

# TEIBEL NATURE PRESERVE MASTER PLAN

December 2011

## ACKNOWLEDGMENTS

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## PROJECT TEAM



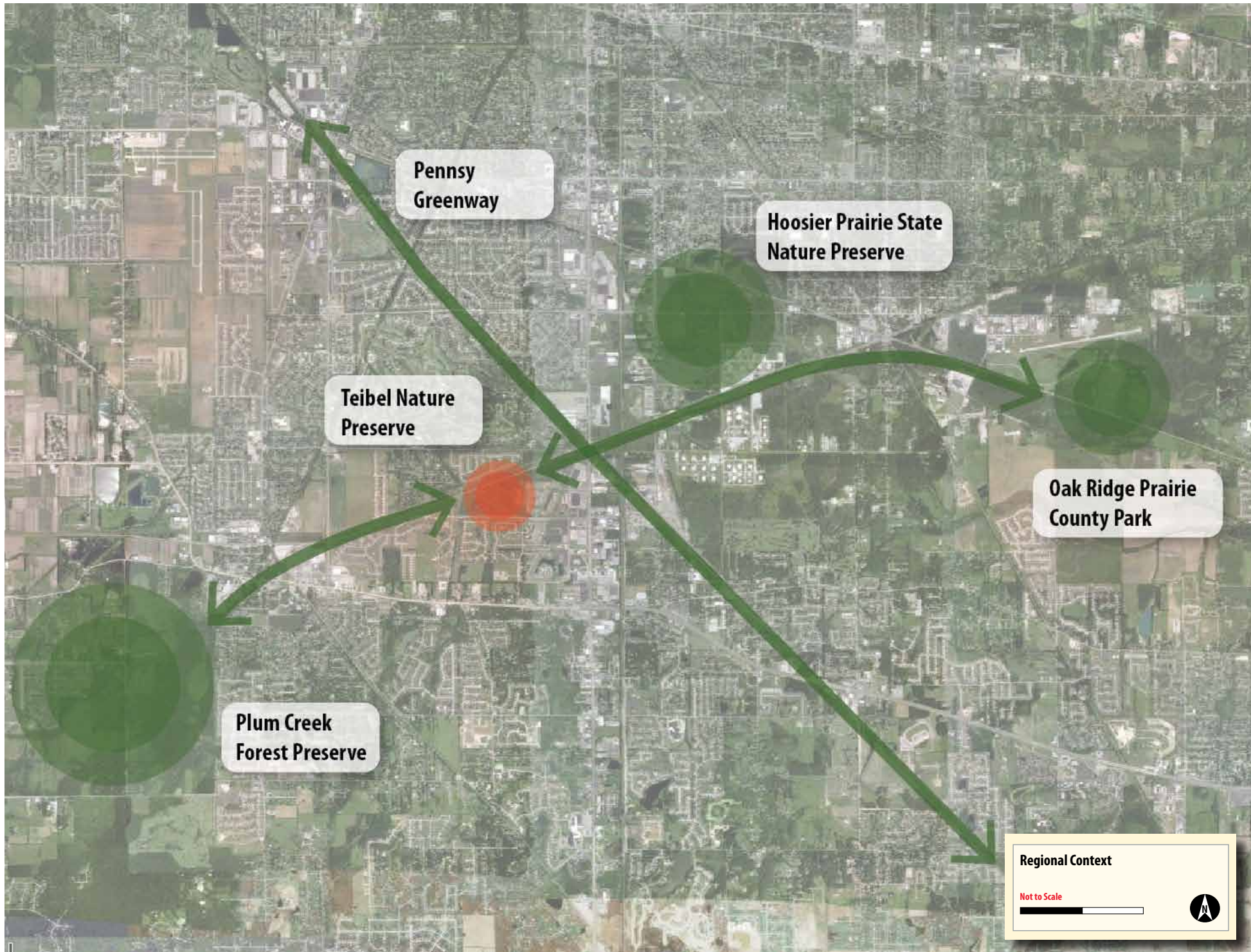
#### On the Cover

*An existing view of the east pond of the Teibel Nature Preserve*

*Funding for this project was provided in part by the National Oceanic and Atmospheric Administration and the Indiana Department of Natural Resources, Lake Michigan Coastal Program.*

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# INTRODUCTION

It is an exciting time for the Town of Schererville, the Schererville Parks and Recreation Department and the numerous stakeholders involved on this project! It is clear that community leaders are committed to protecting and enhancing the natural environment of the Teibel Nature Preserve while developing an open space which will provide an opportunity for passive recreation and outdoor education that will be a unique asset to the community. This master plan describes the results of the planning process and later, presents a series of opportunities for capital and environmental management improvements of the Teibel Nature Preserve Site.

The Teibel Nature Preserve site is used as wetland mitigation for the surrounding residential and commercial developments. In 2008, Richard Teibel donated the property to the Schererville Parks and Recreation Department through the Schererville Parks Foundation. The Schererville 2008-2012 Parks and Recreation Master Plan identified the Teibel Nature Preserve as a future natural area because the northwest quadrant of the Town of Schererville is significantly deficient in the amount of recommended open space per resident. This area of Schererville is densely developed, and the Teibel Nature Preserve offers a unique opportunity to provide open space for the neighborhood and be the first public natural area provided for the Schererville residents by the Parks and Recreation Department.

The site is regionally located between the Plum Creek Forest Preserve, Hoosier Prairie Nature Preserve, Oak Ridge Prairie County Park, and the Pennsy Greenway. These offer high quality natural environments and allow Teibel Nature Preserve to become an extension of the green corridor that serves as habitat for wildlife and migratory birds.

In order to fund the Teibel Nature Preserve Master Plan, the Schererville Parks and Recreation Department applied for and secured an Indiana Department of Natural Resources (IDNR) Coastal Grant to develop the

master plan for the site. After being awarded the grant, the Schererville Parks and Recreation Department engaged Hitchcock Design Group to lead a team including DLZ and Cardno JFNew, recognized leaders in the fields of landscape architecture, land planning, stormwater engineering and ecological assessments to undertake the master plan.

Together, the team outlined a three-phase strategy below:

- Opportunity Analysis
- Master Plan
- Implementation Strategy

The focus of the Opportunity Analysis phase was to identify the issues and most promising opportunities that meet the goals and objectives based on the characteristics of the site, natural, physical, and cultural resources, and the interests of the Parks and Recreation department, project stakeholders and general public. Once the opportunities were identified, the Master Plan illustrates the preferred approach to capital and environmental management improvements. Finally, the Implementation Strategy outlines a phasing plan that directs the Schererville Parks and Recreation Department towards achieving the Master Plan.





# OPPORTUNITY ANALYSIS





## EXISTING CONDITIONS

The master plan process began with a comprehensive analysis of the Teibel Nature Preserve's current conditions and evaluation of existing opportunities.

### Study Area

The site is bounded by the Elgin Joliet & Eastern (EJ&E) Railroad to the north, Stone Bridge Estates neighborhood and Villa Cesare to the east, Deer Creek Drive to the south, and Dyer Ditch and the Town of Schererville Corporate limits to the west. The site is approximately 81 acres.

### Ownership and Jurisdiction

Schererville Parks Foundation leases the Teibel Nature Preserve property to the Parks and Recreation Department. The Department of the Army Permit and Declaration of Restriction on Land Use document space restrictions on the property and limit improvements to the site. Improvements will be subject to Schererville Parks and Recreation Department and Army Corps of Engineers (ACOE) regulations and approval.

### Resources

There are many framework plans and drawings that have previously been developed for the Town of Schererville and the Teibel Nature Preserve property that were studied during the course of the master plan. The information contained in the following documents laid the groundwork for the proposed plan.

- 2008-2012 Parks and Recreation Master Plan, Town of Schererville, Prepared by The Arsh Group, Inc., Issued January 2008
- Comprehensive Plan, Town of Schererville, Prepared by The Arsh Group, Inc., Issued July 2009
- Deer Creek Development: Phase I Archeological Investigations in Schererville, Lake County, Indiana, Prepared by Northeast

- Indiana Archaeological Survey, Issued April 29, 1996
- Department of the Army Permit, No. 88-145-009-2, Issued October 14, 1997
- Declaration of Restriction on Land Use
- Dyer Ditch Stormwater Detention Facility, Prepared by Christopher B. Burke Engineering, Ltd, Issued on February 27, 1996
- As-Built 100-Year Storm Event Inundation, Exhibit 4, Prepared by Christopher B. Burke Engineering, Ltd, Issued on May 8, 2000
- Stone Bridge Estates ALTA Survey, Prepared by Torrenga Surveying, LLC, Issued November 25, 2008
- Wetland Mitigation Plan: Deer Creek Development, Schererville, Indiana, USACOE 88-145-009-0E, Prepared by JFNew & Associates, Inc., Revised March 7, 1996

### Existing Conditions Information

Schererville Parks and Recreation Department, Hitchcock Design Group, and DLZ walked the site on June 3, 2011 to observe existing conditions. Hitchcock Design Group gathered GIS data from various sources including DLZ, who provided GIS data from the Lake County Surveyor's Office. This information was used to create project base maps, and supplemented information with general field observations.

### Roadways

Deer Creek Drive is the south border of the project limits. It begins at US 30 west of the site, continues through the Hearth Stone neighborhood in Dyer, and connects to US 41 in Schererville. Deer Creek Drive will be a main access point for the Teibel Nature Preserve property.

### Walkways and paving

There is a beaten down path that circles the northeast pond that is accessed from the railroad right-of-way and Villa Cesare parking lot. This path was made by various users accessing the property.



View of the existing north regional detention facility



View of pipeline corridor along Deer Creek Drive



View of the east pond



View of the Schererville Ditch and Dyer Ditch confluence



View of the existing woodlands



View of the south regional detention facility

### **Access**

It was observed that people are accessing the northeast pond through the Villa Cesare parking lot on the east side of the project limits. It looks as though ATVs or vehicles have tried to access the site in the past and timbers and chains have been installed to keep them out. It was discussed that people drive along the railroad right-of-way on the east side of the site to fish in the northeast pond.

There is a pinch point on the northeast side of the property where one of the Stone Bridge Neighborhood homes backs up to the northeast pond. This presents a conflict to both the homeowner and park users.

### **Topography**

The site is characterized by flat topography. Schererville Ditch passes through the site from southeast to northwest where it joins Dyer Ditch at the northwest corner of the site. In addition to the two main ditches, three other water features are located on the site. The north regional detention facility is hydraulically connected to the Schererville Ditch according to the original development plans. The hydraulic connections are through a weir between the ditch and the detention facility. It was designed so that the water flowing through the Schererville Ditch would flow into the north regional detention pond and improve water quality.

Due to the historical flooding that occurs along portions of the Schererville Ditch, Dyer Ditch, and downstream Hart Ditch, dredging the sedimentation from the regional detention ponds should be considered. This will not only have the potential to improve flood control, but also the potential to improve water quality within the water features.

### **Legal Drains**

Schererville Ditch and Dyer Ditch are Lake County regulated drains throughout the site. The regulated drains hold easements extending 75 feet outward from the top of each bank. Work within the regulated drain easement will require approval from the Lake County Drainage Board.

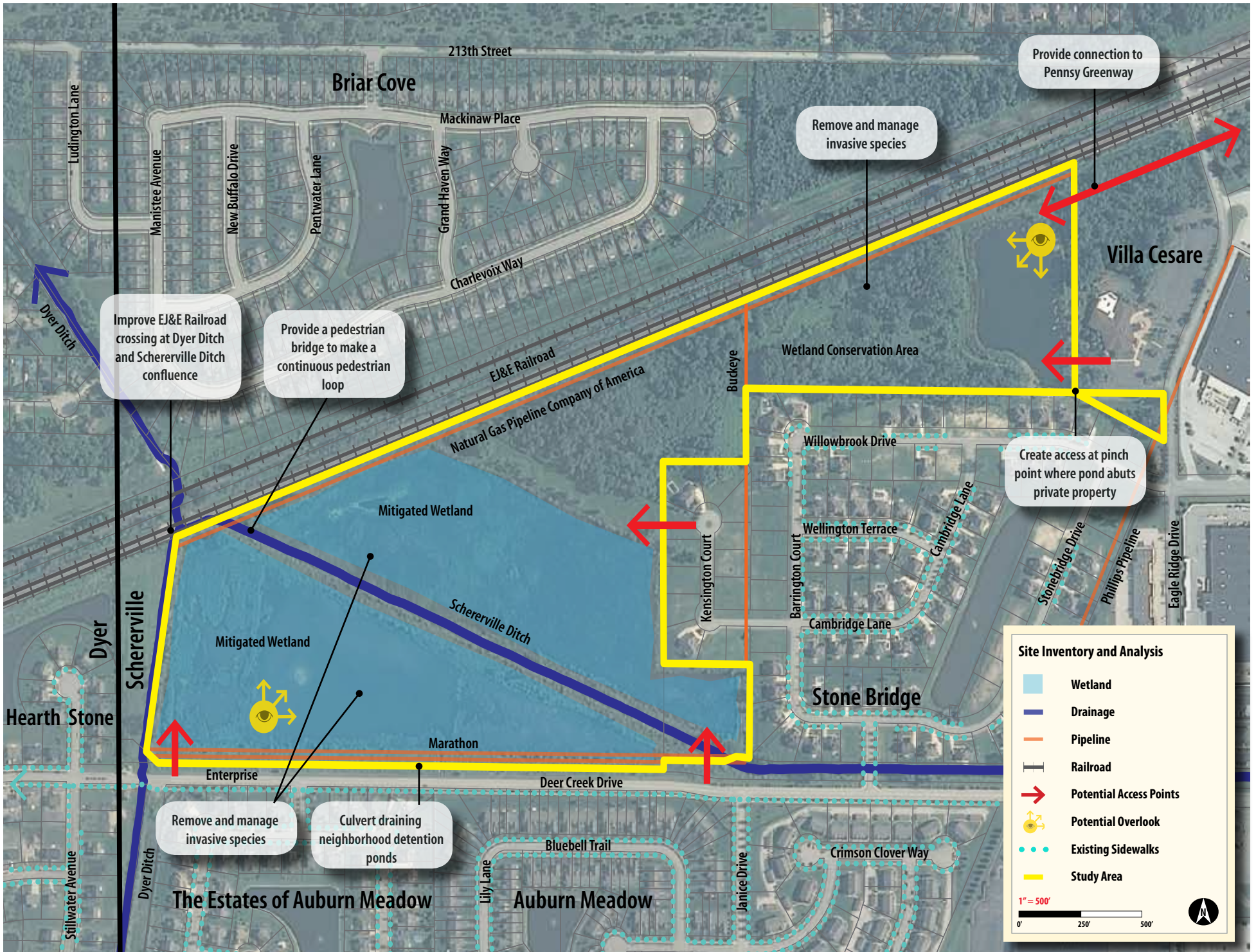
### **Groundwater**

Groundwater near the site is reported to be high. According to the Town of Schererville Director of Public Works, sump pumps in the homes in the adjoining Stone Bridge Subdivision run almost continuous during most seasons. The design team studied the potential of providing deeper regional detention facilities, but due to the high water table, it would not serve as additional water storage.

### **Wetland Information**

According to documentation produced by the Schererville Parks and Recreation Department including: 1) a declaration of restriction on land use pertaining to the site; and 2) Department of the Army Permit No. 88-145-009-2, there are restrictions to the land use on the site. These restrictions come in the form of wetland and environmental restrictions. According to these documents, the entire area encompassing the regional detention facilities are mitigated wetlands and the entire site up to and including east pond is a wetland conservation area.

According to the documentation, the east pond appears to have been modified to provide more stable and manageable banks; Lateral 1 to Schererville Ditch was completely filled in order to make way for the Stone Bridge Subdivision; and replacement wetlands at a 2:1 ratio and mitigated wetlands was created within the wetland conservation area. The restrictions also limit improvements to a 4-foot wide mowed pedestrian trail.

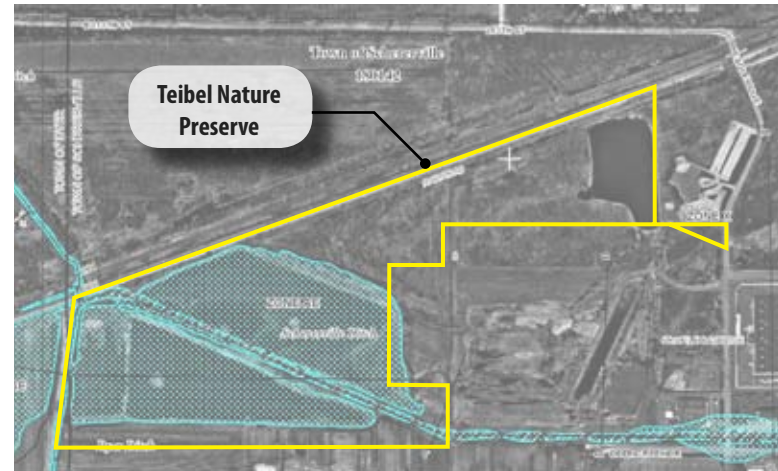


The restrictions allowed for the installation of a 24-inch drainage pipe across the eastern side of the conservation area from the east pond.

As the above restrictions were put into place through the Detroit District of the U.S. Army Corps of Engineers (ACOE). Northwest Indiana is now under the jurisdiction of the Chicago District of the ACOE. Schererville Parks and Recreation Department and the design team met on-site with the Chicago District ACOE on July 29, 2011. The ACOE is concerned with a long-term management plan for the property and understands that opening the site up as a nature preserve would aid in the management of the property. It is required to delineate the wetlands before proceeding with improvements. Overall, the ACOE is open to the idea of improving the site as a nature preserve.

**Floodplain information**

Schererville Ditch flows northwestward through the site. It confluences with Dyer Ditch at the extreme northwest corner of the site just before it passes beneath the Elgin, Joliet and Eastern (EJ&E) Railroad. The ditch is flanked on each side by regional detention facilities. The preliminary digital flood insurance rate map (FIRM) was obtained from the Indiana Department of Natural Resources (IDNR). The map indicates that the portions of the site adjacent to Schererville Ditch are designated special flood hazard area Zone AE. Those not immediately adjacent to the ditch are designated Zone X. The definitions of Zone AE and Zone X are provided in the following table.



Preliminary Digital Flood Insurance Map for the Teibel Nature Preserve Site

Table 1 - Special Flood Hazard Area Descriptions	
Zone	Description
AE	Base flood elevations determined.
X	Areas of 0.2% annual chance of flood; areas of 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.



State endangered plant, Hairy-leaved Lake Sedge, *Carex atherodes*, was discovered on-site



The Marsh Wren is a state endangered species that was found on the property



Gray Birch, *Betula populifolia*, a state endangered tree, was located during the site assess



Many Red-Winged Blackbirds were observed at the Teibel Nature Preserve

According to the Flood Insurance Study (FIS), “flooding on Schererville Ditch and Schilling Ditch is often elevated by flooding from Dyer Ditch backwater. The Elgin, Joliet and Eastern Railroad bridge over Dyer Ditch further complicates the flood problems by its restrictive flow.” This was confirmed during an interview between DLZ and the Town’s Public Works Director. Improvements to this crossing may improve flood control along Schererville Ditch and may provide a benefit to the Teibel Preserve site.

Anticipated stormwater flow rates through the site are summarized in the following table:

<b>Table 2 - Schererville Ditch Flow Rates (Source: FIS)</b>	
Drainage Area	1.85 sq. mi.
10% Annual Chance Event	180 cfs
2% Annual Chance Event	240 cfs
1% Annual Chance Event	260 cfs
0.2% Annual Chance Event	320 cfs

sq. mi. – square miles  
 cfs – cubic feet per second

Flood elevations in Schererville Ditch through the site range from 623 to 624 feet (National Geodetic Vertical Datum 88) according to the preliminary FIS. Average mean velocities through the channel are approximately 3 feet per second. A comparison of these flood elevations to the one foot contours confirms the preliminary FIRM limits.

**Pipelines**

There are numerous pipelines which cross the site. Marathon and Enterprise pipelines run parallel to Deer Creek Drive on the north side of the right-of-way. The Natural Gas Pipeline Co. of America pipeline is located parallel to the EJ&E Railroad on its south side along the northern edge of the site. Buckeye pipeline runs north and south through the site on the west side of the Stone Bridge subdivision. Refer to the Site Inventory and Analysis Map for approximate locations. Locating improvements over the top of pipelines such as parking facilities and pedestrian paths is possible; however, specific requirements of each pipeline should be identified.

**Signage**

There is currently no signage on-site.

**Trees and vegetation**

See Appendix B: Ecological Assessment Report.



Participants voted on the preferred alternative and amenities at the public meeting on September 7, 2011



Attendees discuss the preferred strategy at the public meeting on October 5, 2011



Attendees discuss the preferred strategy at the public meeting on October 5, 2011



Attendees discuss the preferred strategy at the public meeting on October 5, 2011



## PUBLIC PARTICIPATION

A collaborative process with key stakeholders and the public during the design process is critical in creating a successful master plan. Public input and buy-in fostered ideas for the improved park and formed the basis for the design alternatives and the final master plan.

### **Stakeholder Interviews, June 29, 2011, 2pm-7pm Villa Cesare**

The purpose of the stakeholder interviews was to understand current conditions that impact key residents, businesses, institutions and others. The stakeholders were asked to provide valuable knowledge and perspective in private discussions.

- 18 interviews were conducted with 2 facilitators from Hitchcock Design Group
- Individuals discussed assets and challenges of the Teibel Nature Preserve property and identified potential uses and opportunities

### **Public meeting, September 7, 2011, 5:30pm Scherverville Town Hall**

The purpose of this meeting was to garner public support, present design alternatives and receive public input in creating a vision for the Teibel Nature Preserve Master Plan.

- 46 public attendees
- Attendees voted on preferred alternative and amenities
- Attendees filled out a questionnaire to elaborate on the preferred concept, proposed features, and priorities

### **Public meeting, October 5, 2011, 5:30pm Scherverville Town Hall**

The purpose of this meeting was to present the preferred alternative and operational recommendation.

- 13 public attendees
- Attendees commented on the preferred alternative in an open house format
- Comment sheets were provided

*The site provides the opportunity to be outside in a nature preserve alongside wading birds in a wetland.*

*June 29, 2011  
Stakeholder Interviews*



# MASTER PLAN

## GOAL

**Develop Teibel Nature Preserve into a public park that promotes passive recreation through natural resource preservation and management and educational opportunities while enhancing the quality of life for all residents.**



## GOAL AND OBJECTIVES

The Schererville Parks and Recreation Department, Park Board, and the project team developed the project goals and objectives to support the vision for Teibel Nature Preserve. The objectives are specific actions for achieving the goal for the park. The goal that was developed is:

*Develop Teibel Nature Preserve into a public park that promotes passive recreation through natural resource preservation and management and educational opportunities while enhancing the quality of life for all residents*

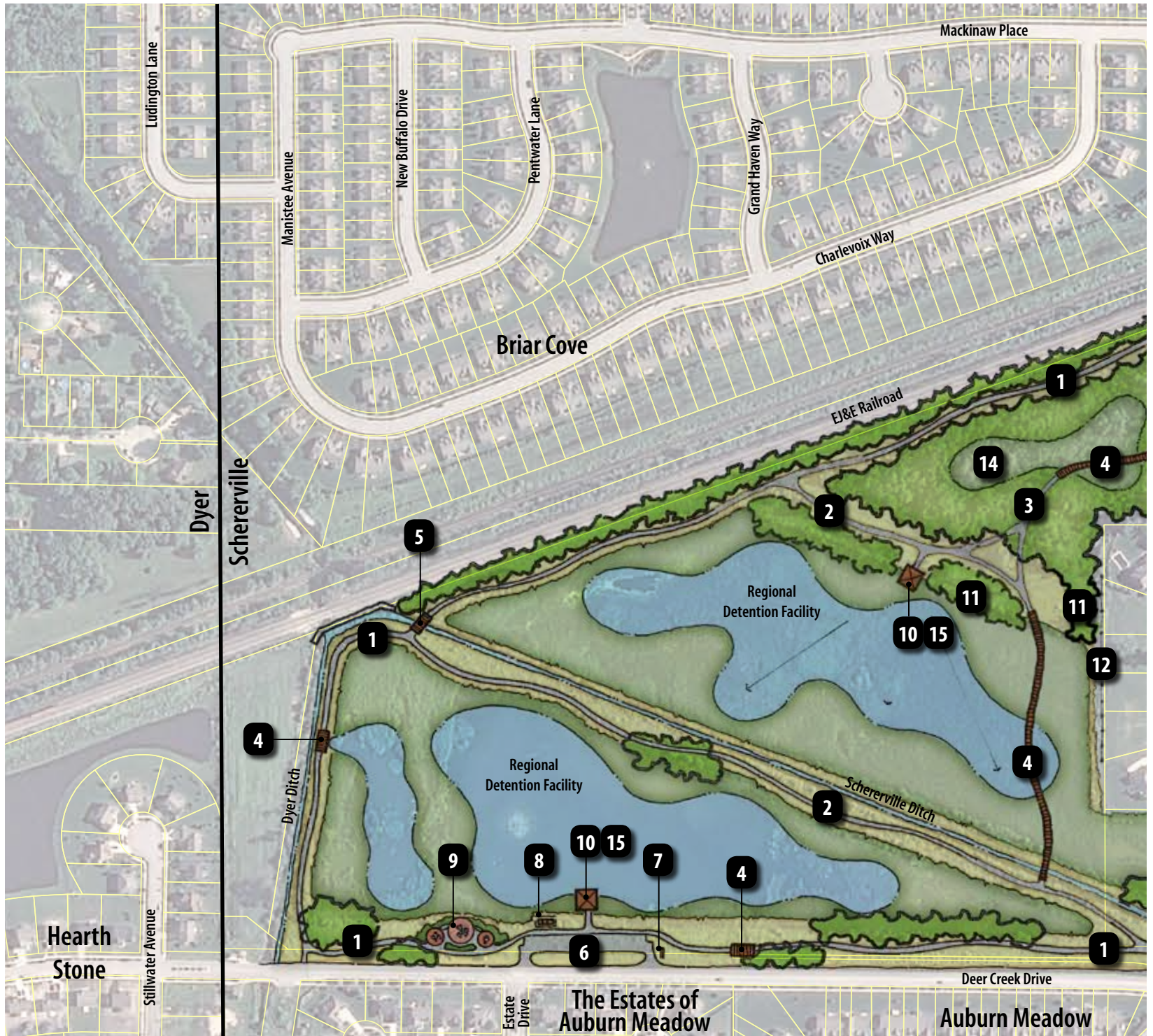
The goal, which is described throughout the Teibel Nature Preserve Master Plan was guided by and centered on the following objectives.:

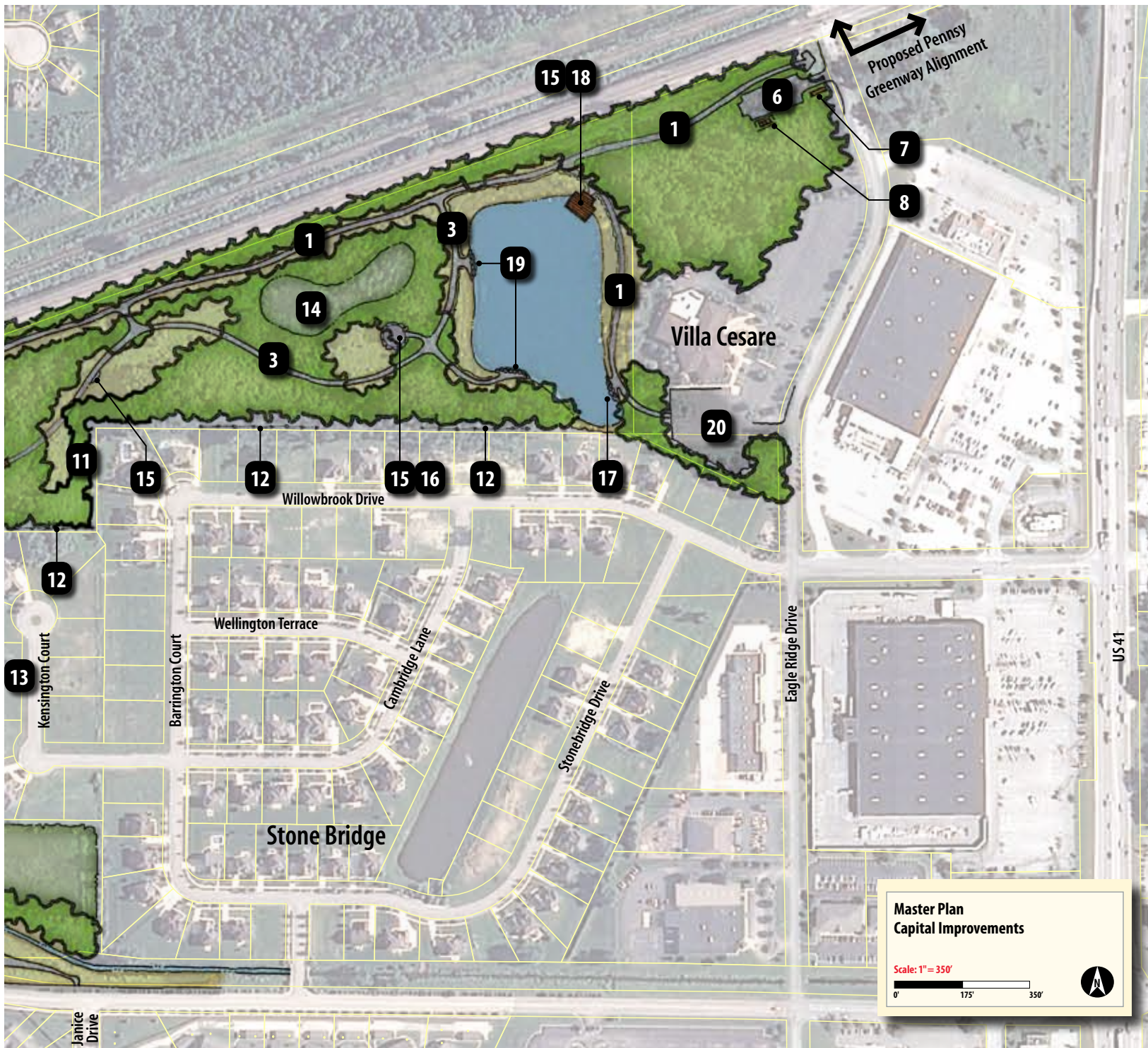
- *Preserve and enhance the site's natural features*
- *Provide recreational and educational amenities*
- *Create an accessible and desirable park which will attract community members*



Birds-eye view of the Teibel Nature Preserve

- 1** Gravel Trail
- 2** Mown Trail
- 3** Mulch Trail
- 4** Boardwalk
- 5** Bridge
- 6** Parking  
30 Spaces
- 7** Gateway Sign
- 8** Portable  
Restrooms with  
Screen Fence
- 9** Play Area
- 10** Overlook with  
Shelter






- 11** Landscape Buffer
- 12** Split Rail Fence with No Access Sign
- 13** No Parking Sign
- 14** Wetland
- 15** Interpretive Sign
- 16** Council Ring
- 17** Boat Launch
- 18** Pier
- 19** Fishing Station
- 20** Shared Parking

**Master Plan  
Capital Improvements**

Scale: 1" = 350'

0' 175' 350'



## CAPITAL IMPROVEMENTS

To aid in understanding the design intent of the proposed Teibel Nature Preserve capital improvements, the following pages provide comparable photographic images of the proposed amenities and activities.



Boardwalk



Winter Activities



Trails



Boardwalk



Access to Water





Pier



Fishing Station



Council Ring



Overlook with Shelter



Split Rail Fence



Educational Station



Nature Based Play



Play Area



Shoreline Enhancements



Nature Based Play



Play Area



Interpretive Sign



Wildlife Viewing



Pedestrian Bridge



Parking



Wildlife Viewing



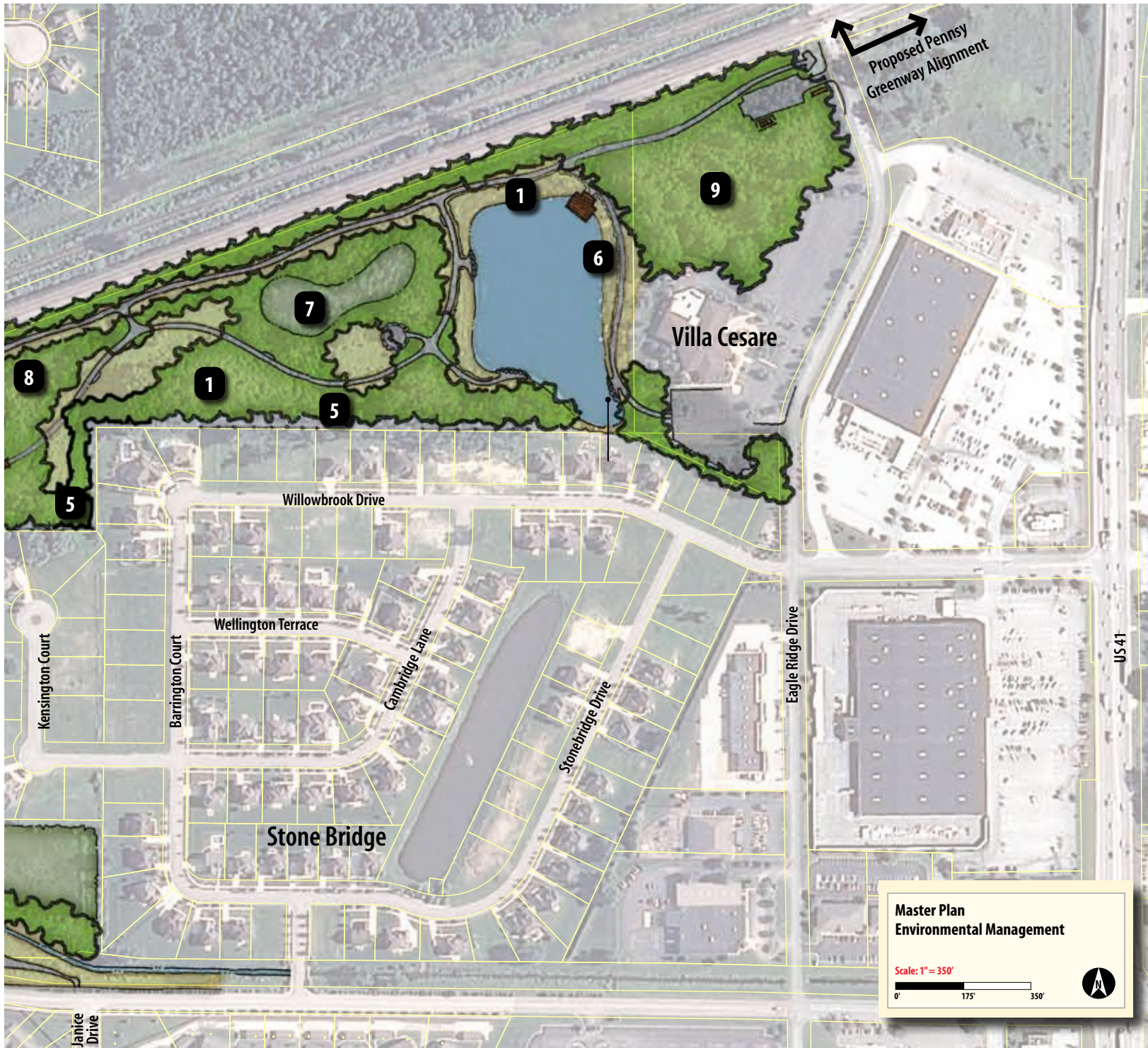
Gateway Sign



Portable Restrooms

- 1** Remove invasive species, revegetate, and prepare a management plan for on-going maintenance
- 2** Stabilize Schererville Ditch banks at current condition
- 3** Improve EJ&E Railroad crossing at Dyer Ditch and Schererville Ditch confluence
- 4** Enhance existing regional detention facilities to maximize stormwater management
- 5** Maintain a landscape buffer between the trails and adjacent properties





- 6** Select areas of cattails to remain for the Marsh Wren habitat
- 7** Select areas within the woodlands to return to wetland for additional stormwater detention capacity
- 8** Conduct further research and investigation on woodland habitat to determine if returning it to a wet prairie habitat is recommended
- 9** Coordinate with Villa Cesare to remove invasive species, revegetate, and prepare a management plan for on-going maintenance

**Master Plan  
Environmental Management**

Scale: 1" = 350'

0' 175' 350'

**81**

Acres

**5**

Ecological  
Communities

**243**

Vascular Plant Species

**4**

State Listed  
Plant Species



## ENVIRONMENTAL MANAGEMENT PLAN

An overall comprehensive management plan is a high priority for the Teibel Nature Preserve site. This page provides photographic images of the environmental management techniques that are proposed to produce a high quality native landscape.



Buckthorn Removal



Wetland Herbiciding



Phragmites Removal



Brush Mowing



Prairie Installation with No-Till Drill





# IMPLEMENTATION STRATEGY



Celebrate all aspects of the park's construction including groundbreaking ceremonies



Design and create promotional materials that increase the visibility of Teibel Nature Preserve



Develop a partnership with local schools to create educational programming for the nature preserve



Create a volunteer policy to recruit, retain, and recognize volunteers who can support the park maintenance efforts



Dedicate staff to establish and maintain volunteer programs



Coordinate with the Schererville Police Department to provide routine patrols of the park

## OPERATIONAL RECOMMENDATIONS

Operational recommendations are critical to the success of the Teibel Nature Preserve. The goal of operational recommendations is to establish means to accomplish effective and efficient operations and identify potential improvements on various operational levels.

### **Organizational and Administration**

- Coordinate funding, planning, and implementation with other Town departments and partner agencies.
- Develop a partnership with the Shirley Heinze Land Trust and local schools to create educational programming for the nature preserve.
- Dedicate staff to establish and maintain volunteer programs, youth programs, and partnerships.
- Establish proactive and coordinated relationships with external agencies and organizations.
- Identify potential new partners and develop agreements and letters of understanding with partners as necessary.

### **Finance**

- Encourage joint ventures and partnerships with recreation program providers to provide new programs in the park.
- Communicate and facilitate permitting with appropriate jurisdictional agencies.
- Coordinate construction with public relations, operations, and promotional activities.
- Continue to actively pursue grants, donations, and other funding sources for capital improvements, maintenance, and park programs.
- Leverage financial resources by coordinating funding with other agencies and grant programs.
- Identify and pursue potential sponsorship opportunities including environmental signage, park benches, natural areas, landscape volunteer programs, and educational programs.

- Leverage mitigation opportunities through maintenance of existing wetlands.

### **Public Relations**

- Regularly communicate with the public regarding planned improvements and construction activities.
- Design and create promotional materials that increase the visibility of Teibel Nature Preserve.
- Celebrate all aspects of the park's construction including groundbreaking ceremonies and grand opening events.
- Educate the public and staff about the benefits of environmental conservation and publicize successes.
- Encourage neighborhood involvement through a watch group.

### **Operations, Maintenance, and Management**

- Coordinate with the Schererville Police Department to provide routine patrols of the park.
- Provide walks that are accessible to police and maintenance vehicles.
- Develop and implement a maintenance plan for short term and long term maintenance of the park.
- Invest in training for staff to understand maintenance standards, performance measures and tracking, lifecycle maintenance, volunteer management, and how to track cost of service for all tasks and services provided.
- Coordinate between the Army Corps of Engineers, Lake County Surveyors Office, Lake County Parks Department, Indiana Department of Natural Resources, and the Schererville Parks Department on the maintenance of the park.
- Create a volunteer policy to recruit, retain, and recognize volunteers who can support the park maintenance efforts.
- Review and amend current park rules and regulations to allow new recreational opportunities recommended as part of this master plan.

## PERMITS / PERMISSIONS REQUIRED

The following permits and approvals are required to be secured prior to implementation of the Teibel Nature Preserve's proposed improvements.

### **Town of Schererville**

- Apply for a construction permit through the Planning and Building Administrator for park and recreation improvements.

### **The US Army Corps of Engineers (ACOE)**

- Section 404 – Wetlands / Waters of the United States
  - Activities within wetlands / waters of the United States will require a Section 404 permit. A wetland delineation is required to determine those affected areas.
  - Wetland delineation is active for 5 years from the time of ACOE verification.
  - It is recommended to permit all park improvements and wetland impacts at one time, but ACOE may require additional wetland delineations if the improvements are constructed in phases spanning more than 5 years.

### **Lake County Drainage Board**

- Apply for a permit allowing bank stabilization and dredging of the Dyer Ditch and Schererville Ditch and for encroachment on the easements with the trail and other improvements. An At-Risk Agreement will need to be prepared and signed by the Lake County Surveyor and Schererville Park Board specifying requirements on the maintenance of the ditches and their easements.

### **Indiana Department of Environmental Management (IDEM)**

- Open Burning – Prescribed Vegetative Burn
  - Request for Variance from 326 IAC 4-1 - State Form 50864: This is an application for prescribed vegetation open burning approval to comply with 326 IAC 4-1. This form can be printed and or submitted electronically to the Office of Air Quality, Air Compliance Branch.
- Section 401 of the Clean Water Act – Water Quality Certification
  - A Section 401 Water Quality Certification will be required if the project impacts to a wetland, stream, river, or lake. Impacts due to parking lot, path and / or trail construction through a wetland in the park may trigger this requirement. A detailed wetland inventory should be conducted to determine the project's impacts to wetlands.

### **EJ&E Railroad**

- Apply for approval of trail within the easement. Coordinate to prepare a written understanding of maintenance operations.

### **Pipeline Easements (Natural Gas Pipeline Gas Company of America, Buckeye, Enterprise Products Operating LLC, Marathon)**

- Apply for approval of trail and other improvements within the utility easements. Coordinate to prepare a written understanding of maintenance operations.

## MARKETING AND PROMOTIONAL OPPORTUNITIES

It's important for communities to market and promote new improvements to their residents and surrounding municipalities. The following is a preliminary list of marketing and promotion opportunities for the Teibel Nature Preserve site.

- Involve local schools for hands-on outdoor education and science labs.
- Engage Boys and Girl Scouts for camping and outdoor education.
- Utilize the park as a trailhead to the Pennsy Greenway.
- Publicize the park through the Town's website, sign, and newsletter.
- Publicize the groundbreaking and opening of the park.
- Market the Schererville Parks and Recreation Department's new recreational opportunities of bird watching, fishing, cross country skiing, snowshoeing, etc.
- Garner public support by continual implementation of the proposed improvements in phases.
- Establish proactive and coordinated relationships with external agencies and organizations.



Publicize the opening of the Teibel Nature Preserve



Engage Girl Scouts for outdoor education

## IMPLEMENTATION STRATEGY

The realization of the goals and objectives outlined by the Town of Schererville, the Schererville Parks and Recreation Department and the numerous stakeholders involved in this project will require a Phased Implementation Strategy. Balancing short (1-7 years) and long (8-20 years) term capital improvements and environmental management needs was the priority during the development of this strategy. Even though the complete development is long term, this balance will create a sense of place and establish a community amenity within the short term that significantly and positively impacts the quality of life for residents throughout the community.

The Implementation Strategy develops six different phases for both the capital improvements and the environmental management. This will accommodate enhancement and development of the park as funding and community interest allows. Because project funding is a particularly sensitive and difficult subject, a funding strategy has been outlined to assist current and future community leaders plan for the development of this project. Budgetary figures are based on 2012 construction costs and should be used for planning purposes only. Budgets should be refined as each project phase progresses.

### **Funding Strategy**

As discussed earlier in the Operational Recommendations, the financial and funding strategy is critical to the overall implementation of the master plan. In conjunction with the items previous discussed, potential funding strategies are identified below:

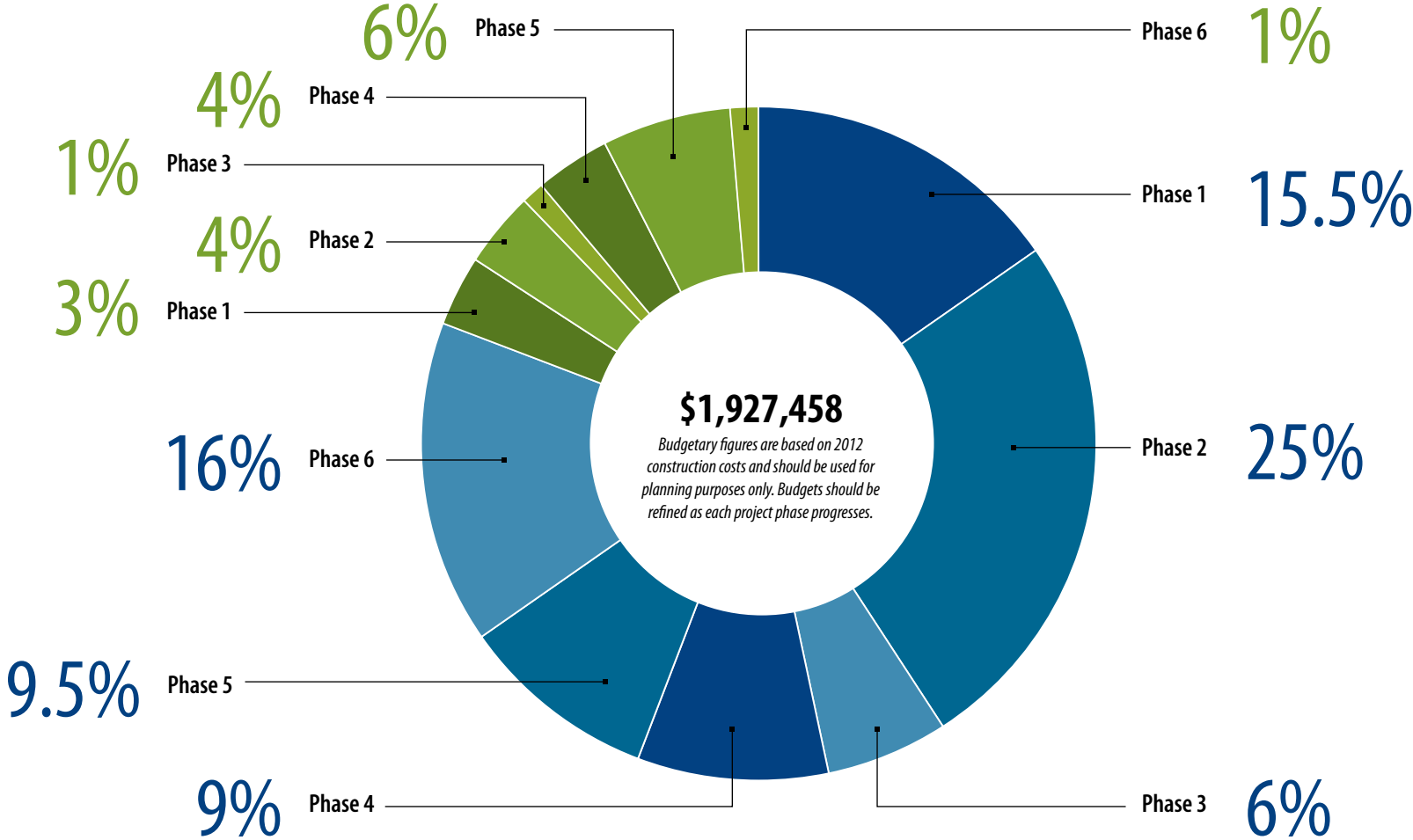
- **Municipal Funding:** The Town of Schererville may decide to self-fund the development of this park. This may be done in a series of substantial initiatives, or over a period of years, which is the most likely scenario.

- **Federal Funding:** The confluence of natural, historic, and community resources positions Schererville for various federal programs that may be interested in supporting this project. The U.S. Army Corps of Engineers, for instance, has programs that target the restoration of riparian corridors in the Great Lakes region.
- **Grant Funding:** Any strategy selected should include an aggressive grant writing campaign. The redevelopment and enhancement outlined in this document is well-positioned for a variety of funding sources. Many near term grant opportunities have been included in the Funding Matrix in Appendix A.
- **Philanthropic Funding:** Philanthropists who wish to leave a legacy have often been sought after to finance substantial community projects. In many cases, these individuals, groups, or corporate foundations have funded quite impressive projects and should be considered a resource.

More than likely, a combination of these funding sources will be necessary to realize the vision and potential for the Teibel Nature Preserve. Being creative, deliberate, and disciplined is the key to capitalizing on these opportunities. Leveraging spending with grant opportunities, and maintaining the vision through periodic public meetings and regular success, no matter how small, will help to cultivate project momentum.

# COST SUMMARY

Understanding costs determines the ability to successfully implement and manage Teibel Nature Preserve. The graphic below represents the financial allocation for capital construction, blue colors, and environmental management, green colors, by summarizing the six phases of each identified in this master plan.



**Short Term Improvements**  
1-7 years

**Phase 1**

- Mown Trail
- Parking
- Gateway Sign
- Boardwalks
- Bridge
- Portable Restrooms with Screen Fence
- Split Rail Fence with No Access Sign
- No Parking Sign
- Landscape Buffer

*Approximate Cost: \$296,950*

**Phase 2**

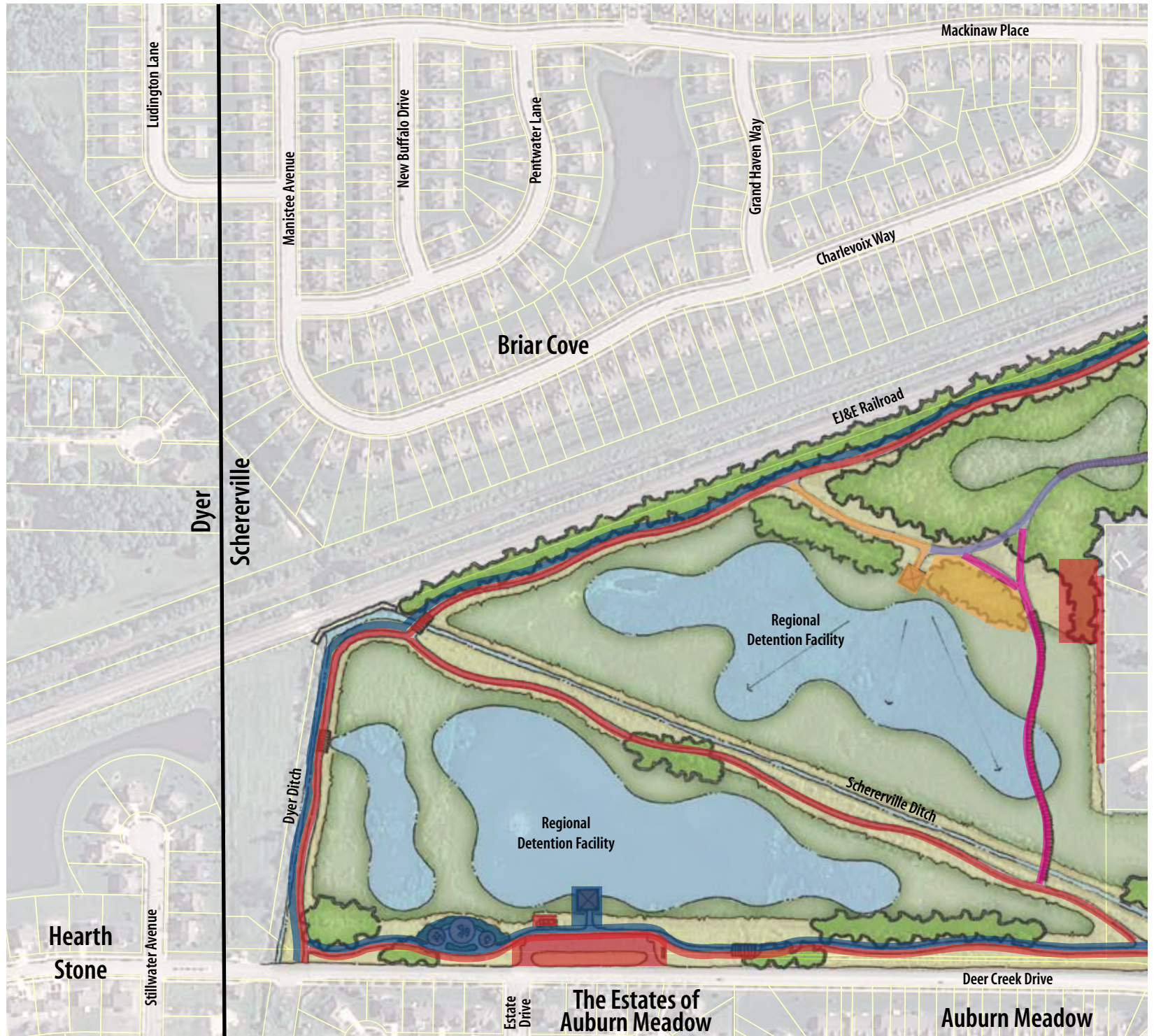
- Gravel Trail
- Playground
- Overlook with Shelter
- Interpretive Sign

