cox 1985). Transects placed 20 m apart have been established and herbaceous vegetation will be assessed using 1m² quadrats placed at two meter intervals along each transect, beginning with a quadrat one meter from the baseline. A minimum of forty 1m² quadrats will be sampled annually at Site 1. Likewise, Site 3 (emergent pond), located at the southeast corner of the mitigation area, will be assessed using standard sampling techniques (Cox 1985). Three transects (273°) have been established perpendicular to a baseline (3°) running along the east side of the wetland. Quadrats (1m²) will be placed at five meter intervals along each transect, beginning with a quadrat two meters from the baseline. A minimum of twenty 1m² quadrats will be sampled annually. Site 2 is a very small, narrow, wet meadow/marsh site. Because of its small size, Site 2 is not quantitatively sampled. Instead the assessment of dominant herbaceous vegetation in Site 2 will be done by a visual estimate. Dominant species for Site 4 (proposed wetland tree planting) will also be based on a visual estimate.

Results and status of the created wetland site will be submitted to the IDOT in yearly monitoring reports. The likelihood of meeting the proposed goals and performance criteria will also be addressed. If, at any time during the monitoring period, it appears that the goals/performance criteria will not be met at the end of the five-year monitoring period, written management recommendations will be made to IDOT in an effort to correct any problems.

Floristic Quality Index

A complete list of all plant species found in the project area will be recorded annually and the Floristic Quality Index (FQI) will be calculated (Swink and Wilhelm 1979 and 1994; Taft *et al.* 1997). The FQI provides a measure of the floristic integrity or level of disturbance of a site. Each native plant species is assigned a rating between 0 and 10 (the Coefficient of Conservatism) that is a subjective indicator of how likely a plant may be found on an undisturbed site in a natural plant community. A plant species that has a low Coefficient of Conservatism (C) is common and is likely to tolerate disturbed conditions; a species with a high C is relatively rare

and is likely to require specific, undisturbed habitats. Species not identified to species level are not rated and are not included in the calculations.

To calculate the FQI, first compute the mean C value (also known as mean rated quality), $mCv = \Sigma C/N$, where ΣC represents the sum of the numerical ratings (C) for all species recorded for a site, and N represents the number of plants on the site. The C value for each species is shown in the species list for the site. Species that are not native to Illinois (indicated by * in the species list for each site) are not included in the calculations. The FQI for each site is determined by dividing the ΣC value by the square root of N [$\Sigma C/(\sqrt{N})$]. An Index score below 10 suggests a site of low natural quality; below 5, a highly disturbed site. An FQI value of 20 or more ($mCv > 3$) suggests that a site has evidence of native character and may be considered an environmental asset.

Project Goal #1 At the end of the five-year monitoring period the created wetland community should be a jurisdictional wetland as defined by current federal standards.

Wetland delineations will be completed yearly for all wetlands created at this compensation site. Since accurate boundaries may not be clear until several years of data have been gathered, final delineation of wetland extent will be marked on an aerial photograph only after the plant communities have stabilized or at the end of the five year monitoring period.

Therefore it is important to recognize that wetland areas marked on the enclosed aerial photograph (Appendix 1, Figure 2) are subject to change. In addition, permanent photo stations have been established in each wetland area and photos will be taken annually in order to help monitor changes in the vegetation. Photos are included in Appendix 3 of the report.

A. Predominance of Hydrophytic Vegetation – The method for determining dominant hydrophytic vegetation is described in Environmental Laboratory (1987) and Federal Interagency Committee for Wetland Delineation (1989). This method is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is assigned a wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter (i.e., FAC, FAC+, FACW-, FACW, FACW+ and OBL) is considered hydrophytic. A predominance of hydrophytic vegetation in the wetland plant community exists if greater than 50% of the dominant species present are hydrophytic.

Dominant hydrophytic vegetation will be determined each year based on the results of systematic plant sampling (Sites 1 and 3) or by general visual estimates (Sites 2 and 4). For systematic plant sampling, cover of all species in each plot is assigned a cover class according to Daubenmire (1959) as modified by Bailey and Poulton (1968) (Table 2). Frequency (proportion of quadrats in which a species occurred) and average cover (calculated using midpoints for each cover class) will be used to compute relative frequency (frequency of a species relative to total observations) and relative cover (cover relative to total observed cover), respectively. These two relative values are averaged to determine the importance value for each species sampled. Importance values will be used to determine dominant species. “Dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50% of the total dominance measure for the stratum, plus any additional

species comprising 20% or more of the total dominance measure for the stratum” (FICWD 1989; Tiner 1999).

Table 2. Cover classes used in vegetation sampling.

Cover Class	Range of Cover (%)	Midpoint of Range (%)
1	0-1	0.5
2	1-5	3.0
3	5-25	15.0
4	25-50	37.5
5	50-75	62.5
6	75-95	85.0
7	95-100	97.5
(Daubenmire 1959; Bailey and Poulton 1968)		

B. Presence of Hydric Soils – INHS personal will examine soil cores for field indicators to determine the presence or absence of hydric soils as described in the *Corps of Engineers Wetland Delineation Manual* (Environmental, 1987) and the *Field Indicators of Hydric Soils in the United States* (USDA 2002).

Hydric soils may develop slowly and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soil indicators at that time, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation are present at the site.

C. Presence of Wetland Hydrology – The ISGS has been tasked to monitor hydrology at the proposed mitigation site. To date they have installed one surface-water monitoring station (RDS1), a rain gauge, four surface water staff gauges (A, B, C, and D), and nine monitoring wells (1S-9S) (Pociask and Shofner 2004). ISGS personnel will measure water levels monthly. In addition, INHS scientists will survey the site annually for field indicators of wetland hydrology.

Project Goal #2: A native, non-weedy, emergent wetland community will be created (Sites 1, 2, and 3).

Planted emergent species survivorship will be assessed each year for a five-year monitoring period (2004 to 2008). Initially six emergent species were planted. These emergent species were *Acorus calamus*, *Iris shrevei*, *Juncus effusus*, *Pontederia cordata*, *Sagittaria latifolia*, and *Scirpus acutus*. Annually, planted emergent species will be located, identified to species, and determined to be alive or dead. If less than 50% of the planted emergent species are represented by live, healthy individuals at the end of the five-year monitoring period, this part of the performance criteria for project goal #2 will be considered unsatisfied.

A complete species list will be compiled each year and species will be recorded as native or non-native and weedy or non-weedy. Nativity of plants will be determined by consulting

Mohlenbrock (1986; 2002) and Taft *et al.* (1997). Weedy species, for the purposes of this report, are defined as all non-native species and any native species assigned a Coefficient of Conservatism of 0 or 1 (Taft *et al.* 1997). Species given a C value of 0-1 correspond to Grime's ruderal species (Grime 1974; Grime *et al.* 1988) or species which are adapted to frequent or severe disturbances (Taft *et al.* 1997). If native and non-weedy species constitute less than 50% of the plant species present at a particular site, part B of the performance criteria for project goal #2 will be considered unsatisfied for that site. Furthermore, if any dominant species are non-native, part C of the performance criteria for project goal #2 will be considered unsatisfied.

Project Goal #3: A floodplain forest wetland community will be created (Site 4).

Tree survivorship will be assessed each year for a five-year monitoring period (2004 to 2008). Initially Site 4 was planted with a total of 187 trees. These trees included *Taxodium distichum* (21), *Fraxinus pennsylvanica* (17), *Liquidambar styraciflua* (17), *Platanus occidentalis* (17), *Quercus bicolor* (38), *Q. lyrata* (38), and *Q. palustris* (39). An additional fourteen *T. distichum* (total of 35) were planted at the north end of the mitigation area (around Site 1). Annually, every tree will be located, identified to species, and determined to be alive or dead.

