

Human Dimensions of Shoreline Development

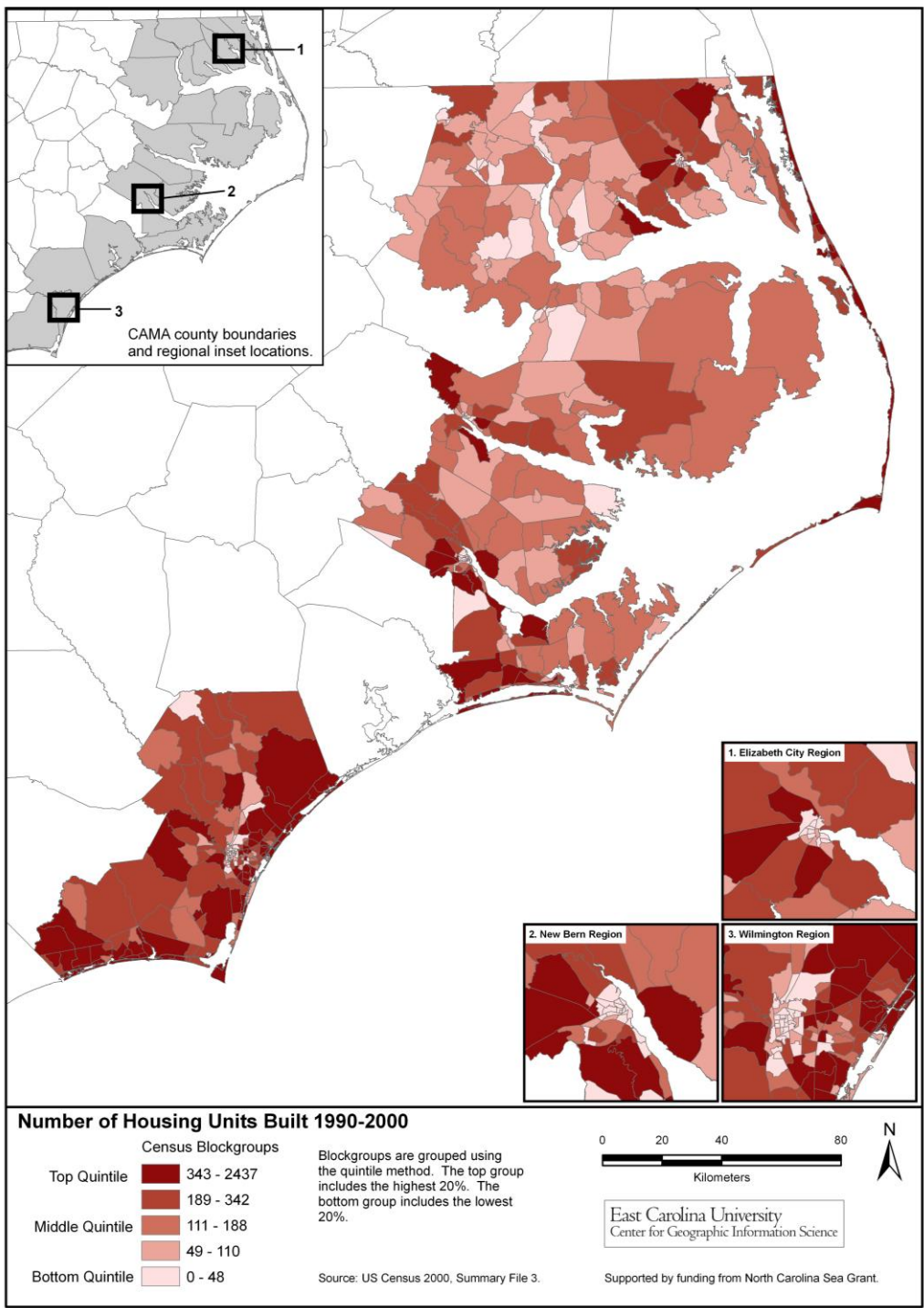
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Trends

