

Consideration of Small-Scale Stream and Wetland Restoration Efforts in an Urban Environment

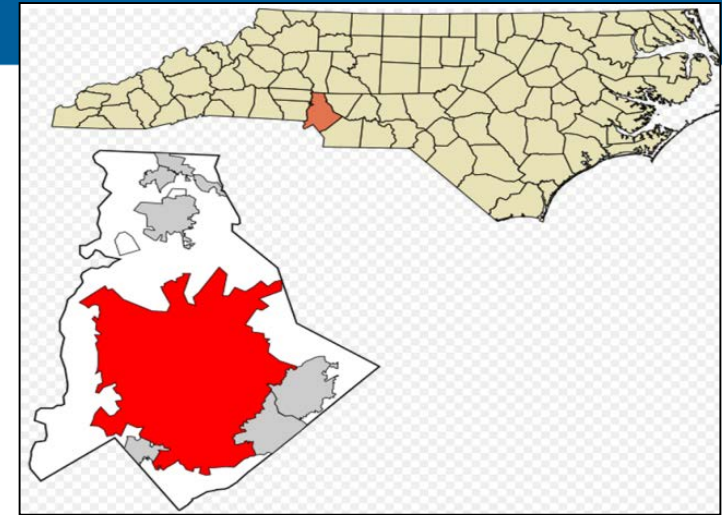
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Charlotte Quick Facts

- Population 859,000 (16th)
- Metro Population 2.4 million (22nd)
- Fastest Growing City 2nd-13th
- Area 300 sq. miles
- Streams 1,300 miles
- 2nd Largest Banking Center in US
- 6 Fortune 500 Company Headquarters in Charlotte Metro Area
- Major Redevelopment in Uptown and along Transit Corridors



Program History

Missions of Charlotte Storm Water Services:



Maintain storm water infrastructure



Reduce flooding



Improve water quality

Program Goals

Watershed Stressors:

- Spills and illicit discharges
- Development and impervious surfaces
- Historic loss of floodplains, buffers, and streams and wetlands
- Stream erosion
- Sedimentation and loss of habitat



Program Goals

Improving Water Quality:



Stream Restoration



Wetland Restoration

Stormwater Control
Measures (a.k.a. BMPs)

Program Goals

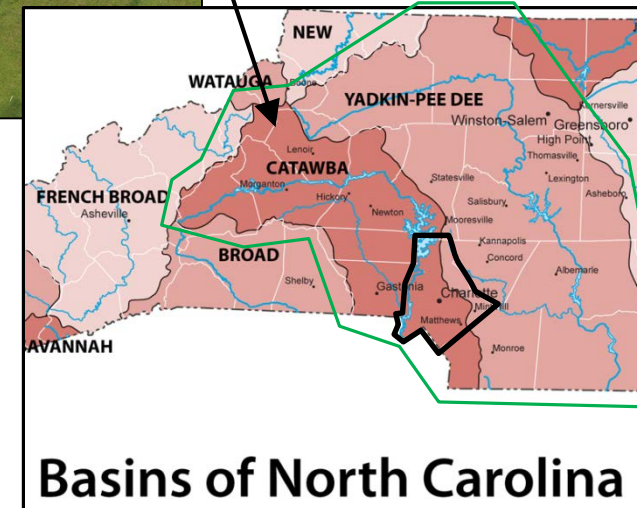
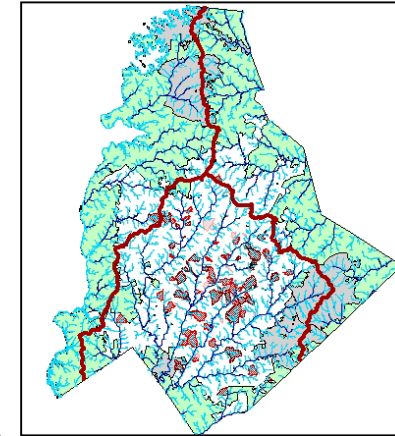
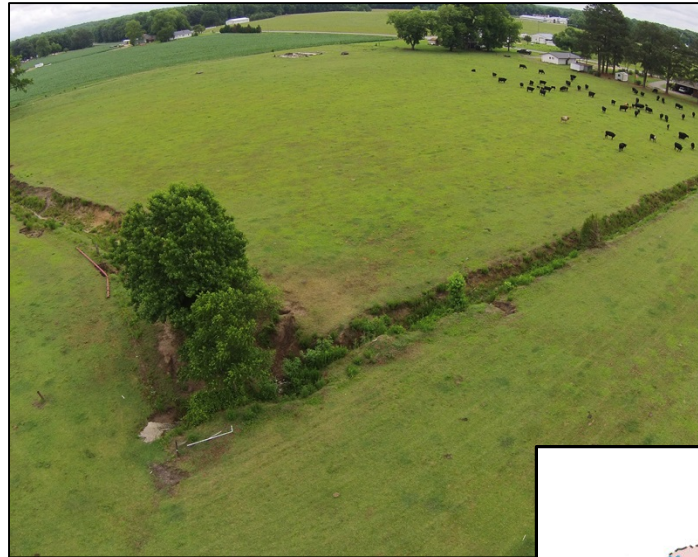
Watershed Improvement with Ecological Restoration:



Mitigation Bank

Overview

- Established in 2004
- Serves 3 watersheds
- Currently 20 projects
- Mitigation for municipal project impacts
- Watershed improvement tool
- Keeps mitigation local
- Generates \$ for more improvements

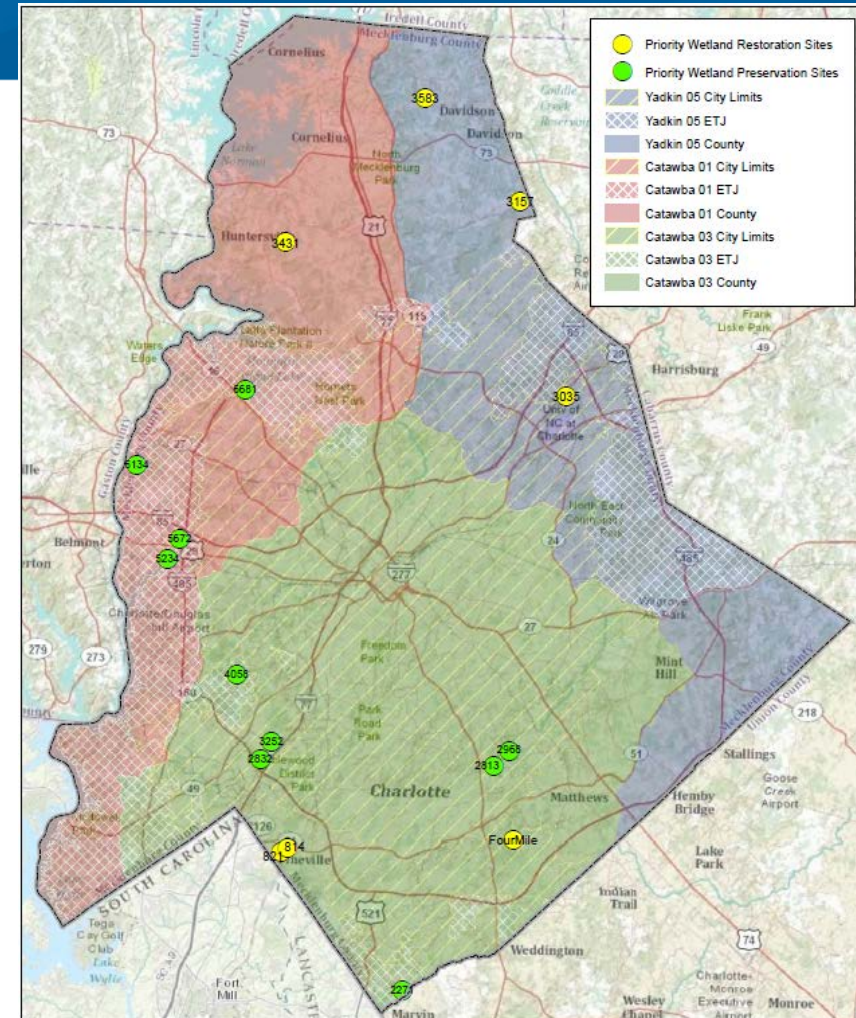


Basins of North Carolina

Mitigation Bank

Project Selection:

- Stream Restoration Ranking Protocol
 - First completed in 2002
 - Several iterations have followed as projects have been implemented
 - Currently working from a list of 20 identified projects
- Wetland Identification and Prioritization Protocol
 - First completed in 2013
 - 7 wetland restoration/enhancement sites
 - 10 wetland preservation sites
 - 2 R/E sites and 4 P sites in City
 - Another iteration in 2015 ID'ed several more candidate sites
- Opportunities within other City flood control projects
- Moving towards watershed planning based project implementation



Urban Challenges

Project Implementation:

- Habitat degradation and fragmentation
- Limited ecological function(?)
- Urban hydrology
- Costs
- Physical constraints
- Citizen perceptions...



Urban Challenges

Community Engagement:

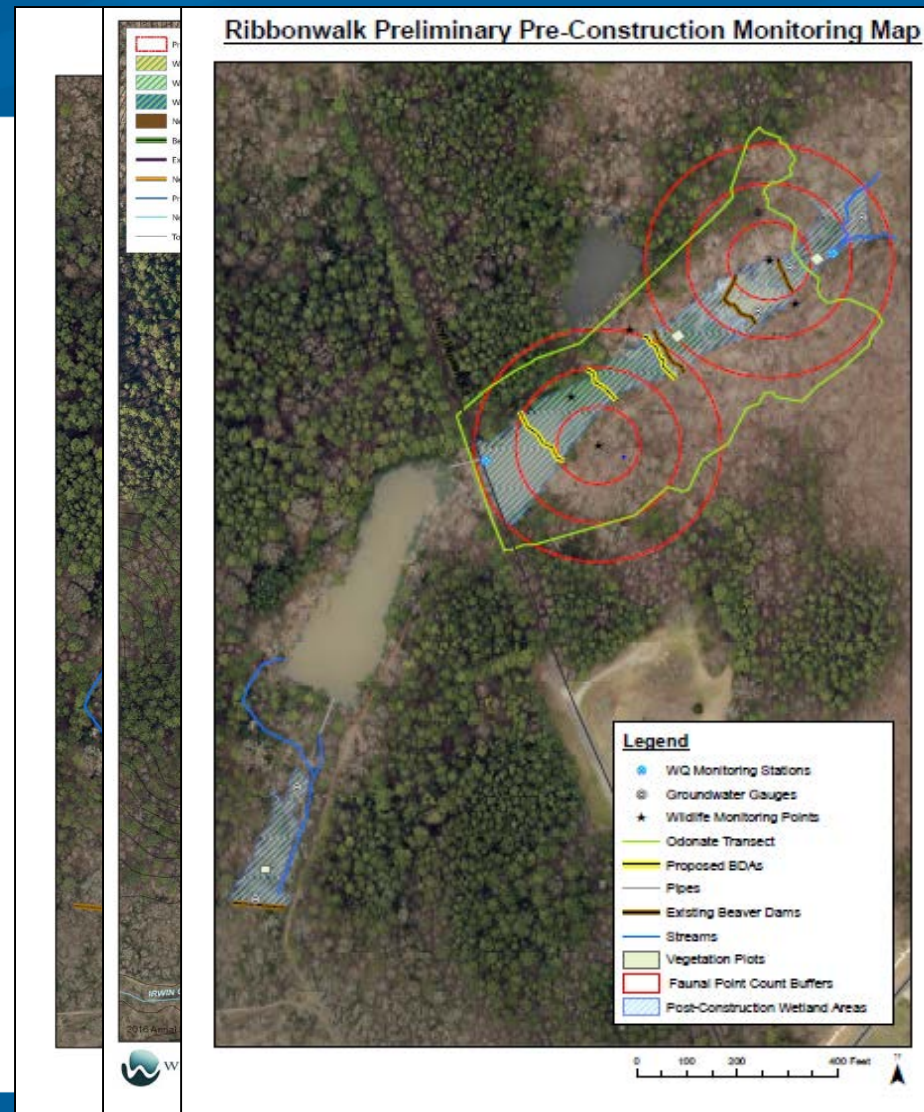
- Enhanced project communication
- Public education
- Nature as an amenity
- Aesthetics



