

TRANSMITTAL FORM

To: Bureau of Design and Environment
 Attn: Thomas Brooks
 From: Illinois Natural History Survey
 Re: Wetland Mitigation Monitoring

Route and Location

Mark: La Grange Mitigation Bank Site
 County: Brown
 IDOT District: 6
 Sequence Number: 9579

Survey Conducted By: Allen Plocher, Dennis Keene and Brad Zercher
 Division of Ecology and Conservation Science
 Illinois Natural History Survey
 1816 S. Oak St.
 Champaign, IL 61820
 (217) 333-6292

Date Conducted: 19, 20 September 2006

Project Summary:

We conducted the first year of quantitative vegetation monitoring for Areas 1, 2 and 3 of the La Grange Mitigation Bank Site (qualitative vegetation assessment was carried out in 2004 and 2005). The attached report includes information detailing monitoring methods and results. The status of the created wetland site is discussed. The created wetland site is overlain on digital ortho-quad photography (DOQ) using Arcview 3.2. This report has been posted on the IDOT ftp site as well as submitted as a hard copy.

Signed: _____

Dr. Allen E. Plocher
 INHS/IDOT project Coordinator

Date: _____

Signed: _____

Dr. Edward J. Heske
 INHS/IDOT project principal investigator

Date: _____

Wetland Mitigation Monitoring for the La Grange Mitigation Bank Site - 2006

Allen Plocher, Dennis Keene, Brad Zercher
Illinois Natural History Survey
Division of Ecology and Conservation Science
1816 S. Oak St.
Champaign, IL 61820
(217) 333-6292

Introduction

In 2004, the Illinois Department of Transportation (IDOT) established the La Grange Wetland Mitigation Bank in Brown Co., IL (legal location: T. 1 S., R. 1 W., Sect. 16, 17, 20, 21) (Watson et al. 2004). This site, at the confluence of the Illinois and La Moine Rivers, occupies 665 ha (1643 acres), primarily comprising low agricultural fields with some previously existing upland forest, forested wetland, marsh, wet meadow and backwater lakes. Topographically, the site consists of a lower floodplain area, which is inundated for a sufficient duration to support wetland hydrology in more than 7 out of 10 years, a less frequently inundated upper floodplain and a small area of river bluff. The slope break between the lower and upper floodplain occurs at about 132.3 m (434 ft) elevation. To facilitate agriculture, the hydrology of the site has been modified. Ditch and tile drainage systems are in place, a levee is present, and pumps were operational. Since establishment of the bank, the pumps have been removed and portions of the tile and ditch systems deactivated or plugged. In 2002, a flood event breached the levee in two places. For organizational and management purposes, the site has been arbitrarily divided into 16 Areas (Watson et al. 2004).

The general site plan calls for emergent wetland establishment through natural regeneration on the lower floodplain and forested wetland planting on the upper floodplain. Wetland enhancement of areas designated as farmed wetland (FW) is expected to result in 95.8 ha (237 acres) of emergent wetland. Restoration of areas designated as prior converted cropland (PC) is expected to generate 220.3 ha (544.2 acres) of emergent wetland and 117.4 ha (290.1 acres) of forested wetland (Watson et al. 2004). In 2006, the upper floodplain was still in crops. The lower floodplain has recently been allowed to revert to natural vegetation. While qualitative vegetation assessment has been carried out on the lower floodplain for two years (Busemeyer and Plocher 2004, 2005), the INHS was tasked to conduct quantitative vegetation monitoring on part of this area (Areas 1, 2 and 3) in 2006. Area 2 (other than Horseshoe Lake) has been out of agriculture for two years, Area 1 for four years, and Area 3 and Horseshoe Lake for six years (Busemeyer and Plocher 2004).

In 2006, field monitoring was conducted on 19 and 20 September. This report details results of the 2006 monitoring. Project goals, objectives and performance criteria are included, as are monitoring methods, monitoring results, summary information and recommendations. A wetland banking prospectus (IDOT 2002)) and Wetland Banking

Instrument (Watson et al. 2004) were prepared by the Illinois State Geological Survey and Illinois Natural History Survey.

Project Goals, Objectives and Performance Criteria

Proposed goals and objectives are based on information contained in the original IDOT project request (Sunderland, 2006) and the Wetland Banking Instrument (Watson et al. 2004). Performance criteria are based on those specified in the U. S. C. O. E. Wetland Delineation Manual (Environmental Laboratory, 1987), and Guidelines for Developing Mitigation Proposals (USACOE, 1993). Each goal should be attained by the end of the monitoring period. Project goals, objectives and performance criteria are listed below.

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

Objective: The goal is to enhance 237 acres of Farmed Wetland and restore 834 acres of Prior Converted cropland by establishing emergent, scrub shrub and forested wetland.

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

- A. Predominance of hydrophytic vegetation - More than 50% of the dominant plant species must be hydrophytic.
- B. Presence of hydric soils - Hydric soil characteristics must be present, or conditions favorable to the formation of hydric soil must persist at the site.
- C. Presence of wetland hydrology - the created wetland must be inundated at an average depth of less than 2 m (6.6 ft) or have soils saturated to the surface for at least 12.5 % of the growing season.