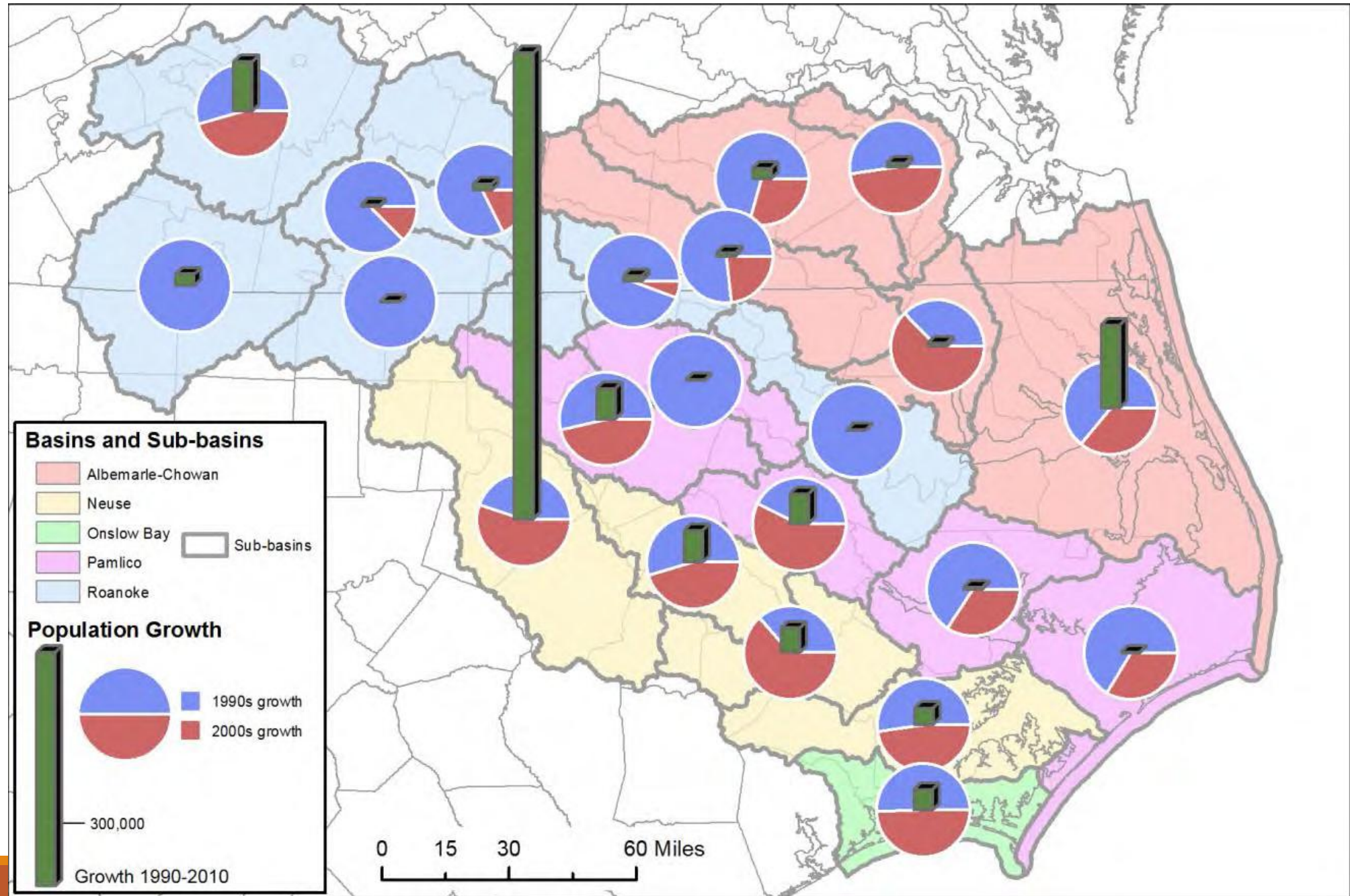


- Oceanfront highly developed
- High land values along ocean
- Estuarine shoreline under pressure

Crawford et al., 2011

More trends: % change 2000-2011

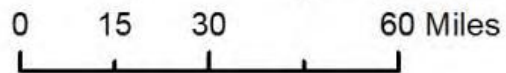
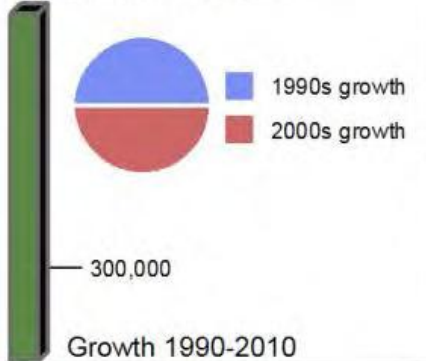
County	Population	Income	Housing price
Currituck	29.45	35.65	107.79
Camden	44.95	54.69	115.23
Pasquotank	16.52	44.81	99.65
Perquimans	18.34	45.71	92.15
Chowan	1.84	18.86	60.80
Hertford	9.15	16.86	34.52
Bertie	7.63	15.62	30.74
Washington	-3.61	13.34	32.42
Tyrrell	6.22	25.43	89.83
Dare	13.19	27.06	149.34
Hyde	-0.27	34.53	24.97
Beaufort	6.23	30.86	30.65
Craven	13.2	24	56.83
Pamlico	1.62	19	48.83
Carteret	11.93	20.37	67.47
North Carolina	18.46	10.57	42.38

