

# Gerónimo and Alligator Creeks Watershed Partnership Urban Work Group

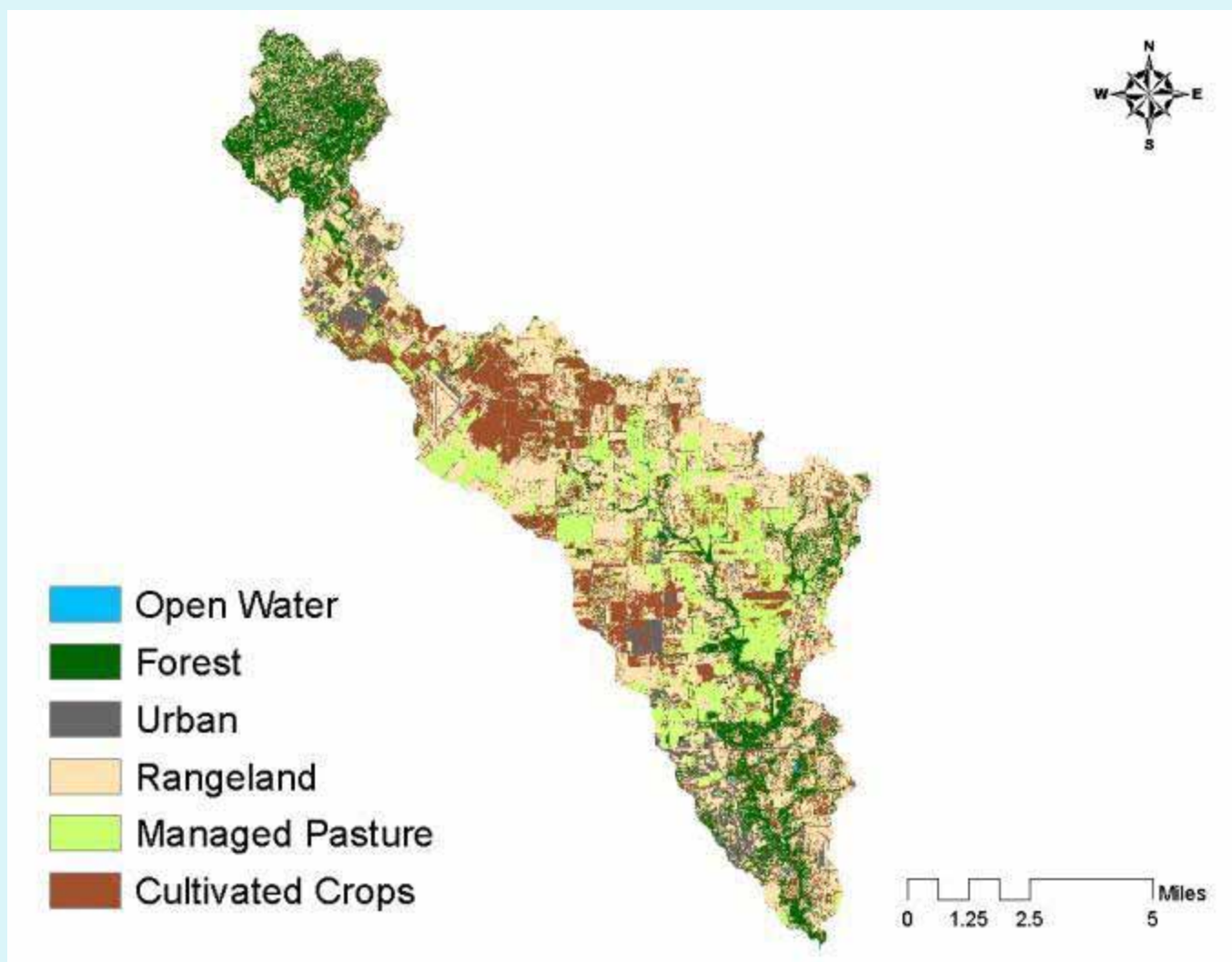
April 13, 2010



# 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 surfaces, pets and other non-livestock domestic species
- Urban growth and development is a topic within the realm of this Work Group