*Approximate Cost: \$487,735*

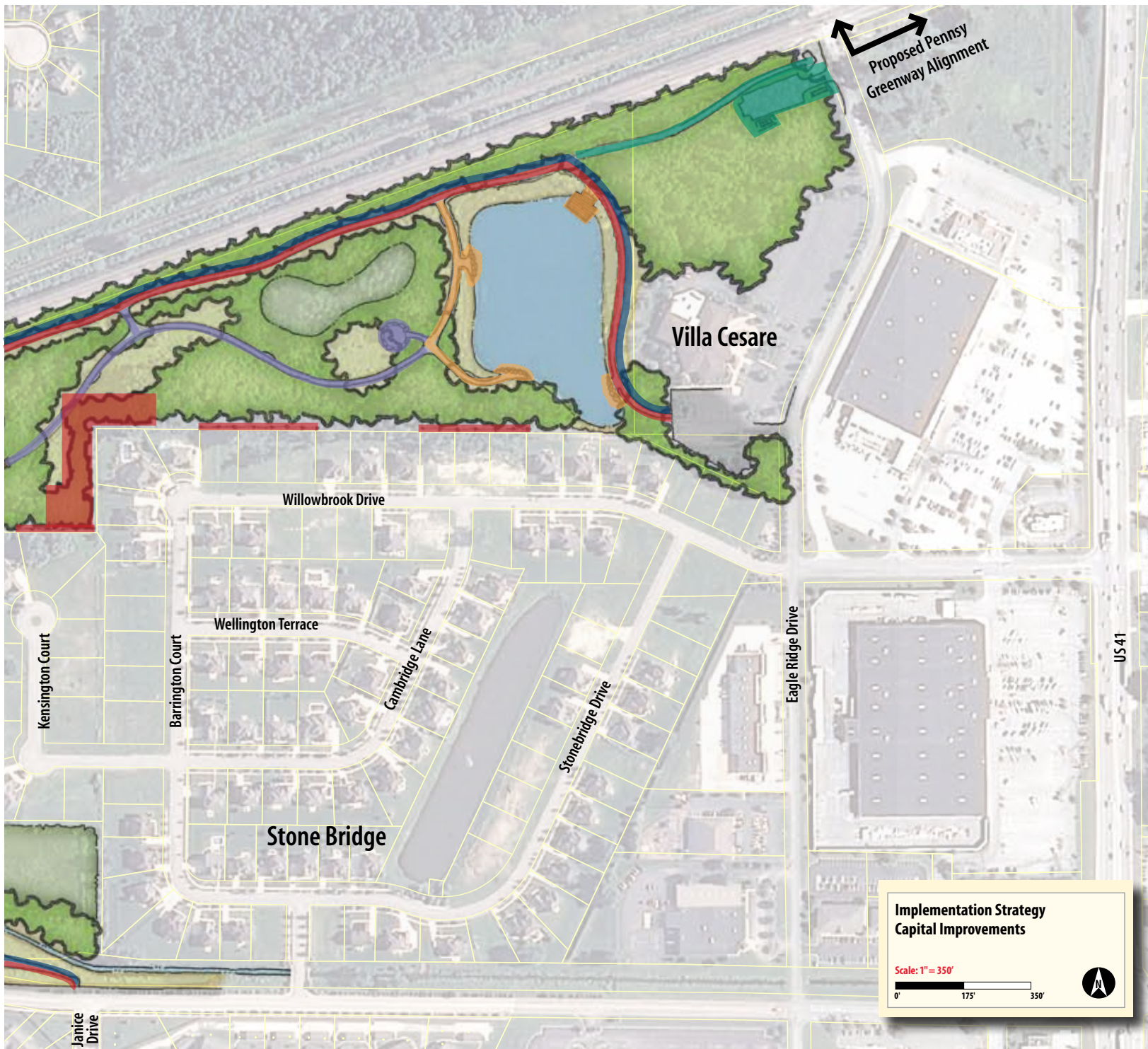
**Phase 3**

- Improvements to be coordinated with the Pennsy Greenway
- Gravel Trail
  - Parking
  - Gateway Sign
  - Portable Restrooms with Screen Fence

*Approximate Cost: \$114,087*







**Long Term Improvements**  
8-20 years

**Phase 4**

- Mown Trail
- Mulch Trail
- Observation Deck
- Pier
- Fishing Station
- Boat Launch
- Interpretive Signs

*Approximate Cost: \$174,919*

**Phase 5**

- Mulch Trail
- Council Ring
- Interpretive Signs

*Approximate Cost: \$182,680*

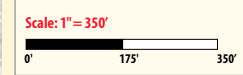
**Phase 6**

- Mown Trail
- Mulch Trail
- Boardwalk

*Approximate Cost: \$301,217*

**Total Capital Improvements:**  
*\$1,557,588*

**Implementation Strategy  
Capital Improvements**



*Budgetary figures are based on 2012 construction costs and should be used for planning purposes only. Budgets should be refined as each project phase progresses.*

**Short Term Improvements**  
1-7 years

**Phase 1**

- Stabilize Schererville Ditch banks at current condition
- Brush mowing

*Approximate Cost: \$62,105*

**Phase 2**

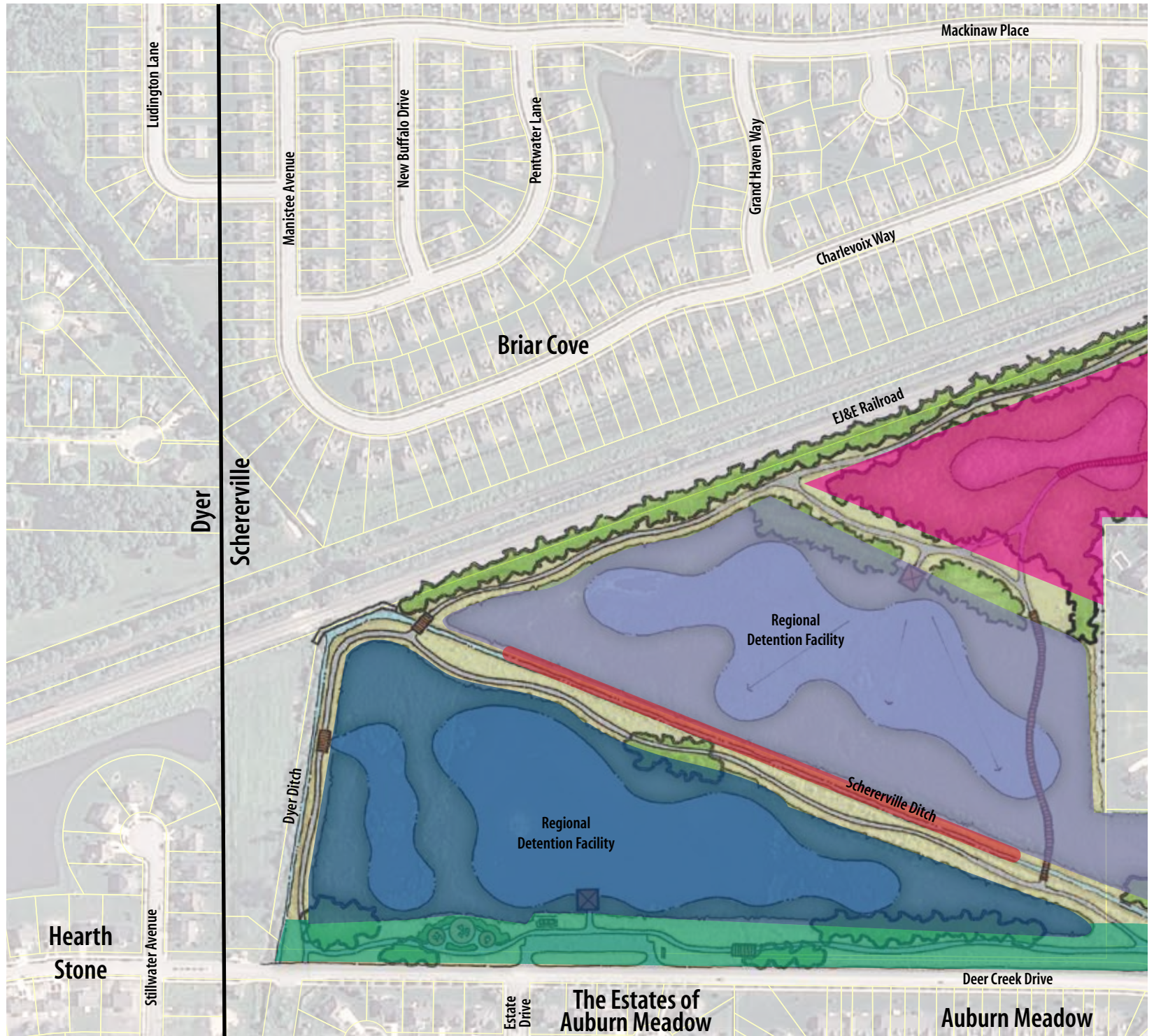
- Remove invasive species, revegetate, and prepare a management plan for on-going maintenance

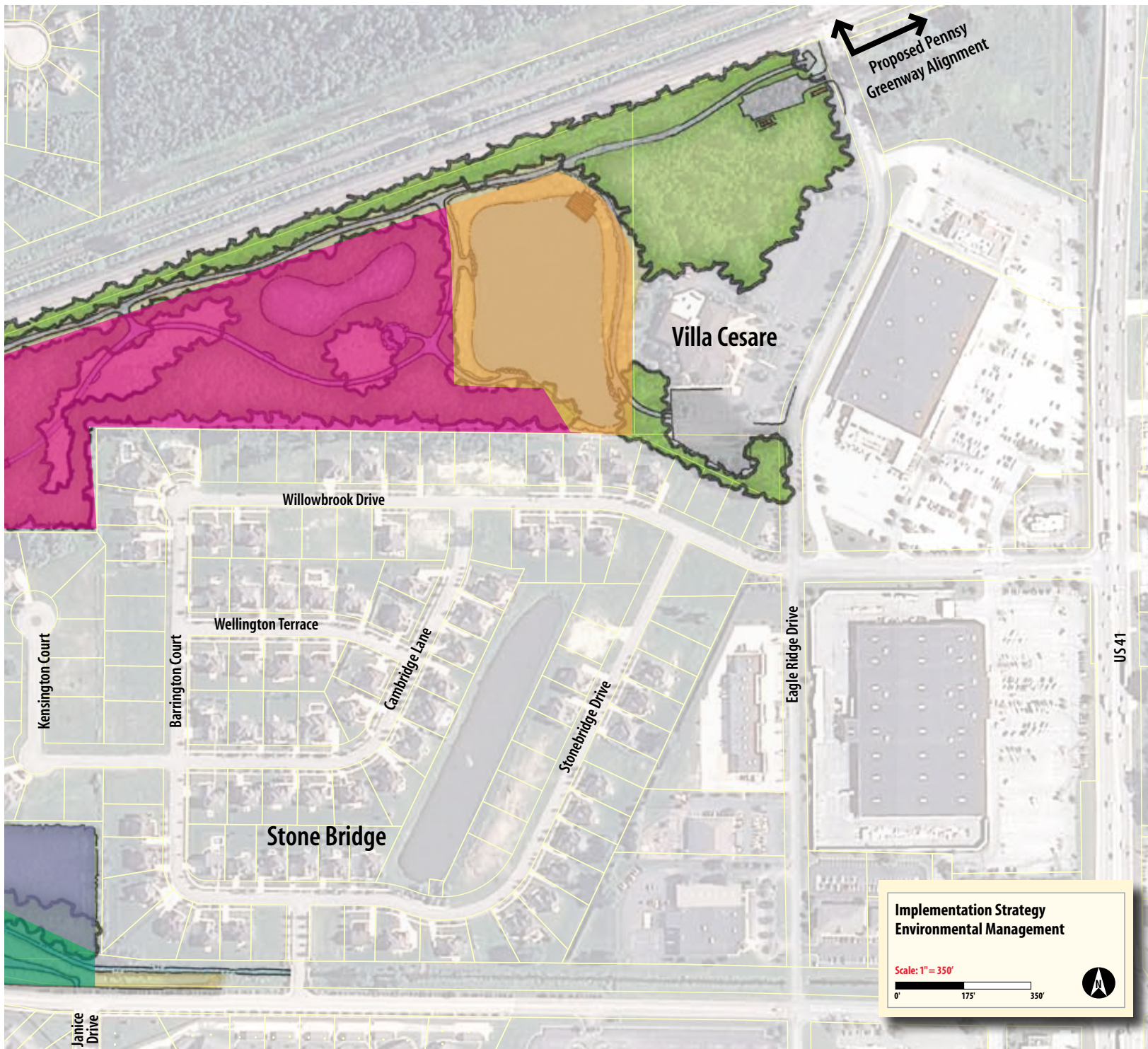
*Approximate Cost: \$74,526*

**Phase 3**

- Remove invasive species, revegetate, and prepare a management plan for on-going maintenance

*Approximate Cost: \$16,561*





**Long Term Improvements**  
8-20 years

**Phase 4**

Remove invasive species, revegetate, and prepare a management plan for on-going maintenance

*Approximate Cost: \$74,526*

**Phase 5**

Remove invasive species, revegetate, and prepare a management plan for on-going maintenance

*Approximate Cost: \$117,310*

**Phase 6**

Remove invasive species, revegetate, and prepare a management plan for on-going maintenance

*Approximate Cost: \$24,842*

**Total Environmental Management Improvements:**  
*\$369,870*

*Budgetary figures are based on 2012 construction costs and should be used for planning purposes only. Budgets should be refined as each project phase progresses.*



# **APPENDIX A**

## ***FUNDING MATRIX***

## APPENDIX A FUNDING MATRIX

This list is intended to provide a number of available resources to fund portions of the Teibel Nature Preserve as the project progresses toward and into implementation. Because grant funding is dynamic and funders have variable resources, we recommend this list be updated regularly.

Funding Source	Grant	Funding Amount	Description
EPA	<b>Advancing Public Health Protection Through Water Infrastructure Sustainability</b>	\$300,000 to \$600,000	Can be used for improvements, mapping, and some planning.
ACOE	<b>Aquatic Ecosystem Restoration-Section 206 (WRDA)</b>	Varies Limited to 10% of total project cost	Purpose is to fund projects that restore the structure, function, and dynamics of degraded ecosystems.
NOAA	<b>Coastal and Marine Habitat Restoration Projects Funding</b>	Up to \$1,000,000	Can be used for park improvements, habitat corridors, redevelopment of blighted areas into habitat/park.
INDOT / NIRPC	<b>Congestion Mitigation &amp; Air Quality Program</b>	Varies	Purpose is to fund projects that aid in improving air quality in regions that qualify, such as Northwest Indiana. NIRPC accepts applications from eligible agencies in Lake, Porter, and LaPorte Counties for funding consideration. Call-for-projects occur every two years. Off-road trails are eligible projects under CMAQ.
US Fish & Wildlife Services	<b>Cooperative Conservation Initiative</b>	Varies	Purpose is to restore natural resources and establish or expand wildlife habitat
Department of the Interior / Fish and Wildlife Service	<b>Fish &amp; Wildlife Management Assistance</b>	Varies	Provides technical information and assistance to restore, manage, and conserve the health of nationally significant fish, marine mammals, wildfire, other aquatic animals, and their habitats. For the restoration of degraded habitats, open up fish passages, remove invasive species, and planting native vegetation.

Funding Source	Grant	Funding Amount	Description
NOAA	<b>Fisheries Habitat Restoration / Community Based Program</b>	Varies	Provides funds for small-scale, locally driven habitat restoration projects that foster natural resource stewardship within communities and build partnerships aimed at restoring anadromous fish, marine and estuarine habitat, as well as promote community involvement and an overall conservation-stewardship ethic.
US EPA	<b>Five Star Restoration Program</b>	\$5,000 to \$20,000	The Five Star Restoration Program brings together students, conservation corps, other youth groups, citizen groups, corporations, landowners and government agencies to provide environmental education and training through projects that restore wetlands and streams.
GDDF	<b>Gaylord and Dorothy Donnelley Foundation</b>	Varies	We foster the conservation and stewardship of natural land, providing current and future generations a link with their heritage.
Council of Lake Committees	<b>Great Lakes Fishery and Ecosystem Restoration</b>	Varies	Shoreline enhancement and restoration/creation of wetlands.
EPA	<b>Great Lakes Restoration Initiative</b>	Varies Significant over a period of years. \$475 million total to start	Brownfield remediation, water quality improvements, green infrastructure.

Funding Source	Grant	Funding Amount	Description
NOAA	<b>Great Lakes Watershed Restoration Grants</b>	\$35,000 to \$1,000,000	Shoreline restoration, watershed restoration projects, green infrastructure that addresses water quality.
Eastman Kodak, The Conservation Fund, and the National Geographic Society	<b>Kodak American Greenways Grant</b>	Varies	Small grants to stimulate the planning and design of greenways in communities throughout America.
IDNR	<b>Lake Michigan Coastal Program</b>	Varies	For projects to protect and restore natural, cultural, and historic resources in Indiana's Lake Michigan coastal region. Comprised of two components: (1) Large Scale Grant Program; and (2) Small Scale Grant Program. Projects are required to be located in the proposed Lake Michigan Coastal Program Area, which consists of the watershed area draining into Indiana's portion of Lake Michigan.
Legacy Foundation	<b>Lake County Community Fund</b>	\$1,000 to \$25,000	This fund was established to be responsive to needs throughout Lake County and is dedicated to worthwhile community projects in the areas of environment, health, and education.
IDNR	<b>Land and Water Conservation Fund</b>	\$10,000 to \$200,000	Applications may consist of land acquisition and/or outdoor recreation facility construction or renovation. Park Boards with a 5-Year Park and Recreation Master Plan are eligible.
US Fish and Wildlife Service	<b>Migratory Bird Management</b>	Varies	For projects that aim to restore habitat where bird populations are declining, on-the-ground activities to conserve migratory bird and other wildlife habitats, supporting regional-scale biological planning, project implementation, and evaluation.



Funding Source	Grant	Funding Amount	Description
US Fish and Wildlife Service	<b>National Fish &amp; Wildlife Foundation General Matching Grant Program</b>	Varies	To foster cooperative partnerships to restore and maintain proper function to watersheds and landscapes.
National Fish and Wildlife Foundation	<b>Native Plant Conservation Initiative</b>	Varies	A strong preference is given for “on-the-ground” projects that involve local communities and citizen volunteers in the restoration of native plant communities. Funds cannot be used for direct land acquisition costs or political advocacy.
Nisource	<b>Nisource Foundation</b>	Up to \$50,000	The Foundation seeks opportunities to provide funding and encourage volunteer support for non-profit organizations in the areas of: Community Vitality and Development, Environmental and Energy Sustainability, Learning and Science Education, and Public Safety and Human Services.
US Fish and Wildlife Service	<b>North American Wetlands Conservation Grant Programs</b>	Varies	Encourages voluntary public-private partnerships to conserve North American wetlands ecosystems for migratory birds and other wildlife. For the acquisition, restoration, and enhancement of wetlands and associated uplands habitat.
IDNR	<b>Recreational Trails Program</b>	\$10,000 to \$150,000	Public entities are eligible for land acquisition and/or development, maintenance, and ethics education of multi-use trails.

Funding Source	Grant	Funding Amount	Description
US EPA	<b>Regional Geographic Initiative</b>	Varies	Supports innovative, geographically-based environmental projects that protect children’s health, restore watersheds, provide for clean air, prevent pollution, and foster environmental stewardship.
IDEM	<b>Section 319 Implementation</b>	Varies	Funding available for various implementation projects related to an approved Watershed Management Plan.
INDOT / NIRPC	<b>Surface Transportation Program</b>	Varies	Provides flexible funding that may be used by states and localities for projects on any Federal-aid highway. NIRPC dedicates 3-5% of its portion to non-motorized projects such as off-road trails. Call-for-projects occur every two years.
National Fish and Wildlife Foundation, ArcelorMittal, US EPA	<b>Sustain Our Great Lakes</b>	\$25,000 to \$1,500,000	<p>A bi-national grants program focused on restoring the chemical, biological and physical integrity of the Great Lakes ecosystem.</p> <ol style="list-style-type: none"> <li>1. Community Grants Program – Supports habitat restoration and enhancement projects that simultaneously: 1) improve local habitat conditions; and 2) build local conservation capacity. Grant awards range from \$25,000 to \$150,000.</li> <li>2. Stewardship Grants Program – Supports large-scale habitat restoration and enhancement projects that will have enduring and significant positive impacts on the ecological condition of the Great Lakes basin. Grant awards range from \$150,000 to \$1,500,000</li> </ol>

Funding Source	Grant	Funding Amount	Description
The Conservation Fund	<b>The Conservation Fund Great Lakes Fund</b>	Varies	Provides technical assistance and bridge financing to nonprofit land trusts working to preserve resources within the Great Lakes Basin. Short-term loans are made to public agencies and nonprofit land trusts for the conservation of coastal and freshwater sites of high ecological significance.
INDOT/NIRPC	<b>Transportation Enhancement Program</b>	Varies	Offers funding opportunities to help expand transportation choices and to enhance the transportation experience through 12 eligible activities related to surface transportation including pedestrian and bicycle infrastructure and safety programs, scenic and historic highway programs, landscaping and scenic beautification, historic preservation, and environmental mitigation. NIRPC has yearly call-for-projects and ranks eligible applications for INDOT's final approval. Single largest grant-aid program for off-road trail development in Northwest Indiana.
UTC Building Sustainable Cities	<b>United Technologies Corporation</b>	Varies	The UTC Building Sustainable Cities initiative promotes environmental responsibility through sustainable building practices in urban areas. We initiate and participate in programs designed to educate on the need for more sustainable building practices and encourage the growth of urban green spaces.
US Fish and Wildlife	<b>Urban Treaty for Migratory Bird Conservation</b>	Varies	Purpose is to support a partnership agreement between the Service and a U.S. city to help conserve birds

Funding Source	Grant	Funding Amount	Description
US EPA	<b>Wetland Program Development</b>	Varies	To achieve no-net-loss and net-gain of wetlands in the US by conserving and restoring wetland health through the development of effective and comprehensive wetland protection and management programs. Provides the opportunity to build restoration programs, train staff, and prioritize restoration work.

# **APPENDIX B**

## ***ECOLOGICAL ASSESSMENT REPORT***

## APPENDIX B

### ECOLOGICAL ASSESSMENT REPORT

*Prepared by Cardno JFNew  
September 17, 2011*

#### **Introduction**

Cardno JFNew completed an ecological assessment at the Teibel Nature Preserve property in Schererville, Lake County, Indiana (Figure 1). A field investigation was conducted on June 30, 2011 to map the ecological communities within the proposed project area, to assess and map invasive species, to conduct a botanical and wildlife inventory, to note the location of endangered, threatened, and rare (ETR) species, and to compile notes regarding potential habitat management options for the site.

#### **Methodology**

A total of 16 person-hours were spent investigating the site on June 30, 2011. Additional time was spent in the office identifying unknown plant species. The on-site investigation was conducted using meander surveys. Vascular plants observed were recorded for each plant community. Wildlife observations were recorded during the meander survey. All species of conservation concern (Endangered, Threatened, and Rare plant species and Endangered and Special Concern animal species) observed during the site investigation were mapped. The ecological communities that were observed on site were mapped, and the dominant species in each community were noted. Due to the timing of the study and budgetary constraints, plant and animal inventories and the survey for species of conservation concern should not be considered comprehensive.

Botanical nomenclature follows Swink and Wilhelm<sup>1</sup>; wildlife nomenclature follows NatureServe<sup>2</sup>.

#### **General Site Description and Ecological Community Types**

Indiana has been divided into different natural regions based on several environmental factors, including climate, soils, glacial history, topography, exposed bedrock, presettlement vegetation, species composition, physiography, and flora and fauna distribution<sup>3</sup>. Each

natural region has been further divided into sections. Teibel Nature Preserve is located within the area categorized as the Lake Michigan Natural Region; more specifically, the site is within the Chicago Lake Plain Section, which is characterized by ridge-and-swale and lacustrine plain topography on mostly sand substrates. The natural communities found most commonly in the Chicago Lake Plain Section include Marsh, Lake, Sand Savanna, Sand Prairie, and Swamp, while forests make up a less common portion of this section<sup>3</sup>. The ecological communities identified at the site represent different levels of degradation to the naturally occurring communities. Five communities were mapped at the site (Figure 2) and are described below.

#### **Aquatic Bed**

The Aquatic Bed community type was observed in deeper water areas within the Emergent Marsh community. These areas are located in the northeast corner of the site (in the northeast pond), and at three locations at the southwest corner of the site. Most of the vascular plant cover in this community consists of submerged or floating-leaved aquatic species. Dominant species include Hornwort (*Ceratophyllum demersum*), Small Duckweed (*Lemna minor*), Beginner's Pondweed (*Potamogeton crispus*), Leafy Pondweed (*Potamogeton foliosus*), and American Water Meal (*Wolffia columbiana*), with pockets at the west end of the southern basin dominated by Yellow Pond Lily (*Nuphar advena*). Of the vascular plants in this community type, all observed are native with the exception of Beginner's Pondweed. This community type is generally of moderate natural area quality.

The Aquatic Bed areas located in the wetland basins in the southwest corner of the site were created as part of a State and Federal required wetland mitigation project. A timeline for this project is included in the Emergent Marsh discussion below.

#### **Emergent Marsh**

The Emergent Marsh community type is located in a narrow perimeter around the Aquatic Bed in the northeast corner of the site and in the two wetland basins in the southwest corner of the site. All of these

locations have been created through excavation. This community type is characterized by the hydrologic regime of a naturally occurring Emergent Marsh, but the vegetation component shows evidence of severe degradation. Dominant vascular plant species in this community include Common Reed (*Phragmites australis*), Narrow-leaved Cattail (*Typha angustifolia*), and Hybrid Cattail (*Typha x glauca*). Purple Loosestrife (*Lythrum salicaria*) is also dominant in the Emergent Marsh fringe around the northeast pond. In general, the outer perimeters of the Emergent Marsh communities have the most vascular plant diversity, whereas the interiors, which make up most of the community, are dominated by these non-native species. A scrub / successional forest zone has begun to form around the perimeter of the two Emergent Marsh wetland basins in the southwest corner of the site. This area is dominated by young River Birch (*Betula nigra*), Gray Birch (*Betula populifolia*), Glossy Buckthorn (*Rhamnus frangula*) and willow (*Salix* spp.) trees and shrubs up to approximately 25 feet tall. Overall, although several conservative plants are present, because of the dominance by Common Reed and Cattail, the Emergent Marsh community type is of low natural area quality.

The two basins in the southwest corner of the site were created as a State and Federal required mitigation project (USACE #88-145-009-0E and #89-145-077-1; IDEM #1996-083-45-MTM-A). The mitigation wetlands were constructed by excavating upland agricultural fields and old-field scrub communities in 1998, and the mitigation wetland was monitored from 1999 through 2003. In 2004, The US Army Corps of Engineers officially released the site from further monitoring requirements.

#### ***Wet Prairie***

The Wet Prairie community type is located in a narrow perimeter around the Emergent Marsh in the northeast corner of the site and in the linear pipeline right-of-way along the northern site boundary. Levels of degradation within this community type vary, with less degraded areas around the northeast pond and in the eastern two-thirds of the linear right-of-way at the north end of the site and more

heavily degraded areas in the western two-thirds of the linear right-of-way at the north end of the site. In addition, several isolated patches of Common Reed are present within the eastern two-thirds of the right-of-way, and Glossy Buckthorn is dominant along the north edge of the right-of-way. In the less degraded areas, this community type is characterized by higher species richness and diversity than anywhere else on the site. The dominant vascular plant species include Winged Loosestrife (*Lythrum alatum*), Black-eyed Susan (*Rudbeckia hirta*), Red Bulrush (*Scirpus pendulus*), Chairmaker's Rush (*Scirpus pungens*), and Indian Grass (*Sorghastrum nutans*). Although the more heavily degraded portions of this community are of low natural area quality, the less degraded portions are of high natural area quality and are remnants of the Wet Prairie that likely dominated the area of the site prior to European settlement. We expect that the Wet Prairie is still in existence at the site, especially in the right-of-way, as a result of right-of-way maintenance activities. Without the required right-of-way clearing, we expect that this community would transition into the Successional Woods community.

