

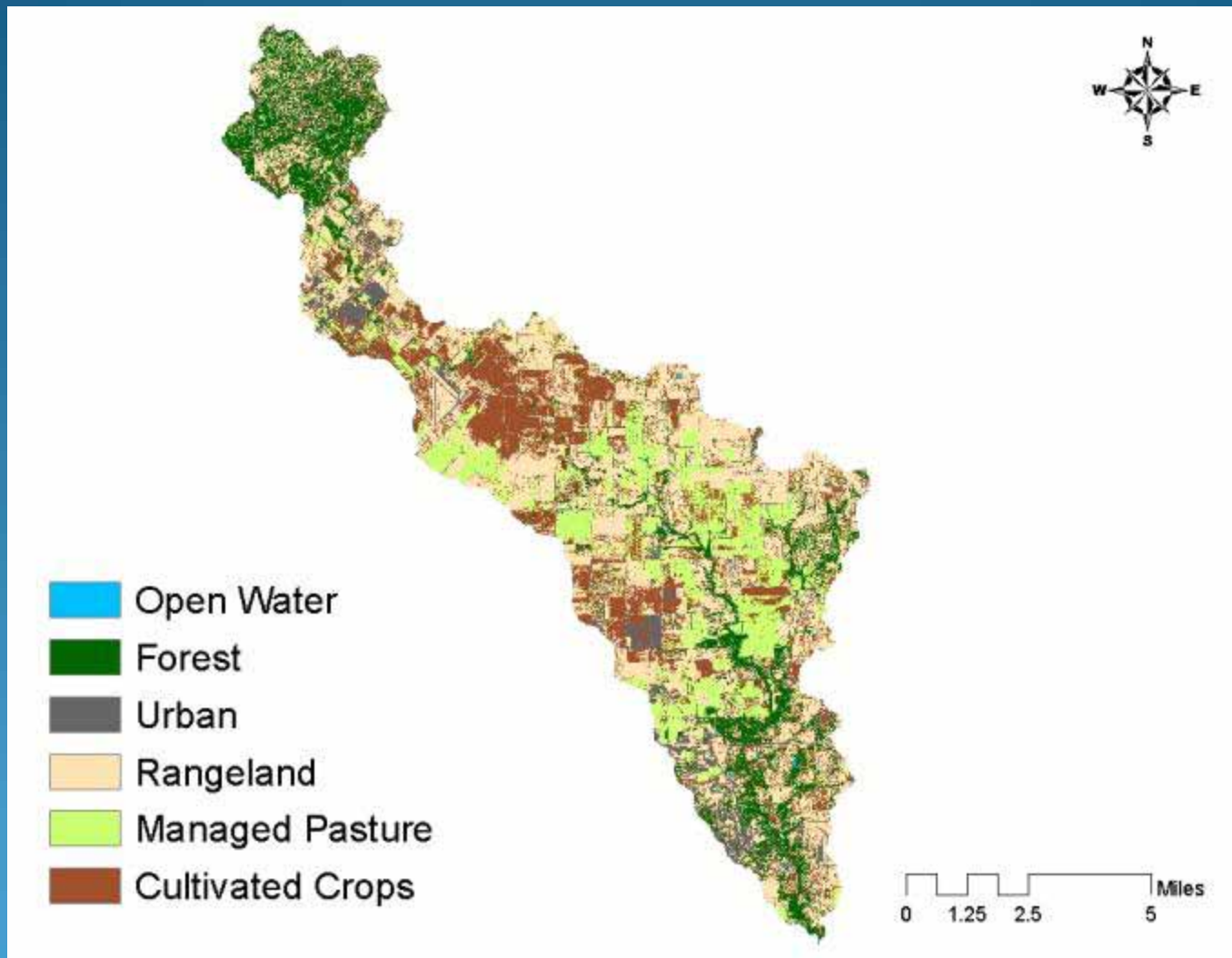
Geronimo and Alligator
Creeks Watershed
Partnership
Agricultural Work Group

April 13, 2010

Agricultural Work Group

- The purpose of this Work Group is to discuss the specific causes and sources of nonpoint source pollution stemming from general agricultural and silvicultural (forestry) sources.
- This includes cropland, pastureland, rangeland, and forestland. Sources to be discussed include runoff from cropland, livestock, wildlife and feral hogs (invasive species).
- This Work Group will also identify and recommend strategies to reduce and abate pollution from these sources.

Watershed Land Use/Land Cover



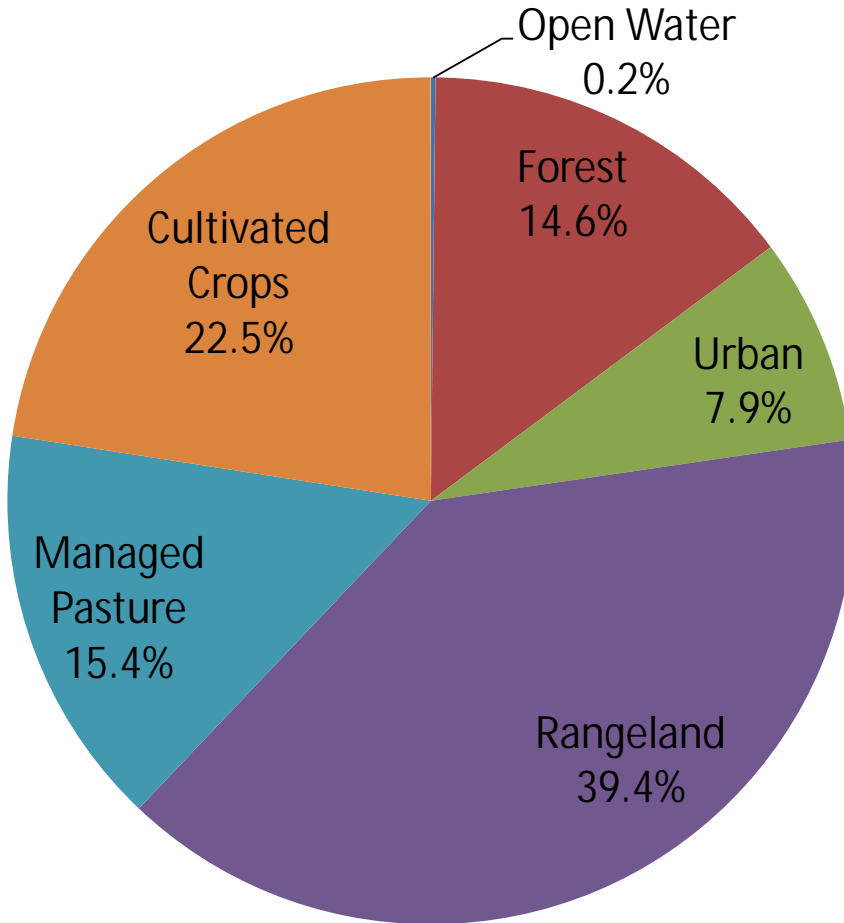
Land Use Definitions

- Open Water - All areas of open water, generally with less than 25% cover of vegetation or soil.
- Urban- Includes areas with a mixture of some constructed materials, and lawn grasses. These areas most commonly include residential and commercial developments.
- Forest - Areas dominated by trees generally greater than 15 feet tall, and greater than 50% of total vegetation cover, and areas adjacent to streams, creeks and/or rivers.

Land Use Definitions continued

- Rangeland - Areas of unmanaged shrubs, grasses, or shrub-grass mixtures
- Managed Pasture - Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.
- Cultivated Crops - Areas used for the production of annual crops, such as corn, soybeans, vegetables, and cotton, and also perennial crops such as orchards. This also includes all land being actively tilled.

