Geronimo and Alligator Creeks Watershed Partnership
Urban Work Group

March 9, 2010

GBRA

AgriLIFE EXTENSION
Texas A&M System

TSSWCB

Urban Work Group

– The purpose of this Work Group is to discuss the specific causes and sources of nonpoint source pollution stemming from general urban sources.

– This includes residential, commercial, and industrial land uses.

– Sources to be discussed include runoff from paved sources, pets and other non-livestock domestic species.

– Urban growth and development is a topic within the realm of this Work Group.

Geronimo and Alligator Creeks Watershed
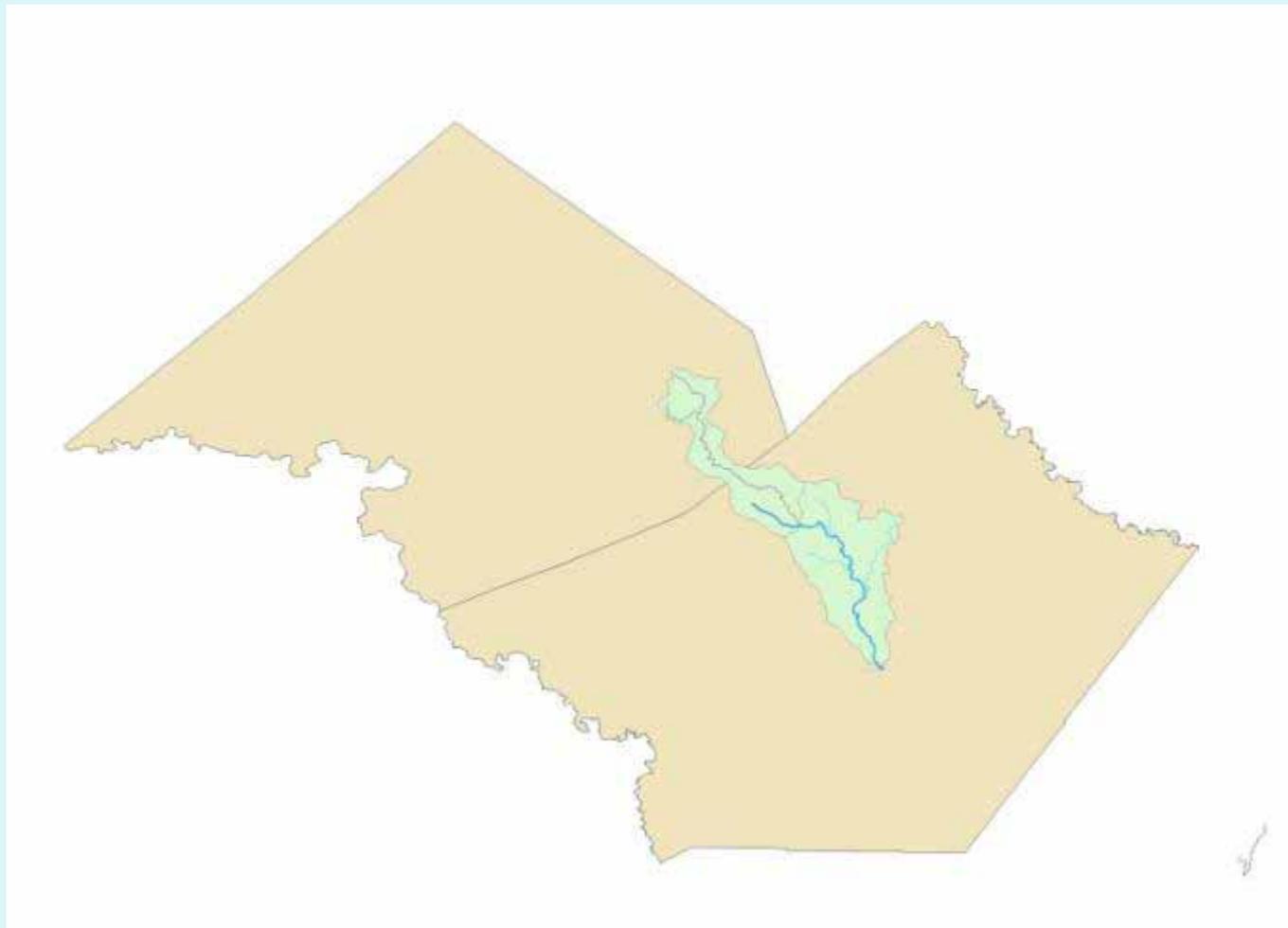
County and Watershed Acreage

Acres

- Comal County Total: 366,238
- Guadalupe Total: 450,261
- Watershed in Comal County: 7,341
- Watershed in Guadalupe County: 34,283

