Solution Impacts

Key Features:
- 0.61-acre fishpond with dock
- 1000 feet of walking paths
- 1.5 acres of native vegetation
- ADA accessible dock

ROI:
- Expected property value increases in the ½ mile radius from the property: $225,000
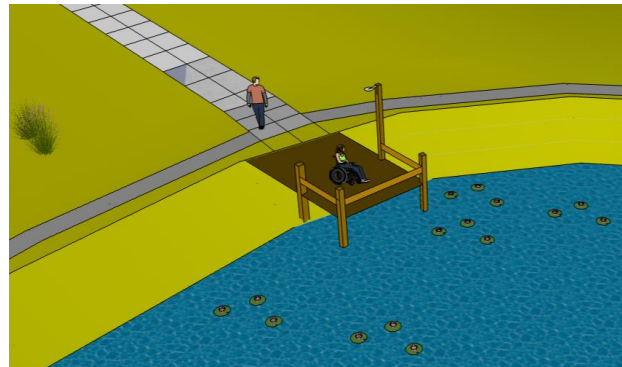

- New prairie habitat hosts attractive flora and fauna
- Creates recreation and fundraising opportunities

Shadeland Park Expansion

Purdue University ABE Capstone

Fall 2021 – Spring 2022

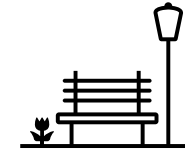Haley Thomas (ENRE)
Collin Mellady (ENRE)
Marissa Maddox (ASM)

Thanks to our sponsors, the Shadeland Parks Committee, for making this possible.

Shadeland Park Expansion

Allowing anyone to connect with nature.

ABE Capstone Team VD-1

Project Overview

Sponsor: Shadeland Parks Committee

Opportunity: 2.2 acres of abandoned farmland, directly adjacent to an existing park.

Need: Design plans for a nature park which will improve ecosystem health and promote recreation in the area.

Scope: $160,000 budget over 2 years

Technical Specifications

Pond Overview:
- 0.59 Acre SA, 6,700 yd^3 of Water
- 1:6 slope for 3 ft
- 1:3 slope for 7ft

Pathway Overview
- 4.75% x 1.5% Grades
- 400ft of 5ft wide concrete
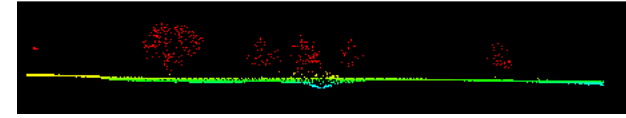- 600ft of crushed gravel
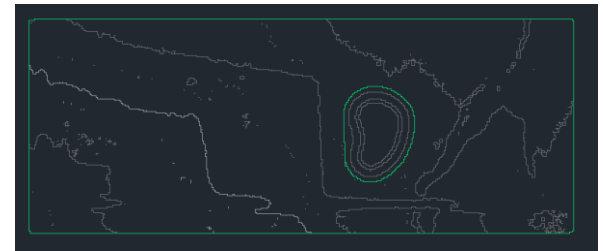(Future asphalt conversion)

Recommended Prairie Vegetation

Solution Generation

LiDAR imagery was used for input to Civil3D, where the to scale pond was designed. ArcGIS and Hec-Ras were used to determine watershed size.

Simulations based on these statistics were ran in Winpond to determine spillway performance

```
******************** HYDROLOGIC DATA ********************
-----------------------------------------------------------
| Rainfall distr. type ----- :     II                        |
| Drainage area, acres ----- :    3.8    Watershed slope, % :   1.7 |
| Runoff curve number ------ :     79    Flow length, ft. - :  1000 |
| Time of concentration, hrs :   0.42                        |
|                    (min.:  25.14)                          |
|-----------------------------------------------------------|
|                              --------- Spillway ---------  |
|                              Principal      Auxiliary      |
| Design frequency, yrs.:          10            100         |
| 24 hr. Rainfall, in.  :         4.1            6.2         |
| Runoff, in. --------- :         2.0            3.8         |
| Peak inflow, cfs ---- :        7.10          13.50         |
| Peak outflow, cfs --- :        0.99          0.13 A.S.     |
|                                               2.55 P.S.    |
-----------------------------------------------------------
```