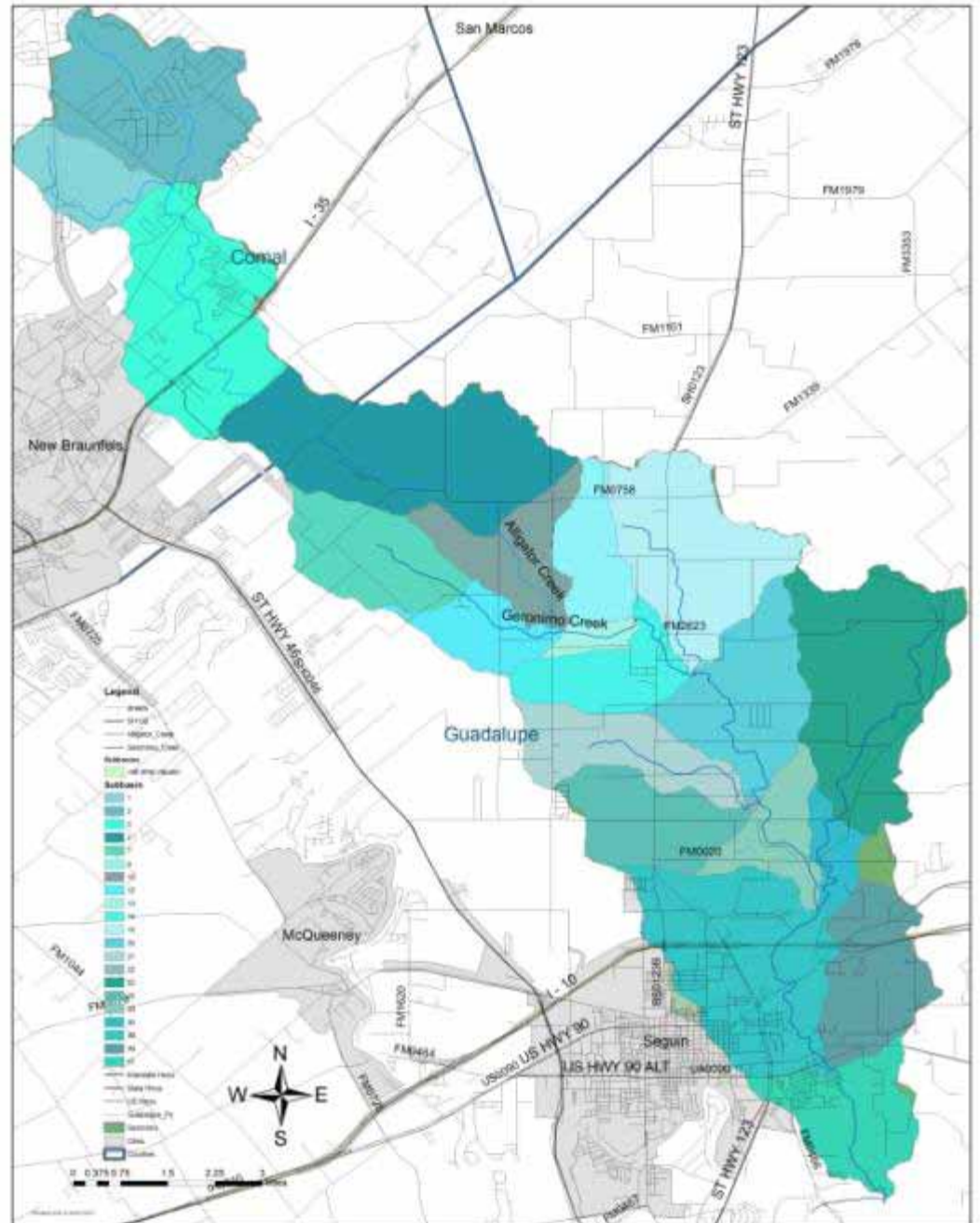
Land Use Percentages



<u>Land Use</u>	<u>Acres</u>
Total	41625
Rangeland	16397
Cultivated Crops	9381
Managed Pasture	6406
Forest	6088
Urban	3282
Open Water	72

Subwatersheds

Geronimo and Alligator Creeks Watershed



Sources of Bacteria and/or Nitrogen

- Feral hogs
- Livestock- cattle, goats, horses
- Wildlife- deer, coyotes, raccoons, skunks, birds, migratory waterfowl, etc.
- Fertilizer application
- Illegal dumping

Sources of Bacteria and Nitrogen with Data

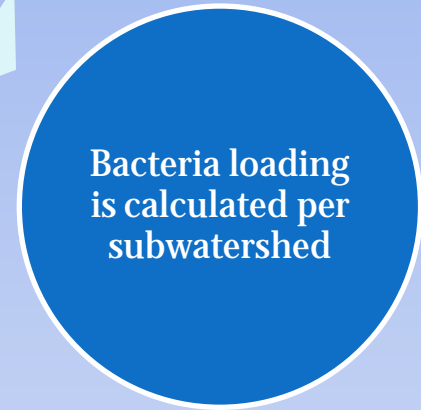
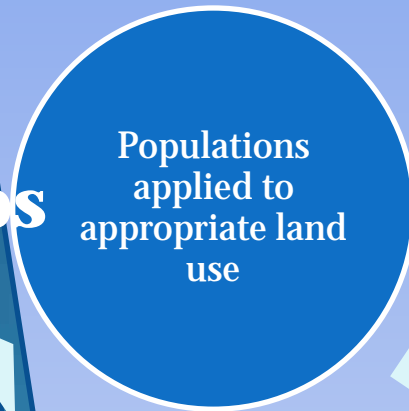
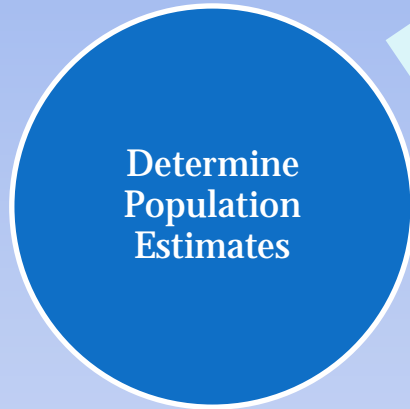
- Feral hogs
- Livestock- cattle, goats, horses
- Deer
- Fertilizer application (cropland)

SELECT - How does this tool work?

- Stakeholders estimate the populations of each source that may be contributing bacteria or nutrients
- Populations are then distributed across the watershed based on land use
- Pollutant loading from each source is estimated based on average amounts produced/released by the sources
- Subwatersheds with greatest potential can be identified

Functions Of Work Groups

Functions of SELECT



Inputs Needed For SELECT

- Land use data
- Potential sources (feral hogs, livestock, wildlife, septic systems)
- Accurate estimates of populations (numbers) of each source

