Aggie Park Survey

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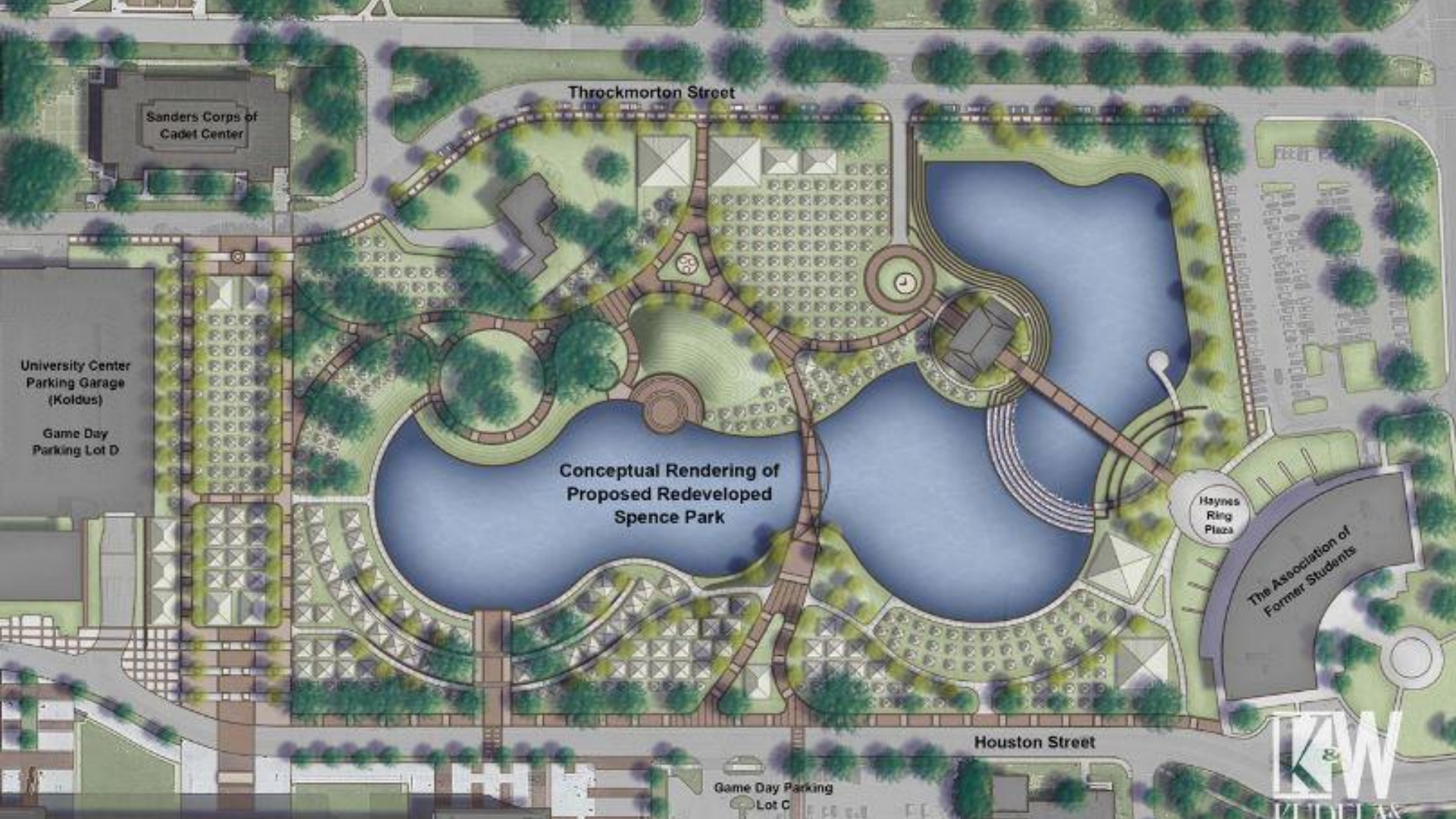
INTRODUCTION

Background on Spence Park

- Created in 1953
- Located between Houston St. and Throckmorton St. in College Station, TX
- 20 acre area
- Includes a gazebo, calisthenics area, and space for tailgating
- Contains the beginning of the 5.5 mile long Bee Creek

