WETLAND MITIGATION SITE MONITORING REPORT
FAU 5822 (Milan Beltway) Henry County – Green Rock Site
Introduction

This report details monitoring of the wetland mitigation site created to compensate for impacts associated with FAU 5822 (Milan Beltway) in Henry County. Phase I of the site consists of approximately 16.88 ha (41.69 ac) of wetland creation/restoration (IDOT 2002), while Phase II of the site consists of approximately 3.02 ha (7.45 ac) of wetland creation/restoration. The wetland creation site is located 1.6 km (0.74 mi) southwest of Green Rock, IL, north and west of the crossing of I-74 over Mosquito Creek. The legal location is SW/4, NE/4, and SE/4, NW/4 Section 16, T. 17 N., R. 1 E. The project area lies within the United States Geological Survey Mississippi River hydrologic unit 07090007, Green River. Phase I was completed and all trees planted by spring 2006; Phase II was completed by spring 2007. 372 pecan trees were replanted within the eastern field of Phase I and in Phase II on approximately June 4, 2009. On-site monitoring was conducted on July 6 and September 2, 2010. This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and discussion and recommendations based on the results. Methods and results are discussed by performance criteria for each goal.

Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those specified in the Conceptual Wetland Compensation Plan (IDOT, 2002) developed for this site. Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *Illinois Wetland Restoration and Creation Guide* (Admiraal et al. 1997), and in *Guidelines for Developing Mitigation Proposals* (USACE 1993). Each goal should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

Project goal 1: The created wetland community should be a jurisdictional wetland as defined by current federal standards.

Objective: The created wetland should compensate for the loss of 16.73 ha (41.31 ac) of wetland.

Performance criteria:
a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic.
b. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site.
c. Presence of wetland hydrology: The area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.

Project goal 2: The created wetland plant community should meet standards for planted species survival and floristic composition.

Objectives: Planting trees will create a forested wetland. Other herbaceous vegetation will be allowed to colonize the site naturally.

Performance criteria:

a. Planted species survivorship: At least 136 planted trees per hectare should be established and living by the end of the five year monitoring period.

b. Native species composition: At least 50% of the plants present should be non-weedy, native, perennial species.

c. Dominance of vegetation: None of the three most dominant plant species may be non-native or weedy species, such as cattails, sandbar willow, or reed canary grass (IDOT 2002).

Methods

Project goal 1

a. Predominance of hydrophytic vegetation

The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter (FAC, FAC+, FACW, or OBL) is considered a hydrophyte. A predominance of wetland vegetation in the plant community exists if more than 50% of the dominant species present are hydrophytic. Since the survival of planted hydrophytic trees and shrubs on non-wetlands (e.g. yards) is well documented, these species were excluded from calculations of percentage of dominant hydrophytic species.

b. Occurrence of hydric soils

The soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described at various points throughout the site. Additionally, the presence, type, size, and abundance of redoximorphic features were noted. Hydric soils 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 the end of the five-year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

c. Presence of wetland hydrology

The extent of wetland hydrology at the Green Rock Wetland Compensation Site was monitored by the Illinois State Geological Survey and is shown on the accompanying figure (Miner et al. 2010). Wetland hydrology occurs when inundation or saturation to land surface is present for greater than 5% of the growing season (10 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 (25 days at this site) to satisfy wetland hydrology criteria (Environmental Laboratory 1987). Areas satisfying wetland hydrology criteria in the 2008 Midwest Supplement (14 consecutive days during the growing season) are also shown for comparison. Inundation and saturation at the site were monitored using a combination of 22 monitoring wells. Water levels were measured at least biweekly from March through May, and monthly during the remainder of the year. Manual readings were supplemented by a datalogger, which measured surface-water levels at regular intervals to document all hydrologic events. Additional details regarding site conditions and monitoring results for wetland

hydrology in 2010 are summarized in ISGS' Annual Report for Active IDOT Wetland Mitigation and Hydrologic Monitoring Sites, September 1, 2009 through August 31, 2010 (Miner et al. 2010).

Project goal 2

a. Planted species survivorship

In order to create floodplain forest, tree saplings were planted at the compensation site. The number of trees to be planted within Phase I [Notice to bidders, specifications, proposal, contract and contract bond (IDOT, 2004)] and Phase II [Notice to bidders, specifications, proposal, contract and contract bond (IDOT, 2006)] are listed in Table 1, which follows:

Table 1. Tree species planted in the created wetland (Planting dates spring 2006 and 2007).

Species	Common Name	Phase I (2006)	Phase II (2007)
Carya illinoensis	Pecan	970 + 372*	168
Fraxinus pennsylvanica	Green ash	970	162
Platanus occidentalis	Sycamore	971	163
Quercus bicolor	Swamp white oak	982	165
Quercus palustris	Pin oak	972	164
TOTAL		5237	822

* Seedlings planted by June, 2009.

All of the trees were to be balled and burlapped 4.4-5.1 cm (1.75-2 in) caliper trees, except the *Carya illinoensis*, which were bare root two year old seedlings. Survivorship and density of planted trees were determined through a census of the created wetland. All live trees were counted. Dead trees were counted but not identified by species.

Tree survival was calculated as the number live trees per hectare: Total number of live planted stems counted/total hectares at site (16.88 ha for Phase I, 3.02 ha for Phase II).

b. Native Species Composition

A complete list of plant species present was compiled. This was used to determine the number and percentage of species present that are non-weedy, native perennials.

In addition, the Floristic Quality Assessment (Taft et al. 1997) was applied to the plant community at the site to evaluate floristic quality and nativity. The assessment methodology is used to identify natural areas and facilitate floristic comparisons among sites. This technique is part of the procedure for the long-term monitoring of natural areas and the monitoring of restored or created wetlands (Swink and Wilhelm 1994). The basis of the method is that each native plant species is assigned a conservatism coefficient (C) ranging from 0 to 10. Individual conservatism coefficients are ranks of species behavior and reflect the committee's (Taft et al. 1997) confidence level for a taxon's correspondence to anthropogenic disturbances. Coefficient values range from 0 to 10, with all adventive species given a coefficient of 0. Plant species assigned 0 have low affinities for natural areas, whereas those assigned 10 have very high affinities. When a complete species list is assembled for a wetland site, the overall average conservatism coefficient ($\bar{c}$) and a site floristic quality index (FQI) can be calculated. The $\bar{c}$ is calculated by summing the coefficients of conservatism ($\sum C$) and dividing by the total number of native species (N). The FQI is then calculated by dividing the $\sum C$ by the square root of N. These values provide a measure of site floristic quality. Floristic quality index (FQI) values less than 5 indicate that the area is extremely weedy or in an early successional stage (Swink and Wilhelm 1994). FQI values between 20 and 35 ($\bar{c}$ = 3.0) indicate that the area has evidence of native

character and can be considered an environmental asset. FQI values between 35 and 50 ($\bar{c}$ = 3.5) indicate that the area has significant native character.

c. Dominance of vegetation

Plant species dominance was determined as in project goal 1, a. Predominance of hydrophytic vegetation. The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989).