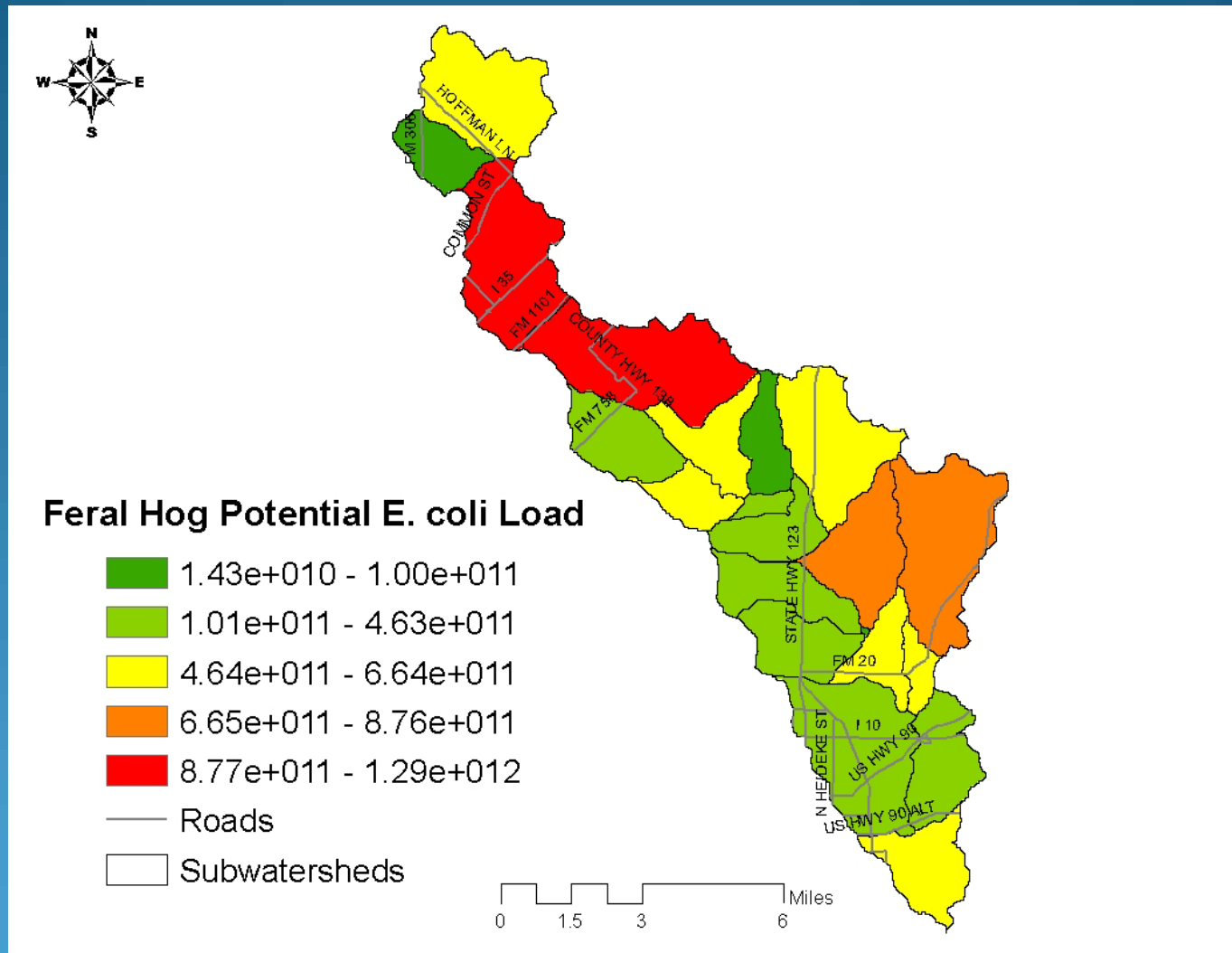
SELECT Inputs

- **Agriculture Work Group**
 - Feral hog populations
 - Livestock: cattle, horse and goat populations
 - Wildlife populations (deer)
- **Urban Work Group**
 - Pet populations
 - Urban runoff
- **Wastewater Work Group**
 - Septic systems
 - WWTF data

Feral Hogs

- The Work Group chose to:
 - Distribute feral hogs to all land uses except for urban and open water
 - Concentrate populations to riparian corridors
 - 25 animals per square mile (1 animal per 26 acres)
- Estimated watershed population: 1626

Daily Potential *E. coli* loads resulting from Feral Hogs



Cattle Population Estimates

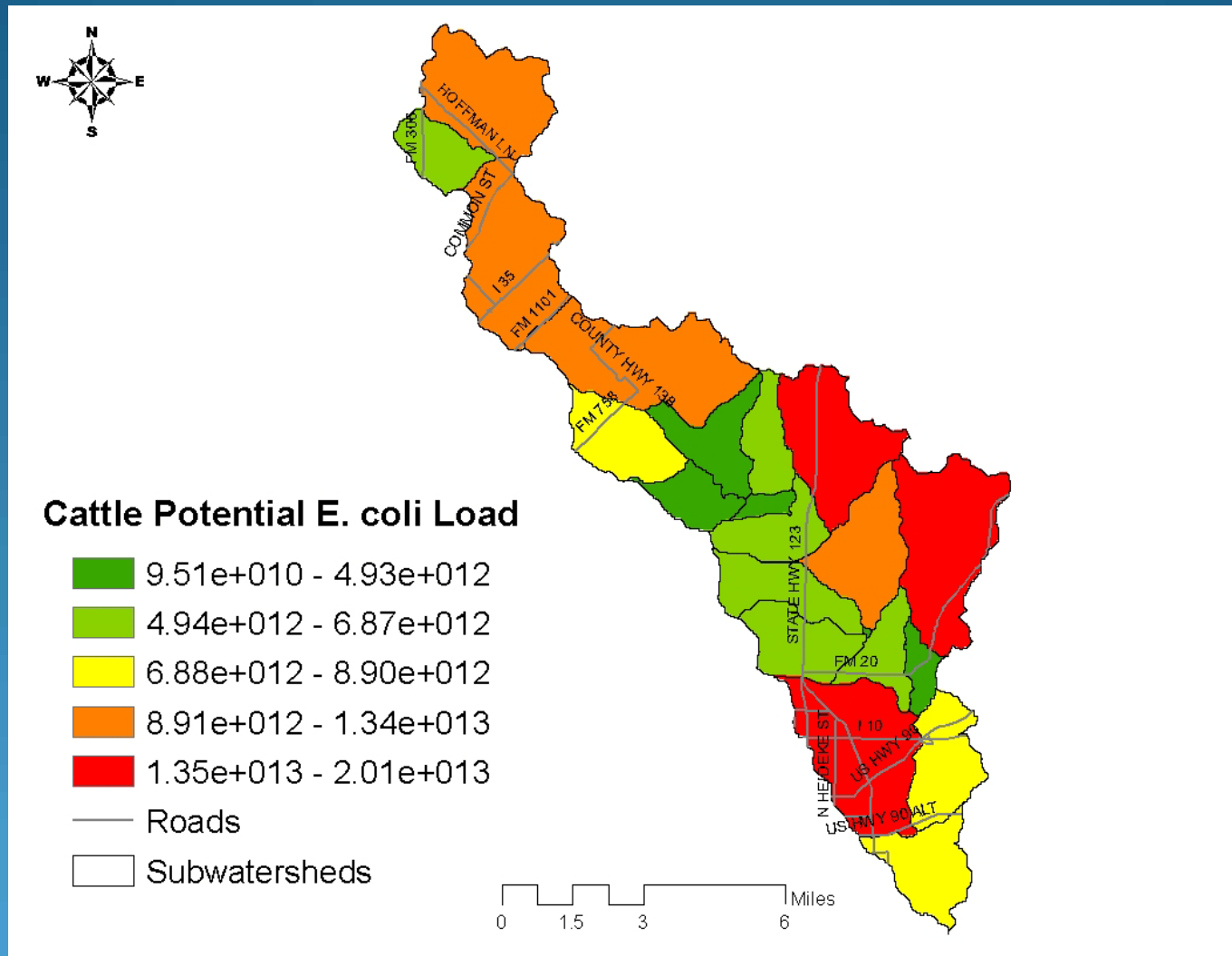
- Option 1: Density
 - Distribute cattle to appropriate land use categories (rangeland, forest)
 - Allocate 10 acres per head of cattle, based upon discussions with local NRCS and CEAs
 - Estimated population for the watershed is 2,248
- Option 2: NASS Population
 - USDA National Agricultural Statistics Service data
 - Take county populations and distribute to appropriate land uses
 - Estimated population for the watershed is 1,785

