

Geronimo and Alligator Creeks Watershed Partnership

Final SELECT Outputs

August 10, 2010

Work Group Accomplishments

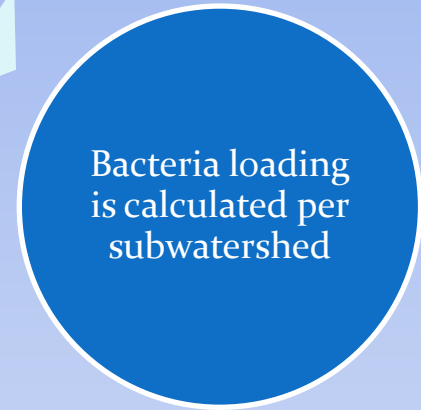
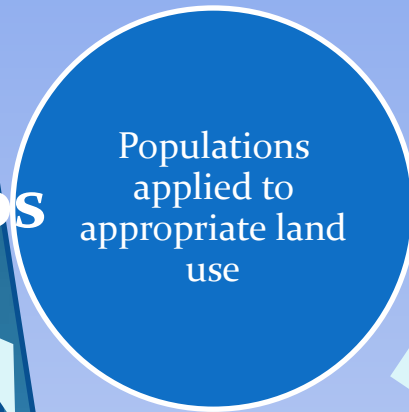
- The work groups have met three times during the months of March, April, May, and June
- Work groups reviewed data and discussed the specific causes and sources of nonpoint source pollution
- Work groups reviewed, modified, and completed the SELECT inputs to accurately characterize the watershed

SELECT - How does this tool work?

- Stakeholders review and approve estimated populations of each source from certified data
- 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



Agricultural Work Group

- The purpose 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.

Sources of Bacteria and Nitrogen with Data

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

SELECT Inputs

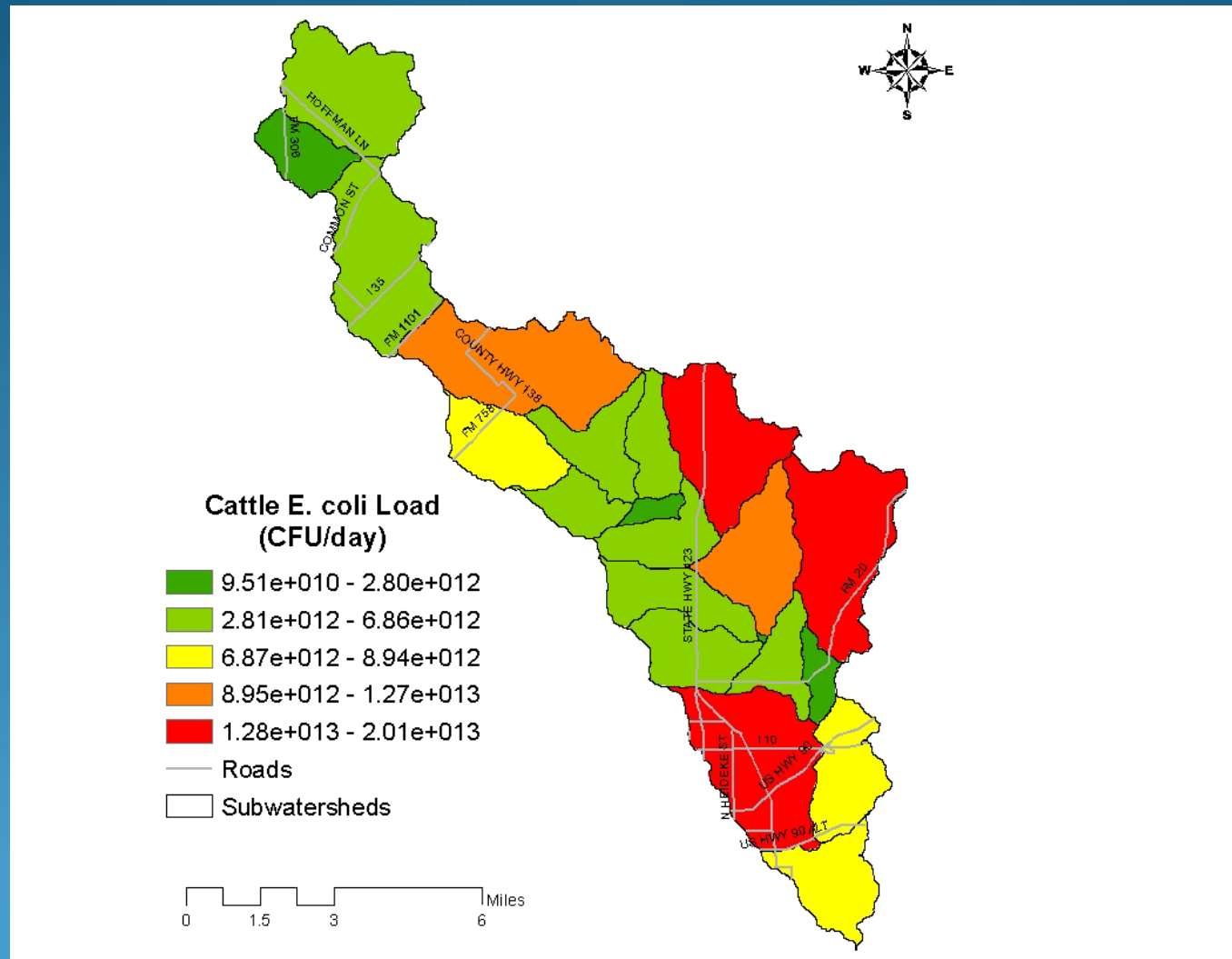
- Agriculture Work Group
 - Livestock: cattle, horse and goat populations
 - Wildlife populations (deer)
 - Feral hog populations
- Urban Work Group
 - Pet populations
 - Urban runoff
- Wastewater Work Group
 - Septic systems
 - WWTF data

