

NORTH FALLS LAKE AREA STUDY

Land Use

Appendix C Land Use

Land Use Maps

The maps on the following pages were used to develop and analyze various land use scenarios as part of the North Falls Lake Area Study.

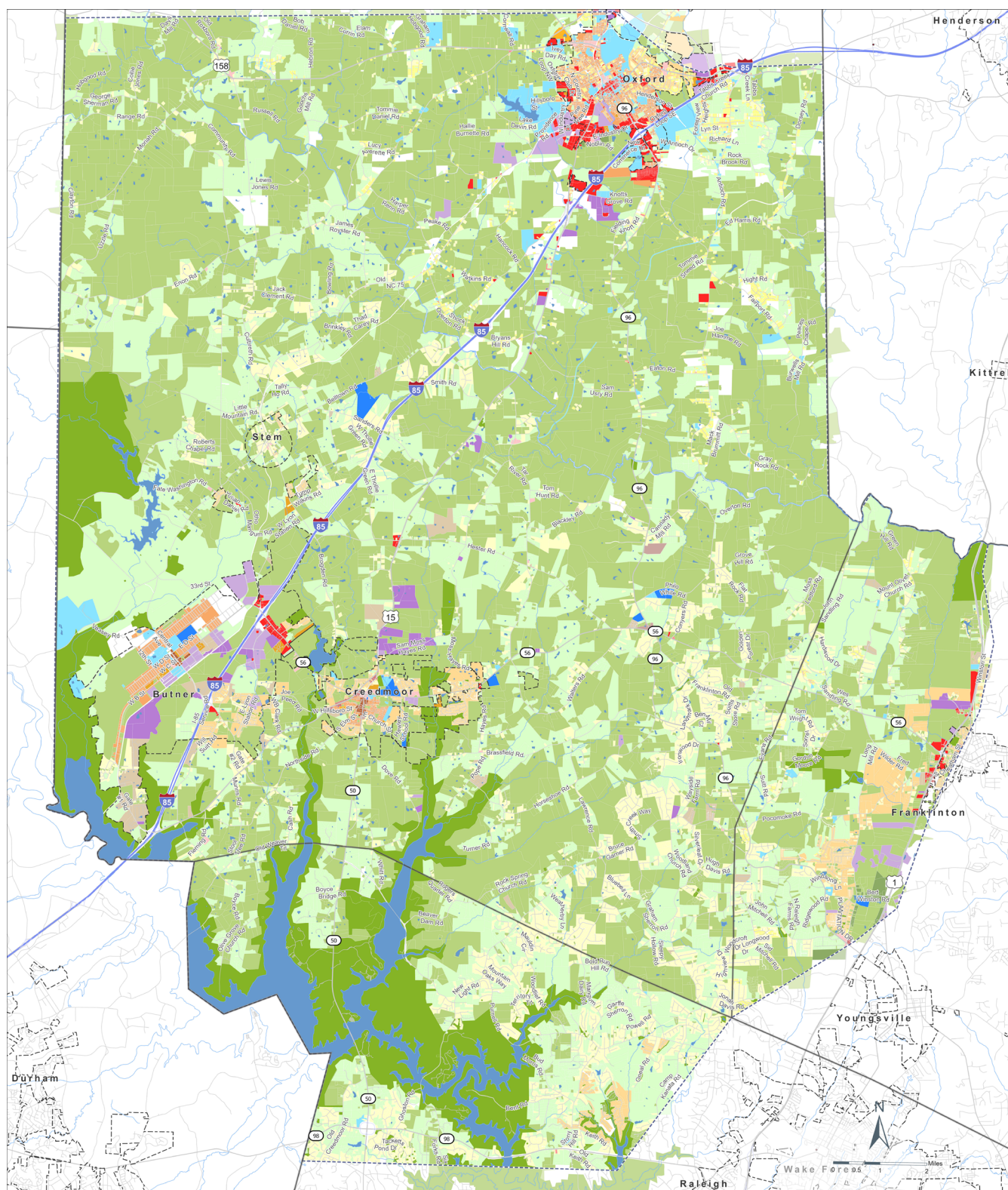
The Existing Land Use Map on page 3 shows how the land is currently zoned within the study area. There are 22 different placetypes that include: Protected Green Space, Parks and Recreation, Farms and Forest, Rural Living, Larger-Lot Residential Neighborhood, Conservation Subdivision, Mobile Home Neighborhood, Midsized Lot Residential Neighborhood, Smaller Lot Residential Neighborhood, Urban Neighborhood, Mixed Density Residential Neighborhood, Mixed-Use Neighborhood, Multifamily Residential Neighborhood, Civic and Institutional, K-12 Education, Rural Crossroads, Neighborhood Commercial Center, Mixed-Use Center, Town Center, Community Commercial, Light Industrial, and Heavy Industrial Center.

The Pending Development Map on page 4 shows the various developments that are in progress in the study area. Some of these developments are in the permitting stage while others are under construction. This map enabled the project team to see where new roadway demand will emerge over the next few years. Much of this development is concentrated around Oxford and the southeast portion of the area.

The Water Supply Watershed Map on page 5 shows the five water supply watersheds that are present in the study area, the two overall watersheds, and the sub watersheds. The map also shows where the Triassic basin soils are present. This map enabled the project team to see where development is mostly likely to occur in the future based on the ground's availability to provide water and support growing populations.

Lastly, the Biodiversity and Wildlife Habitat map on page 6 shows areas where different degrees of development have occurred. This was helpful in determining where land has already been disturbed and where land could be preserved for green spaces and less intense development.