Cattle

- The Work Group chose:
 - Option 1: Based on Density
 - Selected 10 acres per animal
 - To distribute cattle to:
 - Rangeland
 - Forest
 - Managed Pasture

- Estimated Watershed Population: 2889

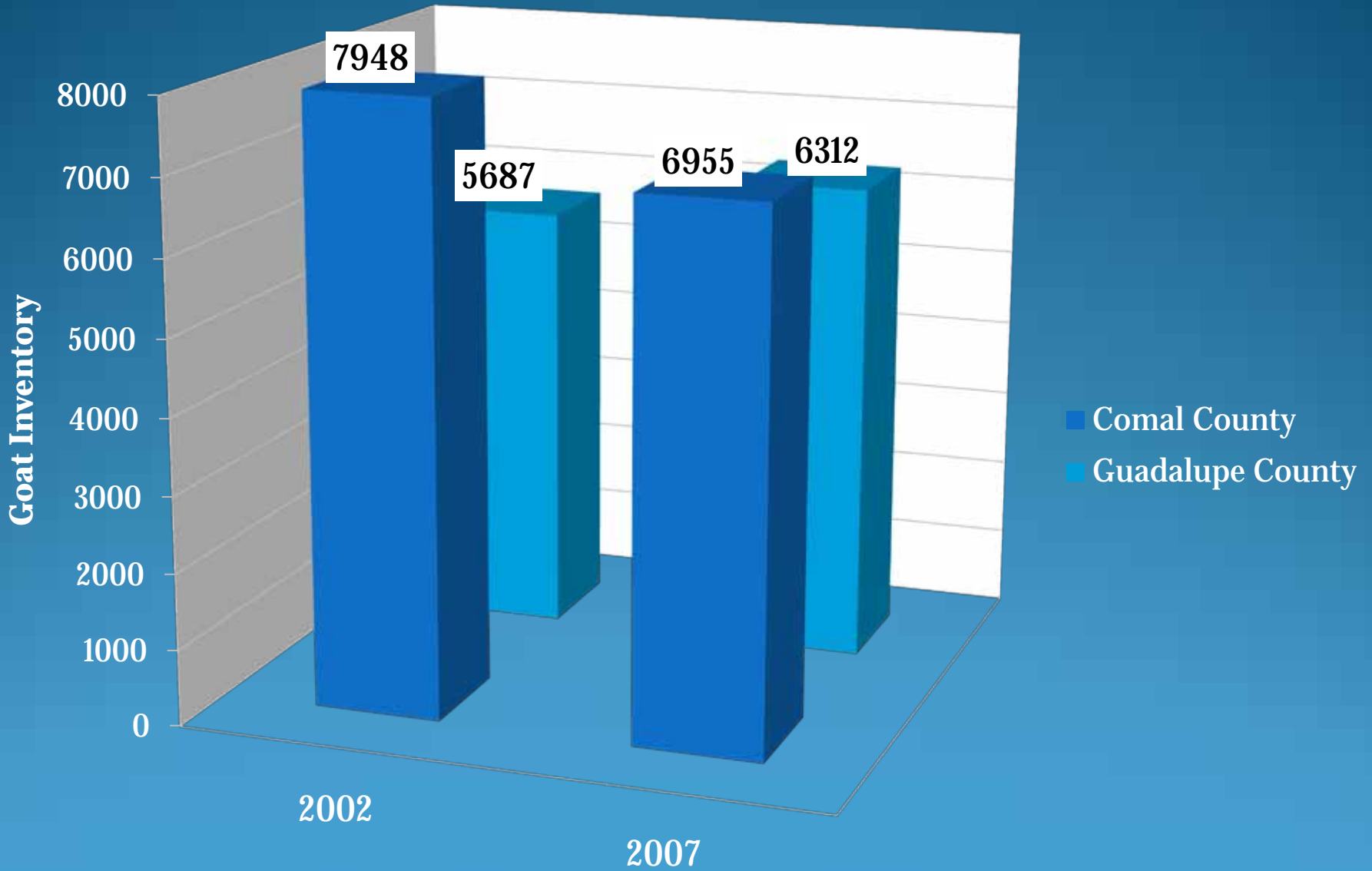
Daily Potential *E. coli* loads resulting from Cattle



Goat Population Estimates

- Option 1: Density
 - Conversations with producers and County Extension Agents estimate the goat population at about 550 in the watershed
- Option 2: NASS Population
 - USDA National Agricultural Statistics Service data
 - Take county populations and distribute to appropriate land uses
 - Estimated population for the watershed is 364