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

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

Performance Criteria: At least 50% of the planted trees and shrubs should be established and living. At least 75% of the plant species present should be non-weedy, native, annual and perennial species. None of the three most dominant species in any stratum should be nonnative, or weedy species.

Methods

Monitoring will be performed on the wetland bank site. Illinois Natural History Survey personnel qualitatively monitored the lower floodplain in 2004 and 2005, began quantitative vegetation monitoring in 2006, and will continue until the Illinois Department of Transportation requests that monitoring cease. Monitoring of tree plantings on the upper floodplain will begin in 2007. The Illinois State Geological Survey has been tasked to monitor hydrology. Monitoring reports on the status of the wetland creation site will be submitted annually. The likelihood of meeting the proposed goals and performance criteria will be addressed. If evidence is discovered indicating that the goals/performance criteria will not be met by the end of the monitoring period, written management recommendations will be submitted to IDOT in an effort to correct the problems.

Project Goal 1

Wetland restoration and enhancement areas will be mapped in the field, and boundaries overlain on digital ortho photographs using Arcview 3.2.

A. Hydrophytic Vegetation - In the lower floodplain area, species composition (relative frequency, relative cover, and Importance Value) will be determined annually through quantitative vegetation sampling of permanent plots. Seventeen parallel transects were established at 200 m (656 ft) intervals. Sampling points (75) were established at 200 m (656 ft) intervals on each transect. At each sampling point, vegetation was tallied by species and percent cover in 20 m² quadrats. For the upper floodplain, planted trees and shrubs and natural regeneration will be tallied in either 100 m² plots at 50 m intervals (4% sample) or 30 m planted row sections at 600 m intervals (5% sample), whichever is deemed appropriate for existing conditions. Beginning when woody vegetation approximates 20% cover, these data will be used to determine woody species composition. Herbaceous species composition will be determined using visual estimation. Dominance is based on Importance Value, a numerical average of species' relative frequency, density and/or aerial coverage (Cox 1985). In each stratum dominant species include, starting with the most dominant, those species whose Importance Values, when summed in descending order, exceed 50%, as well as any additional species whose Importance Values are 20% or greater (Federal Interagency Committee for Wetland Delineation, 1989). Dominant species are assigned wetland indicator status ratings (Reed, 1988). Any plant rated facultative or wetter (FAC, FAC+, FACW-, FACW, FACW+ or OBL) is considered hydrophytic. Hydrophytic vegetation is determined to be present if greater than 50% of the dominant species are hydrophytic (Environmental Laboratory 1987).

B. Hydric Soils – In 2000, soil cores collected from the mitigation site were examined for the presence of redoximorphic features (Environmental Laboratory 1987). Being on the floodplain of the Illinois River, virtually the entire area was found to be underlain by hydric soils (IDOT 2002).

C. Wetland Hydrology - The Illinois State Geological Survey has been tasked to monitor this site. Nine stage gauges and 35 monitoring wells have been installed (Carr et al., 2006). Information provided by ISGS concerning hydrology of the site is incorporated into this report. In addition, visual inspection of the site for field indicators of wetland hydrology, such as landscape position, inundation or surface saturation or wetland drainage and debris patterns, will be used to determine the presence of wetland hydrology (Environmental Laboratory 1987).

Project Goal 2

Vegetation - Dominant plant species in each stratum in each plant community in the lower floodplain area will be determined annually by quantitative sampling. In the upper floodplain area, dominant shrub/sapling layer species will be determined by quantitative sampling, while dominant herbaceous species will be determined by visual estimation. Lists of dominant species will be examined in an attempt to ensure that, in the enhancement and restoration areas, none of the three most dominant species are weedy or non-native. A species list will be prepared annually for each community in order to determine whether at least 75% of the plant species are native and non-weedy. A Floristic Quality Index will be computed annually for each plant community (Taft et al 1997).

Results

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

In Areas 1, 2 and 3 of the lower floodplain three plant communities were identified. In areas of lowest elevation, within backwater lakes and meander scars, the dominant species were *Polygonum pensylvanicum* (FACW+), *Polygonum lapathifolium* (FACW+), and *Bidens connata* (OBL). At slightly higher elevations, *Boltonia asteroides* (FACW) and *Aster simplex* (FACW) dominated. At the north end of Area 1 and higher portions of Area 2 the plant community was dominated by *Boltonia asteroides* (FACW), *Solidago canadensis* (FACU) and *Conyza canadensis* (FAC-). These areas are referred to as Communities A, B and C, respectively. Communities A and B have hydrophytic vegetation; Community C does not. The entire lower floodplain is underlain by hydric soils (figure 2, Appendix 1).

For the past two years, this region has experienced relatively severe drought conditions. Although the entire lower floodplain supported wetland hydrology in several previous years, ISGS field measurements showed only 210.6 acres of wetland hydrology in 2005 and only 84.7 in 2006 (figure 1) (Carr et al 2006). Based on plant community boundaries and topography, we feel confident that at least Community A (209.2 acres) met the three criteria of wetlands in 2006. However, it would be prudent at this point to amass additional years of hydrologic monitoring data before producing an estimate of total wetland acreage.