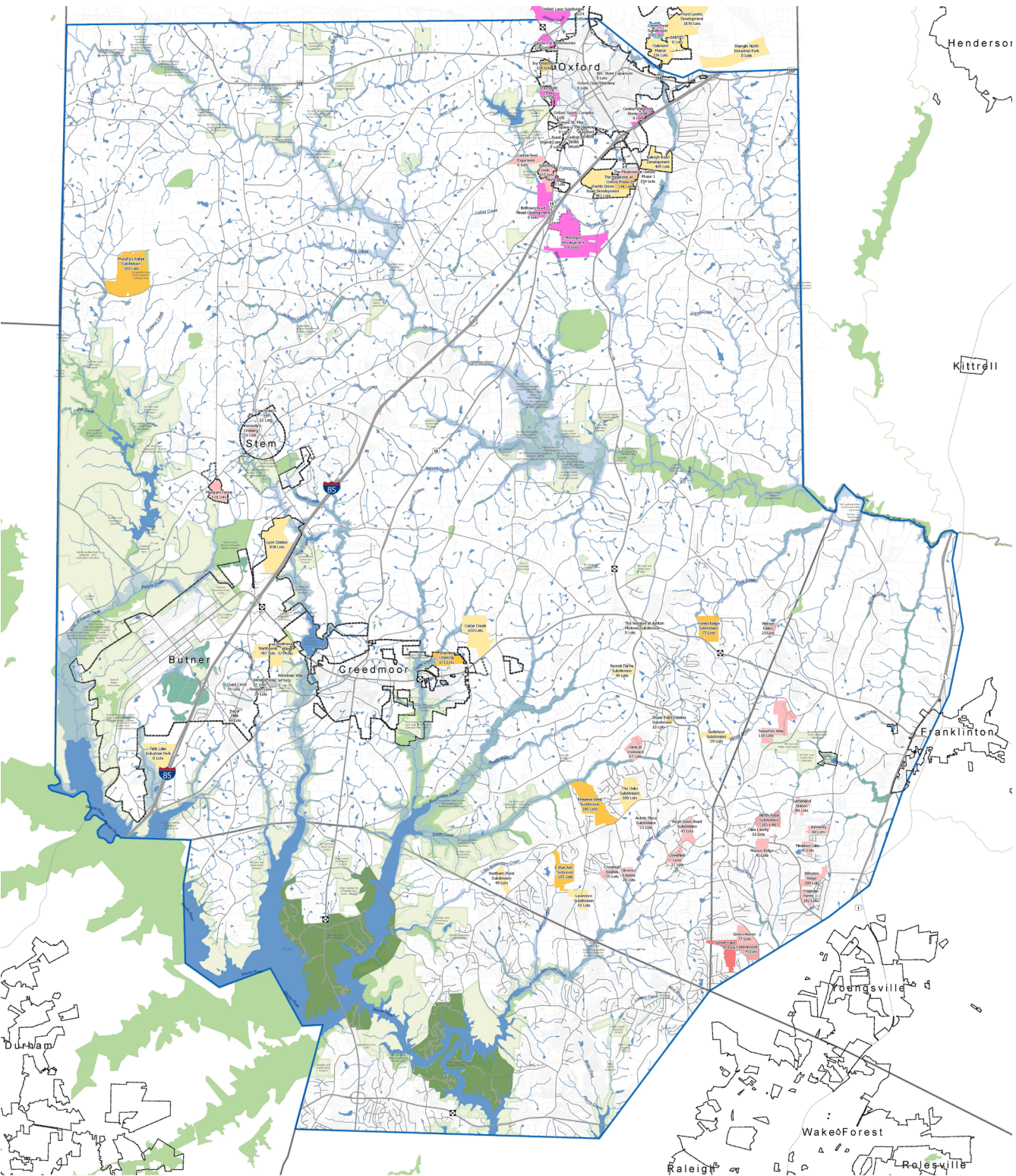
Existing Land Use Map



Existing Land Use

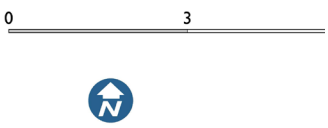
- | | | | |
|--|---|---|--------------------------------------|
| Placetypes | Conservation Subdivision (CON) | Mixed Density Residential Neighborhood (MRN) | Rural Crossroads (RCR) |
| Protected Green Space (POS) | Mobile Home Neighborhood (MHP) | Mixed-Use Neighborhood (MUN) | Neighborhood Commercial Center (NCC) |
| Parks and Recreation (REC) | Mid-sized Lot Residential Neighborhood (MLRN) | Multifamily Residential Neighborhood (MFRN) | Mixed Use Center (MUC) |
| Farms and Forest (FF) | Smaller Lot Residential Neighborhood (SLRN) | Civic and Institutional (CIV) | Town Center (TC) |
| Rural Living (RL) | Urban Neighborhood (UN) | K-12 Education (K-12) | Community Commercial (CCC) |
| Larger-Lot Residential Neighborhood (LLRN) | | | Light Industrial Center (LIC) |
| | | | Heavy Industrial Center (HIC) |

