Sixth Year Wetland Mitigation Site Monitoring for the Tamms Site, FAS 1907 (IL 127), Alexander County, Illinois – 2009

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Introduction

Wetland compensation activity has been initiated along FAS 1907 (Illinois Route 127), one mile north of Tamms, Alexander County, Illinois. The legal location of the site is NE¼ of the NW¼ and the SE¼ of the SE¼ of the SW¼ 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 embankment (IDOT Wetland Conceptual Plan). This site is located within the Bottomlands Section of the Coastal Plain Natural 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 a minimum of 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.

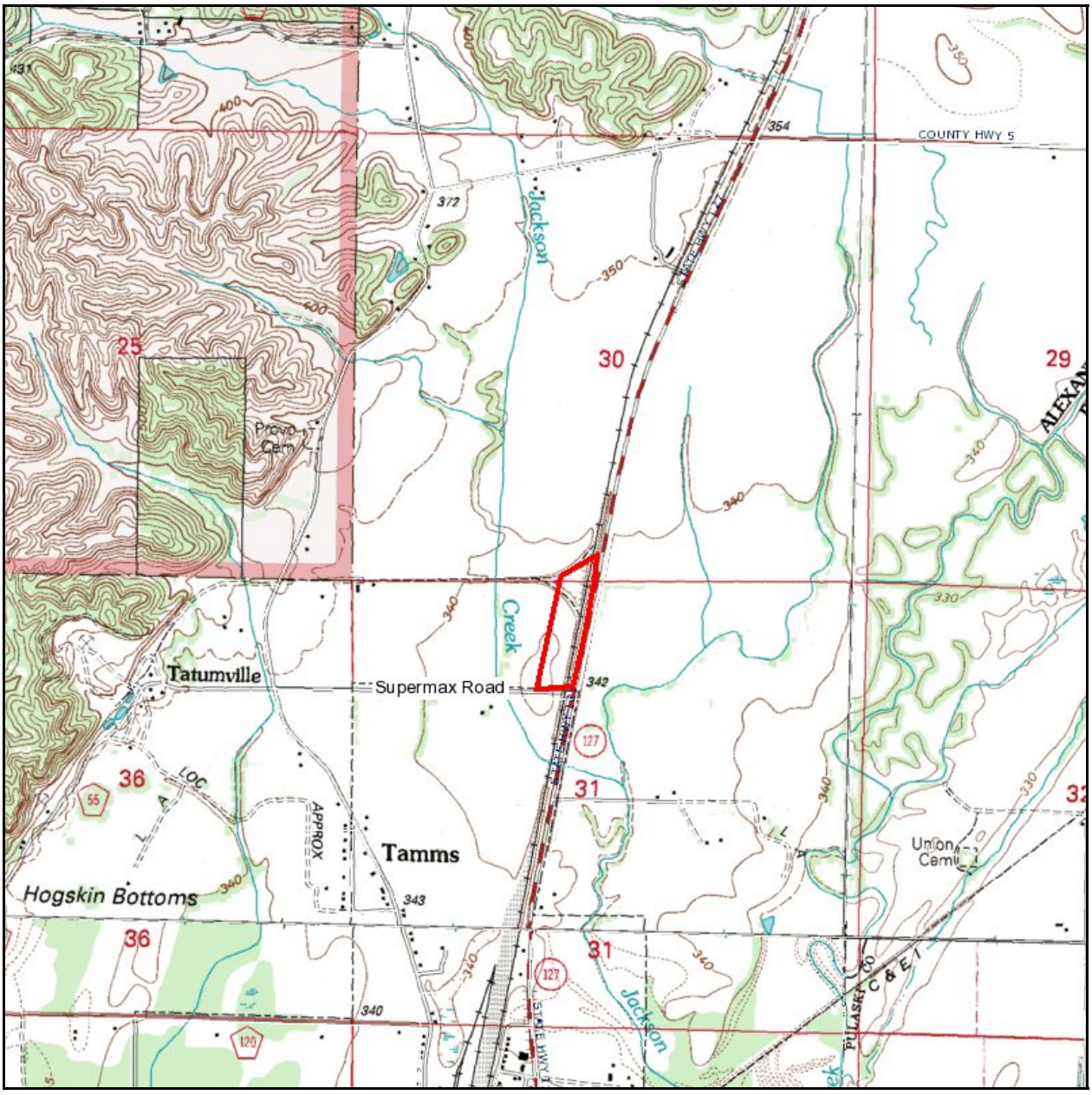

Figure 1. Location map for the Tamms Wetland Mitigation Site [FAS 1907 (IL 127)], Alexander County, Illinois.

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	*Acorus calamus*	Sweet Flag	2" x 3" pots
500	*Iris shrevei*	Blue Flag Iris	2" x 3" pots
500	*Pontederia cordata*	Pickerelweed	2" x 3" pots
500	*Scirpus acutus*	Hardstem Bulrush	2" x 3" pots
500	*Sagittaria latifolia*	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.

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.

* 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).

Methods

Monitoring of this wetland mitigation site began in 2004 and will continue for at least 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 $1m^2$ quadrats placed at two meter intervals along each transect, beginning with a quadrat one meter from the baseline. A minimum of forty $1m^2$ 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 ($1m^2$) will be placed at five meter intervals along each transect, beginning with a quadrat two meters from the baseline. A minimum of twenty $1m^2$ quadrats will be sampled annually. Site 2 is a 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 for each site (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), $mCv = \sum C/N$, where $\sum C$ 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 $\sum C$ value by the square root of N $[\sum C/(\sqrt{N})]$. 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 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. 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+ or 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 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 personnel 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 extent of wetland hydrology at this site is monitored by the Illinois State Geological Survey and is shown on the accompanying figure (Fucciolo et al. 2009). Wetland hydrology occurs when inundation or saturation to land surface is present for greater than 5% of the growing season (11 days at this site) where the soils and vegetation parameters in the Corps of Engineers Wetland Delineation Manual also are met; if either is lacking, then inundation or saturation must be present for greater than 12.5% of the growing season (28 days at this site) to satisfy the wetland hydrology criteria (Environmental Laboratory 1987 [http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf]). Inundation and saturation at the site are monitored using a combination of 10 monitoring wells and 3 staff gauges. Water levels are measured at least biweekly during April and May, and monthly during the remainder of the year. Manual readings are supplemented by 2 dataloggers, which measure surface-water levels at regular intervals to document all hydrologic events. Additional details regarding site conditions and monitoring results for wetland hydrology in 2009 are summarized in ISGS' Annual Report for Active IDOT Wetland Compensation and Hydrologic Monitoring Sites, September 1, 2007 to September 1, 2008 (Fucciolo et al. 2009). 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 beginning in 2004. Monitoring at this site is to be extended beyond the five-year minimum because of attempted hydrologic alteration to the site. 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 beginning in 2004. 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. If less than 75% of the planted trees are found to be alive the performance criteria for project goal #3 will be considered unsatisfied.

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 28.1. Site 1B (mean C = 3.0, FQI = 27.2), Site 2 (mean C = 3.0, FQI = 23.6), Site 3 (mean C = 3.1, FQI = 29.0), and Site 4, the upland buffer area (mean C = 2.3, FQI = 20.8) also had values characteristic of good natural quality. In 2009, numerous species indicative of higher natural quality were present. Nineteen species were present with a C value of 6 or greater. These species were: *Carex crinita* (Sites 2 and 3), *Carex lurida* (Sites 1A and 2), *Cocculus carolinus* (Site 4), *Eleocharis verrucosa* (Sites 1A and 3), *Galium tinctorium* (Site 3), *Glyceria arkansana* (Site 1B), *Juncus diffusissimus* (Site 2), *Juncus nodatus* (Sites 1A, 1B, 2, and 3), *Liquidambar styraciflua* (Sites 1A and 1B), *Lobelia cardinalis* (Site 1B), *Ludwigia decurrens* (Site 3), *Ludwigia glandulosa* (Site 2), *Lysimachia lanceolata* (Site 1B), *Mimulus alatus* (Site 1B), *Panicum rigidulum* (Sites 1A, 1B and 3), *Pluchea camphorata* (Sites 1B and 3), *Pontederia cordata* (Sites 1A and 3), *Populus heterophylla* (Site 3), and *Quercus marilandica* (Site 4).

Furthermore, *Glyceria arkansana* (Arkansas manna-grass) is listed as endangered in Illinois by the Illinois Endangered Species Protection Board (Herkert and Ebinger 2002; Illinois Endangered Species Protection Board 2005). 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, 2009.

	Site 1A	Site 1B	Site 2	Site 3	Site 4
Total Species Richness	101	91	80	102	113
Native Species Richness	91	84	74	89	79
% Native	90%	92%	93%	87%	70%
% Native and Non-weedy	69%	67%	56%	61%	41%
Mean Conservatism	2.9	3.0	3.0	3.1	2.3
Floristic Quality Index (FQI)	28.1	27.2	23.6	29.0	20.8
% Wetland Species (FAC to OBL)	82%	85%	75%	81%	50%

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 2009 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 all sites, except Site 4.

