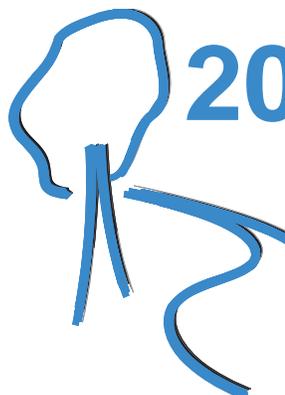




Neuse River

Marks Creek



**2008 Conservation Plan
Update**

Introduction

Both Wake and Johnston Counties are expected to more than double their population by 2035. Wake County predicts their population will reach over 1.5 million people (2005 estimate is 744,643) and Johnston County expects its population to reach over 200,000 (2005 estimate is 76,544). The growth in both of these counties will bring both economic and social capital to the area. This same growth however, will require an immense amount of land as well as new infrastructure, such as schools, public transportation, police services, fire services, and parks. In addition, as these areas continue to grow there will be a pressing need to preserve open space and focus growth to targeted areas. Open space preservation has direct ties to human and natural world health, as well as the economic health of our communities. The Triangle is known for its rural and natural spaces interspersed with its urban settings. This integration is a delicate yet natural balance that can be achieved with careful planning and dedicated resources.

The Neuse River/Marks Creek conservation plan will serve as an update to the 2001 conservation assessment prepared by Triangle Land Conservancy. Although many of the natural features of the initial assessment have maintained their integrity, the built environment has evolved and added an imperative demand to conserve this Last Chance Landscape (designation of the Scenic America Program) before it is too late. This report will provide a summary of progress to date, examine development pressures in greater detail, use new criteria and models to update the priority acquisition areas, and provide guidance on potential complimentary uses within the watershed that could contribute to the health, connectivity, and natural and cultural richness of this unique landscape.

List of Figures

Figure 1: The Study Area.....	6
Figure 2: The Initial 2001 Conservation Assessment	7
Figure 3: Map of Conservation Lands as of December 2007	10
Figure 4: Estimated travel times from surrounding municipalities to key locations within the study area	12
Figure 5: Long range urban service areas of Wake County Municipalities	13
Figure 6: Number of new Subdivisions	14
Figure 7: The acreage of suburban lots.....	14
Figure 8: Map of Existing subdivisions	15
Figure 9: Key natural features of the study area	17
Figure 10: Nationally Registered Historic Sites in the study area	18
Figure 11: Lake Myra	20
Figure 12: Shotwell Area	21
Figure 13: Goodson Farm and Bend of the River/Stallings Carpenter House	22
Figure 14: Brookhill Farm	23
Figure 15: Study area zoning	25
Figure 16: Major NC River Basins	27
Figure 17: Key greenway and community facilities in the study	29
Figure 18: Concept Map for the Marks Creek Area	35

List of Tables

Table 1: Key resources of each of the conservation tracts	11
Table 2: Knightdale Open Space Dedication Matrix	26
Appendix: Table 1: Action Plan	38-39

Table of Contents

The Study Area..... 6

Conservation Potential 8

Conservation Progress 9

Conservation Lands..... 10

Location and Development Pressure 12

Natural Environment 16

Cultural Heritage 18

The Planning and Regulatory Environment24

Other Existing Ordinances, Regulations, and Plans 26

The Mountains to Sea Trail28

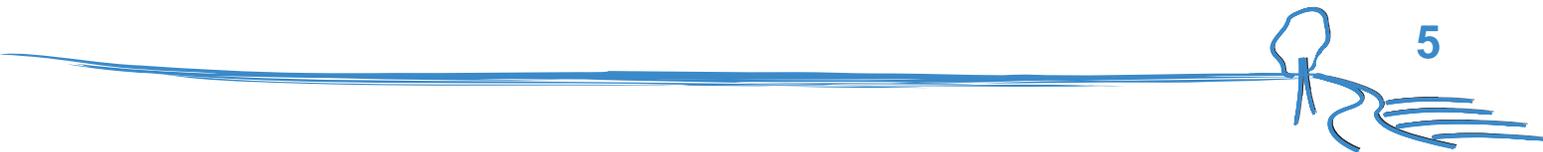
Recommendations and Conservation Strategies31

Stewardship and Management34

Concept Map35

Resources37

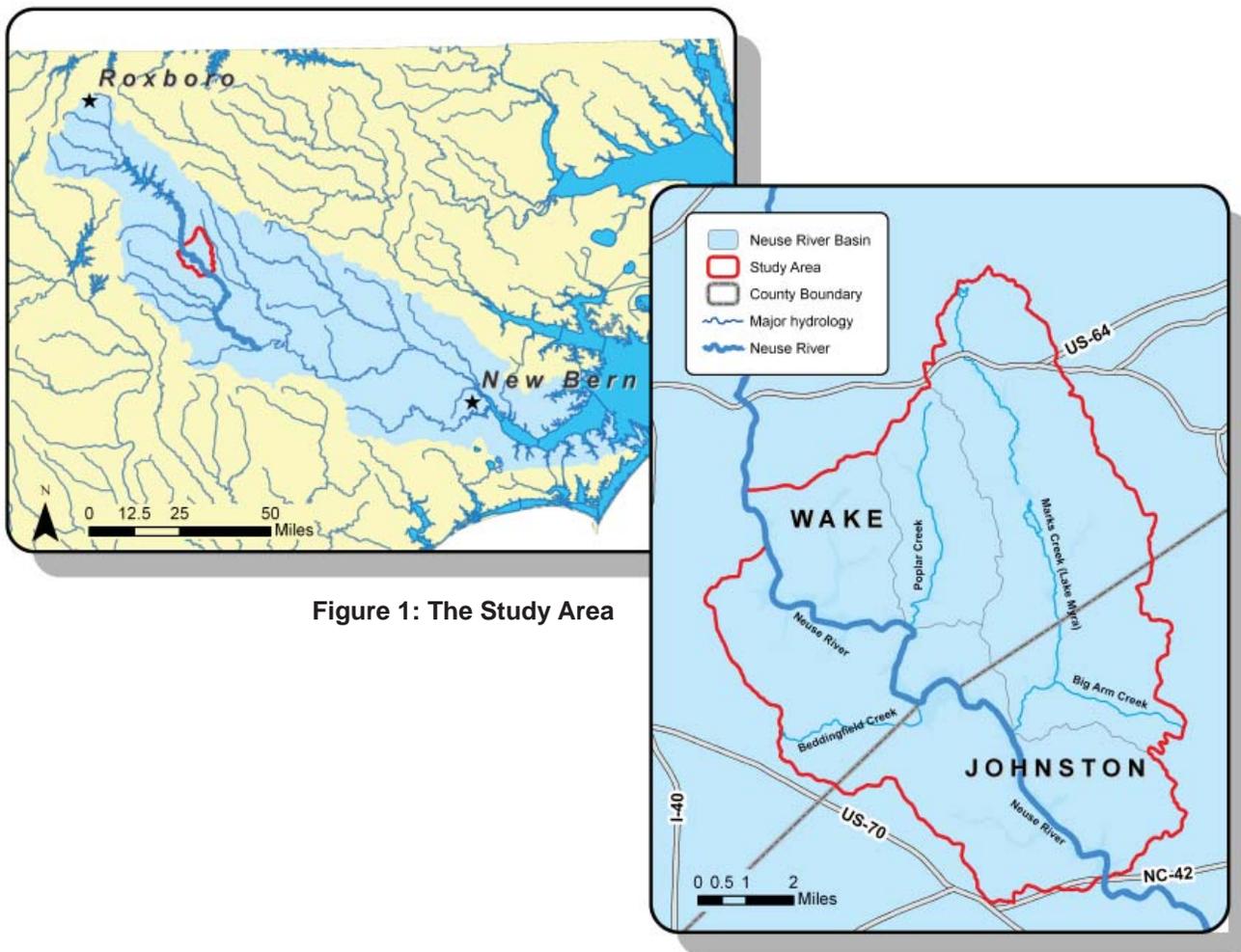
Action Plan38



The Study Area

The Neuse River Basin is the home of the study area. This basin is the third largest river basin in North Carolina and is one of only four river basins whose boundaries are located entirely within the state. The Neuse River flows from Roxboro in Person County to the tidal waters of New Bern, in Craven County. Here the river changes from a free-flowing river to a tidal estuary that eventually flows into the Pamlico Sound.

The study area is the same as the initial 2001 assessment (Costa 2001). It is comprised of the Marks Creek, Poplar Creek, and middle Neuse River 14-digit hydrological units, as defined by the U.S. Department of Agriculture's Natural Resource Conservation Service. The size of the study area is approximately 50,000 acres. Two-thirds of the study area lies in Wake County, with the remaining one-third in Johnston County.



The original study area was chosen for multiple reasons including:

Conservation Potential: For its proximity to the Triangle urban area, the landscape contains relatively few roads and multiple large tracts of land. Much of the land is owned by local families with a commitment to preserving the heritage of the area.

Location and development pressures: The watershed is within close proximity to several municipalities and straddles the Wake/Johnston County line. In 2001, the area was beginning to see development pressure due to lower costs of land and accessibility.

Unique Natural and Cultural Character: The watershed is rich with historic homesteads, scenic vistas, rare plant communities, and patches of mature hardwood forests recognized as ecologically significant by the NC Natural Heritage Program.



**A Conservation Assessment
for the Neuse River and Mark's Creek**

Wake and Johnston Counties, North Carolina



By Lorelei Costa
Triangle Land Conservancy

December 2001

Prepared by Triangle Land
Conservancy for Conservation
Trust for North Carolina and
North Carolina Clean Water
Management Trust Fund

The following pages summarize some of the key features of each of these categories and focus on major changes since the initial assessment. The 2001 assessment provides greater detail on each of these features and should be referenced for more information.

Figure 2: The Initial 2001 Conservation Assessment serves as the basis for this plan

Conservation Potential:

The 2001 assessment set a goal to “Protect the water quality, natural areas, and scenic, rural historic character of Shotwell and the surrounding area in Wake and Johnston Counties for the greatest benefit for the community, while meeting individual land owner goals.

To achieve this goal, the assessment documented the key features of the water resources, natural areas, and scenic, rural, historic character of the area. It focused mainly on the Marks Creek Area and its confluence with the Neuse River. The 7,600 acre-area at the confluence is intersected by only two roads.

The assessment provided recommendations on improving water quality and protecting land. As a follow up to the assessment, TLC and its partners designated high priority tracts for land protection and restoration.

The prioritization focused on:

- areas of mature forests
- stream frontage, areas of wetlands, and areas of floodplains
- core scenic areas

Four years after the assessment was published, the first conservation tract was acquired in the Marks Creek/Neuse River Area (see sidebar for a complete history).



In 2000, the Triangle Land Conservancy (TLC) adopted the Marks Creek/ Neuse River Area as a priority area.

A year later, TLC published a Conservation Assessment for the area which documented its ecological and cultural value as well as identified priority lands for conservation.

This report sparked a sequence of events which led to the designation as a “Last chance Landscape,” and dedicated funding resources from Wake County, the Ecosystem Enhancement Program, and the Clean Water Management Trust Fund.

In 2003, the first Marks Creek Summit, brought together interested municipal, county, state and nonprofit partners to discuss interest in and planning efforts for protection of the Mark’s Creek Rural Lands.