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

figure 1. Estimated extent of 2006 wetland hydrology

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

Vegetation

In 2006, in Areas 1, 2 and 3, a marsh community dominated by *Polygonum pensylvanicum*, *Polygonum lapathifolium* and *Bidens connata* occurred in backwater lakes and meander scars (Community A). At slightly higher elevations, there was a wet forbland dominated by *Boltonia asteroides* and *Aster simplex*, while a forbland dominated by *Boltonia asteroides*, *Solidago canadensis* and *Conyza canadensis* occurred at the highest elevations in the northern part of the site (Communities B and C) (figure 2). Floristic Quality indices for these communities were 11.7, 13.3 and 11.9, respectively, indicating fair natural quality (Taft et al. 1997). Communities A and B in Area 1 harbor a number of individuals (approximately 200) of *Boltonia decurrens*, a State and Federally listed threatened species. A few individuals of this species have been present outside of the levee since 2000, and *Boltonia decurrens* was first observed inside the levee in 2005 (Busemeyer and Plocher 2005). The three communities were moderately diverse (51 to 64 species) and the percentages of native species were fairly high (80% to 84%), considering the sites are only a few years out of agriculture. However, the percentages of non-weedy native species for these communities are still low (52.9%, 51.6%, and 46.7%), which reflects their early successional nature. Communities A and C have weedy species among the three most dominant (*Polygonum lapathifolium*, *Solidago canadensis*, *Conyza canadensis*) (Tables 1, 2 and 3, Appendix 1).

The area most recently taken out of agriculture is the higher portion of Area 2 and this area has also recently been subjected to earth moving activities involving removal of fill for road maintenance. Therefore, this is the weediest of the three areas. In general, however, Areas 1, 2 and 3 are developing satisfactorily. No problems with weedy or exotic species were noted (*Phalaris* was only observed as a few small, scattered patches in Area 2). One phenomenon observed was that, since drought conditions have persisted for two years and the areas are only a few years out of agriculture, a larger than expected number of upland species are present (approximately 20% in communities B and C). Over time, it is expected that both the proportion of wetland species and natural quality will increase. The drought has produced one very positive result: the backwater lakes (Big, Crane, and Horseshoe) are now completely vegetated with marsh species. Since the prevailing agricultural practice was to plow as far as possible out into the lakes at the driest time of year, Big Lake was completely unvegetated at the time of bank establishment.

Table 1. Understory species composition of Marsh (Community A). Freq., Rel. Freq., Cover (m^2/m^2), Rel. Cover, Importance Value (%), N=25.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
<i>Polygonum pensylvanicum</i>	0.960	0.240	0.4800	0.38302	31.151
<i>Polygonum lapathifolium</i>	0.720	0.180	0.2696	0.21513	19.756
<i>Bidens connata</i>	0.400	0.100	0.1748	0.13948	11.974
<i>Conyza canadensis</i>	0.320	0.080	0.0412	0.03288	5.644
<i>Xanthium strumarium</i>	0.280	0.070	0.0320	0.02713	4.776
<i>Bidens frondosa</i>	0.240	0.060	0.0280	0.02234	4.117
<i>Polygonum amphibium</i>	0.120	0.030	0.0640	0.05107	4.053
<i>Amaranthus tuberculatus</i>	0.160	0.040	0.0292	0.02330	3.165
<i>Bidens cernua</i>	0.120	0.030	0.0340	0.02713	2.856
<i>Boltonia asteroides</i>	0.120	0.030	0.0232	0.01851	2.426
<i>Ambrosia trifida</i>	0.080	0.020	0.0120	0.00958	1.479
<i>Vitis riparia</i>	0.080	0.020	0.0120	0.00958	1.479
<i>Chenopodium album</i>	0.080	0.020	0.0080	0.00638	1.319
<i>Panicum capillare</i>	0.040	0.010	0.0152	0.01213	1.107
<i>Abutilon theophrasti</i>	0.040	0.010	0.0060	0.00479	0.740
<i>Hibiscus laevis</i>	0.040	0.010	0.0060	0.00479	0.740
<i>Melilotus officinalis</i>	0.040	0.010	0.0060	0.00479	0.740
<i>Leersia oryzoides</i>	0.040	0.010	0.0040	0.00319	0.660
<i>Ambrosia artemisiifolia</i>	0.040	0.010	0.0040	0.00319	0.660
<i>Echinochloa muricata</i>	0.040	0.010	0.0020	0.00160	0.580
<i>Polygonum scandens</i>	0.040	0.010	0.0020	0.00160	0.580
Total	4.000	1.000	1.2532	1.00001	100.002