# Watershed Land Use/Land Cover



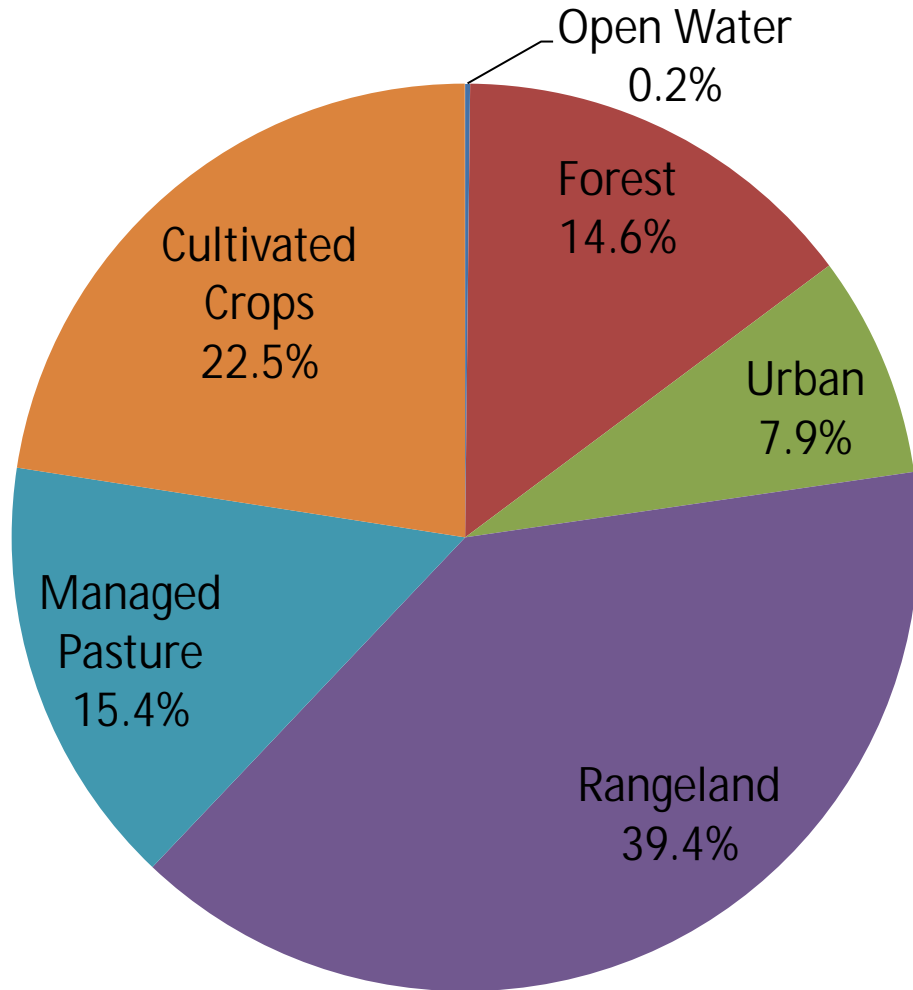
# Land Use Definitions

- 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.