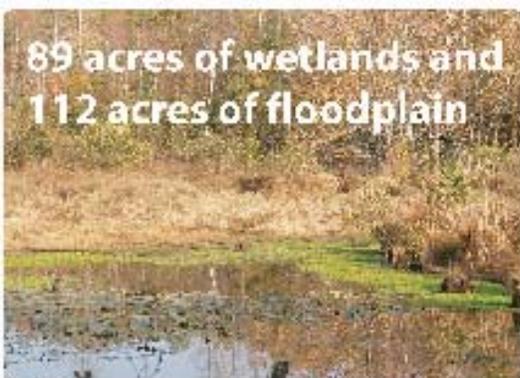
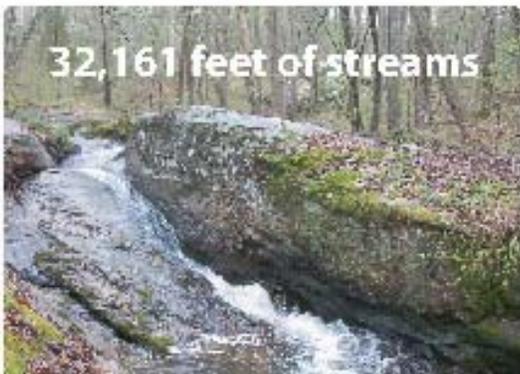
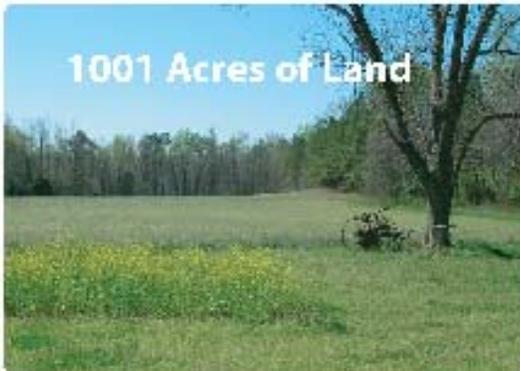
In 2005, the first conservation tract (31.54 acres) was acquired, containing the confluence of Sandy Branch, Gin Creek and Mark’s Creek.

By the end of 2007, over 1000 acres of land has been conserved in the Neuse River/ Marks Creek Area.

Conservation Progress:

Since the initial acquisition, over 1000 acres of land has been preserved in the Marks Creek/Neuse River Area.

As of December of 2007, the Marks Creek Partnership has worked to protect over



Conservation Lands

Figure 3. Conservation lands as of December 2007 in the Marks Creek Area. Most of the land is located along Marks Creek and its tributary Gin Creek.

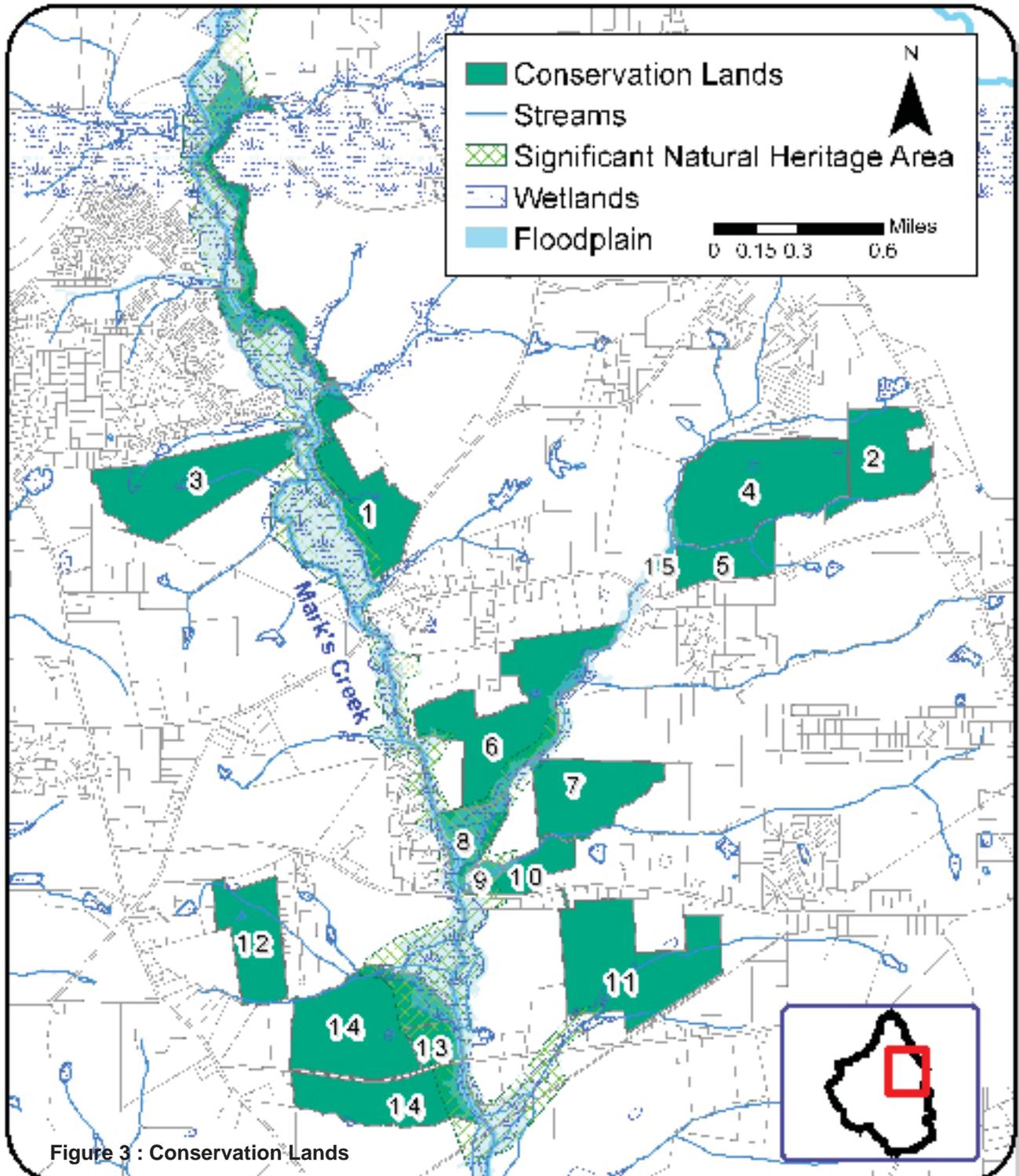


Figure 3 : Conservation Lands

Table 1, Summary of the key resources of each of the conservation tracts:

Map ID	Name	Acres	Length of Streams (ft)	Frontage on Major Streams ^[1] (ft)	Wetlands (acres)	Floodplain (acres)	SNHA ^[2] (acres)	MST ^[3] Spur or other planned greenway (ft)	Acres of prime soils
1	Wendell Falls	125.8	4,824	7,860	38.3	41.66	58.78	11,500	42.1
2	Herndon East	55.0	1,517	0	0.0	0.00	0.00	0	41.5
3	Poor Boy Farms N	92.0	1,948	646	3.8	1.91	1.76	0	67.2
4	Fuller	118.6	1,322	0	0.9	1.07	0.00	0	47.5
5	Herndon South	32.2	1,980	0	0.0	0.13	0.00	0	9.2
6	Pleasants	114.8	2,143	295	7.6	13.49	14.67	0	58.8
7	Medlin	50.6	1,189	0	0.7	0.58	1.03	0	39.6
8	TESC	24.4	2,869	1,167	18.1	22.93	27.11	944	4.3
9	TESC	5.0	701	182	0.0	4.46	4.41	0	0.6
10	Edgerton	26.5	989	131	0.0	2.40	2.65	0	16.1
11	LCL	110.5	3,422	0	4.5	0.00	1.48	0	47.9
12	Poor boy Farms South	51.9	2,565	0	0.2	0.00	0.00	0	18.1
13	Williamson	16.0	911	733	1.8	3.86	13.66	562	4.7
14	Williamson	175.9	5,101	1,616	13.5	17.06	36.74	58	66.5
15	Watson	2.5	680	0	0.0	2.50	0.00	0	0.0
	Total	1,002	32,161	12,629	89	112	162	13,065	464
[1] Major streams include the Neuse River, Mark's Creek, Poplar Creek, Beddingfield Creek, and Big Arm Creek									
[2] Significant Natural Heritage Area									
[3] Mountains to Sea Trail									

* Notes: Numbers are an estimate from Wake County GIS Data, Johnston County GIS Data, USGS Stream Data, the National Wetland Inventory, the Inventory of Significant Natural Heritage Areas, and NC One Map. These are estimates and have not been verified on the ground

Location and Development Pressure:

Standing in the middle of Shotwell, surrounded by farms, 19th century buildings, and gently rolling hills, it's hard to imagine that you are only a 15-minute drive from downtown Raleigh.

In fact, many of the unique places in the study area are less than 15 minutes from Raleigh, Wendell, Knightdale, and Clayton (see Figure 4). Yet only 5% of the study area lies within the jurisdiction of these towns. However, in the future, the entire study area will most likely be incorporated.

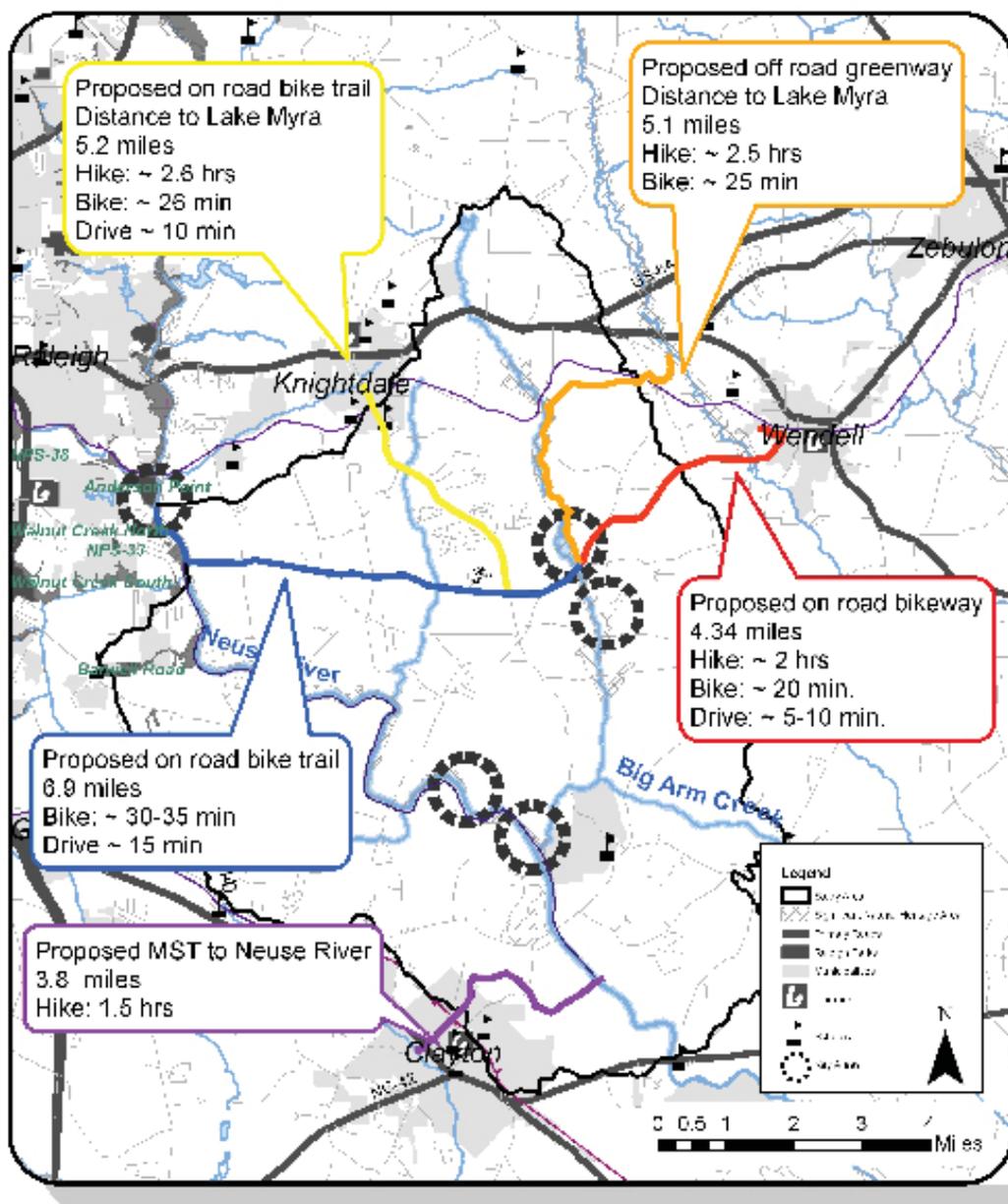


Figure 4: Estimated travel times from surrounding municipalities to key locations within the study area.

The Wake County Long Range Urban Services Areas indicate that most of the study area will fall under Raleigh, Knightdale, and Wendell's jurisdiction (see Figure 5). On the Johnston County side, most of the area will likely fall under Clayton's jurisdiction.