Pending Development Map

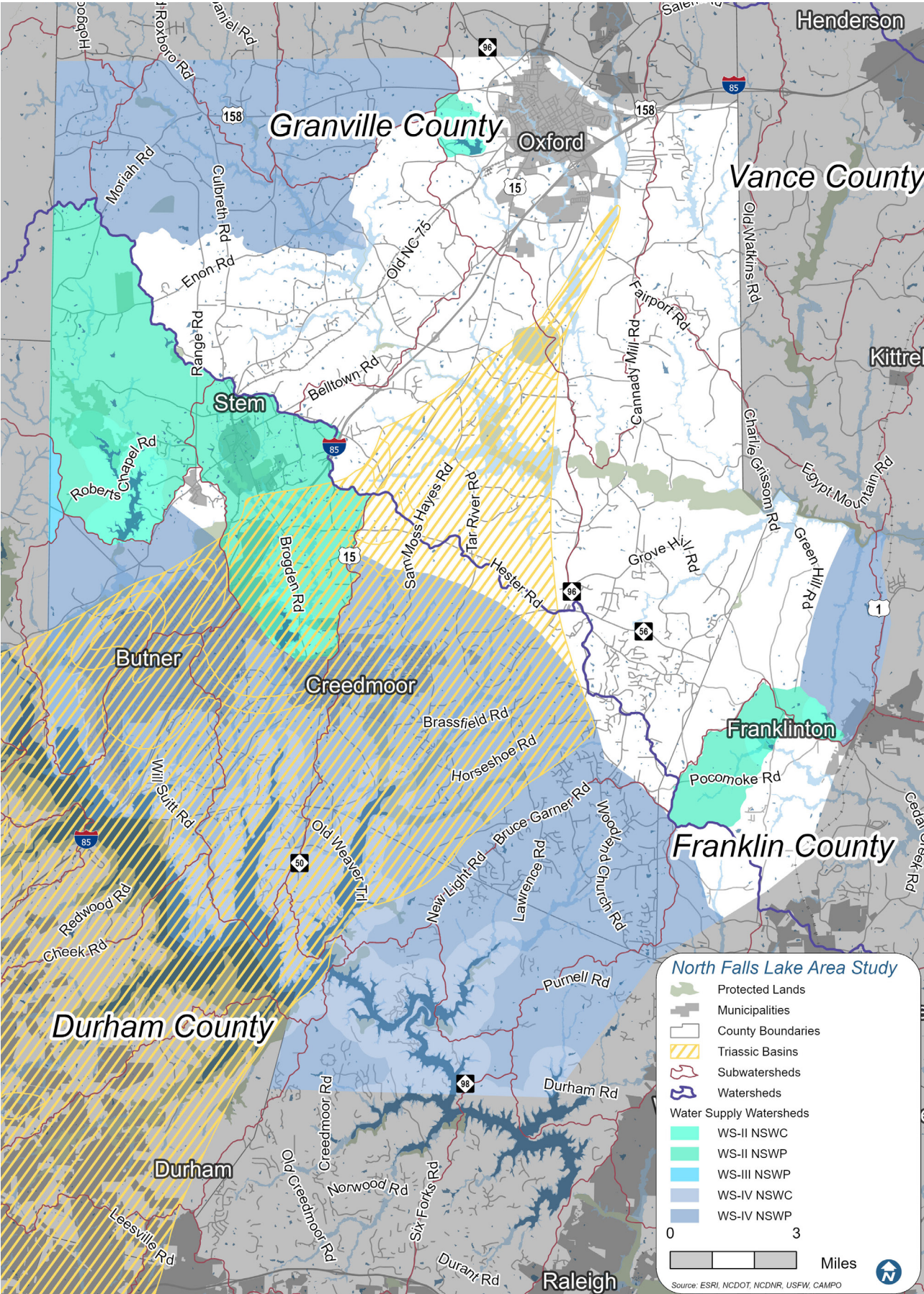


Pending Development Map

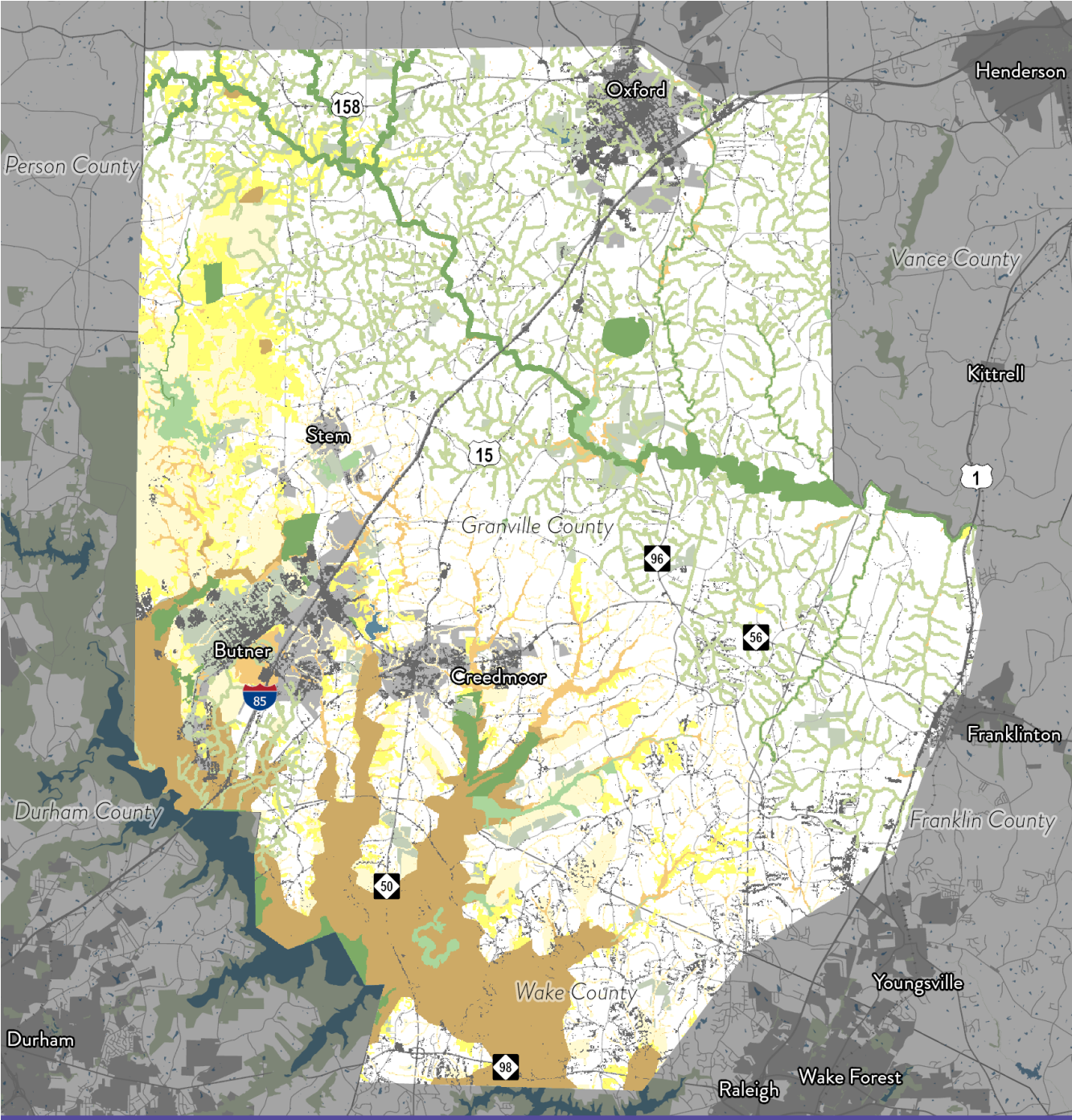
- County Boundaries
- Municipalities
- Granville Municipalities
- Railroads
- Primary Roads
- Interstates
- Protected Lands
- NCDNR Parks
- Waterbodies
- North Falls Lake Area
- Parcels
- Streams
- Managed



