

Matthew Simpson (ENRE), Zhangxuan Liu (ENRE)

Statement of the Problem

The objective of this project is to create recommendations for a 5 year plan for Hopkins Family Park, with a focus on developing and modifying a design layout for a 73 acre area of interest.

Background

- Currently resides on 41 acres
- Hopkins family will donate more land as the park develops
- Eventually will reside on the entire 200 acre Hopkins family estate
- Lack of funding is holding back further expansion
- Continuation of work from last year's teams

Budget & Timeline

Feature Cost Hiking Trails \$31850 Shelter House \$3200 Restroom \$630 Dog Park \$15840 Playground \$1400 Park Overlook \$1200 Activity \$6195 Stations Education \$9000 Garden Community \$0 Garden Picnic Area \$2000 Nature \$1660 Education Area Natural \$2818 Playscape Sand Play Area \$300 Parking Lot \$0 Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093	Hiking Trails \$31850 Shelter House \$3200 Restroom \$630 Dog Park \$15840 Playground \$1400 Park Overlook \$1200 Activity \$6195 Stations Education \$9000 Garden Community \$0 Garden Picnic Area \$2000 Nature \$1660 Education Area Natural \$2818 Playscape Sand Play Area \$300 Parking Lot \$0 Total Cost \$95,131 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093 Note: The total cost does not reflect tax or labor expenses Total Cost \$76,093	Feature	Cost	Vegetation Cost						
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Gibson County Department of Parks and Recreation

Sponsor:

Team with park sign

Plan Recommendations

Hopkins Family Park Five Year

Global/Societal Impact & Sustainability

CAPSTONE/SENIOR DESIGN EXPERIENCE 2017

- Introduces local vegetation to improve aesthetic appeal and ecological function
- Restores vegetation cover to reduce erosion
- Provides recreational amenities and opportunities to promote a healthier lifestyle
- Increases carbon stores for air purification and greenhouse gas reduction
- Creates educational opportunities for learning about local animals and vegetation

Constraints

Infrastructural Constraints:

- Vectren power substation on adjacent land
- Power lines running over the site
- Conservation Reserve Program (CRP) land
- Drainage infrastructure and risers

Natural Constraints:

- Hilly topography
- Erosive soils
- Lack of vegetation
- Gully erosion from ephemeral streams

Planned Features

- 15 unique new features in final design
- Recreational and educational benefits
- Capitalize on natural topography and