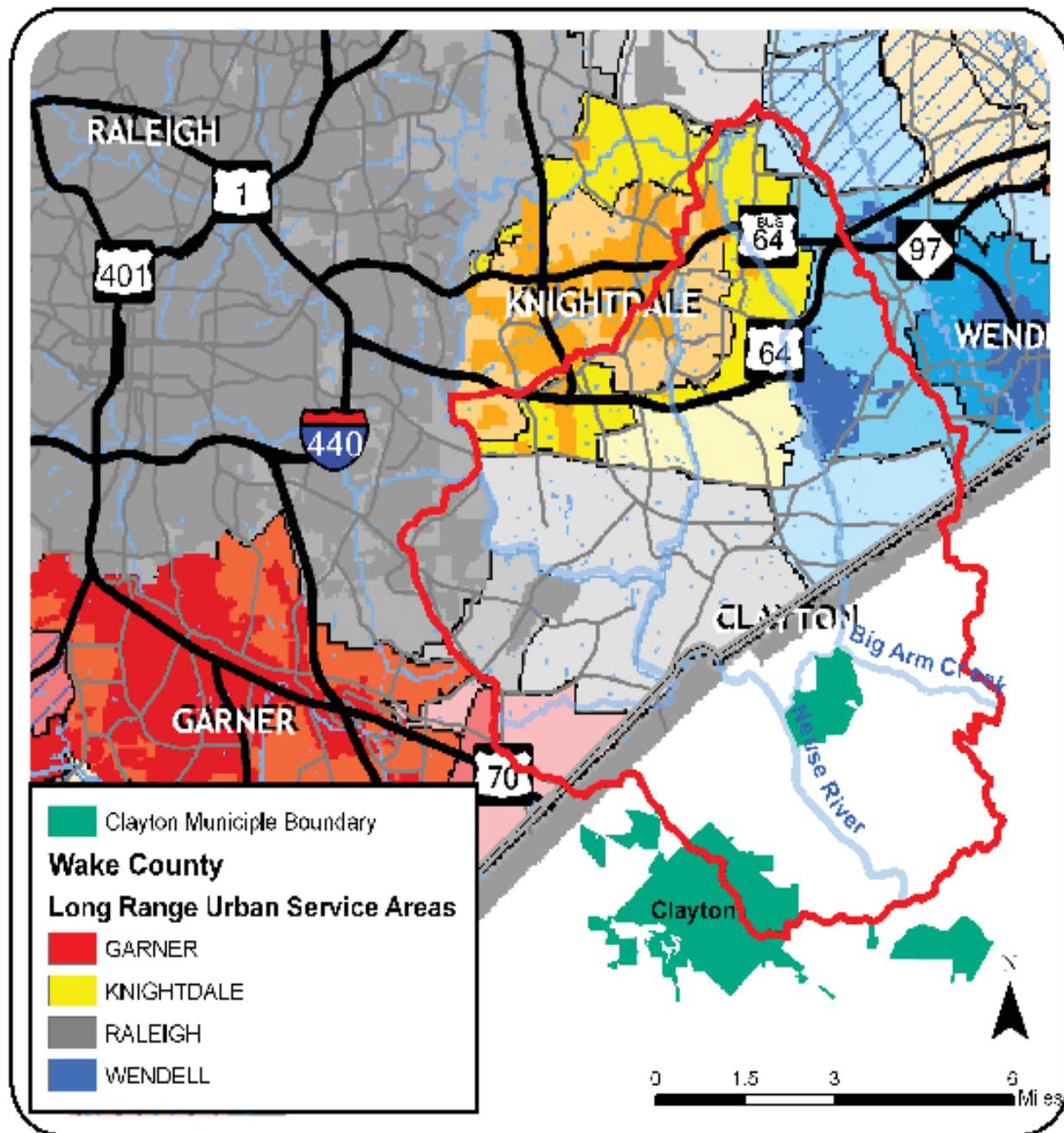


Figure 5: Long range urban service areas of Wake County Municipalities. In the future most of the study area will be incorporated.

Development Pressure (continued):

The transition from rural to a more urban environment has already begun. Since the 2001 assessment, several large subdivisions have been planned or developed in the area. Just northeast of Lake Myra, a massive 4,000-home subdivision called Wendell Falls has been approved. In Johnston County, both Riverwalk and Riverwood subdivisions will add another 3,894 homes to the area. All together, 9 of the original 27 priority tracts identified in the 2001 assessment have been or are being developed.

The following graphs (Figures 6 and 7) provide an indication of the suburbanization of the watershed. Since the 2001 assessment, many of the large tracts have been subdivided.

Figure 6: The number of lots less than or equal to 2.5 acres has increased from 83% in 2001 to 92% in 2007 (Source Wake and Johnston County GIS)

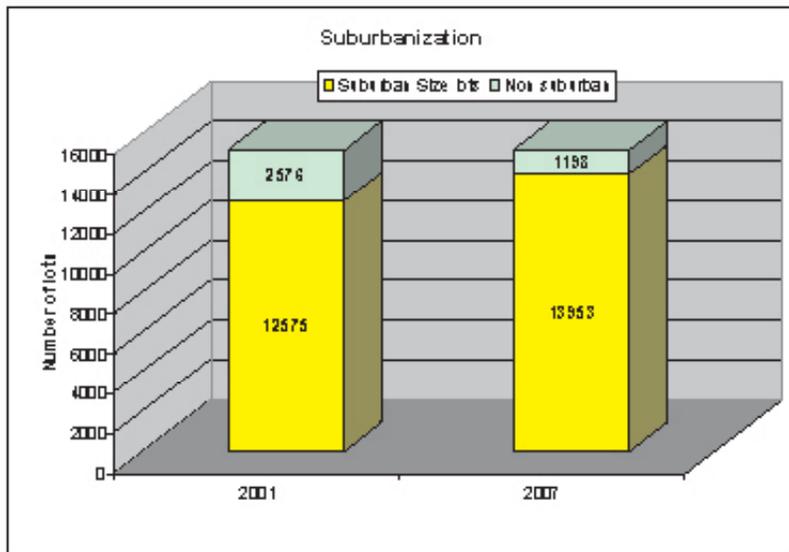
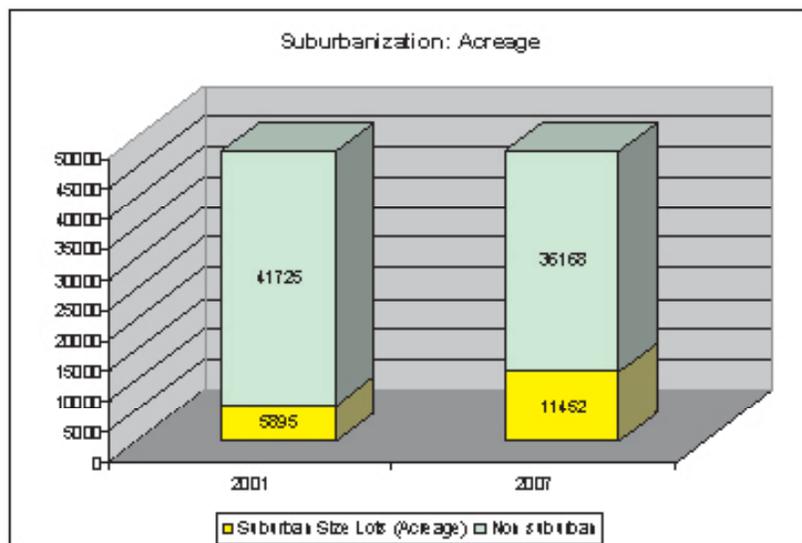


Figure 7: The acreage of suburban lots has doubled from 12% in 2001 of the total land in the study area to 24% in 2007.



Development pressure will continue in the study area. New subdivisions and the extension of I-540, most likely through the southwestern section of the study area, will threaten much of the study area.

In a summit of municipal and county staff from the area, the partnership asked planning staff to identify areas they felt would likely be developed in the near future. Figure 8 highlights these areas.

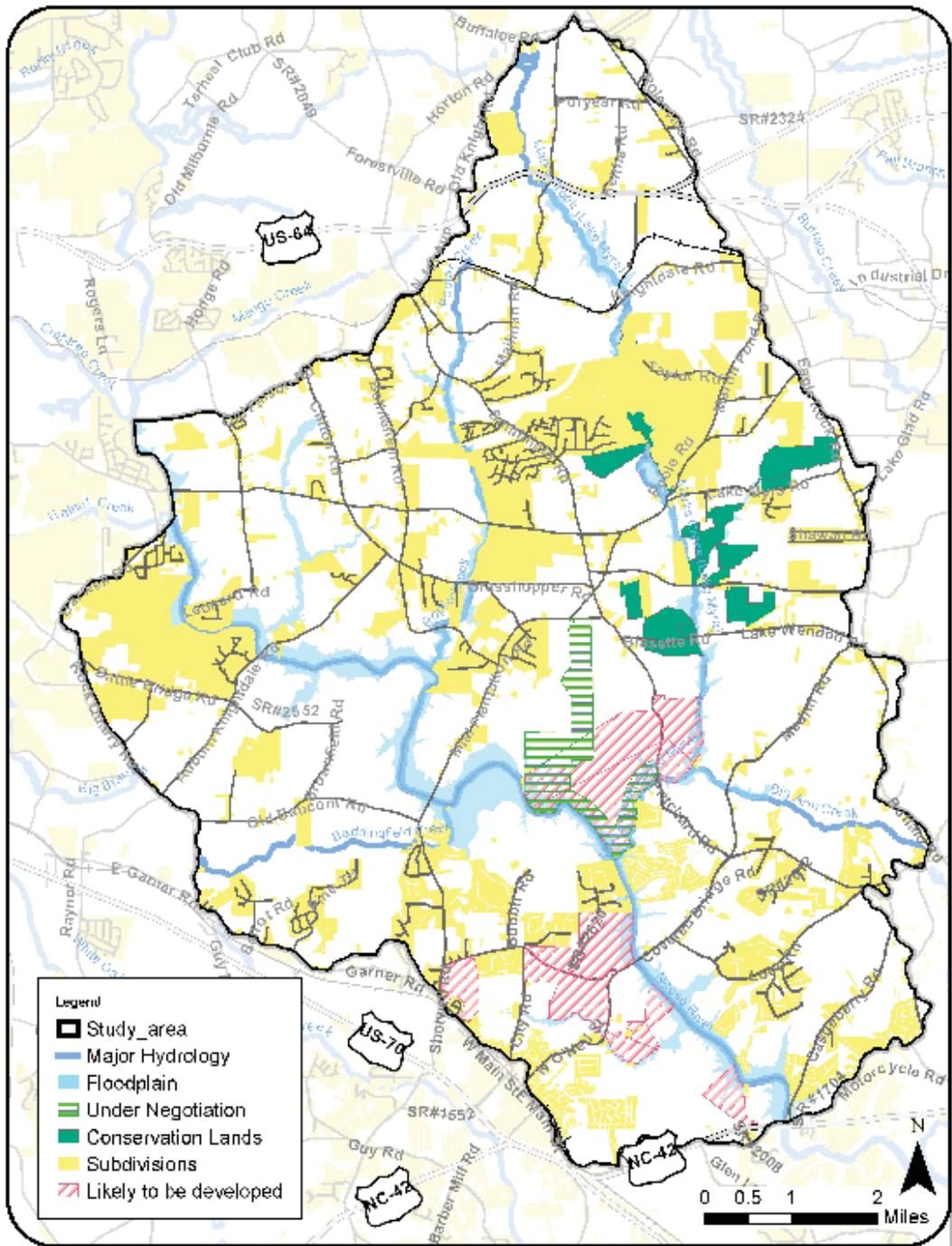


Figure 8: Existing subdivisions are shown in yellow and areas likely to be developed in the near future are shown in pink.

Although the area is developing rapidly, it still contains several large contiguous tracts of land unfragmented by development. These lands, in addition to the 1000 protected acres, offer great potential for wildlife corridors, scenic viewsheds, farmland preservation, and future large strands of mature forests. Additionally, the land offers a unique opportunity to protect the natural and cultural heritage of the area. The following section summarizes the key natural and cultural attributes of the study area (refer to the 2001 assessment for more detail).

Natural Environment:

The study area is located in the transition zone between the Piedmont and Coastal Plain. Consequently, the area has characteristics of both these regions and an increased biodiversity because of it.