County and Watershed Percentages

– **Percent of Comal County in Watershed** 2%

– **Percent of Guadalupe County in Watershed** 7.6%

– **Percent of Watershed in Comal County** 17.6%

– **Percent of Watershed in Guadalupe County** 82.4%

Watershed Land Use/Land Cover
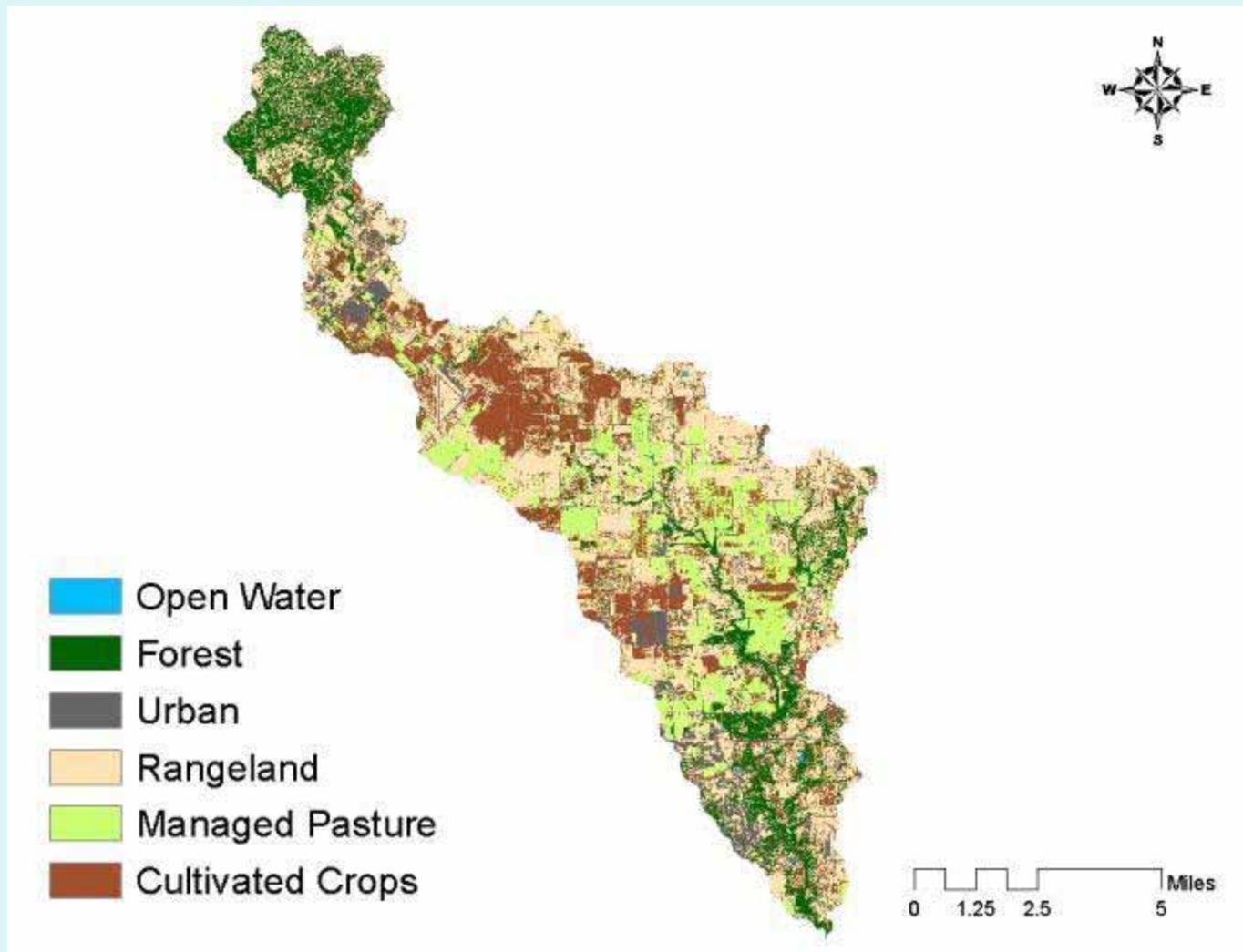
Land Use Definitions

- <u>Open Water</u> - All areas of open water, generally with less than 25% cover of vegetation or soil.

- <u>Urban-</u> Includes areas with a mixture of some constructed materials, and lawn grasses. These areas most commonly include residential and commercial developments.

- <u>Forest</u> - 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

- <u>Rangeland</u> - Areas of unmanaged shrubs, grasses, or shrub-grass mixtures

- <u>Managed Pasture</u> - Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops.