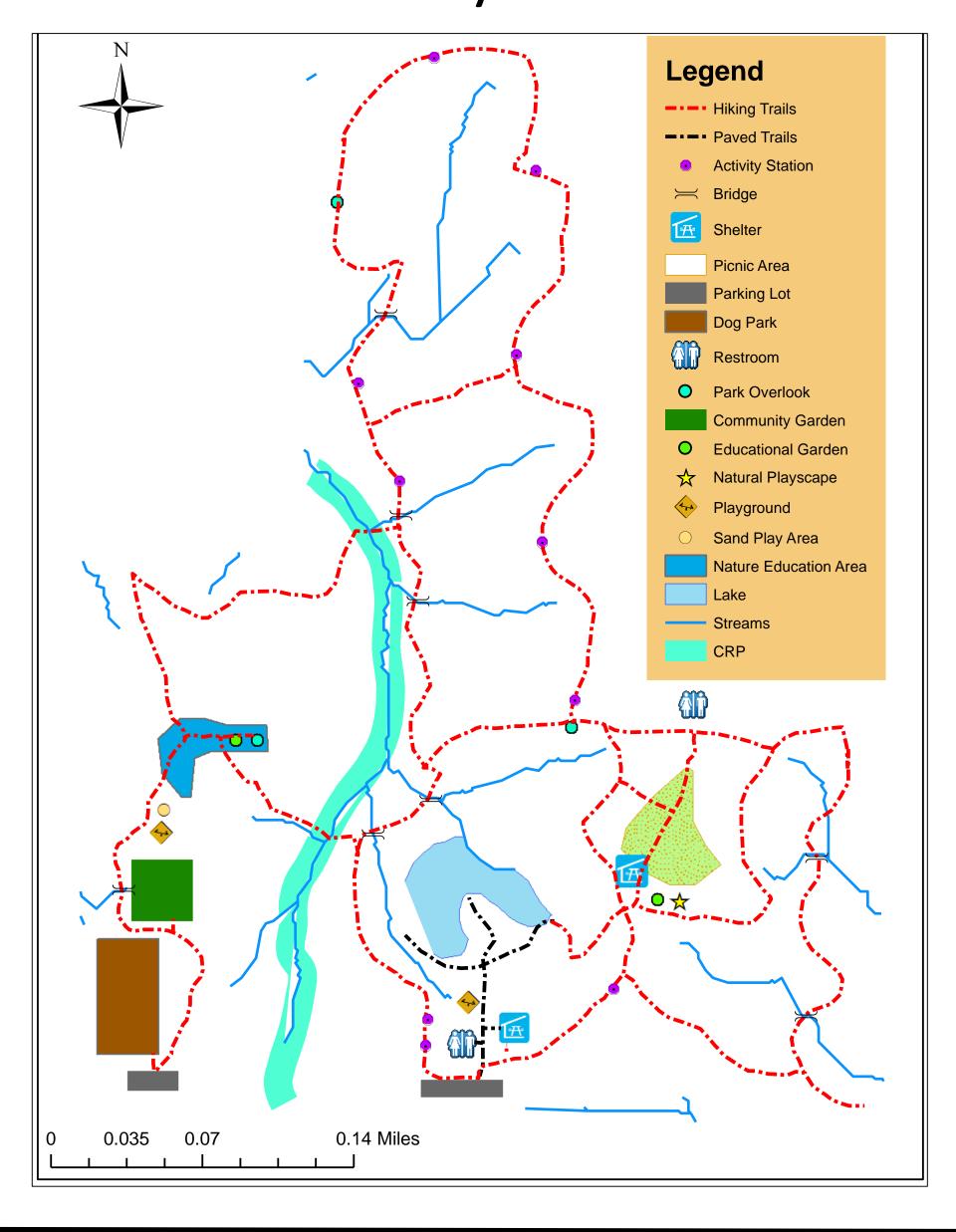
Natural Playscape

Final Design

Recommended Feature Layout

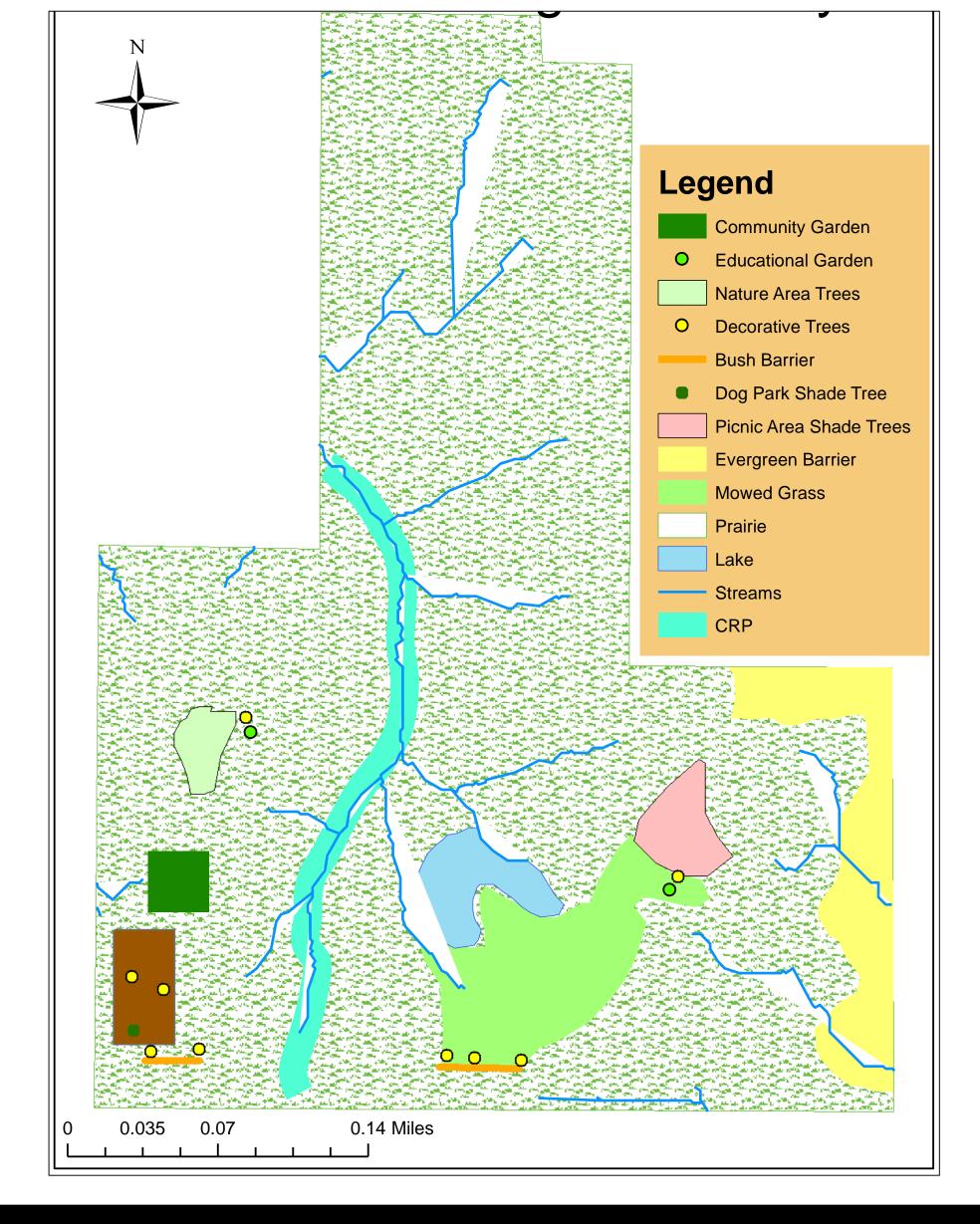
Agricultural Biological

- Feature placement was an iterative process
- Complementary placement of features
- Features were placed based on site suitability
- Strategic placement throughout the park for an efficient use of space
- Over 3 miles of hiking trails link features throughout the park