Unique Habitats and Species:

The area has several unique features identified by the North Carolina Natural Heritage Program (LeGrand 2001, 2003) (see Figure 9).

Clayton Forests: Significant forest patches along the Neuse

Bluffs and moderately steep slopes along the river: Some of which contain Piedmont/Coastal Plain Heath Bluff natural communities. For example, on the Neuse River in Johnston County, about 1½ miles below the county line, the NC Natural Heritage Program has identified a significant, 50-foot north-facing bluff with a substantial stand of mountain laurel and prominent rock outcrops.

Rare Plants:

Michaux's Sumac: Federally listed endangered species, typically found in open/cleared areas; **Southern Skullcap:** a rare species that historically occurs in floodplain areas of the study area

Aquatic Species:

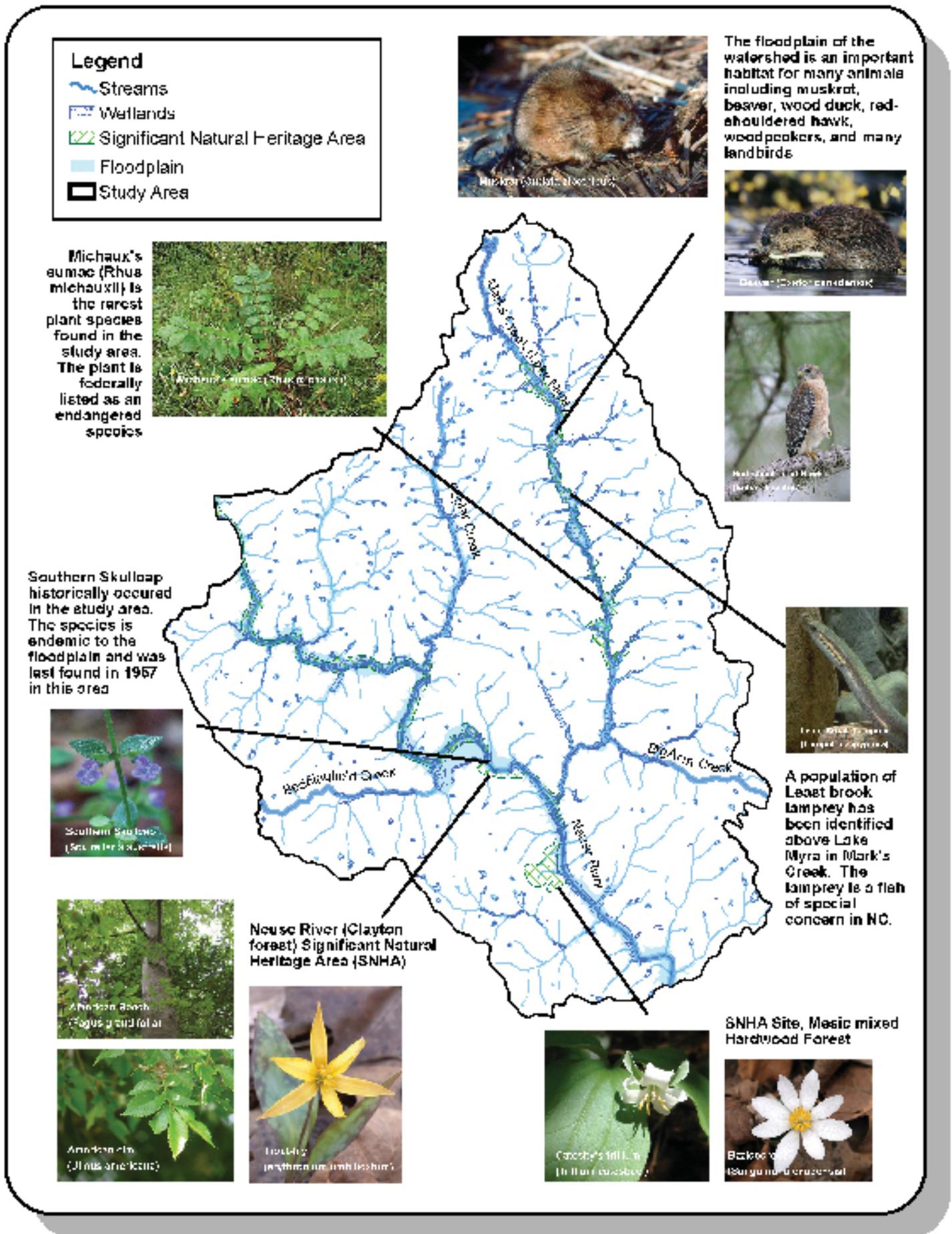
Least brook lamprey: A fish of special concern in NC that is especially sensitive to pollution; **Anadromous fish:** These stretches of the Neuse and Mark's Creek are considered the northern-most spawning area for fish such as striped bass, shad, and sturgeon that swim upstream from the Pamlico Sound.

Elevation: Ranges from 350 feet above sea level at Medlin Road and Lake Wendell Road, to 140 feet above sea level along the Neuse River at Covered Bridge Road.

Geology: The main geological feature in the study area is the Rolesville Pluton, the granitic bedrock that extends from northern Johnston County through Wake County, and up as far as Franklin, Vance, and Warren counties to the north (LeGrand 2003).

Soils: Due to the Rolesville Pluton, most of the soils in the area are acidic with PH values less than 6.0. Additionally, much of the land is suitable for farming. Over 60% of the soils in the area are designated as prime agricultural soils.

Figure 9: Key natural features of the study area



Cultural Heritage

Archeological evidence suggests that humans first settled the Neuse basin over 14,000 years ago (NRK 1999). Although there is little remaining evidence of earlier settlements, the study area still contains unique architectural features from the colonial period onward.

The 2001 assessment identified nine local historic sites (Figure 10). The assessment also noted that designating and preserving these structures as historic is only the first step, as without the rural landscape, the historic context of these landmarks is lost.

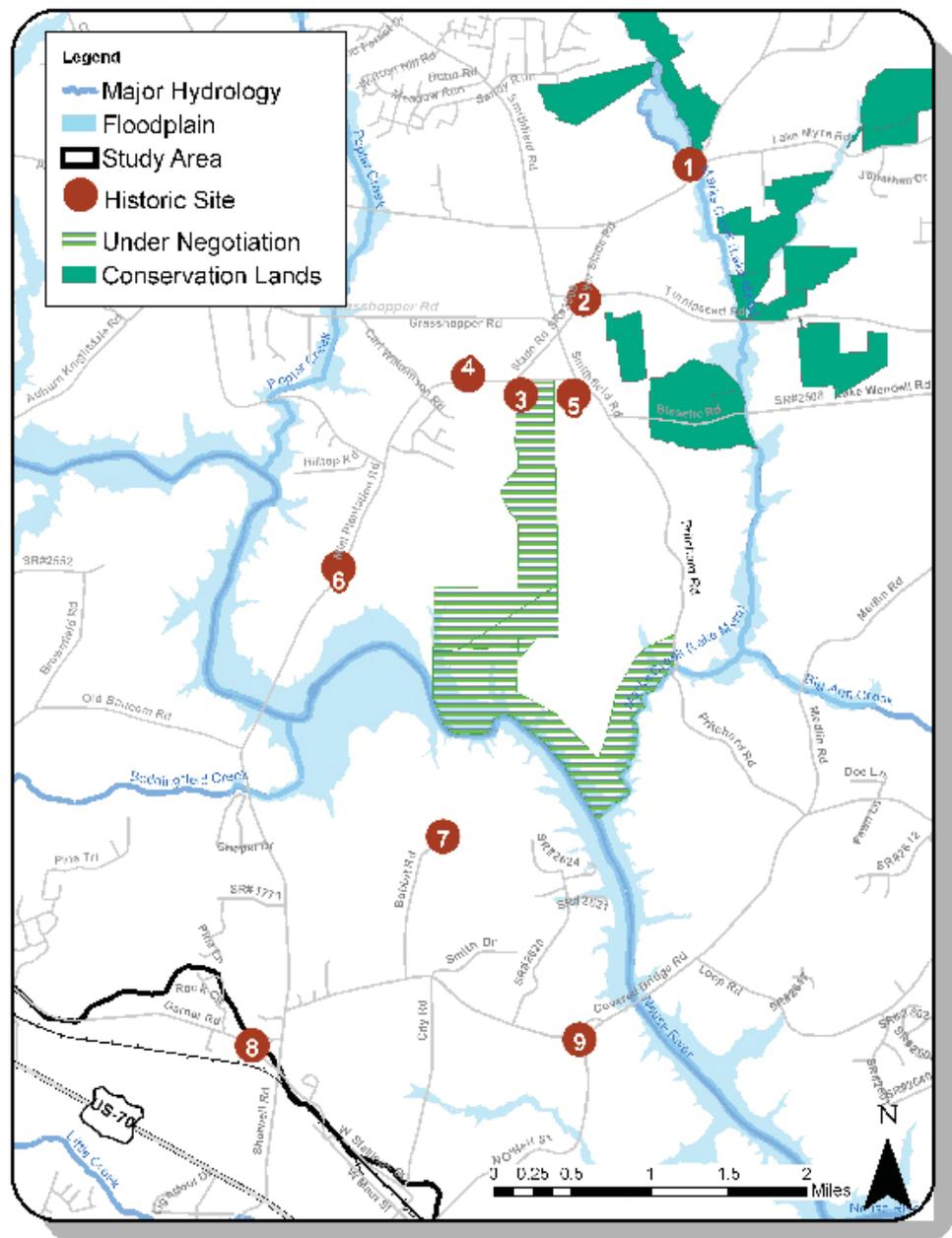


Figure 10: Nationally Registered Historic Sites in the study area

Protected historical landscapes and structures:

Since 2001, the protection status of the following three historical sites has changed.

1



Eastern Shore of Lake Myra: 125 Acres has been protected as a buffer on the eastern shore of the lake, 91 acres has been protected along the northwestern portion of the lake

3



The Walnut Hill historical landscape will be conserved. The buildings have not yet been restored.

4



The Walnut Hill Cotton Gin has been restored and preserved by private owners, but the surrounding landscape has not been protected.

Specific Historic Sites and Landscapes

The following series of maps provide a closer look at the nine historical sites and their surrounding landscapes (please see the 2001 assessment for more detailed information of the historical structures).

- 1) Lake Myra:** Historic mill and community gathering site. 125 acres has been preserved along the eastern shore of the lake as a buffer to the Wendell Falls community which will consist of about 4,000 houses. Another 92 acres have been protected on the northwestern side of the lake (Poor Boy Farms).

