

## Mitigation Monitoring

To: Thomas Brooks

From: Rick Larimore, Allen Plocher, and Paul Marcum

Survey Date: November 17, 2010

Regarding: Mitigation Monitoring – Eckmann Site/Multi-Use Wetland Compensation,  
Madison County

Roadwork on FAP 14 (IL 3) resulted in wetland impacts. Compensation for these and other impacts is proposed on the Eckmann-Bischoff property near Collinsville, IL, Madison Co. (Legal location: T 3 N, R 9 W, Sect. 25, S/2 and NE/4, NE/4 and N/2, SE/4). This 24.1 ha (59.5 acre) tract occurs within an abandoned Mississippi River oxbow and is bordered by cropland to the north, forested wetland and marsh to the south and east and Cahokia Canal levee to the west. The site occurs on the Mississippi River floodplain and the presettlement environment consisted of mesic and wet floodplain forest, wet shrubland, marsh and backwater ponds and sloughs. The surrounding land use is primarily cropland and developed land. Levee Lake to the south is an Illinois State Natural Area, some of which is categorized as grade B shrub swamp/pond. The property, originally consisting of cropland considered to be nonwetland by the NRCS, was acquired by the IDOT in 1995 (Plocher et al. 1994) and 1997 (Keene and Ketzner 1997). Wetland and natural area restoration was to proceed by natural revegetation utilizing the soil seed bank and colonization from adjacent marsh and forested wetland (Thomas Brooks, IDOT personal comm.). The state and federally listed *Boltonia decurrens* had previously been located in low numbers at this site. Less than ten individuals were found in 2008, none were found in 2009, and one was found on the neighboring property to the north in 2010. As of 2000, 17 ha (42 acres) of wetlands (marsh and wet shrubland) had developed on the site (Ketzner et al. 2001); this was found to be the approximate area of wetland in 2002 (Ketterling and Robinson 2002, Robinson and Larimore 2003) and again in 2003 (Fucciolo et al. 2003, Larimore et al. 2004). Monitoring of the site began in 2002 and was conducted again in 2003. After that time monitoring was determined to be unnecessary since the site had been developing natural vegetation for seven years and stable plant communities and hydrology were demonstrated. The ISGS and INHS submitted a letter and map to IDOT showing wetlands with ISGS hydrological data and INHS vegetation surveys combined (Robinson and Larimore 2003). In 2009 the wetland boundaries and plant communities remained basically unchanged, as did ISGS hydrological data (Fucciolo 2009); however, some changes in the marsh and wet meadow communities in 2010 are significant (see Wetland Site Summaries and Appendix 2, Figure 1).

### Hydrology

Low topography and proximity to the Mississippi River combine to keep this area consistently wet. This site receives water through precipitation, sheet flow from adjacent higher ground, and occasionally from backflow via Schneider Ditch (Rorick 1994). Water leaves the site by way of soil infiltration, evapotranspiration and by sheet flow into Schneider

Ditch on occasions. Beaver dams in the southwest corner of the site, just above the Schneider Ditch outlet, are important, holding back several inches of additional water.

In 2010, the area of the site that satisfied wetland hydrology criteria for greater than 5% of the growing season was estimated to be 22.6 ha (55.9 ac); and, the area that satisfied wetland hydrology criteria for 12.5% of the growing season was 20.9 ha (51.6 ac) according to Miner et al (2010).

Size of the immediate watershed is less than 13 km<sup>2</sup> (5 mi<sup>2</sup>). The USGS hydrologic basin unit code is 07140101, Mississippi River, Upper.

## Soils

Soil samples were taken where possible at the site. Most of the site was inundated with water reaching 2-3 ft in some areas. The NRCS had Wakeland silt loam and Beaucoup silt clay loam mapped at the site (Leeper 2004). Upon evaluation of this site, the uninundated area (western portion of the site) was determined to be Petrolia silty clay loam. Petrolia silty clay loam is a hydric poorly drained soil. Depth to the seasonal high water table is 0 to 0.5 ft. This soil is ideal for wetland plants and wildlife. Soils have remained stable and were not checked in 2010.

## Vegetation

This site is made up of marsh, wet meadow, wet floodplain forest, and forbland plant communities (Appendix 2, Figure 1). The plant communities have remained fairly stable since 2003; however, much of the wet floodplain forest was wet shrubland at that time, and the last two growing seasons have seen some major changes in the marsh and wet meadow.

The marsh community, dominated by *Typha angustifolia* and *T. latifolia* has more open water brought on by higher water levels.

The wet meadow community was of good natural quality and diverse (FQI = 20.5); only 27.5% of species present were weedy or non-native. The non-native *Phragmites australis* however, has now become a major dominant and will likely cover the entire wet meadow in the near future.