Table 2. Understory species composition of Wet Forbland (Community B). Freq., Rel. Freq., Cover (m²/m²), Rel. Cover, Importance Value (%), N=28.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
<i>Boltonia asteroides</i>	0.96429	0.27836	0.48821	0.42023	34.929
<i>Aster simplex</i>	0.60714	0.17526	0.21571	0.18567	18.047
<i>Conyza canadensis</i>	0.39286	0.11340	0.17357	0.14940	13.140
<i>Bidens frondosa</i>	0.28571	0.08247	0.08214	0.07070	7.659
<i>Polygonum amphibium</i>	0.28571	0.08247	0.06786	0.05841	7.044
<i>Solidago canadensis</i>	0.17857	0.05155	0.01250	0.01076	3.115
<i>Bidens connata</i>	0.10714	0.03093	0.02857	0.02459	2.776
<i>Potentilla norvegica</i>	0.10714	0.03093	0.02071	0.01783	2.438
<i>Polygonum pensylvanicum</i>	0.10714	0.03093	0.01964	0.01691	2.392
<i>Cuscuta gronovii</i>	0.10714	0.03093	0.01964	0.01691	2.392
<i>Eupatorium serotinum</i>	0.10714	0.03093	0.01000	0.00861	1.977
<i>Phyla lanceolata</i>	0.03571	0.01031	0.00714	0.00615	0.823
<i>Sida spinosa</i>	0.03571	0.01031	0.00536	0.00461	0.746
<i>Solanum nigrum</i>	0.03571	0.01031	0.00357	0.00307	0.669
<i>Cyperus ferruginescens</i>	0.03571	0.01031	0.00357	0.00307	0.669
<i>Xanthium strumarium</i>	0.03571	0.01031	0.00179	0.00154	0.593
<i>Rumex crispus</i>	0.03571	0.01031	0.00179	0.00154	0.593
Total	3.46424	1.00002	1.16177	1.00000	100.002

Table 3. Understory species composition of Forbland (Community C). Freq., Rel. Freq., Cover (m²/m²), Rel. Cover, Importance Value (%), N=22.

Species	Freq.	Rel. Freq.	Cover	Rel. Cov.	I.V.
<i>Boltonia asteroides</i>	0.90909	0.20833	0.37273	0.31002	25.917
<i>Solidago canadensis</i>	0.77273	0.17709	0.17954	0.14934	16.321
<i>Conyza canadensis</i>	0.63636	0.14583	0.15909	0.13233	13.908
<i>Polygonum amphibium</i>	0.36364	0.08333	0.13864	0.11532	9.932
<i>Aster simplex</i>	0.31818	0.07292	0.10000	0.08318	7.805
<i>Eupatorium serotinum</i>	0.36364	0.08333	0.05682	0.04726	6.530
<i>Bidens frondosa</i>	0.18182	0.04167	0.02045	0.01701	2.934
<i>Potentilla norvegica</i>	0.09091	0.02083	0.02727	0.02268	2.175
<i>Bidens connata</i>	0.09091	0.02083	0.02045	0.01701	1.892
<i>Oenothera biennis</i>	0.09091	0.02083	0.01818	0.01512	1.798
<i>Echinochloa muricata</i>	0.04545	0.01042	0.02727	0.02268	1.655
<i>Ambrosia trifida</i>	0.09091	0.02083	0.01136	0.00945	1.514
<i>Aster prealtus</i>	0.04545	0.01042	0.02273	0.01891	1.466
<i>Xanthium strumarium</i>	0.04545	0.01042	0.01818	0.01512	1.277
<i>Chenopodium album</i>	0.04545	0.01042	0.00682	0.00567	0.804
<i>Cassia fasciculata</i>	0.04545	0.01042	0.00682	0.00567	0.804
<i>Aster pilosus</i>	0.04545	0.01042	0.00455	0.00378	0.710
<i>Cyperus ferruginescens</i>	0.04545	0.01042	0.00455	0.00378	0.710
<i>Sida spinosa</i>	0.04545	0.01042	0.00227	0.00189	0.616
<i>Erigeron annuus</i>	0.04545	0.01042	0.00227	0.00189	0.616
<i>Bidens aristosa</i>	0.04545	0.01042	0.00227	0.00189	0.616
Total	4.36360	1.0002	1.20226	1.00000	100.000

Summary and Recommendations

Within Areas 1, 2 and 3, Communities A and B have hydrophytic vegetation. Community C, in areas 1 and 2, does not. All areas have hydric soils. This region has experienced severe drought for the past two years. As a result the ISGS has measured wetland hydrology only in portions of Community A, marshes occupying the backwater lakes. In several previous years, wetland hydrology was documented for the entire lower floodplain (all of Areas 1, 2 and 3) (Carr et al. 2006).

Floristic Quality of the three communities is fair (11.7 – 13.3) and the percentages of native species are high (80% - 84%). State and Federally listed *Boltonia decurrens* is present in Area 1. Big Lake, previously devoid of vegetation, is now completely vegetated. Currently, no problems with non-native species over-abundance exist. However, the percentages of non-weedy species in all three communities are low (47% - 53%), and Communities A and C have weedy species among the three most dominant (*Polygonum lapathifolium*, *Solidago canadensis*, *Conyza canadensis*). Over time, natural quality of these sites is expected to improve.