Results – Phase I

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for Phase I in 2010 are shown in Table 2. Due to differing dominant vegetation, we divided Phase I into three areas for vegetative analyses (Figure 1, page 6). The west and southeast portions of Phase I meet this criteria as all of the dominants (100%) are hydrophytic. The northeast portion of Phase I has two of the three (67%) dominant species rated OBL, FACW, FAC+, or FAC and hydrophytic. All of these results meet the minimum project goal of >50%; therefore, all portions of Phase I meet this criterion this year.

Table 2. Dominant plant species by area, stratum, and wetland indicator status.

Area	Dominant Plant Species	Stratum	Indicator Status
Phase I West	1. *Alisma plantago-aquatica**	Herb	OBL
	2. *Phalaris arundinacea**	Herb	FACW+
	3. *Polygonum amphibium**	Herb	OBL
Phase I Southeast	1. *Alisma plantago-aquatica**	Herb	OBL
	2. *Eleocharis acicularis*	Herb	OBL
	3. *Leersia oryzoides**	Herb	OBL
	4. *Polygonum pensylvanicum**	Herb	FACW+
Phase I Northeast	1. *Leersia oryzoides**	Herb	OBL
	2. *Phalaris arundinacea**	Herb	FACW+
	3. *Poa pratensis**	Herb	FAC-

* used to indicate the three most dominant species.

b. Occurrence of hydric soils

Soils examined were found to be relatively undisturbed and hydric soil indicators are present at the west and southeast areas of Phase I (Figure 1); however, the northeast area shows evidence of disturbance and lacks hydric soil indicators. Table 3 (page 6) presents a soil description of a typical pedon located within the west and southeast areas of this site. The west and southeast portions of this site meet the hydric soil criterion; the northeast area does not.

Table 3. Description of the soils at the site.

Depth	Matrix Color	Concentrations	Depletions	Texture	Structure
0-23 cm (0-9 in)	10YR 3/1	Few 10YR 4/6 and common 7.5YR 4/4	None	Silty clay loam	Medium granular
23-91 cm (9-36+ in)	10YR 3/1 with 10YR 6/1 strata	Common 7.5YR 4/4 & common 10YR 4/4	None	Silty clay loam	Medium granular and blocky

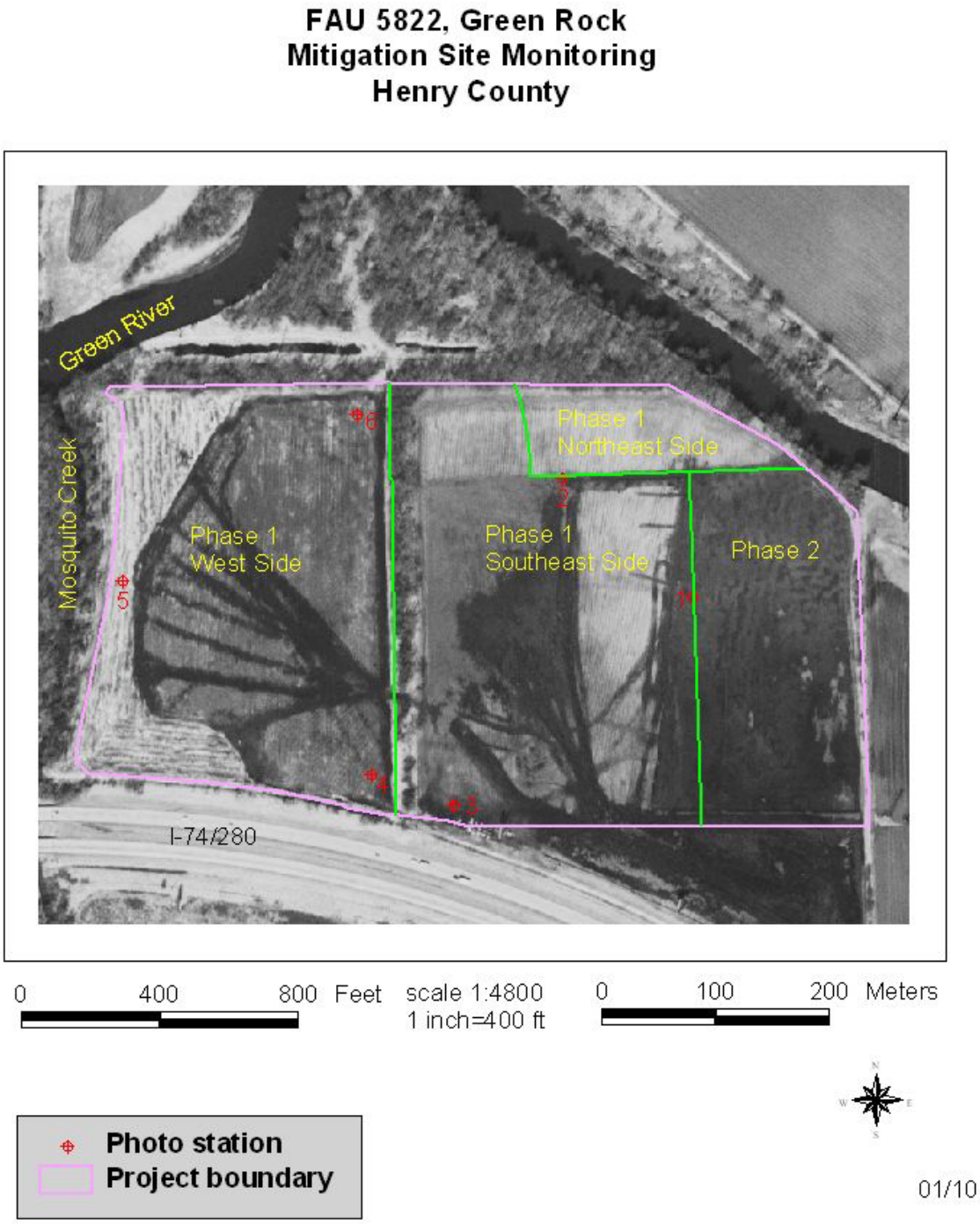

Figure 1. Site, Phase I areas, Phase II, and photo station location map.

c. Presence of wetland hydrology

The ISGS estimated that "16.7 ha (41.3 ac) out of a total area of 16.7 ha (41.3 ac) in Phase I, satisfied jurisdictional wetland hydrology criteria at both 5% and 12.5% of the growing season" (Figure 2) Miner, et al. 2010). More information is available in the *Milan Beltway, Green Rock Wetland Mitigation Site* report (ibid). This total area includes the west, southeast, and northeast areas of Phase I, which satisfied the criteria for 5% and 12.5% of the growing season. During our site visits, both the southeast and west areas were inundated and saturated to the surface.