Gazebo and Benches Located at Spence Park


Throckmorton Street
Sanders Corps of Cadet Center
University Center Parking Garage (Koldus)
Game Day Parking Lot D
Conceptual Rendering of Proposed Redeveloped Spence Park
Haynes Ring Plaza
The Association of Former Students
Houston Street
Game Day Parking Lot C

Proposed Aggie Park

- This project will cost an estimated $10-$16 million.
- The upper lake is proposed to be 800 feet long and feature a 12 foot water wall which will connect the upper and lower lakes.
- The lake is described in the project proposal to have a hard edged concrete shoreline, and will have a safety shelf at 18-inches deep and extending 8 feet from the shoreline, and beyond that the ground will slope to the center.
- At its deepest the lake will be 6-8 feet.
- In the proposal the lower lake is said to accommodate the stormwater detention requirements (12.5 + acre-feet) and the storm water will continue to flow from the lower lake into Bee Creek.

Research Question

- The research question for this project is if the proposed lake is created in Aggie Park, will it cause flooding in Bee Creek.
- This question is important because many neighborhoods have already complained about flooding in Bee Creek and the lake could possibly change the ecological diversity in the area.

Current Bridge and Drainage at Spence Park

Hypothesis

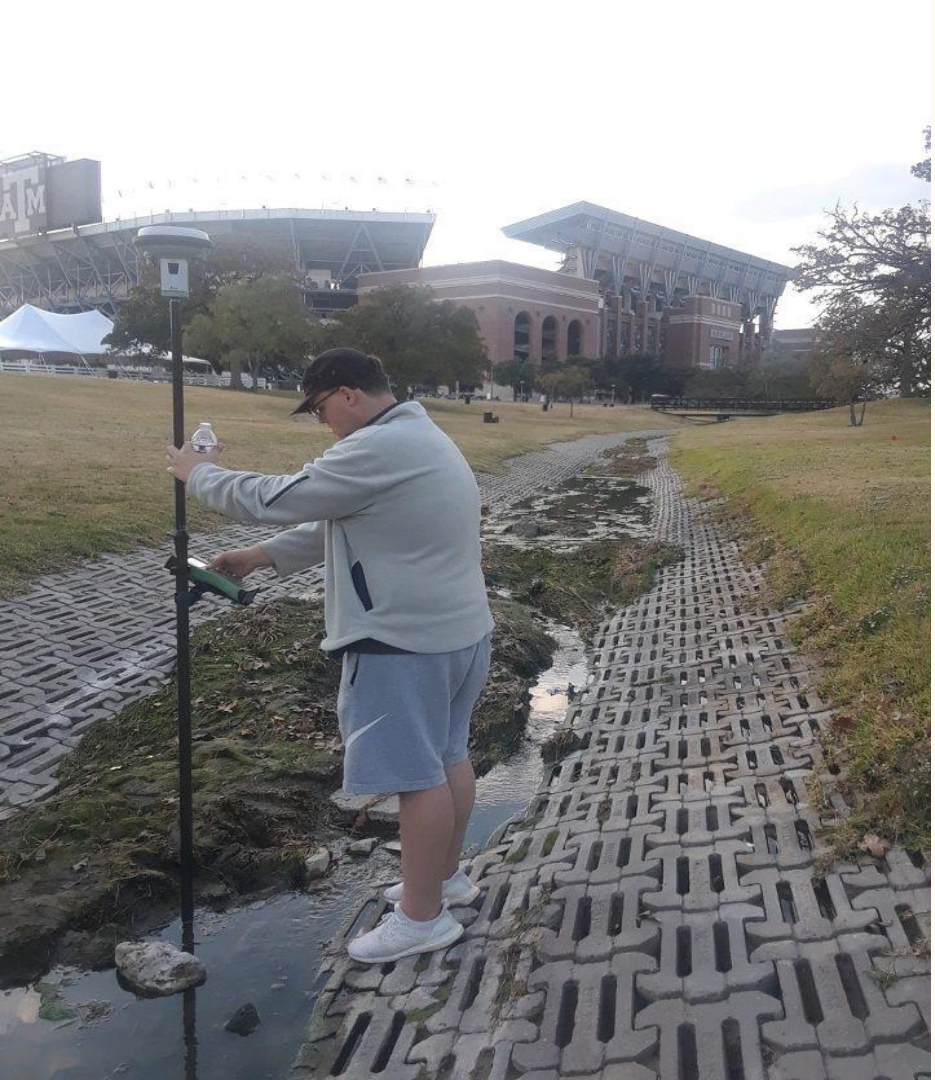
- The creation of the new lake at Aggie Park will make Bee Creek more prone to flooding.
- It will change the ecological diversity of the area.
- Bee Creek flows through numerous suburban areas, so significant rainfall could lead to damaging floods
- The area around Bee Creek could qualify as a wetland and be subject to special protections