The wet floodplain forest community appears to be stable and is of fair natural quality. The site has an FQI of 11.5; 39.3% of the plant species present were weedy or non-native.

The forbland on the western edge of the property, dominated by *Setaria faberi* and *Solidago canadensis*, is of fair to poor quality. The very large exotic grass *Erianthus ravennae* (L.) Beauv. (plume grass) was found in this area in 2010.

**Table 1.** Plant Communities and Dominant Species Within the Project Area

1. Marsh  
Herb - *Typha angustifolia* and *T. latifolia*
2. Wet Meadow  
Herb - *Carex hyalinolepis*, *Leersia oryzoides*, *Phragmites australis*, and *Phyla lanceolata*
3. Wet Floodplain Forest  
Tree – *Populus deltoides*  
Sapling Layer – *Fraxinus pennsylvanica*, *Populus deltoides*  
Herb - *Carex hyalinolepis*, *Toxicodendron radicans*
4. Forbland  
Herb – *Setaria faberi*, *Solidago canadensis*

**Wetland Assessment**

All potential wetlands within the project area were examined on November 17, 2010. Four on-site wetland determinations were performed and it was determined that three of these sites are wetlands. Results of these determinations are summarized below and described in more detail on the accompanying forms (Appendix 1). The wetland delineation sites are marked on the enclosed digital Ortho photograph (Figure 1). Wetland boundaries were mapped using Trimble Global Positioning System (GPS) and depicted using ArcView 3.3 overlain on a digital ortho photograph. GPS data has been posted on the IDOT extranet site.

The following sources were examined while surveying the project area to determine wetland locations and boundaries: United States Geological Survey topographic map and National Wetland Inventory (NWI) map (Monks Mound 7.5 minute quadrangle); aerial photograph; Reed (1988); Leeper (2004); Mohlenbrock (1986); U.S. Army Corps of Engineers (1993); and Environmental Laboratory (1987). These materials were used during an on-site evaluation of vegetation, soils, and hydrology.

Included with the assessment of a site is its Floristic Quality Index, developed by Swink and Wilhelm (1979) and modified by Taft *et al.* (1997) and Swink and Wilhelm (1994). Although the Index is not a substitute for quantitative vegetation analysis in assessing plant communities, it provides a measure of the floristic integrity or level of disturbance of a site. Each plant species native to Illinois is assigned a Coefficient of Conservatism (C value), a number between 0 and 10. The rating number given to each plant is subjective and indicates the likelihood of finding the plant on an undisturbed site in a natural plant community. A plant species that has a low C value is common and is likely to tolerate disturbed conditions; a species with a high C value is relatively rare and is likely to require specific, undisturbed habitats. The Floristic Quality Index (FQI) is calculated as follows:  $FQI = \sum C / \sqrt{N}$ , where  $\sum C$

represents the sum of the numerical ratings for all species recorded for a site, and N represents the number of plant species found on the site. The C value for each species is shown in the species list for the site. The mean C value (also known as mean rated quality) was also calculated for each site. This value is calculated as follows:  $mCv = \sum C / N$ . Species not native to Illinois (indicated by \* in the species list) are not included in the calculations. Plants not identified to species level are not rated and also not included in the calculations. FQI values of less than 10 indicate low natural quality, while sites with values of 20 or more (mean C > 3.0) have at least some evidence of native character and may be considered environmental assets. However, diversity and species composition (therefore FQI and mean C values) may differ naturally between plant community types and seasonally within community types.

### Wetland Site Summaries

Site 1: This marsh is located 99 m (325 ft) east of the Cahokia Canal and extends eastward through much of the tract (Figure 1). One small portion of this site is located in the extreme southwest corner of the tract. The small portion is approximately 0.6 ha (1.6 ac) and the large portion 11.8 ha (29.1 ac) in area for a total of 12.4 ha (30.7 ac). Dominant hydrophytic vegetation, wetland hydrology and hydric soils are all present; therefore, the wetland criteria are met and this site is a wetland. This site provides good quality wildlife habitat. This site was coded as upland by the NWI.

Site 2: This wet meadow has expanded since 2009 to include most of the western one third of the tract (Figures 1 and 2). The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 3. The northern portion lies approximately 15.2 m (50 ft) east of the base of the Cahokia Canal levee and extends west to Site 3 and south. This wetland site is approximately 4.0 ha (9.9 ac) in area. Dominant hydrophytic vegetation, wetland hydrology and hydric soils are all present, therefore, the wetland criteria are met and this site is a wetland. This site provides good quality wildlife habitat. This site was coded as upland by the NWI.