Based on ISGS data and field evidence observed during our on-site visits, all of the areas of Phase I exhibited wetland hydrology. At this time we estimate that approximately 16.7 ha (41.3 ac) of Phase I this year has wetland hydrology.

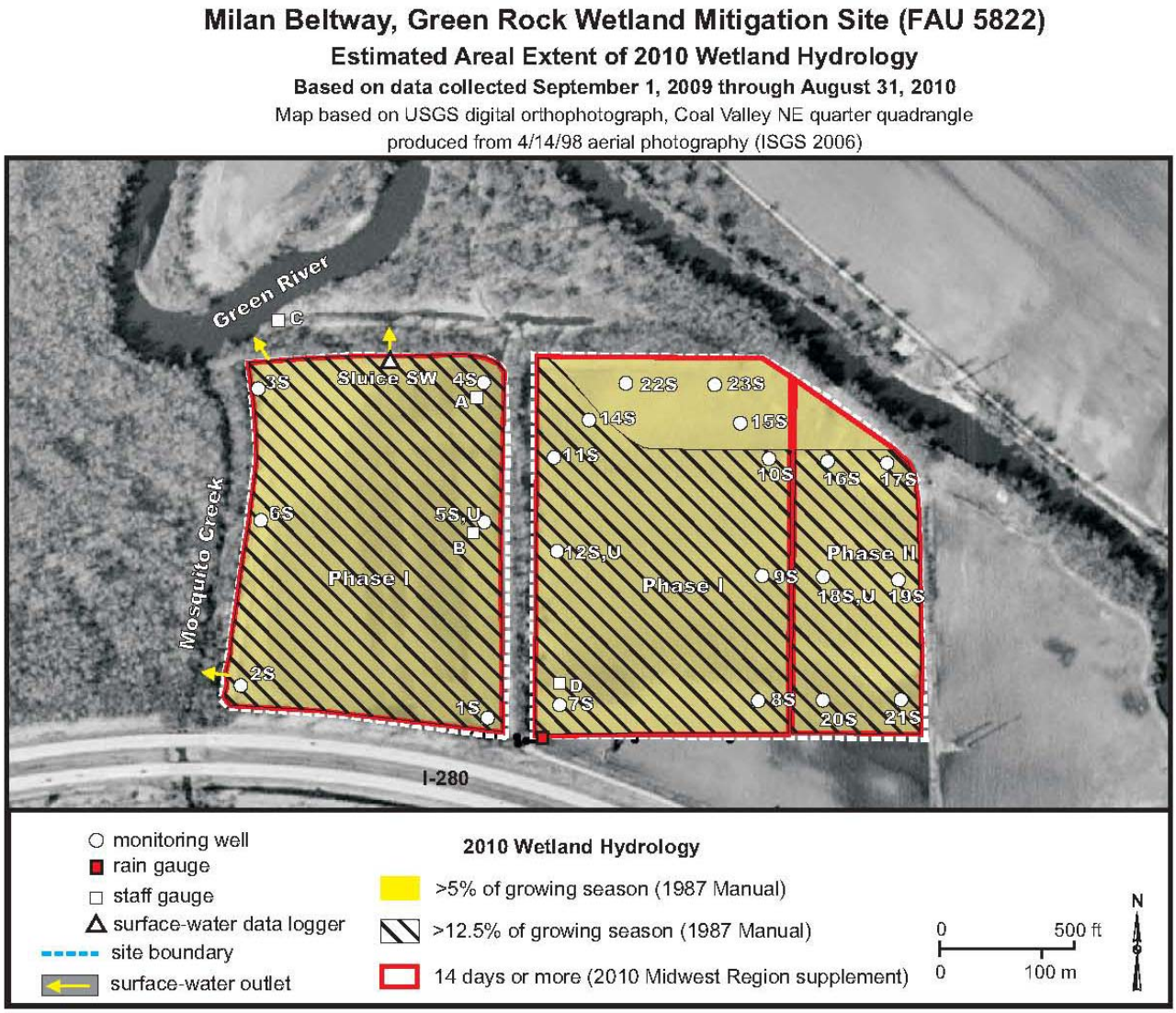

Figure 2. "Estimated Areal Extent of 2010 Wetland Hydrology" (Miner, et al. 2010).

Project goal 2

a. Planted species survivorship

Table 4 shows the results of the census. There were once again some discrepancies between the numbers of trees reported as planted and the number of live trees counted. The major discrepancy was the extreme mortality witnessed with the pecans. Again this year we noticed that the number of swamp white oaks found was about one-quarter of those reported as planted. However, many overcup and white oaks were found which were not reported as planted, and we feel this was simply a result of confusion at the nursery. These trees can look similar when small and immature, and were probably mistaken for swamp white oaks. When we group all of the oaks that were not pin oaks into a *Quercus* spp. category (Table 4), we arrive at much more reasonable numbers in terms of survival. Table 4 also shows the percent survival for the trees. These figures were calculated both by species and overall for all species in the entire site. Nearly 52% of the trees reported planted were counted as alive.

Table 4. Number of trees counted and percent tree survival (by species).

Species	Common Name	Number Planted	Number Surviving	% Survival
Carya illinoensis	Pecan	1342	118	8.8
Fraxinus pennsylvanica	Green ash	970	482	49.7
Platanus occidentalis	Sycamore	971	512	52.7
Quercus palustris	Pin oak	972	870	89.5
Quercus spp.*	Swamp white, white, and overcup oak	982	734	74.7
TOTAL		5090	2716	51.9

* For survival analysis, we grouped all of the oak species that were not pin oaks.

Therefore, there were 2716 live trees counted during the census over 16.88 ha. This results in a trees per hectare number of 161, still exceeding the stated project goal (>136 trees per hectare).

b. Native species composition

The west portion of Phase I has 59.6% non-weedy, native, annual and perennial species. The southeast portion of Phase I has 60.0% non-weedy, native, annual and perennial species. The northeast portion of Phase I has 44.2% non-weedy, native, annual and perennial species. Therefore, both the southeast and west portions meet the requirement for native species composition (>50%), while the northeast portion does not. It is normal, however, for a site to begin very weedy and develop more native character over time, so this portion may be expected to increase in native species composition over time and may exceed the stated project goal.

Two FQI and $\bar{c}$ values were also calculated for each area of Phase I from the species lists included in Appendix A. The first values are calculated from only species which became established on the site naturally; the second values include the planted trees. The values are reported in Table 5, which follows:

Table 5. FQI and $\bar{c}$ values with and without planted trees, by year and area of Phase I.

