



GREEN GROWTH TOOLBOX

Wildlife and Natural Resource Stewardship in Planning



Coordinated by the N.C. Wildlife
Resources Commission

Presenter:

Kacy Cook, Land Conservation Biologist

GGT Coordinator

10/30/2017

Kentucky warbler



Bridging the Gap Between Wildlife Biologists & Land Use Decision Makers



Photo: Brady Beck



**Wildlife conservation
measures
are a missing piece**



Elected Officials



Biologists



Planners & Developers

A non-regulatory guide and technical assistance program



Wildlife & Natural Resource
Stewardship in Planning

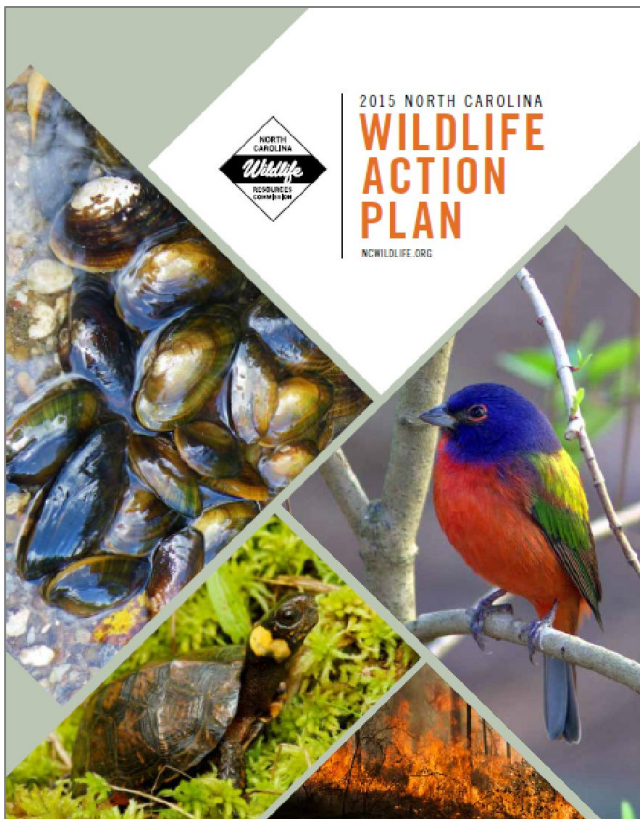
for integrating priority wildlife
habitat conservation in

local government
land use & transportation
planning.

Google

10/30/2017

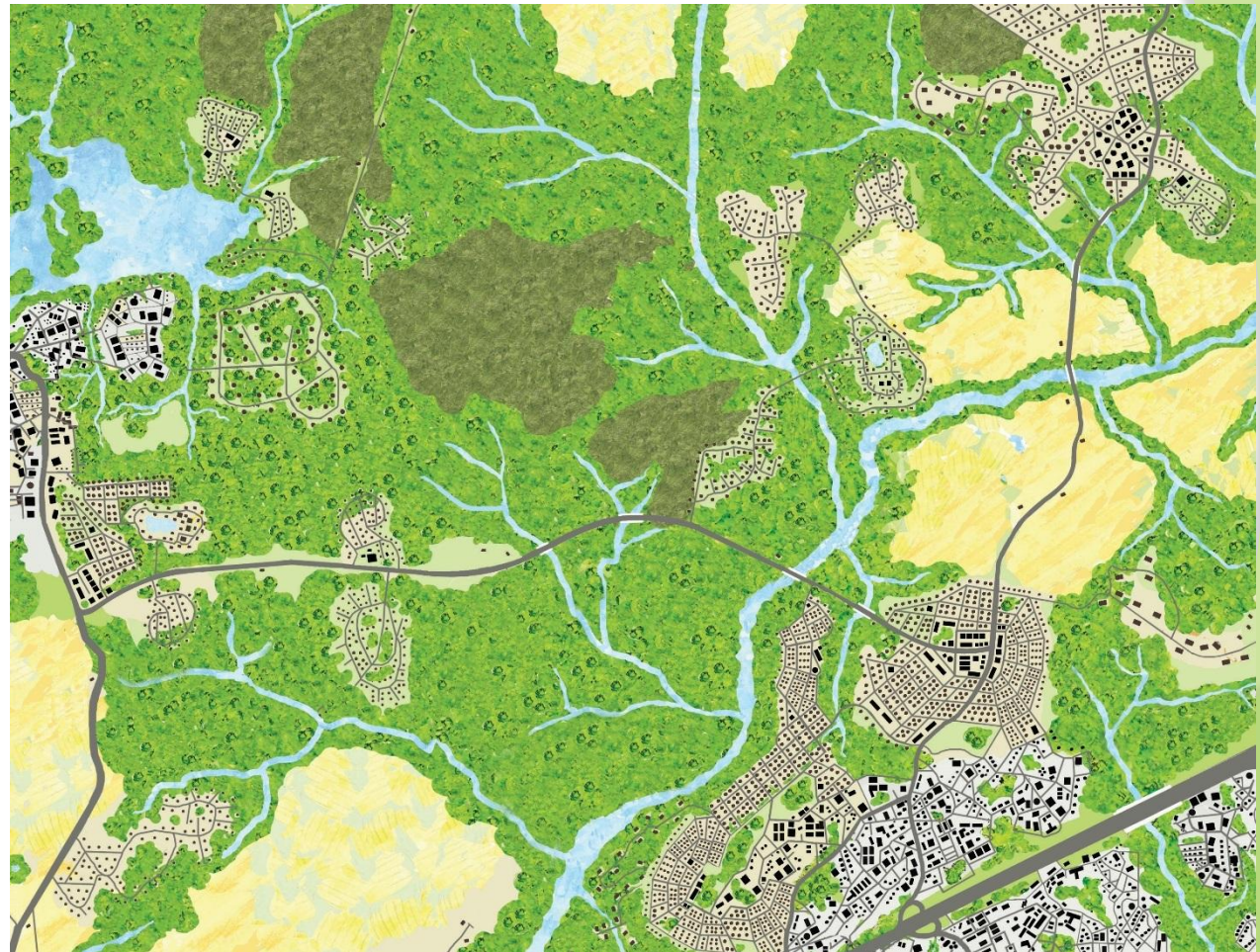
The Status of Wildlife in North Carolina