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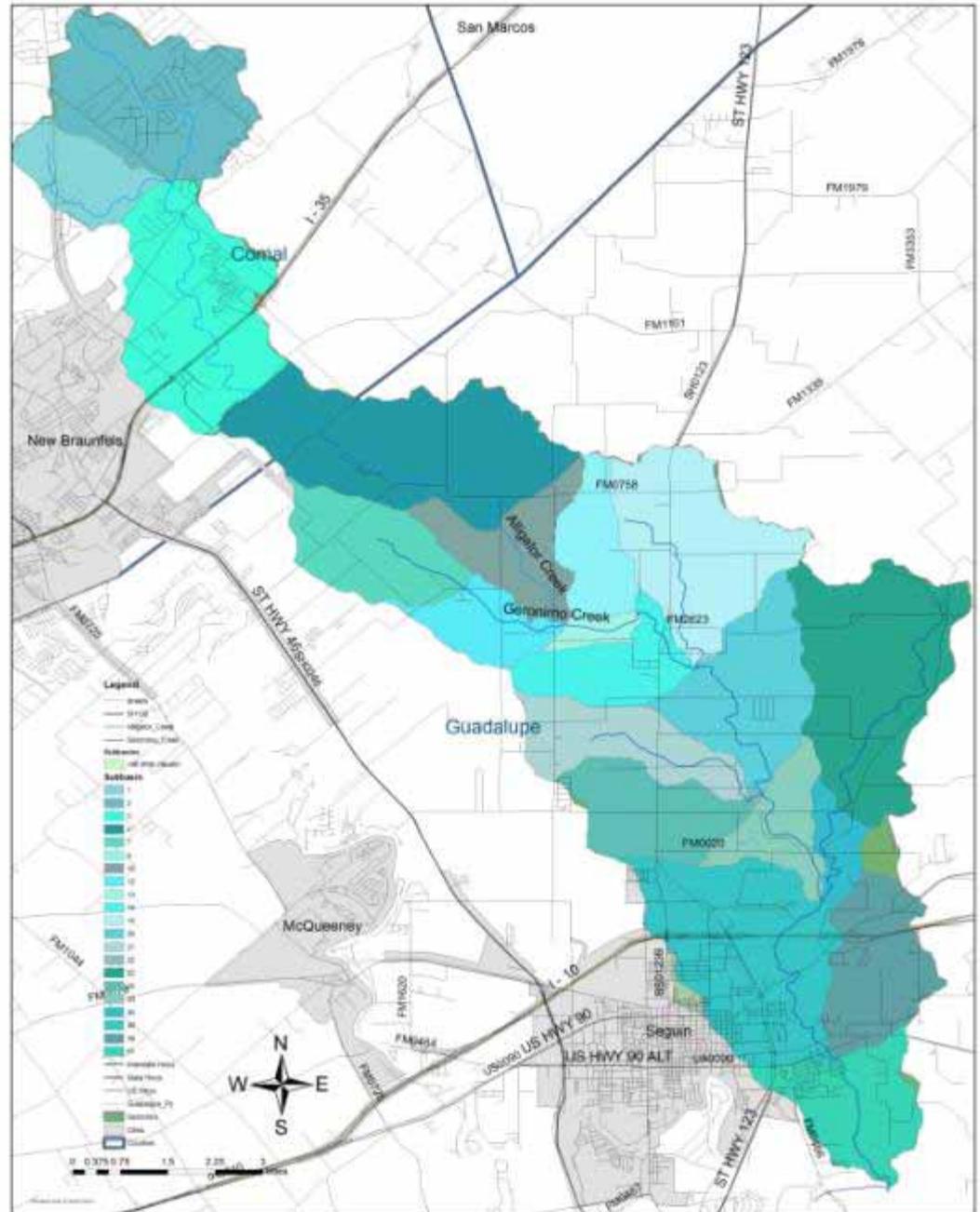
Land Use Percentages
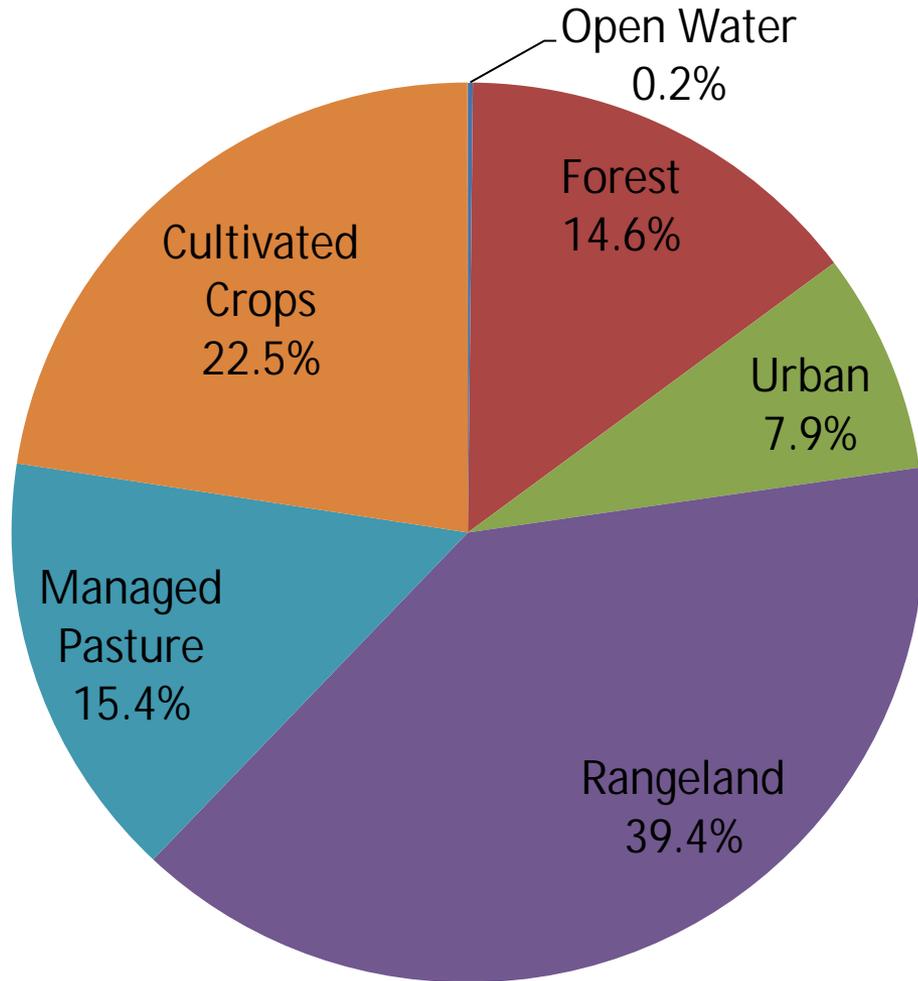
Land Use	Acres
Total	41625
Rangeland	16397
Cultivated Crops	9381
Managed Pasture	6406
Forest	6088
Urban	3282
Open Water	72

Open Water 0.2%
Forest 14.6%
Urban 7.9%
Rangeland 39.4%
Managed Pasture 15.4%
Cultivated Crops 22.5%