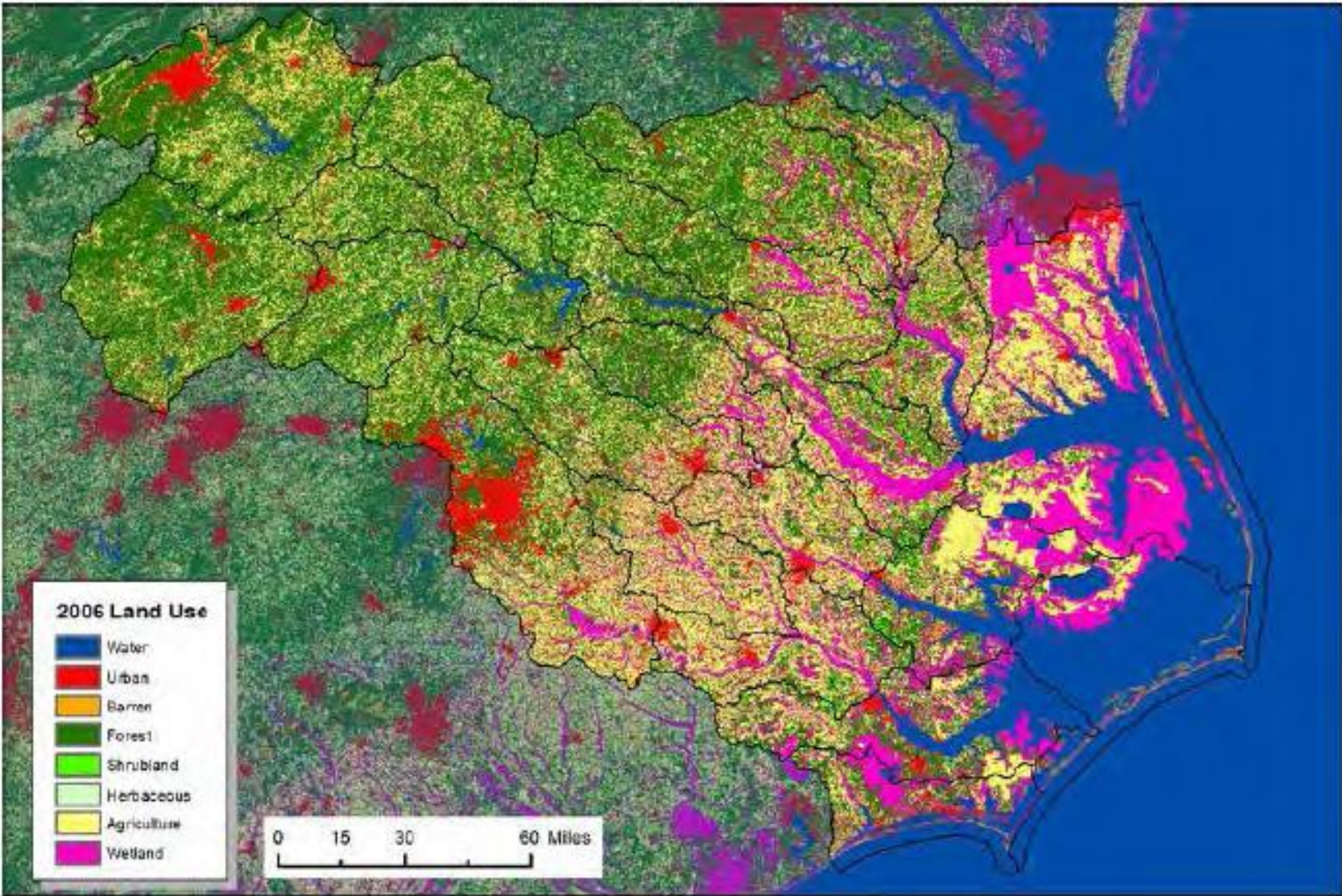


Basins and Sub-basins

- Albemarle-Chowan
- Neuse
- Onslow Bay
- Pamlico
- Roanoke
- Sub-basins

Population Growth





Beaufort County



Pamlico County



The “Lure”

- Amenities
 - Recreational opportunities
 - Boat access
 - Views (bluffs)
- Land Costs
- Relative Safety





Choices

Where can you find a waterfront lot like this?? 1 ACRE Bulkheaded riverfront lot with additional 7.33 acre tract behind. Nice high land ready for your dream home. Possibility of subdivision of the 7.33 acre tract.