Water Supply Watershed Map



Biodiversity and Wildlife Habitat Map



Biodiversity Wildlife Habitat

- Relative Conservation Value
- 9-10 (Maximum)
 - 8
 - 7
 - 6
 - 5
 - 2-4
 - 1 (Moderate)
 - 0 (Unrated)

- Impervious surface > 20%
- Protected Lands
- Waterbodies

- 0 3 Miles
- Railroads
 - Roads
 - Municipalities
 - County Boundaries

Source: ESRI, NCDOT, NCDNR, USFW, CAMPO

Business As Usual

BAU



Narrative and Assumptions

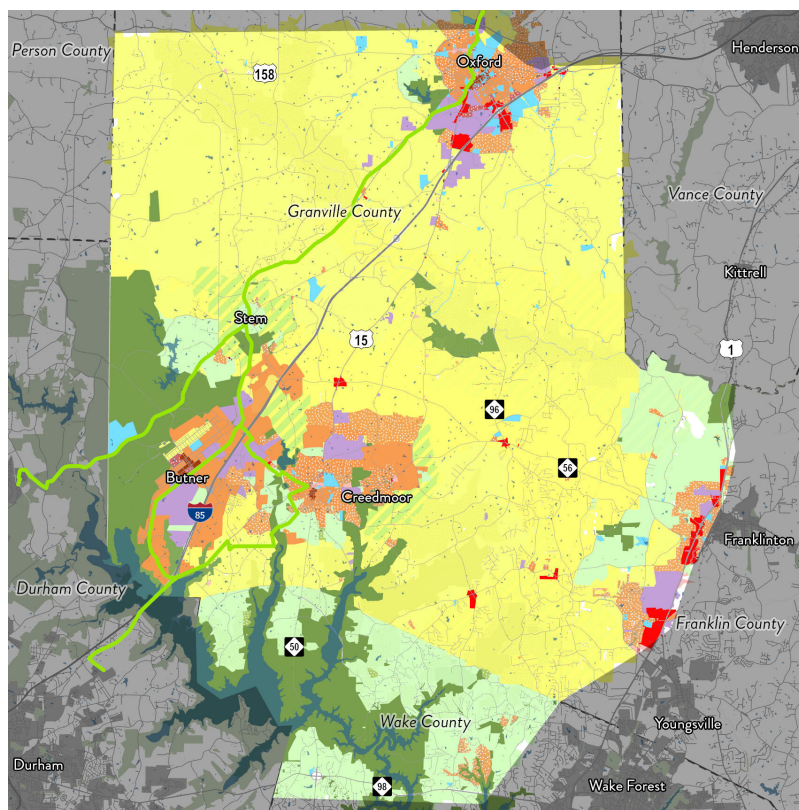
- Plans and Trends Scenario that reflects current land use plans or zoning
- Some concentration of residential and commercial uses near Towns
- Dispersed growth in Southern Granville County
- Increased transportation needs related to roadway modernization and intersection improvements

Transportation Impacts

- Increased demands on major roads
- Longer trips for work and shopping

Potential Transportation Projects

- Intersection improvements on major roads in county (i.e. NC 56, NC 96, etc.)
- Access management and corridor improvements in commercial areas