	West Area				Southeast Area				Northeast Area			
	Without planted species		With planted species		Without planted species		With planted species		Without planted species		With planted species	
Year	FQI	$\bar{c}$	FQI	$\bar{c}$	FQI	$\bar{c}$	FQI	$\bar{c}$	FQI	$\bar{c}$	FQI	$\bar{c}$
2006*	9.1	1.5	13.0	2.0	9.1	1.5	13.0	2.0	9.1	1.5	13.0	2.0
2007	11.7	1.9	15.2	2.3	6.5	1.2	10.8	1.8	7.6	1.7	12.4	2.4
2008	15.7	3.4	19.4	3.7	16.1	3.3	19.7	3.6	18.5	2.4	21.3	2.7
2009	17.0	2.7	20.1	2.9	15.0	3.1	18.8	3.5	18.9	2.2	21.4	2.4
2010	17.9	2.9	21.0	3.2	15.5	2.8	18.9	3.2	16.1	2.2	18.9	2.5

* In 2006, Phase I was not differentiated; therefore the calculated value was used for each of the three areas.

These values indicate that all three areas of Phase I are of fair to good natural quality. While these values could continue to increase over time as higher quality vegetation becomes established; they appear to have reached a plateau level reflecting what can be expected of this site in the future.

c. Dominance of vegetation

No portion of Phase I meets this criterion, each having one dominant which is weedy (Table 2), including *Phalaris arundinacea* in the west portion, *Polygonum pensylvanicum* in the southeast portion, and both *Phalaris arundinacea* and *Poa pratensis* in the northeast portion of this site. Therefore, this site does not meet the performance criterion for dominance of vegetation.

Photography stations were established in areas chosen to give maximum representation of the site. Locations of the photography stations can be seen in Figure 1 (page 6). Photographs were taken from the permanent photography stations established in 2006 and are in Appendix B of this report.

Discussion – Phase I

After this fifth monitoring season, Phase I shows good progress toward forested wetland establishment. All standards for Project Goal 1 have been met for portions of this site, as there is a large area of jurisdictional wetland. Two of the three standards for Project Goal 2 (planted species survival and floristic composition) have been met in portions of the site (tree survival and native species composition), and as the vegetative succession proceeds, the entire site may comply with that goal by the end of the monitoring period.

The northeast area of Phase I does not have hydric soil; therefore, we believe this area is not a wetland. All of the southeast and west areas of Phase I satisfy all the wetland criteria; therefore, we believe these areas are wetlands. Current wetland acreage at this site is estimated to be approximately 39.4 ac (15.9 ha) of the total 41.3 ac (16.7 ha), corresponding to the west and southeast areas of Phase I. This estimate could continue to be refined in future years if more data are gathered.

With the exception of the northeast area of Phase I, the vegetation is hydrophytic and meets the native species composition requirement. The planted trees exhibited satisfactory survival, and may meet the planted species performance criterion at the end of the monitoring period. There are still a large number of species at each site that have very low coefficients of conservatism (C). This is common on disturbed and early successional sites and is not a cause for concern at this time. It is likely that as succession progresses, more conservative species will become established on the site.

Currently, the primary concern for this site is establishing non-weedy, native dominant hydrophytic vegetation. Each area has at least one dominant that is weedy and may need to be controlled for this site to be successful. However, none of these species are likely to remain dominant after the trees at this site close the canopy in the future.

Results – Phase II

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for Phase II in 2010 are shown in Table 6. All of the dominants are rated OBL and are hydrophytic. This results in 100% of the dominants being hydrophytic, which exceeds the minimum project goal of >50%.

Table 6. Dominant plant species by stratum and wetland indicator status.

Dominant Plant Species	Stratum	Indicator Status
1. *Alisma plantago-aquatica**	Herb	OBL
2. *Echinochloa muricata**	Herb	OBL
3. *Eleocharis acicularis*	Herb	OBL
4. *Leersia oryzoides**	Herb	OBL

* used to indicate the three most dominant species.

b. Occurrence of hydric soils

Soils examined were found to be relatively undisturbed and hydric soil indicators are present in the majority of Phase II. Table 7 below presents a soil description of a typical pedon located within Phase II of this site. This site meets the hydric soil criterion.

Table 7. Description of the soils at Phase II.

Depth	Matrix Color	Concentrations	Depletions	Texture	Structure
0-25 cm (0-10 in)	10YR 2/1	Common 10YR 4/6	None	Silty clay loam	Medium granular
25-58 cm (10-23+ in)	10YR 4/2	Common 7.5YR 4/6 & common 10YR 5/6	Few 10YR 5/1	Silty clay loam	Medium granular and blocky

c. Presence of wetland hydrology

The ISGS estimated that "4.3 ha (10.7 ac) out of a total area of 4.3 ha (10.7 ac) in Phase II, satisfied jurisdictional wetland hydrology criteria at both 5% and 12.5% of the growing season" (Figure 2, page 7) (Miner, et al. 2010). More information is available in the *Milan Beltway, Green Rock*

Wetland Compensation Site report (ibid). This area includes all of Phase II, which satisfied the criteria for 5% and 12.5% of the growing season. Phase II was inundated during our site visits.

Based on field evidence observed during our on-site visits, all of Phase II exhibits indicators of wetland hydrology. At this time we estimate that this year 4.3 ha (10.7 ac) of Phase II has wetland hydrology.

Project goal 2

a. Planted species survivorship

Table 8 shows the results of the census. There were minor discrepancies between the numbers of trees planted and the number of live trees counted, with the exception of the pecans and green ash. One living green ash and no pecans were observed this year, as the floods seem to have preferentially destroyed these species. Table 8 also shows the percent survival for the trees. These figures were calculated both by species and overall for all species in the entire site. Nearly 53% of the trees reported planted were counted as alive.

Table 8. Number of trees counted and percent tree survival (by species).

Species	Common Name	Number Planted	Number Surviving	% Survival.
Carya illinoensis	Pecan	168	0	0.0
Fraxinus pennsylvanica	Green ash	162	1	0.6
Platanus occidentalis	Sycamore	163	163	100.0
Quercus palustris	Pin oak	164	126	76.8
Quercus bicolor	Swamp white oak	165	143	86.7
TOTAL		822	433	52.7

Therefore, there were 433 live trees counted during the census over 3.02 ha. This results in a trees per hectare number of 144, exceeding the stated project goal (>136 trees per hectare).

b. Native species composition

This site has 61.3% non-weedy, native, annual and perennial species. Therefore, it meets the requirement for native species composition (>50%).

Two FQI and $\bar{c}$ values were also calculated for Phase II from the species lists included in Appendix A. The first values are calculated from only species which became established on the site naturally; the second values include the planted trees. The values are reported in Table 9, which follows:

Table 9. FQI and $\bar{c}$ values with and without planted trees, by year at Phase II.