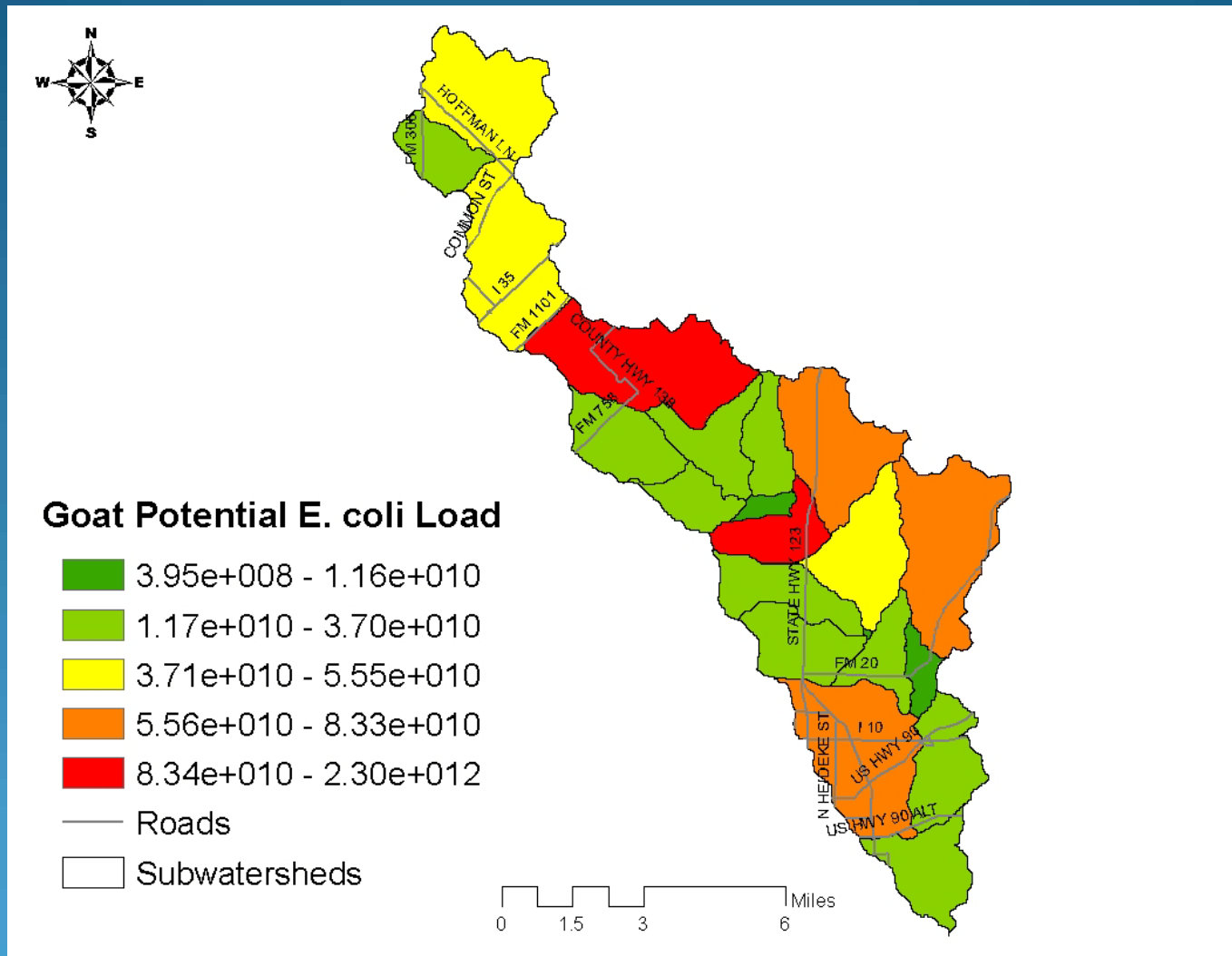
County Goat Populations



Goats

- The Work Group chose to:
 - locate 150 in Subwatershed 4
 - locate 300 in Subwatershed 10
 - 100 evenly distributed around entire watershed
 - Land Use
 - Rangeland
 - Forest
 - Managed Pasture
- Estimated Watershed Population: 550

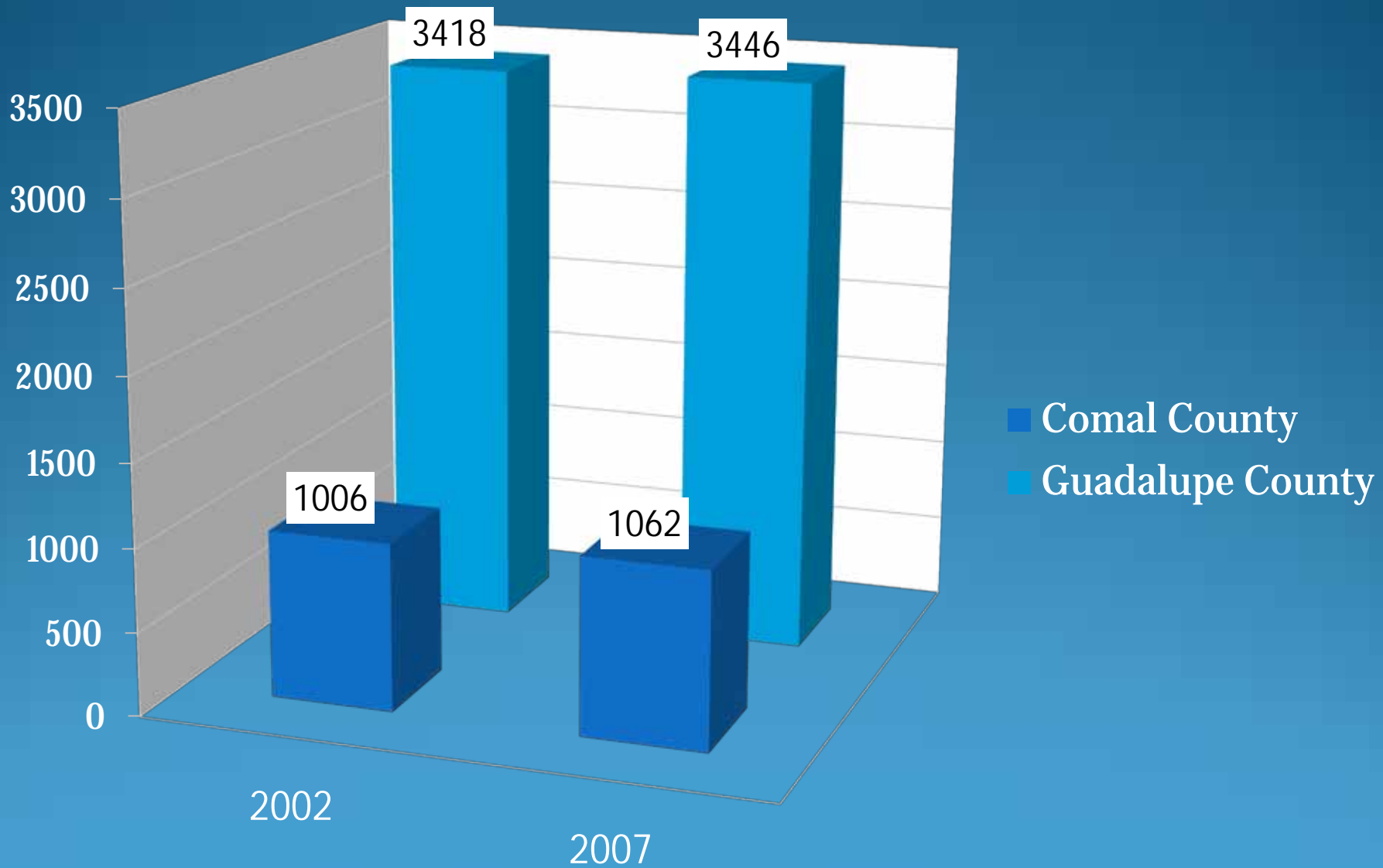
Daily Potential *E. coli* loads resulting from Goats