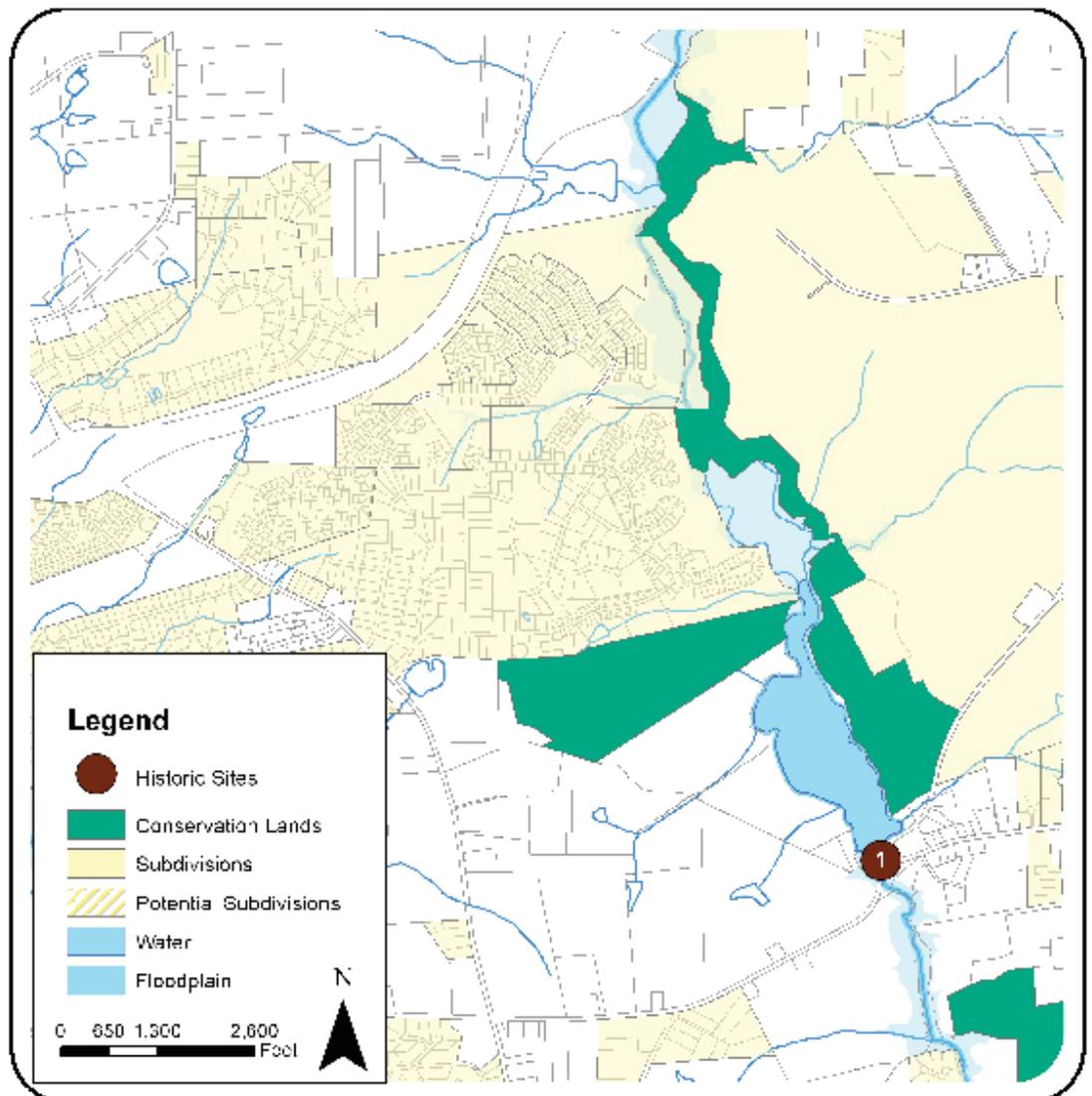


Figure 11: Lake Myra

Historic Sites (continued)

- 2) **Oaky Grove:** Historic farmhouse from the 1800s. The property is located on a 110-acre farm divided by Turnipseed Rd. Wake County has submitted an application for an agricultural easement on the property.
- 3) **Walnut Hill:** Historic farm owned and operated by the Mial and Williamson families since 1775. This site contains unique buildings such as Oaky Grove Methodist Church and Frog Pond Academy. The property will be conserved in phases over the lifetime of the owners.
- 4) **Walnut Hill Cotton Gin:** The gin has been preserved and restored by private owners, but the surrounding landscape has not been preserved.
- 5) **Blake Farm:** The farm is still in active agricultural use.

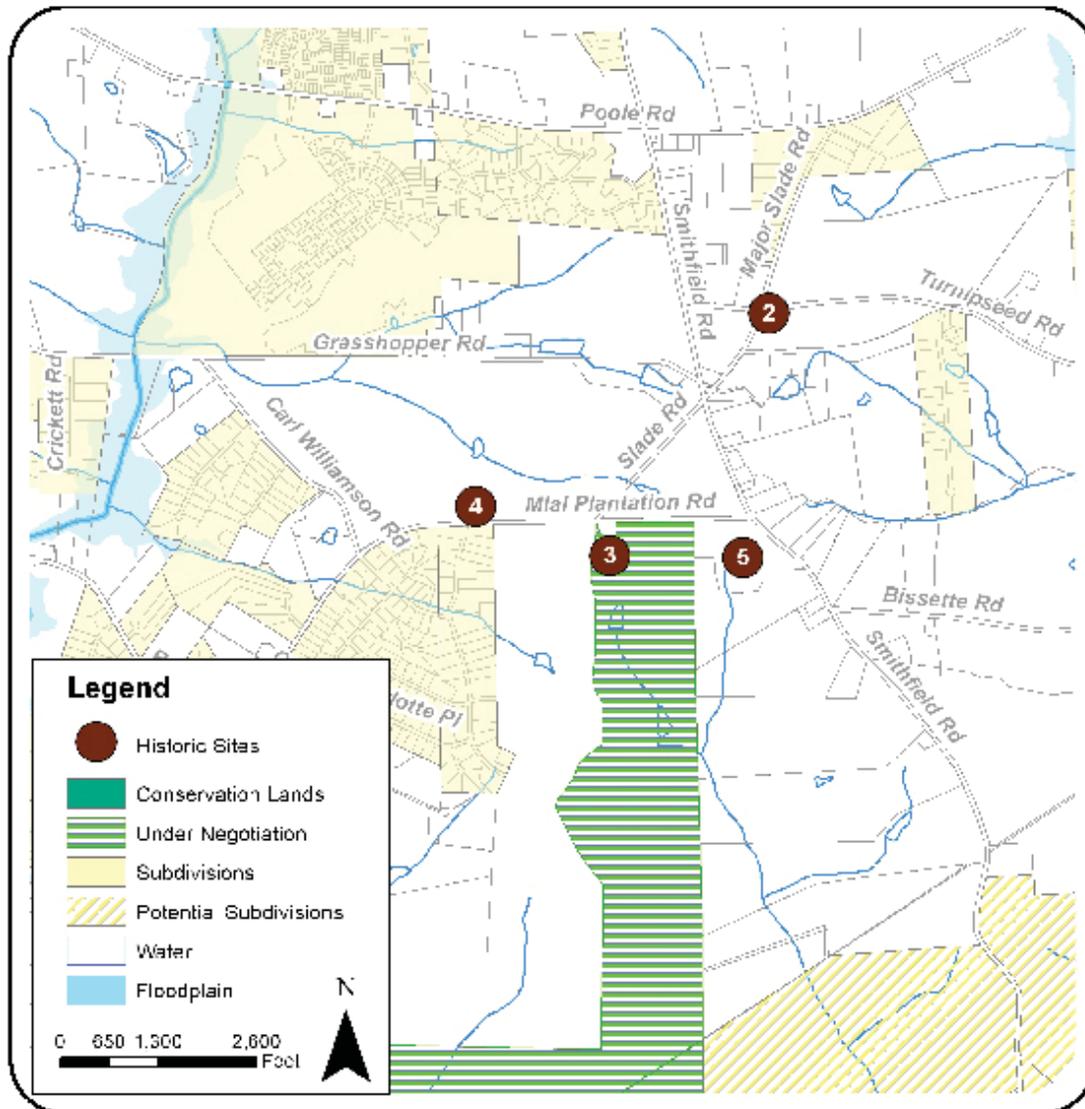


Figure 12: Shotwell Area

- 6) Goodson Farm:** Historic Tobacco Farm owned by the Goodson Family. Henry Rufus Goodson was one of the wealthiest and most prominent black landowners in Wake or Johnston Counties in the early 1900s. The area lies close to lands owned by the City of Raleigh for their waste water treatment plant. It is also within a ¼ mile of potential conservation lands on the Walnut Hill and Riverwalk Tracts.
- 7) Bend of the River/Stallings-Carpenter House:** A privately-owned Greek Revival house built in the 1850s. The original farm has been subdivided into several large tracts. As of now, the surrounding landscape is still preserved mainly in agricultural lands and forests.

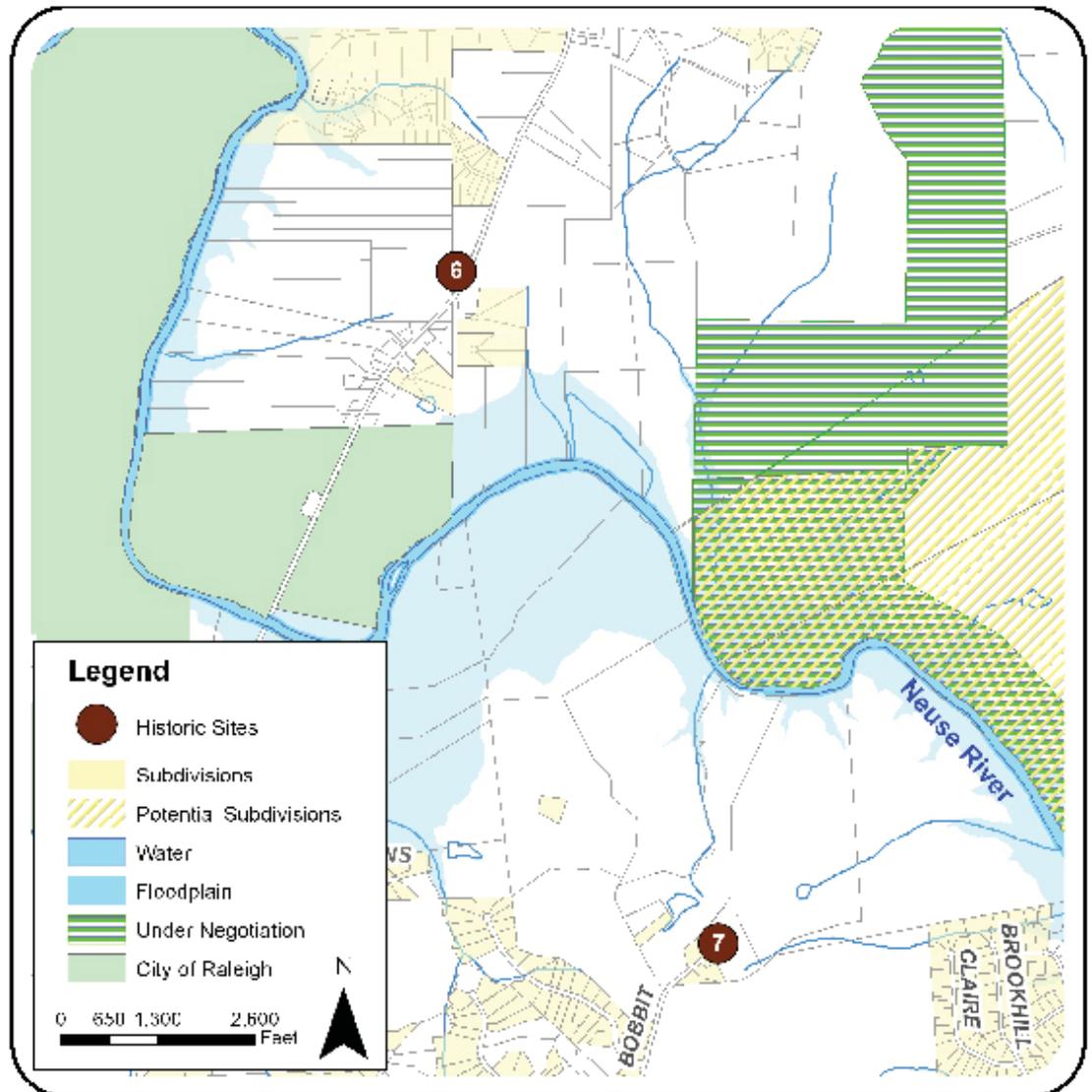


Figure 13: Goodson Farm and Bend of the River/Stallings Carpenter House

Historic Sites (continued)

- 8) **The Maples Farm / Ellington-Ellis Farm** (not shown): This historic farm with a Greek Revival house lies just outside of the study area, near the Town of Clayton.
- 9) **Brookhill Farm:** Located off of Covered Bridge Rd, the site was the home of the Brookhill Steeple Chase for 15 years. As of 2007, the land has had several development proposals.