Due to the fluidity and intergrading between the marsh and wet meadow communities their species lists were combined. The FQI and mean C of marsh and wet meadow combined was 20.5 and 2.6 respectively. These values indicate good natural quality and that the site may be an environmental asset.

Site 3: This wet floodplain forest is made up of two areas. The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 1. The northern portion lies approximately 15.2 m (450 ft) east of the Cahokia Canal and extends east along the northern half of Site 1 to the eastern edge of the tract. The southern portion is approximately 3.2 ha (8.0 ac) and the northern portion 2.8 ha (6.9 ac) in area for a total of 6.0 ha (14.8 ac). Dominant hydrophytic vegetation, wetland hydrology and hydric soils are all present; therefore, the wetland criteria are met and this site is a wetland. This site provides fair quality wildlife habitat. The FQI was 11.5 and mean C value was 2.4. These values indicate fair natural quality. This site was coded as upland by the NWI.

Site 4: This forbland lies on the western edge of the tract just east of the base of the Cahokia Canal levee. Hydric soils are present; however, dominant hydrophytic vegetation and wetland hydrology are absent. The wetland criteria are not all met and this site is not a wetland. This site was dominated by *Setaria faberi* and *Solidago canadensis*. This site was coded as upland by the NWI.

## Summary and Conclusions

All revegetation of this site has been 'natural' with no seeding or planting, relying on the seed bank and colonization from adjacent seed sources to enhance natural quality. Since this property was acquired by IDOT in 1995 and 1997 (Keene and Ketzner 1997), approximately 17 ha (42 acres) of marsh and wet shrubland had developed by 2000 (Ketzner et al. 2001); this was found to be the approximate area of wetland in 2002 (Robinson and Larimore 2003) and 2003 (Larimore et al. 2004). The area of wetland in 2008 was 21.0 ha (51.8 ac). In 2009, the area of the site that satisfied wetland hydrology criteria for greater than 12.5% of the growing season was estimated to be 22.7 ha (56.0 ac) (Fucciolo et al. 2009). In 2010, the area of the site that satisfied wetland hydrology criteria for greater than 5% of the growing season was estimated to be 22.6 ha (55.9 ac) and the area that satisfied wetland hydrology criteria for 12.5% of the growing season was 20.9 ha (51.6 ac) (Miner et al 2010). For the most part wet shrubland has become wet floodplain forest as many saplings have become tree sized (Figure 1).

The abundance of *Phragmites australis* in the wet meadow community is a concern. It is apparent that this invasive species will continue to dominate in the years to come. Repeated applications of glyphosate formulated for aquatic applications should be considered.

At the time of our visit in November 2009, the west end of Schneider Ditch had recently been significantly excavated. At that time the site hydrology did not seem to have been immediately impacted; however, it appeared that loss of beaver dams could potentially drain much of the site. In 2010 it appeared that ditch excavation had stopped and beaver dams were doing a good job of maintaining a slightly elevated water level.

The wet floodplain forest communities to the east and south of the property (Illinois Natural Area – Levee Lake) appear to be of fairly good quality. North of the property lies a marsh (*Typha* spp.) and shallow pond apparently used for duck hunting. The federally listed plant, *Boltonia decurrens* (decurent false aster), was found just east of this duck pond (38.68378° N, 90.3581° W, +/- 11.9 ft).

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**Appendix 1:**

**Routine Wetland Determinations**

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** marsh

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This marsh is located 99 m (325 ft) east of the Cahokia Canal and extends eastward through much of the tract. One small portion of this site is located in the extreme southwest corner of the tract.

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

Have the vegetation, soils, and/or hydrology been significantly disturbed? Yes: No: X

### VEGETATION

| <b>Dominant Plant Species</b> | <b>Indicator Status</b> | <b>Stratum</b> |
|-------------------------------|-------------------------|----------------|
| <i>Typha angustifolia</i>     | OBL                     | herb           |
| <i>Typha latifolia</i>        | OBL                     | herb           |

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

**Hydrophytic vegetation?** Yes: X No:

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

### SOILS

Series and phase: Undetermined (inundated area)

On Madison County hydric soils list?: Yes: No: X

Is the soil a histosol? Yes: No: X

Histic epipedon present? Yes: No: X

Redox concentrations: Yes: No: Undet: X

Redox depletions: Yes: No: Undet: X

Matrix color: NA

Other hydric soil indicators: Soil is saturated.

**Hydric soils:** Yes: X No:

**Rationale:** This site was inundated. This soil is ponded for a long duration or a very long duration during the growing season. This characteristic is evidence of a hydric soil.

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 2 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** marsh

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This marsh is located 99 m (325 ft) east of the Cahokia Canal and extends eastward through much of the tract. One small portion of this site is located in the extreme southwest corner of the tract.

### HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0 to 0.3 m (0 to 12 in)

Depth to saturated soil: at surface

Overview of hydrological flow through the system: This site receives water through precipitation, sheet flow from adjacent higher ground, and occasionally from backflow via Schneider Ditch (Rorick 1994). Water leaves the site by way of soil infiltration, evapotranspiration and by sheet flow into Schneider Ditch on occasions.

Size of immediate watershed: < 13 km<sup>2</sup> (5 mi<sup>2</sup>)

Other field evidence observed: drift lines, water marks, and water-borne sediment deposits

**Wetland hydrology?** Yes: X No:

**Rationale:** Topographic position indicates that water leaves this site slowly. In our opinion this site is flooded or saturated long enough during the growing season to satisfy the wetland hydrology criterion. ISGS well data (Miner et al 2010).

### DETERMINATION AND RATIONALE:

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

**Rationale for decision:** Dominant hydrophytic vegetation, wetland hydrology, and hydric soils are all present. The wetland criteria are all met and this site is a wetland. This site was coded as upland by the NWI.

Determined by: Rick Larimore, Allen Plocher, and Paul Marcum (vegetation and hydrology)  
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## ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** marsh and wet meadow

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This marsh is located 99 m (325 ft) east of the Cahokia Canal and extends eastward through much of the tract. One small portion of this site is located in the extreme southwest corner of the tract.

### SPECIES LIST

for marsh (Site 1) and wet meadow (Site 2) combined

| Scientific name                 | Common name             | Stratum       | Wetland indicator status | C† |
|---------------------------------|-------------------------|---------------|--------------------------|----|
| <i>Acalypha rhomboidea</i>      | three seeded Mercury    | herb          | FACU                     | 0  |
| <i>Acer negundo</i>             | box elder               | shrub, herb   | FACW-                    | 1  |
| <i>Acer saccharinum</i>         | silver maple            | shrub/sapling | FACW                     | 1  |
| <i>Alisma plantago aquatica</i> | water plantain          | herb          | OBL                      | 2  |
| <i>Amaranthus tuberculatus</i>  | water hemp              | herb          | OBL                      | 1  |
| <i>Ambrosia trifida</i>         | giant ragweed           | herb          | FAC+                     | 0  |
| <i>Ammannia coccinea</i>        | ammannia                | herb          | OBL                      | 5  |
| <i>Apocynum cannabinum</i>      | dogbane                 | herb          | FAC                      | 2  |
| <i>Asclepias incarnata</i>      | swamp milkweed          | herb          | OBL                      | 4  |
| <i>Aster simplex</i>            | panicked aster          | herb          | FACW                     | 3  |
| <i>Bidens aristosa</i>          | swamp marigold          | herb          | FACW                     | 1  |
| <i>Boehmeria cylindrica</i>     | false nettle            | herb          | OBL                      | 3  |
| <i>Boltonia asteroides</i>      | false aster             | herb          | FACW                     | 5  |
| <i>Carex blanda</i>             | woodland sedge          | herb          | FAC                      | 2  |
| <i>Carex crus-corvi</i>         | sedge                   | herb          | OBL                      | 6  |
| <i>Carex hyalinolepis</i>       | sedge                   | herb          | OBL                      | 4  |
| <i>Carex lupulina</i>           | hop sedge               | herb          | OBL                      | 5  |
| <i>Carex tribuloides</i>        | sedge                   | herb          | FACW+                    | 3  |
| <i>Carex vulpinoidea</i>        | fox sedge               | herb          | OBL                      | 3  |
| <i>Cornus drummondii</i>        | rough leaf dogwood      | shrub         | FAC                      | 2  |
| <i>Cyperus acuminatus</i>       | taperleaf flatsedge     | herb          | OBL                      | 2  |
| <i>Cyperus ferruginescens</i>   | flat sedge              | herb          | OBL                      | 1  |
| <i>Cyperus strigosus</i>        | straw colored flatsedge | herb          | FACW                     | 0  |
| <i>Diospyros virginiana</i>     | persimmon               | shrub         | FAC                      | 2  |
| <i>Echinochloa muricata</i>     | barnyard grass          | herb          | OBL                      | 0  |
| <i>Eleocharis erythropoda</i>   | red rooted spikerush    | herb          | OBL                      | 3  |
| <i>Eleocharis obtusa</i>        | spikerush               | herb          | OBL                      | 2  |
| <i>Eleocharis smallii</i>       | spikerush               | shrub         | OBL                      | 5  |

(continued)

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 4 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** marsh and wet meadow

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This marsh is located 99 m (325 ft) east of the Cahokia Canal and extends eastward through much of the tract. One small portion of this site is located in the extreme southwest corner of the tract.