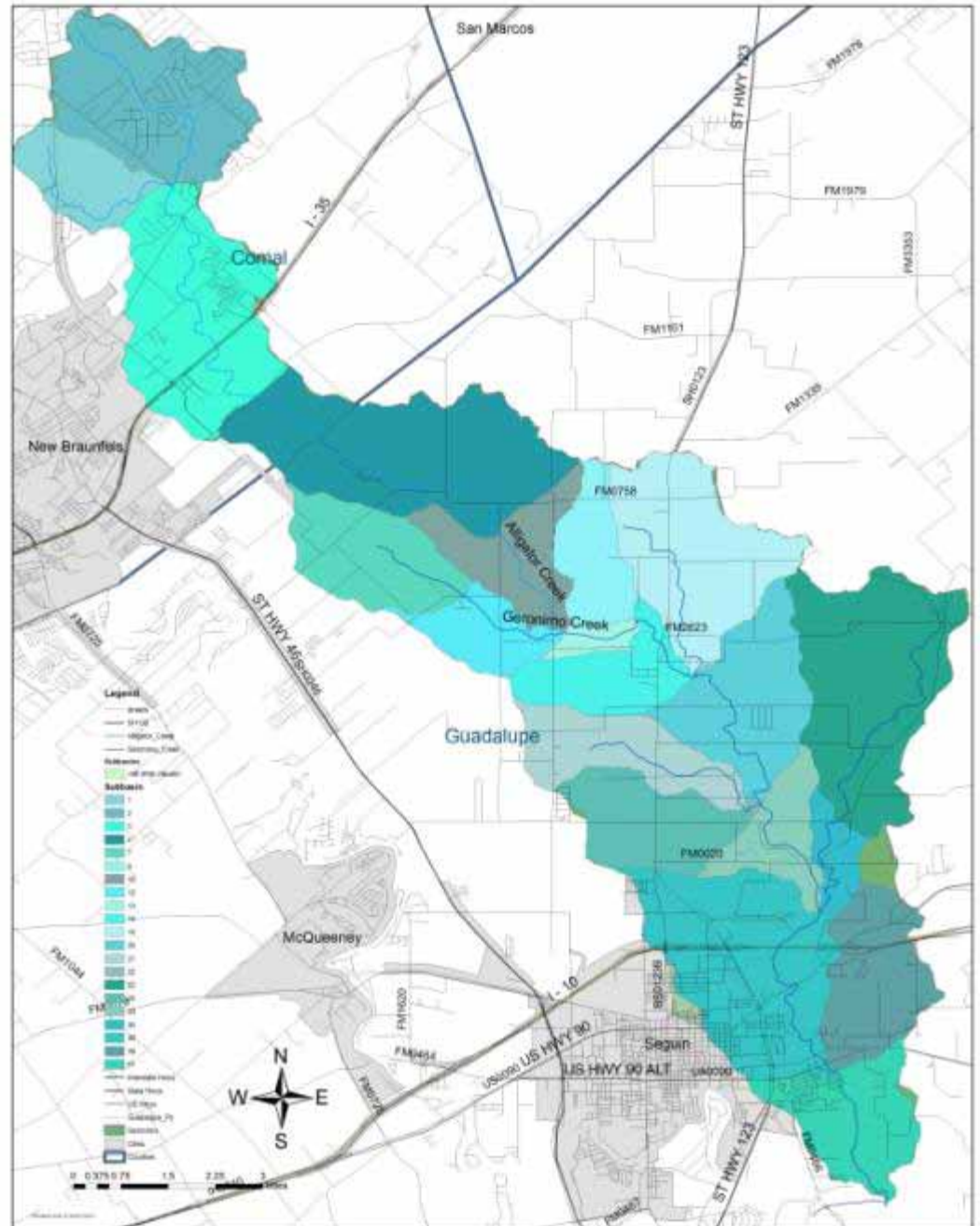
# Land Use Percentages



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

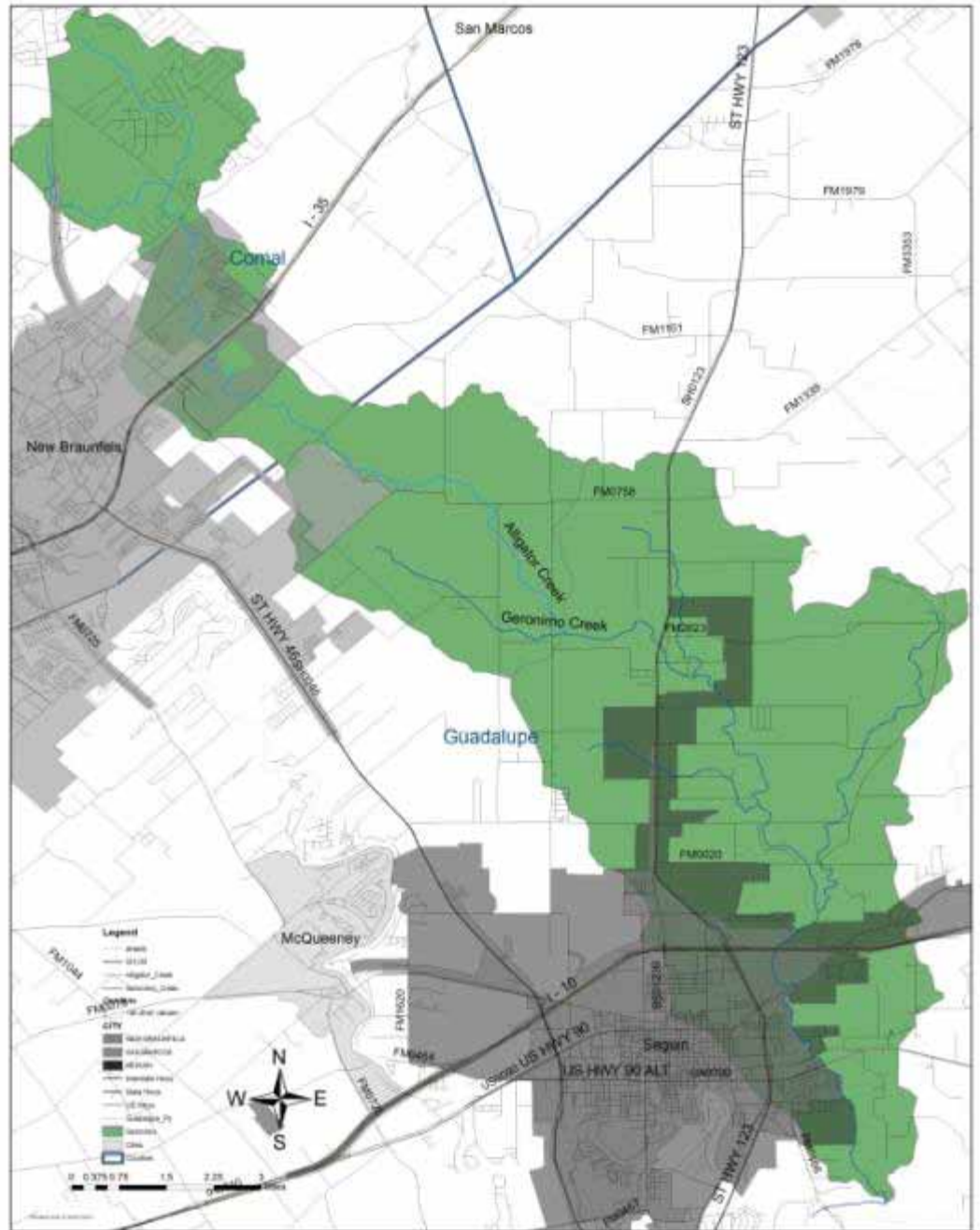