Results

Floristic Quality Index: The FQI was calculated for each wetland delineation site using native species only. Site 1A (Wet Meadow) had a mean C value of 2.9 and a FQI score of 22.4. These values are indicative of good natural quality. Site 1B (mean C = 3.2, FQI = 26.4) and Site 3 (mean C = 3.0, FQI = 21.5) also had values characteristic of good natural quality while Site 2 (mean C = 2.4, FQI = 11.7) and Site 4 (mean C = 2.4, FQI = 14.9) had scores characteristic of fair natural quality. In 2005, numerous species indicative of higher natural quality were present. Species present with a C value of 6 or greater included: *Carex lurida* (Sites 1A and 3), *Carex muskingumensis* (Site 1B), *Juncus diffusissimus* (Sites 1B and 3), *Juncus nodatus* (Sites 1A, 2, and 3), *Ludwigia glandulosa* (Sites 1A, 1B, and 3), *Mimulus alatus* (Site 2), *Pluchea camphorata* (Site 1B), and *Pontederia cordata* (Site 3). Summary information for wetland delineation sites at the FAS 1907 (IL 127) wetland mitigation area is given in Table 3.

Table 3. Summary table for wetland sites at FAS 1907 (IL 127) Tamms wetland mitigation area, 2005.

	Site 1A	Site 1B	Site 2	Site 3	Site 4
Total Species Richness	65	79	26	59	61
Native Species Richness	59	68	23	52	38
% Native	91%	86%	88%	88%	62%
% Native and Non-weedy	65%	66%	54%	63%	36%
Mean Conservatism	2.9	3.2	2.4	3.0	2.4
Floristic Quality Index (FQI)	22.4	26.4	11.7	21.5	14.9
% Wetland Species (FAC to OBL)	89%	90%	88%	93%	54%

Project Goal #1 At the end of the five year monitoring period the created wetland community should be a jurisdictional wetland as defined by current federal standards.

A. Predominance of Hydrophytic Vegetation – The performance criterion requires that greater than 50% of the dominant plant species be hydrophytic. Dominant plant species for 2005 are given in Tables 4 through 8. Quantitative sampling results for Sites 1A, 1B, and 3 are presented in Tables 9, 10, and 11. More than 50% of the dominant species are hydrophytic for Sites 1A, 1B, 2, and 3. Only Site 4 failed to satisfy this part of the performance criteria for project goal #1.

Table 4. Dominant species present at FAS 1907 (IL 127) Site 1A (Wet Meadow)

Species	Indicator Status	Stratum
1. <i>Carex tribuloides</i>	FACW+	herb
2. <i>Echinochloa muricata</i>	OBL	herb
3. <i>Polygonum hydropiper</i>	OBL	herb

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

Table 5. Dominant species present at FAS 1907 (IL 127) Site 1B (Emergent Pond)

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Polygonum hydropiper</i>	OBL	herb

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

Table 6. Dominant species present at FAS 1907 (IL 127) Site 2 (Marsh/Wet Meadow)

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Iva annua</i>	FAC	herb
4. <i>Juncus nodatus</i>	OBL	herb
3. <i>Typha angustifolia</i>	OBL	herb

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

Table 7. Dominant species present at FAS 1907 (IL 127) Site 3 (Emergent Pond w/fringe)

Dominant Plant Species	Indicator Status	Stratum
1. <i>Acorus calamus</i>	OBL	herb
2. <i>Juncus nodatus</i>	OBL	herb
3. <i>Ludwigia peploides glabrescens</i>	OBL	herb

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

Table 8. Dominant species present at FAS 1907 (IL 127) Site 4 [Shrubland (proposed floodplain forest)]

Dominant Plant Species	Indicator Status	Stratum
1. <i>Quercus bicolor</i>	planted	sapling/shrub
2. <i>Quercus macrocarpa</i>	planted	sapling/shrub
3. <i>Quercus palustris</i>	planted	sapling/shrub
4. <i>Agrostis alba</i>	FACW	herb
5. <i>Campsis radicans</i>	FAC	herb
6. <i>Elymus canadensis</i>	FAC-	herb
7. <i>Setaria faberi</i>	FACU+	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 50%

Table 9. FAS 1907 (IL 127) Site 1A wetland monitoring site vegetation sampling data including frequency, cover, and importance value for all species sampled in 2005. Dominants are in bold.

Species	Indicator	Freq.	Rel. Freq.	Avg. Cover	Rel. Cover	IV
<i>Echinochloa muricata</i>	OBL	0.8824	13.2743	41.3529	44.5783	28.9263
<i>Polygonum hydropiper</i>	OBL	0.9412	14.1593	12.3824	13.3481	13.7537
<i>Carex tribuloides</i>	FACW+	0.5294	7.9646	8.3235	8.9727	8.4687
<i>Carex vulpinoidea</i>	OBL	0.4706	7.0796	4.4118	4.7559	5.9178
<i>Ludwigia palustris</i>	OBL	0.2941	4.4248	4.2353	4.5656	4.4952
<i>Setaria faberi</i>	FACU+	0.2353	3.5398	4.1471	4.4705	4.0052
<i>Juncus nodatus</i>	OBL	0.1765	2.6549	4.5882	4.9461	3.8004
<i>Panicum implicatum</i>	FAC	0.2353	3.5398	3.1471	3.3925	3.4662
<i>Juncus interior</i>	FAC+	0.1765	2.6549	2.5588	2.7584	2.7066
<i>Panicum dichotomiflorum</i>	FACW-	0.1765	2.6549	2.5588	2.7584	2.7066
<i>Eleocharis obtusa</i>	OBL	0.2941	4.4248	0.7353	0.7926	2.6087
<i>Ulmus americana</i>	FACW-	0.2353	3.5398	0.1176	0.1268	1.8333
<i>Hypericum mutilum</i>	FACW	0.1765	2.6549	0.3824	0.4122	1.5335
<i>Rumex crispus</i>	FAC+	0.1765	2.6549	0.3824	0.4122	1.5335
<i>Polygonum persicaria</i>	FACW	0.1765	2.6549	0.2353	0.2536	1.4543
<i>Lespedeza cuneata</i>	NI	0.1765	2.6549	0.0882	0.0951	1.3750
<i>Iva annua</i>	FAC	0.1176	1.7699	0.3529	0.3805	1.0752
<i>Iris shrevei</i>	OBL	0.0588	0.8850	0.8824	0.9512	0.9181
<i>Acalypha rhomboidea</i>	FACU	0.1176	1.7699	0.0588	0.0634	0.9167
<i>Scirpus atrovirens</i>	OBL	0.1176	1.7699	0.0588	0.0634	0.9167
<i>Xanthium strumarium</i>	FAC	0.1176	1.7699	0.0588	0.0634	0.9167
<i>Aster pilosus</i>	FACU+	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Aster vimineus</i>	FACW-	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Campsis radicans</i>	FAC	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Carex annectans</i>	FACW	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Juncus acuminatus</i>	OBL	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Juncus effusus solutus</i>	OBL	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Ludwigia glandulosa</i>	OBL	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Panicum capillare</i>	FAC	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Polygonum pensylvanicum</i>	FACW+	0.0588	0.8850	0.1765	0.1902	0.5376
<i>Acer negundo</i>	FACW-	0.0588	0.8850	0.0294	0.0317	0.4583
<i>Eclipta prostrata</i>	FACW	0.0588	0.8850	0.0294	0.0317	0.4583
<i>Erechtites hieracifolia</i>	FACU	0.0588	0.8850	0.0294	0.0317	0.4583
<i>Toxicodendron radicans</i>	FAC+	0.0588	0.8850	0.0294	0.0317	0.4583
		6.6471	100.0000	92.7647	100.0000	100.0000
bare ground				22.8529		

Table 10. FAS 1907 (IL 127) Site 1B wetland monitoring site vegetation sampling data including frequency, cover, and importance value for all species sampled in 2005. Dominants are in bold.