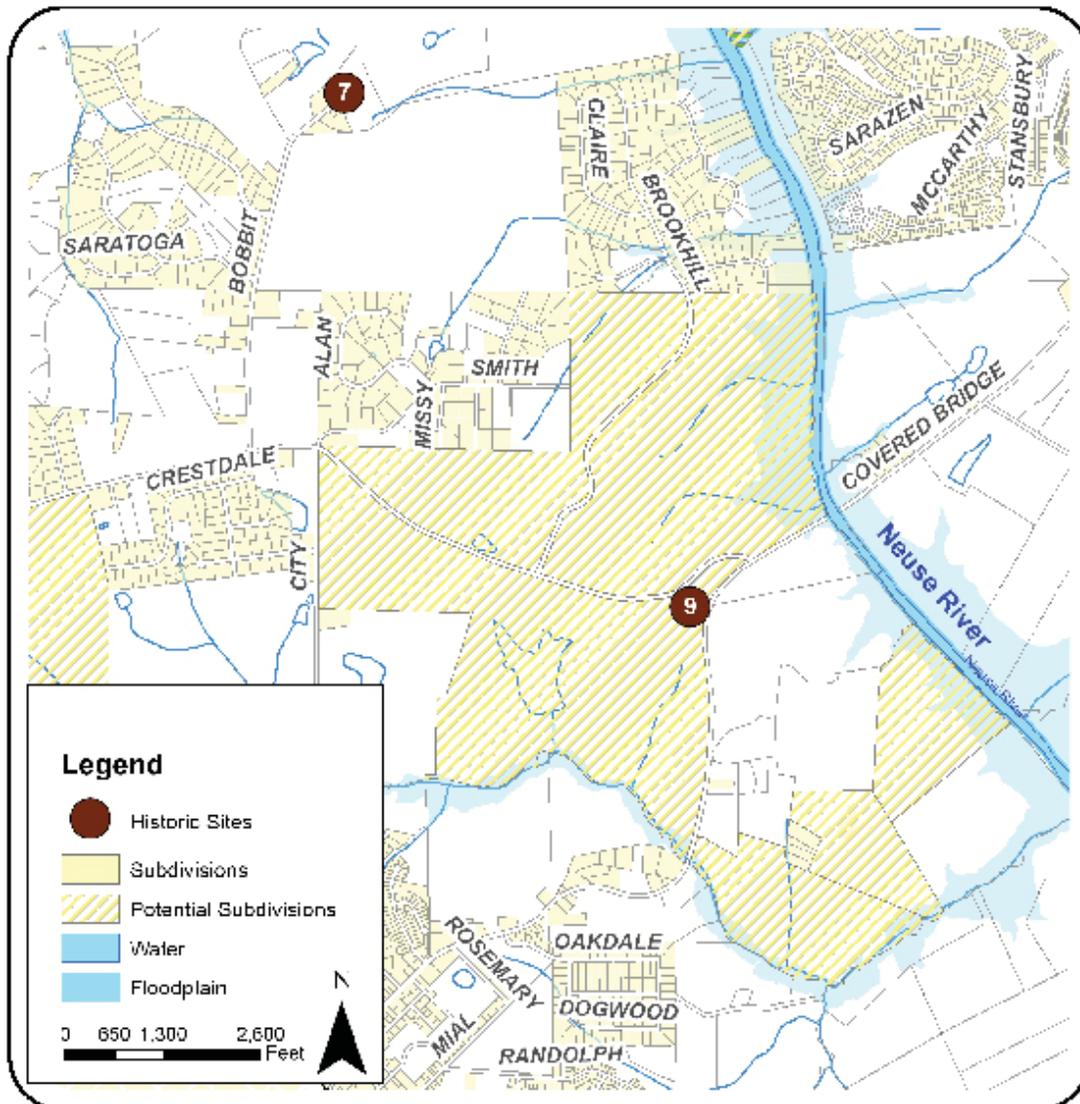


Figure 14: Brookhill Farm

The planning and regulatory environment

In addition to infrastructure, development, cultural heritage, and natural features, the regulatory environment is also playing a major role in conservation progress within the study area. The following section summarizes the major land use regulations that affect the Neuse River/Mark's Creek Area.

Zoning:

The area's zoning has changed relatively little since the 2001 assessment, except for the transition of several large properties from R-40 and AR (each 1 unit/ acre) to planned unit developments (Figure 15).

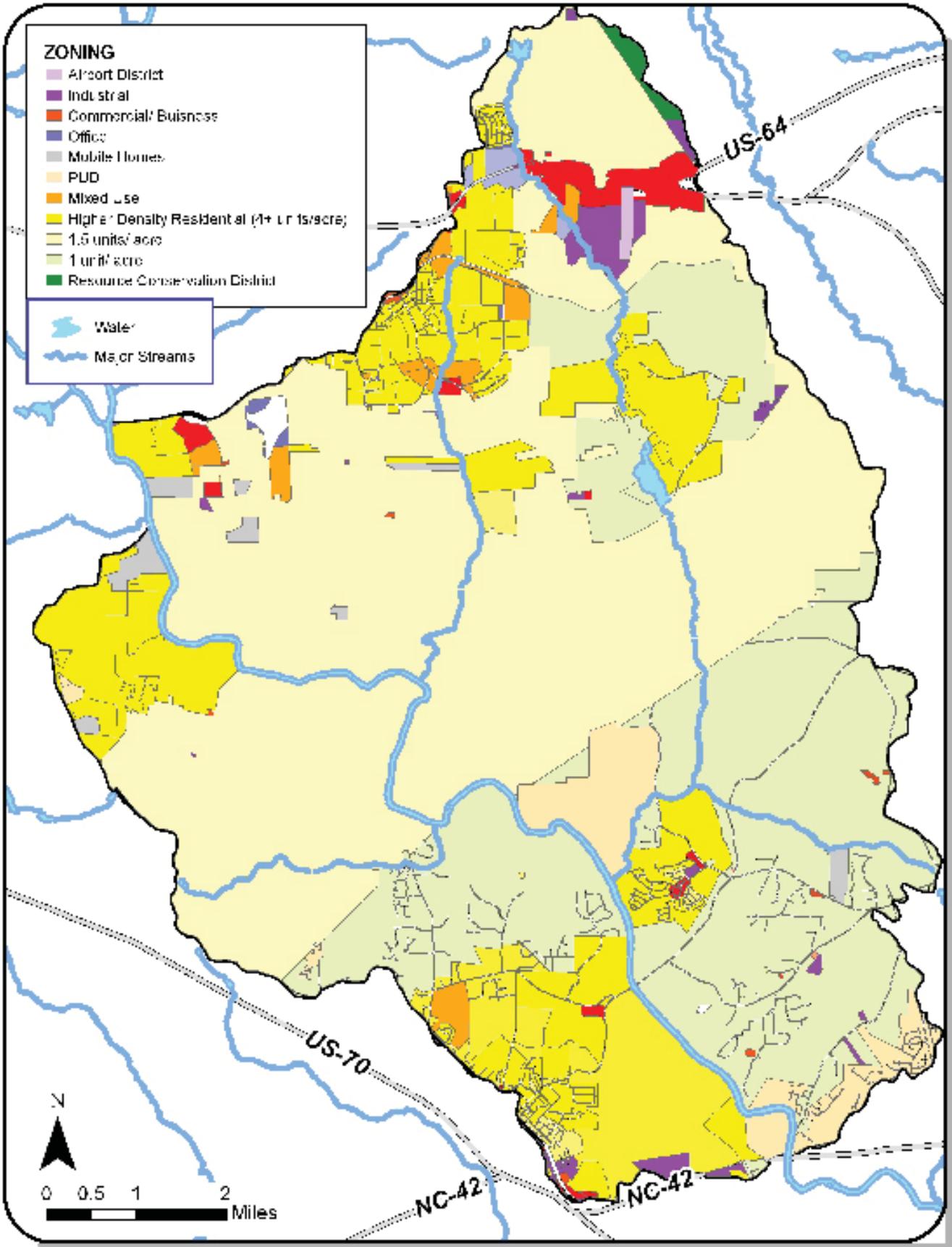
In Johnston County, most of the area is zoned AR (agricultural residential) which allows a density of 1 unit/ acre on well and septic or 1.5 units/ acre if public sewer and water is accessible.

In addition to the agricultural zoning, several large areas are zoned as PUD (planned unit development), R-7, or R-10. These areas are built or planned communities with densities averaging about four dwelling units per acre.

In Wake County, most of the area is zoned R-30 which allows for about 1.5 units/ acre. Since 2001, Knightdale has rewritten their zoning ordinance allowing for a greater density and mix of uses in the northern part of the study area. Additionally, much of the R-40 (residential 1 unit/ acre) area of Wake County was rezoned to a planned unit development to accommodate the new Wendell Falls development.

Buildout: If the study area were to develop to the fullest densities allowed under the current zoning codes, there would be approximately 95,000 residential units in the study area. This buildout is 10,000 units higher than the 2001 assessment estimates, with just a few zoning changes. Although full buildout is unlikely, the potential urbanization of the area could have dramatic impacts on existing infrastructure and the environment, particularly roads, water, sewer, and open spaces.

Figure 15: Study area zoning (note: zoning categories have been reclassified to land use categories)



Other Existing Ordinances, Regulations, and Plans

Floodplain Development: Since the 2001 assessment, Wake County has enacted stricter ordinances which prohibit new development in the 100-year floodplain area. Clayton also limits development in the floodplain, allowing only 5% impervious cover. Raleigh, Wendell, Knightdale, and Johnston County still allow development in the floodplain.

Open Space Requirements:

Johnston County requires 10% of the total land area (must be contiguous and at least two acres) to be dedicated. Wetlands and/or riparian or stream buffer areas and overhead electric utility easements must be designated as common open space and do not count towards land requirements.

Instead of dedication, a fee in lieu of \$400 per lot can be made. Johnston County just lowered their payment a few years ago from \$800 to \$400 per a lot. Since this time they have seen an increase in payments with about 50% of the developments choosing the fee in lieu option.

Clayton's standard subdivisions require 1,245 sq ft per lot (about 1/35 of land for an acre) or fee in lieu equal to the market value of the dedication. The fee in lieu is used about 50% of the time. Open space subdivisions require 12.5% of the total area to be dedicated open space.

Wake County requires 1/35 of land or fee in lieu equal to 1/35 of the tax value of the property. The payment must be invested within three miles of the site. About 90% of the developers pay the fee in lieu.

Raleigh requires a facilities fee for parks and open spaces unless the area contains a dedicated greenway.

Wendell requires 800 sq ft per dwelling unit or fee in lieu equal to market value of the land.

Knightdale uses a multiplier based on average density, number of bedrooms, and proximity to parks. This ranges from 250 to 500 sq ft per bedroom (see chart below).

RECREATIONAL OPEN SPACE DEDICATION MATRIX						
	Estimated Number of Bedrooms X	Gross Dwelling Units per Acre				Proximity to Parks
		0-2	2-6	6-10	+10	
		500	520	550	580	Base
		375	390	413	435	Within ¼ mile
		250	260	275	290	Adjacent to Existing Park
<i>All figures are in square feet</i>						

Table 2: Knightdale Open Space Dedication Matrix

Neuse River Buffer Rules: The Neuse River Rules require 50 feet of vegetation along all perennial and intermittent streams in the Neuse Basin. Under the rule, the first 30 feet of the buffer must remain undisturbed, but some selective cutting is allowed in the outer 20 feet.

The Neuse River Basin Plan:

Basinwide water quality plans are prepared by the NC Division of Water Quality (DWQ) for each of the 17 major river basins in the state.



Figure 16: Major NC River Basins

The goals of basinwide planning are to:

- Identify water quality problems and restore full use to Impaired waters.
- Identify and protect high value resource waters.
- Protect unimpaired waters yet allow for reasonable economic growth.

The last Neuse River Basin Wide plan was published in 2002 (DWQ). The plan is being updated in 2008.

In the 2002 plan:

The report noted logging in the lower stretches of Marks Creek near its confluence with the Neuse. It also noted that the benthic monitoring site on Mark's Creek maintained its 1998 rating of "Good-Fair."

According to the plan, "adherence to and enforcement of riparian buffer and stormwater rules will help to protect Marks Creek as its watershed is developed." Because of water quality impacts, increasing development pressure, and the availability of a conservation assessment in the watershed, Marks Creek is a NCWRP targeted local watershed (2002 Basin Report pg 122).

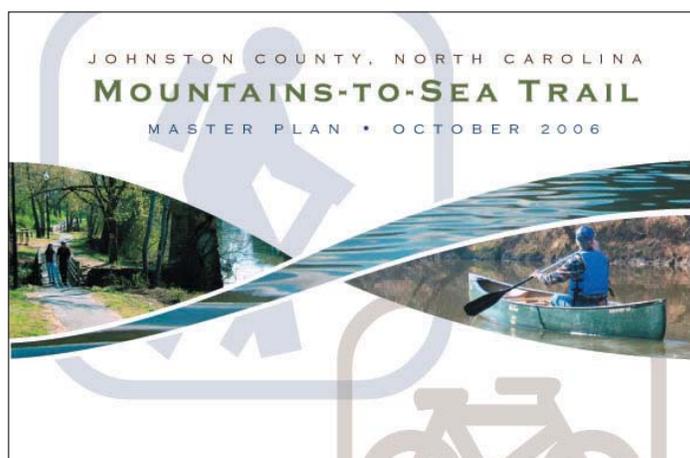
The plan mentions little of the Neuse River stretches in our study area, except that the down stream benthic monitoring site at the Neuse and NC 42 improved its status from "Good-Fair" in 1998 to "Good" in 2002.