- 457 Species of Greatest Conservation Need
- 8 of the 21 most endangered US ecosystems
- Development *patterns* are a top threat

The Toolbox can be used to plan for landscapes where wildlife & natural resources are secure.

-  Farms
-  Lawn
-  Working Forests
-  Native Forest
-  Streams, Rivers & Reservoirs
-  Residential
-  Commercial / Industrial



Same amount of development as previous slide



What is Green Growth? Minimizing Impacts

Missed opportunity



(B. L. Robinson)





What is Green Growth? Maintaining Habitat Connectivity



Greenville, NC. Horizons 2026



bobcat

NC communities have implemented conservation planning: Randolph Co. since 1990s

- ◎ 50% of developers have chosen conservation subdivisions
- ◎ 50% required conservation area
- ◎ 1 extra lot for each 5% above 50% conserved
- ◎ 3 acre min. lot size base density

Google Earth



068 Mt. Shenard Road Extension



What is in the Green Growth Toolbox?



- Handbook
- Conservation Data
- www.ncwildlife.org/greengrowth
- Training workshops
- Technical assistance

Partners for Green Growth



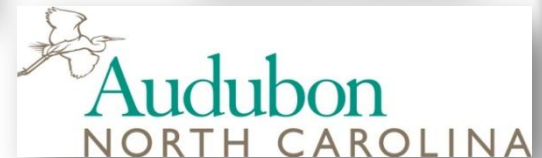
Modest funding to assist local governments with conservation-based comprehensive plans & ordinance review.

North Carolina Model Natural Resources Conservation Ordinance



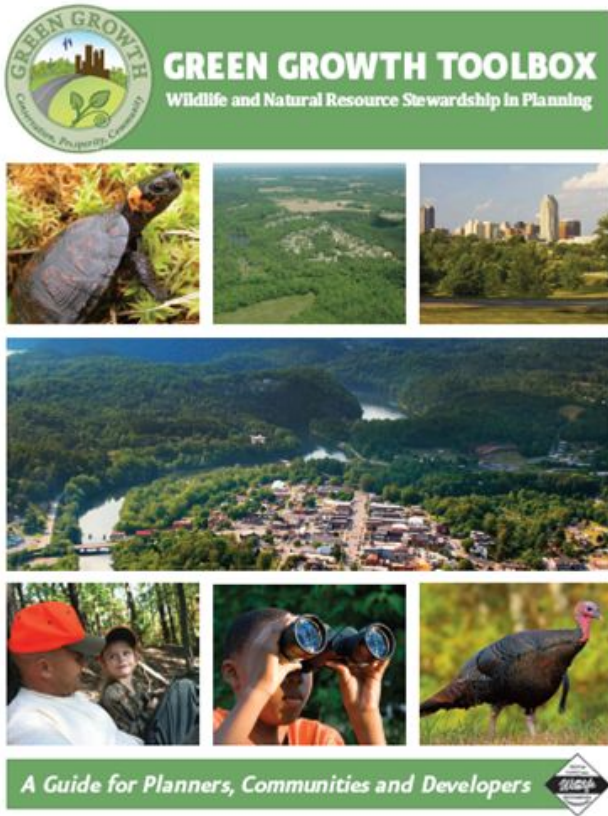
- ⦿ Wildlife habitat conservation overlay for the MOST SENSITIVE areas.
- ⦿ Requires a site survey, contiguous connected habitat % set-aside based on survey findings.
- ⦿ Surveys are not a cost burden to major development projects. (Home values higher near natural areas).

Contributors and Partners



10/30/2017

GGT handbook & the components of Green Growth



1. Justification & Benefits
2. Interpreting Conservation Data
3. Habitat Conservation Recommendations
4. Green Planning
5. Greening Land Use Ordinances
6. Greening Development Review & Site Design

Economic & Societal Benefits



GREEN GROWTH TOOLBOX HANDBOOK: SECTION 1

Summary of over 60 peer reviewed articles

6. Increase Prosperity

Conservation Development Cost Savings & Profits



- ⦿ In SC **conventional** development **cost \$10,000 more per lot** than the cost of a conservation subdivision.
- ⦿ Overall **savings of 36% verses conventional** subdivisions.
- ⦿ On average in the western US, **homes sell for 22 to 26% more** in a conservation subdivisions.
 - Premiums were double when 2/3 of land was conserved.