Subwatersheds

Geronimo and Alligator Creeks Watershed

City Limits

Geronimo and Alligator Creeks Watershed

Extra Territorial Jurisdictions (ETJ)

Geronimo and Alligator Creeks Watershed

Subdivisions in Guadalupe County

Alligator Creek Watershed

Legend
- county_line
- CORDOVA HEIGHTS - 1972
- DAUER RANCH SUB - 2002
- GERONIMO'S HAVEN - 1986
- OAK SPRINGS - 1985
- THE SUMMIT @ CORDOVA - 1999
- VALLE DEL SOL - 1977
- NEW BRAUNFELS
- SEGUIN
- Geronimo Alligator Creek Watershed
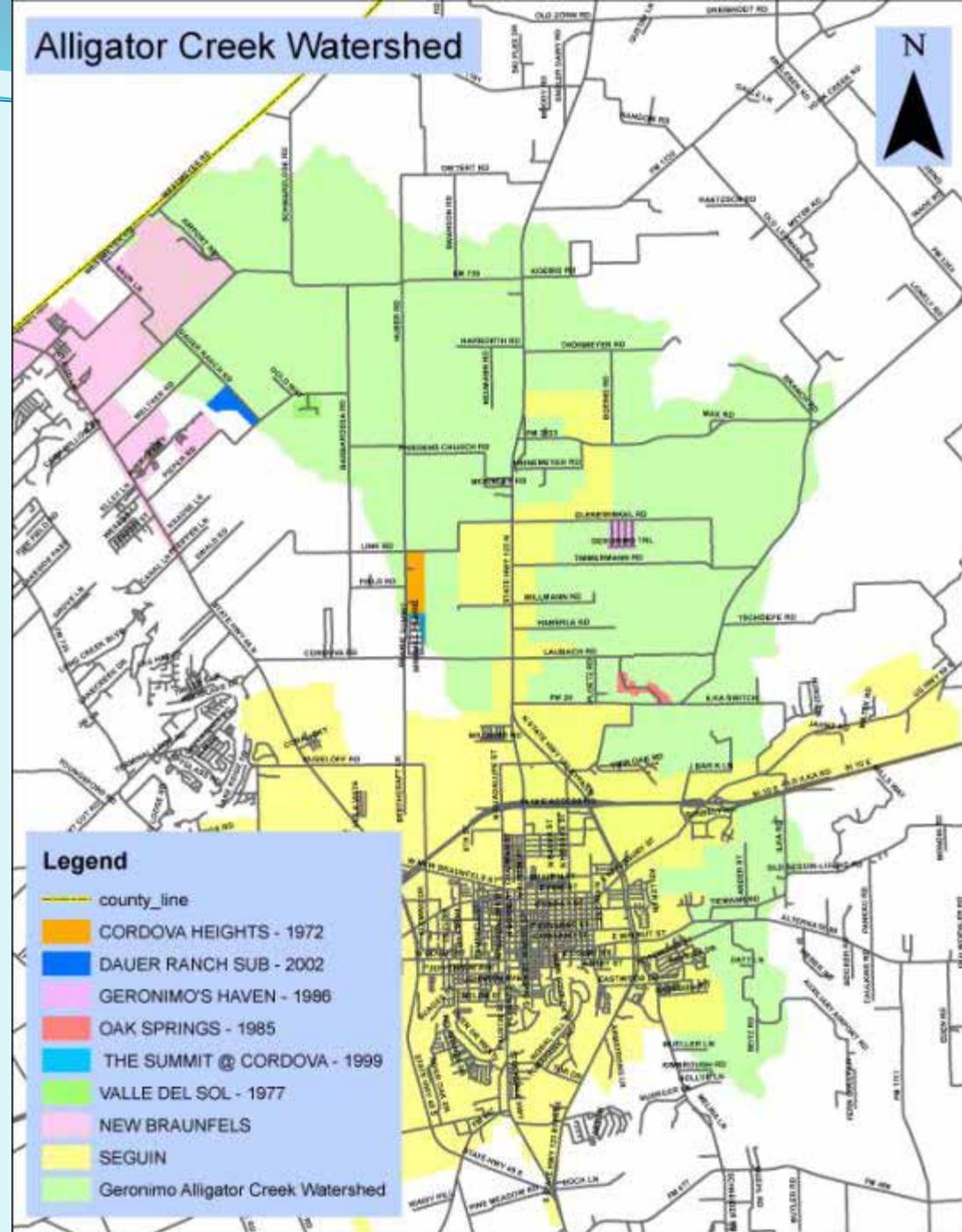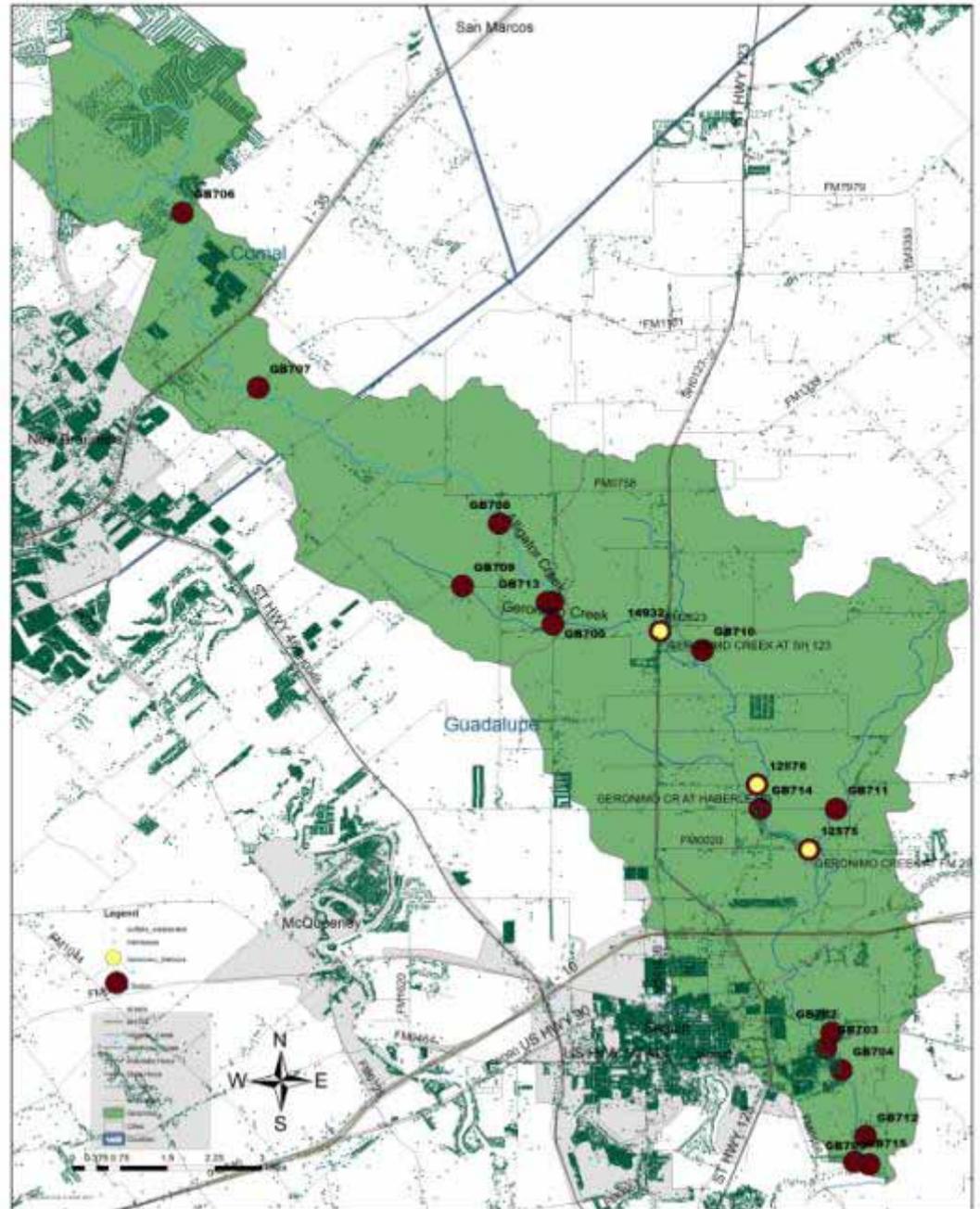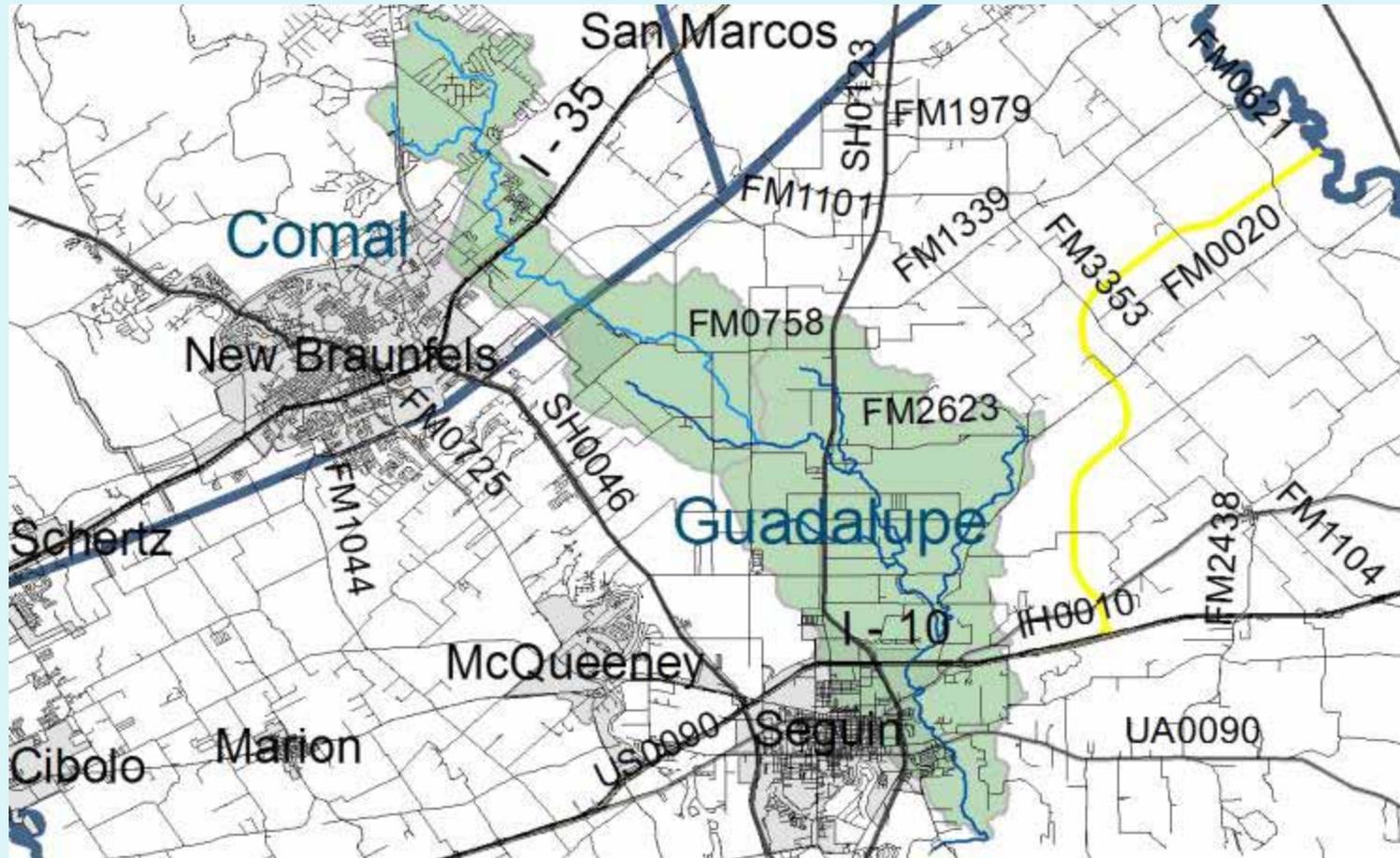
Sampling Stations and 911 Addresses