Species	Indicator	Freq.	Rel. Freq.	Avg. Cover	Rel. Cover	IV
<i>Echinochloa muricata</i>	OBL	0.9286	17.6471	49.1548	69.8292	43.7381
<i>Polygonum hydropiper</i>	OBL	0.3571	6.7873	2.5595	3.6361	5.2117
<i>Eleocharis obtusa</i>	OBL	0.2857	5.4299	2.4643	3.5008	4.4653
<i>Ammania coccinea</i>	OBL	0.3810	7.2398	0.3690	0.5243	3.8820
<i>Lindernia dubia anagallidea</i>	OBL	0.3333	6.3348	0.8690	1.2346	3.7847
<i>Acorus calamus</i>	OBL	0.0476	0.9050	4.0476	5.7500	3.3275
<i>Mollugo verticillata</i>	FAC	0.2857	5.4299	0.5476	0.7779	3.1039
<i>Juncus interior</i>	FAC+	0.1429	2.7149	1.1310	1.6066	2.1608
<i>Aster vimineus</i>	FACW-	0.0952	1.8100	1.6786	2.3846	2.0973
<i>Aster ontarionis</i>	FAC	0.1190	2.2624	1.2143	1.7250	1.9937
<i>Aster simplex</i>	FACW	0.1429	2.7149	0.8810	1.2515	1.9832
<i>Rotala ramosior</i>	OBL	0.1905	3.6199	0.1548	0.2199	1.9199
<i>Eclipta prostrata</i>	FACW	0.1667	3.1674	0.2619	0.3721	1.7697
<i>Lespedeza cuneata</i>	NI	0.1667	3.1674	0.2619	0.3721	1.7697
<i>Setaria faberi</i>	FACU+	0.0476	0.9050	1.5000	2.1309	1.5179
<i>Ludwigia palustris</i>	OBL	0.1190	2.2624	0.0595	0.0846	1.1735
<i>Carex tribuloides</i>	FACW+	0.0952	1.8100	0.1071	0.1522	0.9811
<i>Leersia oryzoides</i>	OBL	0.0952	1.8100	0.1071	0.1522	0.9811
<i>Iris shrevei</i>	OBL	0.0476	0.9050	0.7143	1.0147	0.9598
<i>Rorippa islandica/sessiliflora</i>	OBL	0.0952	1.8100	0.0476	0.0676	0.9388
<i>Panicum virgatum</i>	FAC+	0.0238	0.4525	0.8929	1.2684	0.8604
<i>Cyperus iria</i>	FACW	0.0714	1.3575	0.1548	0.2199	0.7887
<i>Ambrosia artemisiifolia</i>	FACU	0.0714	1.3575	0.0952	0.1353	0.7464
<i>Boltonia asteroides</i>	FACW	0.0476	0.9050	0.3690	0.5243	0.7146
<i>Acalypha rhomboidea</i>	FACU	0.0714	1.3575	0.0357	0.0507	0.7041
<i>Ludwigia polycarpa</i>	OBL	0.0714	1.3575	0.0357	0.0507	0.7041
<i>Salix nigra</i>	OBL	0.0714	1.3575	0.0357	0.0507	0.7041
<i>Carex vulpinoidea</i>	OBL	0.0476	0.9050	0.0833	0.1184	0.5117
<i>Panicum implicatum</i>	FAC	0.0476	0.9050	0.0833	0.1184	0.5117
<i>Populus deltoides</i>	FAC+	0.0476	0.9050	0.0238	0.0338	0.4694
<i>Pyrrhopappus carolinianus</i>	UPL	0.0476	0.9050	0.0238	0.0338	0.4694
<i>Rumex crispus</i>	FAC+	0.0476	0.9050	0.0238	0.0338	0.4694
<i>Ulmus americana</i>	FACW-	0.0476	0.9050	0.0238	0.0338	0.4694
<i>Agrostis alba</i>	FACW	0.0238	0.4525	0.0714	0.1015	0.2770
<i>Penthorum sedoides</i>	OBL	0.0238	0.4525	0.0714	0.1015	0.2770
<i>Polygonum lapathifolium</i>	FACW+	0.0238	0.4525	0.0714	0.1015	0.2770
<i>Acer rubrum</i>	FAC	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Campsis radicans</i>	FAC	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Carex hyalinolepis</i>	OBL	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Cyperus strigosus</i>	FACW	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Glyceria striata</i>	OBL	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Juncus brachycarpus</i>	FACW	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Juncus effusus solutus</i>	OBL	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Ludwigia glandulosa</i>	OBL	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Riccia/Ricciacarpus</i> liverwort	OBL	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Sida spinosa</i>	FACU	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Typha angustifolia</i>	OBL	0.0238	0.4525	0.0119	0.0169	0.2347
<i>Vitis riparia</i>	FACW-	0.0238	0.4525	0.0119	0.0169	0.2347
Others...		0.0476	0.9050	0.0238	0.0338	0.4694
		5.2619	100	70.3929	100	100
bare ground				46.8571		

Table 11. FAS 1907 (IL 127) Site 3 wetland monitoring site vegetation sampling data including frequency, cover, and importance value for all species sampled in 2005. Dominants are in bold.

Species	Indicator	Freq.	Rel. Freq.	Avg. Cover	Rel. Cover	IV
<i>Ludwigia peploides</i>	OBL	0.9167	22.9167	41.6875	46.3946	34.6556
<i>Acorus calamus</i>	OBL	0.3750	9.3750	12.9375	14.3983	11.8867
<i>Juncus nodatus</i>	OBL	0.2917	7.2917	13.0208	14.4911	10.8914
<i>Echinochloa muricata</i>	OBL	0.5417	13.5417	4.0417	4.4980	9.0198
<i>Juncus effusus solutus</i>	OBL	0.2083	5.2083	9.8958	11.0132	8.1108
<i>Xanthium strumarium</i>	FAC	0.3333	8.3333	1.1875	1.3216	4.8275
<i>Pontederia cordata</i>	OBL	0.1250	3.1250	2.3125	2.5736	2.8493
<i>Polygonum pennsylvanicum/bicorne</i>	FACW+/FAC	0.1250	3.1250	0.7708	0.8579	1.9914
<i>Eleocharis obtusa</i>	OBL	0.0833	2.0833	0.7500	0.8347	1.4590
<i>Polygonum hydropiper</i>	OBL	0.0833	2.0833	0.7500	0.8347	1.4590
<i>Eleocharis acicularis</i>	OBL	0.0833	2.0833	0.6458	0.7188	1.4010
<i>Ammania coccinea</i>	OBL	0.0833	2.0833	0.2500	0.2782	1.1808
<i>Barbarea vulgaris</i>	FAC	0.0833	2.0833	0.1458	0.1623	1.1228
<i>Eclipta prostrata</i>	FACW	0.0833	2.0833	0.1458	0.1623	1.1228
<i>Ipomaea hederacea</i>	FAC	0.0833	2.0833	0.0417	0.0464	1.0649
<i>Juncus diffusissimus</i>	FACW	0.0417	1.0417	0.6250	0.6956	0.8686
<i>Juncus acuminatus</i>	OBL	0.0417	1.0417	0.1250	0.1391	0.5904
<i>Leersia oryzoides</i>	OBL	0.0417	1.0417	0.1250	0.1391	0.5904
<i>Panicum dichotomiflorum</i>	FACW-	0.0417	1.0417	0.1250	0.1391	0.5904
<i>Sagittaria latifolia</i>	OBL	0.0417	1.0417	0.1250	0.1391	0.5904
<i>Acalypha rhomboidea</i>	FACU	0.0417	1.0417	0.0208	0.0232	0.5324
<i>Aster simplex</i>	FACW	0.0417	1.0417	0.0208	0.0232	0.5324
<i>Bidens cernua</i>	OBL	0.0417	1.0417	0.0208	0.0232	0.5324
<i>Iva annua</i>	FAC	0.0417	1.0417	0.0208	0.0232	0.5324
<i>Lindernia dubia anagallidea</i>	OBL	0.0417	1.0417	0.0208	0.0232	0.5324
<i>Populus deltoides</i>	FAC+	0.0417	1.0417	0.0208	0.0232	0.5324
<i>Solidago canadensis</i>	FACU	0.0417	1.0417	0.0208	0.0232	0.5324
		4.0000	100	89.8542	100	100
bare ground				34.2096		

B. Presence of Hydric Soils – The performance criterion requires that hydric soil characteristics be present, or conditions favorable for hydric soil formation should persist. INHS personnel examined soil cores for field indicators to determine the presence or absence of hydric soils as described in the *Corps of Engineers Wetland Delineation Manual* (Environmental, 1987) and the *Field Indicators of Hydric Soils in the United States* (USDA 2003). The NRCS (Natural Resource Conservation Service) had mapped the entire site as hydric soils. After conducting a field investigation, the first three sites that received some excavation appeared to be hydric. The fourth site, which is not considered part of the wetland acreage but as a buffer, varied from being hydric to non-hydric. Following is a soil description of a typical pedon for each site.