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

Dominant Plant Species	Indicator Status	Stratum	Importance Value (IV)
1. *Echinochloa muricata*	OBL	herb	14.4799
2. *Carex tribuloides*	FACW+	herb	12.6509
3. *Carex vulpinoidea*	OBL	herb	7.1998
4. *Panicum dichotomiflorum*	FACW-	herb	6.6435
5. *Aster vimineus*	FACW-	herb	6.5910
6. *Aster ontarionis*	FAC	herb	5.8475

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	Importance Value (IV)
1. *Boltonia asteroides*	FACW	herb	24.8536
2. *Aster vimineus*	FACW-	herb	12.1489
3. *Aster ontarionis*	FAC	herb	7.5771
4. *Echinochloa muricata*	OBL	herb	5.1969
5. *Eleocharis obtusa*	OBL	herb	4.9074

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. *Aster vimineus*	FACW-	herb
2. *Juncus nodatus*	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	Importance Value (IV)
1. *Boltonia asteroides*	FACW	herb	13.2503
2. *Juncus nodatus*	OBL	herb	10.4230
3. *Acorus calamus*	OBL	herb	8.8241
4. *Aster vimineus*	FACW-	herb	7.0042
5. *Echinochloa muricata*	OBL	herb	4.9284
6. *Ludwigia peploides glabrescens*	OBL	herb	4.8006
7. *Xanthium strumarium*	FAC	herb	4.3687

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. *Quercus bicolor*	planted	sapling/shrub
2. *Quercus lyrata*	planted	sapling/shrub
3. *Quercus palustris*	planted	sapling/shrub
4. *Agrostis alba*	FACW	herb
5. *Solidago canadensis*	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 2009. Dominants are in bold.

Species	Indicator	Average Cover	Relative Cover	Frequency	Relative Frequency	Importance Value (IV)
Echinochloa muricata	**OBL**	**19.0476**	**20.1056**	**0.8095**	**8.8542**	**14.4799**
Carex tribuloides	**FACW+**	**14.5952**	**15.4059**	**0.9048**	**9.8958**	**12.6509**
Carex vulpinoidea	**OBL**	**8.2143**	**8.6705**	**0.5238**	**5.7292**	**7.1998**
Panicum dichotomiflorum	**FACW-**	**6.6667**	**7.0369**	**0.5714**	**6.2500**	**6.6435**
Aster vimineus	**FACW-**	**8.0476**	**8.4946**	**0.4286**	**4.6875**	**6.5910**
Aster ontarionis	**FAC**	**8.1190**	**8.5700**	**0.2857**	**3.1250**	**5.8475**
Polygonum hydropiperoides	OBL	2.8095	2.9656	0.7143	7.8125	5.3890
Eleocharis obtusa	OBL	4.7143	4.9761	0.2857	3.1250	4.0506
Scirpus atrovirens	OBL	4.4286	4.6745	0.1905	2.0833	3.3789
Ludwigia palustris	OBL	1.8095	1.9100	0.3810	4.1667	3.0383
Ulmus americana	FACW-	0.4286	0.4524	0.3810	4.1667	2.3095
Boltonia asteroides	FACW	2.6429	2.7896	0.1429	1.5625	2.1761
Polygonum pennsylvanicum	OBL	1.0714	1.1309	0.2857	3.1250	2.1280
Panicum implicatum	FAC	0.5952	0.6283	0.2381	2.6042	1.6162
Juncus effusus	OBL	1.9286	2.0357	0.0952	1.0417	1.5387
Aster simplex	FACW	0.5714	0.6032	0.1905	2.0833	1.3432
Acer negundo	FACW-	0.4524	0.4775	0.1905	2.0833	1.2804
Ulmus alata	FACU	0.4524	0.4775	0.1905	2.0833	1.2804
Panicum clandestinum	FACW	1.4286	1.5079	0.0952	1.0417	1.2748
Lespedeza cuneata	NI	0.8810	0.9299	0.1429	1.5625	1.2462
Iva annua	FAC	0.7619	0.8042	0.1429	1.5625	1.1834
Parthenocissus quinquefolia	FAC-	0.8571	0.9047	0.0952	1.0417	0.9732
Campsis radicans	FAC	0.3095	0.3267	0.1429	1.5625	0.9446
Solanum caroliniense	FACU-	0.3095	0.3267	0.1429	1.5625	0.9446
Teucrium canadense	FACW-	0.3095	0.3267	0.1429	1.5625	0.9446
Stachys tenuifolia	OBL	0.1905	0.2011	0.1429	1.5625	0.8818
Juncus secundus	FAC-	0.0714	0.0754	0.1429	1.5625	0.8189
Carex squarrosa	OBL	0.7143	0.7540	0.0476	0.5208	0.6374
Leersia oryzoides	OBL	0.7143	0.7540	0.0476	0.5208	0.6374
Desmodium dillenii	FACU	0.1667	0.1759	0.0952	1.0417	0.6088
Diodia virginiana	FACW	0.1667	0.1759	0.0952	1.0417	0.6088
Cyperus strigosus	FACW	0.1429	0.1508	0.0476	0.5208	0.3358
Ambrosia artemisiifolia	FACU	0.1429	0.1508	0.0476	0.5208	0.3358
Toxicodendron radicans	FAC+	0.1429	0.1508	0.0476	0.5208	0.3358
Agrostis alba	FACW	0.1429	0.1508	0.0476	0.5208	0.3358
Phyllanthus caroliniensis	FAC	0.1429	0.1508	0.0476	0.5208	0.3358
Eleocharis verrucosa	OBL	0.1429	0.1508	0.0476	0.5208	0.3358
Andropogon virginicus	FAC-	0.1429	0.1508	0.0476	0.5208	0.3358
Solidago canadensis	FACU	0.0238	0.0251	0.0476	0.5208	0.2730
Fraxinus pennsylvanica	FACW	0.0238	0.0251	0.0476	0.5208	0.2730
Potentilla simplex	FACU-	0.0238	0.0251	0.0476	0.5208	0.2730
Rorippa islandica	OBL	0.0238	0.0251	0.0476	0.5208	0.2730
Others (7 taxa)		0.1667	0.1759	0.3333	3.6458	1.9109
		94.7381	100.0000	9.1429	100.0000	100.0000
Bare Ground		25.9524				
Litter		50.5952				

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 2009. Dominants are in bold.

Species	Indicator	Average Cover	Relative Cover	Frequency	Relative Frequency	Importance Value (IV)
Boltonia asteroides	**FACW**	**32.4677**	**38.5484**	**0.8387**	**11.1588**	**24.8536**
Aster vimineus	**FACW-**	**13.5968**	**16.1432**	**0.6129**	**8.1545**	**12.1489**
Aster ontarionis	**FAC**	**8.0645**	**9.5749**	**0.4194**	**5.5794**	**7.5771**
Echinochloa muricata	**OBL**	**3.6935**	**4.3853**	**0.4516**	**6.0086**	**5.1969**
Eleocharis obtusa	**OBL**	**4.2903**	**5.0938**	**0.3548**	**4.7210**	**4.9074**
Ludwigia palustris	OBL	3.4516	4.0980	0.3871	5.1502	4.6241
Polygonum hydropiperoides	OBL	1.2258	1.4554	0.5484	7.2961	4.3758
Aster simplex	FACW	1.3548	1.6086	0.3548	4.7210	3.1648
Leersia oryzoides	OBL	2.8871	3.4278	0.1935	2.5751	3.0015
Lespedeza cuneata	NI	1.0323	1.2256	0.3226	4.2918	2.7587
Carex tribuloides	FACW+	0.5000	0.5936	0.3548	4.7210	2.6573
Diodia virginiana	FACW	1.2903	1.5320	0.2258	3.0043	2.2681
Penthorum sedoides	OBL	1.2903	1.5320	0.2258	3.0043	2.2681
Acorus calamus	OBL	2.5000	2.9682	0.0645	0.8584	1.9133
Callitriche heterophylla	OBL	1.1774	1.3979	0.1613	2.1459	1.7719
Juncus effusus	OBL	1.0968	1.3022	0.1613	2.1459	1.7241
Panicum dichotomiflorum	FACW-	0.1613	0.1915	0.1613	2.1459	1.1687
Eleocharis acicularis	OBL	0.1613	0.1915	0.1613	2.1459	1.1687
Carex vulpinoidea	OBL	0.6774	0.8043	0.0968	1.2876	1.0459
Panicum rigidulum	FACW	0.5968	0.7085	0.0968	1.2876	0.9980
Rotala ramosior	OBL	0.5161	0.6128	0.0968	1.2876	0.9502
Iva annua	FAC	0.1452	0.1723	0.1290	1.7167	0.9445
Ulmus americana	FACW-	0.0645	0.0766	0.1290	1.7167	0.8967
Eclipta prostrata	FACW	0.0645	0.0766	0.1290	1.7167	0.8967
Campsis radicans	FAC	0.0484	0.0574	0.0968	1.2876	0.6725
Carex hyalinolepis	OBL	0.1935	0.2298	0.0645	0.8584	0.5441
Quercus palustris	FACW	0.4839	0.5745	0.0323	0.4292	0.5018
Scirpus atrovirens	OBL	0.4839	0.5745	0.0323	0.4292	0.5018
Senecio glabellus	OBL	0.0323	0.0383	0.0645	0.8584	0.4483
Panicum implicatum	FAC	0.0323	0.0383	0.0645	0.8584	0.4483
Xanthium strumarium	FAC	0.0323	0.0383	0.0645	0.8584	0.4483
Carex granularis	FACW+	0.0968	0.1149	0.0323	0.4292	0.2720
Pluchea camphorata	FACW	0.0968	0.1149	0.0323	0.4292	0.2720
Juncus nodatus	OBL	0.0968	0.1149	0.0323	0.4292	0.2720
Diospyros virginiana	FAC	0.0968	0.1149	0.0323	0.4292	0.2720
Acer rubrum	FAC	0.0968	0.1149	0.0323	0.4292	0.2720
Juncus secundus	FAC-	0.0161	0.0191	0.0323	0.4292	0.2242
Acer negundo	FACW-	0.0161	0.0191	0.0323	0.4292	0.2242
Sida spinosa	FACU	0.0161	0.0191	0.0323	0.4292	0.2242
Cyperus iria	FACW	0.0161	0.0191	0.0323	0.4292	0.2242
Ricciocarpus natans (liverwort)	OBL	0.0161	0.0191	0.0323	0.4292	0.2242
Ammannia coccinea	OBL	0.0161	0.0191	0.0323	0.4292	0.2242
Others (2 taxa)		0.0323	0.0383	0.0645	0.8584	0.4483
		84.2258	100.0000	7.5161	100.0000	100.0000
Bare Ground		45.4688				
Litter		33.7500				

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 2009. Dominants are in bold.