Recommended Vegetation Layout

- Vegetation placed after features to allow complementary positioning
- Soil properties and hydrography affected vegetation placement and species selection
- Most of the park will be restored to its native prairie state

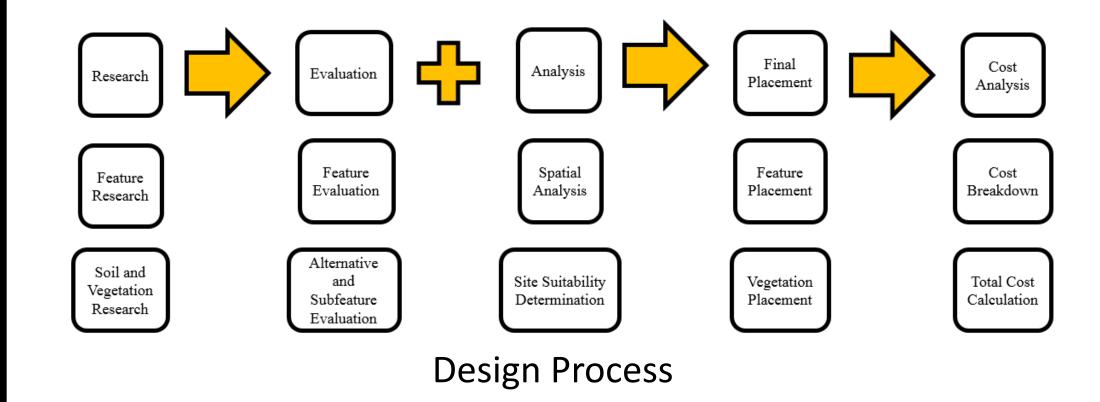


Deliverables

The team presented the final park design and submitted a final report to the Gibson County Department of Parks and Recreation.