#### ***Mesic Prairie***

The Mesic Prairie community type is located in a band through the middle of the site north of the southwest wetland basins, between the two southwest wetland basins, and in a narrow strip at the south end of the southwest portion of the site. This community type is present on the site mostly as a "restored" community, with seed having been introduced in an effort to create a native Mesic Prairie community. Along the southern boundary of the site and between the two southern wetland basins, this community type exists in a severely degraded state. To the north of the southern wetland basins, the Mesic Prairie appears more natural, with fewer invasive species present and more characteristic Mesic Prairie species present. Dominant species in the more intact Mesic Prairie areas include Redtop (*Agrostis alba*), Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Andropogon scoparius*), Kentucky Bluegrass (*Poa pratensis*), Indian Grass, and Common Spiderwort (*Tradescantia ohiensis*); in the more degraded areas, Kentucky Bluegrass, blackberry (*Rubus* sp.), and Tall Goldenrod

(*Solidago altissima*) are dominant. The invasive Ornamental Pear (*Pyrus calleryana*) is beginning to escape from plantings into the degraded Mesic Prairie at the southeast end of the site. Overall, the Mesic Prairie community ranges in natural area quality from low to moderate.

### ***Successional Woods***

The Successional Woods community occupies much of the eastern half of the site. Based on topography, scattered remnant plant species, and the adjacent plant communities, we expect that the Successional Woods was once Wet Prairie similar to that present in the right-of-way at the north end of the eastern two-thirds of the site. The dominant species in the Successional Woods are Eastern Cottonwood (*Populus deltoides*), and Glossy Buckthorn; Sensitive Fern (*Onoclea sensibilis*) is also dominant in scattered pockets. In openings within the Successional Woods, Tall Nettle (*Urtica procera*) and blackberry are dominant. This community type is of low natural area quality.

### ***Vascular Plant and Wildlife Inventories***

A total of 243 species of vascular plants were observed on the site, 184 (76%) of which are native to the Chicago Region (Appendix B-1). Vascular plant inventories for each of the communities referenced above, as well as for the site as a whole, are included in Appendix B-1. In addition, 30 species of birds, three amphibians, and seven insect species were observed during the site inspection (Appendix B-2).

Representative photographs of the site are located in Appendix B-3.

### ***Invasive Species***

An invasive species, for the purpose of this specification, is defined as a species not native to the local region, as defined in Plants of the Chicago Region<sup>1</sup> whose presence causes or is likely to cause ecological harm or degradation by overtaking native plant communities. Much of the site is dominated by invasive species including Purple Loosestrife, Reed Canary Grass (*Phalaris arundinacea*), Common Reed, Glossy Buckthorn, Narrow-leaved Cattail, and Hybrid Cattail (Figure 3). Purple Loosestrife is dominant along the eastern edge of the northeast pond.

A Reed Canary Grass Monoculture is present near the western end of the right-of-way at the north end of the site. Common Reed is dominant in pockets around the northeast pond, throughout the Emergent Wetland community in the two wetland basins in the southwest corner of the site, and in a few isolated pockets within the right-of-way at the north end of the site. Glossy Buckthorn is dominant in the understory of the Successional Woods community as well as along the north boundary of the site between the right-of-way and the railroad tracks. Cattails are dominant in pockets around the northeast pond as well as throughout most of the Emergent Marsh community in the two wetland basins in the southwest corner of the site. It should be noted that Purple Loosestrife biological control beetles (*Galerucella* sp.) were observed feeding on Purple Loosestrife on the east side of the northeast pond.

### ***Sensitive Areas and Species of Conservation Concern***

Because of the intact nature of portions of the Wet Prairie located in the right-of-way at the north end of the site and around the northeast pond, these areas are considered sensitive areas for the purposes of this project. Several species with high coefficient of conservatism (C) values were observed in this community. Swink and Wilhelm<sup>1</sup> assigned each native plant a C value from 0 to 10, which defines the ability of the species to withstand degradation. Plants with C values of 10 are typically the first to be lost from a site when the site begins to become degraded. Conversely, plants with C values of 0 can withstand a large amount of degradation. Examples of conservative species in the Wet Prairie include Wedge-fruited Oval Sedge (*Carex suberecta*, C=8), Golden-seeded Spikerush (*Eleocharis elliptica*, C=8), Short-fruited Rush (*Juncus brachycarpus*, C=9), Grass-leaved Rush (*Juncus marginatus*, C=9), Winged Loosestrife (*Lythrum alatum*, C=7), Prairie Sundrops (*Oenothera pilosella*, C=10), Smooth Woolly Panic Grass (*Panicum lindheimeri*, C=9), Hairy Beard Tongue (*Penstemon hirsutus*, C=9), Marsh Phlox (*Phlox glaberrima* var. *interior*, C=8), Slender Mountain Mint (*Pycnanthemum tenuifolium*, C=7), and Porcupine Grass (*Stipa spartea*, C=7).



No Federally listed plant or animal species were observed on the site. Naturally occurring populations of four species listed as Endangered, Threatened, or Rare in Indiana were observed. In addition, one State Endangered bird species was noted in several locations on the site. Locations of all Endangered, Threatened, and Rare plant and animal species found during the site inspection are shown in Figure 4. An obviously introduced population of another State Rare plant species and a population of a State Watch List plant species were also observed on the site but are not mapped.

Three populations of False Arrow Feather (*Aristida intermedia*, State Rare) were observed on the site. Two of these populations were observed in the Wet Prairie around the northeast pond, and one population was observed in disturbed sandy soil in the Mesic Prairie north of the east side of the wetland basins in the southwest corner of the site.

Two populations of Gray Birch (*Betula populifolia*, State Endangered) were observed on the site. One of these populations was observed at the edge of the Wet Prairie and Successional Woods communities near the middle of the north side of the site. The other population was observed along the north edge of the northern wetland basin in the southwest corner of the site.

One population of Hairy-leaved Lake Sedge (*Carex atherodes*, State Endangered) was observed on the site. This population was observed within an opening in the Successional Woods community, west of the northeast pond.

A single plant of Ragged Fringed Orchid (*Habenaria lacera*, State Watch List) was observed in the Successional Woods community west of the northeast pond.

One population of Lake Shore Rush (*Juncus balticus* var. *littoralis*, State Rare) was observed on the site. This population was observed in the Emergent Marsh on the east side of the northeast pond.

One small, introduced population of Ostrich Fern (*Matteuccia struthiopteris*, State Rare) was observed along the south edge of the northern wetland basin in the southwest corner of the site.

Marsh Wrens (*Cistothorus palustris*, State Endangered) were heard singing at five locations on the site. At each location, the Marsh Wrens were hidden within Cattails. Four of the locations were within the wetland basins in the southwest corner of the site, and one Marsh Wren was observed on the north side of the northeast pond.

#### ***Protection for Species of Conservation Concern***

In the State of Indiana, State Endangered, Threatened, and Rare plants do not have specific legal protection under state laws. Therefore, a property owner is under no legal obligation to protect state-listed plants, or to mitigate in the event that site development impacts state-listed plants. However, protection of Endangered, Threatened, and Rare plants may be required as part of other permits. For example, if a Section 404 Nationwide Permit or Regional General Permit is required for impacts to wetlands for this project, verification will be required from the Indiana Department of Natural Resources that if the populations of Endangered, Threatened, and Rare plants are impacted, no state laws will be violated.

Animals listed as endangered in the State of Indiana are protected from “take” by state statutes. “Take” is defined as: to harass, hunt, capture, or kill; or to attempt to harass, hunt, capture, or kill. Animals listed as special concern are not protected by state laws. The exception to this rule is that all birds, river otter, badger, bobcat, and box turtle are protected non-game species that may not be taken at anytime. Mitigation or relocation may be required if impacts will occur to state-listed animals.

#### ***Habitat Management Options***

The following options are offered regarding potential management of habitats at the site. Implementing these recommendations would directly improve the natural quality of the plant communities and

recreational activities at the site. An integrated management approach will be necessary to restore the biological and ecological integrity and significance of the wetland complex. Restoration services include the removal of exotic plants, native plant installation, maintenance services, prescribed burning and monitoring. Please note, prescribed burning will be extremely difficult due to the urban setting and the numerous pipelines that traverse the site.

In the Emergent Marsh community around the northeast pond, several native wetland species are present but are being overtaken by Common Reed and Cattails, as well as native woody species such as Eastern Cottonwood and willows. The wetland shelf surrounding the northeast pond has restoration potential; selectively controlling invasive and woody species would allow the native species already present to survive and spread. Biological control beetles appear to be naturally controlling Purple Loosestrife on the east side of the pond. Also, an overlook located on the east side of the pond would allow for increased wildlife viewing opportunities. Controlling Common Reed and Cattails in the wetland basins in the southwest corner of the site and getting native species established would be an immense task, but is an option for restoration. The population of Marsh Wrens within these basins should be considered before removing Cattail, which is currently providing their necessary habitat. Bank erosion is severe on the north side of the ditch between the two wetland basins in the southwest corner of the site, and restoration potential exists. In addition, a wildlife viewing platform could be constructed to overlook the southwest wetland basins as part of a trail system through the site. It should be noted that because the wetland basins in the southwest corner of the site were created as a Federal and State required mitigation project, the US Army Corps of Engineers and the Indiana Department of Environmental Management should be consulted prior to any restoration work in these basins.

The Wet Prairie community contains the area with the highest natural area quality, but portions of this community are degraded. Specifically, the western portion of the right-of-way is dominated by weedy

species including Reed Canary Grass, pockets of Common Reed are present along the right-of-way, and Glossy Buckthorn is present along the north edge of the Wet Prairie. Management options focus around preserving the intact portions of the Wet Prairie and selectively controlling Common Reed, Reed Canary Grass, and Glossy Buckthorn. This work would need to be coordinated with the utility right-of-way company (Buckeye Pipeline). Because the intact Wet Prairie is a sensitive area, we recommend that no trails run through this area.

We suspect that the Successional Woods community was once Wet Prairie similar to that in the right-of-way that has become overgrown with woody species. This growth of woody species has likely altered hydrology in this area in two ways: 1) through increased evapotranspiration by the woody species, and 2) through increased organic matter accumulation. Removal of trees and shrubs in this area may increase water levels through this area, but we expect that a more natural native Wet Prairie would be obtained by removing the organic matter that has accumulated and excavating to at or near the water table level. We recommend that soil borings be examined to determine the elevation of the native soil. This would be a substantial restoration project, and the benefits would need to be balanced against removing habitat for migratory bird species. Conversely, no restoration action could be conducted in this area, but a trail system could be developed throughout the Successional Woods community.

#### ***Conservation Targets***

The project goal is to reduce the presence of exotic, invasive and undesirable plant species within the project area in order to improve overall site biodiversity, wetland structure and habitat quality.

Objectives:

- Reduce cover and stem density of exotic, invasive and undesirable nonnative or invasive woody plant species within the project area and surrounding properties
- Remove non-native invasive herbaceous plants
- Control resprouts of targeted species
- Establish long-term ecological management program

### ***Woody Control Performance Standards***

The objective is to cut and treat 100% of targeted stems larger than 3/8" diameter at base. Performance standard shall equal 90% reduction of existing stem densities for target species. At no time during post-construction evaluation shall target species and resprouts exceed 10% of total stem density in any 10x10 meter-square plot. New seedlings will not be included in final monitoring.

Performance will be evaluated based upon percent cover in any given 10 meter square area. Upon completion of the initial woody clearing, the Owner, Architect, and Construction Manager will perform a site evaluation with the contractor representative to determine whether the performance standards have been met. A second evaluation will be performed after the spring follow-up application has been performed.

### ***Target Herbaceous Species Performance Standards***

The objective is to treat 100% of exotic species. The intent of the project is to have 95% of the project area cleared of exotic species. At the successful completion of the project, target species, exotic species and re-sprout cover shall not exceed 5% of total cover in any 10x10 meter-square plot. New seedlings will not be included in final monitoring.

In addition, native plant cover and wildlife habitat structure throughout the site could be enhanced to restore a fully functioning wetland system and to ensure ecosystem resiliency. Enhancement activities may include, but are not limited to prescribed burning (difficult as it may be), re-seeding with native species, and installation of native plant plugs.

### ***Integrated Management Techniques***

Control methods will be limited to mechanical clearing in select areas and foliar applications in addition to hand clearing in and around sensitive locations. In order to minimize collateral damage and compaction from the use of clearing equipment, the primary

treatment method shall focus mostly on the removal of target species via cut stump and girdling methods. Follow up and herbaceous species treatment shall be performed through wicker applications and selective spot-spraying.

### **Removal Specifications (sample)**

#### **A. Control Methods**

1. Foliar Application for herbaceous plants
  - a. Glyphosate products for cut-stump application
    - 50% - 100% solution of Razor or approved equal in upland areas and AquaNeat® aquatic herbicide, or approved equal in wet areas
    - 5% Non-ionic surfactant such as Invade 90 or approved equal
    - 0.5% Tracer dye such as Trail Lite 264 or approved equal
  - b. Garlon® 3A for foliar applications for upland applications of broadleaf weeds
    - 5% solution of Garlon® 3A or approved equal
    - 5% Non-ionic surfactant such as Invade 90 or approved equal
    - 0.5% Tracer dye such as Trail Lite 264 or approved equal
2. Cut-stump
  - a. All trees and shrubs smaller than 18" DBH shall be cut to a height no greater than 2" whenever possible. Stumps should be parallel to the ground surface to minimize puncturing and tripping hazards.
  - b. Stumps shall be treated with a 50-75% solution of Razor herbicide (or approved equal). Treatment must occur within 30 minutes of cutting in order to maximize the effectiveness of the application.
  - c. Do not apply herbicides when temperatures drop below 20 degrees Fahrenheit.
  - d. Debris and felled shall be chipped, burn or removed from

the site.

3. Girdling

- a. For use on trees larger than 18" DBH unless otherwise specified.
- b. Girdles may be cut into the trees with the use of hand axe or chainsaw. Cuts must cut through the bark and cambium of the tree, but should not be so deep as to cause the tree to fall. Keep all girdles within 24" of the ground surface.
- c. Within 30 minutes of cutting, apply a 75% solution of Razor (or equivalent) herbicide to the girdle through the use of a squirt bottle.
- d. Should a tree fall over during the girdling process, re-cut the stump and treat via the cut-stump method.

4. Mowing

- a. The use of a mechanical mower is permitted where appropriate on site and where damage from rutting and compaction can be limited.
- b. Tracked forestry mowers will be allowed in areas as indicated on the plans. Such mowers are to avoid environmentally sensitive areas.

B. Debris Removal

1. All cut material will be hauled to and chipped at the designated areas on site. These areas are indicated on the attached site map. The chips will remain on site for future use on park trails.
2. Debris areas such as wood chip piles or brush piles must be pre-approved by Town of Schererville. Chipped material must be evenly distributed throughout site with no chip piles greater than 1-½ inches in depth allowed.

C. Follow-up Herbicide Applications

1. After the initial clearing is completed, follow-up herbicide applications shall be performed to treat any re-sprouting of target trees and shrubs as well as any exotic herbaceous species that were dormant during the woody clearing.
2. Treatment of any woody re-sprouts will begin May 15th or

when re-sprouts reach a height of 12 inches.

3. Woody resprouts shall be treated via wicking application of a 15% solution of Garlon® 3A or equivalent. Wicking shall be performed by hand.
4. Posting of herbicide application signs and education signage during restoration applications is recommended.

A trail system could be constructed throughout the site to increase recreational use of the property. We recommend that this trail system avoid sensitive areas and species of conservation concern, and that several overlooks and wildlife viewing platforms, as well as educational kiosks, be incorporated into this trail system. Ideally, the trail system would traverse the Mesic Prairie and Successional Woods communities, avoiding the intact portions of the Wet Prairie.

**Summary**

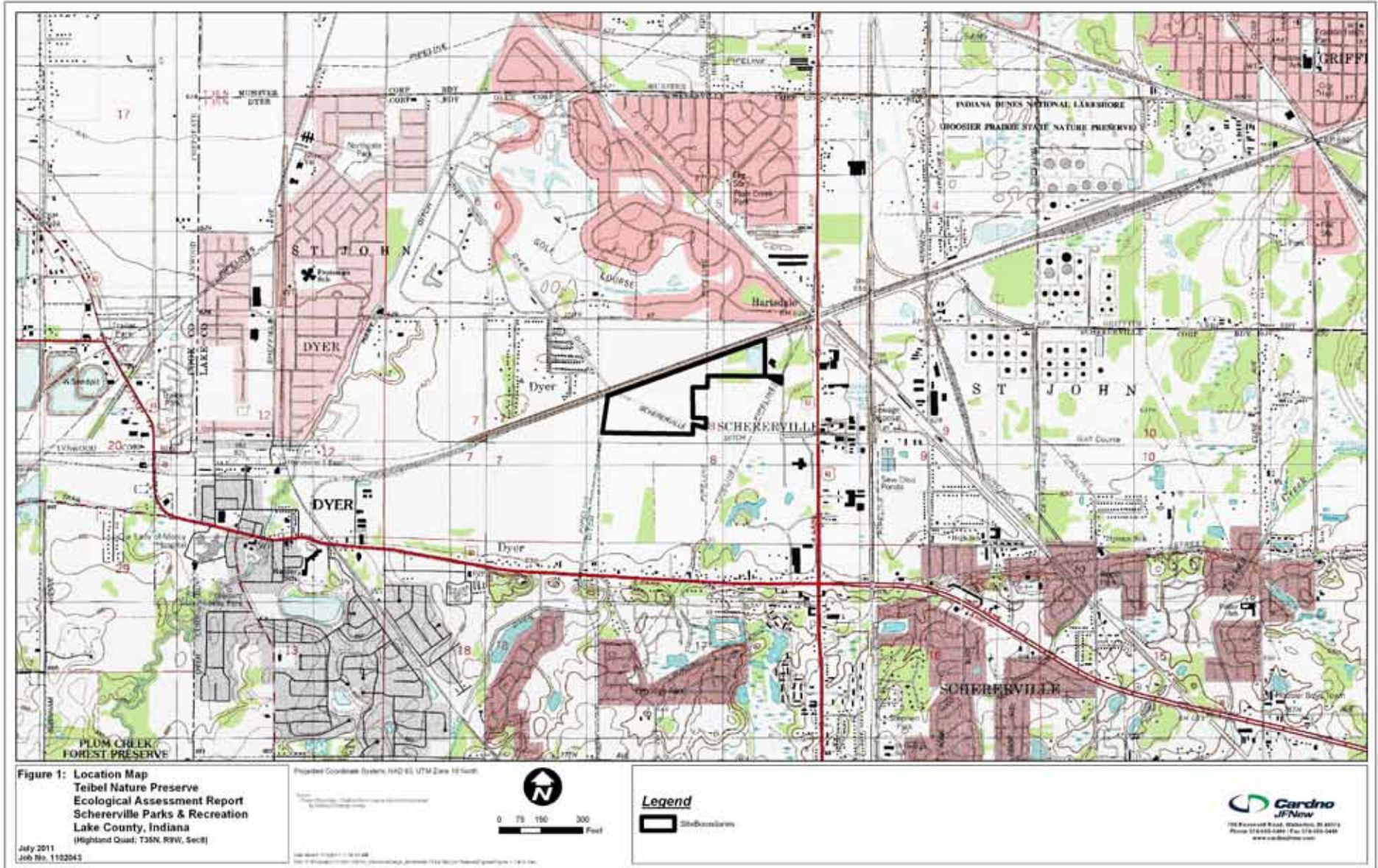
The Teibel Nature Preserve site was inspected on June 30, 2011. Five ecological communities were mapped on the site, ranging in natural area quality from low to high. The eastern two-thirds of the Wet Prairie community is the most ecologically intact, whereas much of the rest of the site was heavily degraded.

Populations of four naturally-occurring State Endangered, Threatened, and Rare plant species (False Arrow Feather, Gray Birch, Hairy-leaved Lake Sedge, and Lake Shore Rush) were observed during the site investigation. In addition, one state-listed animal species (Marsh Wren) was observed. It should be noted that the site investigation was not an exhaustive survey for ETR species.

Potential options for improvement of the site in terms of native plant communities include removal of non-native invasive plant species and maintenance of intact portions of the sensitive areas. In addition, a trail system with overlooks and wildlife viewing platforms would increase recreational opportunities at the site.

- <sup>1</sup> Swink, Floyd and Gerould Wilhelm. 1994. *Plants of the Chicago Region*. 4th edition. Indianapolis: Indiana Academy of Science.
- <sup>2</sup> NatureServe. [www.natureserve.org](http://www.natureserve.org). Accessed July 2011.
- <sup>3</sup> Homoya, Michael A., D. Brian Abrell, James R. Aldrich, and Thomas W. Post. *The Natural Regions of Indiana*. Indiana Academy of Science. Vol. 94 (1985).

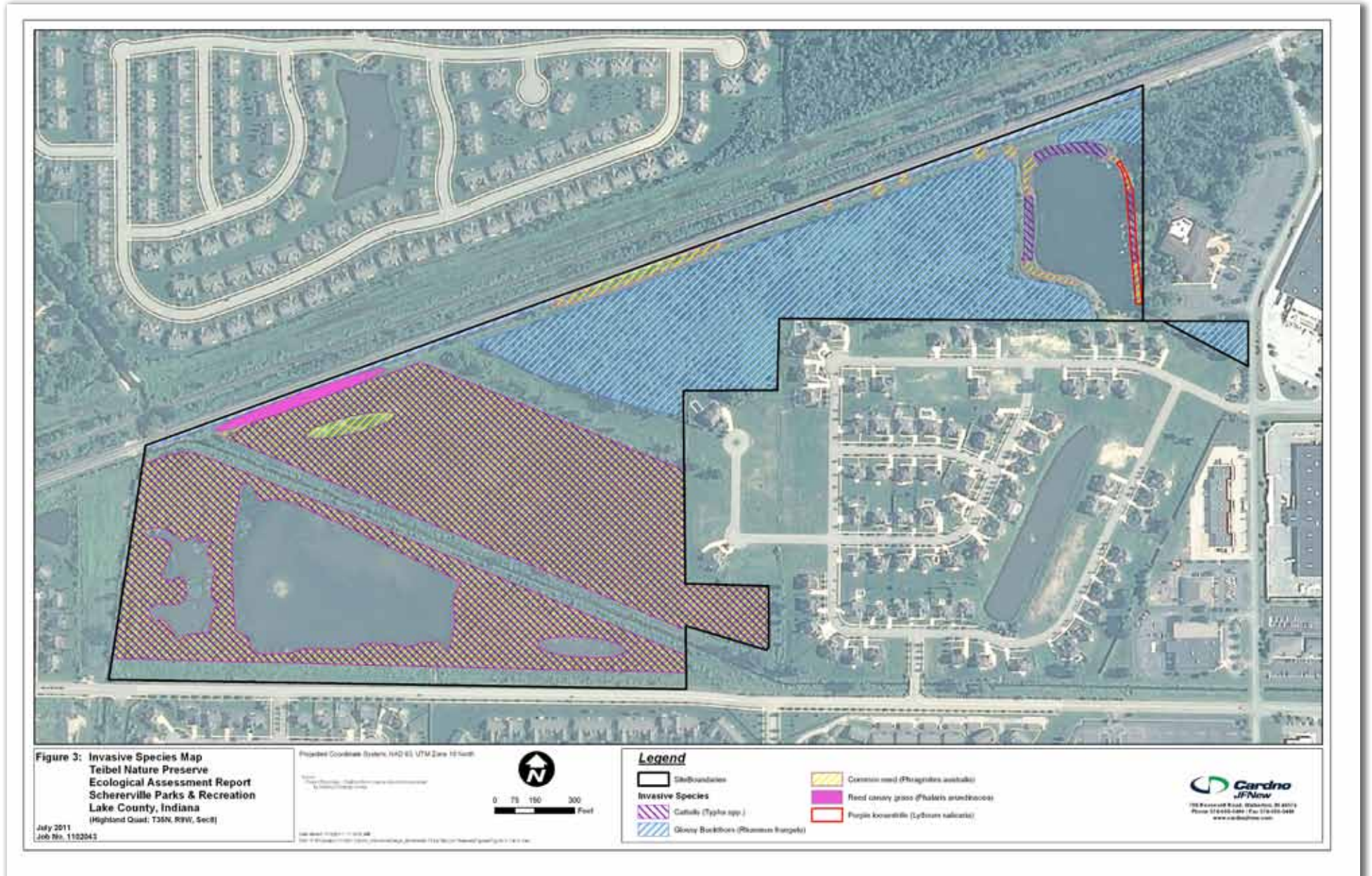
**FIGURE 1  
LOCATION MAP**



**FIGURE 2**  
**VEGETATION COMMUNITY MAP**



**FIGURE 3**  
**INVASIVE SPECIES MAP**





**FIGURE 4**  
**SENSITIVE AREAS AND SPECIES OF CONSERVATION CONCERN**



**Figure 4: Sensitive Areas & Species of Conservation Concern**  
**Teibel Nature Preserve**  
**Ecological Assessment Report**  
**Schererville Parks & Recreation**  
**Lake County, Indiana**  
 (Highland Quad: T36N, R3W, Sec8)  
 July 2011  
 Job No. 1102043

Projected Coordinate System: NAD 83 UTM Zone 18 North

Source: <http://www.aerialimagery.com>  
 by [www.aerialimagery.com](http://www.aerialimagery.com)



Map Scale: 1 inch = 300 feet  
 Date of Data Collection: 11/11/2010  
 Date of Report: 7/11/2011

**Legend**

- Site Boundaries
- Marsh Wren (*Catalpaus pusillus*), State Endangered
- Gray Birch (*Betula populifolia*), State Endangered
- Hairy-leaved Lake Sedge (*Carex stuppea*), State Endangered
- False Arrow-wood (*Ambrosia trifida*), State Rare
- Lake Street Rush (*Juncus effusus* var. *stolonis*), State Rare
- Sensitive Areas



## APPENDIX B-1 VASCULAR PLANT SPECIES INVENTORIES

Site: Teibel Site  
 Locale: Lake County, Indiana  
 Date: June 30, 2011  
 By: S. Barker, S. Nemesnik  
 File: r:\Projects\111102\1102049\_HitchcockDesign\_Schereville Teibel Nature Preserve\Data\20110705\_siteinventory.inv  
 Notes: Site Vascular Plant Species Inventory