Species	Indicator	Average Cover	Relative Cover	Frequency	Relative Frequency	Importance Value (IV)
Boltonia asteroides	**FACW**	**16.5000**	**18.3650**	**0.8276**	**8.1356**	**13.2503**
Juncus nodatus	**OBL**	**11.7241**	**13.0493**	**0.7931**	**7.7966**	**10.4230**
Acorus calamus	**OBL**	**12.8103**	**14.2583**	**0.3448**	**3.3898**	**8.8241**
Aster vimineus	**FACW-**	**9.8448**	**10.9576**	**0.3103**	**3.0508**	**7.0042**
Echinochloa muricata	**OBL**	**4.8966**	**5.4500**	**0.4483**	**4.4068**	**4.9284**
Ludwigia peploides	**OBL**	**6.1897**	**6.8893**	**0.2759**	**2.7119**	**4.8006**
Xanthium strumarium	**FAC**	**4.5000**	**5.0086**	**0.3793**	**3.7288**	**4.3687**
Diodia virginiana	FACW	2.4310	2.7058	0.4483	4.4068	3.5563
Aster simplex	FACW	3.0345	3.3775	0.2759	2.7119	3.0447
Eleocharis acicularis	OBL	0.9828	1.0938	0.4483	4.4068	2.7503
Eclipta prostrata	FACW	0.8966	0.9979	0.4483	4.4068	2.7023
Iva annua	FAC	0.6207	0.6908	0.3793	3.7288	2.2098
Pontederia cordata	OBL	2.1379	2.3796	0.2069	2.0339	2.2067
Leersia oryzoides	OBL	1.8276	2.0342	0.2414	2.3729	2.2035
Ammannia coccinea	OBL	0.2931	0.3262	0.4138	4.0678	2.1970
Panicum dichotomiflorum	FACW-	1.3793	1.5352	0.2414	2.3729	1.9540
Polygonum hydropiperoides	OBL	0.2586	0.2879	0.3448	3.3898	1.8388
Lindernia dubia	OBL	0.5000	0.5565	0.3103	3.0508	1.8037
Sida spinosa	FACU	0.1552	0.1727	0.3103	3.0508	1.6118
Aster ontarionis	FAC	1.6552	1.8423	0.1379	1.3559	1.5991
Aster pilosus	FACU+	1.8103	2.0150	0.0690	0.6780	1.3465
Phyla lanceolata	OBL	0.3621	0.4030	0.2069	2.0339	1.2184
Senecio glabellus	OBL	0.1034	0.1151	0.2069	2.0339	1.0745
Cyperus pseudovegetus	FACW	0.7241	0.8060	0.1034	1.0169	0.9115
Galium tinctorium	OBL	0.0862	0.0960	0.1724	1.6949	0.8954
Cyperus esculentus	FACW	0.0690	0.0768	0.1379	1.3559	0.7163
Rorippa islandica	OBL	0.0690	0.0768	0.1379	1.3559	0.7163
Typha latifolia	OBL	0.6207	0.6908	0.0690	0.6780	0.6844
Scirpus atrovirens	OBL	0.6207	0.6908	0.0690	0.6780	0.6844
Paspalum laeve	UPL	0.5345	0.5949	0.0690	0.6780	0.6364
Ipomaea lacunosa	FACW	0.1379	0.1535	0.1034	1.0169	0.5852
Chamaesyce humistrata	FACW	0.0517	0.0576	0.1034	1.0169	0.5373
Iris sp. (cultivated)	NA	0.5172	0.5757	0.0345	0.3390	0.4573
Solidago canadensis	FACU	0.2069	0.2303	0.0690	0.6780	0.4541
Polygonum pennsylvanicum	OBL	0.1207	0.1343	0.0690	0.6780	0.4061
Ludwigia decurrens	OBL	0.1207	0.1343	0.0690	0.6780	0.4061
Bidens frondosa	FACW	0.0345	0.0384	0.0690	0.6780	0.3582
Pluchea camphorata	FACW	0.0345	0.0384	0.0690	0.6780	0.3582
Carex tribuloides	FACW+	0.1034	0.1151	0.0345	0.3390	0.2271
Carex annectens	FACW	0.1034	0.1151	0.0345	0.3390	0.2271
Kummerowia striata	FACU	0.1034	0.1151	0.0345	0.3390	0.2271
Trifolium hybridum	FAC-	0.1034	0.1151	0.0345	0.3390	0.2271
Juncus effusus	OBL	0.1034	0.1151	0.0345	0.3390	0.2271
Others (17 taxa)		0.4655	0.5181	0.5862	5.7627	3.1404
		89.8448	100.0000	10.1724	100.0000	100.0000
Bare Ground		33.8621				
Litter		23.5000				

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, is predominately non-hydric. Hydric soil areas did seem to expand between sites 2 and 3. Following is a soil description of a typical pedon for each site.

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

Hor-izon	Depth (in)	Matrix Color	Concre-tions	Iron Masses	Pore linings	Iron Deplet.	Clay Deplet.	Tex-ture	Structure
	0-3	10YR 5/2, N 5/		FFD 10YR 5/4				sil	gr
	3-14	2.5Y 6/1 2.5Y 6/2		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.

Hor-izon	Depth (in)	Matrix Color	Concre-tions	Iron Masses	Pore linings	Iron Deplet.	Clay Deplet.	Tex-ture	Structure
	0-3	2.5Y 5/1 5Y 6/1 and 7/1 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 2.5Y 6/1		CMP 7.5YR 5/6 FFP 7.5YR 5/8	CM 7.5YR 5/8			sicl	bl
	6-28	2.5Y 6/2 2.5Y 6/1		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.

Hor-izon	Depth (in)	Matrix Color	Concre-tions	Iron Masses	Pore linings	Iron Deplet.	Clay Deplet.	Tex-ture	Structure
	0-2	2.5Y 6/2		FMP 10YR 5/6 and 5/8				sicl	bl
	2-9	2.5Y 6/2 2.5Y 6/1 5Y 7/1		FMP 10YR 5/6 FMP 7.5YR 5/8				sic	pr
	9-20	2.5Y 5/2		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.

Hor-izon	Depth (in)	Matrix Color	Concre-tions	Iron Masses	Pore linings	Iron Deplet.	Clay Deplet.	Tex-ture	Structure
	0-6	2/5Y 5/1 10Y 2.5/	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	7.5YR 5/8			sicl	bl
	15-22	2.5Y 6/2	10YR 3/1	FMD 10YR 5/4 FMP 7.5YR 5/8	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) – Non hydric

Hor-izon	Depth (in)	Matrix Color	Concre-tions	Iron Masses	Pore linings	Iron Deplet.	Clay Deplet.	Tex-ture	Structure
	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 10YR 5/4	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 10YR 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. Area exhibiting wetland hydrology has increased every year since 2005. In 2004, 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). In 2005, the site had its lowest area total in terms of satisfying the wetland hydrology criterion for greater than 5% of the growing season. In that year only 0.7 ha (1.8 ac) were considered to have wetland hydrology (Pociask and Shofner 2005). In 2006, 1.2 ha (2.9 ac) satisfied the wetland hydrology criterion for greater than 5% of the growing season [0.6 ha (1.5 ac) for 12.5% of the growing season] (Pociask 2006); in 2007, 1.4 ha (3.5 ac) satisfied the wetland hydrology criterion for greater than 5% of the growing season [0.5 ha (1.1 ac) for 12.5% of the growing season] (Pociask 2007); and in 2008, 2.5 ha (6.3 ac) satisfied the wetland hydrology criterion for greater than 5% of the growing season [1.1 ha (2.6 ac) for 12.5% of the growing season] (Pociask 2008).

Their findings for 2009 indicate that 2.7 ha (6.7 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 2.0 ha (4.8 ac) that conclusively satisfied the wetland hydrology criterion for 12.5% of the growing season (Pociask 2009); Appendix 1, Figure 2. Although annual precipitation was only 81% of normal for the monitoring period, the site continued to show a significant increase in area possessing wetland hydrology (April and May were at or above normal precipitation). It is important to note that the area exhibiting wetland hydrology is significantly different than the area of created wetland (1.07 ha (2.64 ac); Figure 3). Although a larger area has satisfied the wetland hydrology criterion in recent years, this area does not appear to be developing hydrophytic vegetation. In fact, the vegetation in most of the additional area has become dominated by the perennial non-hydrophyte *Solidago canadensis* (Canada goldenrod). This area will probably never develop dominant hydrophytic vegetation.

During visits to the mitigation area, the following indicators of wetland hydrology were observed: surface water, high water table, saturation, sediment deposits, drift deposits, algal mat or crust, sparsely vegetated concave surface, water-stained leaves, surface soil cracks, and crayfish burrows.

[*] 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).