	Phase II			
	Without planted species		With planted species	
Year	FQI	$\bar{c}$	FQI	$\bar{c}$
2007	5.8	1.3	9.6	1.9
2008	14.0	3.2	16.9	3.5
2009	16.7	2.9	19.1	3.1
2010	13.3	2.6	16.2	2.9

These values indicate that Phase II is of fair natural quality. While these values could continue to increase over time as higher quality vegetation becomes established, they appear to have stabilized.

c. Dominance of vegetation

This site does not meet the performance criteria for dominance of vegetation. One of the three (Table 6) most dominant species (*Echinochloa muricata*) is weedy.

A photography station was established in an area chosen to give maximum representation of the site. Location of the photography station can be seen in Figure 1 (page 6). Photographs were taken from the permanent photography station established in 2006 and are in Appendix D of this report.

Discussion – Phase II

After this fourth monitoring season, Phase II shows much progress toward forested wetland establishment. All standards for Project Goal 1 have been met, as this site is a jurisdictional wetland. Two of the three standards for Project Goal 2 (planted species survival and floristic composition) have been met, and as the vegetative succession proceeds, this site may comply with that goal by the end of the monitoring period.

All of Phase II satisfies all the wetland criteria; therefore, we believe this site is a wetland. Current wetland acreage at this site is determined to be 4.3 ha (10.7 ac). This estimate will continue to be refined in the future year as more hydrologic data is gathered.

The vegetation is hydrophytic, but it does not meet the dominance criteria for native non-weedy species. The planted trees exhibited barely adequate survival, and could meet the planted species performance criterion at the end of the monitoring period. There are still many species at each site that have very low coefficients of conservatism (C). This is common on disturbed and early successional sites and is not a cause for concern at this time. It is likely that as succession progresses, more conservative species will become established on the site.

Currently, the primary concern for this site is establishing non-weedy, native dominant hydrophytic vegetation. This site has one dominant that is weedy; however, this species is not likely to remain dominant after the trees at this site close the canopy in the future. One other possible area of concern is tree survival. More trees may need to be planted to meet the survivorship criterion in future years.

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Appendix A

Wetland Determination Forms of Wetland Mitigation Site: Green Rock Phase I

ROUTINE ONSITE WETLAND DETERMINATION
Northeast area (page 1 of 5)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase I) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Non-native grassland
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This non-wetland occupies approximately the eastern half of the area north of the pipeline on the east side of Phase I.

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Leersia oryzoides*	Herb	OBL
2. *Phalaris arundinacea*	Herb	FACW+
3. *Poa pratensis*	Herb	FAC-

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 66%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS
Series and phase: NRCS mapped as Sawmill and Radford;
Revised to Radford silt loam (Fluvaquentic Hapludoll)

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

Matrix color: 10YR 3/2 over strata of 10YR 3/2 and 4/2
Other indicators: None.
Hydric soils? Yes: No: X
Rationale: The Natural Resources Conservation Service identifies Radford silt loam as a Fluvaquentic Hapludoll which is somewhat poorly drained. This soil lacks redox concentrations or depletions and possesses a medium chroma matrix, which indicates saturated or reduced conditions for only brief duration. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ONSITE WETLAND DETERMINATION
Northeast area (page 2 of 5)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase I) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Non-native grassland
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This non-wetland occupies approximately the eastern half of the area north of the pipeline on the east side of Phase I.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: N/A
Depth to saturated soil: > 0.30 m (12 in)
Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the Green River and Mosquito Creek, sheet flow from surrounding uplands, and precipitation. Water leaves the area via evapotranspiration, sheet flow, and drainage into the river.
Size of watershed: 2596 km^2 (1003 mi^2) for the Green River at Geneseo, IL (Wicker, et al. 1996)
Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2010).

Wetland hydrology: Yes: X No:
Rationale: Field evidence cited above and ISGS data indicate that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: No: X
Rationale: While dominant hydrophytic vegetation and wetland hydrology are present at this area, hydric soils are absent; therefore, we determined that this area is not a wetland.

ROUTINE ONSITE WETLAND DETERMINATION
Northeast area (page 3 of 5)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase I) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Non-native grassland
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This non-wetland occupies approximately the eastern half of the area north of the pipeline on the east side of Phase I.

SPECIES LIST (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Acer saccharinum	silver maple	shrub, herb	FACW	1+
Alisma plantago-aquatica	broad-leaf water-plantain	herb	OBL	2
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1+
Ambrosia artemisiifolia	common ragweed	herb	FACU	0+
Ambrosia trifida	giant ragweed	herb	FAC+	0+
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Apocynum cannabinum	dogbane	herb	FAC	2
Asclepias incarnata	swamp milkweed	herb	OBL	4
Asclepias syriaca	common milkweed	herb	UPL	0+
Aster lateriflorus	side-flowered aster	herb	FACW-	2
Aster ontarionis	Ontario aster	herb	FAC	4
Aster simplex	panicled aster	herb	FACW	3
Bidens frondosa	common beggar's ticks	herb	FACW	1+
Bidens tripartita	beggar's ticks	herb	OBL	2
Bromus commutatus	hairy brome	herb	UPL	* +
Bromus inermis	awnless brome grass	herb	UPL	*+
Calystegia sepium	American bindweed	herb	FAC	1+
Carex frankii	sedge	herb	OBL	4
Carex sp.	sedge	herb	-----	--
Catalpa sp.	cigar tree	shrub	-----	--
Cirsium arvense	Canada thistle	herb	FACU	*+
Commelina communis	common day flower	herb	FAC	*+
Cyperus esculentus	yellow nut-sedge	herb	FACW	0+
Cyperus sp.	flatsedge	herb	-----	--
Daucus carota	Queen Anne's lace	herb	UPL	*+
Echinochloa muricata	barnyard grass	herb	OBL	0+
Eleocharis acicularis	needle spike rush	herb	OBL	3
Eleocharis erythropoda	spike rush	herb	OBL	3
Elymus canadensis	Canada wild rye	herb	FAC-	4
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Eupatorium serotinum	late boneset	herb	FAC+	1+
Festuca arundinacea	tall fescue	herb	FACU+	*+
Fraxinus pennsylvanica	green ash	shrub, herb	FACW	2
Helianthus tuberosus	Jerusalem artichoke	herb	FAC	3
Hordeum jubatum	squirrel-tail	herb	FAC+	*+
Leersia oryzoides	**rice cutgrass**	**herb**	**OBL**	**3**
Leucospora multifida	leucospora	herb	FACW+	3

Species list continued next page.

ROUTINE ONSITE WETLAND DETERMINATION
Northeast area (page 4 of 5)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase I) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Non-native grassland
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This non-wetland occupies approximately the eastern half of the area north of the pipeline on the east side of Phase I.