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Appendix 1: Wetland Report

A brief functional assessment of each wetland is provided in this report. However, this assessment is not an exhaustive description of the values of the site. The Floristic Quality Index (FQI), Developed by Taft, Ladd, Wilhelm and Masters (*Floristic Quality Assessment for Vegetation in Illinois*, 1997), was applied to the vegetation of each site. This index should not be used as a substitute for quantitative analysis, but it does provide a measure of floristic integrity. The FQI is calculated as follows: $FQI = R/\sqrt{N}$, where R represents the sum of the numerical ratings for all species recorded in the area, and N represents the number of recorded native species. The mean C is calculated as: $mean\ C = R/N$. FQI values of 10 or less indicate low natural quality, while sites with values of 20 or more (mean C generally greater than 3.0) have at least some evidence of native character and may be considered environmental assets.

Site 1: This marsh is located in depressions within Areas 1, 2 and 3. Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore this site is a wetland. The site occupies 84.7 ha (209.2 acres). Hydrologic inputs are precipitation, sheetflow and overflow from the Illinois River. Water leaves the site by evapotranspiration. The site provides floodwater storage and wildlife habitat of fair quality. The NWI codes the site as PEMA, PEMCh, PEMFh, PABG, L2EM2Gh and L1UBHh. The FQI is 11.7, which is indicative of fair natural quality.

Site 2: This wet forland is located in Areas 1 and 3. Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore this site is a wetland. The site occupies 111.9 ha (276.3 acres). Hydrologic inputs are precipitation, sheetflow and overflow from the Illinois River. Water leaves the site by evapotranspiration and sheetflow. The site provides floodwater storage and wildlife habitat of fair quality. The NWI codes part of the site as PEMCh, PEMFh, L2EM2Gh and L1UBHh, and part of the site is not coded as wetland. The FQI is 13.34, which is indicative of fair natural quality.

Site 3: This forland is located in topographically higher areas in Area 2 and the northern part of Area 1. Although hydric soils are present, hydrophytic vegetation and wetland hydrology are absent. Therefore this site is not a wetland. The site occupies 119.3 ha (294.6 acres). Hydrologic inputs are precipitation, sheetflow and overflow from the Illinois River. Water leaves the site by evapotranspiration and sheetflow. The site provides floodwater storage and wildlife habitat of fair quality. The NWI codes part of the site as PEMA, PEMC and PEMFh and part of the site is not coded as wetland. The FQI is 11.86, which is indicative of fair natural quality.

Watershed Data:

This site is in the watershed for the Illinois River, which has a drainage area of 62,748 km² (24,227 mi²) at Beardstown, IL. The USGS hydrologic unit code is 07130011, Illinois River, Lower.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 19, 20 September 2006

Project Name: LaGrange/Brown Co. Mitigation Bank

State: Illinois **County:** Brown **Applicant:** IDOT District 6

Site Name: Marsh

Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1, 2 and 3

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Polygonum pensylvanicum</i>	herb	FACW+
2. <i>Polygonum lapathifolium</i>	herb	FACW+
3. <i>Bidens connata</i>	herb	OBL

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

Hydrophytic vegetation: Yes: X No:

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

SOILS*

*field checked in 2000

Series and phase: Mapped as Darwin silty clay and Water by NRCS. Revised to Wagner silt loam and Water

On county hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox Concentrations? Yes: X No:
Redox Depletions? Yes: X No:
Matrix color: N 4/

Other indicators: Portions of the site were inundated.

Hydric soils? Yes: X No:

Rationale: This soil meets the requirements for NRCS hydric soil indicator F2 – loamy gleyed matrix

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 2 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 19, 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Marsh
Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21
Location: Areas 1, 2 and 3

HYDROLOGY

Inundated: Yes: X (in places) No: Depth of standing water: 0 – 1 m (0 – 39 in)

Depth to saturated soil: 0 – 0.66 m (0 - 26 in)

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, sheetflow and overflow from the Illinois River. Evapotranspiration is the major output.

Size of watershed: 62,748 km² (24,227 mi²) at Beardstown, IL

Other field evidence observed: The sites are depressions on the lower floodplain of the Illinois River.

Wetland hydrology: Yes: X No:

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

WETLAND DETERMINATION AND RATIONALE:

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

Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The sites are coded by the NWI as PEMA, PEMC, PEMCh, PEMF, PEMFh, PABG (palustrine, emergent/aquatic bed, temporarily flooded/seasonally flooded/intermittently exposed/semipermanently flooded, diked/impounded) or L2EM2Gh, L1UBHh (Lacustrine, littoral/limnetic, emergent nonpersistent/unconsolidated bottom, semipermanently flooded/permanently flooded, diked/impounded).