Toolbox Handbook Section 2: Conservation Data

To view the maps and data online go to the N.C. Natural Heritage Data Explorer at:

<https://ncnhde.natureserve.org/>

Click on Your Area to Download Clipped Statewide Datasets



Click here to download only the additional ecological region data (regional data are clipped and available also by clicking your planning area above).

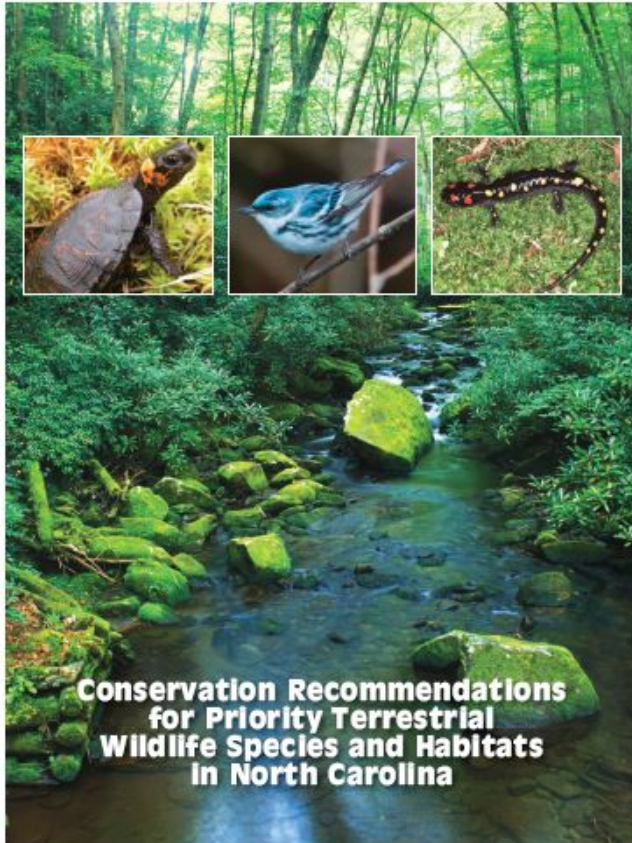
Toolbox Handbook Section 3: HABITAT CONSERVATION RECOMMENDATIONS

Green Growth Toolbox Science Delivery

Peer reviewed conservation
thresholds literature summary



Official NCWRC Habitat
Conservation
Recommendations





Toolbox Handbook Sections 4, 5 & 6: **ACHIEVING GREEN GROWTH**

- ◎ **Green Planning (4)**
 - How to enable habitat conservation & a 6 step process
 - Links to existing community plans
- ◎ **Greening Incentives & Ordinances (5)**
 - How to reduce barriers to conservation
 - Links to existing community incentives & ordinances.
- ◎ **Greening Development Review & Design (6)**
 - Links to existing conservation developments.





OUTCOMES: USE OF THE GREEN GROWTH TOOLBOX BY COMMUNITIES



Wildlife & Natural Resource
Stewardship in Planning



Green Growth Toolbox Implementation

- ◎ Since late 2009
- ◎ Over 550 planners & local government staff trained.
- ◎ From:
 - Over 125 local governments
 - 13 Regional Councils of Government
 - 37 Consulting Firms
 - 34 Conservation Organizations
- ◎ 35 communities received technical assistance.
- ◎ 51 local plans & ordinances

Use of the Toolbox by Local Governments

	Adopted	Draft
Green Infrastructure Plan	2	0
Regional Growth Plan	3	1
Land Use or Comprehensive Plans	15	6
Transportation Plans	4	1
Watershed Plans	10	1
Online GIS Mapper	2	0
Rezoning	2	0
Ordinances	5	9
Highway Bypass	2	

51 local plans, ordinances

Chatham County Watershed Ordinance



Waterways & wetland delineation & buffers = those recommended by Wildlife Commission

All development

Full environmental review for >50 lots

Chatham County Conservation Subdivision Standards

The Retreat At Haw River Site Plan



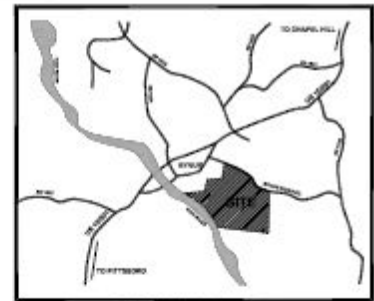
Chatham County, North Carolina
June 6, 2014