### SPECIES LIST (continued)

for marsh (Site 1) and wet meadow (Site 2) combined

| Scientific name                  | Common name                 | Stratum       | Wetland indicator status | C† |
|----------------------------------|-----------------------------|---------------|--------------------------|----|
| <i>Eupatorium serotinum</i>      | late flowering thoroughwort | herb          | FAC+                     | 1  |
| <i>Fraxinus pennsylvanica</i>    | green ash                   | shrub, herb   | FACW                     | 2  |
| <i>Hibiscus laevis</i>           | halberd leaf rose mallow    | herb          | OBL                      | 4  |
| <i>Ipomoea lacunosa</i>          | small white morning glory   | herb          | FACW                     | 1  |
| <i>Iva annua</i>                 | sumpweed                    | herb          | FAC                      | 0  |
| <i>Juncus torreyi</i>            | Torrey's rush               | herb          | FACW                     | 3  |
| <i>Juniperus virginiana</i>      | eastern red cedar           | shrub         | FACU                     | 1  |
| <i>Leersia oryzoides</i>         | rice cutgrass               | herb          | OBL                      | 3  |
| <i>Leersia virginica</i>         | white grass                 | herb          | FACW                     | 4  |
| <i>Lemna minor</i>               | duckweed                    | herb          | OBL                      | 3  |
| <i>Lindernia dubia</i>           | false pimpernel             | herb          | OBL                      | 5  |
| <i>Liquidambar styraciflua</i>   | sweet gum                   | shrub         | FACW                     | 6  |
| <i>Ludwigia peploides</i>        | creeping primrose willow    | herb          | OBL                      | 5  |
| <i>Lycopus americanus</i>        | water horehound             | herb          | OBL                      | 3  |
| <i>Penthorum sedoides</i>        | ditch stonecrop             | herb          | OBL                      | 2  |
| <i>Phragmites australis</i>      | common reed                 | herb          | FACW+                    | 1  |
| <i>Phyla lanceolata</i>          | fog fruit                   | herb          | OBL                      | 1  |
| <i>Platanus occidentalis</i>     | sycamore                    | shrub/sapling | FACW                     | 3  |
| <i>Polygonum hydropiperoides</i> | water pepper                | herb          | OBL                      | 4  |
| <i>Polygonum lapathifolium</i>   | nodding smartweed           | herb          | FACW+                    | 0  |
| <i>Polygonum pensylvanicum</i>   | giant smartweed             | herb          | FACW+                    | 1  |
| <i>Polygonum persicaria</i>      | spotted lady's thumb        | herb          | FACW                     | *  |
| <i>Populus deltoides</i>         | cottonwood                  | herb          | FAC+                     | 2  |
| <i>Ranunculus sceleratus</i>     | cursed crowfoot             | herb          | OBL                      | 3  |
| <i>Rorippa sessiliflora</i>      | sessile flowered cress      | herb          | OBL                      | 3  |
| <i>Rumex altissimus</i>          | pale dock                   | herb          | FACW-                    | 2  |
| <i>Rumex crispus</i>             | curly dock                  | herb          | FAC+                     | *  |
| <i>Sagittaria latifolia</i>      | arrowhead                   | herb          | OBL                      | 4  |
| <i>Salix exigua</i>              | sandbar willow              | shrub/sapling | OBL                      | 1  |
| <i>Salix nigra</i>               | black willow                | shrub/sapling | OBL                      | 3  |
| <i>Samolis valerandii</i>        | brookweed                   | herb          | OBL                      | 5  |

(continued)

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 5 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** marsh and wet meadow

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This marsh is located 99 m (325 ft) east of the Cahokia Canal and extends eastward through much of the tract. One small portion of this site is located in the extreme southwest corner of the tract.

### SPECIES LIST (continued)

**for marsh (Site 1) and wet meadow (Site 2) combined**

| Scientific name            | Common name         | Stratum | Wetland indicator status | C† |
|----------------------------|---------------------|---------|--------------------------|----|
| <i>Scirpus validus</i>     | great bulrush       | herb    | OBL                      | 4  |
| <i>Setaria faberi</i>      | giant foxtail       | herb    | FACU+                    | *  |
| <i>Solidago canadensis</i> | Canada goldenrod    | herb    | FACU                     | 1  |
| <i>Sorghum halapense</i>   | Johnson grass       | herb    | FACU                     | *  |
| <i>Typha angustifolia</i>  | narrow leaf cattail | herb    | OBL                      | *  |
| <i>Typha latifolia</i>     | common cattail      | herb    | OBL                      | 1  |
| <i>Ulmus americana</i>     | American elm        | herb    | FACW-                    | 5  |
| <i>Verbena hastata</i>     | blue vervain        | herb    | FACW+                    | 3  |
| <i>Vitis aestivalis</i>    | summer grape        | herb    | FACU                     | 4  |
| <i>Vitis riparia</i>       | riverbank grape     | herb    | FACW-                    | 2  |