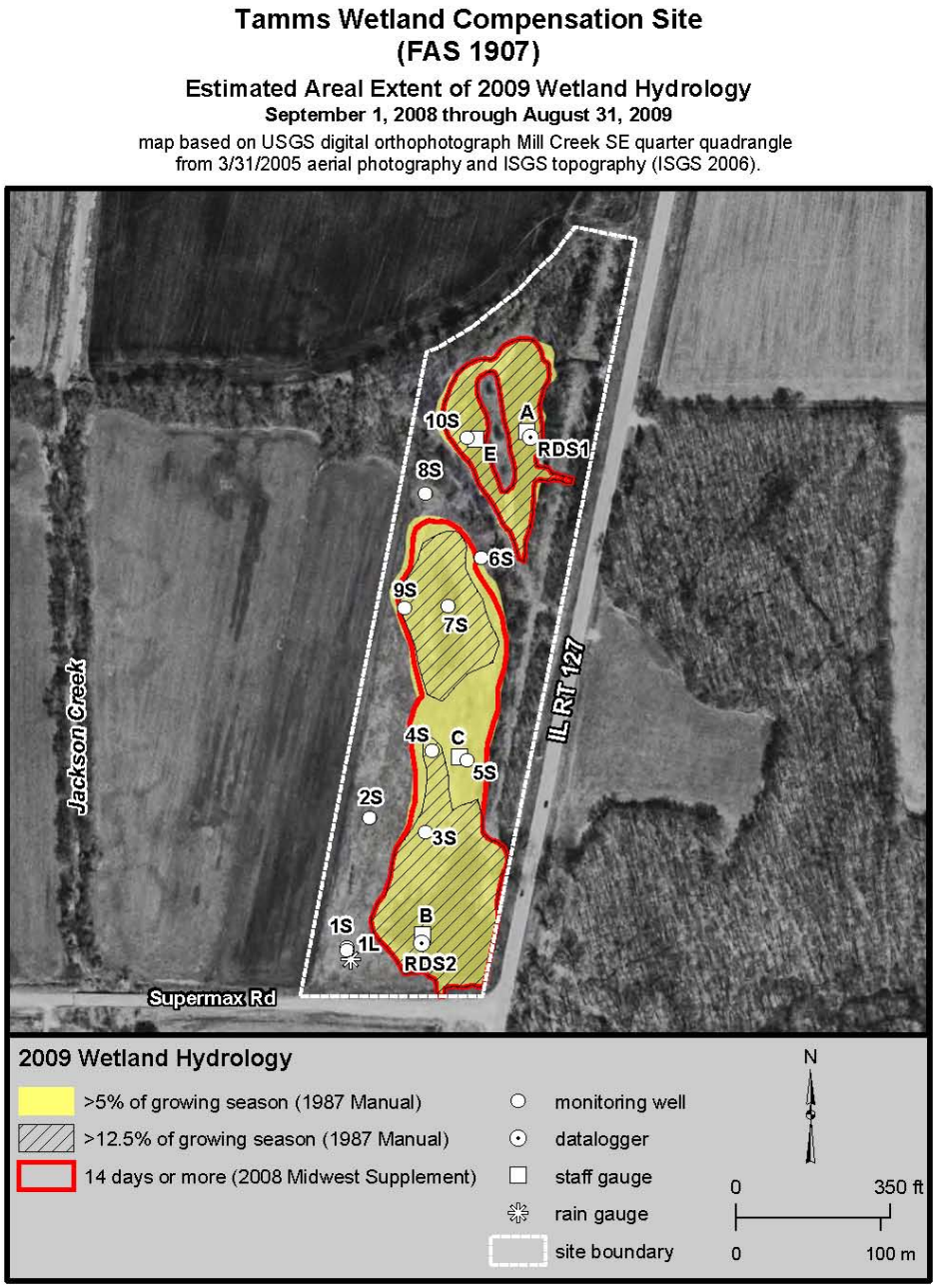

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Figure 2. 2009 aerial extent of wetland hydrology for FAS 1907 (IL 127) wetland monitoring site (prepared by ISGS; Pociask 2009; Fucciolo et al. 2009). Note that this area differs significantly from Figure 3 which depicts the aerial extent of the three created wetland sites.

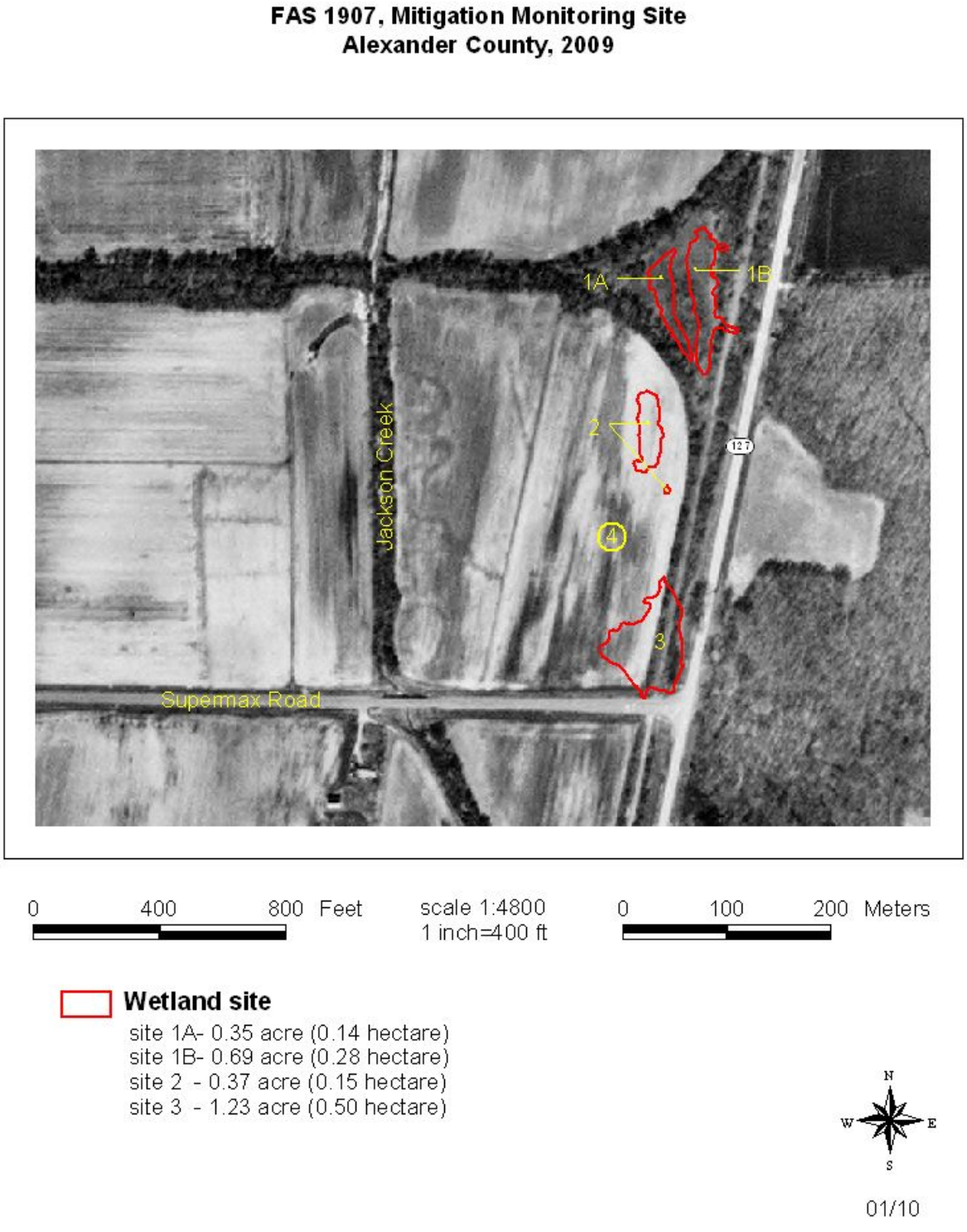

Figure 3. Estimated aerial extent of the created wetland sites at FAS 1907 (IL 127), near Tamms, Alexander County, Illinois.

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 Wetland Construction Plan). Subsequently *Juncus effusus* was also planted at the mitigation area. In 2007, the *Iris* sp. present at the site was observed flowering and determined to be of horticultural origin and not the native *Iris shrevei* that was supposed to have been planted (Appendix 2, Photo 6). Numerous live, healthy individuals of all other species except for *Scirpus acutus* were observed (67% of planted emergents were observed in a live, healthy condition). This part of the performance criteria is satisfied in 2009.

Three emergent wetland sites (Sites 1A, 1B, 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 = 90%, Site 1B = 92%, Site 2 = 93%, Site 3 = 87%; Table 3). Furthermore, percentages of native and non-weedy species were at acceptable levels (Site 1A = 69%; Site 1B = 67%; Site 2 = 56%; Site 3 = 61%). 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. All wetland sites were dominated by native species (Tables 4-6, 9-11). Part C of the performance criteria for project goal #2 is satisfied for Sites 1A, 1B, 2 and 3 in 2009.

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 145 trees were found alive in 2009. This is down 1 from 2008, 5 from 2007, 9 from 2006, 14 from 2005 and 38 from 2004 (Marcum *et al.* 2009; Marcum *et al.* 2008; Marcum *et al.* 2007; Marcum *et al.* 2006; Marcum *et al.* 2005). In all, 56 of 201 trees planted at this site have died (72.1% overall survival). Survival of *Liquidambar styraciflua* (6%) has fallen well below the 75% threshold. Likewise, *Taxodium distichum* (43%) and *Platanus occidentalis* (71%) are also 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 - 2009.