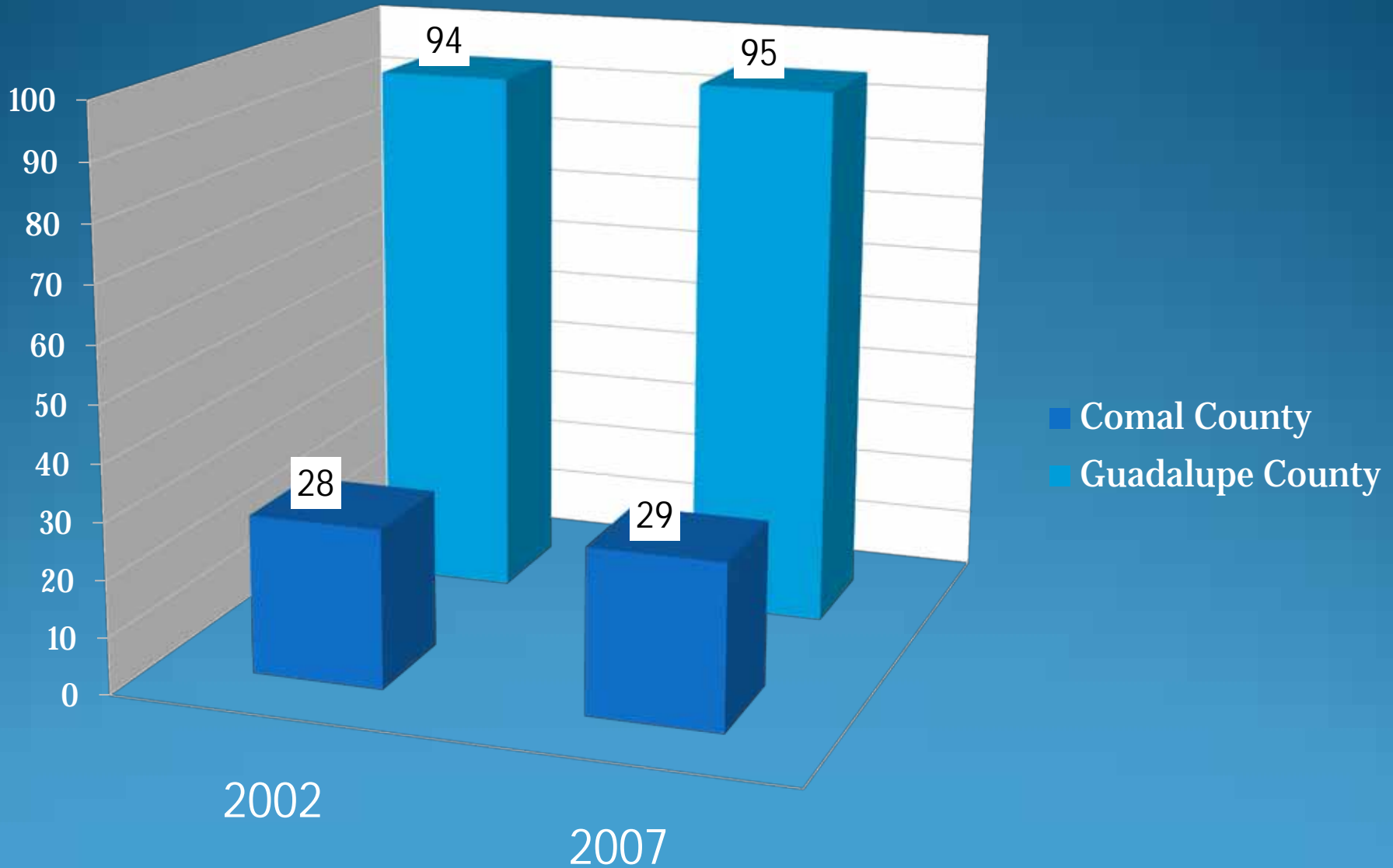
Horses

- Option 1 Density
 - Distribute to appropriate land use categories (rangeland, forest)
 - Estimated population for the watershed would be based on a selected density
- Option 2 NASS Population
 - USDA National Agricultural Statistics Service data
 - Take county populations and distribute to appropriate land uses
 - Estimated population for the watershed is 124

Horses in Counties



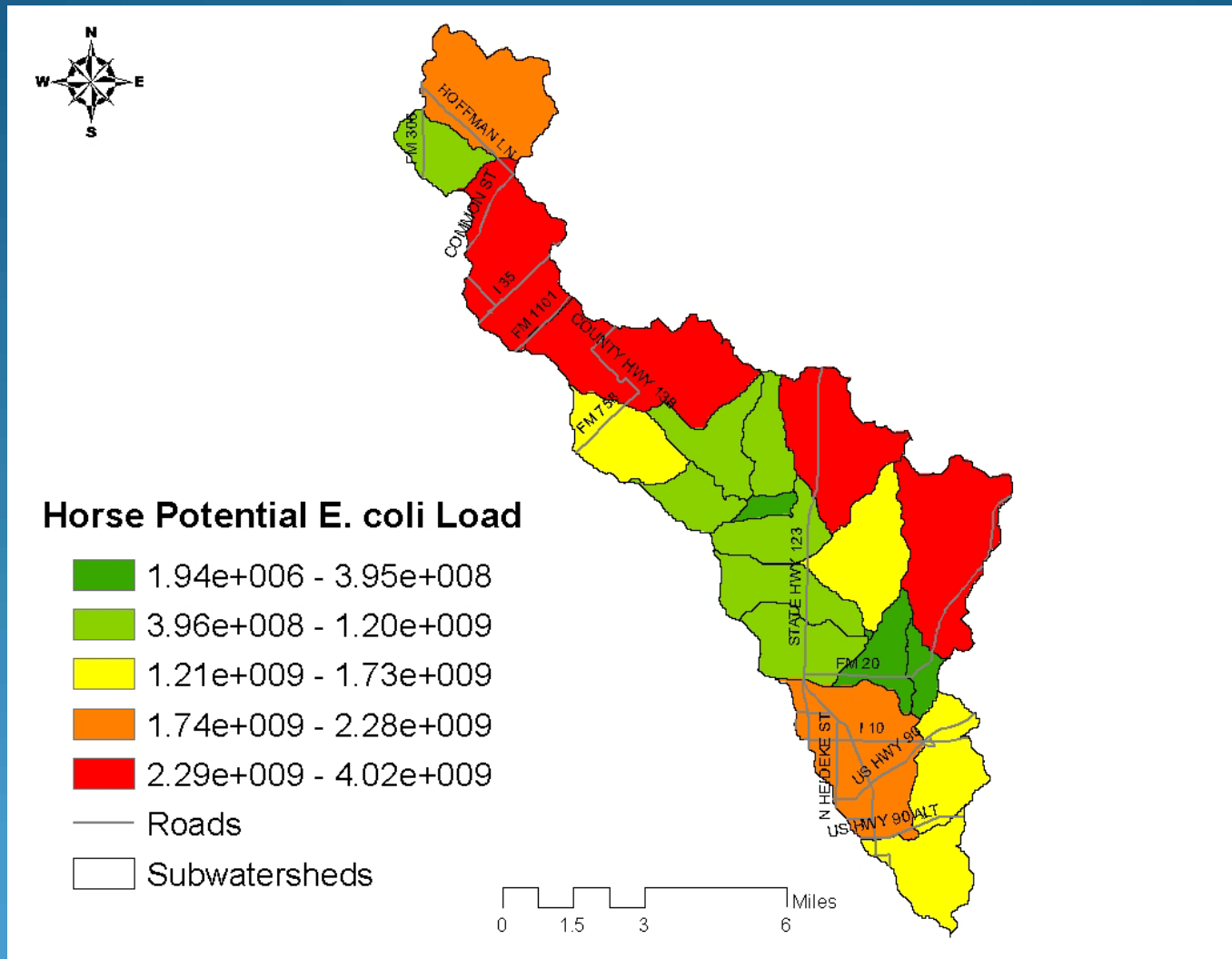
Horses in Watershed



Horses

- The Work Group chose Option 2:
 - Use the NASS population as the basis for the estimate for the watershed
 - Results in a density of 132 acres per animal
 - Distribute horses to:
 - Rangeland
- Estimated Watershed Population: 124

Daily Potential *E. coli* loads resulting from Horses



Deer Population Estimates

- Estimate was provided by TPWD deer census information (Lockwood, 2008)
- Allocate about 10 acres per deer
 - 2005 to 2008: 99.8 deer, 95.2 deer, 84.7 deer, and 106.7 deer/1000 acres
 - Average is 96.6 deer/1000 acres
- Estimated population for the watershed 2,172
- Distribute deer to appropriate landuse categories