Business as Usual Placetypes



0 3 Miles



Source: ESRI, NCDOT, NCDNR, USFWS, CAMPO, USDA NLCD

Key Placetypes

Small Lot Residential



Mid-Sized Lot Residential



Commercial Corridor



Economic Growth

EG



Narrative and Assumptions

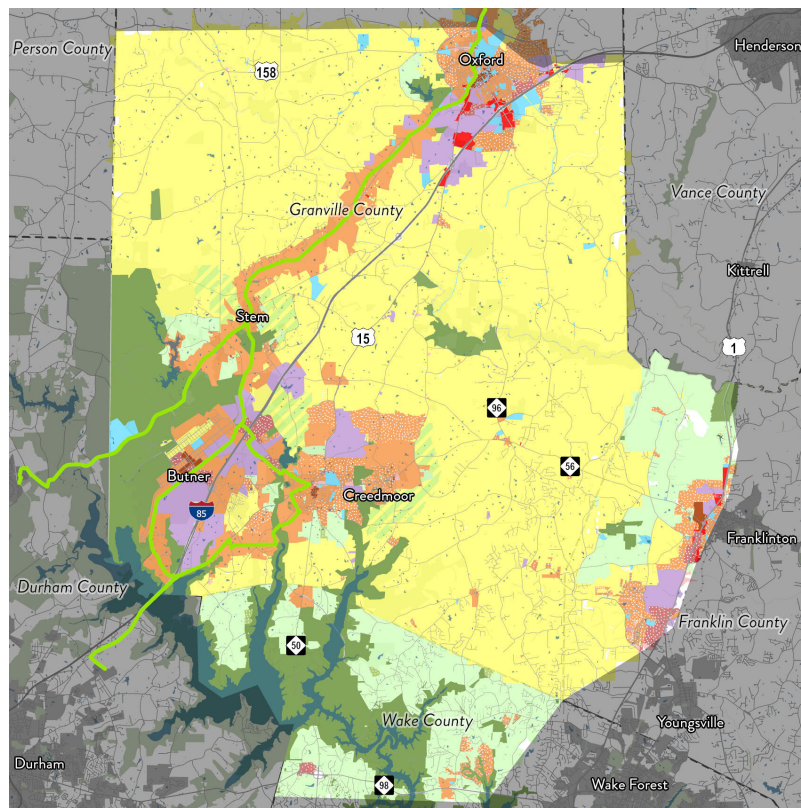
- Emphasis on commercial, mixed-use and industrial growth along major corridors
- New employment centers, including industrial, office, and distribution uses along I-85 and new interchange at Hester Road
- New commercial and mixed-use centers to serve county areas including at Old Weaver Trail and Wilton
- East coast greenway completed with trail-oriented development

Transportation Impacts

- Shorter trips for work due to more local jobs
- More demands on I-85 and US Routes

Potential Transportation Projects

- New interchange on I-85 in the vicinity of Brogden Road and Hester Road
- Significant sections of the East Coast Greenway completed
- Express bus on key corridors



Economic Growth Placetypes



Source: ESRI, MCDOT, NCDOT, USFWS, CAMPO, USDA, NCEC

0 3 Miles



Key Placetypes

Mixed Use Center



Light Industrial Center



Trail Oriented Development



Strong Towns

ST



Narrative and Assumptions

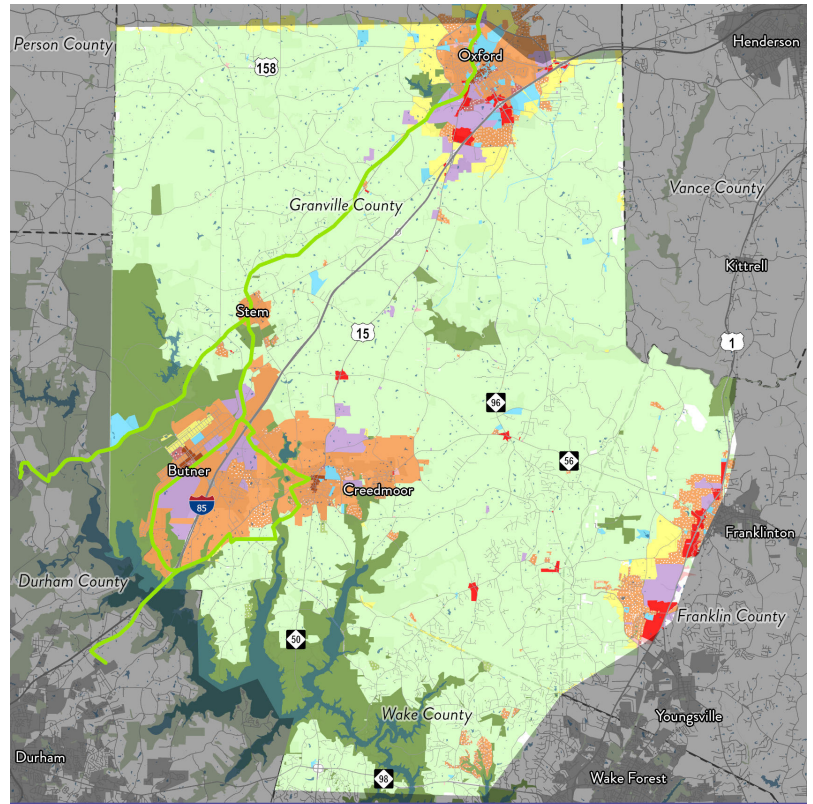
- Emphasis on reinforcing and creating walkable downtowns and neighborhoods
- Two-three story buildings with a mix of uses
- Less off-street minimum parking requirements
- Residential infill including small lot and missing middle housing (duplexes, triplexes and quadplexes)
- Targeted transportation improvements

Transportation Impacts

- Shorter trips for work and shopping
- Greatly Improved walkability
- More traffic demand on streets near towns

Potential Transportation Projects

- Sidewalks and streetscape improvements
- Expanded collector street system in towns including the Creedmoor Southern Connector
- Neighborhood circulator bus route