Table 12. Site 1A (Wet Meadow) – Okaw silt loam.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Deplet.</u>	<u>Tex- ture</u>	<u>Structure</u>
	0-3	10YR 5/2		FFD 10YR 5/4				sil	Gr
	3-14	2.5Y 6/1		MCP 7.5YR 5/8				sicl	pl
	14-23	2.5Y 6/2		CMP 7.5YR 5/8 CMP 10YR 5/6				sicl	pr
	23-34	2.5Y 6/2		MCP 7.5YR 5/8 PMP 10YR 5/6				sicl	pr

Table 13. Site 1B (Emergent Pond) – Okaw silt loam.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Deplet.</u>	<u>Tex- ture</u>	<u>Struct ure</u>
	0-3	10YR 6/1 10YR 5/2		CMP 7.5YR 5/8 CMP 7.5YR 5/6	CM 7.5YR 5/8			sicl	gr
	3-6	2.5Y 5/1		CMP 7.5YR 5/6 FFP 7.5YR 5/8	CM 7.5YR 5/8			sicl	bl
	6-28	2.5Y 6/2		FCD 7.5YR 4/6	FM 7.5YR 5/3			sic	pr
	28-38	2.5Y 6/2		MMP 10YR 5/4	FM 7.5YR 5/3			sic	pr

Table 14. Site 2 (Marsh/Wet Meadow) – Cape silty clay loam.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Deplet.</u>	<u>Tex- ture</u>	<u>Structure</u>
	0-2	2.5Y 6/2		FMP 10YR 5/6 and 5/8				sicl	bl
	2-9	2.5Y 6/2		FMP 10YR 5/6 FMP 7.5YR 5/8				sic	pr
	9-20	2.5Y 6/2		FFP 10YR 5/6 CMP 7.5YR 5/8				sic	pr
	20-	2.5Y 6/2		MMP 10YR 5/6 FFP 7.5YR 5/8				sic	pr

Table 15. Site 3 (Emergent Pond w/fringe) – Cape silty clay loam.

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Deplet.</u>	<u>Tex- ture</u>	<u>Structure</u>
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	0-6	2/5Y 5/1	10YR 3/1	CMP 7.5YR 5/8				sil	gr
	6-15	2.5Y 6/2	10YR 3/1	FMP 7.5YR 5/4 CMP 7.5YR 5/8				sicl	bl
	15-22	2.5Y 6/2	10YR 3/1	FMD 10YR 5/4 FMP 7.5YR 5/8				sic	pr
	22-36	2.5Y 6/2		MCD 10YR 5/4 FMP 7.5YR 5/8				sic	pr

Table 16. Site 4 (Shrubland; proposed floodplain forest) – Variable (non-hydric with hydric inclusions).

<u>Hor- izon</u>	<u>Depth (in)</u>	<u>Matrix Color</u>	<u>Concre- -tions</u>	<u>Iron Masses</u>	<u>Pore linings</u>	<u>Iron Deplet.</u>	<u>Clay Deplet.</u>	<u>Tex- -ture</u>	<u>Structure</u>
	0-4	10YR 4/2	CM 10YR 2/1	FFD 10YR 5/4				sil	gr
	4-9	10YR 4/3	FM 10YR 2/1	CMP 10YR 5/8				sic	pl
	9-21	2.5Y 5/3 2.5Y 6/2 2.5Y 6/3	FM 10YR 2/1	FMP 7.5YR 5/8 FFD 10YR 5/4				sic	pr
	21-36	2.5Y 5/3 2.5Y 6/2	CM 10YR 2/1	MCP 7.5YR 4/6 FMP 7.5YR 5/8				sic	pr

C. Presence of Wetland Hydrology – The performance criterion requires that the compensation 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*. The ISGS initiated water level monitoring at this site in November 2003. Their findings for 2005 indicate that 0.7 ha (1.8 ac) out of a total site area of approximately 6.3 ha (15.6 ac) satisfied the wetland hydrology criterion for greater than 5% of the growing season. Included within this area are 0.5 ha (1.3 ac) that conclusively satisfied the wetland hydrology criterion for 12.5% of the growing season (Pociask and Shofner 2005); Appendix 1, Figure 1). This is down from 2004 when 1.0 ha (2.5 ac) satisfied the wetland hydrology criterion for greater than 5% of the growing season [0.6 ha (1.6 ac) for 12.5% of the growing season] (Pociask and Shofner 2004).

During visits to the mitigation area, the following indicators of wetland hydrology were observed: areas of inundation, algal mats, mud cracks, blackened-leaves, crayfish chimneys, and areas of surface or near surface saturation.

Project Goal #2: A native, non-weedy, emergent wetland community will be created (Sites 1, 2, and 3).

Initially five emergent species (*Acorus calamus*, *Iris shrevei*, *Pontederia cordata*, *Sagittaria latifolia*, and *Scirpus acutus*) were to be planted at the FAS 1907 (IL 127) mitigation site (IDOT

* In some cases wetland hydrology can be met when a site is inundated or saturated for 5% to 12.5% of the growing season (Environmental Laboratory 1987).

Wetland Construction Plan). Subsequently *Juncus effusus* was also planted at the mitigation area. Numerous live, healthy individuals of all species except for *Scirpus acutus* were observed (83% of planted emergents were observed in a live, healthy condition). This part of the performance criteria is satisfied in 2005.

Three emergent wetland sites (Sites 1, 2, and 3) have been created at the FAS 1907 (IL 127) mitigation area. All three sites had a high percentage of native species (Site 1A = 91%, Site 1B = 86%, Site 2 = 88%, Site 3 = 88%; Table 3). Furthermore, percentages of native and non-weedy species were at acceptable levels (Site 1A = 65%; Site 1B = 66%; Site 2 = 54%; Site 3 = 63%). All three sites satisfy the second part of the performance criteria for project goal #2.

Part C of the performance criteria for project goal #2 states that no dominant species may be a non-native species. Both parcels of Site 1 had *Polygonum hydropiper*, a European smartweed, as a dominant in 2005. All other wetland sites had native dominant species (Tables 4-7, 9-11). Part C of the performance criteria for project goal #2 is satisfied for Sites 2 and 3 in 2005.

Project Goal #3: A floodplain forest wetland community will be created (Site 4).

All planted trees within FAS 1907 (IL 127) wetland mitigation area were located, identified and their condition was assessed. A total of 159 trees were found alive in 2005. This is down 24 from 2004 (Marcum *et al.* 2004). In all, 42 of 201 trees planted at this site have died (79% overall survival). Survival of *Liquidambar styraciflua* (12%) has fallen well below the 75% threshold. All other species continued to be at an acceptable level. Table 17 shows the cumulative survivorship for each tree species planted at the FAS 1907 (IL 127) wetland mitigation site.

Table 17. Cumulative tree survival for FAS 1907 (IL 127) wetland monitoring site - 2005.

Species	# Alive	# Dead	Total Planted	% Survival
<i>Fraxinus pennsylvanica</i>	17	0	17	100%
<i>Liquidambar styraciflua</i>	2	15	17	12%
<i>Platanus occidentalis</i>	13	4	17	76%
<i>Quercus bicolor</i>	31	7	38	82%
<i>Quercus lyrata</i>	29	9	38	76%
<i>Quercus palustris</i>	39	0	39	100%
<i>Taxodium distichum</i>	28	7	35	80%
Totals	159	42	201	79%

Summary and Recommendations

Table 18. Summary table of FAS 1907 (IL 127) Project Goal success.