Species	# Alive	# Dead	Total Planted	% Survival
Fraxinus pennsylvanica	17	0	17	100%
Liquidambar styraciflua	1	16	17	6%
Platanus occidentalis	12	5	17	71%
Quercus bicolor	29	9	38	76%
Quercus lyrata	31	7	38	82%
Quercus palustris	39	0	39	100%
Taxodium distichum	16	19	35	46%
Totals	145	56	201	72.1%

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)
Required Area of Wetland Creation – Create 1.750 ha (4.325 ac)	Unsatisfied (only 1.07 ha (2.64 ac) created
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 1-3)
Project Goal #3 – Create a floodplain forest community (Site 4)	
Performance Criterion (> 75% tree survival)	Unsatisfied (Site 4)

Project goal #1 was satisfied for all sites except Site 4. This site, 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. Likewise, project goal #2 was met by all four created wetland sites (Sites 1A, 1B, 2 and 3).

At this stage of monitoring, planted herbaceous species have survived satisfactorily; however, planted tree species survival (72.1%) continues to be below the acceptable level of 75%. While *Fraxinus pennsylvanica*, green ash (100%), *Quercus palustris*, pin oak (100%), *Quercus bicolor*, swamp white oak (76%), and *Quercus lyrata*, overcup oak (82%) had acceptable tree survival, *Platanus occidentalis*, sycamore (71%), *Liquidambar styraciflua*, sweet gum (6%), and *Taxodium distichum*, bald cypress (46%), were all below the required 75% threshold for tree survival. It is our recommendation that replanting be done, at least for the latter three species. Additional replanting of other tree species might be considered as well. Other tree species to consider are: *Quercus michauxii* (basket oak), *Quercus pagoda* (cherrybark oak), *Carya laciniosa* (kingnut hickory), and *Nyssa sylvatica* (black gum).

Floristic quality of all emergent sites is very promising with all created emergent wetland sites being highly diverse. In Site 1A, 101 overall species were recorded including 91 native species. Site 1B had 91 overall species recorded with 84 natives, Site 2 had 80 total species with 74 natives and Site 3 had 102 overall species recorded with 89 of them being native. These values are incredibly high for sites of such small size. FQI scores for all of the created wetland sites at FAS 1907 (IL 127) were above 23 (range from 23.6 at Site 2 to a high of 29.0 at Site 3). Although these values are slightly lower than 2008, they remain indicative of good natural quality. All of these sites may be considered environmental assets.

Total area of the created wetlands at the Tamms site remains a concern. In 2009, we determined the area of created wetlands at FAS 1907 (IL 127) to be approximately 1.07 ha (2.64 ac) [Figure 3]. The objective for project goal #1 was to create 1.750 ha (4.325 ac) of jurisdictional wetland. Although a larger area has satisfied the wetland hydrology criterion, at least in recent years, this area does not appear to be developing hydrophytic vegetation. In fact, the vegetation in most of the additional area has become dominated by the perennial non-hydrophyte *Solidago canadensis*

(Canada goldenrod). This area will probably never develop dominant hydrophytic vegetation. 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 in the created wetlands are native at this time and all four emergent wetlands are represented by greater than 50% native and non-weedy species. Nonetheless, many aggressive non-native species are present within the mitigation area. These species include: *Carduus nutans* (musk thistle), *Lespedeza cuneata* (sericea lespedeza), *Lonicera japonica* (Japanese honeysuckle), *Melilotus alba* (white sweet clover), *Melilotus officinalis* (yellow sweet clover), *Morus alba* (white mulberry), *Phalaris arundinacea* (reed canary grass), *Pyrus calleryana* (Bradford pear), *Rosa multiflora* (multiflora rose), *Sorghum halepense* (Johnson grass), *Torilis japonica* (hedge parsley), *Typha angustifolia* (narrow-leaf cattail) and *Ulmus pumila* (Siberian elm).

Lespedeza cuneata has become very abundant in upland portions of the mitigation area, especially around the wetland borders. This aggressive species should be treated appropriately if floristic quality of the buffer areas is of concern. This species is difficult to contral especially after it is has developed an extensive seed bank. Burning followed by mowing and finally an herbicide treatment was shown to be effective in Kansas (Phipps and Victory 2002). *Phalaris arundinacea* patches should also be treated before this highly invasive species spreads throughout the created wetland sites. At this point, it is most common in small patches within the upland portion (Site 4) of the mitigation area; however, it is already present within two of the created wetland sites (Sites 1A and 2). If herbicide application is conducted, early spring application of Rodeo or Dalapon is recommended. Rodeo is a special glyphosate formulation for use in wetlands and near water courses. Dalapon, also approved for use in aquatic areas, is a selective herbicide and plant growth regulator used to control specific annual and perennial grasses and other monocots (Smith 2003). The abundance of all of these aggressive, persistent weeds will continue to be monitored and future management recommendations will be made.

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Appendix 1. Wetland Determination Forms

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Importance Value (IV)*
1. *Echinochloa muricata*	OBL	herb	14.4799
2. *Carex tribuloides*	FACW+	herb	12.6509
3. *Carex vulpinoidea*	OBL	herb	7.1998
4. *Panicum dichotomiflorum*	FACW-	herb	6.6435
5. *Aster vimineus*	FACW-	herb	6.5910
6. *Aster ontarionis*	FAC	herb	5.8475

**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: 5Y 6/1 and 7/1
Other indicators: This soil is found in a depressional area.
Note: At least one foot of the topsoil 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. Additionally, this soil meets the NRCS hydric soil indicator F3. These characteristics are evidence of a hydric soil.

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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: 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 a depression surrounded by higher ground on all sides. Water enters this site via precipitation, sheet flow from surrounding higher ground, and from occasional overflow of the adjacent wetland paralleling IL 127. Water leaves the site primarily via evapotranspiration and slowly through soil infiltration.
Size of watershed: Less than 2.59 km^2 (1 mi^2).
Other field evidence observed: This site has been excavated to hold water for longer periods. Bare areas indicating ponded water, sediment deposits, drift, algal mats, mud cracks, and blackened leaves have been observed at this site.

Wetland hydrology: Yes: X No:
Rationale: The ISGS (Pociask 2009) show this satisfies the wetland hydrology criterion. A depressional landscape position and 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: 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 (vegetation, hydrology and GPS)
Dave Ketzner & Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GIS)
Geoff Pociask (ISGS; hydrology)
Illinois Natural History Survey
Division of Ecology and Conservation Science
1816 S. Oak Street
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 3 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	shrub, herb	FACW-	1
Acer rubrum	red maple	shrub, herb	FAC	5
Acorus calamus	sweetflag	herb	OBL	4
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Andropogon virginicus	broom sedge	herb	FAC-	1
Apios americana	groundnut	herb	FACW	4
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Asclepias syriaca	common milkweed	herb	UPL	0
Aster ontarionis	Ontario aster	herb	FAC	4
Aster simplex	panicled aster	herb	FACW	3
Aster vimineus	frost flower	herb	FACW-	3
Boltonia asteroides	false aster	herb	FACW	5
Campsis radicans	trumpet creeper	herb	FAC	2
Carex annectens	large yellow fox sedge	herb	FACW	3
Carex frankii	Frank's sedge	herb	OBL	4
Carex granularis	meadow sedge	herb	FACW+	2
Carex hyalinolepis	southern lake sedge	herb	OBL	4
Carex lurida	sedge	herb	OBL	7
Carex shortiana	Short's sedge	herb	FACW+	4
Carex squarrosa	sedge	herb	OBL	5
Carex tribuloides	awl-fruited oval sedge	herb	FACW+	3
Carex vulpinoidea	fox sedge	herb	OBL	3
Chasmanthium latifolium	sea oats	herb	FACW	4
Cynanchum laeve	blue vine	herb	FAC	1
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Cyperus iria	sedge	herb	FACW	*
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Desmodium dillenii	tick trefoil	herb	FACU	3

Species list continued on following page.

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Desmodium paniculatum	panicled tick trefoil	herb	FACU	2
Diodia virginiana	large buttonweed	herb	FACW	4
Diospyros virginiana	persimmon	shrub, herb	FAC	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Eclipta prostrata	yerba de tajo	herb	FACW	2
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Eleocharis verrucosa	slender spike rush	herb	OBL	6
Euthamia graminifolia	grassleaf goldenrod	herb	FACW-	3
Festuca arundinacea	tall fescue	herb	FACU+	*
Fraxinus pennsylvanica	green ash	shrub, herb	FACW	2
Gleditsia triacanthos	honey locust	shrub, herb	FAC	2
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Ipomoea pandurata	wild sweet potato vine	herb	FACU	2
Iva annua	marsh elder	herb	FAC	0
Juncus acuminatus	knotty-leaved rush	herb	OBL	4
Juncus effusus solutus	common rush	herb	OBL	4
Juncus interior	inland rush	herb	FAC+	3
Juncus nodatus	stout rush	herb	OBL	6
Juncus tenuis	path rush	herb	FAC	0
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Lindernia dubia	false pimpernel	herb	OBL	5
Liquidambar styraciflua	sweet gum	shrub	FACW	6
Ludwigia alternifolia	seedbox	herb	OBL	5
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Panicum clandestinum	deer-tongue grass	herb	FACW	4
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Panicum implicatum	old field panic grass	herb	FAC	2
Panicum rigidulum	munro grass	herb	FACW	6
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Parthenocissus quinquefolia	Virginia creeper	herb	FAC-	2
Paspalum laeve	smooth lens grass	herb	UPL	2

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1A (page 5 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Passiflora incarnata	large passion-flower	herb	FACU	3
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phyllanthus caroliniensis	phyllanthus	herb	FAC	5
Physalis angulata	ground cherry	herb	FAC	*
Poa pratensis	Kentucky bluegrass	herb	FAC-	*
Polygonum hydropiperoides	mild water pepper	herb	OBL	4
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Polygonum punctatum	dotted smartweed	herb	OBL	3
Polygonum scandens	climbing buckwheat	herb	FAC	2
Pontederia cordata	pickerelweed	herb	OBL	8
Populus deltoides	eastern cottonwood	herb	FAC+	2
Potentilla simplex	common cinquefoil	herb	FACU-	3
Quercus pagoda	cherrybark oak	herb	FAC	5
Quercus palustris	pin oak	herb	FACW	4
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rotala ramosior	tooth-cup	herb	OBL	4
Rubus pensylvanicus	blackberry	shrub	FAC-	2
Rumex crispus	curly dock	herb	FAC+	*
Salix nigra	black willow	shrub	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5
Setaria faberi	giant foxtail	herb	FACU+	*
Setaria glauca	pigeon grass	herb	FAC	*
Solanum carolinense	horse nettle	herb	FACU-	0
Solidago canadensis	Canada goldenrod	herb	FACU	1
Stachys tenuifolia	slenderleaf betony	herb	OBL	5
Teucrium canadense	American germander	herb	FACW-	3
Toxicodendron radicans	poison ivy	herb	FAC+	1
Typha angustifolia	narrow-leaved cattail	herb	OBL	*
Typha latifolia	cattail	herb	OBL	1

Species list continued on following page.