227 West Trade St. Suite 1000
Charlotte, NC 28202

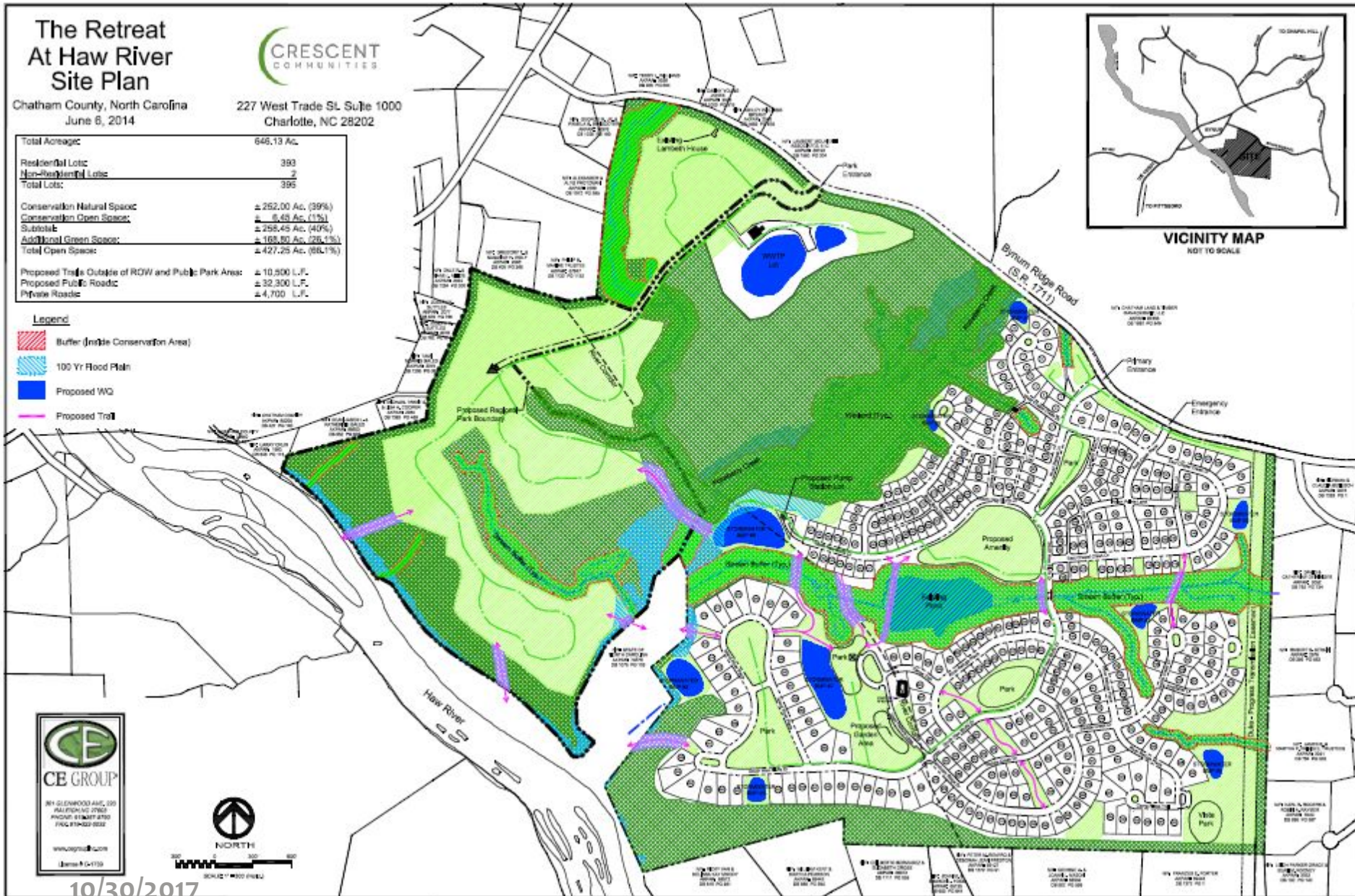
Total Acreage	646.13 Ac.
Residential Lots	393
Non-Residential Lots	2
Total Lots	395
Conservation Natural Space	± 252.00 Ac. (39%)
Conservation Open Space	± 6.43 Ac. (1%)
Subtotal	± 258.43 Ac. (40%)
Additional Green Space	± 168.80 Ac. (26.1%)
Total Open Space	± 427.23 Ac. (66.1%)
Proposed Trails Outside of ROW and Public Park Area	± 10,500 L.F.
Proposed Public Roads	± 32,300 L.F.
Private Roads	± 4,700 L.F.

Legend

- Buffer (Inside Conservation Area)
- 100 Yr Flood Plain
- Proposed WQ
- Proposed Trail