SPECIES LIST (Continued) (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Lindernia dubia	false pimpernel	herb	OBL	5
Lythrum salicaria	purple loosestrife	herb	OBL	*+
Mimulus ringens	monkey flower	herb	OBL	5
Morus alba	white mulberry	shrub	FAC	*+
Nepeta cataria	catnip	herb	FAC-	*+
Oenothera biennis	evening primrose	herb	FACU	1+
Oxalis stricta	yellow wood sorrel	herb	FACU	0+
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	**reed canary grass**	**herb**	**FACW+**	***+**
Phleum pratense	Timothy	herb	FACU	*+
Phyla lanceolata	fog-fruit	herb	OBL	1+
Pilea pumila	Canada clearweed	herb	FACW	3
Plantago rugelii	red-stalked plantain	herb	FAC	0+
Poa pratensis	**Kentucky bluegrass**	**herb**	**FAC-**	***+**
Polygonum amphibium	water smartweed	herb	OBL	3
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1+
Polygonum persicaria	spotted lady's thumb	herb	FACW	*+
Polygonum scandens	climbing buckwheat	herb	FAC	2
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rorippa sylvestris	creeping yellow cress	herb	OBL	*+
Rosa multiflora	multiflora rose	shrub	FACU	*+
Rumex crispus	curly dock	herb	FAC+	*+
Sagittaria latifolia	arrowhead	herb	OBL	4
Sambucus canadensis	common elder	shrub, herb	FACW-	2
Salix exigua	sandbar willow	shrub	OBL	1+
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Setaria faberi	giant foxtail	herb	FACU+	*+
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+
Solidago gigantea	late goldenrod	herb	FACW	3
Taraxacum officinale	common dandelion	herb	FACU	*+
Toxicodendron radicans	poison ivy	herb	FAC+	1+
Trifolium hybridum	alsike clover	herb	FAC-	*+
Trifolium repens	white clover	herb	FACU+	*+

Species list continued next page.

ROUTINE ONSITE WETLAND DETERMINATION
Northeast area (page 5 of 5)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase I) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Non-native grassland
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This non-wetland occupies approximately the eastern half of the area north of the pipeline on the east side of Phase I.

SPECIES LIST (Continued) (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Ulmus americana	American elm	shrub, herb	FACW-	5
Urtica dioica	stinging nettle	herb	FAC+	2
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Vitis riparia	riverbank grape	herb	FACW-	2
Xanthium strumarium	cocklebur	herb	FAC	0+

Coefficient of Conservatism (Taft et al. 1997) + weedy native or non-native species, *non-native species

$FQI = \sum C/\sqrt{N} = 118/\sqrt{54} = 16.1$ $\bar{C} = \sum C/N = 118/54 = 2.2$

Planted Saplings
SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Carya illinoensis	pecan	sapling(p)	FACW	6
Fraxinus pennsylvanica	green ash	sapling(p)	FACW	2
Platanus occidentalis	sycamore	sapling(p)	FACW	3
Quercus bicolor	swamp white oak	sapling(p)	FACW+	7
Quercus lyrata	overcup oak	sapling(p)	OBL	7
Quercus palustris	pin oak	sapling(p)	FACW	4

Coefficient of Conservatism (Taft et al. 1997) (p) planted species

$FQI^* = \sum C/\sqrt{N} = 145/\sqrt{59} = 18.9$ $\bar{C}^* = \sum C/N = 145/59 = 2.5$

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

Determined by: Scott Wiesbrook (soils and hydrology)
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ROUTINE ONSITE WETLAND DETERMINATION
Southeast area (page 1 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the east side of Phase I.

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Alisma plantago-aquatica*	Herb	OBL
2. *Eleocharis acicularis*	Herb	OBL
3. *Leersia oryzoides*	Herb	OBL
4. *Polygonum pensylvanicum*	Herb	FACW+

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: NRCS mapped as Sawmill, Radford, and Tice;
Revised to Sawmill silty clay loam (Cumulic Endoaquoll)

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

Matrix color: 10YR 3/1 over strata of 10YR 3/1 and 6/1
Other indicators: None.
Hydric soils? Yes: X No:
Rationale: The Natural Resources Conservation Service identifies Sawmill silty clay loam as a Cumulic Endoaquoll which is poorly drained. This soil possesses redox concentrations within a low chroma matrix, which indicates saturated or reduced conditions for extended duration. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F6 – Redox dark surface.

ROUTINE ONSITE WETLAND DETERMINATION
Southeast area (page 2 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the east side of Phase I.

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: From 0-0.1 m (4 in)
Depth to saturated soil: At surface
Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the Green River and Mosquito Creek, sheet flow from surrounding uplands, some directed drainage from Interstate 280/74, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the creek and river.
Size of watershed: 2596 km^2 (1003 mi^2) for the Green River at Geneseo, IL (Wicker, et al. 1996)
Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2010). This site was inundated during the site visit.

Wetland hydrology: Yes: X No:
Rationale: Field evidence cited above and ISGS data indicate that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:
Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at this area; therefore, we determined that this area is a wetland.

ROUTINE ONSITE WETLAND DETERMINATION
Southeast area (page 3 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the east side of Phase I.

SPECIES LIST (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Acer saccharinum	silver maple	herb	FACW	1+
Alisma plantago-aquatica	**broad-leaf water-plantain**	**herb**	**OBL**	**2**
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Armoracia aquatica	lake cress	herb	OBL	10
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster simplex	panicled aster	herb	FACW	3
Bidens frondosa	common beggar's ticks	herb	FACW	1+
Carex sp.	sedge	herb	-----	--
Cyperus esculentus	yellow nut-sedge	herb	FACW	0+
Cyperus strigosus	straw-colored flatsedge	herb	FACW	0+
Echinochloa muricata	barnyard grass	herb	OBL	0+
Eleocharis acicularis	**needle spike rush**	**herb**	**OBL**	**3**
Eleocharis erythropoda	spike rush	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Eleocharis smallii	spike rush	herb	OBL	5
Eupatorium serotinum	late boneset	herb	FAC+	1+
Fraxinus pennsylvanica	green ash	shrub, herb	FACW	2
Leersia oryzoides	**rice cutgrass**	**herb**	**OBL**	**3**
Lemna minor	common duckweed	herb	OBL	3
Lindernia dubia	false pimpernel	herb	OBL	5
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Mimulus ringens	monkey flower	herb	OBL	5
Phalaris arundinacea	reed canary grass	herb	FACW+	*+
Phyla lanceolata	fog-fruit	herb	OBL	1+
Polygonum amphibium	water smartweed	herb	OBL	3
Polygonum hydropiper	common smartweed	herb	OBL	*+
Polygonum pensylvanicum	**giant smartweed**	**herb**	**FACW+**	**1+**
Polygonum persicaria	spotted lady's thumb	herb	FACW	*+
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rumex crispus	curly dock	herb	FAC+	*+
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix exigua	sandbar willow	shrub, herb	OBL	1+
Scirpus americanus	chairmaker's rush	herb	OBL	3
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Typha angustifolia	narrow-leaved cattail	herb	OBL	*+

Coefficient of Conservatism (Taft et al. 1997) + weedy native or non-native species, *non-native species

$FQI = \sum C/\sqrt{N} = 85/\sqrt{30} = 15.5 \quad \bar{C} = \sum C/N = 85/30 = 2.8$

ROUTINE ONSITE WETLAND DETERMINATION
Southeast area (page 4 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the east side of Phase I.