Determined by: Allen Plocher (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS and hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-6292

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 19, 20 September 2006

Project Name: LaGrange/Brown Co. Mitigation Bank

State: Illinois **County:** Brown **Applicant:** IDOT District 6

Site Name: Marsh

Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1, 2 and 3

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C*
<i>Abutilon theophrasti</i>	velvet leaf	herb	FACU-	
<i>Amaranthus tuberculatus</i>	water hemp	herb	OBL	1
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Artemisia annua</i>	annual wormwood	herb	FACU	
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens cernua</i>	beggar's ticks	herb	OBL	2
<i>Bidens connata</i>	beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Boltonia decurrens</i>	decurrent false aster	herb	OBL	4
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cuscuta gronovii</i>	dodder	herb	FACW	2
<i>Cyperus ferruginescens</i>	flat sedge	herb	OBL	1
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Hibiscus laevis</i>	halberd leaf rose mallow	herb	OBL	4
<i>Ipomoea lacunosa</i>	small flowered morning glory	herb	FACW	1
<i>Leersia oryzoides</i>	rice cutgrass	herb	OBL	3
<i>Melilotus officinalis</i>	yellow clover	herb	FACU	
<i>Morus alba</i>	white mulberry	seedling	FAC	

*Coefficient of Conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 4 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 19, 20 September 2006

Project Name: LaGrange/Brown Co. Mitigation Bank

State: Illinois **County:** Brown **Applicant:** IDOT District 6

Site Name: Marsh

Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1, 2 and 3

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C*
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Panicum capillare</i>	witchgrass	herb	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Penthorum sedoides</i>	ditch stonecrop	herb	OBL	2
<i>Phyla lanceolata</i>	fog fruit	herb	OBL	1
<i>Phytolacca americana</i>	pokeweed	herb	FAC-	1
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum lapathifolium</i>	nodding smartweed	herb	FACW+	0
<i>Polygonum pennsylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum scandens</i>	climbing false buckwheat	herb	FAC	2
<i>Populus deltoides</i>	cottonwood	seedling	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Rorippa islandica</i>	marsh yellow cress	herb	OBL	4
<i>Rumex crispus</i>	curly dock	herb	FAC+	
<i>Salix amygdaloides</i>	peach leaf willow	seedling	FACW	4
<i>Salix exigua</i>	sandbar willow	seedling	OBL	1
<i>Salix nigra</i>	black willow	seedling	OBL	3
<i>Scirpus fluviatilis</i>	river bulrush	herb	OBL	3
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	
<i>Sida spinosa</i>	prickly sida	herb	FACU	
<i>Solanum dulcamara</i>	climbing nightshade	herb	FAC	
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Stachys tenuifolia</i>	slenderleaf betony	herb	OBL	5
<i>Verbena hastata</i>	blue vervain	herb	FACW+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

*Coefficient of Conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

$FQI = R/\sqrt{N} = 75/\sqrt{41} = 11.71$, mean $C = R/N = 75/41 = 1.83$

Percent native species = 80.4

Percent nonweedy and native = 52.9

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Wet Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1 and 3

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Boltonia asteroides</i>	herb	FACW
2. <i>Aster simplex</i>	herb	FACW

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

Hydrophytic vegetation: Yes: X No:

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

SOILS*

* field checked in 2000

Series and phase: Mapped as Wagner silt loam, Beaucoup silty clay loam and Darwin silty clay by NRCS. Revised to Wagner silt loam

On county hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox Concentrations? Yes: X No:
Redox Depletions? Yes: X No:
Matrix color: N 4/

Other indicators: level to depressional landscape position

Hydric soils? Yes: X No:

Rationale: This soil meets the requirements for NRCS hydric soil indicator F2 – loamy gleyed matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 2 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Wet Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1 and 3

HYDROLOGY

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

Depth to saturated soil: > 0.66 m (26 in)

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, sheetflow and overflow from the Illinois River. Evapotranspiration and sheetflow are the major outputs.

Size of watershed: 62,748 km² (24,227 mi²) at Beardstown, IL

Other field evidence observed: level to depression landscape position

Wetland hydrology: Yes: X No:

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

WETLAND DETERMINATION AND RATIONALE:

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

Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. Part of the site is coded by the NWI as PEMCh, PEMFh (palustrine, emergent, seasonally flooded/intermittently exposed, diked/impounded), or L2EM2Gh, L1UBHh (lacustrine, littoral/limnetic, emergent nonpersistent/unconsolidated bottom, semipermanently flooded/permanently flooded, diked/impounded) and part is not coded as wetland.

Determined by: Allen Plocher (vegetation and hydrology)
Demnis Keene (soils and hydrology)
Brad Zercher (GPS and hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-6292

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 3 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Wet Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1 and 3

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C*
<i>Abutilon theophrasti</i>	velvet leaf	herb	FACU-	
<i>Acer saccharinum</i>	silver maple	seedling	FACW	1
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Amorpha fruticosa</i>	false indigo bush	shrub	FACW+	6
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster ontarionis</i>	Ontario aster	herb	FAC	4
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster simplex</i>	panicked aster	herb	FACW	3
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens cernua</i>	beggar's ticks	herb	OBL	2
<i>Bidens connata</i>	beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Bidens vulgata</i>	beggar's ticks	herb	FACW	0
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Boltonia decurrens</i>	decurrent false aster	herb	OBL	4
<i>Carduus nutans</i>	musk thistle	herb	UPL	
<i>Cassia fasciculata</i>	partridge pea	herb	FACU-	1
<i>Celtis occidentalis</i>	hackberry	seedling	FAC-	3
<i>Chamaesyce humistrata</i>	milk spurge	herb	FACW	1
<i>Chamaesyce maculata</i>	nodding spurge	herb	FACU-	0
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	
<i>Cirsium discolor</i>	field thistle	herb	UPL	3
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cuscuta gronovii</i>	dodder	herb	FACW	2
<i>Cyperus ferruginescens</i>	flat sedge	herb	OBL	1
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1