VICINITY MAP
NOT TO SCALE

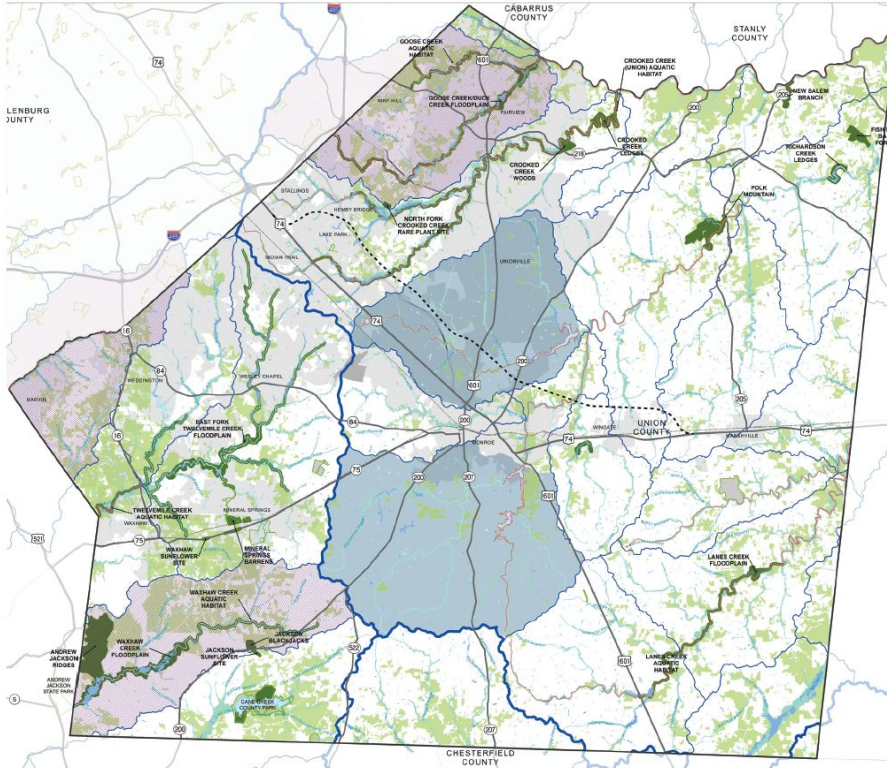


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Using Conservation in Land Use Planning – Union Co.

no direct WRC involvement

MAP 1: NATURAL RESOURCES IN UNION COUNTY



- Study Area
 - Protected Lands
 - Significant Natural Heritage Areas
 - Priority Working Forests
 - Water Supply Watersheds
 - Flood Plain
 - River Basins
 - Subwatershed
 - Federally Listed Aquatic Species
 - Impaired Waters
- 10/30/2017

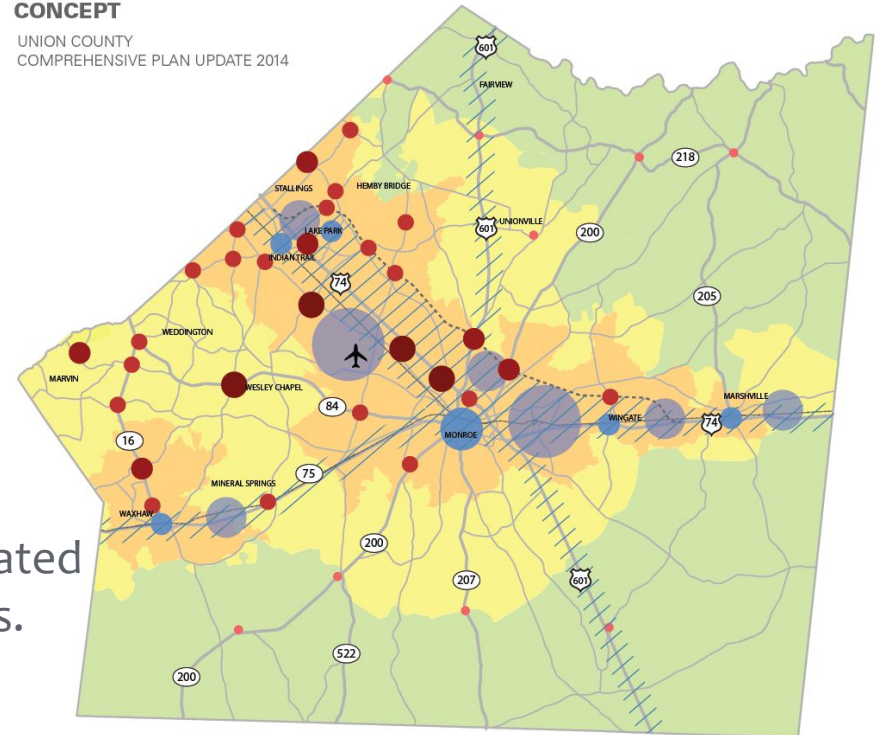
Land Design consulting firm uses the GGT. They incorporated Many GGT recommendations. Without needing assistance.