Strong Towns Placetypes



0 3 Miles



Key Placetypes

Town Center



Mixed Density Residential



Urban Neighborhood



Watershed Protection

WP



Narrative and Assumptions

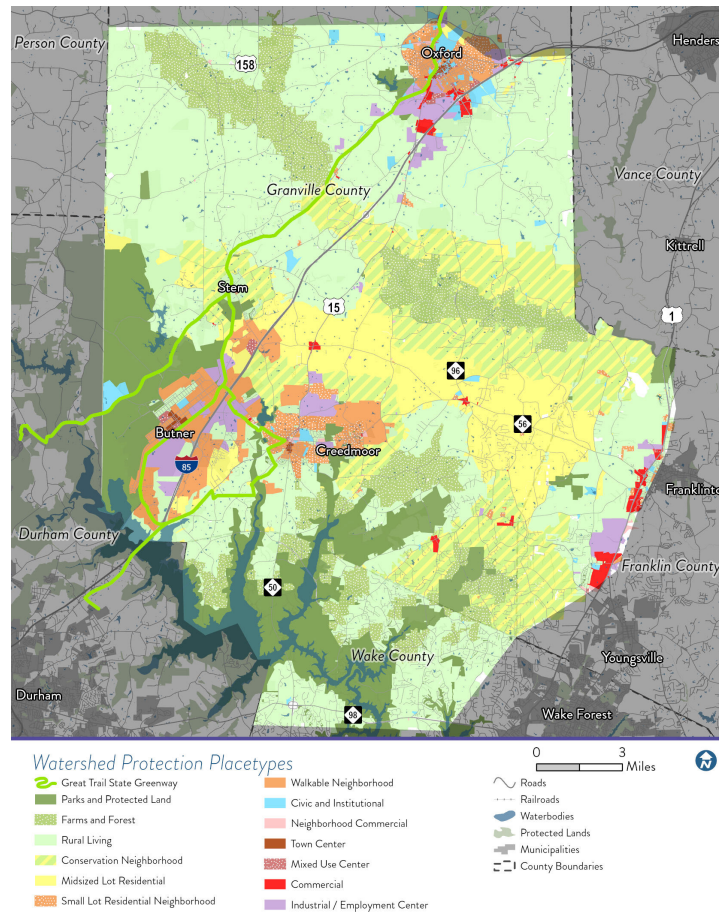
- Open space and natural resources protection in the Falls Lake Watershed, Triassic Basin and along the Tar River
- Very low density residential development in the Falls Lake Watershed in county jurisdiction (reduction in currently allowable density in Granville County)
- Conservation subdivisions emphasized in other areas with sensitive natural resources
- Growth in towns and along highway corridors outside of sensitive watersheds

Transportation Impacts

- Shorter trips for work and shopping near new rural centers
- Some increase in walkability locally
- Increased demand on some corridors (i.e. NC 56)

Potential Transportation Projects

- Intersection improvements on major roads in county (i.e. NC 56, etc.)
- Access management and corridor improvements in commercial areas
- Additional connectivity near new rural centers



Key Placetypes

Protected Open Space



Conservation Subdivision



Rural Living





North Falls Lake AREA STUDY

Report Card

Initial Scenarios

RESULTS KEY

-  = Worse than BAU scenario
-  = Minor improvement (<33% change) from BAU scenario
-  = Significant improvement compared to BAU scenario
-  = Most significant improvement compared to BAU scenario

SCENARIO KEY

-  **BAU** = Business As Usual
-  **EG** = Economic Growth
-  **ST** = Strong Towns
-  **WP** = Watershed Protection

OBJECTIVES	BAU	EG	ST	WP
ECONOMIC DEVELOPMENT				
Acres of Industrial Areas	6,020			
Acres of New Commercial or Mixed-Use Development	3,676			
Jobs in Municipalities	3,584			
ENVIRONMENT AND OPENSOURCE				
Impervious Surface in Sensitive Watersheds (Acres)	71			
Urban Footprint (Grids)	1,322			
Growth in Sensitive Natural Areas (Homes)	996			
LAND USE AND TRANSPORTATION				
Homes in Walkable Communities	TBD	TBD	TBD	TBD
Homes Near Parks and Greenways	6,623			
Transit Propensity (Homes and Jobs Near New Transit)	0			
Total Vehicle Miles Traveled	2,502,611			
Total Vehicle Hours Traveled	49,690			
INFRASTRUCTURE AND COST OF SERVICES				
Homes in Municipalities	4,583			
New Water/Sewer Demand (MGD)	1,153,114			
Build-out Potential (Dwelling Units)	152,981	+8%	-52%	-46%



North Falls Lake AREA STUDY

Report Card

Final Scenarios

RESULTS KEY

- = Worse than BAU scenario
- ◐ = Minor improvement (<33% change) from BAU scenario
- = Significant improvement compared to BAU scenario

SCENARIO KEY

- BAUv2 = Business As Usual Revised
- PS = Preferred Scenario

OBJECTIVES	BAUv2	PS	% Change	Result
ECONOMIC DEVELOPMENT				
Acres of Industrial Areas	5,809	7,153	+23%	◐
Acres of New Commercial or Mixed-Use Development	3,977	4,594	+16%	◐
Jobs in Municipalities	2,656	3,144	+18%	◐
ENVIRONMENT AND OPENSOURCE				
Impervious Surface in Sensitive Watersheds (Acres)	39	33	-15%	◐
Urban Footprint (Acres)	42,970	8,830	-79%	●
Preserved Open Space (Acres)	98,819	125,837	+27%	◐
Growth in Sensitive Natural Areas (Homes)	1,331	389	-71%	●
LAND USE AND TRANSPORTATION				
Homes in Walkable Communities	3,920	8,260	+111%	●
Homes Near Parks and Greenways	3,500	5,370	+53%	●
Transit Propensity (Homes and Jobs Near Transit)	1,839	4,279	+133%	●
Total Vehicle Miles Traveled	2,502,611	TBD	TBD	TBD
Total Vehicle Hours Traveled	49,690	TBD	TBD	TBD
INFRASTRUCTURE AND COST OF SERVICES				
Homes in Municipalities	3,785	5,956	+57%	●
New Water/Sewer Demand (MGD)	952,364	1,497,463	+57%	●
Build-out Potential (Dwelling Units)	152,000	86,574	-46%	N/A



Best Practices

Checklist

RESULTS KEY

- = Significant Improvements Needed ● = Meeting Standard / Accomplished
◐ = Some Updates Recommended