*Coefficient of Conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 4 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Wet Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16, 20, 21

Location: Areas 1 and 3

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C*
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Gnaphalium obtusifolium</i>	catfoot	herb	UPL	2
<i>Heterotheca latifolia</i>	camphorweed	herb	FACU-	2
<i>Hibiscus laevis</i>	halberd leaved rose mallow	herb	OBL	4
<i>Ipomoea lacunosa</i>	small flowered morning glory	herb	FACW	1
<i>Morus alba</i>	white mulberry	seedling	FAC	
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Panicum capillare</i>	witchgrass	herb	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Phyla lanceolata</i>	fog fruit	herb	OBL	1
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum lapathifolium</i>	nodding smartweed	herb	FACW+	0
<i>Polygonum pensylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum ramosissimum</i>	bushy knotweed	herb	FAC-	3
<i>Populus deltoides</i>	cottonwood	seedling	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Ranunculus abortivus</i>	kidneyleaf buttercup	herb	FACW-	1
<i>Rumex crispus</i>	curly dock	herb	FAC+	
<i>Salix amygdaloides</i>	peach leaf willow	seedling	FACW	4
<i>Salix exigua</i>	sandbar willow	seedling	OBL	1
<i>Salix nigra</i>	black willow	seedling	OBL	3
<i>Scrophularia marilandica</i>	late figwort	herb	FACU-	4
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	
<i>Sida spinosa</i>	prickly sida	herb	FACU	
<i>Solanum nigrum</i>	black nightshade	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Sonchus arvensis</i>	sow thistle	herb	FAC-	
<i>Stachys tenuifolia</i>	slenderleaf betony	herb	OBL	5
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Vitis riparia</i>	riverbank grape	herb	FACW-	2
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

*Coefficient of Conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

$FQI = R/\sqrt{N} = 98/\sqrt{54} = 13.34$, mean $C = R/N = 98/54 = 1.81$

Percent native species = 84.4

Percent nonweedy and native = 51.6

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 1 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16

Location: Areas 1 and 2

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. <i>Boltonia asteroides</i>	herb	FACW
2. <i>Solidago canadensis</i>	herb	FACU
3. <i>Conyza canadensis</i>	herb	FAC-

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 33%

Hydrophytic vegetation: Yes: No: X

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

SOILS*

* field checked in 2000

Series and phase: Mapped as Wagner silt loam, Beaucoup silty clay loam and Darwin silty clay by NRCS. Revised to Wagner silt loam.

On county hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox Concentrations? Yes: X No:
Redox Depletions? Yes: X No:
Matrix color: 5Y 4/1
Other indicators: none

Hydric soils? Yes: X No:

Rationale: This soil meets the requirements for NRCS hydric soil indicator F3 – depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 2 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16

Location: Areas 1 and 2

HYDROLOGY

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

Depth to saturated soil: > 0.66 m (26 in)

Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, sheetflow and overflow from the Illinois River. Evapotranspiration and sheetflow are the major outputs.

Size of watershed: 62,748 km² (24,227 mi²) at Beardstown, IL

Other field evidence observed: This area is on the Illinois River floodplain but is somewhat higher in elevation than Sites 1 and 2.

Wetland hydrology: Yes: No: X

Rationale: Field evidence listed above indicates that this site is not flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

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

Rationale: Although hydric soils are present, hydrophytic vegetation and wetland hydrology are absent. Therefore the site is not a wetland. Part of the site is coded by the NWI as PEMA, PEMC or PEMFh (palustrine, emergent, temporarily flooded/seasonally flooded/intermittently exposed, diked/impounded) and part is not coded as wetland.

Determined by: Allen Plocher (vegetation and hydrology)
Dennis Keene (soils and hydrology)
Brad Zercher (GPS and hydrology)
Illinois Natural History Survey
Center for Wildlife Ecology
607 East Peabody Drive
Champaign, Illinois 61820
(217) 333-6292

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 3 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006