# Subwatersheds

## Geronimo and Alligator Creeks Watershed



# City Limits

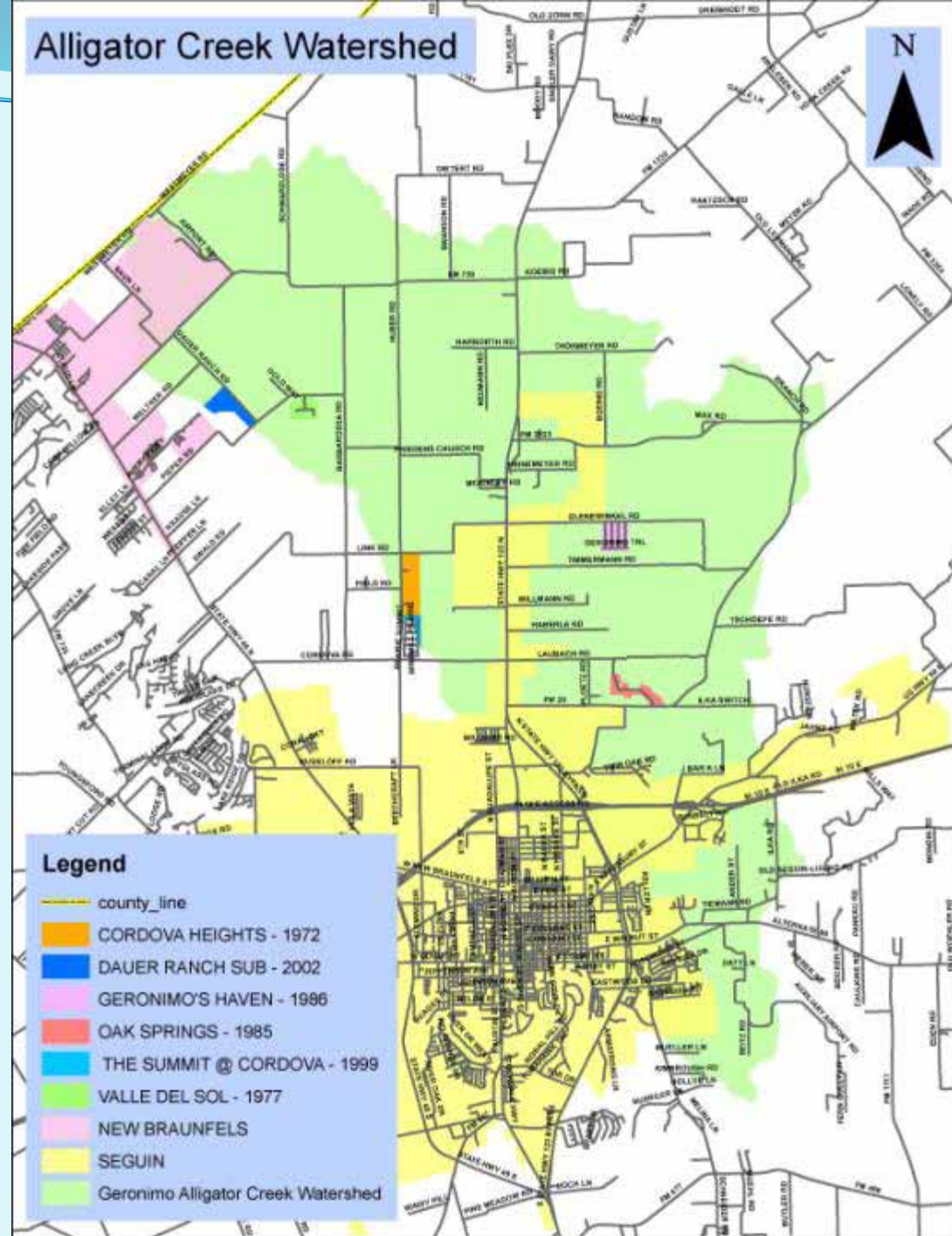
## Geronimo and Alligator Creeks Watershed