Bee Creek at Spence Park

METHODS

On Site Methods

- One RTK was used around the perimeter of Spence Park encasing the proposed lake area.
- After the perimeter was completed, the RTK GPS unit was used to specify the locations of the sewage, drainage pipes, hydrants, gas meters, and other underground objects. It was also used around the gazebo as well.
- The Garmin GPS units was used to locate trees, light posts, and park benches.
- The RTK Unit was also used along the drainage bed and on the transition zones on both sides.
- The other RTK GPS unit was used to create transects in the whole area enclosed by the perimeter distinguished.



Data Collected

- The data collected includes the Easting, Northing, and Elevation of the perimeter of the proposed area for the lake as well as the transects of that area.

- The Easting, Northing, and Elevation of the sidewalks, trees, above ground structures, gazebo, drains, creek bottom, and creek boundary was also gathered.

Post Processing Methods

- With the elevation data collected, a contour map was created using Carlson Civil 2018.

- ArcMap was then used to display the locations of objects of interest including sidewalks and drains leading to Bee Creek and the gazebo.

- These locations were then compared to the proposed lake in Microsoft Paint.

RESULTS

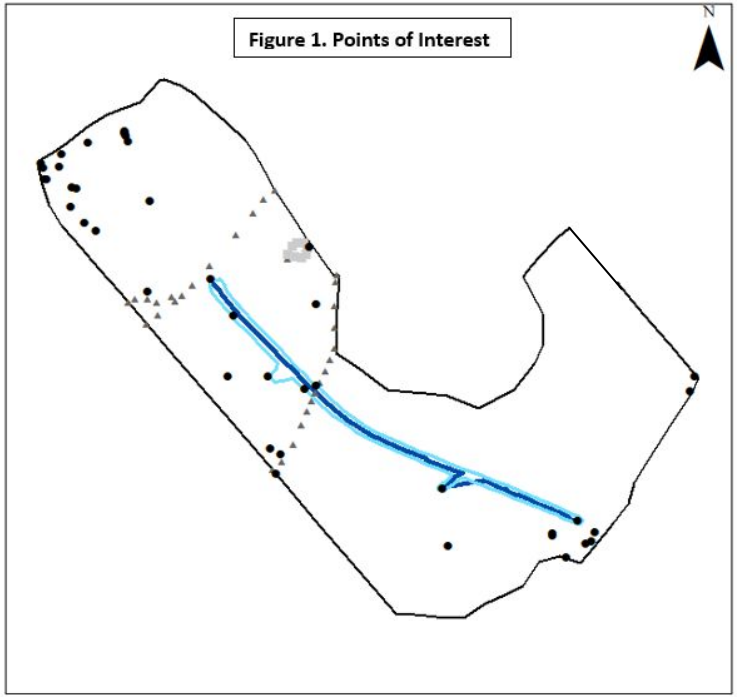
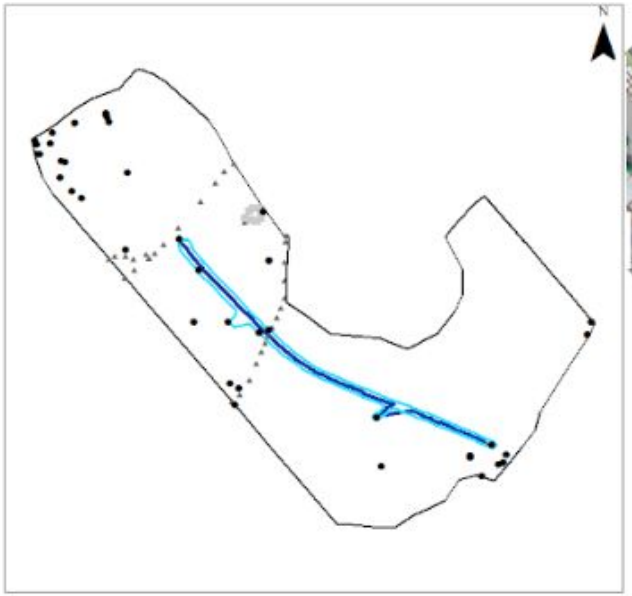