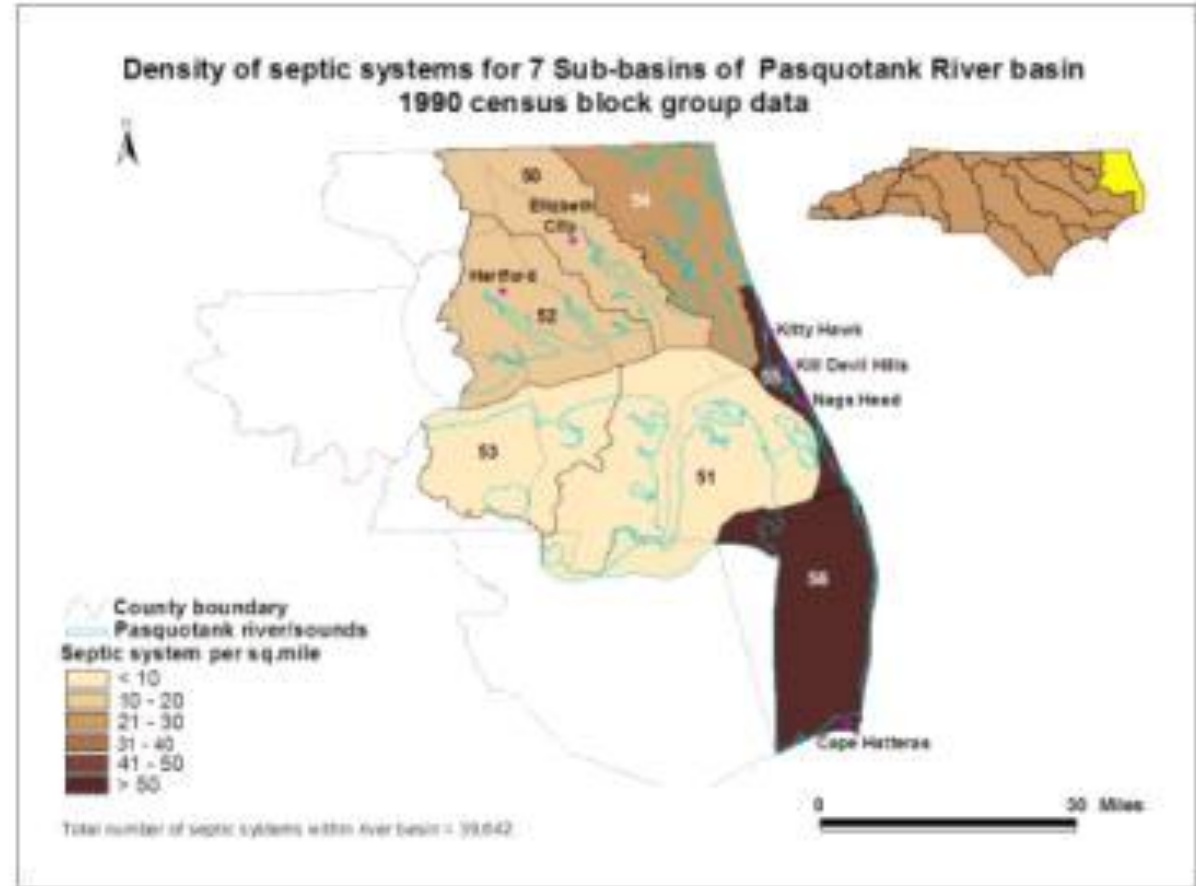


Waterfront property on the beautiful Chowan River in eastern North Carolina. Lot 15 (.88 acres) is one of five waterfront lots left in the new subdivision "Riversedge On The Chowan". If you're looking to retire or just want to build a dream home overlooking a breath taking view, then call today! There will be a common area with boat ramp, dock, and floating pier.

Enjoy fishing, boating, hunting, and especially the views from your 12 x 56 upstairs covered porch or from your downstairs 12 x 24 screened porch. Spectacular views of water, sunrisings and sunsets. This property offers it all for your permanent home or your vacation/weekend home.



Impacts: Pollution



<http://www.soil.ncsu.edu/programs/septicsystem/pasquotank.htm>

Impacts: Erosion







Impacts: Flooding

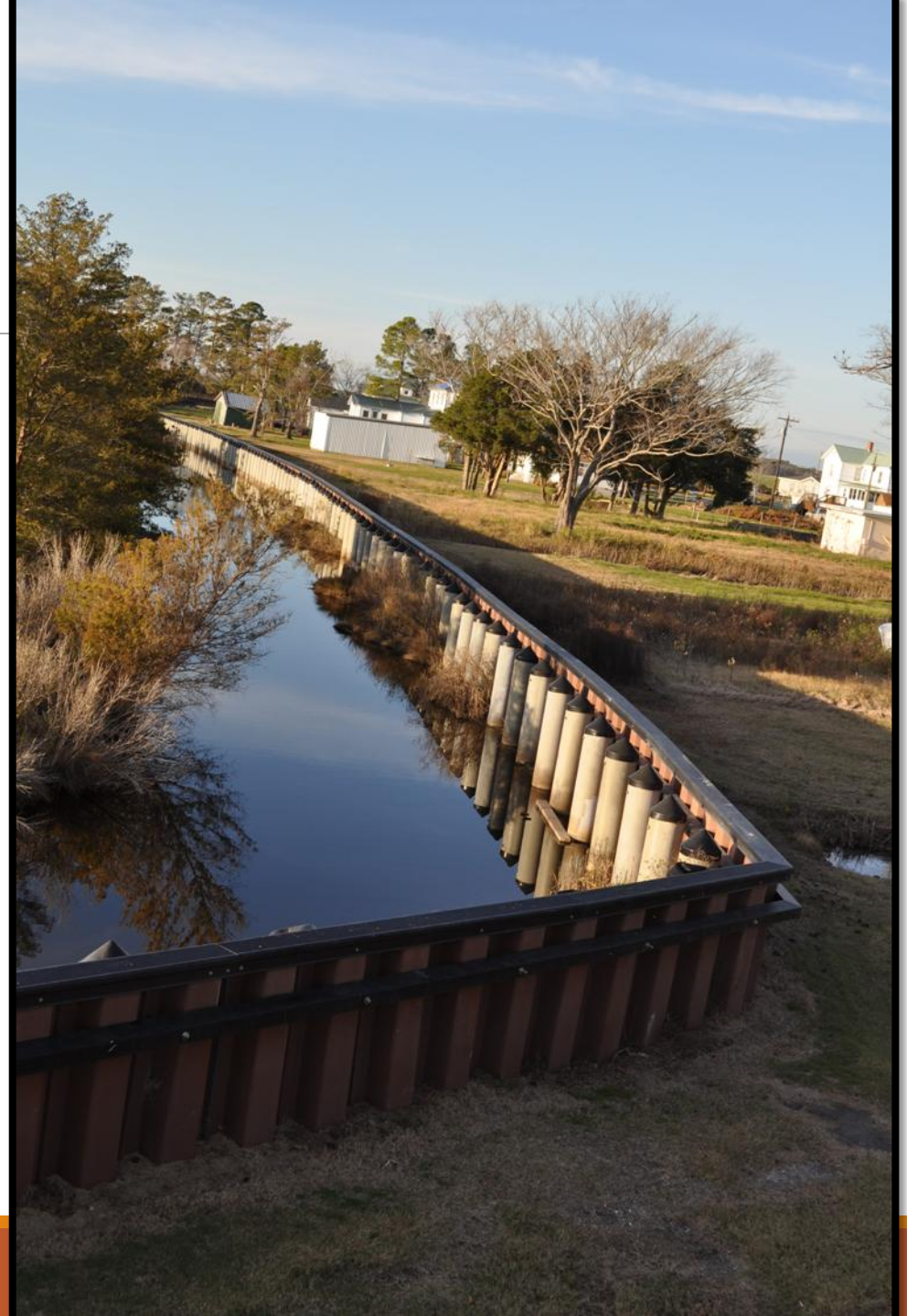


Stumpy Point

Managing the impacts

- Modify the cause
 - Engineering
- Modify the loss/impacts
 - Build to avoid problem or don't build
- Distribute the loss
 - Share the burden
- Bear the loss

Modify the cause





Comparing sounds to oceanfront

- Less expensive structures (bulkheads, riprap)
- Less unpredictable consequences (less current and breaking surf)
- Individual protection – or at least small groups – is an option
- Possible ecosystem externalities, but much less significant recreational externalities