Estimated Whitetail Deer Population

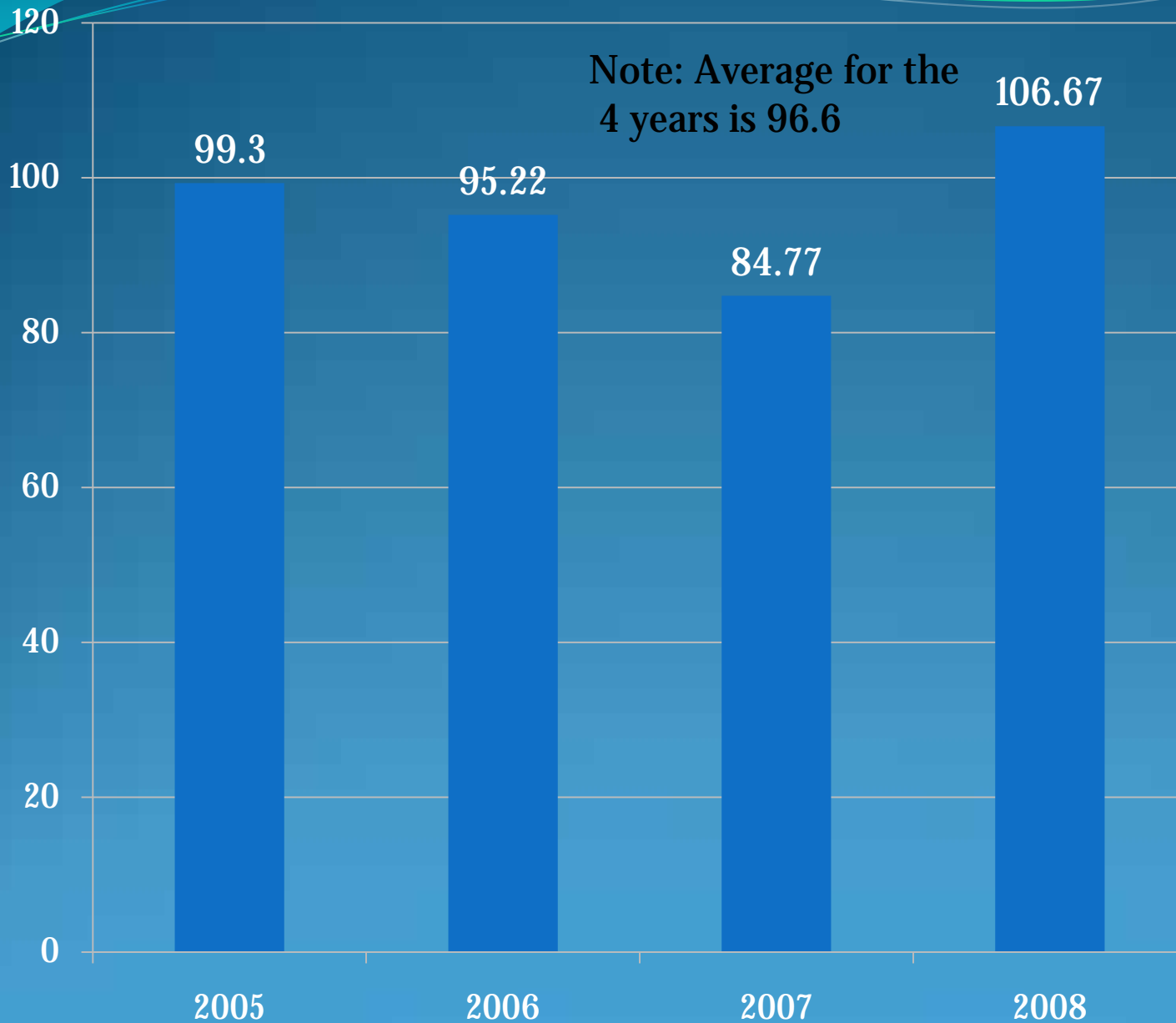
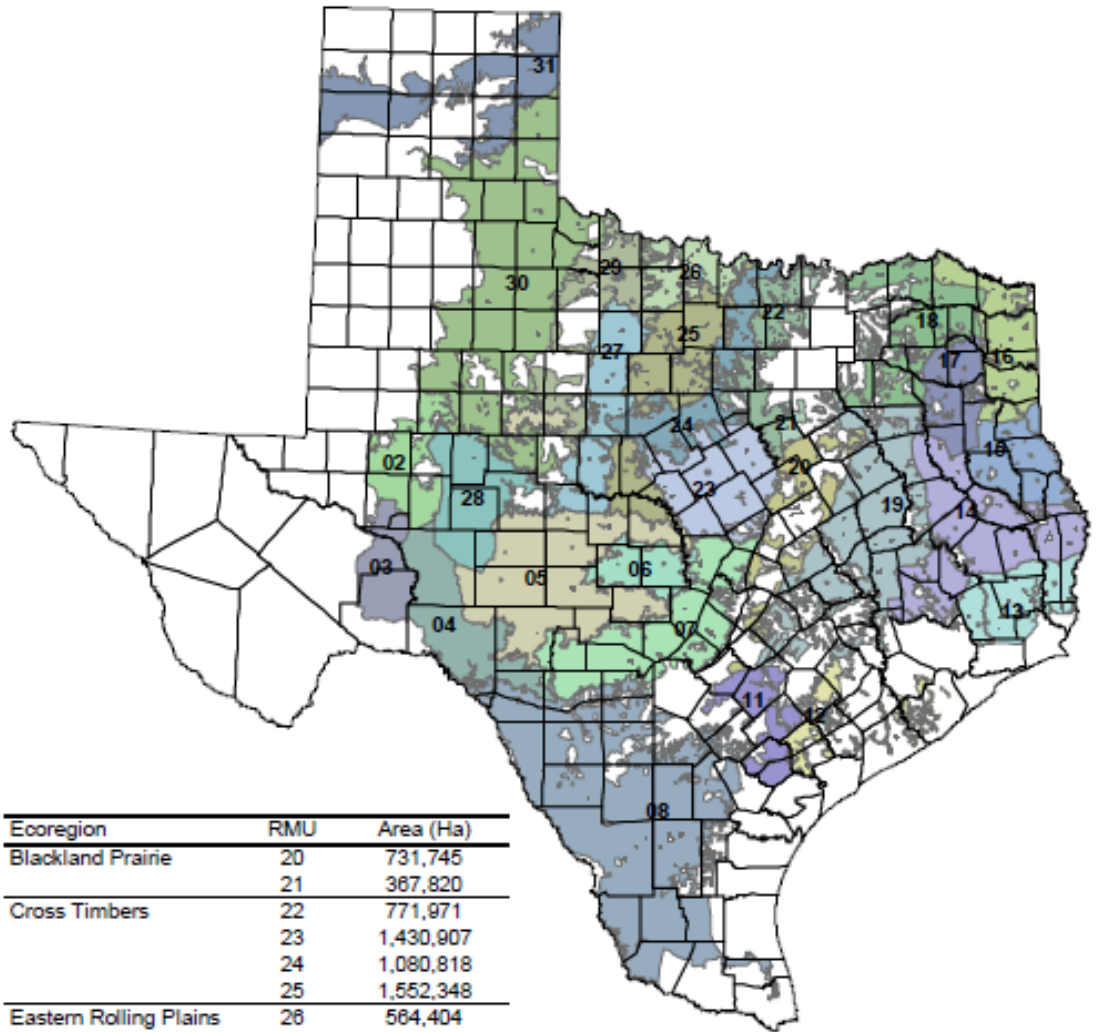


Figure 1. Monitored deer range within the Resource Management Units (RMU) of Texas.