MAP 2: FUTURE LAND USE CONCEPT

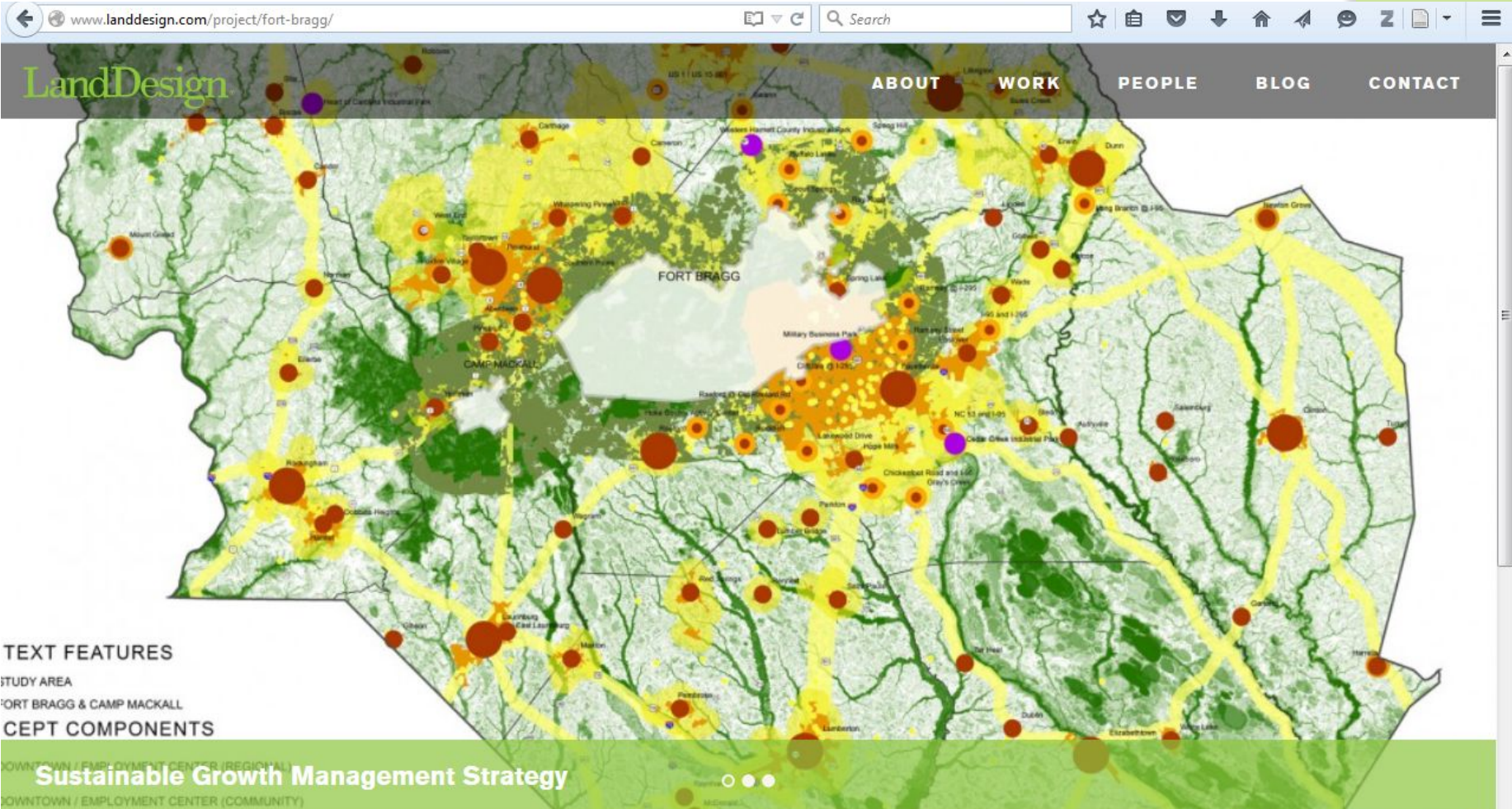
- Agricultural Area**
Farming, forestry and rural residential
- Single Family Residential**
Detached single family (~1 unit/acre)
- Mixed Residential**
Mixed residential (detached single family, patio and cottage homes, town homes and multi-family)
- Rural Center**
Small scale commercial and civic uses
- Neighborhood Center**
Neighborhood-serving commercial uses (retail, restaurant and services) and mixed residential uses
- Community Center - Small**
Community-serving commercial uses (retail, restaurant and services) including opportunities for office, civic, institutional and mixed residential uses
- Community Center - Large**
Community-serving commercial centers with a larger footprint and service area
- Town Center / Downtown**
Existing downtown or town center with a range of uses including commercial, office, civic, institutional and mixed residential uses
- Employment Center**
Industrial and office uses
- Employment Corridor**
Logistics, industrial and agri-business related uses