Program Future

Initiatives:

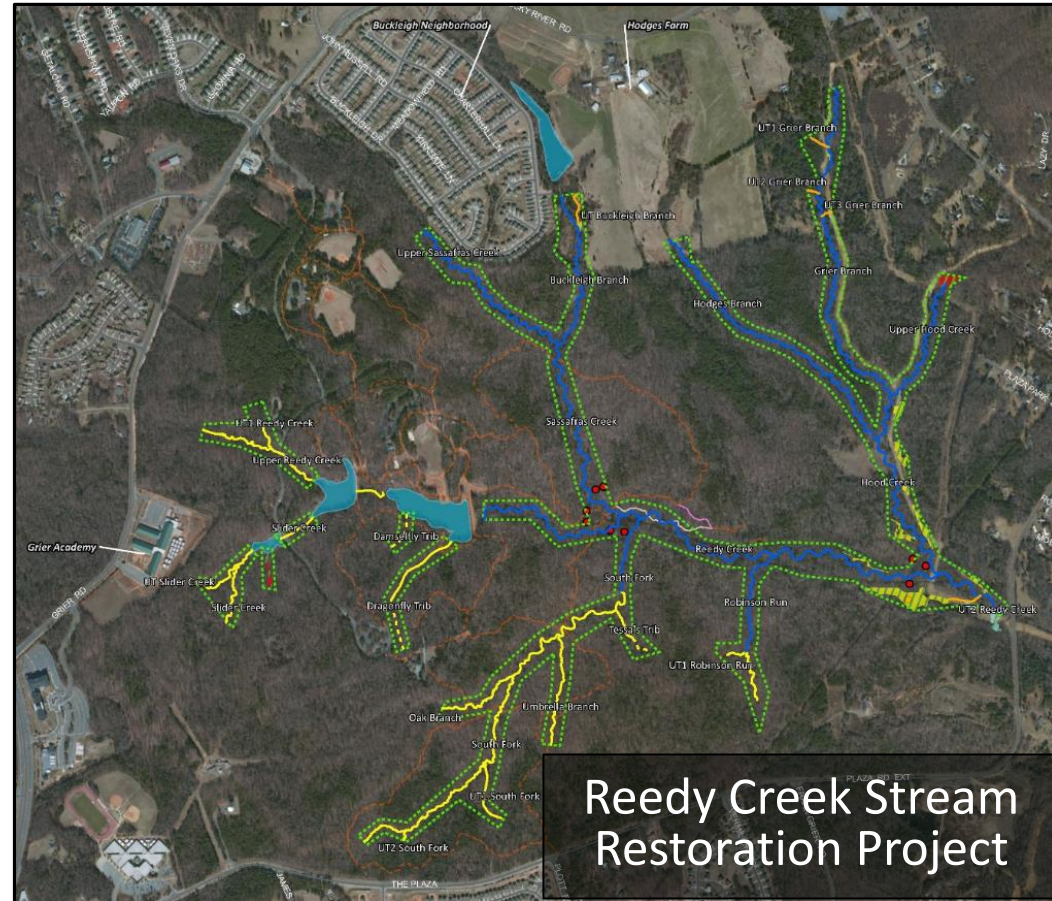
- Strategic watershed planning
- Incentivize private sector investment
- More watershed improvement, less stream mitigation
- Wetland mitigation
- Non-traditional mitigation
- Innovation and monitoring to advance the science of urban restoration
- Work with stakeholders to develop best practices



Program Future

Questions:

- Maximum urban aquatic ecosystem function?
- New technologies and techniques?
- Most effective watershed improvement measures?
- New regulations?
- Time to watershed recovery?





QUESTIONS?

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