= Coefficient of Conservatism (Taft et al. 1997)  $mCv = \sum C/N = 164/64 = 2.6$

\* Non-native species  $FQI = \sum C/\sqrt{N} = 164/\sqrt{64} = 20.5$  Quality = good

Percent weedy or nonnative:  $19/69 = 27.5\%$

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 1 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** wet meadow

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This wet meadow is made up of two areas both in the western one third of the tract. The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 3. The northern portion lies approximately 15.2 m (50 ft) east of the base of the Cahokia Canal levee and extends west to Site 3 and south.

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

Have the vegetation, soils, and/or hydrology been significantly disturbed?      Yes:      No: X

### VEGETATION

| <b>Dominant Plant Species</b> | <b>Indicator Status</b> | <b>Stratum</b> |
|-------------------------------|-------------------------|----------------|
| <i>Carex hyalinolepis</i>     | OBL                     | herb           |
| <i>Leersia oryzoides</i>      | OBL                     | herb           |
| <i>Phyla lanceolata</i>       | OBL                     | herb           |
| <i>Phragmites australis</i>   | FACW+                   | herb           |

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

**Hydrophytic vegetation?**      Yes: X      No:

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

### SOILS

Series and phase: Petrolia silty clay loam

On Illinois State 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 4/1

Other indicators: This soil is found in low areas and was inundated in many places.

**Hydric soils:**      Yes: X      No:

**Rationale:** The Natural Resources Conservation Service classifies Petrolia silty clay loam as having aquic conditions. This soil has iron masses, iron depletions, and an iron depleted matrix. Furthermore, this soil meets the NRCS hydric soil indicator F3 (depleted matrix). These characteristics are evidence of a hydric soil.

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 2 of 5)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** wet meadow

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This wet meadow is made up of two areas both in the western one third of the tract. The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 3. The northern portion lies approximately 15.2 m (50 ft) east of the base of the Cahokia Canal levee and extends west to Site 3 and south.

### HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0 to 0.3 m (0 to 12 in)

Depth to saturated soil: at surface

Overview of hydrological flow through the system: This site receives water through precipitation, sheet flow from adjacent higher ground, and occasionally from backflow via Schneider Ditch (Rorick 1994). Water leaves the site by way of soil infiltration, evapotranspiration and by sheet flow into Schneider Ditch on occasions.

Size of immediate watershed: < 13 km<sup>2</sup> (5 mi<sup>2</sup>) The Mississippi River has a watershed greater than 25,920 km<sup>2</sup> (10,000 mi<sup>2</sup>).

Other field evidence observed: drift lines, water stains, and sediment deposits

**Wetland hydrology?** Yes: X No:

**Rationale:** Topographic position indicates that water leaves this site slowly. In our opinion this site is flooded or saturated long enough during the growing season to satisfy the wetland hydrology criterion. ISGS well data (Miner et al 2010)

### DETERMINATION AND RATIONALE:

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

**Rationale for decision:** Dominant hydrophytic vegetation, wetland hydrology, and hydric soils are all present. The wetland criteria are all met and this site is a wetland. This site was coded as upland by the NWI. (see marsh community for combined species list)

Determined by: Rick Larimore, Allen Plocher, and Paul Marcum (vegetation and hydrology)  
David Ketzner (GPS, vegetation, and hydrology)  
Dennis Keene (soils and hydrology)  
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## ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 1 of 3)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** wet floodplain forest

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This wet floodplain forest is made up of two areas. The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 1. The northern portion lies approximately 15.2 m (450 ft) east of the Cahokia Canal and extends east along the northern half of Site 1 to the eastern edge of the tract.

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

Have the vegetation, soils, and/or hydrology been significantly disturbed?      Yes:      No: X

### VEGETATION

| Dominant Plant Species        | Indicator Status | Stratum |
|-------------------------------|------------------|---------|
| <i>Populus deltoides</i>      | FAC+             | tree    |
| <i>Fraxinus pennsylvanica</i> | FACW             | sapling |
| <i>Populus deltoides</i>      | FAC+             | sapling |
| <i>Carex hyalinolepis</i>     | OBL              | herb    |
| <i>Toxicodendron radicans</i> | FAC+             | herb    |

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

**Hydrophytic vegetation?** Yes: X      No:

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

### SOILS

Series and phase: Undetermined (inundated area)

On Madison County hydric soils list?:      Yes:      No: X

Is the soil a histosol?      Yes:      No: X

Histic epipedon present?      Yes:      No: X

Redox concentrations:      Yes:      No:      Undet: X

Redox depletions:      Yes:      No:      Undet: X

Matrix color: NA

Other hydric soil indicators: Soil is saturated.