FLORISTIC QUALITY DATA		Native	184	75.7%	Adventive	59	24.3%
184 NATIVE SPECIES	Tree	15	6.2%	Tree	2	0.8%	
243 Total Species	Shrub	10	4.1%	Shrub	8	3.3%	
4.2 NATIVE MEAN C	W-Vine	3	1.2%	W-Vine	2	0.8%	
3.2 W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%	
56.9 NATIVE FQI	P-Forb	87	35.8%	P-Forb	19	7.8%	
49.5 W/Adventives	B-Forb	7	2.9%	B-Forb	8	3.3%	
-1.0 NATIVE MEAN W	A-Forb	21	8.6%	A-Forb	7	2.9%	
-0.2 W/Adventives	P-Grass	19	7.8%	P-Grass	10	4.1%	
AVG: Faculative (+)	A-Grass	1	0.4%	A-Grass	3	1.2%	
	P-Sedge	18	7.4%	P-Sedge	0	0.0%	
	A-Sedge	0	0.0%	A-Sedge	0	0.0%	
	Cryptogam	3	1.2%				

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACESAI	0 Acer saccharinum	-3 FACW	Nt Tree	SILVER MAPLE
ACHMIL	0 ACHILLEA MILLEFOLIUM	3 FACU	Ad P-Forb	YARROW
AGAPUU	6 Agalinis purpurea	-3 FACW	Nt A-Forb	PURPLE FALSE FOXGLOVE
AGRPAR	7 Agrimonia parviflora	-1 FAC+	Nt P-Forb	SWAMP AGRIMONY
AGRPPE	0 AGROPYRON REPENS	3 FACU	Ad P-Grass	QUACK GRASS
AGRALA	0 AGROSTIS ALBA	-3 FACW	Ad P-Grass	RETOP
AGRHYE	1 Agrostis hymnalis	1 FAC-	Nt P-Grass	TICKLE GRASS
ALLPET	0 ALLIARIA PETIOLATA	0 FAC	Ad B-Forb	GARLIC MUSTARD
ALLCAN	2 Allium canadense	3 FACU	Nt P-Forb	WILD ONION
AMBARE	0 Ambrosia artemisiifolia elatior	3 FACU	Nt A-Forb	COMMON RAGWEED
ANDGER	5 Andropogon gerardii	1 FAC-	Nt P-Grass	BIG BLUESTEM GRASS
ANDCOO	5 Andropogon scoparius	4 FACU-	Nt P-Grass	LITTLE BLUESTEM GRASS
ANDVIR	0 ANDROPOGON VIRGINICUS	1 FAC-	Ad B-Grass	BROOM SEDGE
APOSBIB	2 Apocynum sibiricum	-1 FAC+	Nt P-Forb	PRAIRIE INDIAN HEMP
ARCMIN	0 ARCTIUM MINUS	5 UPL	Ad B-Forb	COMMON BURDOCK
ARIINT	5 Aristida intermedia	0 FAC	Nt A-Grass	FALSE ARROW FEATHER
ASCINC	4 Asclepias incarnata	-5 OBL	Nt P-Forb	SWAMP MILKWEED
ASCSYR	0 Asclepias syriaca	5 UPL	Nt P-Forb	COMMON MILKWEED
ASPOFF	0 ASPARAGUS OFFICINALIS	3 FACU	Ad P-Forb	ASPARAGUS
ASTNOV	4 Aster novae-angliae	-3 FACW	Nt P-Forb	NEW ENGLAND ASTER
ASTPIL	0 Aster pilosus	2 FACU+	Nt P-Forb	HAIRY ASTER
ASTSIS	3 Aster simplex	-5 OBL	Nt P-Forb	PANICLED ASTER
BETNIG	7 Betula nigra	-3 FACW	Nt Tree	RIVER BIRCH
BETPEN	0 BETULA PENDULA	3 [FACU]	Ad Tree	EUROPEAN WHITE BIRCH
BETPOP	10 Betula populifolia	0 FAC	Nt Tree	GRAY BIRCH
BIDPOL	3 Bidens polylepis	-3 FACW	Nt A-Forb	BUR MARIGOLD
BOECYC	2 Boehmeria cylindrica	-5 OBL	Nt P-Forb	FALSE NETTLE
BROJAP	0 BROMUS JAPONICUS	3 FACU	Ad B-Grass	JAPANESE CHESS
BROSQU	0 BROMUS SQUARROSUS	5 UPL	Ad A-Grass	NODDING BROME
BROTEC	0 BROMUS TECTORUM	5 UPL	Ad A-Grass	DOWNY BROME
CALCAN	3 Calamagrostis canadensis	-5 OBL	Nt P-Grass	BLUE JOINT GRASS
CARPA	2 Cardamine parviflora arenicola	0 FAC	Nt A-Forb	SMALL-FLOWERED BITTER CRESS
CXANNX	7 Carex annectens xanthocarpa	0 [FAC]	Nt P-Sedge	SMALL YELLOW FOX SEDGE
CXATHE	5 Carex attherodes	-5 OBL	Nt P-Sedge	HAIRY-LEAVED LAKE SEDGE
CXCRI3	4 Carex cristatella	-4 FACW+	Nt P-Sedge	CRESTED OVAL SEDGE
CXGRAN	4 Carex granularis	-4 FACW+	Nt P-Sedge	PALE SEDGE
CXLURI	8 Carex lurida	-5 OBL	Nt P-Sedge	BOTTLEBRUSH SEDGE
CXSCOP	7 Carex scoparia	-3 FACW	Nt P-Sedge	LANCE-FRUITED OVAL SEDGE
CXSUBE	8 Carex suberecta	-5 OBL	Nt P-Sedge	WEDGE-FRUITED OVAL SEDGE
CXSWAN	8 Carex swanii	3 FACU	Nt P-Sedge	DOWNY GREEN SEDGE
CXTRIB	3 Carex tribuloides	-4 FACW+	Nt P-Sedge	AWL-FRUITED OVAL SEDGE
CXVULP	2 Carex vulpinoidea	-5 OBL	Nt P-Sedge	BROWN FOX SEDGE
CXLOBR	0 CELASTRUS ORBICULATUS	5 UPL	Ad W-Vine	ORIENTAL BITTERSWEET
CENMAC	0 CENTAUREA MACULOSA	5 UPL	Ad B-Forb	SPOTTED KNAWEED
CENPUL	0 CENTAURIUM PULCHELLUM	4 FACU-	Ad A-Forb	SHOWY CENTAURY
CERDEM	5 Ceratophyllum demersum	-5 OBL	Nt P-Forb	HORNWORT
CHARLEP	0 CHRYSANTHEMUM LEUCANTHEMUM PINNATIFIDUM	5 UPL	Ad P-Forb	OX-EYE DAISY
CICMAC	6 Cicuta maculata	-5 OBL	Nt P-Forb	WATER HEMLOCK
CIRLUC	1 Circaea lutetiana canadensis	3 FACU	Nt P-Forb	ENCHANTER'S NIGHTSHADE
CIRARV	0 CIRSIUM ARVENSE	5 UPL	Ad P-Forb	FIELD THISTLE
CIRDIS	2 Cirsium discolor	5 UPL	Nt B-Forb	PASTURE THISTLE
CONMUL	5 Conohea multifida	-4 FACW+	Nt A-Forb	OBE-WAN-CONOBEA
CONSEP	1 Convolvulus sepium	0 FAC	Nt P-Forb	HEDGE BINWEED

COROBL	6 Cornus obliqua	-4 FACW+	Nt Shrub	BLUE-FRUITED DOGWOOD
CORRAC	1 Cornus racemosa	-2 FACW-	Nt Shrub	GRAY DOGWOOD
DAUCAR	0 DAUCUS CAROTA	5 UPL	Ad B-Forb	QUEEN ANNE'S LACE
DIARAW	0 DIANTHUS ARMERIA	5 UPL	Ad A-Forb	DEFTFORD PINK
ECHPAL	8 Echinacea pallida	5 UPL	Nt P-Forb	PURPLE CONFLOWER
ELANUB	0 ELAAGNUS UMBELLATA	5 UPL	Ad Shrub	AUTUMN OLIVE
ELEELL	8 Eleocharis elliptica	-5 [OBL]	Nt P-Sedge	GOLDEN-SEEDED SPIKE RUSH
ELEERY	2 Eleocharis erythropoda	-5 OBL	Nt P-Sedge	RED-ROOTED SPIKE RUSH
ELYCAN	4 Elymus canadensis	1 FAC-	Nt P-Grass	CANADA WILD RYE
EREHIE	2 Erechtites hieracifolia	3 FACU	Nt A-Forb	FIREWEED
ERIAN5	0 Erigeron annuus	1 FAC-	Nt B-Forb	ANNUAL FLEABANE
ERICAN	0 Erigeron canadensis	1 FAC-	Nt A-Forb	HORSWEED
ERIPHI	4 Erigeron philadelphicus	-3 FACW	Nt P-Forb	MARSH FLEABANE
ERISTR	5 Erigeron strigosus	5 [UPL]	Nt B-Forb	DAISY FLEABANE
ERYYUC	9 Eryngium yuccifolium	-1 FAC+	Nt P-Forb	RATTLESNAKE MASTER
EUPALT	0 Eupatorium altissimum	3 [FACU]	Nt P-Forb	TALL BONESET
EUPPER	4 Eupatorium perfoliatum	-4 FACW+	Nt P-Forb	COMMON BONESET
EUPRUG	4 Eupatorium rugosum	5 UPL	Nt P-Forb	WHITE SNAKEROOT
EUPSEM	0 Eupatorium serotinum	-1 FAC+	Nt P-Forb	LATE BONESET
FESELA	0 FESTUCA ELATIOR	2 FACU+	Ad P-Grass	TALL FESCUE
FESRUB	0 FESTUCA RUBRA	1 FAC-	Ad B-Grass	RED FESCUE
FRANVR	1 Fragaria virginiana	1 FAC-	Nt P-Forb	WILD STRAWBERRY
FRAPES	1 Fraxinus pennsylvanica subintegerrima	0 FAC	Nt Tree	GREEN ASH
GALTRF	5 Galium triflorum	2 FACU+	Nt P-Forb	SWEET-SCENTED BEDSTRAW
GEUCAN	1 Geum canadense	0 FAC	Nt P-Forb	WOOD AVENS
GEULAT	2 Geum laciniatum trichocarpum	-3 FACW	Nt P-Forb	ROUGH AVENS
GLEHED	0 GLECHOMA HEDERACEA	3 FACU	Ad P-Forb	CREeping CHARLIE
GLYSTR	4 Glyceria striata	-3 [FACW]	Nt P-Grass	FOWL MANNA GRASS
GRANEG	7 Gratiola neglecta	-5 OBL	Nt A-Forb	CLAMMY HEDGE HYSSOP
HABLAC	10 Habenaria lacera	-3 FACW	Nt P-Forb	RAGGED FRINGED ORCHID
HACVIR	0 Hackelia virginiana	1 FAC-	Nt B-Forb	STICKSEED
HELGR0	2 Helianthus grosseserratus	-2 FACW-	Nt P-Forb	SAWTOOTH SUNFLOWER
HIBPAL	9 Hibiscus palustris	-5 OBL	Nt P-Forb	SWAMP ROSE MALLOW
HYFMAJ	6 Hypericum majus	-3 FACW	Nt A-Forb	SAND ST. JOHN'S WORT
HYPPER	0 HYPERICUM PERFORATUM	5 UPL	Ad B-Forb	COMMON ST. JOHN'S WORT
HYPPUN	4 Hypericum punctatum	3 [FACU]	Nt P-Forb	SPOTTED ST. JOHN'S WORT
IMPCAP	3 Impatiens capensis	-3 FACW	Nt A-Forb	ORANGE JEWELWEED
IRIVIS	5 Iris virginica shrevei	-5 OBL	Nt P-Forb	BLUE FLAG
JUNACU	6 Juncus acuminatus	-5 OBL	Nt P-Forb	SHARP-FRUITED RUSH
JUNBAL	6 Juncus balticus littoralis	-3 [FACW]	Nt P-Forb	LAKE SHORE RUSH
JUNBR9	9 Juncus brachycarpus	-3 FACW	Nt P-Forb	SHORT-FRUITED RUSH
JUNBUF	5 Juncus bufonius	-4 FACW+	Nt A-Forb	TODD RUSH
JUNDUD	4 Juncus dudleyi	0 [FAC]	Nt P-Forb	DUDLEY'S RUSH
JUNEFF	7 Juncus effusus	-5 OBL	Nt P-Forb	COMMON RUSH
JUNINT	6 Juncus interior	3 [FACU]	Nt P-Forb	INLAND RUSH
JUNMAR	9 Juncus marginatus	-3 FACW	Nt P-Forb	GRASS-LEAVED RUSH
JUNTEN	0 Juncus tenuis	2 [FACU+]	Nt P-Forb	PATH RUSH
JUNVIC	2 Juniperus virginiana crebra	3 FACU	Nt Tree	RED CEDAR
KOECRI	7 Koeleria cristata	5 UPL	Nt P-Grass	JUNE GRASS
LACBIE	4 Lactuca biennis	0 FAC	Nt B-Forb	TALL BLUE LETTUCE
LACCAN	2 Lactuca canadensis	2 FACU+	Nt B-Forb	WILD LETTUCE
LACSER	0 LACTUCA SERRIOLA	0 FAC	Ad B-Forb	PRICKLY LETTUCE
LEEORY	4 Leersia oryzoides	-5 OBL	Nt P-Grass	RICE CUT GRASS
LEMMAI	5 Lemna minor	-5 OBL	Nt A-Forb	SMALL DUCKWEED
LEOCAR	0 LEONURUS CARDIACA	5 UPL	Ad P-Forb	MOTHERWORT
LEPVIR	0 Lepidium virginicum	4 FACU-	Nt A-Forb	COMMON PEPPERGRASS
LOBSP5	6 Lobelia spicata	0 FAC	Nt P-Forb	BLUE SPIKED LOBELIA
LONMAA	0 LONICERA MAAKII	5 UPL	Ad Shrub	AMUR HONEYSUCKLE
LOTCOR	0 LOTUS CORNICULATUS	1 FAC-	Ad P-Forb	BIRD'S FOOT TREFOLL
LUDALT	6 Ludwigia alternifolia	-5 OBL	Nt P-Forb	SEEDBOX
LUDPAA	5 Ludwigia palustris americana	-5 OBL	Nt P-Forb	MARSH PURSLANE
LYCAME	5 Lycopus americanus	-5 OBL	Nt P-Forb	COMMON WATER HOREHOUND
LYTALA	7 Lythrum alatum	-5 OBL	Nt P-Forb	WINGED LOOSESTRIFE
LYTSAL	0 LYTHRUM SALICARIA	-5 OBL	Ad P-Forb	PURPLE LOOSESTRIFE
MARSST	10 Matricaria struthiopteris	-3 FACW	Cryptogam	OSTRICH FERN
MEDLUP	0 MEDICAGO LUPULINA	1 FAC-	Ad A-Forb	BLACK MEDICK
MELLAB	0 MELLILLOTUS ALBA	3 FACU	Ad B-Forb	WHITE SWEET CLOVER
MELLOP	0 MELLILLOTUS OFFICINALIS	3 FACU	Ad B-Forb	YELLOW SWEET CLOVER
MIMRIN	6 Mimulus ringens	-5 OBL	Nt P-Forb	MONKEY FLOWER
MONFIS	4 Monarda fistulosa	3 FACU	Nt P-Forb	WILD BERGAMOT
NEPCAT	0 NEPETA CATARIA	1 FAC-	Ad P-Forb	CATNIP
NUPADV	7 Nuphar advena	-5 OBL	Nt P-Forb	YELLOW POND LILY
NYMTUB	7 Nymphaea tuberosa	-5 OBL	Nt P-Forb	WHITE WATER LILY
OENBIE	0 Oenothera biennis	3 FACU	Nt B-Forb	COMMON EVENING PRIMROSE
OENPIL	10 Oenothera pilosella	1 FAC-	Nt P-Forb	PRAIRIE SUNDROPS
ONOSEN	8 Onoclea sensibilis	-3 FACW	Cryptogam	SENSITIVE FERN

OSMRES	8	<i>Osmunda regalis spectabilis</i>	-5	OBL	Cryptogam	ROYAL FERN
OXASTR	0	<i>Oxalis stricta</i>	5	UPL	Nt P-Forb	COMMON WOOD SORREL
PANCLA	6	<i>Panicum clandestinum</i>	-3	FACW	Nt P-Grass	DEER-TONGUE GRASS
PANIMP	2	<i>Panicum implicatum</i>	1	FAC-	Nt P-Grass	OLD-FIELD PANIC GRASS
PANLID	9	<i>Panicum lindheimeri</i>	-1	FAC+	Nt P-Grass	SMOOTH WOOLLY PANIC GRASS
PANOLS	4	<i>Panicum oligosanthes scribnerianum</i>	3	[FACU]	Nt P-Grass	SCRIBNER'S PANIC GRASS
PANRIG	5	<i>Panicum rigidulum</i>	-3	FACW	Nt P-Grass	MINRO GRASS
PANVIR	5	<i>Panicum virgatum</i>	-1	FAC+	Nt P-Grass	SWITCH GRASS
PARINS	1	<i>Parthenocissus inserta</i>	3	FACU	Nt W-Vine	THICKET CREEPER
PENDIG	4	<i>Penstemon digitalis</i>	1	FAC-	Nt P-Forb	FOXGLOVE BEARD TONGUE
PENHIR	9	<i>Penstemon hirsutus</i>	5	UPL	Nt P-Forb	HAIRY BEARD TONGUE
PHAAARU	0	<i>PHALARIS ARUNDINACEA</i>	-4	FACW+	Ad P-Grass	REED CANARY GRASS
PHGLLI	8	<i>Phlox glaberrima interior</i>	-3	FACW	Nt P-Forb	MARSH PHLOX
PHRAUS	1	<i>Phragmites australis</i>	-4	FACW+	Nt P-Grass	COMMON REED
PHYHET	3	<i>Physalis heterophylla</i>	5	UPL	Nt P-Forb	CLAMMY GROUND CHERRY
PHYVIV	6	<i>Physostegia virginiana</i>	-5	[OBL]	Nt P-Forb	OBEDIENT PLANT
PHYAME	1	<i>Phytolacca americana</i>	1	FAC-	Nt P-Forb	POKEWEED
PILPUM	5	<i>Pilea pumila</i>	-3	FACW	Nt A-Forb	CLEARWEED
PLAARI	0	<i>Plantago aristata</i>	5	UPL	Nt A-Forb	POOR JOE
PLALAN	0	<i>Plantago LANCEOLATA</i>	0	FAC	Ad P-Forb	ENGLISH PLANTAIN
PLARUG	0	<i>Plantago rugelii</i>	0	FAC	Nt A-Forb	RED-STALKED PLANTAIN
PLAOC	9	<i>Platanus occidentalis</i>	-3	FACW	Nt Tree	SYCAMORE
POACOM	0	<i>POA COMPRESSA</i>	2	FACU+	Ad P-Grass	CANADA BLUE GRASS
POAPRA	0	<i>POA PRATENSIS</i>	1	FAC-	Ad P-Grass	KENTUCKY BLUE GRASS
POLAMS	4	<i>Polygonum amphibium stipulaceum</i>	-5	OBL	Nt P-Forb	WATER KNOTWEED
POLCEL	0	<i>POLYGONUM CESPITOSUM LONGISETUM</i>	5	UPL	Ad A-Forb	CREEPING SMARTWEED
POLCOC	4	<i>Polygonum coccineum</i>	-5	OBL	Nt P-Forb	WATER HEARTSEASE
POLGVI	2	<i>Polygonum virginianum</i>	0	FAC	Nt P-Forb	WOODLAND KNOTWEED
POPEL	2	<i>Populus deltoides</i>	-1	FAC+	Nt Tree	EASTERN COTTONWOOD
POPTRE	4	<i>Populus tremuloides</i>	0	FAC	Nt Tree	QUAKING ASPEN
POTCRI	0	<i>POTAMOGETON CRISPUS</i>	-5	OBL	Ad P-Forb	BEGINNER'S PONDWEED
POTFOL	7	<i>Potamogeton foliosus</i>	-5	OBL	Nt P-Forb	LEAFY PONDWEED
POTNOR	0	<i>Potentilla norvegica</i>	0	FAC	Nt A-Forb	NORWAY CINQUEFOIL
POTFIS	4	<i>Potentilla simplex</i>	4	FACU-	Nt P-Forb	COMMON CINQUEFOIL
PRUVILA	0	<i>Prunella vulgaris lanceolata</i>	3	[FACU]	Nt P-Forb	SELF HEAL
PRUSER	1	<i>Prunus serotina</i>	3	FACU	Nt Tree	WILD BLACK CHERRY
PYCTEN	7	<i>Pycnanthemum tenuifolium</i>	0	FAC	Nt P-Forb	SLENDER MOUNTAIN MINT
PYCVIR	5	<i>Pycnanthemum virginianum</i>	-4	FACW+	Nt P-Forb	COMMON MOUNTAIN MINT
PYRCAL	0	<i>PYRUS CALLERYANA</i>	5	UPL	Ad Tree	ORNAMENTAL PEAR
QUEMAC	5	<i>Quercus macrocarpa</i>	1	FAC-	Nt Tree	BUR OAK
QUEPAU	8	<i>Quercus palustris</i>	-3	FACW	Nt Tree	PIN OAK
QUEVEL	6	<i>Quercus velutina</i>	5	UPL	Nt Tree	BLACK OAK
RANABO	0	<i>Ranunculus abortivus</i>	-2	FACW-	Nt A-Forb	SMALL-FLOWERED BUTTERCUP
RATCOL	0	<i>RATIIDA COLUMNIFERA</i>	5	UPL	Ad P-Forb	LONG-HEADED CONEFLOWER
RATPIN	4	<i>Ratibida pinnata</i>	5	UPL	Nt P-Forb	YELLOW CONEFLOWER
RHACAT	0	<i>RHAMNUS CATHARTICA</i>	3	FACU	Ad Shrub	COMMON BUCKTHORN
RHAFRA	0	<i>RHAMNUS FRANGULA</i>	-1	FAC+	Ad Shrub	GLOSSY BUCKTHORN
RHUGLA	1	<i>Rhus glabra</i>	5	UPL	Nt Shrub	SMOOTH SUMAC
RHURAD	2	<i>Rhus radicans</i>	-1	FAC+	Nt W-Vine	POISON IVY
RHUTYP	1	<i>Rhus typhina</i>	5	UPL	Nt Tree	STAGHORN SUMAC
ROSCAR	5	<i>Rosa carolina</i>	4	FACU-	Nt Shrub	PASTURE ROSE
ROSMUL	0	<i>ROSA MULTIFLORA</i>	3	FACU	Ad Shrub	MULTIFLORA ROSE
RUBOCC	2	<i>Rubus occidentalis</i>	5	UPL	Nt Shrub	BLACK RASPBERRY
RUBPEN	3	<i>Rubus pensilvanicus</i>	3	FACU	Nt Shrub	YANKEE BLACKBERRY
RUDHIR	1	<i>Rudbeckia hirta</i>	3	FACU	Nt P-Forb	BLACK-EYED SUSAN
RUDLAC	5	<i>Rudbeckia laciniata</i>	-4	FACW+	Nt P-Forb	WILD GOLDEN GLOW
RUMACE	0	<i>RUMEX ACETOSELLA</i>	3	[FACU]	Ad P-Forb	FIELD SORREL
RUMCRI	0	<i>RUMEX CRISPUS</i>	-1	FAC+	Ad P-Forb	CURLY DOCK
SALAMY	5	<i>Salix amygdaloides</i>	-3	FACW	Nt Tree	PEACH-LEAVED WILLOW
SALERI	5	<i>Salix eriocephala</i>	-3	FACW	Nt Shrub	HEART-LEAVED WILLOW
SALGLU	7	<i>Salix glaucophylloides</i>	-3	FACW	Nt Shrub	BLUE-LEAVED WILLOW
SALINT	1	<i>Salix interior</i>	-5	OBL	Nt Shrub	SANDBAR WILLOW
SALNIG	4	<i>Salix nigra</i>	-5	OBL	Nt Tree	BLACK WILLOW
SALCAN	1	<i>Sambucus canadensis</i>	-2	FACW-	Nt Shrub	ELDERBERRY
SCIACU	6	<i>Scirpus acutus</i>	-5	OBL	Nt P-Sedge	HARD-STEMMED BULRUSH
SCIATR	4	<i>Scirpus atrovirens</i>	-5	OBL	Nt P-Sedge	DARK GREEN RUSH
SCICYP	6	<i>Scirpus cyperinus</i>	-5	OBL	Nt P-Sedge	WOOL GRASS
SCIFLU	4	<i>Scirpus fluviatilis</i>	-5	OBL	Nt P-Sedge	RIVER BULRUSH
SCIPEN	4	<i>Scirpus pendulus</i>	-5	OBL	Nt P-Sedge	RED BULRUSH
SCIPUN	5	<i>Scirpus pungens</i>	-5	OBL	Nt P-Sedge	CHAIRMAKER'S RUSH
SENPAU	6	<i>Senecio pauperculus</i>	-1	FAC+	Nt P-Forb	BALSAM RAGWORT
SILANT	1	<i>Silene antirrhina</i>	5	UPL	Nt A-Forb	SLEEPY CATCHFLY
SILPER	5	<i>Silphium perfoliatum</i>	-2	FACW-	Nt P-Forb	CUP PLANT
SISANG	10	<i>Sisyrinchium angustifolium</i>	-2	FACW-	Nt P-Forb	STOUT BLUE-EYED GRASS
SMISTE	5	<i>Smilacina stellata</i>	1	FAC-	Nt P-Forb	STARRY FALSE SOLOMON'S SEAL
SOLCAR	0	<i>SOLANUM CAROLINENSE</i>	4	FACU-	Ad P-Forb	HORSE NETTLE

SOLDUL	0	<i>SOLANUM DULCAMARA</i>	0	FAC	Ad W-Vine	BITTERSWEET NIGHTSHADE
SOLALIT	1	<i>Solidago altissima</i>	3	FACU	Nt P-Forb	TALL GOLDENROD
SOLGIG	4	<i>Solidago gigantea</i>	-3	FACW	Nt P-Forb	LATE GOLDENROD
SOLGRG	4	<i>Solidago graminifolia</i>	-2	FACW-	Nt P-Forb	COMMON GRASS-LEAVED GOLDENROD
SOLGRN	3	<i>Solidago graminifolia nuttallii</i>	0	[FAC]	Nt P-Forb	HAIRY GRASS-LEAVED GOLDENROD
SOLNEM	4	<i>Solidago nemoralis</i>	5	UPL	Nt P-Forb	OLD-FIELD GOLDENROD
SORNUT	5	<i>Sorghastrum nutans</i>	2	FACU+	Nt P-Grass	INDIAN GRASS
SPAPEC	4	<i>Spartina pectinata</i>	-4	FACW+	Nt P-Grass	PRAIRIE CORD GRASS
SPHOBT	7	<i>Sphenopholis obtusata</i>	0	FAC	Nt P-Grass	PRAIRIE WEDGE GRASS
SPIPOL	7	<i>Spirodela polyrrhiza</i>	-5	OBL	Nt A-Forb	GREAT DUCKWEED
STATEH	5	<i>Stachys tenuifolia hispida</i>	-4	FACW+	Nt P-Forb	MARSH HEDGE NETTLE
STEMED	0	<i>STELLARIA MEDIA</i>	3	FACU	Ad A-Forb	COMMON CHICKWEED
STISPA	7	<i>Stipa spartea</i>	5	UPL	Nt P-Grass	FORCUPINE GRASS
TAROFF	0	<i>TARAXACUM OFFICINALE</i>	3	FACU	Ad P-Forb	COMMON DANDELION
TRADAD	5	<i>Thalictrum dasycarpum</i>	-2	FACW-	Nt P-Forb	PURPLE MEADOW RUE
TRAKHI	2	<i>Tradescantia chiensis</i>	-2	FACU+	Nt P-Forb	COMMON SPIDERWORT
TRICAM	0	<i>TRIFOLIUM CAMPESTRE</i>	5	UPL	Ad A-Forb	LOW HOP CLOVER
TRIPRA	0	<i>TRIFOLIUM PRATENSE</i>	5	UPL	Ad P-Forb	RED CLOVER
TRIREP	0	<i>TRIFOLIUM REPENS</i>	2	FACU+	Ad P-Forb	WHITE CLOVER
TRIFLA	0	<i>TRIFOLIA FLAVA</i>	5	UPL	Ad P-Grass	FALSE REDTOP
TRIPSA	0	<i>TRIPSACUM DACTYLOIDES</i>	5	UPL	Ad P-Grass	GAMA GRASS
TYPANG	1	<i>Typha angustifolia</i>	-5	OBL	Nt P-Forb	NARROW-LEAVED CATTAIL
TYPLAT	1	<i>Typha latifolia</i>	-5	OBL	Nt P-Forb	BROAD-LEAVED CATTAIL
TYPLA	1	<i>Typha X glauca</i>	-5	OBL	Nt P-Forb	HYBRID CATTAIL
URTPRO	2	<i>Urtica procera</i>	-1	FAC+	Nt P-Forb	TALL NETTLE
VERTHA	0	<i>VERBASCUM THAPSUS</i>	5	UPL	Ad B-Forb	COMMON MULLEIN
VERHAS	4	<i>Verbena hastata</i>	-4	FACW+	Nt P-Forb	BLUE VERVAIN
VERURU	5	<i>Verbena urticifolia</i>	5	UPL	Nt P-Forb	HAIRY WHITE VERVAIN
VERATA	5	<i>Veronica altissima taeniotricha</i>	0	[FAC]	Nt P-Forb	HAIRY TALL IRONWEED
VERARV	0	<i>VERONICA ARVENSIS</i>	3	FACU	Ad A-Forb	CORN SPEEDWELL
VERVIR	7	<i>Veronicastrum virginicum</i>	0	FAC	Nt P-Forb	CULVER'S ROOT
VIBDEN	0	<i>VIBURNUM DENTATUM</i>	5	UPL	Ad Shrub	ARROW-WOOD
VIBOPU	0	<i>VIBURNUM OPLULUS</i>	3	[FACU]	Ad Shrub	EUROPEAN HIGHBUSH CRANBERRY
VIBREC	0	<i>VIBURNUM RECOGNITUM</i>	-2	FACU-	Ad Shrub	SMOOTH ARROW-WOOD
VIOSAG	7	<i>Viola sagittata</i>	-2	FACW-	Nt P-Forb	ARROW-LEAVED VIOLET
VIOSOR	3	<i>Viola sororia</i>	1	FAC-	Nt P-Forb	COMMON BLUE VIOLET
VITRIP	2	<i>Vitis rotundifolia</i>	-2	FACW-	Nt W-Vine	RIVERBANK GRAPE
WOLCOL	7	<i>Wolffia columbiana</i>	-5	OBL	Nt A-Forb	AMERICAN WATER MEAL

Additional plants observed not identifiable to species:  
*Alisma* sp. (A. subcordatum or A. triviale)  
*Asclepias* sp.  
*Carex* sp.  
*Cerastium* sp.  
*Galium* sp. (G. boreale, G. tinctorium, and/or G. trifidum)  
*Helenium* sp. (H. autumnale or H. flexuosum)  
*Juncus* sp. (J. canadensis or J. torreyi)  
*Lonicera* sp.  
*Polygonum* sp. (P. hydropiper or P. punctatum)  
*Rubus* sp.