Project Goal #1 - Create jurisdictional wetlands.(Sites 1-4)	
Performance Criterion A (hydrophytic vegetation)	Satisfied (Sites 1-3), Unsatisfied (Site 4)
Performance Criterion B (hydric soils)	Satisfied (Sites 1-3), Unsatisfied (Site 4)
Performance Criterion C (wetland hydrology)	Satisfied (Sites 1-3), Unsatisfied (Site 4)
Project Goal #2 – Create native, non-weedy emergent wetlands (Sites 1-3)	
Performance Criterion A (50% planted emergent survival)	Satisfied (Sites 1-3)
Performance Criterion B (50% native, non-weedy species)	Satisfied (Sites 1-3)
Performance Criterion C (No non-native dominants)	Satisfied (Sites 2-3), Unsatisfied (Site 1)
Project Goal #3 – Create a floodplain forest community (Site 4)	
Performance Criterion (< 75% tree survival)	Satisfied (Site 4)

Project goal #1 was satisfied for all sites except Site 4. Site 4, although not a wetland, is still valuable as a buffer for the created emergent wetlands (Sites 2 and 3) at the south end of the mitigation area. The performance criterion for part C of project goal #2 was not satisfied by Site 1 because the non-native European smartweed, *Polygonum hydropiper*, was found to be a dominant in 2005.

At this early stage of monitoring, planted herbaceous and tree species are above projected survivorship levels. Only *Liquidambar styraciflua* (sweet gum) was below the 75% threshold for trees. It is our recommendation that replanting be done, at least for this species. Additional replanting of other tree species might be considered as well. Floristic quality of all emergent sites is very promising. Sites 1 (1A, mean C = 2.9, FQI = 22.4; 1B, mean C = 3.2, FQI = 26.4) and 3 (mean C = 3.0, FQI = 21.5) are especially diverse.

Total area of the created wetlands is of some concern. In 2004 we determined the area of created wetlands at FAS 1907 (IL 127) to be approximately 1.00 ha (2.48 ac) [Appendix 1, Figure 2]. The objective for project goal #1 was to create 1.750 ha (4.325 ac) of jurisdictional wetland. It is conceivable that some additional wetland area might develop at this site; however, it is unlikely that an additional 0.75 ha (1.845 ac) of wetland will develop. Additional mitigation area should be searched for if this requirement is to be met.

Dominant species and overall species composition of the three created emergent wetlands are on course for good development. All dominants (except one) are native at this time and all three emergent wetlands are represented by greater than 50% native and non-weedy species. Many aggressive non-native species are present within the mitigation area. In 2004, *Typha angustifolia* (narrow-leaf cattail) was present in low numbers at Site 3. This year it has been found, still in low numbers, at all wetland sites within the mitigation area. *Phalaris arundinacea*, reed canary grass, is now present at Sites 2, 3, and 4. In 2004 it was only found at Site 4. A few aggressive non-native species were also observed in the upland site within the mitigation area. *Lespedeza cuneata* (sericea lespedeza), although not a dominant, was observed throughout the mitigation area. Other aggressive upland weeds include *Lonicera japonica* and *Sorghum halepense*. The abundance of all of these aggressive, persistent weeds will continue to be monitored and management recommendations will be made. At this time, as a precautionary measure, we

recommend spraying with herbicide to remove them from the site. Hopefully this treatment will remove them from the project area before they become a serious problem.

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Appendix 1. Figures

**Tamms Wetland Compensation Site
(FAS 1907)**

Estimated Areal Extent of 2004-2005 Wetland Hydrology
map based on IDOT design plans and ISGS topography recified to USGS digital orthophotograph
Mill Creek SE quarter quadrangle (ISGS 2004).

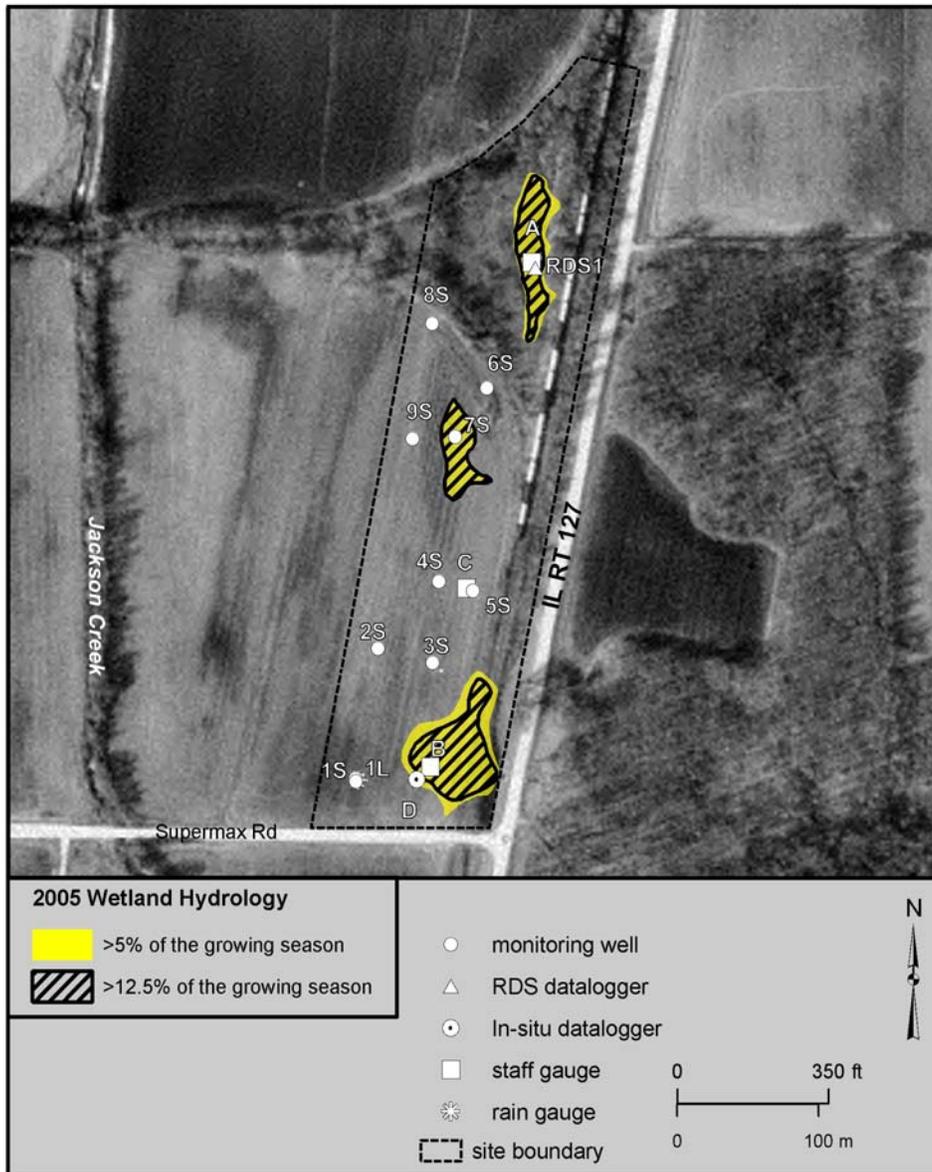


Figure 1. 2005 aerial extent of wetland hydrology for FAS 1907 (IL 127) wetland monitoring site (prepared by ISGS, Pociask and Shofner 2005).

Figure 2. Estimated aerial extent of the created wetland sites at FAS 1907 (IL 127), Alexander County, near Tamms, Illinois (prepared by INHS, Brad Zercher).