**Hydric soils:**      Yes: X      No:

**Rationale:** This site was inundated. This soil is ponded for a long duration or a very long duration during the growing season. This characteristic is evidence of a hydric soil.

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 2 of 3)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** wet floodplain forest

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This wet floodplain forest is made up of two areas. The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 1. The northern portion lies approximately 15.2 m (450 ft) east of the Cahokia Canal and extends east along the northern half of Site 1 to the eastern edge of the tract.

### HYDROLOGY

Inundated: Yes: X No: Depth of standing water: 0 to 0.3 m (0 to 12 in)

Depth to saturated soil: at surface

Overview of hydrological flow through the system: This site receives water through precipitation, sheet flow from adjacent higher ground, and occasionally from backflow via Schneider Ditch (Rorick, 1994). Water leaves the site slowly by way of soil infiltration, evapotranspiration and by sheet flow into Schneider Ditch on occasions.

Size of immediate watershed: < 13 km<sup>2</sup> (5 mi<sup>2</sup>)

Other field evidence observed: drift lines and sediment deposits

**Wetland hydrology?** Yes: X No:

**Rationale:** Topographic position indicates that water leaves this site slowly. In our opinion this site is flooded or saturated long enough during the growing season to satisfy the wetland hydrology criterion. ISGS well data (Miner et al 2010).

### DETERMINATION AND RATIONALE:

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

**Rationale for decision:** Dominant hydrophytic vegetation, wetland hydrology, and hydric soils are all present: therefore, the wetland criteria are all met and this site is a wetland. This site was coded as upland by the NWI.

Determined by: Rick Larimore, Allen Plocher, and Paul Marcum (vegetation and hydrology)  
David Ketzner (GPS, vegetation, and hydrology)  
Dennis Keene (soils and hydrology)  
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## ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 3 of 3)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** wet floodplain forest

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This wet floodplain forest is made up of two areas. The southern portion is adjacent to the base of the Cahokia Canal levee and extends east to the western edge of Site 1. The northern portion lies approximately 15.2 m (450 ft) east of the Cahokia Canal and extends east along the northern half of Site 1 to the eastern edge of the tract.

### SPECIES LIST

| Scientific name                | Common name              | Stratum         | Wetland indicator status | C† |
|--------------------------------|--------------------------|-----------------|--------------------------|----|
| <i>Acer saccharinum</i>        | silver maple             | sapling         | FACW                     | 1  |
| <i>Asparagus officinalis</i>   | asparagus                | herb            | FACU                     | *  |
| <i>Bidens frondosa</i>         | beggar's ticks           | herb            | FACW                     | 1  |
| <i>Campsis radicans</i>        | trumpet creeper          | herb/woody vine | FAC                      | 2  |
| <i>Carex hyalinolepis</i>      | sedge                    | herb            | OBL                      | 4  |
| <i>Cassia fasciculata</i>      | partridge pea            | herb            | FACU-                    | 1  |
| <i>Cornus racemosa</i>         | gray dogwood             | shrub           | FACW-                    | 2  |
| <i>Cynanchum laeve</i>         | blue vine                | herb            | FAC                      | 1  |
| <i>Eclipta prostrata</i>       | yerba de tajo            | herb            | FACW                     | 2  |
| <i>Fraxinus pennsylvanica</i>  | green ash                | shrub/sapling   | FACW                     | 2  |
| <i>Hibiscus laevis</i>         | halberd leaf rose mallow | herb            | OBL                      | 4  |
| <i>Juncus torreyi</i>          | Torrey's rush            | herb            | FACW                     | 3  |
| <i>Lemna minor</i>             | duckweed                 | herb            | OBL                      | 3  |
| <i>Lysimachia nummularia</i>   | moneywort                | herb            | FACW+                    | *  |
| <i>Morus alba</i>              | white mulberry           | shrub           | FAC                      | *  |
| <i>Panicum dichotomiflorum</i> | fall panicum             | herb            | FACW-                    | 0  |
| <i>Panicum virgatum</i>        | switchgrass              | herb            | FAC+                     | 4  |
| <i>Phalaris arundinacea</i>    | reed canarygrass         | herb            | FACW+                    | *  |
| <i>Phragmites australis</i>    | common reed              | herb            | FACW+                    | 1  |
| <i>Populus deltoides</i>       | cottonwood               | tree/sapling    | FAC+                     | 2  |
| <i>Rumex crispus</i>           | curly dock               | herb            | FAC+                     | *  |
| <i>Salix amygdaloides</i>      | peach leaf willow        | sapling         | FACW                     | 4  |
| <i>Scirpus validus</i>         | great bulrush            | herb            | OBL                      | 4  |
| <i>Solidago gigantea</i>       | late goldenrod           | herb            | FACW                     | 3  |
| <i>Stachys tenuifolia</i>      | slender leaf betony      | herb            | OBL                      | 5  |
| <i>Toxicodendron radicans</i>  | poison ivy               | herb/woody vine | FAC+                     | 1  |
| <i>Ulmus americana</i>         | American elm             | herb            | FACW-                    | 5  |
| <i>Xanthium strumarium</i>     | cocklebur                | herb            | FAC                      | 0  |