Site: Teibel Site  
 Locale: Lake County, Indiana  
 Date: June 30, 2011  
 By: S. Barker, S. Namestnik  
 File: r:\Projects\11\1102\1102043\_HitchcockDesign\_Schereville Teibel Nature Preserve\Data\20110705\_aquaticzoneinventory.in  
 Notes: Aquatic Bed Vascular Plant Species Inventory

FLORISTIC QUALITY DATA		Native	7	87.5%	Adventive	1	12.5%
7 NATIVE SPECIES	Tree	0	0.0%	Tree	0	0.0%	
8 Total Species	Shrub	0	0.0%	Shrub	0	0.0%	
6.4 NATIVE MEAN C	W-Vine	0	0.0%	W-Vine	0	0.0%	
5.6 W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%	
17.0 NATIVE FQI	P-Forb	4	50.0%	P-Forb	1	12.5%	
15.9 W/Adventives	B-Forb	0	0.0%	B-Forb	0	0.0%	
-5.0 NATIVE MEAN W	A-Forb	3	37.5%	A-Forb	0	0.0%	
-5.0 W/Adventives	P-Grass	0	0.0%	P-Grass	0	0.0%	
AVG: Obl. Wetland	A-Grass	0	0.0%	A-Grass	0	0.0%	
	P-Sedge	0	0.0%	P-Sedge	0	0.0%	
	A-Sedge	0	0.0%	A-Sedge	0	0.0%	
	Cryptogam	0	0.0%				

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
CERDEM	5 Ceratophyllum demersum	-5 OBL	Nt P-Forb	HORNWORT
LEMMIO	5 Lemna minor	-5 OBL	Nt A-Forb	SMALL DUCKWEED
NUPADV	7 Nuphar advena	-5 OBL	Nt P-Forb	YELLOW POND LILY
NYMTUB	7 Nymphaea tuberosa	-5 OBL	Nt P-Forb	WHITE WATER LILY
POTCRI	0 POTAMOGETON CRISPUS	-5 OBL	Ad P-Forb	BEGINNER'S PONDWEED
POTFOL	7 Potamogeton foliosus	-5 OBL	Nt P-Forb	LEAFY PONDWEED
SPIPOL	7 Spirodela polyrhiza	-5 OBL	Nt A-Forb	GREAT DUCKWEED
WOLCOL	7 Wolffia columbiana	-5 OBL	Nt A-Forb	AMERICAN WATER MEAL

Site: Teibel Site  
 Locale: Lake County, Indiana  
 Date: June 30, 2011  
 By: S. Barker, S. Namestnik  
 File: r:\Projects\11\1102\1102043\_HitchcockDesign\_Schereville Teibel Nature Preserve\Data\20110705\_emergentmarshinventory.in  
 Notes: Emergent Marsh Vascular Plant Species Inventory

FLORISTIC QUALITY DATA		Native	67	84.8%	Adventive	12	15.2%
67 NATIVE SPECIES	Tree	9	11.4%	Tree	1	1.3%	
79 Total Species	Shrub	4	5.1%	Shrub	4	5.1%	
4.4 NATIVE MEAN C	W-Vine	0	0.0%	W-Vine	0	0.0%	
3.7 W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%	
36.0 NATIVE FQI	P-Forb	25	31.6%	P-Forb	1	1.3%	
33.2 W/Adventives	B-Forb	2	2.5%	B-Forb	2	2.5%	
-2.8 NATIVE MEAN W	A-Forb	7	8.9%	A-Forb	0	0.0%	
-2.2 W/Adventives	P-Grass	7	8.9%	P-Grass	4	5.1%	
AVG: Fac. Wetland	A-Grass	0	0.0%	A-Grass	0	0.0%	
	P-Sedge	10	12.7%	P-Sedge	0	0.0%	
	A-Sedge	0	0.0%	A-Sedge	0	0.0%	
	Cryptogam	3	3.8%				

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACESAI	0 Acer saccharinum	-3 FACW	Nt Tree	SILVER MAPLE
AGAPUU	6 Agalinis purpurea	-3 FACW	Nt A-Forb	PURPLE FALSE FOXGLOVE
AGRPAR	7 Agrimonia parviflora	-1 FAC+	Nt P-Forb	SWAMP AGRIMONY
AGRALA	0 AGROSTIS ALBA	-3 FACW	Ad P-Grass	REDTOP
AMBARE	0 Ambrosia artemisiifolia elatior	3 FACU	Nt A-Forb	COMMON RAGWEED
ANDSCO	5 Andropogon scoparius	4 FACU-	Nt P-Grass	LITTLE BLUESTEM GRASS
ANDVIR	0 ANDROPOGON VIRGINICUS	1 FAC-	Ad P-Grass	BROOM SEDGE
ASCINC	4 Asclepias incarnata	-5 OBL	Nt P-Forb	SWAMP MILKWEED
ASTPIL	0 Aster pilosus	2 FACU+	Nt P-Forb	HAIRY ASTER
BETNIG	7 Betula nigra	-3 FACW	Nt Tree	RIVER BIRCH
BETPEN	0 BETULA PENNOLA	3 [FACU]	Ad Tree	EUROPEAN WHITE BIRCH
BETPOP	10 Betula populifolia	0 FAC	Nt Tree	GRAY BIRCH
BIDPOL	3 Bidens polylepis	-3 FACW	Nt A-Forb	BUR MARIGOLD
BOECYC	2 Boehmeria cylindrica	-5 OBL	Nt P-Forb	FALSE NETTLE
CXCRIS	4 Carex cristatella	-4 FACW+	Nt P-Sedge	CRESTED OVAL SEDGE
CXLURI	8 Carex lurida	-5 OBL	Nt P-Sedge	BOTTLEBRUSH SEDGE
CXSOP	7 Carex scoparia	-3 FACW	Nt P-Sedge	LANCE-FRUITED OVAL SEDGE
CXVULP	2 Carex vulpinoidea	-5 OBL	Nt P-Sedge	BROWN FOX SEDGE
COROBL	6 Cornus obliqua	-4 FACW+	Nt Shrub	BLUE-FRUITED DOGWOOD
DAUCAR	0 DAUCUS CAROTA	5 UFL	Ad B-Forb	QUEEN ANNE'S LACE
ELAUMB	0 ELAAGNUS UMBELLATA	5 UFL	Ad Shrub	AUTUMN OLIVE
ELEERY	2 Eleocharis erythropoda	-5 OBL	Nt P-Sedge	RED-ROOTED SPIKE RUSH
ERIANIS	0 Erigeron annuus	1 FAC-	Nt B-Forb	ANNUAL FLEABANE
EUPPER	4 Eupatorium perfoliatum	-4 FACW+	Nt P-Forb	COMMON BONESET
EUPSEM	0 Eupatorium serotinum	-1 FAC+	Nt P-Forb	LATE BONESET
FESELA	0 FESTUCA ELATIOR	2 FACU+	Ad P-Grass	TALL FESCUE
HIBPAL	9 Hibiscus palustris	-5 OBL	Nt P-Forb	SWAMP ROSE MALLOW
HYFMAJ	6 Hypericum majus	-3 FACW	Nt A-Forb	SAND ST. JOHN'S WORT
IRIVIS	5 Iris virginica shrevei	-5 OBL	Nt P-Forb	BLUE FLAG
JUNACU	6 Juncus acuminatus	-5 OBL	Nt P-Forb	SHARP-FRUITED RUSH
JUNBAL	6 Juncus balticus littoralis	-3 [FACW]	Nt P-Forb	LAKE SHORE RUSH
JUNEFF	7 Juncus effusus	-5 OBL	Nt P-Forb	COMMON RUSH
JUNVIC	2 Juniperus virginiana crebra	3 FACU	Nt Tree	RED CEDAR
LEEORY	4 Leersia oryzoides	-5 OBL	Nt P-Grass	RICE CUT GRASS
LEMMIO	5 Lemna minor	-5 OBL	Nt A-Forb	SMALL DUCKWEED
LUDALT	6 Ludwigia alternifolia	-5 OBL	Nt P-Forb	SEEDBOX
LYCAME	5 Lycopodium americanus	-5 OBL	Nt P-Forb	COMMON WATER HOREHOUND
LYTSAL	0 LYTHRUM SALICARIA	-5 OBL	Ad P-Forb	PURPLE LOOSESTRIFE
MATSTR	10 Matteuccia struthiopteris	-3 FACW	Cryptogam	OSTRICH FERN
MELALB	0 MELLILLOTUS ALBA	3 FACU	Ad B-Forb	WHITE SWEET CLOVER
NYMTUB	7 Nymphaea tuberosa	-5 OBL	Nt P-Forb	WHITE WATER LILY
OENBIE	0 Oenothera biennis	3 FACU	Nt P-Forb	COMMON EVENING PRIMROSE
ONOSEN	8 Onoclea sensibilis	-3 FACW	Cryptogam	SENSITIVE FERN
OSMRES	8 Osmunda regalis spectabilis	-5 OBL	Cryptogam	ROYAL FERN
PANIMP	2 Panicum implicatum	1 FAC-	Nt P-Grass	OLD-FIELD PANIC GRASS
PANRIG	5 Panicum rigidulum	-3 FACW	Nt P-Grass	MUNRO GRASS
PANVIR	5 Panicum virgatum	-1 FAC+	Nt P-Grass	SWITCH GRASS
PENDIG	4 Penstemon digitalis	1 FAC-	Nt P-Forb	FOXGLOVE BEARD TONGUE
PHAAARU	0 PHALARIS ARUNDINACEA	-4 FACW+	Ad P-Grass	REED CANARY GRASS
PHRAUS	1 Phragmites australis	-4 FACW+	Nt P-Grass	COMMON REED
PHYVIV	6 Physostegia virginiana	-5 [OBL]	Nt P-Forb	OBEDIENT PLANT
POPDEL	2 Populus deltoides	-1 FAC+	Nt Tree	EASTERN COTTONWOOD
POPTRE	4 Populus tremuloides	0 FAC	Nt Tree	QUAKING ASPEN

POTPOL	7	Potamogeton foliosus	-5	OBL	Nt	P-Forb	LEAFY PONDWEED
QUEMAC	5	Quercus macrocarpa	1	FAC-	Nt	Tree	BUR OAK
RHAFRA	0	RHAMNUS FRANGULA	-1	FAC+	Ad	Shrub	GLOSSY BUCKTHORN
ROSMUL	0	ROSA MULTIFLORA	3	FACU	Ad	Shrub	MULTIFLORA ROSE
RUDHIR	1	Rudbeckia hirta	3	FACU	Nt	P-Forb	BLACK-EYED SUSAN
SALAMY	5	Salix amygdaloides	-3	FACW	Nt	Tree	PEACH-LEAVED WILLOW
SALERI	5	Salix eriocephala	-3	FACW	Nt	Shrub	HEART-LEAVED WILLOW
SALGLU	7	Salix glaucophylloides	-3	FACW	Nt	Shrub	BLUE-LEAVED WILLOW
SALINT	1	Salix interior	-5	OBL	Nt	Shrub	SANDBAR WILLOW
SALNIG	4	Salix nigra	-5	OBL	Nt	Tree	BLACK WILLOW
SCIACU	6	Scirpus acutus	-5	OBL	Nt	P-Sedge	HARD-STEMMED BULRUSH
SCICYP	6	Scirpus cyperinus	-5	OBL	Nt	P-Sedge	WOOL GRASS
SCIFLU	4	Scirpus fluviatilis	-5	OBL	Nt	P-Sedge	RIVER BULRUSH
SCIPEN	4	Scirpus pendulus	-5	OBL	Nt	P-Sedge	RED BULRUSH
SCIPUN	5	Scirpus pungens	-5	OBL	Nt	P-Sedge	CHAIRMAKER'S RUSH
SENAU	6	Senecio pauperculus	-1	FAC+	Nt	P-Forb	BALSAM RAGWORT
SOLALT	1	Solidago altissima	3	FACU	Nt	P-Forb	TALL GOLDENROD
SOLGRG	4	Solidago graminifolia	-2	FACW-	Nt	P-Forb	COMMON GRASS-LEAVED GOLDENROD
SOLGRN	3	Solidago graminifolia nuttallii	0	[FAC]	Nt	P-Forb	HAIKY GRASS-LEAVED GOLDENROD
SFAPEC	4	Spartina pectinata	-4	FACW+	Nt	P-Grass	PRAIRIE COBD GRASS
SPIPOL	7	Spirodela polyrhiza	-5	OBL	Nt	A-Forb	GREAT DUCKWEED
TYPANG	1	Typha angustifolia	-5	OBL	Nt	P-Forb	NARROW-LEAVED CATTAIL
TYPLAT	1	Typha latifolia	-5	OBL	Nt	P-Forb	BROAD-LEAVED CATTAIL
TYPLA	1	Typha X glauca	-5	OBL	Nt	P-Forb	HYBRID CATTAIL
VIBDEN	0	VIBURNUM DENTATUM	5	UPL	Ad	Shrub	ARROW-WOOD
WOLCOL	7	Wolffia columbiana	-5	OBL	Nt	A-Forb	AMERICAN WATER MEAL

Additional plants observed not identifiable to species:  
Galium sp. (G. tinctorium or G. trifidum)  
Helenium sp. (H. autumnale or H. flexuosum)  
Rubus sp.

Site: Teibel Site  
Locale: Lake County, Indiana  
Date: June 30, 2011  
By: S. Barker, S. Namesnik  
File: r:\Projects\11102\1102043\_HitchcockDesign\_Scherville Teibel Nature Preserve\Data\20110705\_wetprairieinventory.in  
Notes: Wet Prairie Vascular Plant Species Inventory

FLORISTIC QUALITY DATA		Native	108	77.1%	Adventive	32	22.9%
108	NATIVE SPECIES	Tree	5	3.6%	Tree	0	0.0%
140	Total Species	Shrub	6	4.3%	Shrub	2	1.4%
4.2	NATIVE MEAN C	W-Vine	3	2.1%	W-Vine	0	0.0%
3.3	W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%
43.9	NATIVE FQI	P-Forb	55	39.3%	P-Forb	13	9.3%
38.5	W/Adventives	B-Forb	3	2.1%	B-Forb	5	3.6%
-1.1	NATIVE MEAN W	A-Forb	10	7.1%	A-Forb	3	2.1%
-0.4	W/Adventives	P-Grass	11	7.9%	P-Grass	8	5.7%
AVG: Faculative (+)		A-Grass	1	0.7%	A-Grass	1	0.7%
		P-Sedge	13	9.3%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Cryptogam	1	0.7%			

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME	
ACHMIL	0	ACHILLEA MILLEFOLIUM	3	FACU	Ad	P-Forb	YARROW
AGRPAR	7	Agrimonia parviflora	-1	FAC+	Nt	P-Forb	SWAMP AGRIMONY
AGRREP	0	AGROPYRON REPENS	3	FACU	Ad	P-Grass	QUACK GRASS
AGRALA	0	AGROSIS ALBA	-3	FACW	Ad	P-Grass	REDTOP
ANDGER	5	Andropogon gerardii	1	FAC-	Nt	P-Grass	BIG BLUESTEM GRASS
APOSIB	2	Apocynum sibiricum	-1	FAC+	Nt	P-Forb	PRAIRIE INDIAN HEMP
ARCMIN	0	ARCTIUM MINUS	5	UPL	Ad	B-Forb	COMMON BURDOCK
ARIINT	5	Aristida intermedia	0	FAC	Nt	A-Grass	FALSE ARROW FEATHER
ASCSYR	0	Asclepias syriaca	5	UPL	Nt	P-Forb	COMMON MILKWEED
ASPOFF	0	ASPARAGUS OFFICINALIS	3	FACU	Ad	P-Forb	ASPARAGUS
ASTNOV	4	Aster novae-angliae	-3	FACW	Nt	P-Forb	NEW ENGLAND ASTER
ASTPIL	0	Aster pilosus	2	FACU+	Nt	P-Forb	HAIKY ASTER
ASTSIS	3	Aster simplex	-5	OBL	Nt	P-Forb	PANICLED ASTER
BIDPOL	3	Bidens polylepis	-3	FACW	Nt	A-Forb	BUR MARI GOLD
BROTEC	0	BROMUS TECTORUM	5	UPL	Ad	A-Grass	DOWNY BROME
CALCAN	3	Calamagrostis canadensis	-5	OBL	Nt	P-Grass	BLUE JOINT GRASS
CXANNX	7	Carex annectens xanthocarpa	0	[FAC]	Nt	P-Sedge	SMALL YELLOW FOX SEDGE
CXCRIS	4	Carex cristatella	-4	FACW+	Nt	P-Sedge	CRESTED OVAL SEDGE
CXGRAN	4	Carex granularis	-4	FACW+	Nt	P-Sedge	PALE SEDGE
CXSCOP	7	Carex scoparia	-3	FACW	Nt	P-Sedge	LANCE-FRUITED OVAL SEDGE
CXSUBE	8	Carex suberecta	-5	OBL	Nt	P-Sedge	WEDGE-FRUITED OVAL SEDGE
CXVULP	2	Carex vulpinoidea	-5	OBL	Nt	P-Sedge	BROWN FOX SEDGE
CENPUL	0	CENTAURIUM PULCHELLUM	4	FACU-	Ad	A-Forb	SHOWY CENTAURY
CHRLEP	0	CHRYSANTHEMUM LEUCANTHEMUM PINNATIFIDUM	5	UPL	Ad	P-Forb	OX-EYE DAISY
CICMAC	6	Cicuta maculata	-5	OBL	Nt	P-Forb	WATER HEMLOCK
CIRDIS	2	Cirsium discolor	5	UPL	Nt	B-Forb	PASTURE THISTLE
CONMUL	5	Conoclea multifida	-4	FACW+	Nt	A-Forb	OBE-WAN-CONEBEA
CONSEP	1	Convolvulus sepium	0	FAC	Nt	P-Forb	HEDGE BINDWEED
COROBL	6	Cornus obliqua	-4	FACW+	Nt	Shrub	BLUE-FRUITED DOGWOOD
DAUCAR	0	DAUCUS CAROTA	5	UPL	Ad	B-Forb	QUEEN ANNE'S LACE
DIAARM	0	DIANTHUS ARMERIA	5	UPL	Ad	A-Forb	DEPTFORD PINK
ELEELL	8	Eleocharis elliptica	-5	[OBL]	Nt	P-Sedge	GOLDEN-SEEDED SPIKE RUSH
ELEERY	2	Eleocharis erythropoda	-5	OBL	Nt	P-Sedge	RED-ROOTED SPIKE RUSH
ERIPHI	4	Erigeron philadelphicus	-3	FACW	Nt	P-Forb	MARSH FLEABANE
ERISTR	5	Erigeron strigosus	5	[UPL]	Nt	B-Forb	DAISY FLEABANE
EUPALT	0	Eupatorium altissimum	3	[FACU]	Nt	P-Forb	TALL BONESET
EUPPER	4	Eupatorium perfoliatum	-4	FACW+	Nt	P-Forb	COMMON BONESET
EUPRUG	4	Eupatorium rugosum	5	UPL	Nt	P-Forb	WHITE SNAKEROOT
EUPSEM	0	Eupatorium serotinum	-1	FAC+	Nt	P-Forb	LATE BONESET
FESELA	0	FESTUCA ELATIOR	2	FACU+	Ad	P-Grass	TALL FESCUE
FESRUB	0	FESTUCA RUBRA	1	FAC-	Ad	P-Grass	RED FESCUE
FESVIR	1	Fragaria virginiana	1	FAC-	Nt	P-Forb	WILD STRAWBERRY
GEULAT	2	Geum laciniatum trichocarpum	-3	FACW	Nt	P-Forb	ROUGH AVENS
GLEHED	0	GLECHOMA HEDERACEA	3	FACU	Ad	P-Forb	CREeping CHARLIE
GLYSTR	4	Glyceria striata	-3	[FACW]	Nt	P-Grass	FOWL MANNA GRASS
GRANEG	7	Gratiola neglecta	-5	OBL	Nt	A-Forb	CLAMMY HEDGE HYSSOP
HELGR0	2	Helianthus grosseserratus	-2	FACW-	Nt	P-Forb	SAWTOOTH SUNFLOWER
HYPMJ	6	Hypericum majus	-3	FACW	Nt	A-Forb	SAND ST. JOHN'S WORT
HYPPER	0	HYPERICUM PERFORATUM	5	UPL	Ad	P-Forb	COMMON ST. JOHN'S WORT
IRIVIS	5	Iris virginica shrevei	-5	OBL	Nt	P-Forb	BLUE FLAG
JUNACU	6	Juncus acuminatus	-5	OBL	Nt	P-Forb	SHARP-FRUITED RUSH
JUNBR	9	Juncus brachycarpus	-3	FACW	Nt	P-Forb	SHORT-FRUITED RUSH
JUNBUF	5	Juncus bufonius	-4	FACW+	Nt	A-Forb	TOAD RUSH