PLAN/ POLICY/ORDINANCE	Counties		
	Granville County	Wake County	Franklin County
Documents			
Zoning Ordinance and Land Use Regulations	◐	●	●
Comprehensive / Land Use Plan	○	◐	○
Local Transportation Planning	◐	●	◐
Collector Street Plan	○	●	○
Bicycle, Pedestrian, or Greenway Plan	◐	●	●
Transportation Facilities and Requirements			
Sidewalk Policy	◐	◐	●
Sidewalk Design Requirements	◐	●	●
Greenway Design, Connection and Reservation Requirements	◐	●	●
Bicycle Parking Requirements and Standards	○	○	●
Connectivity Ordinance/Policy	●	●	●
Maximum Cul-de-sac Length and/or Block Length	◐	◐	●
Access Management and ROW Preservation Policies	◐	●	●
Traffic Impact Analysis Requirements	◐	◐	●
Land Use Policies			
Mixed-Use Zoning Districts and Incentives	○	●	◐
Commercial and Mixed-use Design Requirements	○	●	●
Low Density / Rural Living Zoning District (<1 DUA)	◐	●	○
Conservation Design Option and Open Space Standards	◐	●	◐
Tree Preservation and Planting Requirements	○	●	●
Lifecycle Housing (Missing Middle Housing Including Triplex, Quads, ADUs)	◐	◐	◐

Municipalities					Note ID
Butner	Creedmoor	Stem	Oxford	Franklinton	
					A
					B
					C
					D
					E
					F
					G
					H
					I
					J
					K
					L
					M
					N
					O
					P
					Q
					R
					S

Note ID

The following text corresponds to the Best Practices checklists on the previous two pages and includes general descriptions of how each county and municipality could improve in that category.

A. Category: Zoning Ordinance and Land Use Regulations. Many jurisdictions need targeted zoning updates to address plan recommendations including lower density district in rural areas, a conservation subdivision options, mixed-use development standards, or allowances for “lifecycle” or missing middle housing.

B. Category: Comprehensive/Land Use Plans. Plan that are 5 years old: Wake County, Butner
Plans that are over 5 years old: Granville County, Franklin County, Stem

C. Category: Local Transportation Planning. Granville County and Franklin County have CTPs, but they are dated. Butner has done a Gateway Area Plan and Creedmoor has incorporated transportation planning into their Comp Plan but some updates are suggested.

D. Category: Collector Street Plan. Butner, Creedmoor, Stem, and Oxford all participated in the Granville County CTP but do not have local transportation plans or collector street elements. Some minor thoroughfares could be considered collectors. Wake County and Franklinton have local transportation plans.

E. Category: Bicycle, Pedestrian, or Greenway Plan. Granville County has a Greenway Plan within the Comprehensive Plan but could be updated. Wake County has Greenway Plan. Butner and Creedmoor have greenway and bike/ped recommendations in Comprehensive Plans / Land Use Plans. Oxford has Bike/Ped plan. Updates needed in Butner and Creedmoor. Stem has a Downtown Plan that has some bike/ped recs, but needs to be expanded.

F. Category: Sidewalk Policy. Potential Improvement designation used to indicate where additional clarity is needed. For instance, Granville County LDC includes the phrase “sidewalks may be required.”

G. Category: Sidewalk Design Requirements. Granville County sidewalk standard is 4 feet. This could be increased to 5 feet where provided. For Oxford, some sidewalks are required to be 4 feet, others 5 feet.

H. Category: Greenway Design, Connection, and Reservation Requirements. Connection and reservation requirements needed in Granville County. Butner and Stem ordinances need to be updated to define greenways and reference reservation of land and connections.

I. Category: Bicycle Parking Requirements and Standards. See Oxford UDO Section 9.4.1 for example requirements.

J. Category: Connectivity Ordinance/Policy. Stem ordinance does not address connectivity. Oxford UDO could be strengthened (Sec 6.12) to include connectivity requirements, minimum development entry points.

K. Category: Maximum Cul-de-Sac Length and/or Block Length. Granville County has block length standards but exemptions for cul-de-sacs. Wake County has large maximum for cul-de-sacs. Butner and Oxford do not have block length standards. Creedmoor requirements could be strengthened.

L. Category: Access Management and ROW Preservation Policies. Granville County - reference to adopted plans is suggested. Butner and Creedmoor access management policies, especially along NC 56 could be improved. Stem needs standards.

M. Category: Traffic Impact Analysis Requirements. Granville County - study requirements could be improved. Wake County - recommend lower threshold. Stem - no formal requirements. Franklinton - Reference to NCDOT Requirements is vague.

N. Category: Mixed-Use Zoning Districts and Incentives. Granville County - no mixed-use district or development option (PUD unclear). Franklin County has conditional zoning option, but no base districts. Butner - Central Business District does not allow mixed use. Creedmoor - NC 56 Commercial does not allow mixed-use. Stem - Community Commercial district does not allow mixed-use. Franklinton - mixed use is SUP only.

O. Category: Commercial and Mixed-Use Design Requirements. Granville County has limited commercial design requirements. Butner has standards for gateway districts, but not for other areas (i.e. Downtown). Stem - Update needed based on Downtown plan. Oxford - good standards, but blurred graphics. Franklinton has use specific standards, but limited standards for Downtown and commercial areas.

P. Category: Low Density/Rural Living Zoning District (<1 DUA) Granville County - AR-40 common. Franklin County R-30 is widespread in North Falls Lake Area. Stem and Oxford do not have low density districts.

Q. Category: Conservation Design Option and Open Space Standards. Many jurisdictions have conservation subdivision options and open space requirements, however, updates could be made to implement recommendations in the NFLAS.

R. Category: Tree Preservation and Planting Requirements. Best practices include providing credit for tree preservation, establishing canopy requirements, designation of heritage trees, parking lot and native planting requirements.

S. Category: Lifecycle Housing (Missing Middle Housing including Triplex, Quads, ADUs) Definitions, allowances and standards could be updated. In most cases ADUs are defined and allowed (except for Franklinton where not allowed). Duplexes are defined but many types housing are not addressed (i.e. triplex, quadplex, multi-plex, cottage court, etc.).

