GIS Analysis for Locating Potential Wetland Mitigation Sites in Monroe County, NY

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Agenda

- Introduction to Monroe County and the Project
- Datasets and Resolution
- Literature Review
- Conceptual GIS Analysis Model
- Creating the Different Dataset Values And Classification Values
- Preliminary Results
- Site Visit
- Monitoring the wetland
- New Site and its location
- Ballantyne Site Analysis
- Next Steps
- Summary
Introduction to Monroe County

- Monroe County is located on the South Shore of Lake Ontario
- As of the 2000 Census the population is 735,343
- Comprised of the city of Rochester, 19 Towns, and 10 Villages
Introduction To The Project

- Sometimes disturbance of a wetland cannot be avoided in the process of a project. For example;
  - Expansion of runways at the airport to improve safety requires a set location to build
  - In the build location was a wetland and not having a choice where to expand a runway the wetland was disturbed
  - So to re-mediate the site, a wetland must be created, within the watershed
  - Thus instead of doing after-the-fact re-mediation the County Executive asked the Department of Environmental Services to look at the prospect of a wetland mitigation bank
  - At the time of this project we were looking at potential sites within Monroe County Parks, at this time we are looking outside of the parks for a potential site
Literature Review

- For this analysis of the wetlands I decided to use what makes up a wetland (Tiner 2002 and Army Corps 1987)
  - Hydrology
  - Soils
  - Plant

- I looked at a study by McCauley and Jenkins, in 2005 which looked at finding historic wetlands

- Part of the project is to enhance the wetland function of Geographically Isolated Wetlands

- The Enhancement of a Wetland is an approved by the EPA as a method of Wetland Mitigation (EPA 2008)
Datasets Used For The Analysis

- **Vector**
  - SSURGO Soils Database
  - NYS DEC Wetland Data
  - Federal Fish and Wildlife Wetland Data
  - USGS Water and Stream Data
  - Monroe County Parcel Data
  - Monroe County LiDAR Elevation Data
  - Monroe County Parks Records

- **Aerial Photography**
  - Historic
  - State DOP
  - Pictometry
Overall County Layers Used
Distance From USGS Streams
Distance From USGS Water
Average Distance From All USGS Water Sources
Distance From New York State Classified Wetlands
Distance From Federal Fish And Wildlife Classified Wetlands
Average Distance From All Mapped Wetlands
Scoring Of The Difference Values

Distance:
9x < 100ft
100ft ≤8x< 300ft
300ft ≤7x< 500ft
500ft ≤6x< 1000ft
1000ft ≤5x< 1500ft
1500ft ≤4x< 2000ft
2000ft ≤3x< 3000ft
3000ft ≤2x< 5000ft
1x≥5000ft
Slope Image From The 2006 LiDAR Collection
Scoring The Slope Image

90 = 0% - 5%
80 = 5% - 10%
70 = 15% - 20%
60 = 20% - 25%
50 = 25% - 30%
40 = 30% - 35%
30 = 35% - 40%
20 = 40% - 50%
10 ≥ 50%
Scoring Of The Slope Image
Hydric Soils
(From The SSURGO Database)
Limits Of The Results

- We initially limited the results to only County Owned Parks due to their accessibility.
- Also, areas that were heavily forested were not considered.
- Because of these criteria and the current push for development on the west side of the county, Black Creek Park was chosen as the optimal site to investigate.
Black Creek Park
Black Creek Park And Hydric Soils
Site Visit To Black Creek Park

- In the spring of 2009 the planning team visited the site at the south of Black Creek Park.
- We found that much of the area is near wetland with the dominate species being dogwoods, grasses, and rush.
- We found small pockets of definite wetland areas.
- Each photo during the site visit was geotagged for future reference.
Site Visit Continued
Monitoring the Potential Site

- Part of the Wetland Mitigation Site is to monitor the site to make sure it has the correct characteristics.
- Piezometer Wells were established at this location during a past wetland mitigation project that was 5 years ago.
- We are planning on using a web-based map and monitoring program after the wetland is constructed.
Monitoring the Potential Site continued

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Monitoring The Potential Site Continued
After a few site visits, including one with both New York State DEC and Army Corps of Engineers, we have decided that while this site is promising, it is smaller due to the existing wetlands.

Because of this we have decided not to use the Black Creek Site.
The new site is off of Ballantyne Rd in the Town of Chili

This site is privately owned but the County is currently looking into it
Ballantyne Site
Ballantyne Site Analysis
Ballantyne Site Analysis

- Based on the model this site does not appear to be viable

- Looking closer at the data shows only one of the values are not optimal
  - Ranging from 4790 - 5890

- Going back to the Model any 7,8,or 9 in the code shows a good results.

- The first digit is the score for distance to water which the site has no water moving through it, but has water nearby
Ballantyne Site Analysis (Site Visit)

- The site was a former farm field
- The site has noticeable channel scars from the tributary to Black Creek just north of the site
- There were facultative and obligate wetland plants starting to migrate back to the site
Next Steps

- Currently, the County is investigating this site further

- There is **nothing definite** in the works but just the preliminary site research

- **Potentially**, due to the watershed location, the site would be able to meet future needs of County Projects, west of the Genesee River
Summary

- The methodology worked well as a tool for finding places to investigate for wetland mitigation.
- Using a raster based analysis showed more variability in the results which also helped in finding places where we could add on.
- The model itself shows a lot more information than just where a good mitigation site may be, but also may be used to locate wetlands and former wetlands.
Questions

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