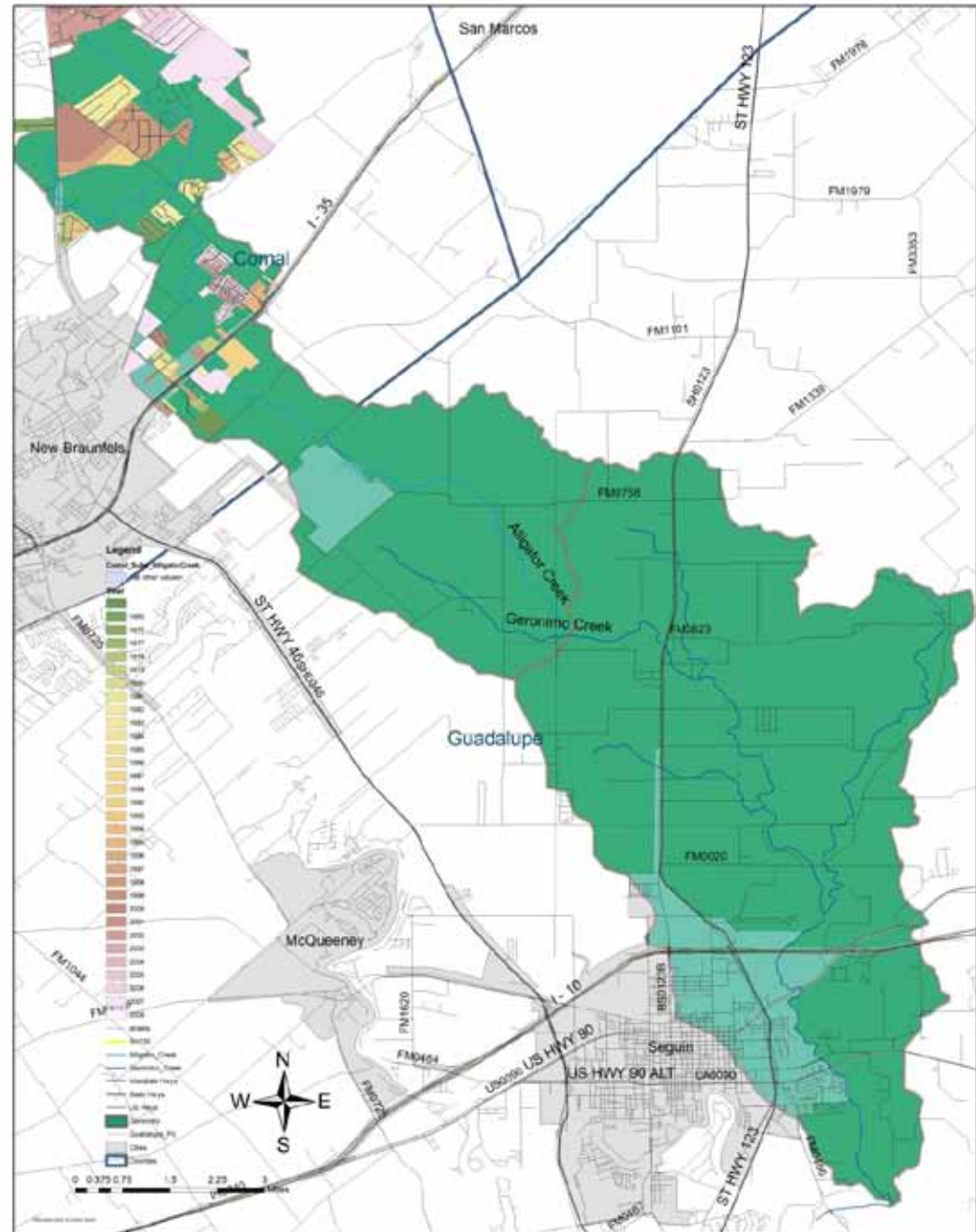


# Subdivisions in Guadalupe County



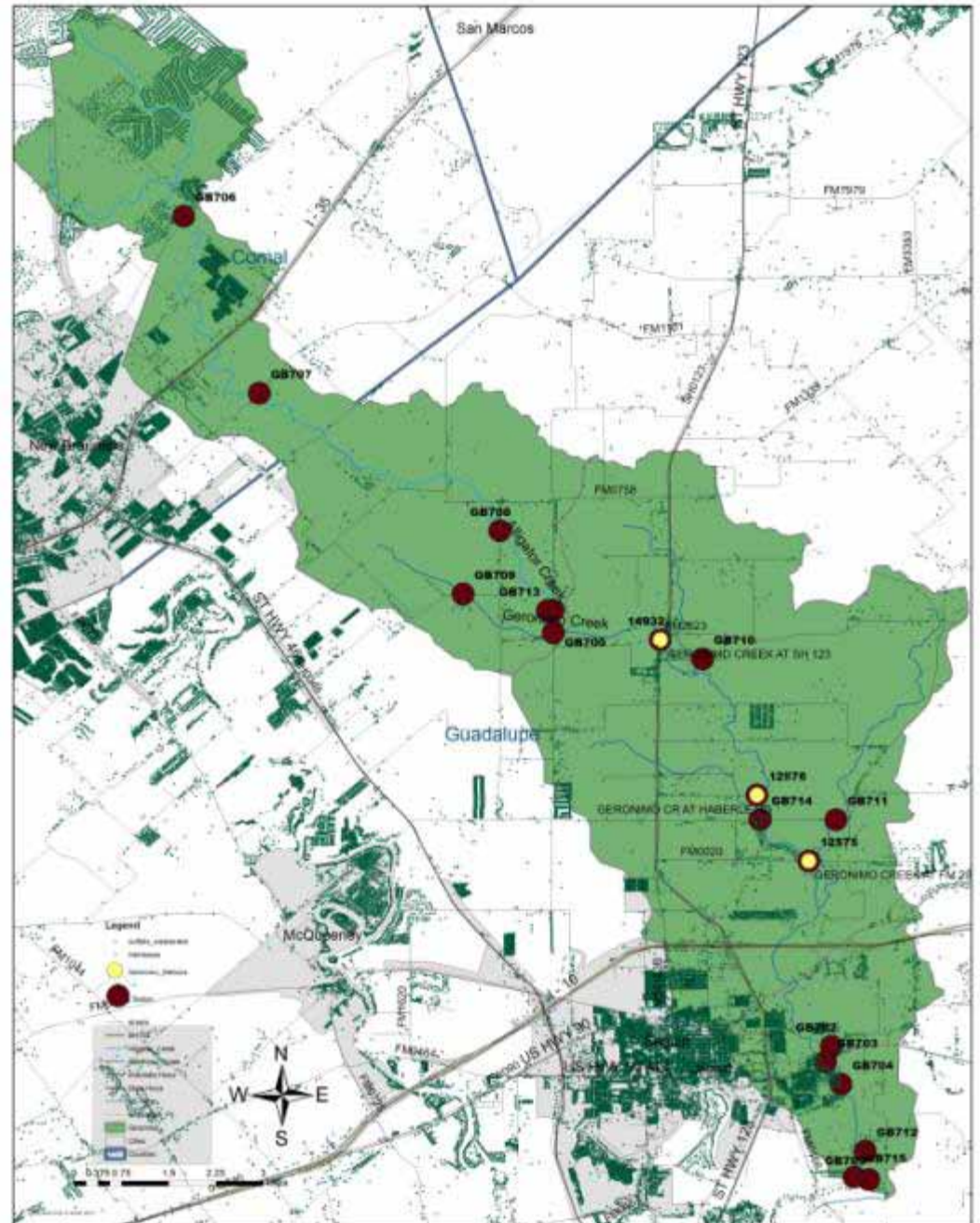
# Subdivisions in Comal County

## Geronimo and Alligator Creeks Watershed Comal County Subdivisions



# Sampling Stations and 911 Addresses

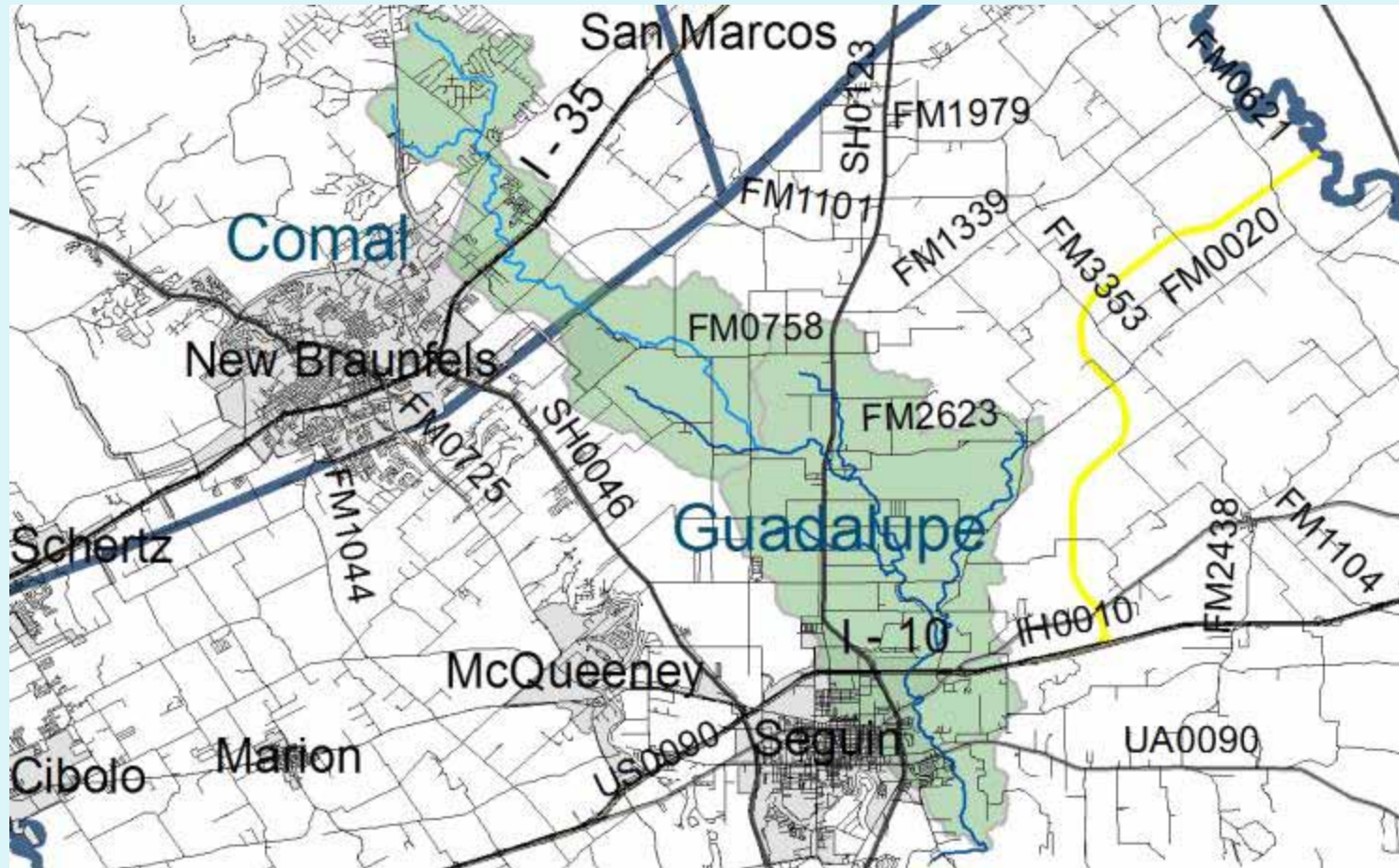
## Geronimo and Alligator Creeks Watershed



# 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%

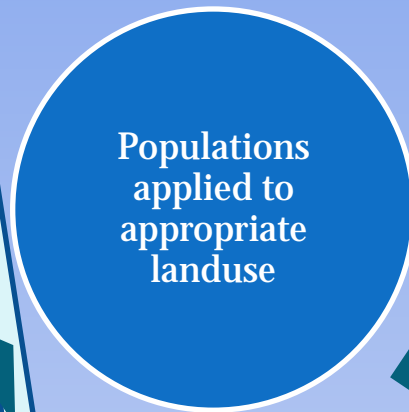
# State Highway 130



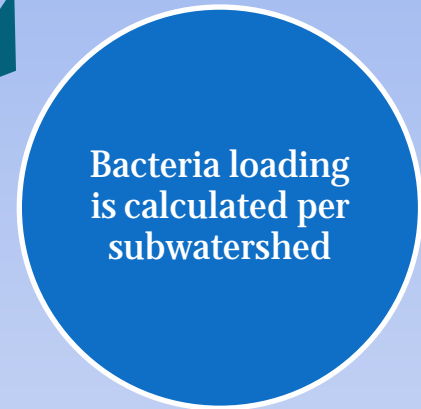
# SELECT - How does this tool work?

- 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 (urban runoff, dogs)
- Accurate estimates of populations (numbers) of each source

# SELECT Inputs

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

# Sources of Bacteria with Data

- **Urban Stormwater/ runoff**
- **Pets – Dogs**

# Population Estimates - Dogs

- How do we estimate how many dogs are in the watershed?
- The American Veterinarian Medical Association has a method for estimating the number of dogs per household.

# Dog Population Research

- Contacted cities of Seguin and New Braunfels and Comal and Guadalupe Counties to get the number of dogs registered annually through Animal Control
- Contacted local vets to get their estimate of the dog populations
- Looked at American Veterinarian Medical Association (AVMA) estimate methods –both national average and state average