Geronimo and Alligator Creeks Watershed

State Highway 130

Urban Topics Identified at February Meeting

- Pet Waste
- Major road construction projects crossing the creeks
- Ornamental ponds, fish farm
- Stormwater Management
- Water Quality Ordinances
  - What is currently "on the books?"
- Fertilizer Application
  - Urban applications (homeowners, parks, golf courses, athletic fields)

Sources of Bacteria with Data

- Urban Stormwater/ runoff
- Pets – Dogs

Population Estimates - Dogs

– How do we estimate how many dogs are in the watershed?

– Are there any surveys that can tell us where and how many animals there are that is certified data?

– Yes, American Veterinarian Medical Association has a method for estimating the number of dogs.

Dog Population Estimate Method

– **Method used by the American Veterinary Medical Association**

    Populations within the watershed

    Number of dogs = 0.632 x total number of households in the watershed

2000 Census Estimates for the Watershed

– **Population in watershed in Guadalupe County :** 10,029
– **Population in watershed in Comal County :** 3,125
– **Households in watershed in Comal County:** 1,075
– **Households in watershed in Guadalupe County:** 3,558
– New Braunfels **Population in** 2000 was 36,494 **in July 2008:** 53,547. **Population change since 2000:** +46.7%
– **Seguin Population in** 2000 **was** 22,011 **in July** 2008: 26,394. **Population change since** 2000: +19.9%

Dog Populations

– **Comal County Watershed**

–   0.632 **X** (1,075 **households**) = 680 **Dogs**

– **Guadalupe County Watershed**

–   0.632 **X** (3,558 **households**) = 2,249 **Dogs**

– **Total of** 2,929 Dogs in the watershed

Urban Runoff

– Based on results of a study performed for the City of Austin (City of Austin 1997)

  – Uses rainfall data, % impervious cover, and bacteria concentrations to estimate bacteria loading in stormwater

  – Utilizes a "contributing zone"

    – 100 % contribution within 300 ft.

    – 25% contribution outside 300 ft.

  – Same process used in Plum Creek WPP

Functions Of Work Groups

Functions of SELECT

Populations applied to appropriate landuse

Determine Population Estimates

Bacteria loading is calculated per subwatershed

Useful in directing implementation

Create map of where loading occurs

SELECT

- Estimates loadings of pollutant sources that have been identified by stakeholders
- Makes loading estimates for subwatersheds and entire watershed
- Identifies areas and sources having greatest potential impact on water quality
- Can be used to direct implementation