Value of modifying the cause

- Huge benefits to property owners – protected property tends to have high amenity values
- Negative externalities in terms of wetland / aquatic ecosystem interactions
- Right now, property owner benefits are likely larger and are likely to win out

Modify the loss/impact





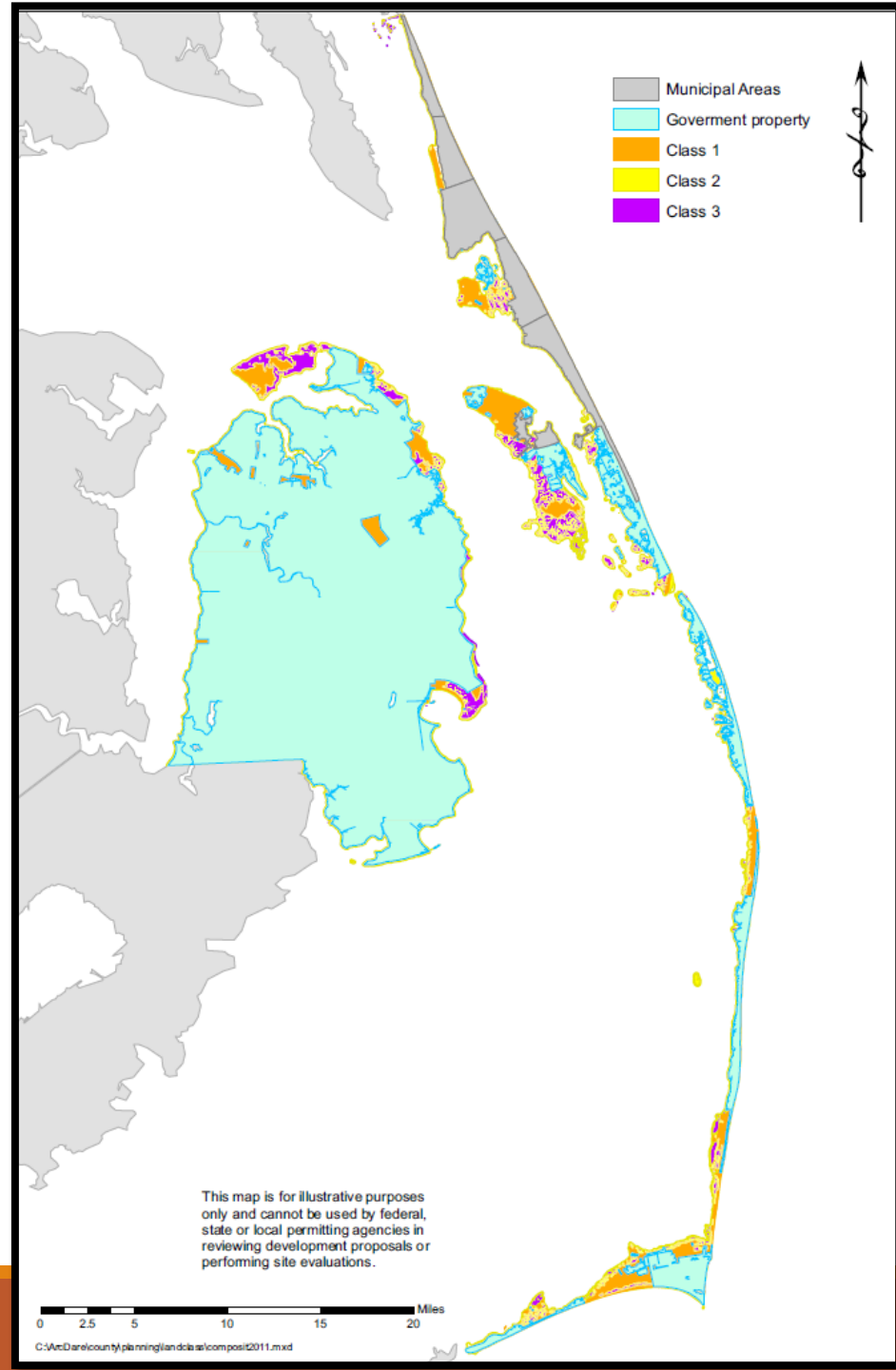
Dare County Land Use Plan

Table 20 Class Assignments of Natural Features

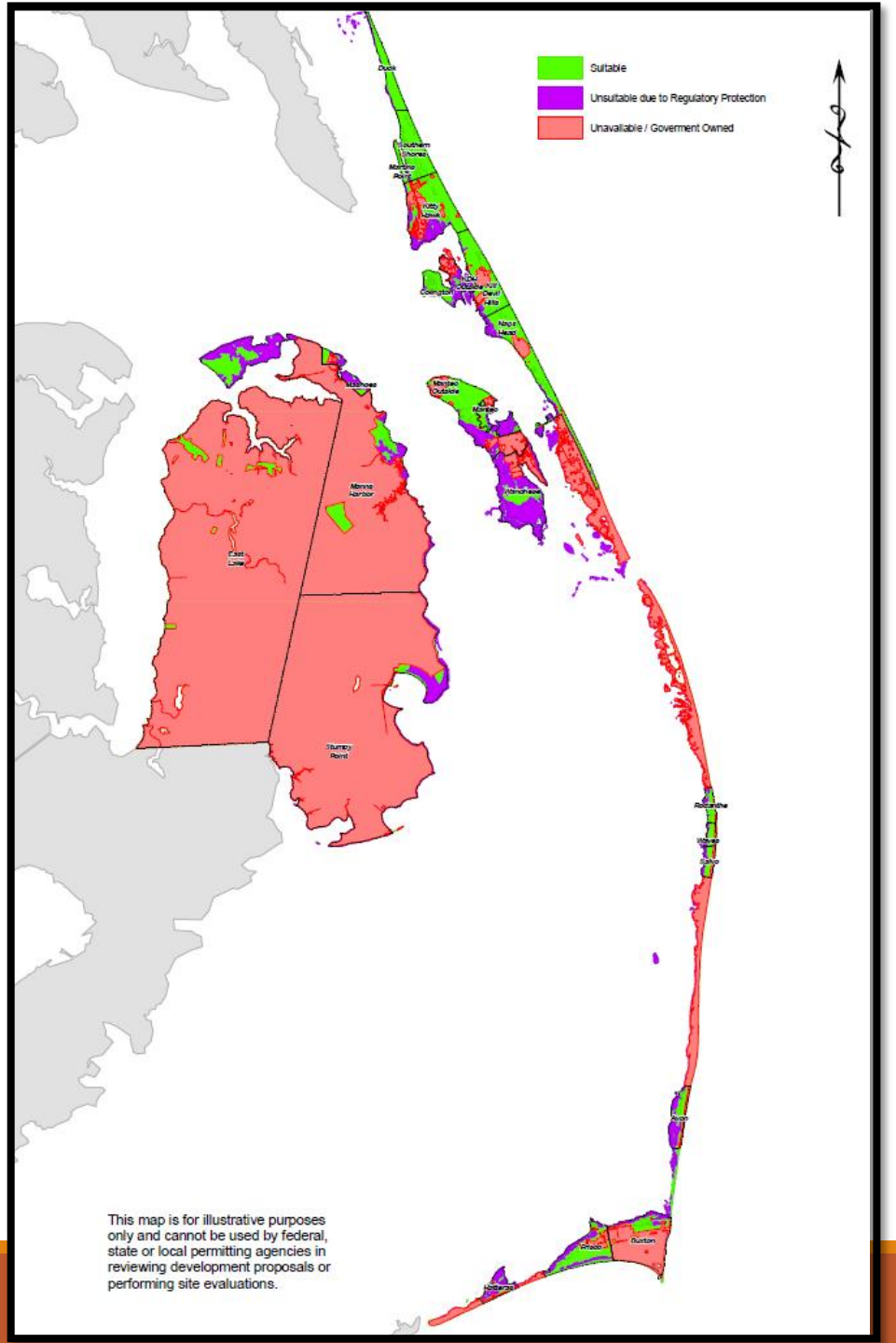
Class 1 Features	Class 2 Features	Class 3 Features
Soils suitable for wastewater	Estuarine Shoreline AEC	Coastal Wetlands AEC
X/AE flood zones	Ocean Erodible AEC	Estuarine Wetlands AEC
Non-wetland soils	High Hazard AEC	Public Trust AEC (area/waters)
	Public Water Supply AEC	Unvegetated Beach AEC
	Non-coastal wetlands	
	Soils --Moderate to severe wastewater limitations	
	VE Flood Zones	
	HQW/ORW Water Quality Classification	
	Buxton Woods SED-1 Zoning Area	

Table 32 Land Suitability Attributes and Ranking

Attributes of Private Lands	Rating
Class 1 or 2 lands as identified on environmental composite map	High importance
Class 3 lands (protected from development by regulatory controls)	High importance
Water quality classifications	Medium importance
Proximity to existing development	Low importance
Compatibility with existing development	Low importance
Proximity to scenic , historical, or cultural sites	Medium importance
Availability of central water and/or central wastewater	Low importance
Access to major highways	Low importance