Appendix 2. Wetland Determination Forms

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 1 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

Do normal environmental conditions exist at this site? Yes: X No:

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

** This site is a recently excavated depression, created for mitigation purposes.*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Carex tribuloides</i>	FACW+	herb
2. <i>Echinochloa muricata</i>	OBL	herb
3. <i>Polygonum hydropiper</i>	OBL	herb

based on quantitative vegetation sampling; Table 9

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

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Okaw silt loam

On Alexander 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: Redox depletions: Yes: X No:

Matrix color: 2.5Y 5/1, 6/2, 6/1

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the top soil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Okaw silt loam as having aquic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 2 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

HYDROLOGY

Inundated: Yes: No: Depth of standing water: NA

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in a depression surrounded by higher ground on all sides. Water enters this site via precipitation and sheet flow from surrounding higher ground. Water leaves the site primarily via evapotranspiration and slowly through soil infiltration.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: No:

Rationale: A depressional landscape position and field evidence of saturation and inundation suggests that this site is saturated for a sufficient duration to meet the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?

Yes: No:

Rationale for decision:

Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present; therefore, this site is a wetland. The NWI does not code this site as a wetland.

Determined by: Paul Marcum and Rick Larimore (vegetation and hydrology)

Dennis Keene (soils and hydrology)

Brad Zercher (GPS and GIS)

Geoff Pociask and Greg Shofner (ISGS, hydrology)

Illinois Natural History Survey

Center for Wildlife Ecology

607 East Peabody Drive

Champaign, Illinois 61820

(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 3 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer negundo</i>	box elder	herb	FACW-	1
<i>Acer rubrum</i>	red maple	herb	FAC	5
<i>Acorus calamus</i>	sweetflag	herb	OBL	4
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Bidens frondosa</i>	common beggar's ticks	herb	FACW	1
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Calystegia sepium</i>	American bindweed	herb	FAC	1
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex annectens</i>	large yellow fox sedge	herb	FACW	3
<i>Carex hyalinolepis</i>	southern lake sedge	herb	OBL	4
<i>Carex lurida</i>	sedge	herb	OBL	7
<i>Carex tribuloides</i>	sedge	herb	FACW+	3
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Carex sp.</i>	sedge	herb	----	--
<i>Chasmanthium latifolium</i>	sea oats	herb	FACW	4
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erechtites hieracifolia</i>	fire weed	herb	FACU	2
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	herb	FACW+	5
<i>Hypericum mutilum</i>	dwarf St. John's wort	herb	FACW	5
<i>Iris shrevei</i>	southern blue flag	herb	OBL	5
<i>Iva annua</i>	marsh elder	herb	FAC	0

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 4 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Juncus acuminatus</i>	knotty-leaved rush	herb	OBL	4
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus nodatus</i>	stout rush	herb	OBL	6
<i>Juncus tenuis</i>	path rush	herb	FAC	0
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
<i>Lindernia dubia</i>	false pimpernel	herb	OBL	5
<i>Lindernia dubia anagallidea</i>	slender false pimpernel	herb	OBL	5
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia glandulosa</i>	false loosestrife	herb	OBL	8
<i>Ludwigia palustris americana</i>	marsh purslane	herb	OBL	4
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Panicum clandestinum</i>	deer-tongue grass	herb	FACW	4
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Panicum implicatum</i>	old field panic grass	herb	FAC	2
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Parthenocissus quinquefolia</i>	Virginia creeper	herb	FAC-	2
<i>Polygonum bicorne</i>	smartweed	herb	FAC	2
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum lapathifolium</i>	currtop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum persicaria</i>	spotted lady's thumb	herb	FACW	*
<i>Populus deltoides</i>	eastern cottonwood	shrub	FAC+	2
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Salix nigra</i>	black willow	shrub	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool grass	herb	OBL	5
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Stachys palustris</i>	woundwort	herb	OBL	5
<i>Teucrium canadense</i>	American germander	herb	FACW-	3

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 5 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-115 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This wet meadow is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C ♦
<i>Toxicodendron radicans</i>	poison ivy	herb	FAC+	1
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Ulmus americana</i>	American elm	herb	FACW-	5
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

mean C value (mCv) = $\sum C/N = 172/59 = 2.9$

FQI = $\sum C/\sqrt{N} = 172/(\sqrt{59}) = 22.4$

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 1 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

Do normal environmental conditions exist at this site? Yes: X No:

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

**This site is a recently excavated depression, created for mitigation purposes.*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Polygonum hydropiper</i>	OBL	herb

based on quantitative vegetation sampling; Table 9

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

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Okaw silt loam

On Alexander 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: Redox depletions: Yes: X No:

Matrix color: 2.5Y 5/1, 6/2, 6/1

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the top soil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Okaw silt loam as having aquic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 2 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

HYDROLOGY

Inundated: Yes: X (in part) No: Depth of standing water: up to 5.1 cm (2 in)

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in a depression surrounded by higher ground on all sides. Water enters this site via precipitation and sheet flow from surrounding higher ground. Additional transfer of water occurs through a low area between this site and a long narrow wetland along IL Route 127. Water leaves the site primarily via evapotranspiration and slowly through soil infiltration.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Areas of inundation, bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: X No:

Rationale: A depressional landscape position and field evidence of saturation and inundation suggest that this site is saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?

Yes: X No:

Rationale for decision:

Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present; therefore, this site is a wetland. The NWI does not code this site as a wetland.

Determined by: Paul Marcum and Rick Larimore (vegetation and hydrology)

Dennis Keene (soils and hydrology)

Brad Zercher (GPS and GIS)

Geoff Pociask and Greg Shofner (ISGS, hydrology)

Illinois Natural History Survey

Center for Wildlife Ecology

607 East Peabody Drive

Champaign, Illinois 61820

(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 3 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acer rubrum</i>	red maple	herb	FAC	5
<i>Acorus calamus</i>	sweetflag	herb	OBL	4
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Apios americana</i>	groundnut	herb	FACW	4
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Bidens frondosa</i>	common 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>Carex hyalinolepis</i>	southern lake sedge	herb	OBL	4
<i>Carex muskingumensis</i>	sedge	herb	OBL	6
<i>Carex squarrosa</i>	sedge	herb	OBL	5
<i>Carex tribuloides</i>	awl-fruited oval sedge	herb	FACW+	3
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Cyperus iria</i>	sedge	herb	FACW	*
<i>Cyperus strigosus</i>	straw-colored flatsedge	herb	FACW	0
<i>Diodia virginiana</i>	large buttonweed	herb	FACW	4
<i>Diospyros virginiana</i>	persimmon	shrub, herb	FAC	2
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Eupatorium perfoliatum</i>	common boneset	herb	FACW+	4
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Euthamia graminifolia</i>	grassleaf goldenrod	herb	FACW-	3
<i>Glyceria striata</i>	fowl manna grass	herb	OBL	4
<i>Hibiscus lasiocarpus</i>	hairy rose mallow	herb	FACW+	5

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 4 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Iris shrevei</i>	southern blue flag	herb	OBL	5
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus acuminatus</i>	knotty-leaved rush	herb	OBL	4
<i>Juncus brachycarpus</i>	rush	herb	FACW	5
<i>Juncus diffusissimus</i>	rush	herb	FACW	7
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
<i>Lindernia dubia anagallidea</i>	slender false pimpernel	herb	OBL	5
<i>Lonicera japonica</i>	Japanese honeysuckle	vine	FACU	*
<i>Ludwigia alternifolia</i>	seedbox	herb	OBL	5
<i>Ludwigia glandulosa</i>	false loosestrife	herb	OBL	8
<i>Ludwigia palustris americana</i>	marsh purslane	herb	OBL	4
<i>Ludwigia peploides glabrescens</i>	creeping primrose willow	herb	OBL	5
<i>Ludwigia polycarpa</i>	false loosestrife	herb	OBL	5
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Mollugo verticillata</i>	carpetweed	herb	FAC	*
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Panicum implicatum</i>	old field panic grass	herb	FAC	2
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Pluchea camphorata</i>	camphor weed	herb	FACW	7
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum persicaria</i>	spotted lady's thumb	herb	FACW	*
<i>Populus deltoides</i>	eastern cottonwood	herb	FAC+	2
<i>Pyrrhopappus carolinianus</i>	false dandelion	herb	UPL	1
<i>Quercus palustris</i>	pin oak	herb	FACW	4
<i>Riccia/Ricciacarpus</i>	liverwort	herb	----	--
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 5 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond

Legal Description: NE1/4, NE1/4, NW1/4 and NW1/4, NW1/4, NE1/4, Section 31, T. 14 S., R. 1 W.; and SW1/4, SW1/4, SE1/4, Section 30, T. 14 S., R. 1 W.