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Ulmus alata	winged elm	herb	FACU	5
Ulmus americana	American elm	herb	FACW-	5
Vernonia gigantea	tall ironweed	herb	FAC	4
Vernonia missurica	Missouri ironweed	herb	FAC+	5
Xanthium strumarium	cocklebur	herb	FAC	0

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

mean C value (mCv) = $\sum C/N = 268/91 = 2.9$
FQI = $\sum C/\sqrt{N}) = 268/(\sqrt{91}) = 28.1$

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Importance Value (IV)*
1. *Boltonia asteroides*	FACW	herb	24.8536
2. *Aster vimineus*	FACW-	herb	12.1489
3. *Aster ontarionis*	FAC	herb	7.5771
4. *Echinochloa muricata*	OBL	herb	5.1969
5. *Eleocharis obtusa*	OBL	herb	4.9074

**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: 5Y 6/1 and 7/1
Other indicators: This soil is found in a depressional area.
Note: At least one foot of the topsoil 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. Additionally, this soil meets the NRCS hydric soil indicator F3. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1B (page 2 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 sheetflow 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 km^2 (1 mi^2).
Other field evidence observed: This site has been excavated to hold water for longer periods. Areas of inundation, sediment deposits, drift, bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves have been observed at this site.
Wetland hydrology: Yes: X No:
Rationale: The ISGS (Pociask 2009) show this satisfies the wetland hydrology criterion. 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 (vegetation, hydrology and GPS)
Dave Ketzner & Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GIS)
Geoff Pociask (ISGS, hydrology)
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(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 3 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	shrub, herb	FACW-	1
Acer rubrum	red maple	herb	FAC	5
Acorus calamus	sweetflag	herb	OBL	4
Agrostis alba	red top	herb	FACW	0
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Andropogon virginicus	broom sedge	herb	FAC-	1
Aster ontarionis	Ontario aster	herb	FAC	4
Aster simplex	panicled aster	herb	FACW	3
Aster vimineus	frost flower	herb	FACW-	3
Bidens frondosa	common beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Callitriche heterophylla	large water starwort	herb	OBL	5
Campsis radicans	trumpet creeper	w-vine, herb	FAC	2
Carex annectens	large yellow fox sedge	herb	FACW	3
Carex frankii	Frank's sedge	herb	OBL	4
Carex granularis	meadow sedge	herb	FACW+	2
Carex hyalinolepis	southern lake sedge	herb	OBL	4
Carex tribuloides	awl-fruited oval sedge	herb	FACW+	3
Carex vulpinoidea	fox sedge	herb	OBL	3
Cassia fasciculata	partridge pea	herb	FACU-	1
Cephalanthus occidentalis	buttonbush	shrub	OBL	4
Cicuta maculata	water hemlock	herb	OBL	4
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Cyperus iria	sedge	herb	FACW	*
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Desmodium dillenii	tick trefoil	herb	FACU	3
Diodia virginiana	large buttonweed	herb	FACW	4
Diospyros virginiana	persimmon	shrub, herb	FAC	2

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 4 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Echinochloa muricata	barnyard grass	herb	OBL	0
Eclipta prostrata	yerba de tajo	herb	FACW	2
Eleocharis acicularis	needle spike rush	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Fraxinus pennsylvanica	green ash	shrub	FACW	2
Gleditsia triacanthos	honey locust	herb	FAC	2
Glyceria arkansana	Arkansas manna grass	herb	OBL	10
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Ipomoea lacunosa	small white morning-glory	herb	FACW	1
Iris sp. (cultivated)	iris	herb	-----	*
Iva annua	marsh elder	herb	FAC	0
Juncus effusus solutus	common rush	herb	OBL	4
Juncus interior	inland rush	herb	FAC+	3
Juncus nodatus	stout rush	herb	OBL	6
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Lindernia dubia	false pimpernel	herb	OBL	5
Liquidambar styraciflua	sweet gum	shrub, herb	FACW	6
Lobelia cardinalis	cardinal-flower	herb	OBL	6
Ludwigia alternifolia	seedbox	herb	OBL	5
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Lysimachia lanceolata	lance-leaved loosestrife	herb	FAC	6
Mimulus alatus	winged monkey flower	herb	OBL	6
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Panicum implicatum	old field panic grass	herb	FAC	2
Panicum rigidulum	munro grass	herb	FACW	6
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Paspalum laeve	smooth lens grass	herb	UPL	2
Passiflora incarnata	large passion-flower	herb	FACU	3
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phyllanthus caroliniensis	phyllanthus	herb	FAC	5
Phytolacca americana	pokeweed	herb	FAC-	1

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1B (page 5 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Platanus occidentalis	sycamore	herb	FACW	3
Pluchea camphorata	camphor weed	herb	FACW	7
Polygonum cespitosum	creeping smartweed	herb	UPL	*
Polygonum hydropiperoides	mild water pepper	herb	OBL	4
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Quercus pagoda	cherrybark oak	shrub	FAC	5
Quercus palustris	pin oak	shrub, herb	FACW	4
Ricciocarpus natans	liverwort	herb	OBL	--
Rosa setigera	Illinois rose	shrub	FACU+	5
Rotala ramosior	tooth-cup	herb	OBL	4
Rubus pensylvanicus	blackberry	shrub	FAC-	2
Rumex crispus	curly dock	herb	FAC+	*
Salix nigra	black willow	shrub	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5
Senecio glabellus	butterweed	herb	OBL	0
Setaria glauca	pigeon grass	herb	FAC	*
Sida spinosa	prickly sida	herb	FACU	*
Solanum carolinense	horse nettle	herb	FACU-	0
Solidago canadensis	Canada goldenrod	herb	FACU	1
Teucrium canadense	American germander	herb	FACW-	3
Toxicodendron radicans	poison ivy	herb	FAC+	1
Typha latifolia	cattail	herb	OBL	1
Ulmus americana	American elm	herb	FACW-	5
Xanthium strumarium	cocklebur	herb	FAC	0

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

mean C value (mCv) = $\sum C/N = 249/84 = 3.0$
FQI = $\sum C/\sqrt{N}) = 249/(\sqrt{84}) = 27.2$

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 1 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **Project Name:** FAS 1907 (IL 127)
State: Illinois **County:** Alexander
Site Name: Wet Meadow
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: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Aster vimineus*	FACW-	herb
2. *Juncus nodatus*	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 6/2 and 2.5Y 6/1
Other indicators: This soil is found in a depressional area.
Note: At least one foot of the topsoil 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. Additionally, this soil meets the NRCS hydric soil indicator F3. These characteristics are evidence of a hydric soil.

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **Project Name:** FAS 1907 (IL 127)
State: Illinois **County:** Alexander
Site Name: Wet Meadow
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 (toward Site 3).
Size of watershed: Less than 2.59 km^2 (1 mi^2).
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 have been observed at this site.
Wetland hydrology: Yes: X No:
Rationale: The ISGS (Pociask 2009) show this satisfies the wetland hydrology criterion. 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 NWI does not code this site as a wetland.

Determined by: Paul Marcum (vegetation, hydrology and GPS)
Dave Ketzner & Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GIS)
Geoff Pociask (ISGS, hydrology)
Illinois Natural History Survey
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1816 S. Oak Street
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(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 3 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **Project Name:** FAS 1907 (IL 127)
State: Illinois **County:** Alexander
Site Name: Wet Meadow
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 ♦
Acer negundo	box elder	shrub	FACW-	1
Agrostis alba	red top	herb	FACW	0
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Andropogon virginicus	broom sedge	herb	FAC-	1
Aster ontarionis	Ontario aster	herb	FAC	4
Aster pilosus	hairy aster	herb	FACU+	0
Aster simplex	panicled aster	herb	FACW	3
Aster vimineus	frost flower	herb	FACW-	3
Bidens frondosa	common beggar's ticks	herb	FACW	1
Boltonia asteroides	false aster	herb	FACW	5
Campsis radicans	trumpet creeper	herb	FAC	2
Carex annectens	large yellow fox sedge	herb	FACW	3
Carex crinita	fringed sedge	herb	OBL	8
Carex frankii	Frank's sedge	herb	OBL	4
Carex granularis	meadow sedge	herb	FACW+	2
Carex lurida	sedge	herb	OBL	7
Carex tribuloides	awl-fruited oval sedge	herb	FACW+	3
Carex vulpinoidea	fox sedge	herb	OBL	3
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Diospyros virginiana	persimmon	herb	FAC	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Eclipta prostrata	yerba de tajo	herb	FACW	2
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Elymus canadensis	Canada wild rye	herb	FAC-	4
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Festuca arundinacea	tall fescue	herb	FACU+	*