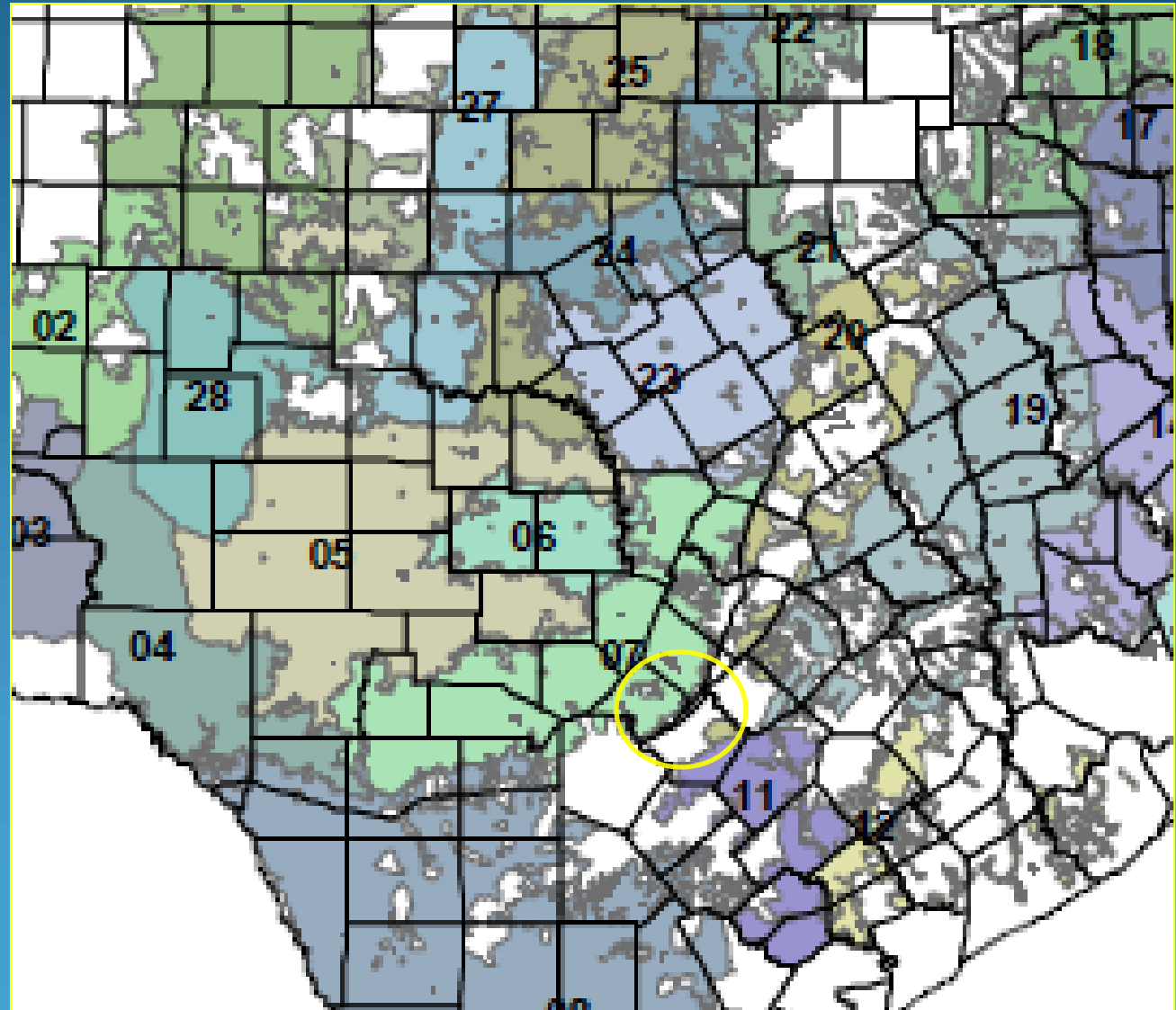


Ecoregion	RMU	Area (Ha)
Blackland Prairie	20	731,745
	21	387,820
Cross Timbers	22	771,971
	23	1,430,907
	24	1,080,818
	25	1,552,348
Eastern Rolling Plains	26	564,404
	27	1,162,939
	29	1,091,385
Edwards Plateau	4	1,308,326
	5	2,807,841
	6	583,685
	7	1,909,010
	28	1,248,008
Pineywoods	13	949,342
	14	1,755,050
	15	882,622
	16	1,056,147
	17	735,592
	18	1,290,491

Ecoregion	RMU	Area (Ha)
Post Oak Savannah	11	690,618
	12	475,323
	18	1,290,491
	19	2,528,747
South Texas Plains	8	5,255,676
Southern High Plains	2	810,505
TransPecos	3	693,080
Western Rolling Plains	30	4,223,231
	31	1,622,158
Total		39,557,788

Monitored Deer ranges within the Resource Management Units of Texas

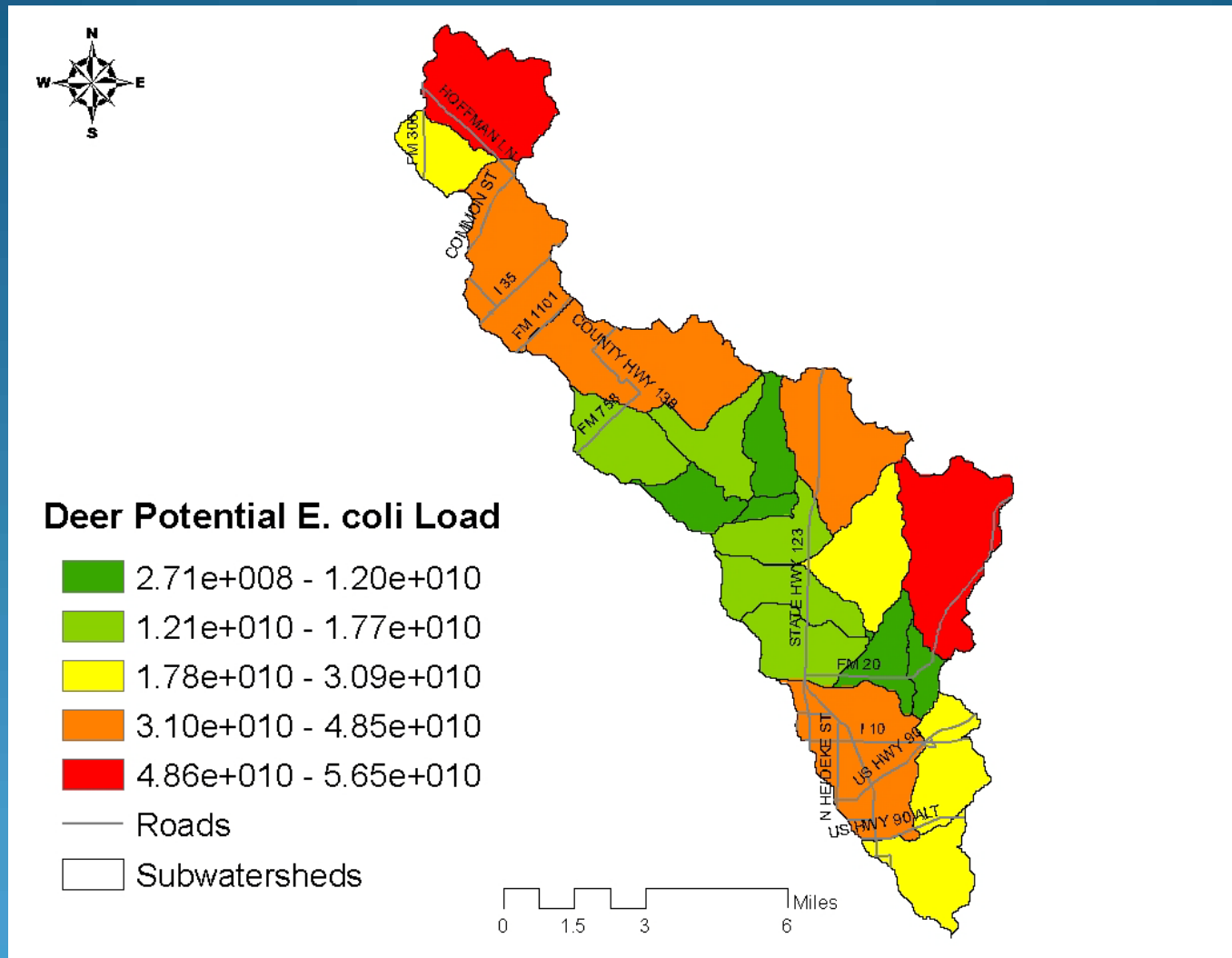
Watershed Area



White-Tailed Deer

- The Work Group chose to:
 - Use the TPWD estimate
 - Average of the previous 4 years
 - Density of 10 acres per animal
 - Distribute them to:
 - Forest
 - Rangeland
- Estimated Watershed Population: 2172

Daily Potential *E. coli* loads resulting from Deer



Next Steps

- May 11th Watershed Tour
- May 11th Partnership Meeting
- Drafting Background materials for the WPP