Location: This emergent pond is located from 304.8 m (1000 ft) to 449.6 m (1475 ft) north of Supermax Rd. and between 45.7 m (150 ft) to 114 m (375 ft) west of IL 27.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C ♦
<i>Rorippa sessiliflora</i>	sessile-flowered cress	herb	OBL	3
<i>Rotala ramosior</i>	tooth-cup	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix exigua</i>	sandbar willow	herb	OBL	1
<i>Salix nigra</i>	black willow	herb	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Ulmus americana</i>	American elm	herb	FACW-	5
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

mean C value (mCv) = $\sum C/N = 218/68 = 3.2$

FQI = $\sum C/\sqrt{N} = 218/(\sqrt{68}) = 26.4$

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 3)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

Do normal environmental conditions exist at this site? Yes: X No:

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

**This site is a recently excavated depression, created for mitigation purposes.*

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Echinochloa muricata</i>	OBL	herb
2. <i>Eleocharis obtusa</i>	OBL	herb
3. <i>Iva annua</i>	FAC	herb
4. <i>Juncus nodatus</i>	OBL	herb
5. <i>Typha angustifolia</i>	OBL	herb

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

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Cape silty clay loam

On Alexander 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: Redox depletions: Yes: X No:

Matrix color: 2.5Y 5/2

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the top soil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Cape silty clay loam as having aquic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 2 of 3)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in an excavated depression. Water enters this site via precipitation and sheet flow from adjacent higher ground. Water leaves the site primarily through soil infiltration and evapotranspiration. Some water may also leave through sheet flow to the south.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Bare areas indicating some ponded water, saturated soil, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: X No:

Rationale: A depressional landscape position and field evidence of saturation and inundation suggest that this site is saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?	Yes: X No:
Rationale for decision:	Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, this site is a wetland. The National Wetland Inventory does not code this site as a wetland.

Determined by: Paul Marcum and Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS, GIS and hydrology)
Geoff Pociask and Greg Shofner (ISGS, hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 3 of 3)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Wet Meadow/Marsh

Legal Description: NE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This wet meadow/marsh consists of two parcels in the center of the mitigation area. The largest parcel is located 251 m (825 ft) north of Supermax Road and 83.8 m (275 ft) west of IL 127. The smaller parcel is 183 m (600 ft) north of Supermax Road and 64.8 m (213 ft) west of IL 127.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acer negundo</i>	box elder	herb	FACW-	1
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Bromus</i> sp.	brome grass	herb	----	--
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex frankii</i>	sedge	herb	OBL	4
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus interior</i>	inland rush	herb	FAC+	3
<i>Juncus nodatus</i>	stout rush	herb	OBL	6
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Mimulus alatus</i>	winged monkey flower	herb	OBL	6
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool grass	herb	OBL	5
<i>Scirpus pendulus</i>	red bulrush	herb	OBL	3
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

mean C value (mCv) = $\sum C/N = 56/23 = 2.4$

FQI = $mCv/(\sqrt{N}) = 56/(\sqrt{23}) = 11.7$

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 1 of 4)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

Do normal environmental conditions exist at this site? Yes: X No:

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

* This site is a recently excavated depression, created for mitigation purposes.

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Acorus calamus</i>	OBL	herb
2. <i>Juncus nodatus</i>	OBL	herb
3. <i>Ludwigia peploides glabrescens</i>	OBL	herb

based on quantitative vegetation sampling; Table 9

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

Hydrophytic vegetation: Yes: X No:

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

SOILS

Series and phase: Cape silty clay loam

On Alexander 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: Redox depletions: Yes: X No:

Matrix color: 2.5Y 6/2

Other indicators: This soil is found in a depressional area.

Note: At least one foot of the top soil has been excavated at this site in order to lower this area.

Hydric soils: Yes: X No:

Rationale: The Natural Resources Conservation Service classifies Cape silty clay loam as having aquatic conditions. This soil has iron masses and an iron depleted matrix. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 2 of 4)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

HYDROLOGY

Inundated: Yes: X (in part) No: Depth of standing water: up to 0.10 m (4 in)

Depth to saturated soil: 0 to 1.02 m (0 to 40 in)

Overview of hydrological flow through the system: This site is located in an excavated depression. Water enters this site through precipitation and sheet flow from adjacent higher ground. Water leaves the site primarily through slow soil infiltration and evapotranspiration. Further transfer of water is possible during high water events through culverts on the south and east side of the wetland. Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: This site has been excavated to hold water for longer periods. Areas of inundation and saturation, bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves were observed at this site.

Wetland hydrology: Yes: X No:

Rationale: A depression landscape position and field evidence of saturation and inundation suggest that this site is saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?

Yes: X No:

Rationale for decision:

Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all present; therefore, this site is a wetland. The National Wetland Inventory does not code this site as a wetland.

Determined by: Paul Marcum and Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS and GIS)
Geoff Pociask and Greg Shofner (ISGS, hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 3 of 4)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acalypha rhomboidea</i>	three-seeded mercury	herb	FACU	0
<i>Acorus calamus</i>	sweetflag	herb	OBL	4
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Alisma plantago-aquatica</i>	broad-leaf water-plantain	herb	OBL	2
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Ammannia coccinea</i>	long-leaved ammannia	herb	OBL	5
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Barbarea vulgaris</i>	winter cress	herb	FAC	*
<i>Bidens cernua</i>	nodding beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	common 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>Carex frankii</i>	Frank's sedge	herb	OBL	4
<i>Carex lurida</i>	sedge	herb	OBL	7
<i>Carex vulpinoidea</i>	fox sedge	herb	OBL	3
<i>Cyperus ovularis</i>	hedgehog club rush	herb	FAC	2
<i>Cyperus pseudovegetus</i>	false green flat sedge	herb	FACW	5
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Diodia virginiana</i>	large buttonweed	herb	FACW	4
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Eclipta prostrata</i>	yerba de tajo	herb	FACW	2
<i>Eleocharis acicularis</i>	needle spike rush	herb	OBL	3
<i>Eleocharis obtusa</i>	blunt spike rush	herb	OBL	2
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Eupatorium serotinum</i>	late boneset	herb	FAC+	1
<i>Ipomoea hederacea</i>	ivy-leaved morning glory	herb	FAC	*
<i>Iris shrevei</i>	southern blue flag	herb	OBL	5
<i>Iva annua</i>	marsh elder	herb	FAC	0

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #3 (page 4 of 4)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Emergent Pond w/fringe

Legal Description: SE1/4, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This emergent pond w/fringe is located in the southeast corner of the mitigation area. The site begins approximately 7.6 m (25 ft) north of Supermax Road and 7.6 m (25 ft) west of IL 127.