Planted Saplings
SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Carya illinoensis	pecan	sapling(p)	FACW	6
Fraxinus pennsylvanica	green ash	sapling(p)	FACW	2
Platanus occidentalis	sycamore	sapling(p)	FACW	3
Quercus bicolor	swamp white oak	sapling(p)	FACW+	7
Quercus lyrata	overcup oak	sapling(p)	OBL	7
Quercus palustris	pin oak	sapling(p)	FACW	4

Coefficient of Conservatism (Taft et al. 1997) (p) planted species

$FQI^* = \sum C/\sqrt{N} = 112/\sqrt{35} = 18.9$ $\bar{C}^* = \sum C/N = 112/35 = 3.2$

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

Determined by: Scott Wiesbrook (soils and hydrology)
Brian Wilm, Ian Draheim,
and Jeff Matthews (vegetation and hydrology)
Brad Zercher (GIS)
Illinois Natural History Survey
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Champaign, Illinois 61820
(217) 265-0368 (Wiesbrook)

ROUTINE ONSITE WETLAND DETERMINATION
West area (page 1 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SE/4, NW/4, Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the west side of Phase I.

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Alisma plantago-aquatica*	Herb	OBL
2. *Phalaris arundinacea*	Herb	FACW+
3. *Polygonum amphibium*	Herb	OBL

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: Sawmill silty clay loam (Cumulic Endoaquoll)
On county hydric soils list? Yes: No: X
Is the soil a histosol? Yes: No: X
Histic epipedon present? Yes: No: X
Redox Concentrations? Yes: X No: Color: 7.5YR 4/4, 10YR 4/6, and 4/4
Redox Depletions? Yes: No: X Color: N/A
Matrix color: 10YR 3/1 over strata of 10YR 3/1 and 6/1
Other indicators: None.
Hydric soils? Yes: X No:
Rationale: The Natural Resources Conservation Service identifies Sawmill silty clay loam as a Cumulic Endoaquoll which is poorly drained. This soil possesses redox concentrations within a low chroma matrix, which indicates saturated or reduced conditions for extended duration. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F6 – Redox dark surface.

ROUTINE ONSITE WETLAND DETERMINATION
West area (page 2 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SE/4, NW/4, Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the west side of Phase I.

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: From 0-0.5 m (19 in)
Depth to saturated soil: At surface
Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the Green River and Mosquito Creek, sheet flow from surrounding uplands, some directed drainage from Interstate 280/74, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the creek and river.
Size of watershed: 2596 km^2 (1003 mi^2) for the Green River at Geneseo, IL (Wicker, et al. 1996)
Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2010). This site was inundated during the site visit.

Wetland hydrology: Yes: X No:
Rationale: Field evidence cited above and ISGS data indicate that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:
Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at this area; therefore, we determined that this area is a wetland.

ROUTINE ONSITE WETLAND DETERMINATION
West area (page 3 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SE/4, NW/4, Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the west side of Phase I.

SPECIES LIST (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Acer saccharinum	silver maple	shrub, herb	FACW	1+
Alisma plantago-aquatica	**broad-leaf water-plantain**	**herb**	**OBL**	**2**
Amaranthus tuberculatus	tall waterhemp	herb	OBL	1+
Ambrosia artemisiifolia	common ragweed	herb	FACU	0+
Ambrosia trifida	giant ragweed	herb	FAC+	0+
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Apocynum cannabinum	dogbane	herb	FAC	2
Armoracia aquatica	lake cress	herb	OBL	10
Asclepias incarnata	swamp milkweed	herb	OBL	4
Aster lateriflorus	side-flowered aster	herb	FACW-	2
Aster ontarionis	Ontario aster	herb	FAC	4
Aster simplex	panicled aster	herb	FACW	3
Bidens frondosa	common beggar's ticks	herb	FACW	1+
Carex sp.	sedge	herb	-----	--
Cephalanthus occidentalis	buttonbush	shrub, herb	OBL	4
Cyperus esculentus	yellow nut-sedge	herb	FACW	0+
Echinochloa muricata	barnyard grass	herb	OBL	0+
Eleocharis acicularis	needle spike rush	herb	OBL	3
Eleocharis smallii	spike rush	herb	OBL	5
Eragrostis hypnoides	creeping love grass	herb	OBL	5
Fraxinus pennsylvanica	green ash	herb	FACW	2
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lemna minor	common duckweed	herb	OBL	3
Leucospora multifida	leucospora	herb	FACW+	3
Lindernia dubia	false pimpernel	herb	OBL	5
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Lysimachia nummularia	moneywort	herb	FACW+	*+
Lythrum salicaria	purple loosestrife	herb	OBL	*+
Mimulus ringens	monkey flower	herb	OBL	5
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phalaris arundinacea	**reed canary grass**	**herb**	**FACW+**	***+**
Phyla lanceolata	fog-fruit	herb	OBL	1+
Polygonum amphibium	**water smartweed**	**herb**	**OBL**	**3**
Polygonum hydropiper	common smartweed	herb	OBL	*+
Polygonum lapathifolium	curttop lady's thumb	herb	FACW+	0+
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1+
Polygonum persicaria	spotted lady's thumb	herb	FACW	*+
Polygonum punctatum	dotted smartweed	herb	OBL	3

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION
West area (page 4 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SE/4, NW/4, Section 16, T. 17 N., R. 1 E
Location: This wetland occupies the area on the west side of Phase I.

SPECIES LIST (Continued) (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Rorippa islandica	marsh yellow cress	herb	OBL	4
Rorippa sylvestris	creeping yellow cress	herb	OBL	*+
Rumex crispus	curly dock	herb	FAC+	*+
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix exigua	sandbar willow	shrub, herb	OBL	1+
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Sparganium eurycarpum	burreed	herb	OBL	5
Typha angustifolia	narrow-leaved cattail	herb	OBL	*+
Ulmus americana	American elm	shrub, herb	FACW-	5

Coefficient of Conservatism (Taft et al. 1997) + weedy native or non-native species, *non-native species

$FQI = \sum C/\sqrt{N} = 112/\sqrt{39} = 17.9$ $\bar{C} = \sum C/N = 112/39 = 2.9$

Planted Saplings
SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Carya illinoensis	pecan	sapling(p)	FACW	6
Fraxinus pennsylvanica	green ash	sapling(p)	FACW	2
Platanus occidentalis	sycamore	sapling(p)	FACW	3
Quercus bicolor	swamp white oak	sapling(p)	FACW+	7
Quercus lyrata	overcup oak	sapling(p)	OBL	7
Quercus palustris	pin oak	sapling(p)	FACW	4

Coefficient of Conservatism (Taft et al. 1997) (p) planted species

$FQI^* = \sum C/\sqrt{N} = 139/\sqrt{44} = 21.0$ $\bar{C}^* = \sum C/N = 139/44 = 3.2$

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

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Appendix B

Photographs of Wetland Mitigation Site:
Green Rock Phase I

Picture 1. Facing northwest from photostation 1 (located on eastern side of east area).