Other Plans (continued)

The Mountains to Sea Trail

In February of 2006, the State of North Carolina Department of Environment and Natural Resources (NCDENR) Division of State Parks, along with North Carolina Department of Transportation (NCDOT) Pedestrian and Bicycle Division, Johnston County, the Town of Clayton, and the Town of Smithfield, commissioned Greenways Incorporated to prepare a Master Plan for Johnston County's portion of the statewide Mountains-to-Sea Trail (MST). The plan describes why the trail is needed, what the trail system will entail, and how to make it a reality. For more information please visit the following website http://www.johnstonnc.com/mainpage.cfm?category_level_id=767



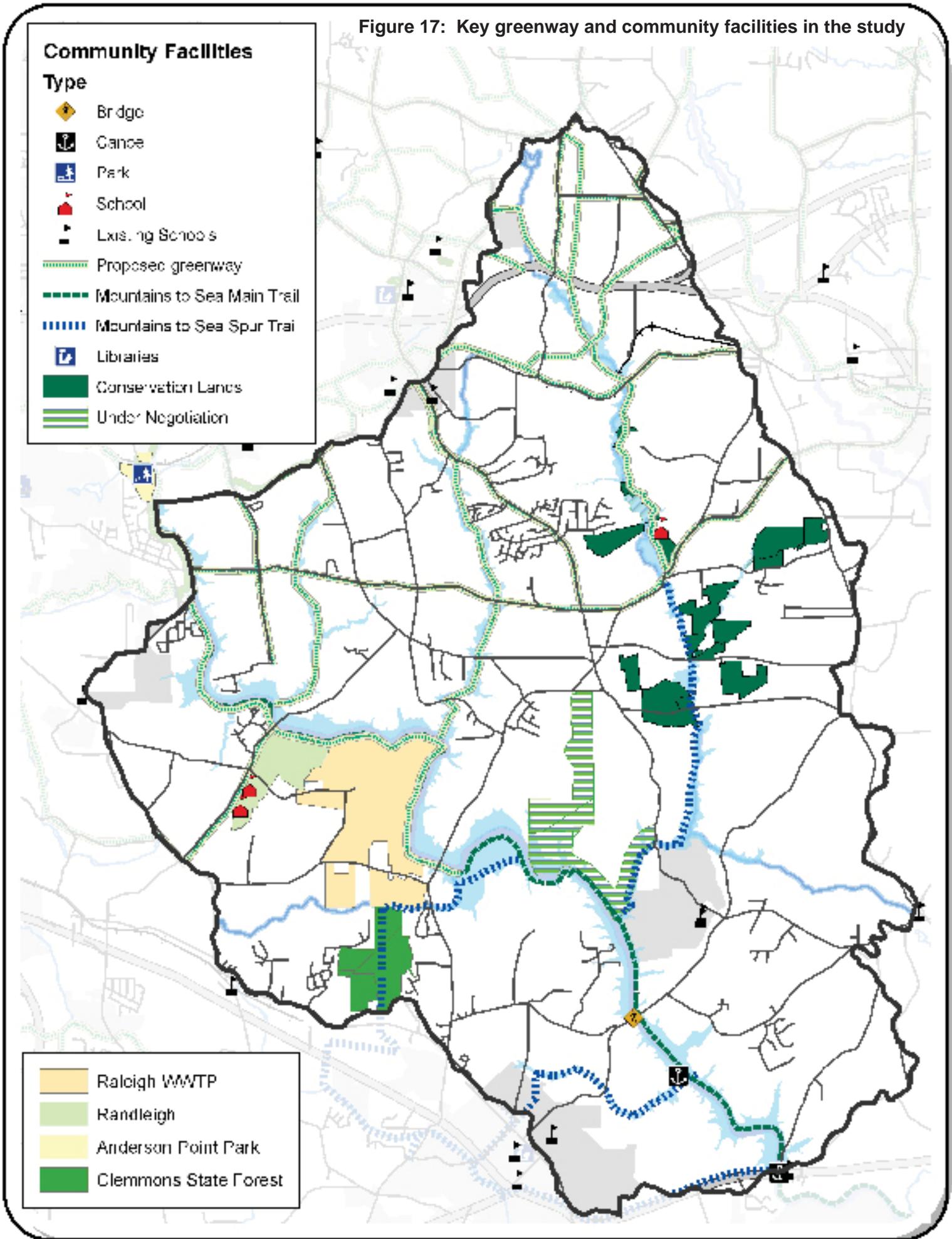
The MST for Johnston County will consist of a mainline running primarily along the east bank of the Neuse River. Various town trails are included in this plan that connect the MST to the Town of Clayton, the Town of Smithfield, and the Town of Selma.

Open Space and Greenway Plans

In addition to the Mountains to Sea Trail, the Wake County Consolidated Open Space Plan also outlines several greenways within the study area. Future plans call for greenway connections between Knightdale and Raleigh, and along Mingo Creek, Poplar Creek, and Marks Creek. The plan also designates several on-road bike paths in the study area. Raleigh also is planning to create a greenway which will run the entire course of the Neuse through Wake County. This trail should be completed by 2013. This trail will be a major component of the Mountains to Sea Trail.

In a summit of municipal and county staff from the area, the partnership asked planning staff to identify key greenway and recreational areas. These features are highlighted in Figure 17, these trails are also identified in Wake County's Consolidated Open Space Plan (2006).

Figure 17: Key greenway and community facilities in the study



In Summary:

In just seven years, the Neuse River / Marks Creek Watershed Area has seen several significant changes:

- **1000 acres of land has been protected**
- **The jurisdictions of neighboring towns and cities have continued to expand into the study area**
- **Several developments, adding over 8000 houses, have been constructed or planned**
- **Significant historical sites have been or are being preserved**
- **Changes in zoning have allowed for greater densities**
- **Stricter regulations have limited development in riparian buffers and the floodplains**



Recommendations and Conservation Strategies

Vision

This report has examined the important open space components of the Neuse River – Marks Creek watershed and the success and challenges of conservation in this area.

Triangle Land Conservancy's goal is to protect the natural areas, water quality, and scenic, historic, rural character of this place for the greatest benefit for the community, while meeting individual landowner goals.

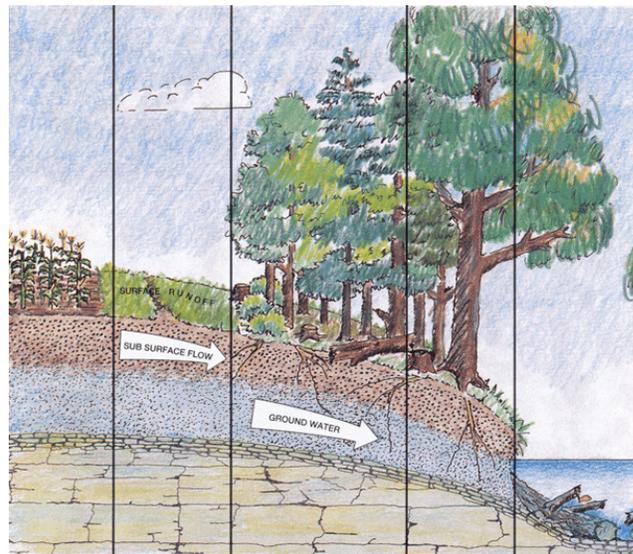
The population in this watershed will continue to grow as new residents make their homes in this beautiful place. Yet, our vision is that this area will grow in the right way with continued input from landowners and residents. We believe this area can maintain its rural, scenic, and historic character, and we can protect its water quality, significant natural areas, and high quality of life while accommodating growth in these rapidly urbanizing counties.

Recommendations:

The following recommendations were developed by Triangle Land Conservancy to achieve the above mentioned vision. These recommendations were informed by both an advisory group of local landowners and project partners. The matrix at the end of the report identifies responsible parties and timelines for implementing these recommendations.

Water quality

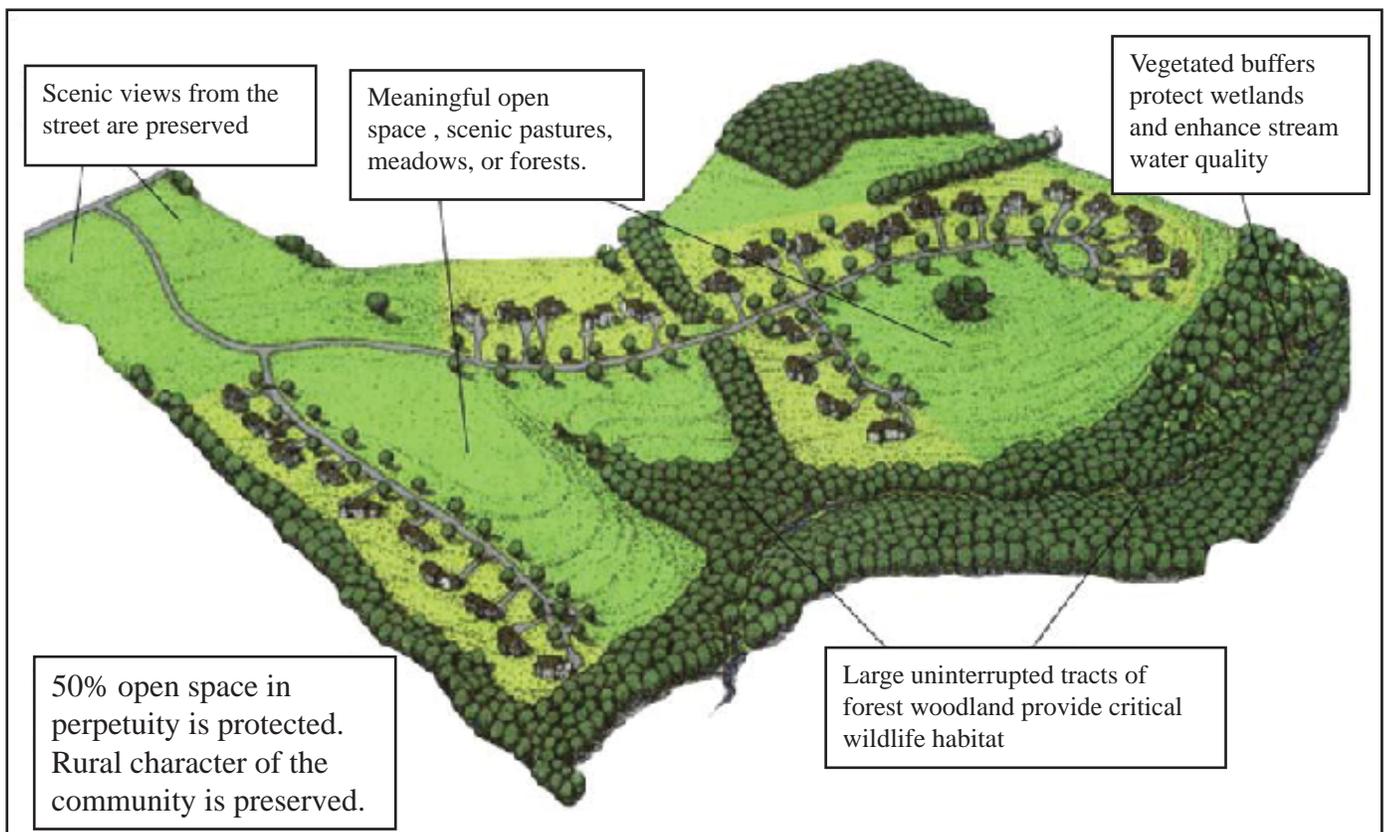
- Maintain 50 ft buffers along streams and encourage large dedications of 150+ ft
- Work to purchase 300+ feet of buffer along all streams
- Work with farmers to encourage restoration in buffer areas
- Prohibit development in floodplain
- Implement a backyard buffer program for landowners in the Marks Creek area



Natural Vegetated buffers help protect water quality by filtering runoff.