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Juncus acuminatus</i>	knotty-leaved rush	herb	OBL	4
<i>Juncus diffusissimus</i>	rush	herb	FACW	7
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4
<i>Juncus nodatus</i>	stout rush	herb	OBL	6
<i>Juncus torreyi</i>	Torrey's rush	herb	FACW	3
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Lindernia dubia anagallidea</i>	slender false pimpernel	herb	OBL	5
<i>Ludwigia glandulosa</i>	false loosestrife	herb	OBL	8
<i>Ludwigia peploides glabrescens</i>	creeping primrose willow	herb	OBL	5
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phyla lanceolata</i>	fog-fruit	herb	OBL	1
<i>Polygonum bicorne</i>	smartweed	herb	FAC	2
<i>Polygonum hydropiper</i>	common smartweed	herb	OBL	*
<i>Polygonum lapathifolium</i>	curttop lady's thumb	herb	FACW+	0
<i>Polygonum pennsylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Pontederia cordata</i>	pickerelweed	herb	OBL	8
<i>Populus deltoides</i>	eastern cottonwood	herb	FAC+	2
<i>Pycnanthemum virginianum</i>	common mountain mint	herb	FACW+	5
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Sagittaria latifolia</i>	arrowhead	herb	OBL	4
<i>Salix nigra</i>	black willow	sapling, shrub	OBL	3
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Scirpus cyperinus</i>	wool grass	herb	OBL	5
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Typha angustifolia</i>	narrow-leaved cattail	herb	OBL	*
<i>Typha latifolia</i>	cattail	herb	OBL	1
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

*Non-native species

mean C value (mCv) = $\sum C/N = 155/52 = 3.0$

FQI = $mCv/(\sqrt{N}) = 155/(\sqrt{52}) = 21.5$

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 1 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

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

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. <i>Quercus bicolor</i>	planted	sapling/shrub
2. <i>Quercus lyrata</i>	planted	sapling/shrub
3. <i>Quercus palustris</i>	planted	sapling/shrub
4. <i>Agrostis alba</i>	FACW	herb
5. <i>Campsis radicans</i>	FAC	herb
6. <i>Elymus canadensis</i>	FAC-	herb
7. <i>Setaria faberi</i>	FACU+	herb

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 50%

Hydrophytic vegetation: Yes: No:

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

SOILS

Series and phase: Undetermined

On Alexander County hydric soils list? Undetermined

Is the soil a histosol? Yes: No: Histic epipedon present? Yes: No:

Redox concentrations: Yes: No: Redox depletions: In some areas

Matrix color: 10YR 5/3, 2.5Y 6/2, 2.5Y 6/3

Other indicators: None

Hydric soils: Undetermined

Rationale: This area varies between being hydric and non-hydric. Furthermore, this site seems to slope towards the lower areas. This site will be monitored and rechecked next year.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 2 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA

Depth to saturated soil: > 1.27 m (> 50 in)

Overview of hydrological flow through the system: This site is at a slightly to noticeably higher elevation than Sites 2 and 3. It is level to slightly sloping towards the lower ground. Water enters this site through precipitation and leaves quickly as sheet flow to Sites 2 and 3.

Size of watershed: Less than 2.59 km² (1 mi²).

Other field evidence observed: none

Wetland hydrology: Yes: No: X

Rationale: Field observations suggest that this site is both too high of elevation and too sloping to satisfy the wetland hydrology criterion. In our opinion, the site is not saturated long enough during the growing season to meet the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the site a wetland?	Yes: No: X
Rationale for decision:	Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are all absent; therefore, this site is not a wetland. The National Wetland Inventory does not code this site as a wetland.

Determined by: Paul Marcum and Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS, GIS and hydrology)
Geoff Pociask and Greg Shofner (ISGS, hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 3 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Acer negundo</i>	box elder	herb	FACW-	1
<i>Achillea millefolium</i>	common milfoil	herb	FACU	*
<i>Agrostis alba</i>	red top	herb	FACW	0
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Apocynum sibiricum</i>	Indian hemp	herb	FAC+	2
<i>Artemisia vulgaris</i>	common mugwort	herb	UPL	*
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Aster vimineus</i>	frost flower	herb	FACW-	3
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Bromus</i> sp.	brome grass	herb	----	--
<i>Campsis radicans</i>	trumpet creeper	shrub, herb	FAC	2
<i>Carex frankii</i>	Frank's sedge	herb	OBL	4
<i>Chamaesyce maculata</i>	nodding spurge	herb	FACU-	0
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	*
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cynanchum laeve</i>	blue vine	herb	FAC	1
<i>Dactylis glomerata</i>	orchard grass	herb	FACU	*
<i>Daucus carota</i>	Queen Anne's lace	herb	UPL	*
<i>Dianthus armeria</i>	Deptford pink	herb	UPL	*
<i>Elymus canadensis</i>	Canada wild rye	herb	FAC-	4
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Festuca pratensis</i>	meadow fescue	herb	FACU-	*
♣ <i>Fraxinus pennsylvanica</i>	green ash	sapling/shrub	FACW	2
<i>Ipomoea hederacea</i>	ivy-leaved morning glory	herb	FAC	*
<i>Ipomoea pandurata</i>	wild sweet potato vine	herb	FACU	2
<i>Iva annua</i>	marsh elder	herb	FAC	0
<i>Juncus effusus solutus</i>	common rush	herb	OBL	4

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 4 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Lespedeza cuneata</i>	sericea lespedeza	herb	NI	*
♣ <i>Liquidambar styraciflua</i>	sweet gum	sapling/shrub	FACW	6
<i>Mollugo verticillata</i>	carpetweed	herb	FAC	*
<i>Oxalis dillenii</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum virgatum</i>	prairie switchgrass	herb	FAC+	4
<i>Paspalum laeve</i>	smooth lens grass	herb	UPL	2
<i>Phalaris arundinacea</i>	reed canary grass	herb	FACW+	*
<i>Phleum pratense</i>	timothy	herb	FACU	*
<i>Phytolacca americana</i>	pokeweed	herb	FAC-	1
<i>Plantago lanceolata</i>	narrow-leaved plantain	herb	FAC	*
♣ <i>Platanus occidentalis</i>	sycamore	sapling/shrub	FACW	3
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
♣ <i>Quercus bicolor</i>	swamp white oak	tree	FACW+	7
♣ <i>Quercus lyrata</i>	overcup oak	tree	OBL	7
♣ <i>Quercus palustris</i>	pin oak	tree	FACW	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	*
<i>Scirpus atrovirens</i>	dark green bulrush	herb	OBL	4
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	*
<i>Setaria glauca</i>	pigeon grass	herb	FAC	*
<i>Sida spinosa</i>	prickly sida	herb	FACU	*
<i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sorghum halepense</i>	Johnson grass	herb	FACU	*
♣ <i>Taxodium distichum</i>	bald cypress	tree	OBL	7
<i>Torilis arvensis</i>	hedge parsley	herb	UPL	*
<i>Tridens flavus</i>	common purple top	herb	UPL	1
<i>Trifolium hybridum</i>	Alsike clover	herb	FAC-	*
<i>Trifolium pratense</i>	red clover	herb	FACU+	*
<i>Trifolium repens</i>	white clover	herb	FACU+	*
<i>Ulmus americana</i>	American elm	shrub, herb	FACW-	5
<i>Vicia villosa</i>	winter vetch	herb	UPL	*

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 5 of 5)

Field Investigators: Marcum, Keene, and Larimore

Date: 9-11 August, 2005

Project Name: FAS 1907 (IL 127)

State: Illinois

County: Alexander

Site Name: Shrubland (proposed floodplain forest)

Legal Description: E1/2, NE1/4, NW1/4, Section 31, T. 14 S., R. 1 W.

Location: This shrubland is located along the west boundary of the mitigation area. It extends from approximately 7.6 m (25 ft) to 320.0 m (1050 ft) north of Supermax Road.

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	C♦
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

♦ Coefficient of Conservatism (Taft *et al.* 1997)

♣ denotes planted species

*Non-native species

without planted species:

mean C value (mCv) = $\sum C/N = 56/31 = 1.8$

FQI = $mCv/(\sqrt{N}) = 56/(\sqrt{31}) = 10.1$

with planted tree species:

mean C value (mCv) = $\sum C/N = 92/38 = 2.4$

FQI = $mCv/(\sqrt{N}) = 92/(\sqrt{38}) = 14.9$

Appendix 3. Photos of wetland creation sites



Photo 1. View of the east half of Site 1, emergent pond/wet meadow, from the south end (at the V). The trees to the left of the picture are on the peninsula between the east and west half of Site 1.



Photo 2. View of the west half of Site 1, emergent pond/wet meadow, looking toward the north. The trees to the right of the picture are on the peninsula between the east and west half of Site 1.



Photo 3. View of the east side of Site 1, emergent pond/wet meadow, looking south from the north end. The trees to the right of the picture are on the peninsula between the east and west half of Site 1.



Photo 4. View of Site 2, wet meadow/marsh, looking south toward Supermax Road. Note the planted tree on the right side of the photo.



Photo 5. View of Site 3, the emergent pond w/fringe, from the culvert at Supermax Road looking to the north. IL 127 is barely visible at the right edge of the photo.