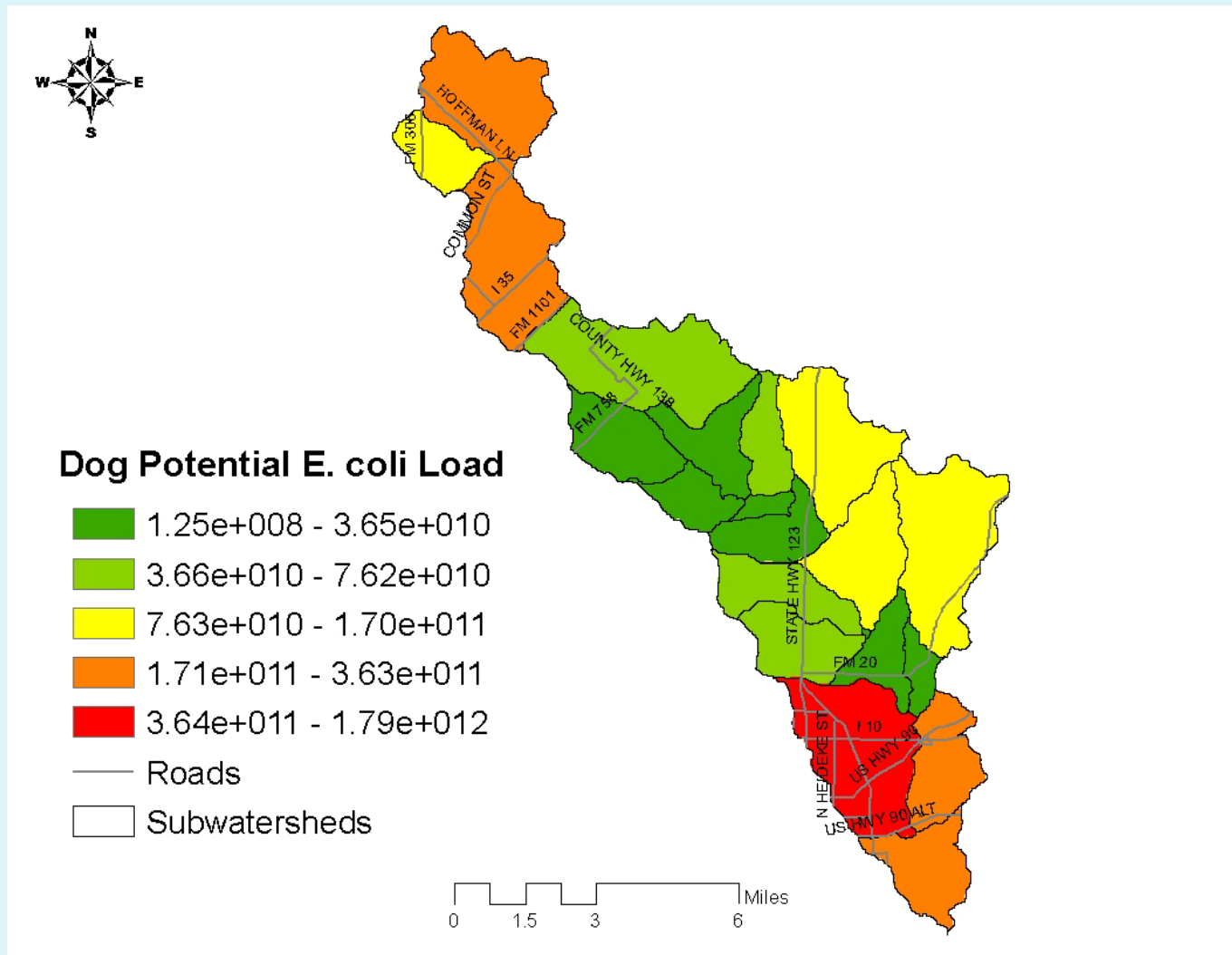
# Dog Population Estimate Method

- **Options**
  - Use the AVMA 2008 National estimate of 0.63 dogs/household
  - Use the AVMA 2002 Texas estimate of 0.8 dogs/household
  - Use a different estimate method
  - Based on input from the March meeting, the 0.8 dog/household estimate was utilized in the preliminary model run
    - This can be adjusted

# Dog Populations

- Comal County Watershed
  - $0.8 \times (1,075 \text{ households}) = 860 \text{ Dogs}$
- Guadalupe County Watershed
  - $0.8 \times (3,558 \text{ households}) = 2,846 \text{ Dogs}$
- Option Totals:
  - Total of 3,706 Dogs in the watershed using (.8)
  - Total of 2,929 Dogs in the watershed using (.623)
  - Total of 4,633 Households so using 1 = 4,633 Dogs