Habitat

- Work to conserve contiguous areas of land of 200+ acres with identified critical habitats, for example areas identified in the heritage inventory or wildlife action plan
- Encourage private conservation of habitat through conservation efforts such as the National Wildlife Certification Program
- Encourage native plantings and wide buffers along streams
- Encourage cluster/conservation developments which set aside important habitat areas
- Educate developers in the area on “green” certification programs (NC Healthy Build /WRC/ LEED) etc.



Conservation developments offer a means to accommodate growth and protect important natural areas. Future developments in the Marks Creek area should be designed to enhance and protect the unique natural resources (Arendt 1996).

Recreation

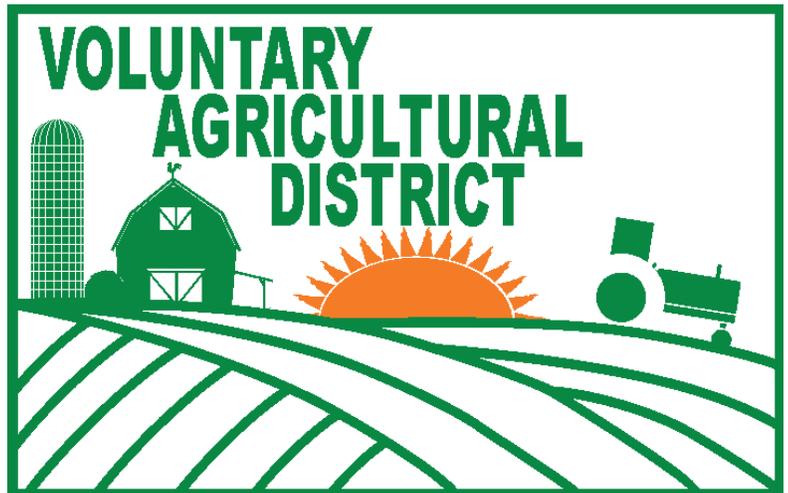
- **Scenic road and bicycle byway designation and signage**
- **Conservation of canoe access points**
- **Dedication of land along greenway corridors**
- **Development of passive recreation facilities at Lake Myra County Park**
- **Development of Mountains to Sea Trail nodes along the planned trail which offer a destination to travelers**

This portion of the Neuse River offers paddling opportunities year-round. Existing and potential boat access points need to be protected and developed into managed recreational areas.



Cultural Preservation

- **Dedicated local funding for open space, farmland, and historic preservation**
- **Voluntary farmland and historic conservation programs – National Register listings and VAD (Voluntary Agricultural Districts)**
- **Scenic Road buffers/landscaping requirements**



Voluntary Agricultural District (VAD) Programs enhance the identity of the agricultural community by encouraging the voluntary preservation and protection of farmland from non-farm development. Both Wake and Johnston Counties have VAD programs. These programs should be targeted at existing farms in the Marks Creek Area.



In addition to recommendations for habitat, cultural, recreation, and water quality preservation, TLC recommends that stewardship and management should be implemented on all the lands acquired for conservation in the Marks Creek Area. Wake County and TLC are actively involved in a Nature Preserve Partnership which is looking at strategies for developing management plans for all open space properties in Wake County, particularly those properties with outstanding and exceptional natural resources. Our recommendations suggest that Wake County should continue working with this group as well as aim to develop a voluntary site steward program which would help with monitoring and maintenance of properties. As properties are acquired in Johnston County, they should also look toward developing similar stewardship and management programs.

Stewardship and Management

- **Continue work with NC State and the Nature Preserves Group to develop management plans, using the TESC wetlands as a pilot site**
- **Develop baseline documents and management plans for all properties**
- **Work with NC State to fund graduate students to develop these plans**
- **Set up a voluntary site steward program to monitor open space properties**
- **Sign and post properties**
- **Develop an information process and webpage to explain the status of open space properties and field requests and or complaints**

Volunteer site stewards and trail crews can help monitor properties and add extra hands to larger projects such as habitat restoration projects or trail building.



In addition to these recommendations, Triangle Land Conservancy, in conjunction with local partners and the Marks Creek Advisory group, drafted a concept map for the Marks Creek Area. The concept map depicts a network of conservation hubs connected through riparian corridors.

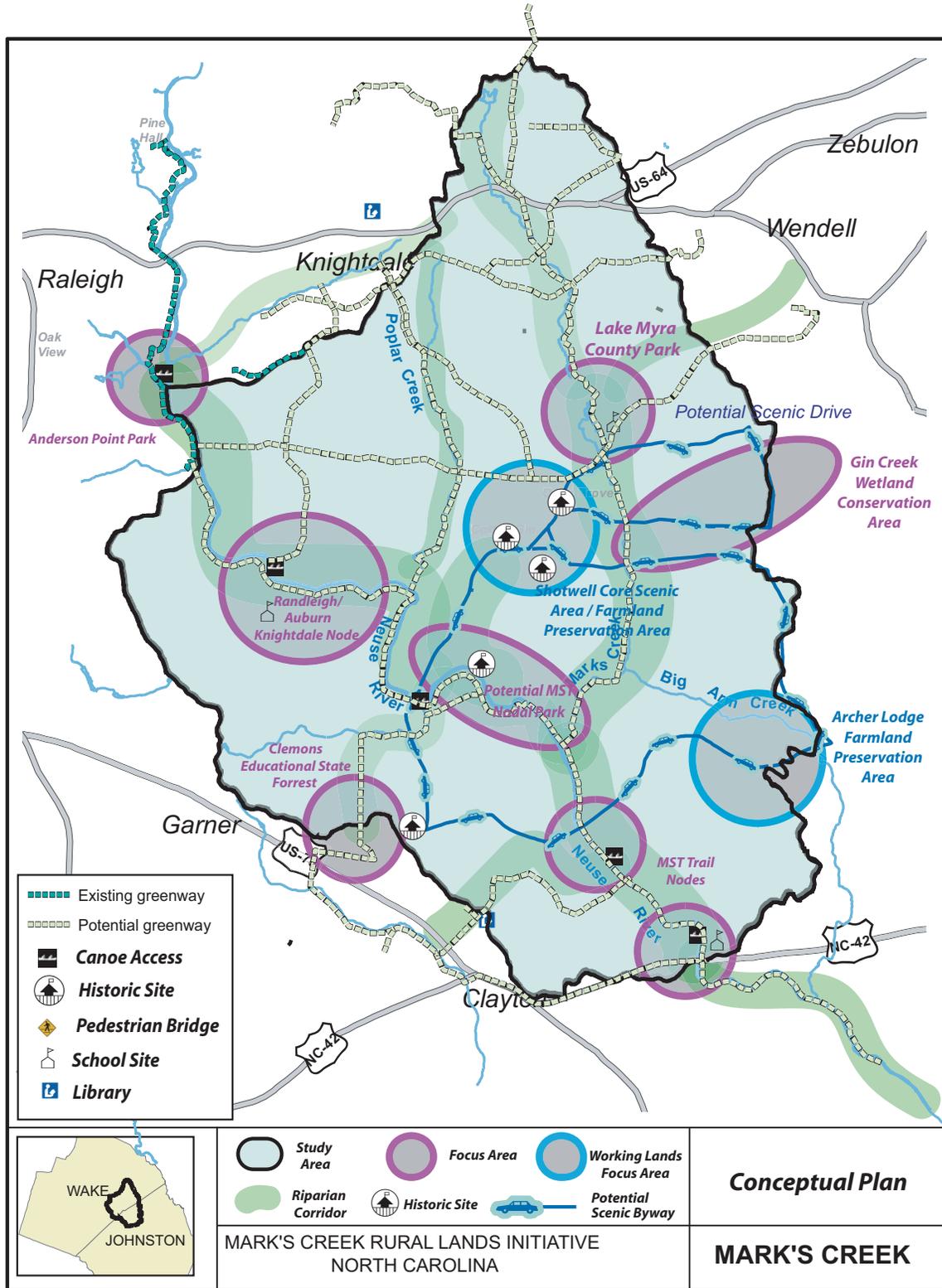


Figure 18: Concept Map for the Marks Creek Area

The conservation hubs will help preserve water quality, wildlife, historic features, working lands, and scenic vistas. The hubs will be connected through riparian corridors which allow for wildlife travel, water quality protection, and trail connections. With local partners, a significant network of open space can be achieved in the Marks Creek Area.

In addition to the recommendations and conservation vision, citizens can take several steps themselves to help protect the natural amenities of the Marks Creek Area. Following is a list of ways citizens can help be stewards of this important watershed

What can you do in your community?

- **Spread the word of the Marks Creek Initiative**
- **Encourage county and municipal staff and officials to make parks, recreation, and open space a priority.**
- **Support full funding of the State Conservation Trust Funds**
- **Support bond initiatives for open space**
- **Support local land trusts**
- **Maintain 50 foot or greater natural buffers along streams**
- **Install a rain barrel or rain garden at your home**
- **Implement a backyard habitat program**
- **Plant drought tolerant native vegetation**
- **Pick up pet waste**
- **Eliminate or reduce your fertilizer and pesticide use**

This is just a short list of strategies to help protect the water quality and natural resources of the Marks Creek Area. Please visit the following websites for more conservation information

Triangle Land Conservancy
<http://www.tlc-nc.org/>

Wake County Parks, Recreation and Open Space
<http://www.wakegov.com/parks>

National Wildlife Foundation Backyard Wildlife Habitat Program
<http://www.nwf.org/backyard/>

North Carolina Botanical Garden- Native Plants
<http://ncbg.unc.edu/pages/96/>

All of these strategies will help preserve the Last Chance Landscape of Marks Creek. There are a limited number of unique properties in the Triangle that have the rich natural and cultural resources found within the Marks Creek Area. Over 1000 acres of land has been preserved in the Neuse River/Marks Creek Area, but there is still much work to do. This landmark has been reached through the cooperation and dedication of land owners, committed citizens, land conservancies, and local governments.

With partnership help, a significant network of open space can be achieved in the Marks Creek Area. Please join our efforts in protecting this incredible area of natural resources



Insert Action Plan



References

[Arendt](#), Randall. (1996) Conservation Design for Subdivisions A Practical Guide to Creating Open Space Networks. Published by Island Press.

Bliley, Daniel J. October 1994. *Soil Survey of Johnston County, North Carolina*. U.S. Department of Agriculture, Soil Conservation Service.

Costa, Lorelei (Triangle Land Conservancy). October 2001. A Conservation Assessment for the Neuse River and Mark's Creek.

Division of Water Quality (2002) Neuse River Basin Plan (accessed Dec 2007) <http://h2o.enr.state.nc.us/basinwide/index.htm>

Johnston County Land Development Code (accessed February 2008) http://www.co.johnston.nc.us/mainpage.cfm?category_level_id=1050

LeGrand, Harry. October 2001. *An Inventory of Significant Natural Areas in Johnston County, North Carolina*. Johnston County, NC Natural Heritage Program, and Triangle Land Conservancy.

LeGrand, Harry. August 2003. *Inventory of the Natural Areas of Wake County, North Carolina*. NC Natural Heritage Program, Triangle Land Conservancy, and Wake County.

Mountains to Sea Trail Land Use Plan.(2006) Greenways Incorporated. Available at http://www.co.johnston.nc.us/mainpage.cfm?category_level_id=767

Town of Clayton [Land Usage Ordinance](#) (accessed Dec 2007) http://www.townofclaytonnc.org/Business/Planning_PlansOrdinances.aspx

U.S. Fish and Wildlife Service. National Wetlands Inventory. St. Petersburg, FL

Wake County Consolidated Open Space Plan (2006, 3003) Available at <http://www.wakegov.com/parks/openspace/consolidatedplan.htm>

Wake County Unified Development Ordinance (accessed March 2008) Unified Development Ordinance

GIS Data Sources:

Wake County GIS <http://www.wakegov.com/gis/default.htm>

Johnston County GIS http://www.johnstonnc.com/mainpage.cfm?category_level_id=420

NC Center for Geographic Information and Analysis, , <http://www.nconemap.com/default.aspx?tabid=286>

NC Natural Heritage Program, <http://www.ncnhp.org/Pages/heritagedata.html>

N.C. State Historic Preservation Office

* All data is current as of December 2007