FUTURE LAND USE CONCEPT

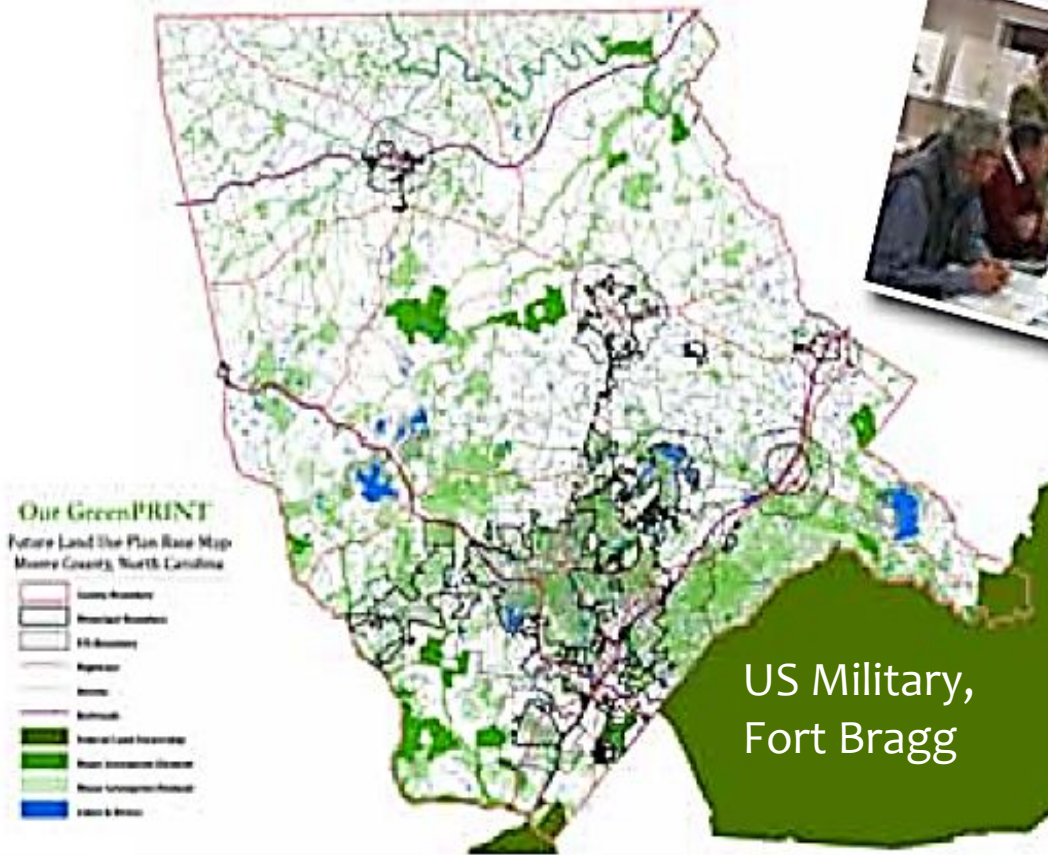
UNION COUNTY
COMPREHENSIVE PLAN UPDATE 2014



Fort Bragg Sustainable Growth Strategy



Moore County Land Use Plan



2013 Land Use Plan

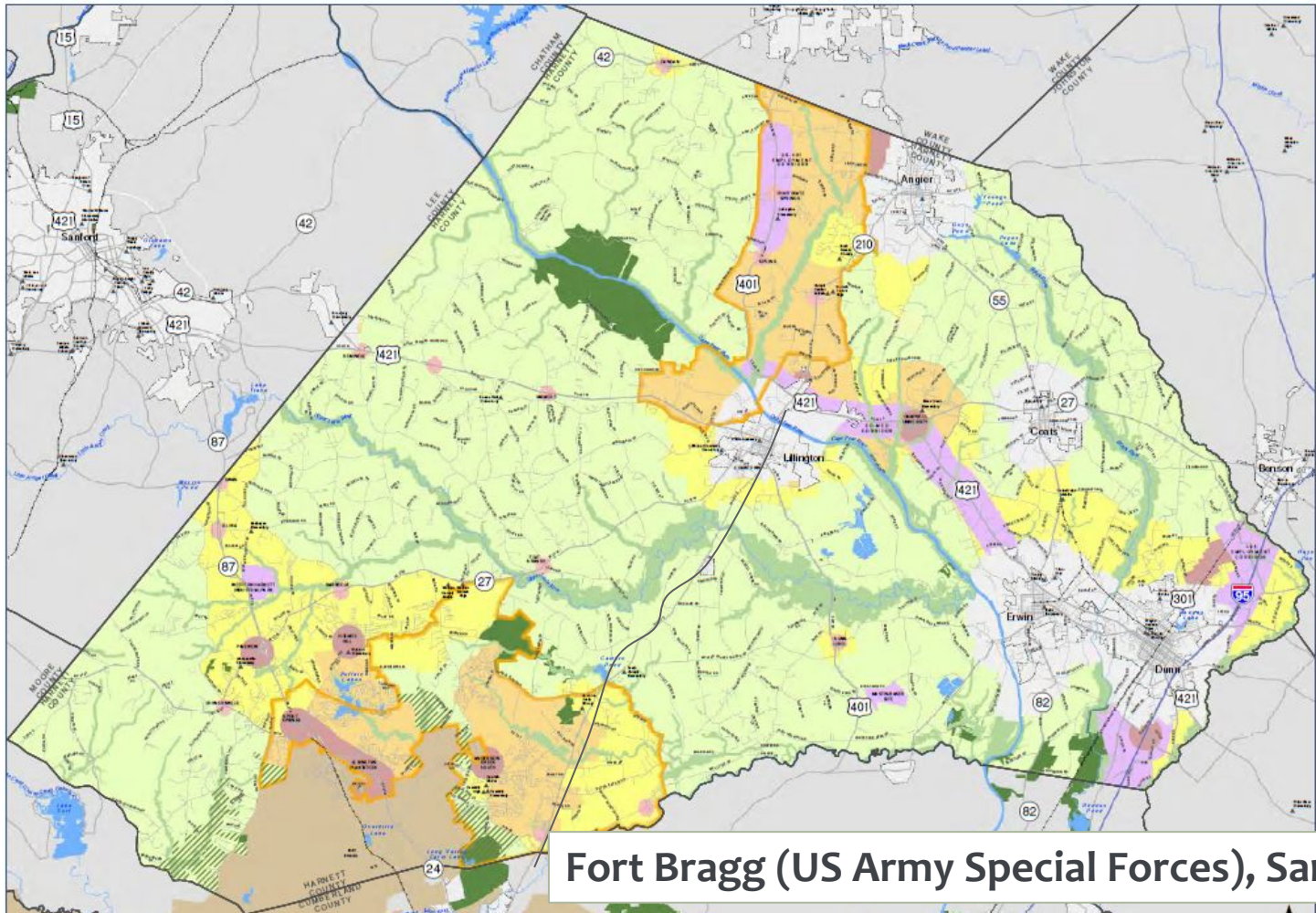


Moore County: GGT used in 2nd Land Use Plan update, 37% of Green Growth recommendations incorporated in the Unified Development Ordinance. Future updates expected to include more.