Project Name: LaGrange/Brown Co. Mitigation Bank

State: Illinois **County:** Brown **Applicant:** IDOT District 6

Site Name: Forbland

Legal Description: T. 1 S., R. 1 W., Sect. 16

Location: Areas 1 and 2

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	C*
<i>Abutilon theophrasti</i>	velvet leaf	herb	FACU-	
<i>Acer negundo</i>	box elder	seedling	FACW-	1
<i>Acer saccharinum</i>	silver maple	seedling	FACW	1
<i>Ambrosia artemisiifolia</i>	common ragweed	herb	FACU	0
<i>Ambrosia trifida</i>	giant ragweed	herb	FAC+	0
<i>Apocynum cannabinum</i>	dogbane	herb	FAC	2
<i>Asclepias incarnata</i>	swamp milkweed	herb	OBL	4
<i>Aster pilosus</i>	hairy aster	herb	FACU+	0
<i>Aster prealtus</i>	willow leaf aster	herb	FACW	4
<i>Aster simplex</i>	panicled aster	herb	FACW	3
<i>Bidens aristosa</i>	swamp marigold	herb	FACW	1
<i>Bidens connata</i>	beggar's ticks	herb	OBL	2
<i>Bidens frondosa</i>	beggar's ticks	herb	FACW	1
<i>Boltonia asteroides</i>	false aster	herb	FACW	5
<i>Campsis radicans</i>	trumpet creeper	herb	FAC	2
<i>Carex frankii</i>	sedge	herb	OBL	4
<i>Cassia fasciculata</i>	partridge pea	herb	FACU-	1
<i>Chamaesyce humistrata</i>	milk spurge	herb	FACW	1
<i>Chenopodium album</i>	lamb's quarters	herb	FAC-	
<i>Cirsium discolor</i>	field thistle	herb	UPL	3
<i>Cirsium vulgare</i>	bull thistle	herb	FACU-	
<i>Conyza canadensis</i>	horseweed	herb	FAC-	0
<i>Cyperus ferruginescens</i>	flat sedge	herb	OBL	1
<i>Echinochloa muricata</i>	barnyard grass	herb	OBL	0
<i>Elymus virginicus</i>	Virginia wild rye	herb	FACW-	4
<i>Erechtites hieracifolia</i>	fireweed	herb	FACU	2
<i>Erigeron annuus</i>	annual fleabane	herb	FAC-	1
<i>Eupatorium serotinum</i>	late flowering thoroughwort	herb	FAC+	1
<i>Ipomoea hedercea</i>	ivy leaf morning glory	herb	FAC	
<i>Ipomoea lacunosa</i>	small flowered morning glory	herb	FACW	1

*Coefficient of Conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

Continued on following page

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 4 of 4)

Field Investigators: Plocher, Keene, Zercher **Date:** 20 September 2006
Project Name: LaGrange/Brown Co. Mitigation Bank
State: Illinois **County:** Brown **Applicant:** IDOT District 6
Site Name: Forbland
Legal Description: T. 1 S., R. 1 W., Sect. 16

Location: Areas 1 and 2

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	C*
<i>Morus alba</i>	white mulberry	seedling	FAC	
<i>Oenothera biennis</i>	evening primrose	herb	FACU	1
<i>Oxalis stricta</i>	yellow wood sorrel	herb	FACU	0
<i>Panicum capillare</i>	witchgrass	herb	FAC	0
<i>Panicum dichotomiflorum</i>	fall panicum	herb	FACW-	0
<i>Phalaris arundinacea</i>	reed canarygrass	herb	FACW+	
<i>Physostegia virginiana</i>	obedient plant	herb	FACW	6
<i>Polygonum amphibium</i>	water smartweed	herb	OBL	3
<i>Polygonum lapathifolium</i>	nodding smartweed	herb	FACW+	0
<i>Polygonum pennsylvanicum</i>	giant smartweed	herb	FACW+	1
<i>Polygonum scandens</i>	climbing false buckwheat	herb	FAC	2
<i>Populus deltoides</i>	cottonwood	seedling	FAC+	2
<i>Potentilla norvegica</i>	rough cinquefoil	herb	FAC	0
<i>Prunus serotina</i>	black cherry	seedling	FACU	1
<i>Rumex crispus</i>	curly dock	herb	FAC+	
<i>Salix exigua</i>	sandbar willow	seedling	OBL	1
<i>Salix nigra</i>	black willow	seedling	OBL	3
<i>Sassafras albidum</i>	sassafras	seedling	FACU	2
<i>Setaria faberi</i>	giant foxtail	herb	FACU+	
<i>Sida spinosa</i>	prickly sida	herb	FACU	
<i>Solanum carolinense</i>	horse nettle	herb	FACU-	0
<i>Solanum nigrum</i>	black nightshade	herb	FACU-	0
<i>Solidago canadensis</i>	Canada goldenrod	herb	FACU	1
<i>Stachys tenuifolia</i>	slenderleaf betony	herb	OBL	5
<i>Taraxacum officinale</i>	dandelion	herb	FACU	
<i>Ulmus americana</i>	American elm	seedling	FACW-	5
<i>Verbascum thapsus</i>	mullein	herb	UPL	
<i>Verbena stricta</i>	hoary vervain	herb	UPL	2
<i>Verbena urticifolia</i>	white vervain	herb	FAC+	3
<i>Xanthium strumarium</i>	cocklebur	herb	FAC	0

*Coefficient of Conservatism, as developed by Taft, Ladd, Wilhelm and Masters (1997)

$FQI = R/\sqrt{N} = 83/\sqrt{49} = 11.86$, mean $C = R/N = 83/49 = 1.69$

Percent native species = 81.7

Percent nonweedy and native = 46.7

LaGrange Mitigation Site Brown County



0 1000 2000 Feet

scale 1:12000
1 inch = 1000 ft

0 300 600 Meters