JUNDUD	4	Juncus dudleyi	0	[FAC]	Nt	P-Forb	DUDLEY'S RUSH
JUNEFF	7	Juncus effusus	-5	OBL	Nt	P-Forb	COMMON RUSH
JUNINT	6	Juncus interior	3	[FACU]	Nt	P-Forb	INLAND RUSH
JUNMAR	9	Juncus marginatus	-3	FACW	Nt	P-Forb	GRASS-LEAVED RUSH
JUNTEN	0	Juncus tenuis	2	[FACU+]	Nt	P-Forb	PATH RUSH
KOECRI	7	Koeleria cristata	5	UPL	Nt	P-Grass	JUNE GRASS
LACSER	0	LACTUCA SERRIOLA	0	PAC	Ad	B-Forb	PRICKLY LETTUCE
LEOCAR	0	LEONURUS CARDIACA	5	UPL	Ad	P-Forb	MOTHERWORT
LEPVIR	0	Lepidium virginicum	4	FACU-	Nt	A-Forb	COMMON PEPPERCRESS
LOBSPS	6	Lobelia spicata	0	FAC	Nt	P-Forb	PALE SPIKED LOBELIA
LUDALT	6	Ludwigia alternifolia	-5	OBL	Nt	P-Forb	SEEDBOX
LUDPAA	5	Ludwigia palustris americana	-5	OBL	Nt	P-Forb	MARSH PURSLANE
LYCAME	5	Lycopus americanus	-5	OBL	Nt	P-Forb	COMMON WATER HOREHOUND
LYTALA	7	Lythrum alatum	-5	OBL	Nt	P-Forb	WINGED LOOSESTRIPE
LYTSAL	0	LYTHRUM SALICARIA	-5	OBL	Ad	P-Forb	PURPLE LOOSESTRIPE
MEDLUP	0	MEDICAGO LUPULINA	1	FAC-	Ad	A-Forb	BLACK MEDICK
MELALB	0	MELILLOTUS ALBA	3	FACU	Ad	B-Forb	WHITE SWEET CLOVER
MIMRIN	6	Mimulus ringens	-5	OBL	Nt	P-Forb	MONKEY FLOWER
NEFCAT	0	NEPETA CATARIA	1	FAC-	Ad	P-Forb	CATNIP
ONENBT	0	Oenothera biennis	3	FACU	Nt	B-Forb	COMMON EVENING PRIMROSE
ONENIL	10	Oenothera pilosella	1	FAC-	Nt	P-Forb	PRAIRIE SUNDROPS
ONOUSEN	8	Oenoclea sensibilis	-3	FACW	Cryptogam		SENSITIVE FERN
PANCLA	6	Panicum clandestinum	-3	FACW	Nt	P-Grass	DEER-TONGUE GRASS
PANIMP	2	Panicum implicatum	1	FAC-	Nt	P-Grass	OLD-FIELD PANIC GRASS
PANLID	9	Panicum lindheimeri	-1	FAC+	Nt	P-Grass	SMOOTH WOOLLY PANIC GRASS
PANOLS	4	Panicum oligosanthos scribnerianum	3	[FACU]	Nt	P-Grass	SCRIBNER'S PANIC GRASS
PARINS	1	Parthenocissus inserta	3	FACU	Nt	W-Vine	THICKET CREEPER
PENDIG	4	Penstemon digitalis	1	FAC-	Nt	P-Forb	FOXGLOVE BEARD TONGUE
PENHIR	9	Penstemon hirsutus	5	UPL	Nt	P-Forb	HAIRY BEARD TONGUE
PHAARU	0	PHALARIS ARUNDINACEA	-4	FACW+	Ad	P-Grass	REED CANARY GRASS
PHGLLI	8	Phlox glaberrima interior	-3	FACW	Nt	P-Forb	MARSH PHLOX
PHYHET	3	Physalis heterophylla	5	UPL	Nt	P-Forb	CLAMMY GROUND CHERRY
PLAARI	0	Plantago aristata	5	UPL	Nt	A-Forb	POOR JOE
PLALAN	0	PLANTAGO LANCEOLATA	0	FAC	Ad	P-Forb	ENGLISH PLANTAIN
PLARUG	0	Plantago rugelii	0	FAC	Nt	A-Forb	RED-STALKED PLANTAIN
PLAACC	9	Platanus occidentalis	-3	FACW	Nt	Tree	SYCAMORE
POACOM	0	POA COMPRESSA	2	FACU+	Ad	P-Grass	CANADA BLUE GRASS
POAPRA	0	POA PRATENSIS	1	FAC-	Ad	P-Grass	KENTUCKY BLUE GRASS
POLCOC	4	Polygonum coccineum	-5	OBL	Nt	P-Forb	WATER HEARTSEASE
POPDEL	2	Populus deltoides	-1	FAC+	Nt	Tree	EASTERN COTTONWOOD
POTNOR	0	Potentilla norvegica	0	FAC	Nt	A-Forb	NORWAY CINQUEFOIL
POTSIS	4	Potentilla simplex	4	FACU-	Nt	P-Forb	COMMON CINQUEFOIL
PRUVLA	0	Prunella vulgaris lanceolata	3	[FACU]	Nt	P-Forb	SELF HEAL
PYCTEN	7	Pycnanthemum tenuifolium	0	FAC	Nt	P-Forb	SLENDER MOUNTAIN MINT
PYCVIR	5	Pycnanthemum virginianum	-4	FACW+	Nt	P-Forb	COMMON MOUNTAIN MINT
RHAFRA	0	RHAMNUS FRANGULA	-1	FAC+	Ad	Shrub	GLOSSY BUCKTHORN
RHURAD	2	Rhus radicans	-1	FAC+	Nt	W-Vine	POISON IVY
RHUTYP	1	Rhus typhina	5	UPL	Nt	Tree	STAGHORN SUMAC
ROSCAR	5	Rosa carolina	4	FACU-	Nt	Shrub	PASTURE ROSE
RUDHIR	1	Rudbeckia hirta	3	FACU	Nt	P-Forb	BLACK-EYED SUSAN
RUDLAC	5	Rudbeckia laciniata	-4	FACW+	Nt	P-Forb	WILD GOLDEN GLOW
RUMCRI	0	RUMEX CRISPUS	-1	FAC+	Ad	P-Forb	CURLY DOCK
SALAMY	5	Salix amygdaloides	-3	FACW	Nt	Tree	PEACH-LEAVED WILLOW
SALERI	5	Salix eriocephala	-3	FACW	Nt	Shrub	HEART-LEAVED WILLOW
SALGLU	7	Salix glaucophyllioides	-3	FACW	Nt	Shrub	BLUE-LEAVED WILLOW
SALINT	1	Salix interior	-5	OBL	Nt	Shrub	SANDBAR WILLOW
SALNIG	4	Salix nigra	-5	OBL	Nt	Tree	BLACK WILLOW
SAMCAN	1	Sambucus canadensis	-2	FACW-	Nt	Shrub	ELDERBERRY
SCIACU	6	Scirpus acutus	-5	OBL	Nt	P-Sedge	HARD-STEMMED BULRUSH
SCIATR	4	Scirpus atrovirens	-5	OBL	Nt	P-Sedge	DARK GREEN RUSH
SCICYP	6	Scirpus cyperinus	-5	OBL	Nt	P-Sedge	WOOL GRASS
SCIPEN	4	Scirpus pendulus	-5	OBL	Nt	P-Sedge	RED BULRUSH
SCIPUN	5	Scirpus pungens	-5	OBL	Nt	P-Sedge	CHAIRMAKER'S RUSH
SENPAN	6	Senecio pauperculus	-1	FAC+	Nt	P-Forb	BALSAM RAGWORT
SILAWI	1	Silene antirrhina	5	UPL	Nt	A-Forb	SLEEPY CATCHFLY
SOLCAR	0	SOLANUM CAROLINENSE	4	FACU-	Ad	P-Forb	HORSE NETTLE
SOLALT	1	Solidago altissima	3	FACU	Nt	P-Forb	TALL GOLDENROD
SOLGIG	4	Solidago gigantea	-3	FACW	Nt	P-Forb	LATE GOLDENROD
SOLGRG	4	Solidago graminifolia	-2	FACW-	Nt	P-Forb	COMMON GRASS-LEAVED GOLDENROD
SOLGRN	3	Solidago graminifolia nuttallii	0	[FAC]	Nt	P-Forb	HAIRY GRASS-LEAVED GOLDENROD
SORNUT	5	Sorghastrum nutans	2	FACU+	Nt	P-Grass	INDIAN GRASS
SPHOBT	7	Sphenopholis obtusata	0	FAC	Nt	P-Grass	PRAIRIE WEDGE GRASS
STATEH	5	Stachys tenuifolia hispida	-4	FACW+	Nt	P-Forb	MARSH HEDGE NETTLE
STISPA	7	Stipa spartea	5	UPL	Nt	P-Grass	PORCUPINE GRASS
TROAHI	2	Tradesantia ohniensis	2	FACU+	Nt	P-Forb	COMMON SPIDERWORT
TRIPRA	0	TRIFOLIUM PRATENSE	5	UPL	Ad	P-Forb	RED CLOVER

TRIREP	0	TRIFOLIUM REPENS	2	FACU+	Ad	P-Forb	WHITE CLOVER
TRIFLA	0	TRIODIA FLAVA	5	UPL	Ad	P-Grass	FALSE REEDTOP
URTERO	2	Urtica procera	-1	FAC+	Nt	P-Forb	TALL NETTLE
VERTHA	0	VERBASCUM THAPSUS	5	UPL	Ad	B-Forb	COMMON MULLLEIN
VERHAS	4	Verbena hastata	-4	FACW+	Nt	P-Forb	BLUE VERVAIN
VERURU	5	Verbena urticifolia	5	UPL	Nt	P-Forb	HAIRY WHITE VERVAIN
VERATA	5	Vernonia altissima taeniotricha	0	[FAC]	Nt	P-Forb	HAIRY TALL IRONWEED
VIBREC	0	VIBURNUM RECOGNITUM	-2	FACW-	Ad	Shrub	SMOOTH ARROW-WOOD
VIOSAG	7	Viola sagittata	-2	FACW-	Nt	P-Forb	ARROW-LEAVED VIOLET
VIOSOR	3	Viola sororia	1	FAC-	Nt	P-Forb	COMMON BLUE VIOLET
VITRIP	2	Vitis riparia	-2	FACW-	Nt	W-Vine	RIVERBANK GRAPE

Additional plants observed not identifiable to species:

Alisma sp. (A. subcordatum or A. triviale)  
 Asclepias sp.  
 Cerastium sp.  
 Galium sp. (G. tinctorium or G. trifidum)  
 Juncus sp. (J. canadensis or J. torreyi)  
 Polygonum sp. (P. hydropiper or P. punctatum)  
 Rubus sp.

Site: Teibel Site  
 Locale: Lake County, Indiana  
 Date: June 30, 2011  
 By: S. Barker, S. Nemesnik  
 File: s:\Borjenta\11102\1102043\_HitchcockDesign\_Schereville Teibel Nature Preserve\Data\20110705\_mesicprairieinventory.inv  
 Notes: Mesic Prairie Vascular Plant Species Inventory (seeded)

FLORISTIC QUALITY DATA		Native	59	64.1%	Adventive	33	35.9%
59 NATIVE SPECIES	Tree	7	7.6%	Tree	2	2.2%	
92 Total Species	Shrub	2	2.2%	Shrub	3	3.3%	
3.8 NATIVE MEAN C	W-Vine	2	2.2%	W-Vine	1	1.1%	
2.4 W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%	
29.2 NATIVE FOI	P-Forb	31	33.7%	P-Forb	11	12.0%	
23.4 W/Adventives	B-Forb	3	3.3%	B-Forb	5	5.4%	
0.6 NATIVE MEAN W	A-Forb	1	1.1%	A-Forb	2	2.2%	
1.4 W/Adventives	P-Grass	10	10.9%	P-Grass	8	8.7%	
AVG: Faculative (-)	A-Grass	1	1.1%	A-Grass	1	1.1%	
	P-Sedge	2	2.2%	P-Sedge	0	0.0%	
	A-Sedge	0	0.0%	A-Sedge	0	0.0%	
	Cryptogam	0	0.0%				

ACRONYM	C SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACHMIL	0 ACHILLEA MILLEFOLIUM	3 FACU	Ad P-Forb	YARROW
AGRPAR	7 Agrimonia parviflora	-1 FAC+	Nt P-Forb	SWAMP AGRIMONY
AGRREP	0 AGROPYRON REPENS	3 FACU	Ad P-Grass	QUACK GRASS
AGRALA	0 AGROSTIS ALBA	-3 FACW	Ad P-Grass	REDTOP
AMBARE	0 Ambrosia artemisiifolia elatior	3 FACU	Nt A-Forb	COMMON RAGWEED
ANDGER	5 Andropogon gerardii	1 FAC-	Nt P-Grass	BIG BLUESTEM GRASS
ANDSCO	5 Andropogon scoparius	4 FACU-	Nt P-Grass	LITTLE BLUESTEM GRASS
APOSIB	2 Apocynum sibiricum	-1 FAC+	Nt P-Forb	PRAIRIE INDIAN HEMP
ARIINT	5 Aristida intermedia	0 FAC	Nt A-Grass	FALSE ARROW FEATHER
ASCSYR	0 Asclepias syriaca	5 UPL	Nt P-Forb	COMMON MILKWEED
BETPEN	0 BETULA PENDULA	3 [FACU]	Ad Tree	EUROPEAN WHITE BIRCH
BETPOP	10 Betula populifolia	0 FAC	Nt Tree	GRAY BIRCH
BROJAP	0 BROMUS JAPONICUS	3 FACU	Ad A-Grass	JAPANESE CHESS
CXSWAN	8 Carex swanii	3 FACU	Nt P-Sedge	DOWNY GREEN SEDGE
CELORB	0 CELASTRUS ORBICULATUS	5 UPL	Ad W-Vine	ORIENTAL BITTERSWEET
CENMAC	0 CENTAUREA MACULOSA	5 UPL	Ad B-Forb	SPOTTED KNAWEED
CHRLF	0 CHRYSANTHEMUM LEUCANTHEMUM PINNATIFIDUM	5 UPL	Ad P-Forb	OX-EYE DAISY
CIRARV	0 CIRSIUM ARVENSE	5 UPL	Ad P-Forb	FIELD THISTLE
CIRDIS	2 Cirsium discolor	5 UPL	Nt B-Forb	PASTURE THISTLE
DAUCAR	0 DAUCUS CAROTA	5 UPL	Ad B-Forb	QUEEN ANNE'S LACE
DIAARM	0 DIANTHUS ARMERIA	5 UPL	Ad A-Forb	DEPTFORD PINK
ECHPAL	8 Echinacea pallida	5 UPL	Nt P-Forb	PURPLE CONEFLOWER
ELAUMB	0 ELAEBAGNUS UMBELLATA	5 UPL	Ad Shrub	AUTUMN OLIVE
ELYCAN	4 Elymus canadensis	1 FAC-	Nt P-Grass	CANADA WILD RYE
ERIAN	0 Erigeron annuus	1 FAC-	Nt B-Forb	ANNUAL FLEABANE
ERYYUC	9 Eryngium yuccifolium	-1 FAC+	Nt P-Forb	RATTLESNAKE MASTER
EUPALT	0 Eupatorium altissimum	3 [FACU]	Nt P-Forb	TALL BONESET
EUPSEM	0 Eupatorium serotinum	-1 FAC+	Nt P-Forb	LATE BONESET
FESCLA	0 FESTUCA ELATIOR	2 FACU+	Ad P-Grass	TALL FESCUE
FESRUB	0 FESTUCA RUBRA	1 FAC-	Ad P-Grass	RED FESCUE
FRAVIR	1 Fragaria virginiana	1 FAC-	Nt P-Forb	WILD STRAWBERRY
FRAPES	1 Fraxinus pennsylvanica subintegerrima	0 FAC	Nt Tree	GREEN ASH
HELGRO	2 Helianthus grosseserratus	-2 FACW-	Nt P-Forb	SAWTOOTH SUNFLOWER
HYPPER	0 HYPERICUM PERFORATUM	5 UPL	Ad P-Forb	COMMON ST. JOHN'S WORT
HYPPUN	4 Hypericum punctatum	3 [FACU]	Nt P-Forb	SPOTTED ST. JOHN'S WORT
JUNTEN	0 Juncus tenuis	2 [FACU+]	Nt P-Forb	PATH RUSH
LACCAN	2 Lactuca canadensis	2 FACU+	Nt B-Forb	WILD LETTUCE
LOTGOR	0 LOTUS CORNICULATUS	1 FAC-	Ad P-Forb	BIRD'S FOOT TREFOIL
MELALB	0 MELLILLOTUS ALBA	3 FACU	Ad B-Forb	WHITE SWEET CLOVER
MELLOF	0 MELLILLOTUS OFFICINALIS	3 FACU	Ad B-Forb	YELLOW SWEET CLOVER
MONFIL	4 Monarda fistulosa	3 FACU	Nt P-Forb	WILD BERGAMOT
OEINFIL	10 Oenothera pilosella	1 FAC-	Nt P-Forb	PRAIRIE SUNROPS
PANIMP	2 Panicum implicatum	1 FAC-	Nt P-Grass	OLD-FIELD PANIC GRASS
PANLID	9 Panicum lindheimeri	-1 FAC+	Nt P-Grass	SMOOTH WOOLLY PANIC GRASS
PANOLS	4 Panicum oligosanthos scribnerianum	3 [FACU]	Nt P-Grass	SCRIBNER'S PANIC GRASS
PANVIR	5 Panicum virgatum	-1 FAC+	Nt P-Grass	SWITCH GRASS
PARINS	1 Parthenocissus inserta	3 FACU	Nt W-Vine	THICKET CREEPER
PHAAAR	0 PHALARIS ARUNDINACEA	-4 FACW+	Ad P-Grass	REED CANARY GRASS
PHRAUS	1 Phragmites australis	-4 FACW+	Nt P-Grass	COMMON REED
PHYHET	3 Physalis heterophylla	5 UPL	Nt P-Forb	CLAMMY GROUND CHERRY
PLALAN	0 PLANTAGO LANCEOLATA	0 FAC	Ad P-Forb	ENGLISH PLANTAIN
POACOM	0 POA COMPRESSA	2 FACU+	Ad P-Grass	CANADA BLUE GRASS
POAPRA	0 POA PRATENSIS	1 FAC-	Ad P-Grass	KENTUCKY BLUE GRASS

POLAMS	4 Polygonum amphibium stipulaceum	-5 OBL	Nt P-Forb	WATER KNOTWEED
POLCOO	4 Polygonum coccineum	-5 OBL	Nt P-Forb	WATER HEARTSEASE
POPEL	2 Populus deltoides	-1 FAC+	Nt Tree	EASTERN COTTONWOOD
POPTR	4 Populus tremuloides	0 FAC	Nt Tree	QUAKING ASPEN
POTSIS	4 Potentilla simplex	4 FACU-	Nt P-Forb	COMMON CINQUEFOIL
PRUSER	1 Prunus serotina	3 FACU	Nt Tree	WILD BLACK CHERRY
PYCTEN	7 Pycnanthemum tenuifolium	0 FAC	Nt P-Forb	SLENDER MOUNTAIN MINT
PYCVIR	5 Pycnanthemum virginianum	-4 FACW+	Nt P-Forb	COMMON MOUNTAIN MINT
PYRCAL	0 PYRUS CALLERYANA	5 UPL	Ad Tree	ORNAMENTAL PEAR
QUEMAC	5 Quercus macrocarpa	1 FAC-	Nt Tree	BUR OAK
QUEPAU	8 Quercus palustris	-3 FACW	Nt Tree	PIN OAK
RATCOL	0 RATIBIDA COLUMNIFERA	5 UPL	Ad P-Forb	LONG-HEADED CONEFLOWER
RATPIN	4 Ratibida pinnata	5 UPL	Nt P-Forb	YELLOW CONEFLOWER
RHAFFA	0 RHAMNUS FRANGULA	-1 FAC+	Ad Shrub	GLOSSY BUCKTHORN
RHUGLA	1 Rhus glabra	5 UPL	Nt Shrub	SMOOTH SUMAC
RHRURD	2 Rhus radicans	-1 FAC+	Nt W-Vine	POISON IVY
ROSMUL	0 ROSA MULTIFLORA	3 FACU	Ad Shrub	MULTIFLORA ROSE
RUDHIR	1 Rudbeckia hirta	3 FACU	Nt P-Forb	BLACK-EYED SUSAN
RUMACE	0 RUMEX ACETOSELLA	3 [FACU]	Ad P-Forb	FIELD SORREL
RUMCRI	0 RUMEX CRISPUS	-1 FAC+	Ad P-Forb	CURLY DOCK
SAMCAN	1 Sambucus canadensis	-2 FACW-	Nt Shrub	ELDERBERRY
SCIPEN	4 Scirpus pendulus	-5 OBL	Nt P-Sedge	RED BULRUSH
SILPER	5 Silphium perfoliatum	-2 FACW-	Nt P-Forb	CUP PLANT
SISANG	10 Sisyrinchium angustifolium	-2 FACW-	Nt P-Forb	STOUT BLUE-EYED GRASS
SOLCAR	0 SOLANUM CAROLINENSE	4 FACU-	Ad P-Forb	HORSE NETTLE
SOLALT	1 Solidago altissima	3 FACU	Nt P-Forb	TALL GOLDENROD
SOLGIG	4 Solidago gigantea	-3 FACW	Nt P-Forb	LATE GOLDENROD
SOLGRG	4 Solidago graminifolia	-2 FACW-	Nt P-Forb	COMMON GRASS-LEAVED GOLDENROD
SOLNEM	4 Solidago nemoralis	5 UPL	Nt P-Forb	OLD-FIELD GOLDENROD
SORNUC	5 Sorghastrum nutans	2 FACU+	Nt P-Grass	INDIAN GRASS
SPEAEC	4 Spartina pectinata	-4 FACW+	Nt P-Grass	PRAIRIE CORD GRASS
STATEH	5 Stachys tenuifolia hispida	-4 FACW+	Nt P-Forb	MARSH HEDGE NETTLE
TRAGHI	2 Tradescantia ohioensis	2 FACU+	Nt P-Forb	COMMON SPIDERWORT
TRICAM	0 TRIFOLIUM CAMPESTRE	5 UPL	Ad A-Forb	LOW HOP CLOVER
TRIPRA	0 TRIFOLIUM PRATENSE	5 UPL	Ad P-Forb	RED CLOVER
VERTHA	0 TRIPSACUM DACTYLOIDES	5 UPL	Ad P-Grass	GAMA GRASS
VERHAS	4 Verbena hastata	5 UPL	Ad B-Forb	COMMON MULLLEIN
VERURU	5 Verbena urticifolia	-4 FACW+	Nt P-Forb	BLUE VERVAIN
		5 UPL	Nt P-Forb	HAIRY WHITE VERVAIN

Additional plants observed not identifiable to species:  
 Rubus sp.

JUNDUD	4	Juncus dudleyi	0	[FAC]	Nt	P-Forb	DUDLEY'S RUSH
JUNEFF	7	Juncus effusus	-5	OBL	Nt	P-Forb	COMMON RUSH
JUNINT	6	Juncus interior	3	[FACU]	Nt	P-Forb	INLAND RUSH
JUNMAR	9	Juncus marginatus	-3	FACW	Nt	P-Forb	GRASS-LEAVED RUSH
JUNTEN	0	Juncus tenuis	2	[FACU+]	Nt	P-Forb	PATH RUSH
KOECRI	7	Koeleria cristata	5	UPL	Nt	P-Grass	JUNE GRASS
LACSER	0	LACTUCA SERRIOLA	0	FAC	Ad	B-Forb	PRICKLY LETTUCE
LEOCAR	0	LEONURUS CARDIACA	5	UPL	Ad	P-Forb	MOTHERWORT
LEPVIR	0	Lepidium virginicum	4	FACU-	Nt	A-Forb	COMMON PEPPERCRESS
LOBSPS	6	Lobelia spicata	0	FAC	Nt	P-Forb	PALE SPIKED LOBELIA
LUDALT	6	Ludwigia alternifolia	-5	OBL	Nt	P-Forb	SEEDBOX
LUDPAA	5	Ludwigia palustris americana	-5	OBL	Nt	P-Forb	MARSH PURSLANE
LYCAME	5	Lycopus americanus	-5	OBL	Nt	P-Forb	COMMON WATER HOREHOUND
LYTALA	7	Lythrum alatum	-5	OBL	Nt	P-Forb	WINGED LOOSESTRIPE
LYTSAL	0	LYTHRUM SALICARIA	-5	OBL	Ad	P-Forb	PURPLE LOOSESTRIPE
MEDLUP	0	MEDICAGO LUPULINA	1	FAC-	Ad	A-Forb	BLACK MEDICK
MELALB	0	MELILLOTUS ALBA	3	FACU	Ad	B-Forb	WHITE SWEET CLOVER
MIMRIN	6	Mimulus ringens	-5	OBL	Nt	P-Forb	MONKEY FLOWER
NEFCAT	0	NEPETA CATARIA	1	FAC-	Ad	P-Forb	CATNIP
OEENITE	0	Oenothera biennis	3	FACU	Nt	B-Forb	COMMON EVENING PRIMROSE
OEENIL	10	Oenothera pilosella	1	FAC-	Nt	P-Forb	PRAIRIE SUNDROPS
ONOUSEN	8	Onoclea sensibilis	-3	FACW	Cryptogam		SENSITIVE FERN
PANCLA	6	Panicum clandestinum	-3	FACW	Nt	P-Grass	DEER-TONGUE GRASS
PANIMP	2	Panicum implicatum	1	FAC-	Nt	P-Grass	OLD-FIELD PANIC GRASS
PANLID	9	Panicum lindheimeri	-1	FAC+	Nt	P-Grass	SMOOTH WOOLLY PANIC GRASS
PANOLS	4	Panicum oligosanthes scribnerianum	3	[FACU]	Nt	P-Grass	SCRIBNER'S PANIC GRASS
PARINS	1	Parthenocissus inserta	3	FACU	Nt	W-Vine	THICKET CREEPER
PENDIG	4	Penstemon digitalis	1	FAC-	Nt	P-Forb	FOXGLOVE BEARD TONGUE
PENHIR	9	Penstemon hirsutus	5	UPL	Nt	P-Forb	HAIRY BEARD TONGUE
PHAARU	0	PHALARIS ARUNDINACEA	-4	FACW+	Ad	P-Grass	REED CANARY GRASS
PHGLLI	8	Phlox glaberrima interior	-3	FACW	Nt	P-Forb	MARSH PHLOX
PHYHET	3	Physalis heterophylla	5	UPL	Nt	P-Forb	CLAMMY GROUND CHERRY
PLAARI	0	Plantago aristata	5	UPL	Nt	A-Forb	POOR JOE
PLALAN	0	PLANTAGO LANCEOLATA	0	FAC	Ad	P-Forb	ENGLISH PLANTAIN
PLANUG	0	Plantago rugelii	0	FAC	Nt	A-Forb	RED-STALKED PLANTAIN
PLAOC	9	Platanus occidentalis	-3	FACW	Nt	Tree	SYCAMORE
POACOM	0	POA COMPRESSA	2	FACU+	Ad	P-Grass	CANADA BLUE GRASS
POAPRA	0	POA PRATENSIS	1	FAC-	Ad	P-Grass	KENTUCKY BLUE GRASS
POLCOC	4	Polygonum coccineum	-5	OBL	Nt	P-Forb	WATER HEARTSEASE
POPDEL	2	Populus deltoides	-1	FAC+	Nt	Tree	EASTERN COTTONWOOD
POTNOR	0	Potentilla norvegica	0	FAC	Nt	A-Forb	NORWAY CINQUEFOIL
POTSIS	4	Potentilla simplex	4	FACU-	Nt	P-Forb	COMMON CINQUEFOIL
PRUVLA	0	Prunella vulgaris lanceolata	3	[FACU]	Nt	P-Forb	SELF HEAL
PYCCTEN	7	Pycnanthemum tenuifolium	0	FAC	Nt	P-Forb	SLENDER MOUNTAIN MINT
PYCVIR	5	Pycnanthemum virginianum	-4	FACW+	Nt	P-Forb	COMMON MOUNTAIN MINT
RHAFRA	0	RHAMNUS FRANGULA	-1	FAC+	Ad	Shrub	GLOSSY BUCKTHORN
RHURAD	2	Rhus radicans	-1	FAC+	Nt	W-Vine	POISON IVY
RHUTYP	1	Rhus typhina	5	UPL	Nt	Tree	STAGHORN SUMAC
ROSCAR	5	Rosa carolina	4	FACU-	Nt	Shrub	PASTURE ROSE
RUDHIR	1	Rudbeckia hirta	3	FACU	Nt	P-Forb	BLACK-EYED SUSAN
RUDLAC	5	Rudbeckia laciniata	-4	FACW+	Nt	P-Forb	WILD GOLDEN GLOW
RUMCRI	0	RUMEX CRISPUS	-1	FAC+	Ad	P-Forb	CURLY DOCK
SALAMY	5	Salix amygdaloides	-3	FACW	Nt	Tree	PEACH-LEAVED WILLOW
SALERI	5	Salix eriocephala	-3	FACW	Nt	Shrub	HEART-LEAVED WILLOW
SALGLU	7	Salix glaucophyllioides	-3	FACW	Nt	Shrub	BLUE-LEAVED WILLOW
SALINT	1	Salix interior	-5	OBL	Nt	Shrub	SANDBAR WILLOW
SALNIG	4	Salix nigra	-5	OBL	Nt	Tree	BLACK WILLOW
SAMCAN	1	Sambucus canadensis	-2	FACW-	Nt	Shrub	ELDERBERRY
SCIACU	6	Scirpus acutus	-5	OBL	Nt	P-Sedge	HARD-STEMMED BULRUSH
SCIATR	4	Scirpus atrovirens	-5	OBL	Nt	P-Sedge	DARK GREEN RUSH
SCICYP	6	Scirpus cyperinus	-5	OBL	Nt	P-Sedge	WOOL GRASS
SCIPEN	4	Scirpus pendulus	-5	OBL	Nt	P-Sedge	RED BULRUSH
SCIPUN	5	Scirpus pungens	-5	OBL	Nt	P-Sedge	CHAIRMAKER'S RUSH
SENFPAU	6	Senecio pauperculus	-1	FAC+	Nt	P-Forb	BALSAM RAGWORT
SILAWI	1	Silene antirrhina	5	UPL	Nt	A-Forb	SLEEPY CATCHFLY
SOLCAR	0	SOLANUM CAROLINENSE	4	FACU-	Ad	P-Forb	HORSE NETTLE
SOLALT	1	Solidago altissima	3	FACU	Nt	P-Forb	TALL GOLDENROD
SOLGIG	4	Solidago gigantea	-3	FACW	Nt	P-Forb	LATE GOLDENROD
SOLGRG	4	Solidago graminifolia	-2	FACW-	Nt	P-Forb	COMMON GRASS-LEAVED GOLDENROD
SOLGRN	3	Solidago graminifolia nuttallii	0	[FAC]	Nt	P-Forb	HAIRY GRASS-LEAVED GOLDENROD
SORNUT	5	Sorghastrum nutans	2	FACU+	Nt	P-Grass	INDIAN GRASS
SPHOB	7	Sphenopholis obtusata	0	FAC	Nt	P-Grass	PRAIRIE WEDGE GRASS
STATEH	5	Stachys tenuifolia hispida	-4	FACW+	Nt	P-Forb	MARSH HEDGE NETTLE
STISPA	7	Stipa spartea	5	UPL	Nt	P-Grass	PORCUPINE GRASS
TRAOHI	2	Tridascantia ohimensis	2	FACU+	Nt	P-Forb	COMMON SPIDERWORT
TRIPRA	0	TRIFOLIUM PRATENSE	5	UPL	Ad	P-Forb	RED CLOVER