Town of Aberdeen: Land Use Plan & standard use of GGT to reduce development impacts

First to implement the Fort Bragg Sustainable Growth Strategy

Harnett County



Fort Bragg (US Army Special Forces), Sandhills

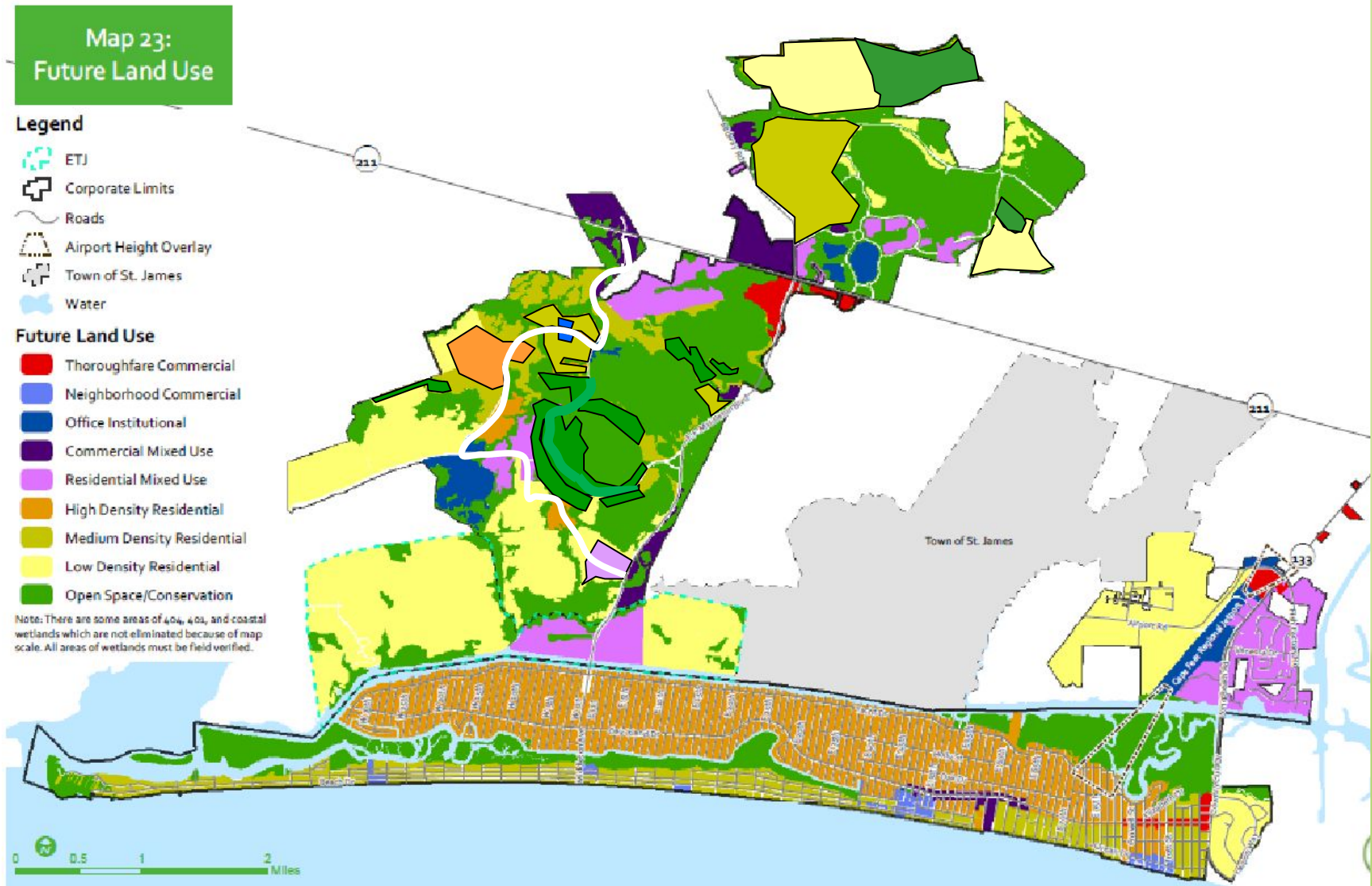
Environmental and Military	Agricultural	Residential Focus Areas	Development Nodes
Protected Areas	Agricultural and Rural Residential	Low Density Residential	Compact Mixed Use
Environmentally Sensitive Areas		Medium Density Residential	Rural Center
Compatibility Development Target Areas			Employment Mixed Use
Military Corridor Buffer			Municipal Extra Territorial Jurisdiction (ETJ)

Brunswick County



- SE North Carolina coast
- Planning department and board very supportive
- County Conservation Data for Green Growth explorer online GIS created by the county & Exceptional Development Option following GGT principles.
- Hosting GGT Workshop with Oak Island was the motivator

Oak Island, Brunswick County



Other projects in the works

- ⦿ Solar facilities guidance – Camden and Brunswick County ordinance guidance requests
- ⦿ Cabarrus County municipalities conservation development district and incentives.
 - Partner: Cabarrus County Soil & Water Conservation District
- ⦿ Mebane Comprehensive Plan and Ordinance update
- ⦿ Pender County Comprehensive Plan
 - Partner: Cape Fear Council of Government
- ⦿ Carteret County Conservation Plan
 - Partner: East Carolina Council
- ⦿ Conservation Design Lunch & Learn at development & planning firms.
 - Partner: Brunswick County Planning Dept.

Thank you! Questions?



Ornate Chorus
Frog



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NC State University

www.ncwildlife.org/greengrowth