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 4 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **Project Name:** FAS 1907 (IL 127)
State: Illinois **County:** Alexander
Site Name: Wet Meadow
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♦
Fraxinus pennsylvanica	green ash	herb	FACW	2
Glyceria striata	fowl manna grass	herb	OBL	4
Ipomoea lacunosa	small white morning-glory	herb	FACW	1
Iva annua	marsh elder	herb	FAC	0
Juncus acuminatus	knotty-leaved rush	herb	OBL	4
Juncus diffusissimus	rush	herb	FACW	7
Juncus effusus solutus	common rush	herb	OBL	4
Juncus interior	inland rush	herb	FAC+	3
Juncus nodatus	stout rush	herb	OBL	6
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Ludwigia alternifolia	seedbox	herb	OBL	5
Ludwigia glandulosa	false loosestrife	herb	OBL	8
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Ludwigia polycarpa	false loosestrife	herb	OBL	5
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phyllanthus caroliniensis	phyllanthus	herb	FAC	5
Physalis angulata	ground cherry	herb	FAC	*
Physalis subglabrata	smooth ground cherry	herb	UPL	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Populus deltoides	eastern cottonwood	herb	FAC+	2
Pycnanthemum tenuifolium	slender mountain mint	herb	FAC	4
Quercus palustris	pin oak	shrub	FACW	4
Salix nigra	black willow	shrub	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION

Site #2 (page 5 of 5)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **Project Name:** FAS 1907 (IL 127)
State: Illinois **County:** Alexander
Site Name: Wet Meadow
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♦
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Setaria faberi	giant foxtail	herb	FACU+	*
Setaria glauca	pigeon grass	herb	FAC	*
Solanum carolinense	horse nettle	herb	FACU-	0
Solidago canadensis	Canada goldenrod	herb	FACU	1
♣*Taxodium distichum*	bald cypress	tree	OBL	7
Toxicodendron radicans	poison ivy	herb	FAC+	1
Typha angustifolia	narrow-leaved cattail	herb	OBL	*
Typha latifolia	cattail	herb	OBL	1
Ulmus americana	American elm	shrub	FACW-	5
Xanthium strumarium	cocklebur	herb	FAC	0

♦Coefficient of Conservatism (Taft *et al*. 1997)
♣ denotes planted species
*Non-native species

without planted species:
mean C value (mCv) = ∑C/N = 216/73 = 2.9
FQI = mCv/(√N) = 216/(√73) = 22.9

with planted tree species:
mean C value (mCv) = ∑C/N = 223/74 = 3.0
FQI = mCv/(√N) = 223/(√74) = 23.6

ROUTINE ON-SITE WETLAND DETERMINATION
Site #3 (page 1 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Importance Value (IV)*
1. *Boltonia asteroides*	FACW	herb	13.2503
2. *Juncus nodatus*	OBL	herb	10.4230
3. *Acorus calamus*	OBL	herb	8.8241
4. *Aster vimineus*	FACW-	herb	7.0042
5. *Echinochloa muricata*	OBL	herb	4.9284
6. *Ludwigia peploides glabrescens*	OBL	herb	4.8006
7. *Xanthium strumarium*	FAC	herb	4.3687

**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 and 5Y 7/1
Other indicators: This soil is found in a depressional area.
Note: At least one foot of the topsoil 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. Additionally, this soil meets the NRCS hydric soil indicator F3. These characteristics are evidence of a hydric soil.

ROUTINE ON-SITE WETLAND DETERMINATION
Site #3 (page 2 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 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 an excavated depression. Water enters this site through precipitation and sheetflow 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 km^2 (1 mi^2).
Other field evidence observed: This site has been excavated to hold water for longer periods. Areas of inundation and saturation, sediment deposits, drift, bare areas indicating ponded water, algal mats, mud cracks, and blackened leaves have been observed at this site.

Wetland hydrology: Yes: X No:
Rationale: The ISGS (Pociask 2009) show this satisfies the wetland hydrology criterion. 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 NWI does not code this site as a wetland.

Determined by: Paul Marcum (vegetation, hydrology and GPS)
Dave Ketzner, & Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GIS)
Geoff Pociask (ISGS; hydrology)
Illinois Natural History Survey
Division of Ecology and Conservation Science
1816 S. Oak Street
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION
Site #3 (page 3 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	shrub	FACW-	1
Acer saccharinum	silver maple	herb	FACW	1
Acorus calamus	sweetflag	herb	OBL	4
Agrostis alba	red top	herb	FACW	0
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Andropogon virginicus	broom sedge	herb	FAC-	1
Aster ontarionis	Ontario aster	herb	FAC	4
Aster pilosus	hairy aster	herb	FACU+	0
Aster simplex	panicled aster	herb	FACW	3
Aster vimineus	frost flower	herb	FACW-	3
Betula nigra	river birch	herb	FACW	4
Bidens aristosa	swamp marigold	herb	FACW	1
Bidens connata	purplestem beggar's ticks	herb	OBL	2
Bidens frondosa	common beggar's ticks	herb	FACW	1
Boltonia asteroides	false aster	herb	FACW	5
Campsis radicans	trumpet creeper	herb	FAC	2
Carex annectens	large yellow fox sedge	herb	FACW	3
Carex crinita	fringed sedge	herb	OBL	8
Carex frankii	Frank's sedge	herb	OBL	4
Carex hyalinolepis	southern lake sedge	herb	OBL	4
Carex tribuloides	awl-fruited oval sedge	herb	FACW+	3
Carex vulpinoidea	fox sedge	herb	OBL	3
Celtis occidentalis	hackberry	herb	FAC-	3
Chamaesyce humistrata	milk spurge	herb	FACW	1
Chamaesyce maculata	nodding spurge	herb	FACU-	0
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Cyperus pseudovegetus	false green flat sedge	herb	FACW	5
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0
Daucus carota	Queen Anne's lace	herb	UPL	*

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION
Site #3 (page 4 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 ♦
Desmodium dillenii	tick trefoil	herb	FACU	3
Diodia virginiana	large buttonweed	herb	FACW	4
Diospyros virginiana	persimmon	shrub	FAC	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Eclipta prostrata	yerba de tajo	herb	FACW	2
Eleocharis acicularis	needle spike rush	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Eleocharis verrucosa	slender spike rush	herb	OBL	6
Eupatorium serotinum	late boneset	herb	FAC+	1
Festuca arundinacea	tall fescue	herb	FACU+	*
Fraxinus pennsylvanica	green ash	shrub, herb	FACW	2
Galium tinctorium	stiff bedstraw	herb	OBL	6
Ipomoea hederacea	ivy-leaved morning glory	herb	FAC	*
Ipomoea lacunosa	small white morning-glory	herb	FACW	1
Iris sp. (cultivated)	iris	herb	-----	*
Iva annua	marsh elder	herb	FAC	0
Juncus acuminatus	knotty-leaved rush	herb	OBL	4
Juncus brachycarpus	short-fruited rush	herb	FACW	5
Juncus effusus solutus	common rush	herb	OBL	4
Juncus marginatus	grass-leaved rush	herb	FACW	5
Juncus nodatus	stout rush	herb	OBL	6
Juncus tenuis	path rush	herb	FAC	0
Juncus torreyi	Torrey's rush	herb	FACW	3
Kummerowia striata	Japanese lespedeza	herb	FACU	*
Leersia lenticularis	catchfly grass	herb	OBL	5
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Lindernia dubia	false pimpernel	herb	OBL	5
Ludwigia decurrens	erect primrose willow	herb	OBL	9
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Ludwigia peploides glabrescens	creeping primrose willow	herb	OBL	5

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION
Site #3 (page 5 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 ♦
Lycopus americanus	common water horehound	herb	OBL	3
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Panicum rigidulum	munro grass	herb	FACW	6
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Paspalum laeve	smooth lens grass	herb	UPL	2
Passiflora incarnata	large passion-flower	herb	FACU	3
Penstemon digitalis	foxglove beard-tongue	herb	FAC-	4
Phyla lanceolata	fog-fruit	herb	OBL	1
Pluchea camphorata	camphor weed	herb	FACW	7
Polygonum hydropiperoides	mild water pepper	herb	OBL	4
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Pontederia cordata	pickerelweed	herb	OBL	8
Populus deltoides	eastern cottonwood	shrub	FAC+	2
Populus heterophylla	swamp cottonwood	shrub	OBL	8
Pycnanthemum tenuifolium	slender mountain mint	herb	FAC	4
Pycnanthemum virginianum	common mountain mint	herb	FACW+	5
Pyrrhopappus carolinianus	false dandelion	herb	UPL	1
Ranunculus sardous	buttercup	herb	FAC	*
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rorippa sessiliflora	sessile-flowered cress	herb	OBL	3
Rotala ramosior	tooth-cup	herb	OBL	4
Rumex crispus	curly dock	herb	FAC+	*
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix nigra	black willow	shrub	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5
Senecio glabellus	butterweed	herb	OBL	0
Setaria glauca	pigeon grass	herb	FAC	*
Setaria viridis	common foxtail	herb	UPL	*
Sida spinosa	prickly sida	herb	FACU	*
Solanum carolinense	horse nettle	herb	FACU-	0
Solidago canadensis	Canada goldenrod	herb	FACU	1

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION
Site #3 (page 6 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
♣*Taxodium distichum*	bald cypress	sapling, shrub	OBL	7
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
Ulmus americana	American elm	shrub	FACW-	5
Vernonia missurica	Missouri ironweed	herb	FAC+	5
Xanthium strumarium	cocklebur	herb	FAC	0

♦Coefficient of Conservatism (Taft *et al*. 1997)
♣ denotes planted species
*Non-native species

without planted species:
mean C value (mCv) = ∑C/N = 267/88 = 3.0
FQI = mCv/(√N) = 267/(√88) = 28.4

with planted tree species:
mean C value (mCv) = ∑C/N = 274/89 = 3.1
FQI = mCv/(√N) = 274/(√89) = 29.0

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	**Indicator Status**	**Stratum**
1. *Quercus bicolor*	planted	sapling/shrub
2. *Quercus lyrata*	planted	sapling/shrub
3. *Quercus palustris*	planted	sapling/shrub
4. *Agrostis alba*	FACW	herb
5. *Solidago canadensis*	FACU	herb

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

Hydrophytic vegetation: Yes: No: X
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: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: No: X
Matrix color: 10YR 4/3
Other indicators: None

Hydric soils: Yes: No: X (but area may contain some hydric soils)
Rationale: This soil is found higher on the landscape. It has some iron concretions but lacks the required depleted soil matrix.