## APPENDIX B-2 WILDLIFE INVENTORY

### WILDLIFE OBSERVATIONS

SCIENTIFIC NAME	COMMON NAME
<b>BIRDS</b>	
<i>Ardea herodias</i>	Great Blue Heron
<i>Agelaius phoeniceus</i>	Red-winged Blackbird
<i>Aix sponsa</i>	Wood Duck
<i>Ardea alba</i>	Great Egret
<i>Bombycilla cedrorum</i>	Cedar Waxwing
<i>Branta canadensis</i>	Canada Goose
<i>Butorides virescens</i>	Green Heron
<i>Cardinalis cardinalis</i>	Northern Cardinal
<i>Carduelis tristis</i>	American Goldfinch
<i>Cathartes aura</i>	Turkey Vulture
<i>Charadrius vociferous</i>	Killdeer
<i>Cistothorus palustris</i>	Marsh Wren
<i>Columba livia</i>	Rock Pigeon
<i>Dendroica petechia</i>	Yellow Warbler
<i>Dumetella carolinensis</i>	Gray Catbird
<i>Geothlypis trichas</i>	Common Yellowthroat
<i>Hirundo rustica</i>	Barn Swallow
<i>Hylocichla mustelina</i>	Wood Thrush
<i>Icterus galbula</i>	Baltimore Oriole
<i>Melospiza georgiana</i>	Swamp Sparrow
<i>Melospiza melodia</i>	Song Sparrow
<i>Passerina cyanea</i>	Indigo Bunting
<i>Pipilo erythrophthalmus</i>	Eastern Towhee
<i>Poecile atricapillus</i>	Black-capped Chickadee
<i>Quiscalus quiscula</i>	Common Grackle
<i>Sterna caspia</i>	Caspian Tern
<i>Sturnus vulgaris</i>	European Starling
<i>Troglodytes aedon</i>	House Wren
<i>Turdus migratorius</i>	American Robin
<i>Vireo gilvus</i>	Warbling Vireo
<b>AMPHIBIANS</b>	
<i>Bufo americanus</i>	American Toad
<i>Lithobates catesbeia</i>	American Bullfrog
<i>Rana clamitans melanota</i>	Green Frog
<b>INSECTS</b>	
<i>Galerucella</i> sp.	Purple Loosetrife Biological Control Beetle
<i>Celithemis eponina</i>	Halloween Pennant
<i>Ischnura verticalis</i>	Eastern Forktail
<i>Junonia coenia</i>	Common Buckeye
<i>Pieris rapae</i>	Cabbage White
<i>Sympetrum</i> sp.	Meadowhawk
<i>Tramea lacerata</i>	Black Saddlebags

Cardno JFNew File # 1102043.00



Appendix B

**APPENDIX B-3  
SITE PHOTOGRAPHS**



Aquatic Bed Community.



Northeast Pond.

Site Photographs  
June 30, 2011  
Teibel Nature Preserve  
Scherville Parks and Recreation  
Lake County, Indiana

File # 1102043.00



708 Roosevelt Road, Walkerton, IN 46574  
Phone 574-586-3400 / Fax 574-586-3446  
www.jfnew.com



Emergent Marsh Community.



Wet Prairie Community (intact).

Site Photographs  
June 30, 2011  
Teibel Nature Preserve  
Scherville Parks and Recreation  
Lake County, Indiana

File # 1102043.00



708 Roosevelt Road, Walkerton, IN 46574  
Phone 574-586-3400 / Fax 574-586-3446  
www.jfnew.com



Wet Prairie Community (degraded).



Mesic Prairie Community.

Site Photographs  
June 30, 2011  
Teibel Nature Preserve  
Scherville Parks and Recreation  
Lake County, Indiana

File # 1102043.00



708 Roosevelt Road, Walkerton, IN 46574  
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www.jfnew.com



Mesic Prairie Community (degraded buffer around Emergent Marsh).



Successional Woods Community.

Site Photographs  
June 30, 2011  
Teibel Nature Preserve  
Scherville Parks and Recreation  
Lake County, Indiana

File # 1102043.00



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Opening within Successional Woods.

Site Photographs  
June 30, 2011  
Teibel Nature Preserve  
Schererville Parks and Recreation  
Lake County, Indiana

File # 1102043.00



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# APPENDIX C

## *COST SUMMARY*

# APPENDIX C COST SUMMARY

Budgetary figures are based on 2012 construction costs and should be used for planning purposes only. Budgets should be refined as each project phase progresses.



## Preliminary Construction Cost Opinion - Cost Summary

Date: December 7, 2011  
 RE: Teibel Nature Preserve Master Plan  
 Project: 04-0981-001-01-03

### CAPITAL IMPROVEMENTS

Description	Cost
Phase 1	\$ 296,950
Phase 2	\$ 487,735
Phase 3	\$ 114,087
Phase 4	\$ 174,919
Phase 5	\$ 182,680
Phase 6	\$ 301,217
<b>Subtotal:</b>	<b>\$ 1,557,588</b>

### ENVIRONMENTAL MANAGEMENT

Description	Cost
Phase 1	\$ 62,105
Phase 2	\$ 74,526
Phase 3	\$ 16,561
Phase 4	\$ 74,526
Phase 5	\$ 117,310
Phase 6	\$ 24,842
<b>Subtotal:</b>	<b>\$ 369,870</b>

**TOTAL:** \$ 1,927,458



## Preliminary Construction Cost Opinion

Date: December 7, 2011  
 RE: Teibel Nature Preserve Master Plan - Capital Improvements  
 Project: 04-0981-001-01-03

### PHASE 1

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$6,195.45	
	general requirements	1	LS	2.0%	\$4,130.30	
	layout	1	LS	1.0%	\$2,065.15	
Contracting and General Requirements Subtotals:						\$ 12,391
<b>061000 Rough Carpentry</b>						
	pedestrian bridge	1	EA	\$ 75,000	\$ 75,000	
	boardwalk	115	LF	\$ 300	\$ 34,500	
Section Subtotal:						\$ 109,500
<b>101400 Signage</b>						
	gateway signage	1	EA	\$ 5,000	\$ 5,000	
	regulatory signage	5	EA	\$ 500	\$ 2,500	
Section Subtotal:						\$ 7,500
<b>312000 Earth Moving</b>						
	excavation, off-site disposal	375	CY	\$ 20	\$ 7,500	
Section Subtotal:						\$ 7,500
<b>321540 Crushed Stone Paving</b>						
	crushed stone parking lot, 10" depth	15,000	SF	\$ 2	\$ 30,000	
Section Subtotal:						\$ 30,000
<b>323129 Wood Fences and Gates</b>						
	split rail wood fence	1,300	LF	\$ 15	\$ 19,500	
	wood screen fence	150	LF	\$ 50	\$ 7,500	
Section Subtotal:						\$ 27,000

329300 Plants					
shade tree	10	EA	\$	500	\$ 5,000
evergreen tree	5	EA	\$	500	\$ 2,500
ornamental tree	6	EA	\$	400	\$ 2,400
mulch	7	CY	\$	40	\$ 280
Section Subtotal:					\$ 10,180

329400 Planting Accessories					
mown path - center of detention facilities	2,135	LF	\$	1.50	\$ 3,203
mown path - exterior	7,755	LF	\$	1.50	\$ 11,633
Section Subtotal:					\$ 14,836

Construction Cost Subtotals:					\$ 206,515
Total Construction Cost Subtotals:					\$ 218,906

Other Project Costs					
design contingency (%)	1	LS	10%	\$	21,891
bid contingency (%)	1	LS	5%	\$	10,945
construction contingency (%)	1	LS	5%	\$	10,945
wetland delineation	1	LS	\$	10,000	\$ 10,000
construction testing services	1	LS	\$	1,000	\$ 1,000
Subtotal:					\$ 54,781

Design and Engineering					
dd/cd phase services (%)	1	LS	6%	\$	16,421
construction phase services (%)	1	LS	2.5%	\$	6,842
Subtotal:					\$ 23,263

**PHASE 1 PROJECT TOTAL:** \$ 296,950

**PHASE 2**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$6,195.45	
	general requirements	1	LS	2.0%	\$4,130.30	
	layout	1	LS	1.0%	\$2,065.15	
Contracting and General Requirements Subtotals:						\$ 12,391

061000 Rough Carpentry					
overlook with shelter	1	EA	\$	25,000	\$ 25,000
Section Subtotal:					\$ 25,000

101400 Signage					
interpretive sign	1	EA	\$	1,500	\$ 1,500
Section Subtotal:					\$ 1,500

116800 Play Field Equipment and Structures					
playground equipment	1	LS	\$	50,000	\$ 50,000
playground equipment (installation)	1	35%	\$	17,500	\$ 17,500
Section Subtotal:					\$ 67,500

129300 Site Furnishings					
bench	10	EA	\$	1,000	\$ 10,000
trash receptacle	5	EA	\$	1,000	\$ 5,000
picnic table	2	EA	\$	800	\$ 1,600
bike rack	2	EA	\$	500	\$ 1,000
Section Subtotal:					\$ 17,600

312000 Earth Moving					
excavation, off-site disposal	375	CY	\$	20	\$ 7,500
Section Subtotal:					\$ 7,500

321313 Concrete Paving and Curbs					
playground curb	550	SF	\$	24	\$ 13,200
Section Subtotal:					\$ 13,200

321540 Crushed Stone Paving					
crushed stone path, 8" width, 4" depth	8,765	LF	\$	20	\$ 175,300
Section Subtotal:					\$ 175,300

321816 Playground Protective Surfacing					
play surfacing, poured-in-place with aggregate base course	5,000	SF	\$	10	\$ 50,000
Section Subtotal:					\$ 50,000

329300 Plants					
shade tree	5	EA	\$	500	\$ 2,500
ornamental tree	3	EA	\$	400	\$ 1,200
mulch	2	CY	\$	40	\$ 80
Section Subtotal:					\$ 3,780

Construction Cost Subtotals:					\$ 361,380
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Total Construction Cost Subtotals:					\$ 373,771
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Other Project Costs					
design contingency (%)	1	LS	10%	\$	37,377
bid contingency (%)	1	LS	5%	\$	18,689
construction contingency (%)	1	LS	5%	\$	18,689
construction testing services	1	LS	\$	1,000	\$ 1,000
Subtotal:					\$ 75,754

Design and Engineering					
dd/cd phase services (%)	1	LS	6%	\$	26,972
construction phase services (%)	1	LS	2.5%	\$	11,238
Subtotal:					\$ 38,210

**PHASE 2 PROJECT TOTAL:** \$ 487,735

**PHASE 3 - PENNSY GREENWAY TRAILHEAD**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$6,195.45	
	general requirements	1	LS	2.0%	\$4,130.30	
	layout	1	LS	1.0%	\$2,065.15	
Contracting and General Requirements Subtotals:						\$ 12,391
<b>101400 Signage</b>						
	gateway signage	1	EA	\$ 5,000	\$ 5,000	
Section Subtotal:						\$ 5,000
<b>129300 Site Furnishings</b>						
	picnic table	2	EA	\$ 800	\$ 1,600	
	bike rack	2	EA	\$ 500	\$ 1,000	
Section Subtotal:						\$ 2,600
<b>312000 Earth Moving</b>						
	excavation, off-site disposal	375	CY	\$ 20	\$ 7,500	
Section Subtotal:						\$ 7,500
<b>321540 Crushed Stone Paving</b>						
	crushed stone path, 8' width, 4' depth	715	LF	\$ 20	\$ 14,300	
	crushed stone parking lot, 10' depth	15,000	SF	\$ 2	\$ 30,000	
Section Subtotal:						\$ 44,300
<b>323129 Wood Fences and Gates</b>						
	wood screen fence	150	LF	\$ 50	\$ 7,500	
Section Subtotal:						\$ 7,500
Construction Cost Subtotals:						\$ 66,900
Total Construction Cost Subtotals:						\$ 79,291
<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 7,929	
	bid contingency (%)	1	LS	5%	\$ 3,965	
	wetland delineation	1	LS	\$ 10,000	\$ 10,000	
	construction contingency (%)	1	LS	5%	\$ 3,965	
Subtotal:						\$ 25,858
<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 6,309	
	construction phase services (%)	1	LS	2.5%	\$ 2,629	
Subtotal:						\$ 8,938
<b>PHASE 3 PROJECT TOTAL:</b>						\$ 114,087

**PHASE 4**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$6,195.45	
	general requirements	1	LS	2.0%	\$4,130.30	
	layout	1	LS	1.0%	\$2,065.15	
Contracting and General Requirements Subtotals:						\$ 12,391
<b>101400 Signage</b>						
	interpretive sign	3	EA	\$ 1,500	\$ 4,500	
Section Subtotal:						\$ 4,500
<b>044300 Stone Masonry</b>						
	outcropping stone, 2 fishing stations	60	TN	\$ 400	\$ 24,000	
	outcropping stone, canoe launch	30	TN	\$ 400	\$ 12,000	
Section Subtotal:						\$ 36,000
<b>061000 Rough Carpentry</b>						
	overlook with shelter	1	EA	\$ 25,000	\$ 25,000	
	pier	1	EA	\$ 25,000	\$ 25,000	
Section Subtotal:						\$ 50,000
<b>129300 Site Furnishings</b>						
	bench	5	EA	\$ 1,000	\$ 5,000	
	trash receptacle	5	EA	\$ 1,000	\$ 5,000	
Section Subtotal:						\$ 10,000
<b>321540 Crushed Stone Paving</b>						
	crushed stone path, 8' width, 4' depth	20	LF	\$ 20	\$ 400	
Section Subtotal:						\$ 400
<b>329300 Plants</b>						
	shade tree	10	EA	\$ 500	\$ 5,000	
	evergreen tree	10	EA	\$ 500	\$ 5,000	
	ornamental tree	6	EA	\$ 400	\$ 2,400	
	mulch	6	CY	\$ 40	\$ 240	
Section Subtotal:						\$ 12,640



<b>329400 Planting Accessories</b>					
mown path	555	LF	\$ 1.50	\$	833
mulch path	675	LF	\$ 10	\$	6,750
Section Subtotal:					\$ 7,583

Construction Cost Subtotals: \$ 121,123

Total Construction Cost Subtotals: \$ 133,513

<b>Other Project Costs</b>					
design contingency (%)	1	LS	10%	\$	13,351
bid contingency (%)	1	LS	5%	\$	6,676
construction contingency (%)	1	LS	5%	\$	6,676
construction testing services	1	LS	\$ 1,000	\$	1,000
Subtotal:					\$ 27,703

<b>Design and Engineering</b>					
dd/cd phase services (%)	1	LS	6%	\$	9,673
construction phase services (%)	1	LS	2.5%	\$	4,030
Subtotal:					\$ 13,703

**PHASE 4 PROJECT TOTAL: \$ 174,919**

**PHASE 5**

<b>Construction Costs</b>						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$6,195.45	
	general requirements	1	LS	2.0%	\$4,130.30	
	layout	1	LS	1.0%	\$2,065.15	
Contracting and General Requirements Subtotals:						\$ 12,391

<b>101400 Signage</b>						
	interpretive sign	1	EA	\$ 1,500	\$ 1,500	
Section Subtotal:						\$ 1,500

<b>044300 Stone Masonry</b>						
	outcropping stone, council ring	20	TN	\$ 400	\$ 8,000	
Section Subtotal:						\$ 8,000

<b>061000 Rough Carpentry</b>						
	boardwalk	255	LF	\$ 300	\$ 76,500	
Section Subtotal:						\$ 76,500

<b>129300 Site Furnishings</b>						
	bench	5	EA	\$ 1,000	\$ 5,000	
	trash receptacle	2	EA	\$ 1,000	\$ 2,000	
Section Subtotal:						\$ 7,000

<b>312000 Earth Moving</b>						
	excavation, off-site disposal	375	CY	\$ 20	\$ 7,500	
Section Subtotal:						\$ 7,500

<b>329400 Planting Accessories</b>						
	mulch path	1,825	LF	\$ 10	\$ 18,250	
Section Subtotal:						\$ 18,250

Construction Cost Subtotals: \$ 118,750

Total Construction Cost Subtotals: \$ 131,141

<b>Other Project Costs</b>					
design contingency (%)	1	LS	10%	\$	13,114
bid contingency (%)	1	LS	5%	\$	6,557
construction contingency (%)	1	LS	5%	\$	6,557
wetland delineation	1	LS	\$ 10,000	\$	10,000
construction testing services	1	LS	\$ 1,000	\$	1,000
Subtotal:					\$ 37,228

<b>Design and Engineering</b>					
dd/cd phase services (%)	1	LS	6%	\$	10,102
construction phase services (%)	1	LS	2.5%	\$	4,209
Subtotal:					\$ 14,311

**PHASE 5 PROJECT TOTAL: \$ 182,680**

**PHASE 6**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$6,195.45	
	general requirements	1	LS	2.0%	\$4,130.30	
	layout	1	LS	1.0%	\$2,065.15	
Contracting and General Requirements Subtotals :						\$ 12,391

<b>061000 Rough Carpentry</b>						
	boardwalk	720	LF	\$ 300	\$ 216,000	
Section Subtotal:						\$ 216,000

<b>329400 Planting Accessories</b>						
	mown path	250	LF	\$ 1.50	\$ 375	
	mulch path	175	LF	\$ 10	\$ 1,750	
Section Subtotal:						\$ 2,125

Construction Cost Subtotals :						\$ 218,125
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Total Construction Cost Subtotals :						\$ 230,516
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<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 23,052	
	bid contingency (%)	1	LS	5%	\$ 11,526	
	construction contingency (%)	1	LS	5%	\$ 11,526	
	construction testing services	1	LS	\$ 1,000	\$ 1,000	
Subtotal:						\$ 47,103

<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 16,657	
	construction phase services (%)	1	LS	2.5%	\$ 6,940	
Subtotal:						\$ 23,598

**PHASE 6 PROJECT TOTAL:** \$ 301,217

**COMBINED PROJECT TOTAL:** \$ 1,557,588



**Preliminary Construction Cost Opinion**

Date: December 7, 2011  
 RE: Teibel Nature Preserve Master Plan - Environmental Management Improvements  
 Project: 04-0981-001-01-03

**PHASE 1: SCHERERVILLE DITCH BANK STABILIZATION**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$1,350.00	
	general requirements	1	LS	2.0%	\$900.00	
	layout	1	LS	1.0%	\$450.00	
Contracting and General Requirements Subtotals :						\$ 2,700

<b>Miscellaneous</b>						
	stabilization of Schererville Ditch banks	50	LF	\$ 500	\$ 25,000	
Section Subtotal:						\$ 25,000

<b>311000 Site Clearing</b>						
	brush mowing	20	AC	\$ 1,000	\$ 20,000	
Section Subtotal:						\$ 20,000

Construction Cost Subtotals :						\$ 45,000
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Total Construction Cost Subtotals :						\$ 47,700
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<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 4,770	
	bid contingency (%)	1	LS	5%	\$ 2,385	
	construction contingency (%)	1	LS	5%	\$ 2,385	
Subtotal:						\$ 9,540

<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 3,434	
	construction phase services (%)	1	LS	2.5%	\$ 1,431	
Subtotal:						\$ 4,865

**PHASE 1 PROJECT TOTAL:** \$ 62,105

**PHASE 2: INVASIVE SPECIES REMOVAL, SOUTH REGIONAL DETENTION FACILITY**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$1,620.00	
	general requirements	1	LS	2.0%	\$1,080.00	
	layout	1	LS	1.0%	\$540.00	
Contracting and General Requirements Subtotals:						\$ 3,240
<b>311000 Site Clearing</b>						
	wetland invasive species removal and revegetation	18	AC	\$ 3,000	\$ 54,000	
Section Subtotal:						\$ 54,000
Construction Cost Subtotals:						\$ 54,000
Total Construction Cost Subtotals:						\$ 57,240
<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 5,724	
	bid contingency (%)	1	LS	5%	\$ 2,862	
	construction contingency (%)	1	LS	5%	\$ 2,862	
Subtotal:						\$ 11,448
<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 4,121	
	construction phase services (%)	1	LS	2.5%	\$ 1,717	
Subtotal:						\$ 5,838
<b>PHASE 2 PROJECT TOTAL:</b>						\$ 74,526

**PHASE 3: INVASIVE SPECIES REMOVAL, EAST POND**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$360.00	
	general requirements	1	LS	2.0%	\$240.00	
	layout	1	LS	1.0%	\$120.00	
Contracting and General Requirements Subtotals:						\$ 720
<b>311000 Site Clearing</b>						
	wetland invasive species removal and revegetation	4	AC	\$ 3,000	\$ 12,000	
Section Subtotal:						\$ 12,000
Construction Cost Subtotals:						\$ 12,000
Total Construction Cost Subtotals:						\$ 12,720
<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 1,272	
	bid contingency (%)	1	LS	5%	\$ 636	
	construction contingency (%)	1	LS	5%	\$ 636	
Subtotal:						\$ 2,544
<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 916	
	construction phase services (%)	1	LS	2.5%	\$ 382	
Subtotal:						\$ 1,297
<b>PHASE 3 PROJECT TOTAL:</b>						\$ 16,561

**PHASE 4: INVASIVE SPECIES REMOVAL, NORTH REGIONAL DETENTION FACILITY**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$1,620.00	
	general requirements	1	LS	2.0%	\$1,080.00	
	layout	1	LS	1.0%	\$540.00	
Contracting and General Requirements Subtotals :						\$ 3,240
<b>311000 Site Clearing</b>						
	wetland invasive species removal and revegetation	18	AC	\$ 3,000	\$ 54,000	
Section Subtotal:						\$ 54,000
Construction Cost Subtotals :						\$ 54,000
Total Construction Cost Subtotals :						\$ 57,240
<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 5,724	
	bid contingency (%)	1	LS	5%	\$ 2,862	
	construction contingency (%)	1	LS	5%	\$ 2,862	
Subtotal:						\$ 11,448
<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 4,121	
	construction phase services (%)	1	LS	2.5%	\$ 1,717	
Subtotal:						\$ 5,838
<b>PHASE 4 PROJECT TOTAL:</b>						\$ 74,526

**PHASE 5: INVASIVE SPECIES REMOVAL, WOODLAND**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$2,550.00	
	general requirements	1	LS	2.0%	\$1,700.00	
	layout	1	LS	1.0%	\$850.00	
Contracting and General Requirements Subtotals :						\$ 5,100
<b>311000 Site Clearing</b>						
	woodland clearing, mechanical / hand clearing and revegetation	20	AC	\$ 4,000	\$ 80,000	
	follow-up herbicide treatment	1	LS	\$ 5,000	\$ 5,000	
Section Subtotal:						\$ 85,000
Construction Cost Subtotals :						\$ 85,000
Total Construction Cost Subtotals :						\$ 90,100
<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 9,010	
	bid contingency (%)	1	LS	5%	\$ 4,505	
	construction contingency (%)	1	LS	5%	\$ 4,505	
Subtotal:						\$ 18,020
<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 6,487	
	construction phase services (%)	1	LS	2.5%	\$ 2,703	
Subtotal:						\$ 9,190
<b>PHASE 5 PROJECT TOTAL:</b>						\$ 117,310

**PHASE 6: INVASIVE SPECIES REMOVAL AND RESEEDING, DEER CREEK DRIVE**

Construction Costs						
Section	Description	Estimated Quantity	Unit	Unit Cost	Extended Cost	Subtotal
<b>0 &amp; 1 Contracting and General Requirements</b>						
	contracting requirements	1	LS	3.0%	\$540.00	
	general requirements	1	LS	2.0%	\$360.00	
	layout	1	LS	1.0%	\$180.00	
Contracting and General Requirements Subtotals :						\$ 1,080

<b>327300 Prairie Establishment</b>						
	native prairie seeding	6	AC	\$ 3,000	\$ 18,000	
Section Subtotal:						\$ 18,000
Construction Cost Subtotals :						\$ 18,000
Total Construction Cost Subtotals :						\$ 19,080

<b>Other Project Costs</b>						
	design contingency (%)	1	LS	10%	\$ 1,908	
	bid contingency (%)	1	LS	5%	\$ 954	
	construction contingency (%)	1	LS	5%	\$ 954	
Subtotal:						\$ 3,816

<b>Design and Engineering</b>						
	dd/cd phase services (%)	1	LS	6%	\$ 1,374	
	construction phase services (%)	1	LS	2.5%	\$ 572	
Subtotal:						\$ 1,946

**PHASE 6 PROJECT TOTAL:** \$ 24,842

**COMBINED PROJECT TOTAL:** \$ 369,870



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