Land Use Implementation Priorities

Overall

Review and update land use plans and/or zoning ordinances to implement recommendations of the North Falls Lake Area Study.

Conduct small area planning to refine land use, development, transportation, and parks and greenways recommendations for key areas.

Granville County

Update the Granville County Comprehensive Plan and consider incorporating NFLAS related recommendations and/or elements from the Preferred Scenario.

Increase coordination on trails and open space.

- Update the county greenway plan.
- Consider increasing staff capacity related to planning for trails and open space.

Consider establishing a county Farmland Preservation Program.

Conduct collector street planning in concert with municipalities and in the southeastern part of the county.

Study targeted zoning updates.

- Transportation related policies and standards related to sidewalks, greenways, bicycle parking, access management and traffic impact analysis should be reviewed and updated.
- Land use policies and standards related to commercial and mixed-use development should be updated. For example allow for mixed-use building types or horizontal mixed use and update commercial design standards.
- Petition state legislature for exemption from downzoning rules to lower allowable density in some parts of the county shown as Rural Living on the Preferred Scenario map.
- Update subdivision design and requirements
- Consider incentives for conservation design following changing maximum density of conventional development.
- Consider a canopy preservation requirement for major subdivisions.
- Consider designation and protection of heritage trees, parking lot planting requirements, and the creation of a tree planing list that emphasizes native shade trees.

Franklin County

Update the Franklin County Comprehensive Plan and consider incorporating NFLAS related recommendations and/or elements from the Preferred Scenario.

Conduct collector street planning in concert with municipalities and in the southwestern part of the county.

Consider feasibility studies to refine alignments, facility type recommendations, cost estimates and phasing for priority greenway projects identified in the Franklin County Bicycle and Pedestrian Plan (2021).

Study targeted zoning updates.

- Consider removal of barriers to mixed-use development. Currently only allowed via a Conditional Zoning process.
- Petition state legislature for exemption from downzoning rules to lower allowable density in some parts of the county shown as Rural Living on the Preferred Scenario map.
- Consider updates to open space requirements that could include requiring more open space for conservation subdivisions and/or specifying an upland open space requirement.
- Define and update allowances and standards for missing middle housing types including triplexes and quadplexes.

Wake County

Continue collaboration with municipalities on long-range transportation planning for collector street connections and greenways.

Incorporate land use recommendations from the North Falls Lake Area Study into updates to the Plan Wake Comprehensive Plan.

Study targeted zoning updates.

- Consider clarifying where pedestrian improvements are required.
- Add bike parking requirements for commercial or mixed-use development.
- Review cul-de-sac length standards and allowances.
- Consider updates to Traffic Impact Analysis requirements including daily trip thresholds.
- Strengthen protections for heritage trees.
- Remove barriers to missing middle housing types.

Butner

Update the Future Land Use Plan and consider incorporating NFLAS related recommendations and/or elements from the Preferred Scenario.

Consider creating a Downtown Master Plan that studies infill development opportunities, street upgrades, and public space improvements.

Conduct additional collector street and bicycle and pedestrian planning in concert Creedmoor, Granville County, and Durham County.

Study targeted zoning updates.

- Transportation related policies and standards related to greenways, cul-de-sac and block length, access management and right-of-way reservation should be reviewed and updated.
- Update zoning for the Central Business District that allows for mixed-use development and establishes design standards.
- Review zoning districts and open space standards in rural areas with significant natural resources. Consider the creation of a conservation subdivision option.
- Update standards to emphasize the use of native plants in landscaping and tree replacement activities.
- Update definitions and allowances for missing middle housing types.

Creedmoor

Conduct additional collector street and bicycle and pedestrian planning in concert Butner, Granville County, and Wake County.

Consider creating a Downtown Master Plan that studies infill development opportunities, street upgrades, and public space improvements.

Study targeted zoning updates.

- Transportation related policies and standards related to cul-de-sac, block length, and access management (especially along NC 56) should be reviewed and updated.
- Identify and remove barriers to mixed-use development. Currently shopfront commercial building types are not allowed along key corridors.
- Update residential street standards to allow for on-street parking in right-of-ways.
- Review and revise subdivision options and consider implementing a conservation subdivision development type that incentivizes preservation of open space in exchange for flexible dimensional standards.
- Update definitions and allowances for missing middle housing types.

Franklinton

Conduct collector street planning in areas where growth is likely.

Create a bicycle, pedestrian, and greenway plan.

Study targeted zoning updates.

- Establish bicycle parking requirements.
- Consider updates to traffic impact analysis requirements.
- Remove barriers to mixed-use development.
- Create building frontage standards for key districts or corridors.
- Update conservation design and open space standards.
- Update definitions and allowances for missing middle housing types.

Oxford

Conduct collector street planning in areas where growth is likely.

Study targeted zoning updates.

- Transportation related policies and standards related to sidewalk design, connectivity, and cul-de-sac and block length should be reviewed and updated.
- Update conservation design and open space standards.
- Update definitions and allowances for missing middle housing types.

Stem

Update the Stem Comprehensive Plan and consider incorporating NFLAS related recommendations and/or elements from the Preferred Scenario.

Conduct collector street planning in areas where growth is likely.

Study targeted zoning updates.

- Transportation related policies and standards related to sidewalks, greenways, bicycle parking, connectivity, access management and traffic impact analysis should be reviewed and updated.
- Remove barriers to mixed-use development downtown and establish standards based on recommendations from Downtown Master Plan.
- Update requirements for cluster / conservation subdivisions.
- Update requirements for buffers between potentially conflicting land uses outside of the downtown area.
- Update definitions and allowances for missing middle housing types.