# Daily Potential *E. coli* loads resulting from Dogs



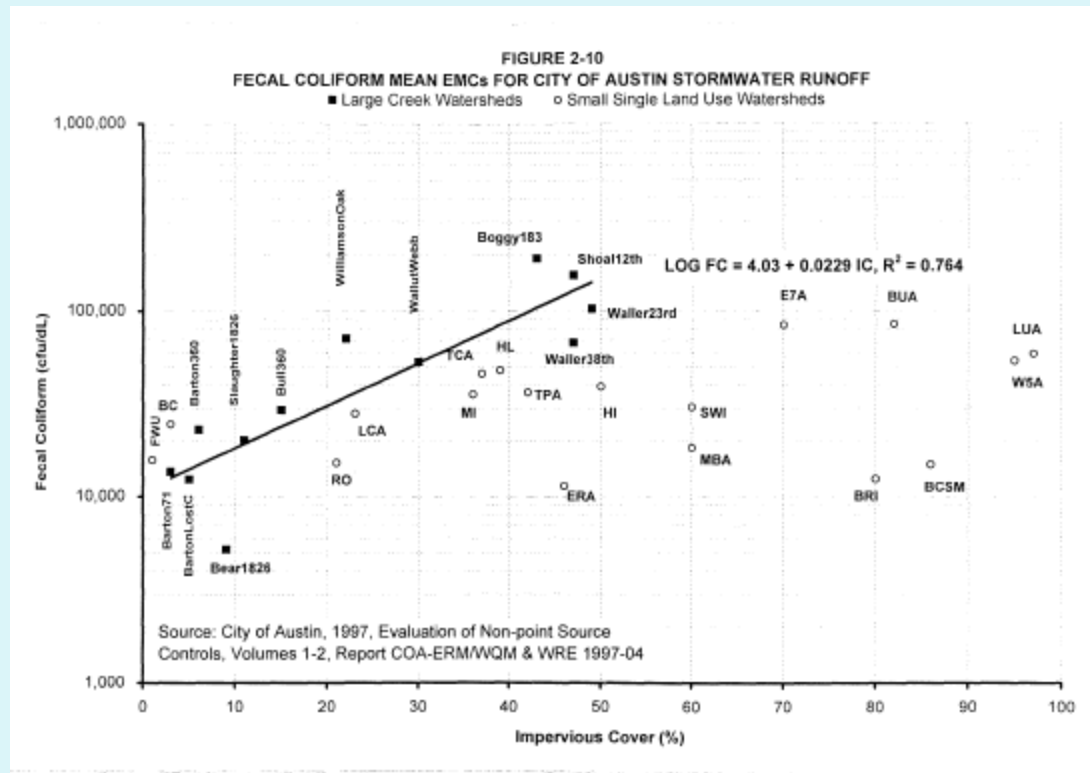


# Urban Runoff

- Utilize PBS&J Report to determine concentration of bacteria in urban runoff
- Use historical rainfall amounts to determine average volume
- Delineate the urban areas where this type of runoff will occur

# Urban Runoff

- PBS&J Report
  - Impervious Cover %= Total Subwatershed Area/Urban Area in Subwatershed



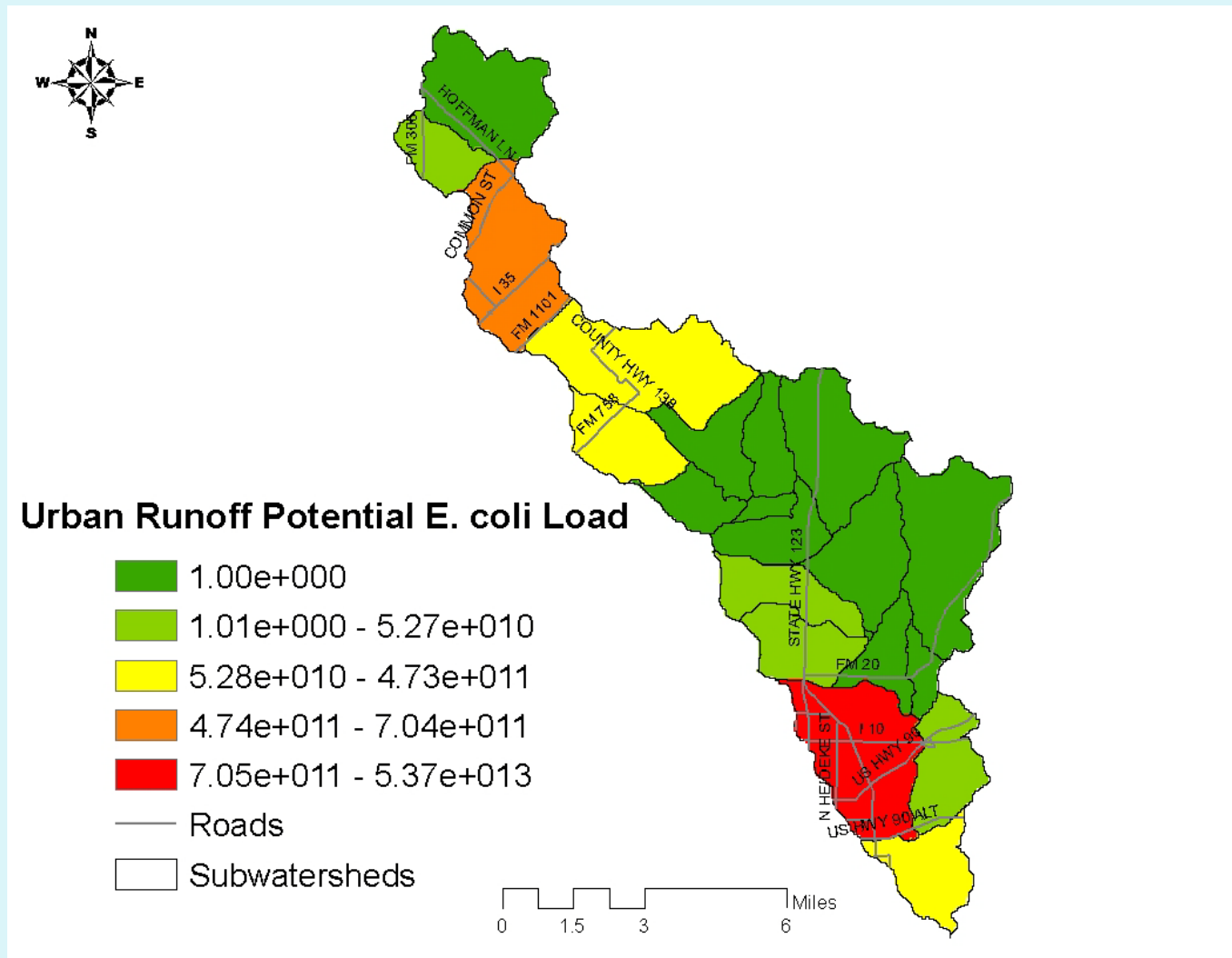
# Urban Runoff

- **Curve Number Approach**

- Assume all urban areas have a curve number of 1
  - Most precipitation runs off the surface
- Conversion from fecal coliform to E. coli is 0.63
- Precipitation = based on annual average daily rainfall
- Runoff Volume = Precipitation \* Urban Area
- E. coli Load = Runoff volume \* E. coli concentration

**Bacteria load = runoff volume \* concentration**

# Daily Potential *E. coli* loads resulting from Urban Runoff



# Discussion of Ordinances

- **City**
- **County**
- **Handouts**

# Next Steps

- **May 11<sup>th</sup> Watershed Tour**
- **May 11<sup>th</sup> Partnership Meeting**
- **Developing background materials for WPP**