Figure 1. Points of Interest
N
Legend
Drains
Gazebo
Sidewalk
Creek Bed Boundary
Perimeter
Creek Bottom
0
375
750
1,500 Feet



Legend

- Drains
- Gazebo
- Sidewalk
- Creek Bed Boundary
- Perimeter
- Creek Bottom

0 375 750 1,500 Feet

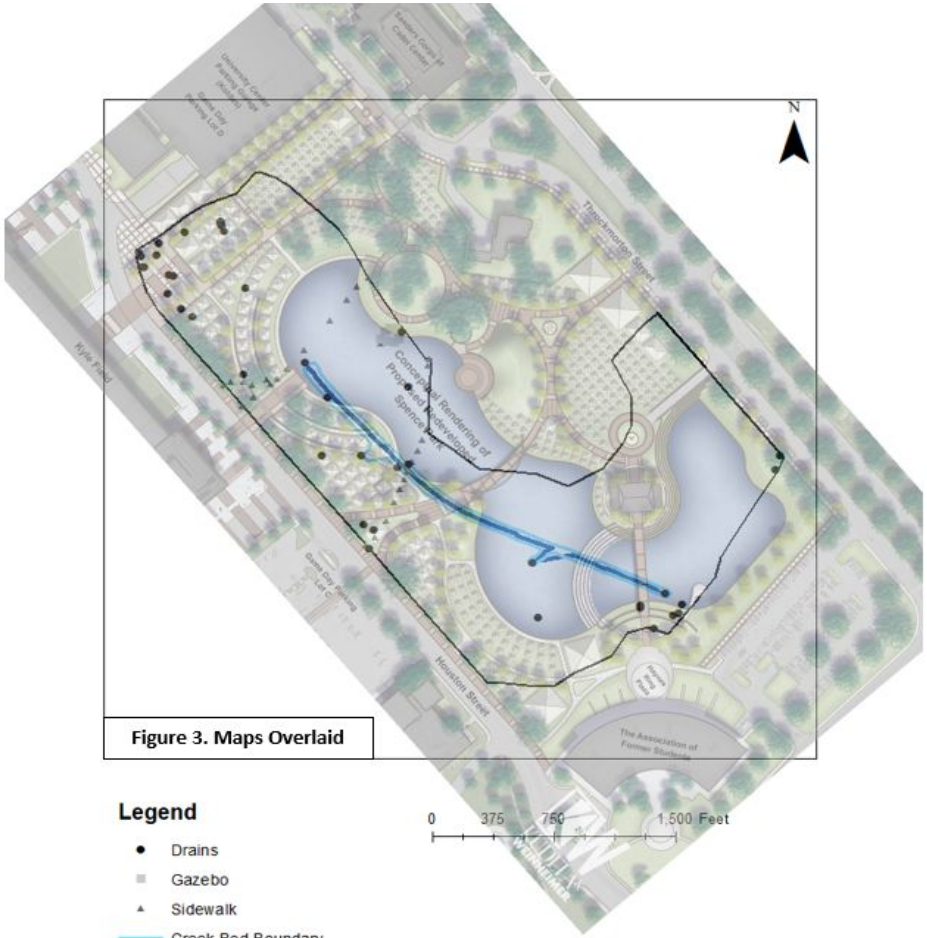
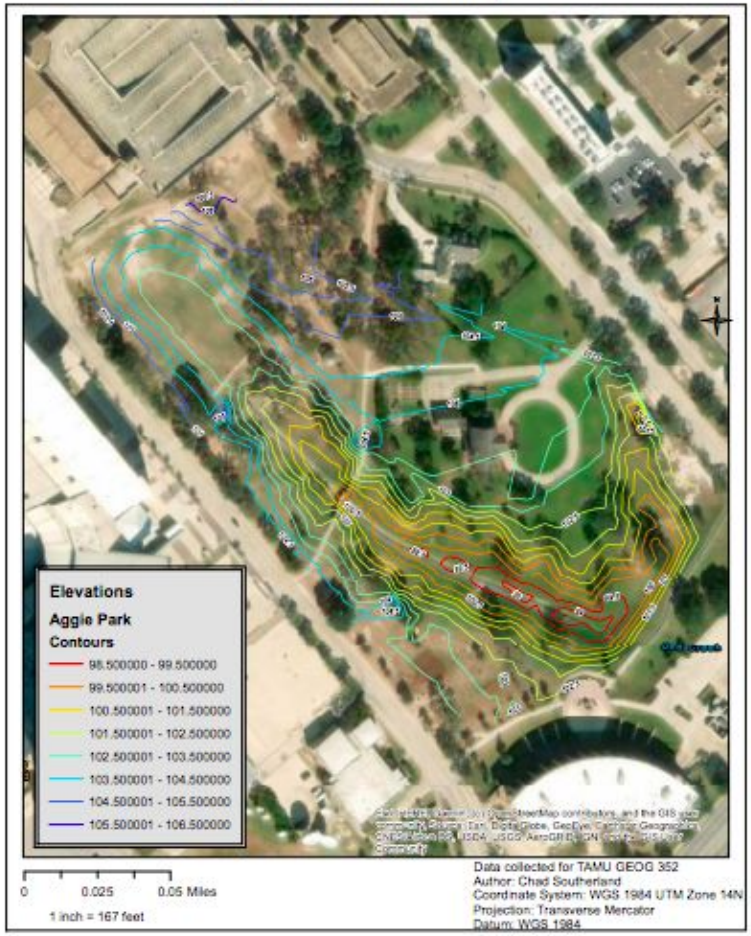