SELECT Inputs

- Agriculture Work Group
  - Cattle, goat populations
  - Wildlife populations
  - Feral hog populations
- Urban Work Group
  - Pet populations
  - Urban runoff
- Wastewater Work Group
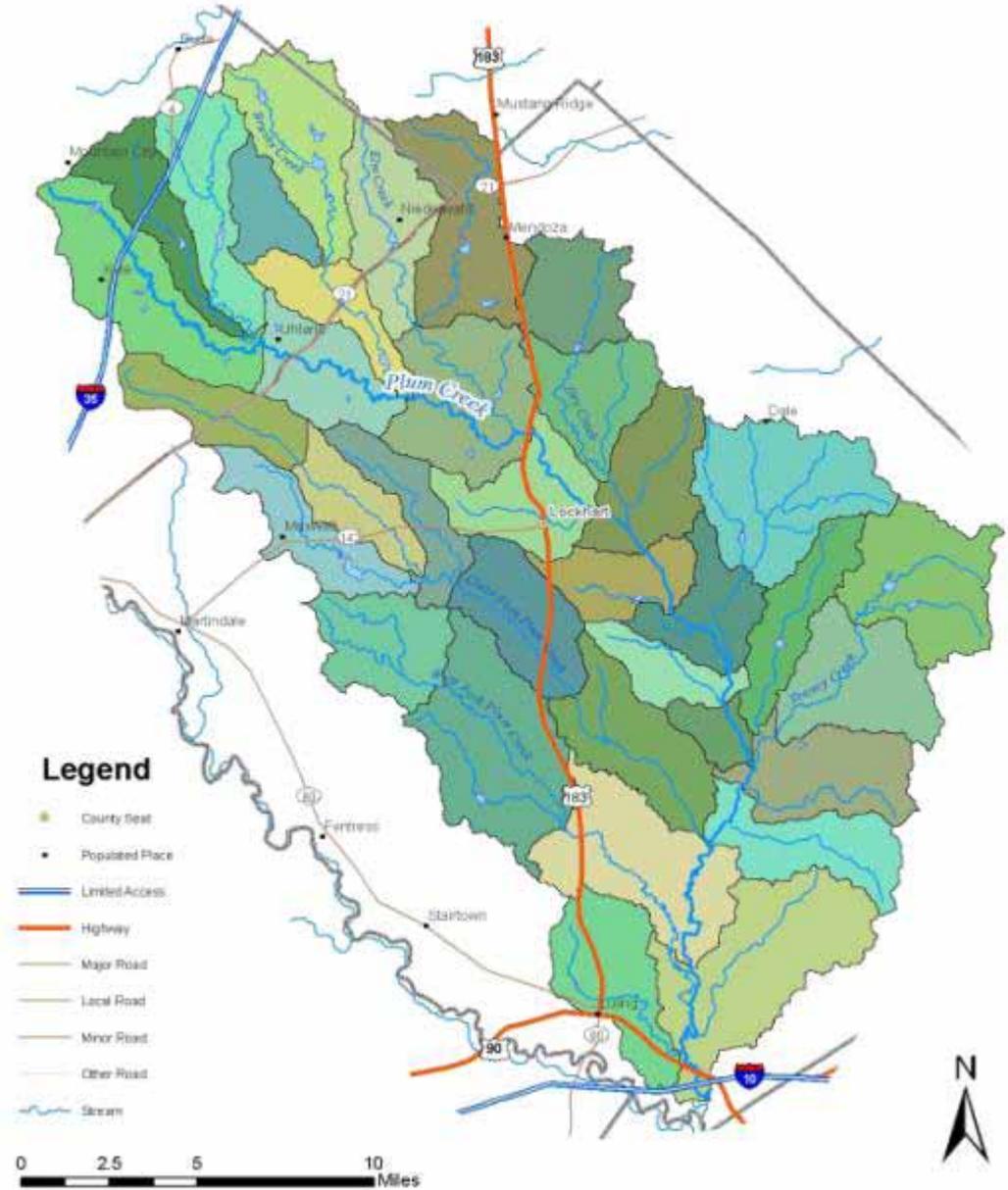 - Septic systems
  - WWTF data