Environmental
Composite Map

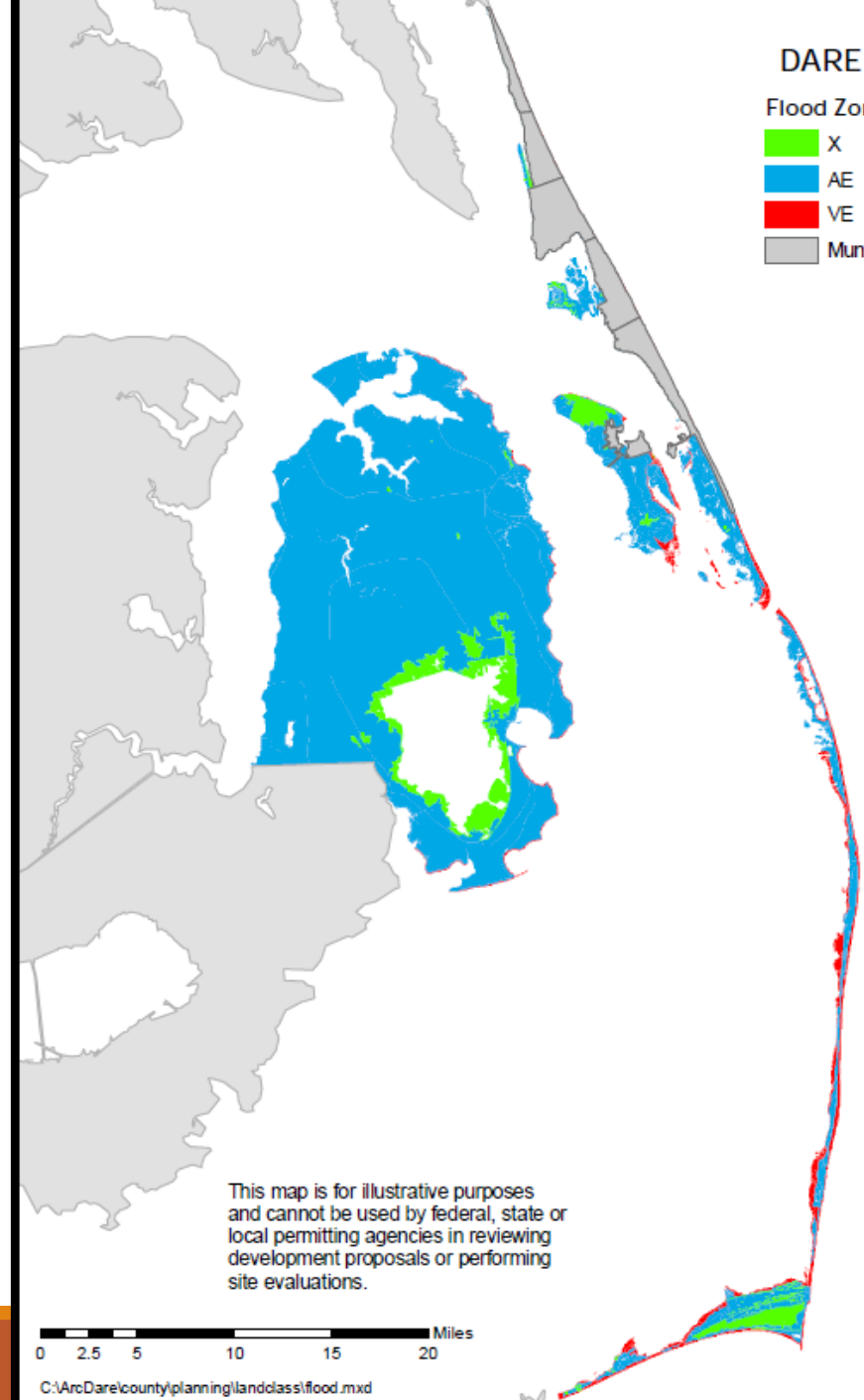


Suitability Map

DARE COUNTY

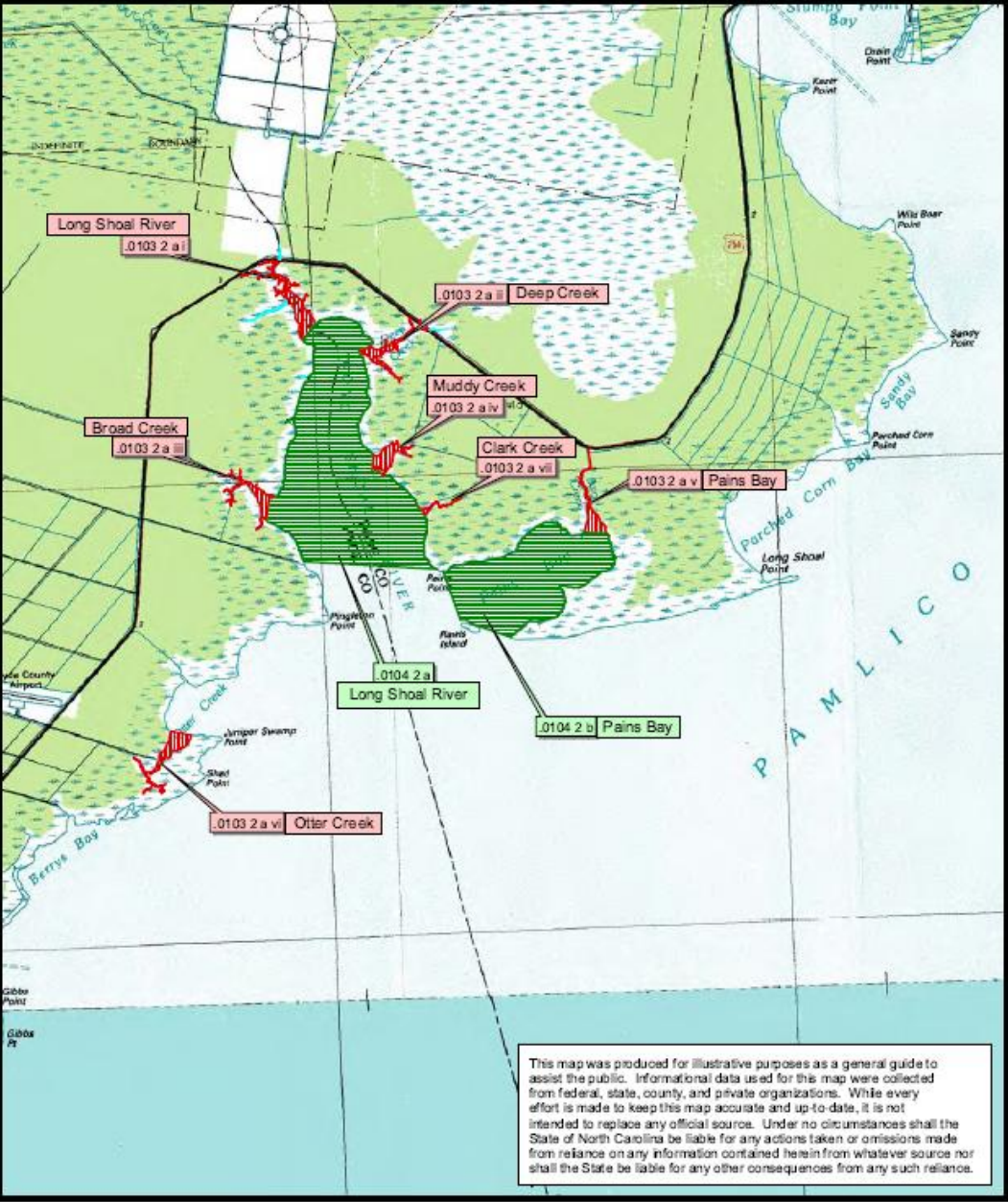
Flood Zone

- X
- AE
- VE
- Municipal Areas



0 2.5 5 10 15 20 Miles

C:\ArcDare\county\planning\landclass\food.mxd



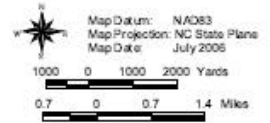
Background imagery are U.S. Geological Survey 1:100,000-scale planimetric maps.