Figure 3. Maps Overlaid

Aggie Park Contour Map



Ecology

- The creek is home to many mosses and lichens, as well as some small patches of larger wetlands grasses.
- The creek has a noticeable amphibian population, as countless tadpoles of an unidentifiable species (most likely the cricket frog or the spring peeper frog) were seen while surveying the creek.
- Insects native to a wetlands environment such as dragonflies

Conclusions

- Water flows perpendicular to contour lines so the creek is flowing from Aggie Park into the nearby College Park neighborhood.
- One can also see from the elevations in the contour map that the park is in a basin like area with a very steep incline from the top to the bottom of the creek bed which causes it to be very prone to runoff and flooding.
- The estimated budget for the renovations may be larger than expected because of the large amount of trees and underground fixtures located on the study area that have to be relocated.
    - Trees cost from $200-$500 to relocate and there were 127 observed.
- The hypothesis that Bee Creek will be more prone to flooding if the proposed lake is to be created was accepted because there will be more water flow into Bee Creek due to the lake.

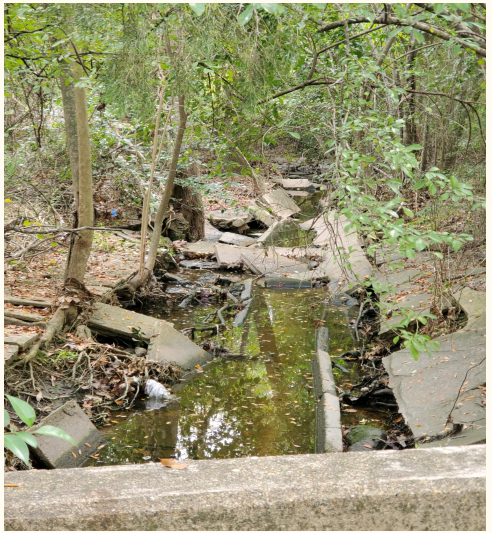
What Could Have Been Improved?

- Use of a drone to survey the area may have minimized human errors.
- A measurement of the height of the water in Bee Creek after a large rain event would have been beneficial.
- A more precise boundary of the perimeter could have been created by tracing the area we used as the perimeter with a string.

Aerial Image of the Study Area

Going Forward

- A survey of the area around Bee Creek in the surrounding suburbs to determine which houses are at risk
- A measurement of the most severe rainfall events and whether it could ever pose a major flood risk.
- A measurement of the average flow rate of the creek to see how much the lake would cause a change in the flow rate downstream.
- A wetland delineation of the study area should be performed.



Bee Creek downstream from Aggie Park.

Future Applications

- The project is applicable to future endeavors because it could be used by those working on the creation of the new Aggie Park as a resource to see how the land needs to be developed in order to create the lake.
- This work can also be used as a resource in later years to see how the topography has changed in the study area.

Thanks and Gig ‘Em!