= Coefficient of Conservatism (Taft et al. 1997)

\* Non-native species

Percent weedy or non-native: 11/28 = 39.3%

$$mCv = \sum C/N = 55/23 = 2.4$$

$$FQI = \sum C/\sqrt{N} = 55/\sqrt{23} = 11.5 \quad \text{Quality} = \text{fair}$$

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 1 of 2)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** forbland

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This forbland is located on the west side of the tract, adjacent to the east edge of Cahokia Canal, 0.8 km (0.5 mi) west of I 255.

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

### VEGETATION

| <b>Dominant Plant Species</b> | <b>Indicator Status</b> | <b>Stratum</b> |
|-------------------------------|-------------------------|----------------|
| <i>Setaria faberi</i>         | FACU+                   | herb           |
| <i>Solidago canadensis</i>    | FACU                    | herb           |

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 0%

**Hydrophytic vegetation?**      Yes:       No:

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

**\*No species list was compiled for this non-wetland.**

### SOILS

Series and phase: Petrolia silty clay loam

On Illinois State hydric soils list?      Yes:       No:

Is the soil a histosol?      Yes:       No:

Histic epipedon present?      Yes:       No:

Redox concentrations:      Yes:       No:

Redox depletions:      Yes:       No:

Matrix color: 2.5Y 4/1

Other indicators: This soil is found in low areas.

**Hydric soils:**      Yes:       No:

**Rationale:** The Natural Resources Conservation Service classifies Petrolia silty clay loam as having aquic conditions. This soil has iron masses, iron depletions, and an iron depleted matrix. Furthermore, this soil meets the NRCS hydric soil indicator F3 (depleted matrix). These characteristics are evidence of a hydric soil.

## ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 2 of 2)

**Field Investigators:** Larimore, Plocher, Marcum, Ketzner, and Keene

**Date:** November 17, 2010

**Project Name:** Eckmann mitigation site

**State:** Illinois **County:** Madison **Applicant:** IDOT District 8

**Site Name:** forbland

**Legal Description:** S 1/2 of NE 1/4 and NE 1/4 of NE 1/4 Sec 25, T 3 N, R 9 W

**Location:** This forbland is located on the west side of the tract, adjacent to the east edge of Cahokia Canal, 0.8 km (0.5 mi) west of I 255.

### HYDROLOGY

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

Depth to saturated soil: 0.25 m (10 in)

Overview of hydrological flow through the system: This site receives water through precipitation, sheet flow from adjacent higher ground, and occasionally from backflow of adjacent wetlands.

Water leaves the site by way of soil infiltration, evapotranspiration and by sheet flow into adjacent wetlands.

Size of immediate watershed: < 13 km<sup>2</sup> (5 mi<sup>2</sup>)

Other field evidence observed: none

**Wetland hydrology?** Yes: No:

**Rationale:** Topographic position indicates that water leaves this site quickly. In our opinion this site is not flooded or saturated long enough during the growing season to satisfy the wetland hydrology criterion. ISGS well data (Miner et al 2010).

### DETERMINATION AND RATIONALE:

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

**Rationale for decision:** Hydric soil is present; however, wetland hydrology, and hydrophytic vegetation are not. Therefore, the wetland criteria are not all met and this site is not a wetland. This site was coded as upland by the NWI.

Determined by: Rick Larimore, Allen Plocher, and Paul Marcum (vegetation and hydrology)  
David Ketzner (GPS, vegetation, and hydrology)  
Dennis Keene (soils and hydrology)  
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**Wetlands and Plant Communities  
Eckmann Property  
Mitigation Site Monitoring  
Madison County**

Figure 1



0 400 800 Feet



scale 1:4800  
1 inch=400 ft

0 100 200 Meters



-  Project boundary
- 1 - marsh
- 2 - wet meadow
- 3 - floodplain forest
- 4 - forbland (not wet)



02/11

Figure 2