Estimate Loads from Sources

- SELECT
  - Uses landuse data which you have just seen
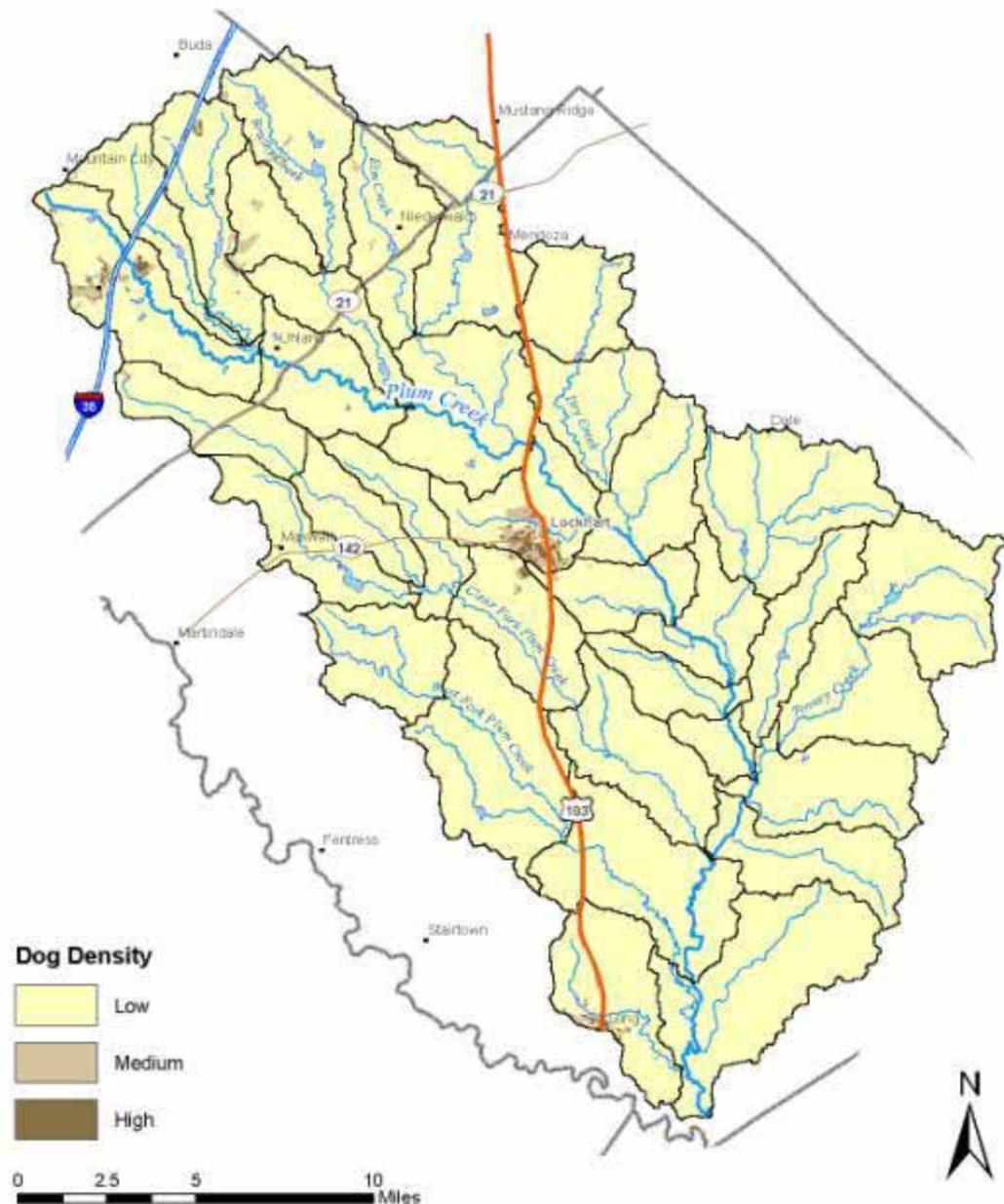 - Need to accurately estimate populations and locations of those populations within the watershed
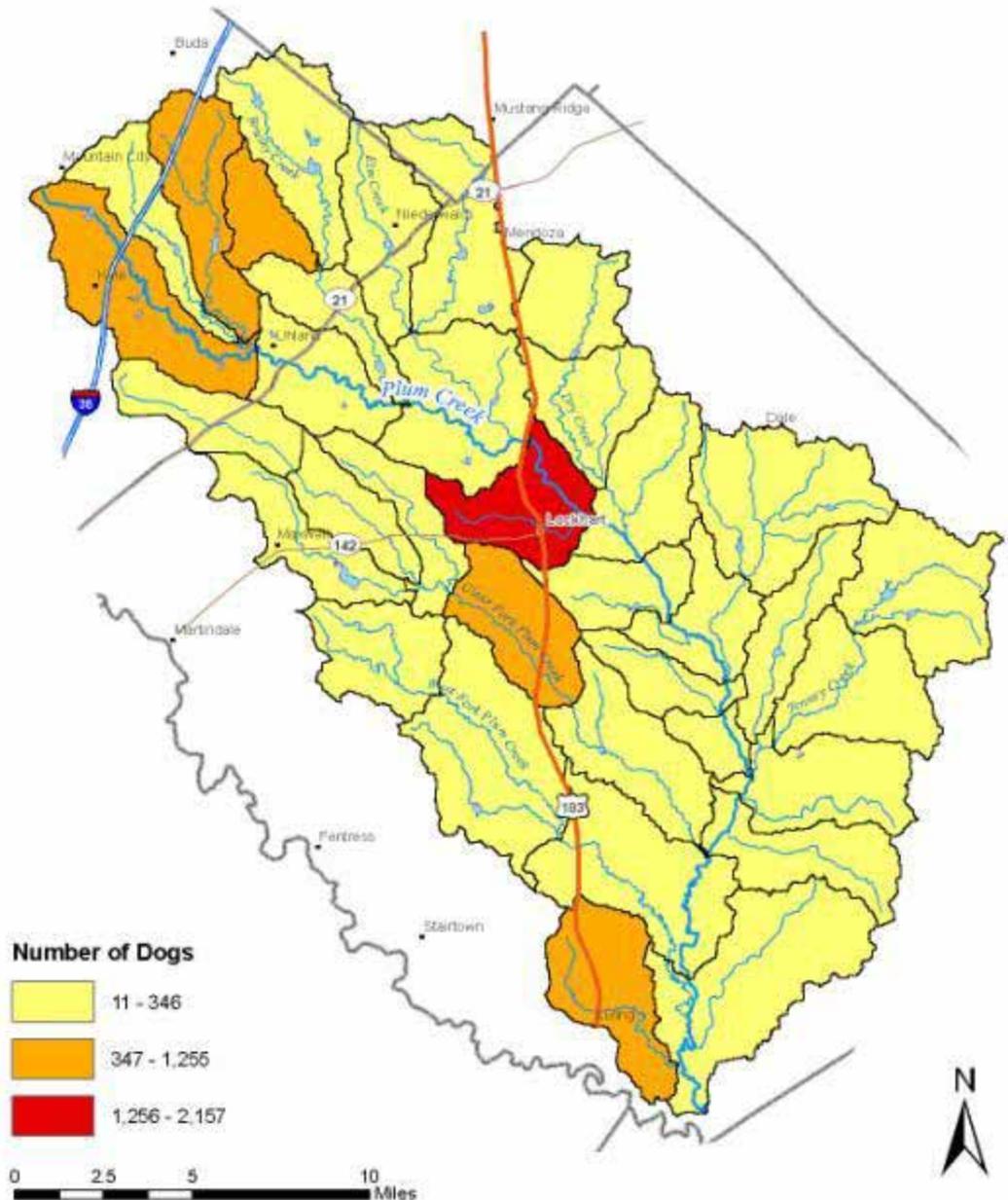
Subwatersheds

Plum Creek Watershed

Legend
- County Seat
- Populated Place
- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road
- Stream

0   2.5   5   10
Miles

Distribute dogs to households based on census data

Dog Population Distribution

Dog Density
- Low
- Medium
- High

0   2.5   5   10 Miles

Dog Population Density

Density determined by sum of dogs in each subwatershed

Number of Dogs

- 11 - 346
- 347 - 1,255
- 1,256 - 2,157

Loading determined from density

EC=#HH*(0.8dogs/HH) *2.5*10^9 org/day

Average Daily Potential *E. coli* Load for Dogs

Billions of CFUs

(yellow)	27 - 865
(orange)	865 - 3,138
(red)	3,138 - 5,393

0   2.5   5   10 Miles

N