Fishery Nursery Areas

- Primary
- Permanent Secondary
- Special Secondary
- Military Danger Zones and Restricted Areas
- Inland waters (WRC jurisdiction)

Map 7



Value of modifying the loss

- Structure elevation:
 - Long term protection
 - Can take advantage of amenities while reducing risk
 - Higher costs to builder at outset
 - Fewer negative ecosystem externalities
 - Public infrastructure not necessarily protected

Value of modifying the impact

- Suitability analysis/avoid building
 - Long term protection
 - Few if any negative ecosystem externalities
 - Avoidance of infrastructure damage
 - Building pressure
 - Perceived benefit from tax dollars

Distribute the loss

- Insurance
 - Flood insurance: Came about because
 - Private market not working
 - Predictable disaster assistance from flooding
 - Erosion Insurance: Should it exist?
- Government assistance (disaster assistance as an example)

Value of distributing the loss

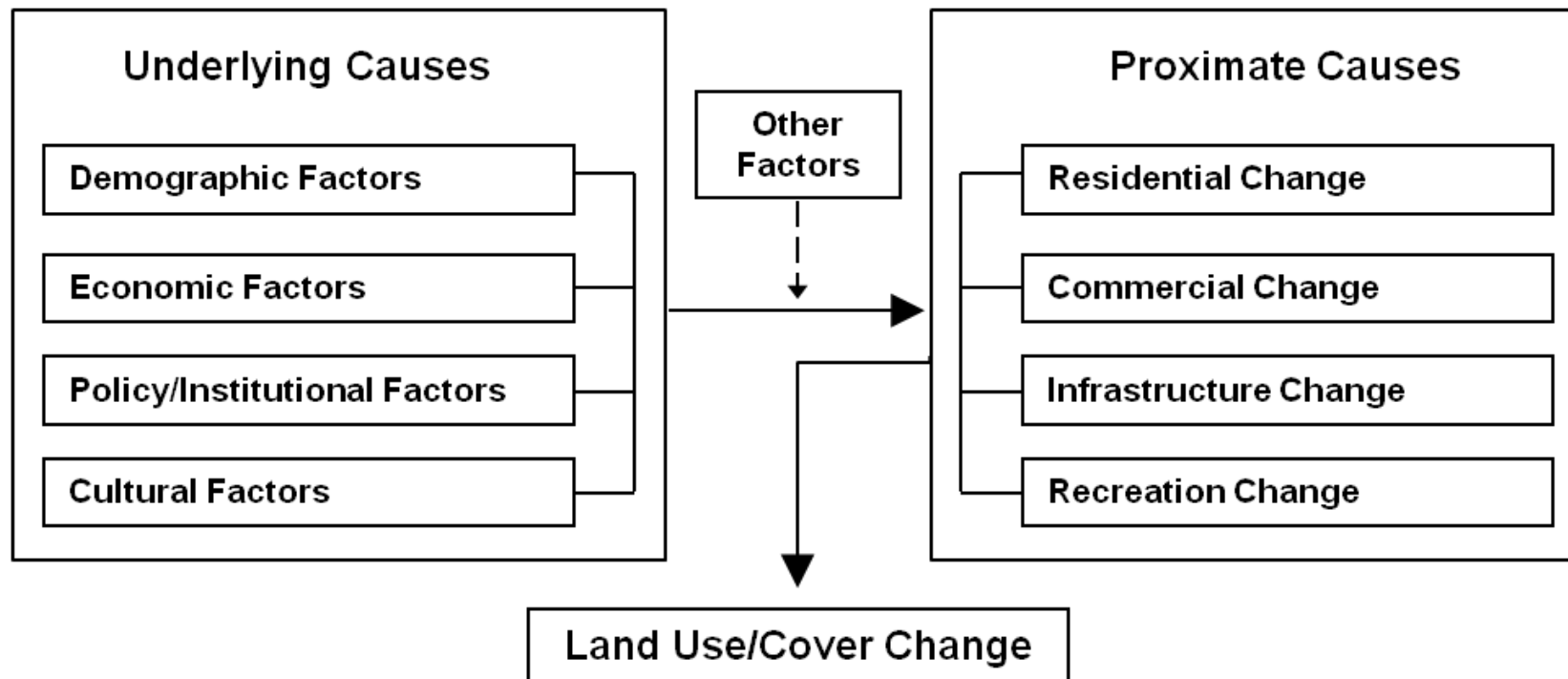
➤ Insurance

- Those at risk pay, not all taxpayers
 - Avoids “moral hazard”
- Forces disclosure of risk
- Phase out uneconomic development vs encourage risky development

➤ Assistance

- Moral hazard
- Available for rebuilding public infrastructure
- Risk-reducing incentives need to be built in

Addressing the Driving Factors



Questions?