Alternative Solutions & Solution Evaluation

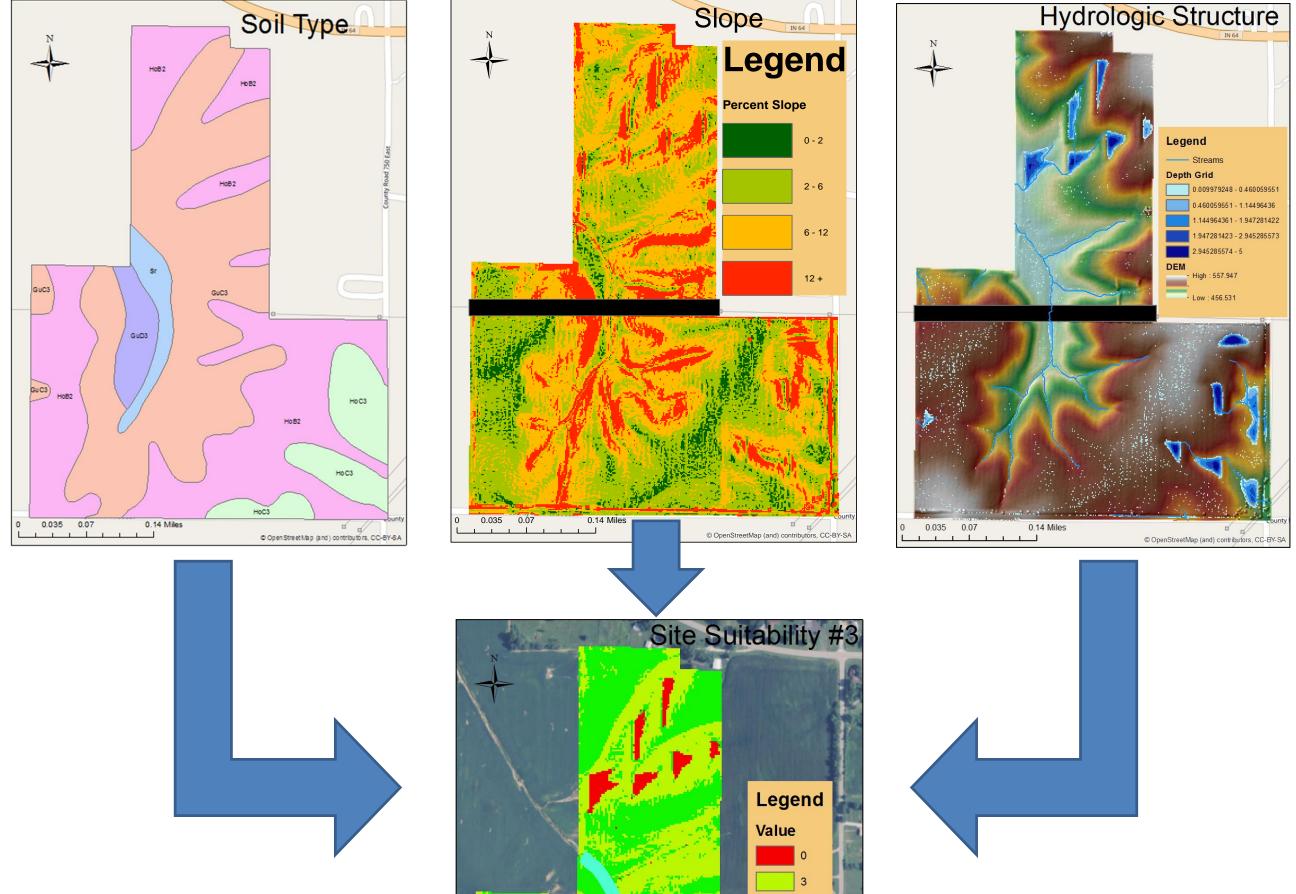
suitability maps



- Project was broken up into 5 major phases
- Completed from August 2016 April 2017 Feature Evaluation

R = Rating W = Weighted Score	Safety 5		Maintenance 3		Ecological Impacts		Perceived Aestetics 1		Community Interest		
Criteria Weight											
Park Features	R	W	R	W	R	W	R	W	R	W	Total Score
Hiking Trails	5	25	3	9	4	16	5	5	4	12	67
Shelter House	5	25	4	12	3	12	4	4	5	15	68
Restrooms	5	25	1	3	3	12	4	4	5	15	59
Disc Golf	4	20	4	12	4	16	3	3	1	3	54
Dog Park	3	15	1	3	4	16	4	4	5	15	53
Playground	3	15	3	9	3	12	3	3	4	12	51
Splash Pad	3	15	2	6	2	8	3	3	2	6	38
Park Overlook	5	25	5	15	4	16	4	4	3	9	69
Biking Trails	3	15	3	9	4	16	5	5	4	12	57
Fishing	4	20	2	6	2	8	5	5	3	9	48
Garden(s)	5	25	2	6	3	12	5	5	1	3	51
Picnic Area	5	25	3	9	5	20	5	5	5	15	74
Natural Playscape	3	15	3	9	3	12	4	4	5	15	55
Nature Education Area	5	25	2	6	4	16	4	4	3	9	60
Activity Stations	3	15	5	15	4	16	3	3	5	15	64
Sand Play Area	4	20	4	12	3	12	3	3	4	12	59
Erosion Control Structures	3	15	4	12	3	12	5	5	5	15	59
Lighting	5	25	4	12	4	16	5	5	5	15	73

- Alternative features were determined and evaluated also
 - Individualized decision matrix was used to determine the preferred version



Relevant spatial properties (11) were used to create 9 site

Soil maps were used to determine vegetation placement

Site suitability maps were used to determine feature placement

Example of Site Suitability Map Formation

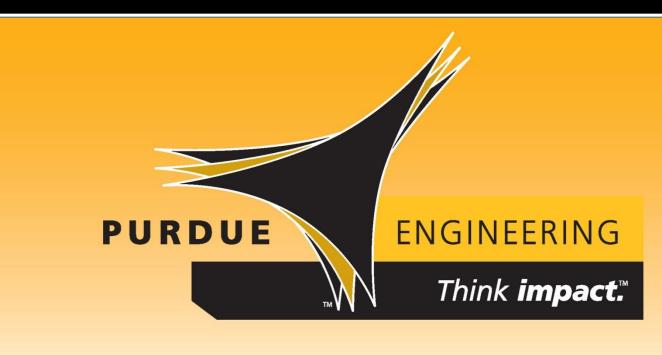
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Instructors: Dr. Robert Stwalley Dr. Bernie Engel

Acknowledgements: Gwen and Richard Hopkins Hans Schmitz Shay Phillips Dr. Nicole Kong Dale Gick





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