Picture 2. Facing southwest from photostation 2 (located on northern side of east area).

Picture 3. Facing north from photostation 3 (located on southwest corner of east area).

Picture 4. Facing northwest from photostation 4 (located on southeast corner of west area).

Picture 5. Facing southeast from photostation 5 (located on west side of west area).

Picture 6. Facing southwest from photostation 6 (located on northeast corner of west area).

Appendix C

Wetland Determination Form of Wetland Mitigation Site: Green Rock Phase II

ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 1 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland includes the entire Phase II area.

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

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Alisma plantago-aquatica*	Herb	OBL
2. *Echinochloa muricata*	Herb	OBL
3. *Eleocharis acicularis*	Herb	OBL
4. *Leersia oryzoides*	Herb	OBL

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: NRCS mapped as Sawmill, Radford, Tice, and Plano;
Revised to Sawmill silty clay loam (Cumulic Endoaquoll)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR 5/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 2/1 over 10YR 4/2
Other indicators: None.
Hydric soils? Yes: X No:
Rationale: The Natural Resources Conservation Service identifies Sawmill silty clay loam as a Cumulic Endoaquoll which is poorly drained. This soil possesses redox concentrations within a low chroma matrix, which indicates saturated or reduced conditions for extended duration. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F6 – Redox dark surface.

ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 2 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland includes the entire Phase II area.

HYDROLOGY

Inundated: Yes: X No: Depth of standing water: From 0-0.20 m (8 in)
Depth to saturated soil: At surface
Overview of hydrological flow through the system: This area is hydrologically influenced by overflow from the Green River and Mosquito Creek, sheet flow from surrounding uplands, some directed drainage from Interstate 280/74, and precipitation. Water leaves the area via evapotranspiration, possible groundwater recharge, and drainage into the creek and river.
Size of watershed: 2596 km^2 (1003 mi^2) for the Green River at Geneseo, IL (Wicker, et al. 1996)
Other field evidence observed: The ISGS estimated that this area met the wetland hydrology criterion (Miner et al. 2010). This site was inundated during the site visit.

Wetland hydrology: Yes: X No:
Rationale: Field evidence cited above and ISGS data indicate that this area is inundated or saturated for a sufficient duration to satisfy the wetland hydrology criterion.

DETERMINATION AND RATIONALE:

Is the area a wetland? Yes: X No:
Rationale: Hydric soil, dominant hydrophytic vegetation, and wetland hydrology are present at this area; therefore, we determined that this area is a wetland.

ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 3 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland includes the entire Phase II area.

SPECIES LIST (Dominant species and strata indicated by bold)

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Acer saccharinum	silver maple	herb	FACW	1+
Alisma plantago-aquatica	**broad-leaf water-plantain**	**herb**	**OBL**	**2**
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Aster simplex	panicled aster	herb	FACW	3
Bidens frondosa	common beggar's ticks	herb	FACW	1+
Carex sp.	sedge	herb	-----	--
Cyperus esculentus	yellow nut-sedge	herb	FACW	0+
Echinochloa muricata	**barnyard grass**	**herb**	**OBL**	**0+**
Eclipta prostrata	yerba de tajo	herb	FACW	2
Eleocharis acicularis	**needle spike rush**	**herb**	**OBL**	**3**
Eleocharis erythropoda	spike rush	herb	OBL	3
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Leersia oryzoides	**rice cutgrass**	**herb**	**OBL**	**3**
Lemna minor	common duckweed	herb	OBL	3
Lindernia dubia	false pimpernel	herb	OBL	5
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Mimulus ringens	monkey flower	herb	OBL	5
Phalaris arundinacea	reed canary grass	herb	FACW+	*+
Phyla lanceolata	fog-fruit	herb	OBL	1+
Polygonum amphibium	water smartweed	herb	OBL	3
Polygonum hydropiper	common smartweed	herb	OBL	*+
Polygonum pensylvanicum	giant smartweed	herb	FACW+	1+
Polygonum persicaria	spotted lady's thumb	herb	FACW	*+
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	eastern cottonwood	shrub, herb	FAC+	2
Rumex crispus	curly dock	herb	FAC+	*+
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix exigua	sandbar willow	shrub, herb	OBL	1+
Salix nigra	black willow	shrub, herb	OBL	3
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scirpus tabernaemontanii	great bulrush	herb	OBL	4
Typha angustifolia	narrow-leaved cattail	herb	OBL	*+

Coefficient of Conservatism (Taft et al. 1997) + weedy native or non-native species, *non-native species

$FQI = \sum C/\sqrt{N} = 68/\sqrt{26} = 13.3$ $\bar{C} = \sum C/N = 68/26 = 2.6$

ROUTINE ONSITE WETLAND DETERMINATION
Site 1 (page 4 of 4)

Field Investigators: Wiesbrook, Wilm, Matthews, and Draheim
Date: July 6 & September 2, 2010
Project Name: FAU 5822 (Milan Beltway Green Rock Phase II) **Section No.:** 1-3
State: Illinois **County:** Henry **Applicant:** IDOT Dist. 2
Area Name: Marsh
Legal Description: SW/4, NE/4 Section 16, T. 17 N., R. 1 E
Location: This wetland includes the entire Phase II area.

Planted Saplings
SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	Coefficient of conservatism#
Carya illinoensis	pecan	sapling(p)	FACW	6
Fraxinus pennsylvanica	green ash	sapling(p)	FACW	2
Platanus occidentalis	sycamore	sapling(p)	FACW	3
Quercus bicolor	swamp white oak	sapling(p)	FACW+	7
Quercus palustris	pin oak	sapling(p)	FACW	4

Coefficient of Conservatism (Taft et al. 1997) (p) planted species

$FQI^* = \sum C/\sqrt{N} = 90/\sqrt{31} = 16.2$ $\bar{C}^* = \sum C/N = 90/31 = 2.9$

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

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Appendix D

Photographs of Wetland Mitigation Site:
Green Rock Phase II

Picture 1. Facing northeast from photostation 1 (located on west side).

Picture 2. Facing southeast from photostation 1 (located on west side).