ROUTINE ON-SITE WETLAND DETERMINATION
Site #4 (page 2 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 sheetflow to Sites 2 and 3.
Size of watershed: Less than 2.59 km^2 (1 mi^2).
Other field evidence observed: none

Wetland hydrology: Yes: No: X
Rationale: Field observations suggest that this site is both too high in 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 NWI does not code this site as a wetland.

Determined by: Paul Marcum, Dave Ketzner, & Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GIS)
Geoff Pociask (ISGS, hydrology)
Illinois Natural History Survey
Division of Ecology and Conservation Science
1816 S. Oak Street
Champaign, Illinois 61820
(217) 333-8459 (Marcum)

ROUTINE ON-SITE WETLAND DETERMINATION

Site #4 (page 3 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Acalypha ostryaefolia	three-seeded mercury	herb	UPL	1
Acalypha rhomboidea	three-seeded mercury	herb	FACU	0
Acer negundo	box elder	sapling, shrub	FACW-	1
Acer rubrum	red maple	herb	FAC	5
Achillea millefolium	common milfoil	herb	FACU	*
Agrostis alba	red top	herb	FACW	0
Allium vineale	field garlic	herb	FACU	*
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ambrosia trifida	giant ragweed	herb	FAC+	0
Ampelopsis cordata	raccoon grape	w-vine	FAC+	2
Andropogon virginicus	broom sedge	herb	FAC-	1
Apocynum sibiricum	Indian hemp	herb	FAC+	2
Artemisia vulgaris	common mugwort	herb	UPL	*
Asclepias syriaca	common milkweed	herb	UPL	0
Aster ontarionis	Ontario aster	herb	FAC	4
Aster pilosus	hairy aster	herb	FACU+	0
Aster simplex	panicled aster	herb	FACW	3
Aster vimineus	frost flower	herb	FACW-	3
Barbarea vulgaris	winter cress	herb	FAC	*
Bidens frondosa	common beggar's ticks	herb	FACW	1
Boltonia asteroides	false aster	herb	FACW	5
Bromus commutatus	hairy brome	herb	UPL	*
Campsis radicans	trumpet creeper	shrub, w-vine, herb	FAC	2
Carex cephalophora	short-headed bracted sedge	herb	FACU	3
Carex frankii	Frank's sedge	herb	OBL	4
Carex vulpinoidea	fox sedge	herb	OBL	3
Chamaesyce supina	milk spurge	herb	UPL	0
Chamaesyce maculata	nodding spurge	herb	FACU-	0
Chenopodium album	lamb's quarters	herb	FAC-	*
Cirsium discolor	pasture thistle	herb	UPL	3
Cocculus carolinus	snailseed	w-vine	FAC	6

Species list continued on following page.

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 ♦
Conyza canadensis	horseweed	herb	FAC-	0
Cynanchum laeve	blue vine	herb	FAC	1
Cyperus esculentus	yellow nut-sedge	herb	FACW	0
Daucus carota	Queen Anne's lace	herb	UPL	*
Desmodium paniculatum	panicled tick trefoil	herb	FACU	2
Digitaria ischaemum	smooth crab grass	herb	FACU	*
Diodia virginiana	large buttonweed	herb	FACW	4
Diospyros virginiana	persimmon	shrub	FAC	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Elymus canadensis	Canada wild rye	herb	FAC-	4
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Erechtites hieracifolia	fire weed	herb	FACU	2
Erigeron annuus	annual fleabane	herb	FAC-	1
Eupatorium coelestinum	blue bonset	herb	FAC+	3
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Eupatorium serotinum	late boneset	herb	FAC+	1
Festuca arundinacea	tall fescue	herb	FACU+	*
♣*Fraxinus pennsylvanica*	green ash	sapling/shrub	FACW	2
Glechoma hederacea	ground ivy	herb	FACU	*
Gleditsia triacanthos	honey locust	shrub	FAC	2
Gnaphalium obtusifolium	catfoot	herb	UPL	2
Hemerocallis fulva	day lily	herb	UPL	*
Ipomoea hederacea	ivy-leaved morning glory	herb	FAC	*
Ipomoea lacunosa	small white morning-glory	herb	FACW	1
Iva annua	marsh elder	herb	FAC	0
Juncus effusus solutus	common rush	herb	OBL	4
Juncus interior	inland rush	herb	FAC+	3
Juncus tenuis	path rush	herb	FAC	0
Lespedeza cuneata	sericea lespedeza	herb	NI	*
♣*Liquidambar styraciflua*	sweet gum	sapling/shrub, herb	FACW	6
Lonicera japonica	Japanese honeysuckle	herb	FACU	*
Medicago lupulina	black medic	herb	FAC-	*

Species list continued on following page.

ROUTINE ON-SITE WETLAND DETERMINATION
Site #4 (page 5 of 6)

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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 ♦
Melilotus alba	white sweet clover	herb	FACU	*
Melilotus officinalis	yellow sweet clover	herb	FACU	*
Morus alba	white mulberry	shrub	FAC	*
Oxalis stricta	yellow wood sorrel	herb	FACU	0
Panicum anceps	panic grass	herb	FACW	3
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Panicum virgatum	prairie switchgrass	herb	FAC+	4
Paspalum laeve	smooth lens grass	herb	UPL	2
Paspalum pubiflorum glabrum	beadgrass	herb	FACW	3
Passiflora incarnata	large passion-flower	herb	FACU	3
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phleum pratense	Timothy	herb	FACU	*
Physalis subglabrata	smooth ground cherry	herb	UPL	0
Phytolacca americana	pokeweed	herb	FAC-	1
♣*Platanus occidentalis*	sycamore	sapling/shrub	FACW	3
Poa pratensis	Kentucky bluegrass	herb	FAC-	*
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1
Pycnanthemum tenuifolium	slender mountain mint	herb	FAC	4
Pyrus calleryana	Bradford pear	shrub	UPL	*
♣*Quercus bicolor*	swamp white oak	sapling/shrub	FACW+	7
♣*Quercus lyrata*	overcup oak	sapling/shrub	OBL	7
Quercus marilandica	blackjack oak	shrub	UPL	7
Quercus pagoda	cherrybark oak	shrub	FAC	5
♣*Quercus palustris*	pin oak	sapling/shrub	FACW	4
Rhus glabra	smooth sumac	herb	UPL	1
Rosa multiflora	multiflora rose	shrub	FACU	*
Rosa setigera	Illinois rose	shrub	FACU+	5
Rubus pensylvanicus	blackberry	shrub	FAC-	2
Rumex crispus	curly dock	herb	FAC+	*
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Setaria faberi	giant foxtail	herb	FACU+	*

Species list continued on following page.

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

Field Investigators: Marcum, Keene, Ketzner, and Larimore
Date: 22-23 September 2009 **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♦
Setaria glauca	pigeon grass	herb	FAC	*
Sida spinosa	prickly sida	herb	FACU	*
Solanum carolinense	horse nettle	herb	FACU-	0
Solidago canadensis	Canada goldenrod	herb	FACU	1
Sorghum halepense	Johnson grass	herb	FACU	*
Stellaria media	common chickweed	herb	FACU	*
♣*Taxodium distichum*	bald cypress	sapling/shrub	OBL	7
Torilis japonica	hedge parsley	herb	UPL	*
Toxicodendron radicans	poison ivy	herb	FAC+	1
Tridens flavus	common purple top	herb	UPL	1
Trifolium pratense	red clover	herb	FACU+	*
Trifolium repens	white clover	herb	FACU+	*
Ulmus americana	American elm	shrub, herb	FACW-	5
Ulmus pumila	Siberian elm	sapling	UPL	*
Verbena urticifolia	white vervain	herb	FAC+	3
Vicia villosa	winter vetch	herb	UPL	*
Vitis aestivalis	summer grape	herb	FACU	4
Xanthium strumarium	cocklebur	herb	FAC	0

♦Coefficient of Conservatism (Taft *et al*. 1997)
♣ denotes planted species
*Non-native species

without planted species:
mean C value (mCv) = $\sum C/N = 152/73 = 2.1$
FQI = $mCv/(\sqrt{N}) = 152/(\sqrt{73}) = 17.8$

with planted tree species:
mean C value (mCv) = $\sum C/N = 185/79 = 2.3$
FQI = $mCv/(\sqrt{N}) = 185/(\sqrt{79}) = 20.8$

Appendix 2. Photos of wetland creation sites

A.

B.

Figure 1. A. 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. B. 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.

A.

B.

Figure 2. A. 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. B. View of Site 2, wet meadow/marsh, looking south toward Supermax Road. Note the abundance of *Solidago canadensis* (Canada goldenrod) around the perimeter of this site.

A.

B.

Figure 3. A. 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. B. View of Site 4 from northeast of Site 2. Note the abundance of *Solidago canadensis* (Canada goldenrod).