Cattle

The Work Group estimated:

- 1 animal/20 acres in Comal County
- 1 animal/10 acres in Guadalupe County
- To distribute cattle to:
 - Rangeland
 - Forest
 - Managed Pasture
- Estimated Watershed Population: 2629

Daily Potential *E. coli* loads resulting from Cattle

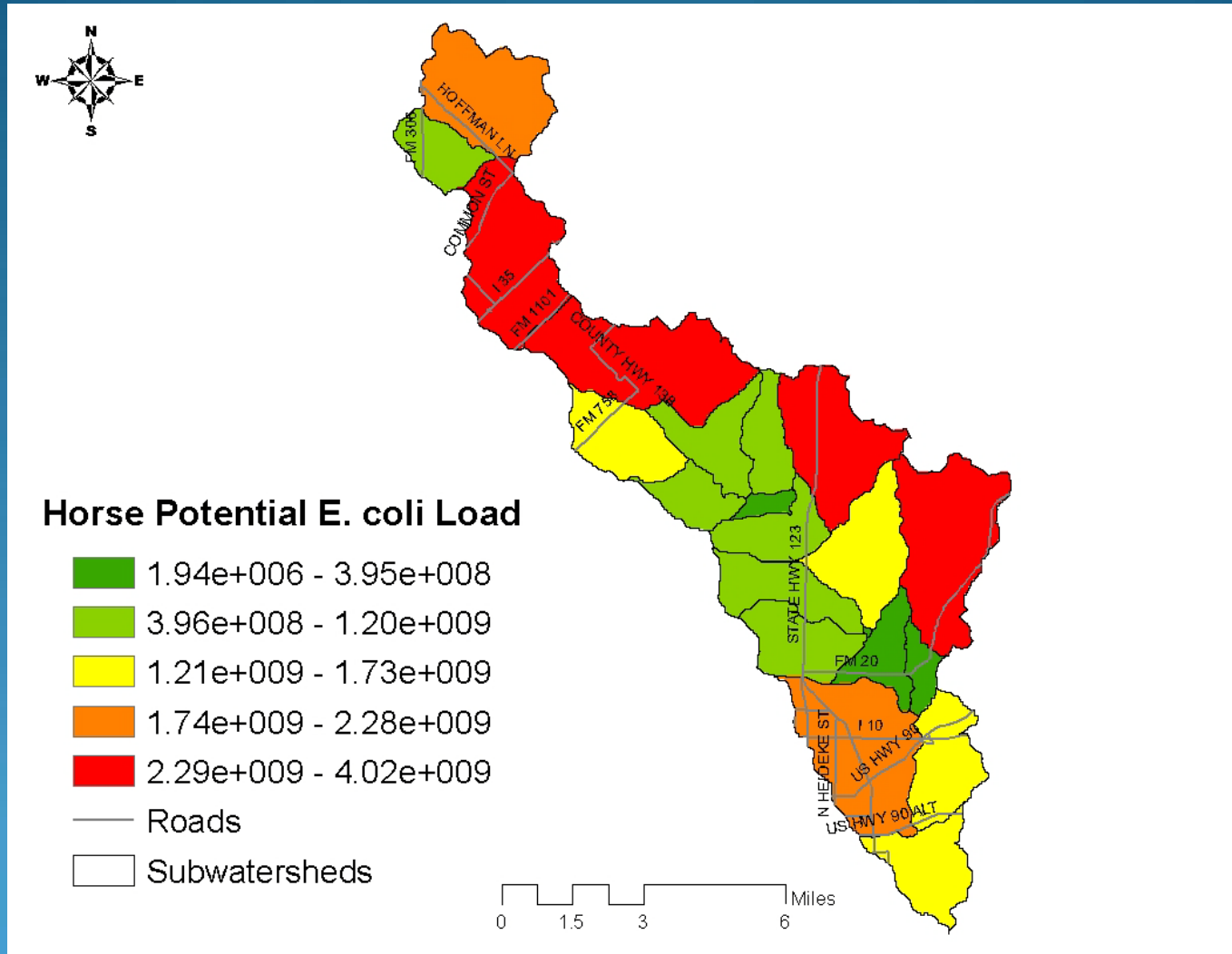


Horses

The Work Group chose to:

- 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

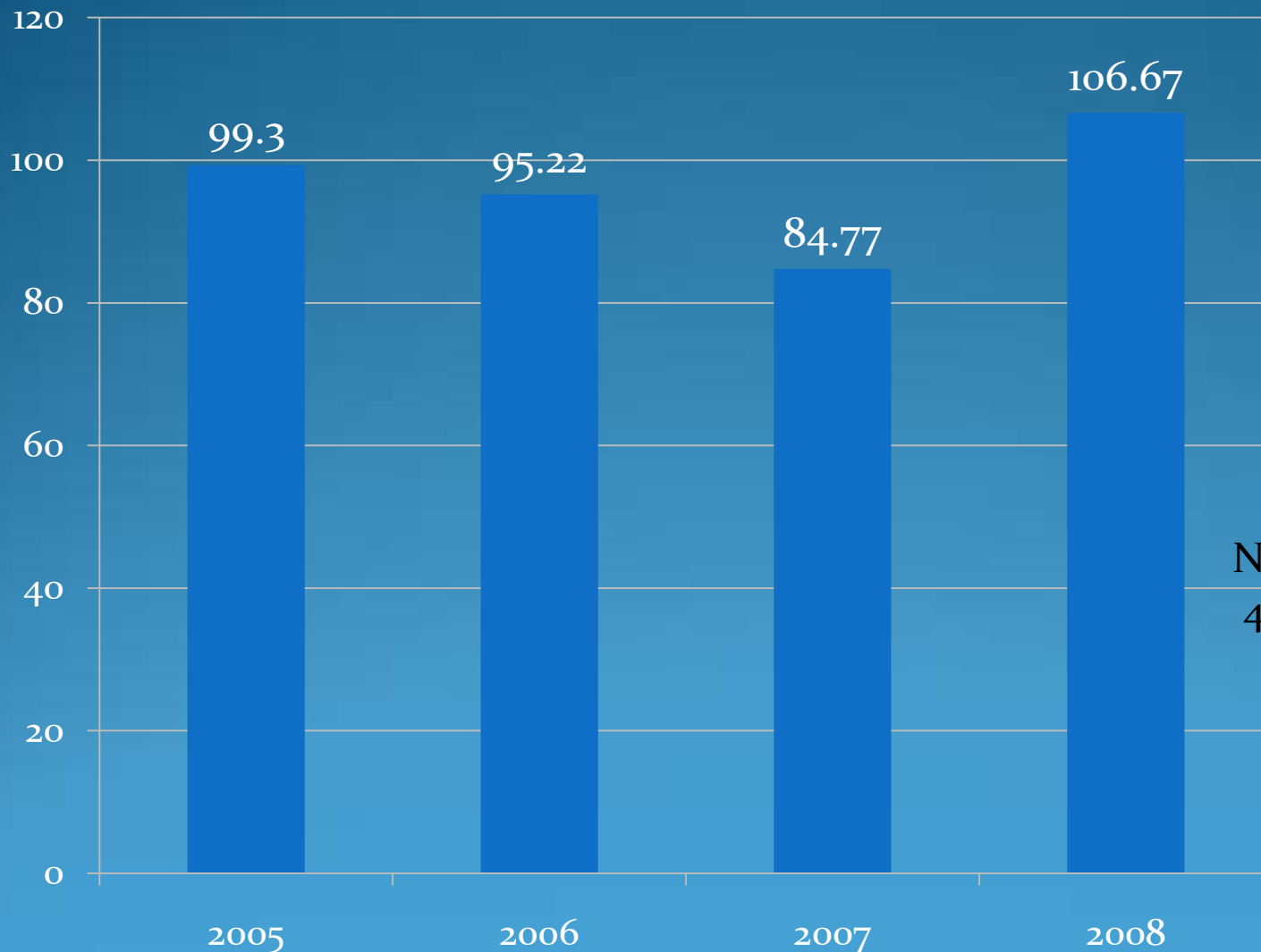
Daily Potential *E. coli* loads resulting from Horses



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

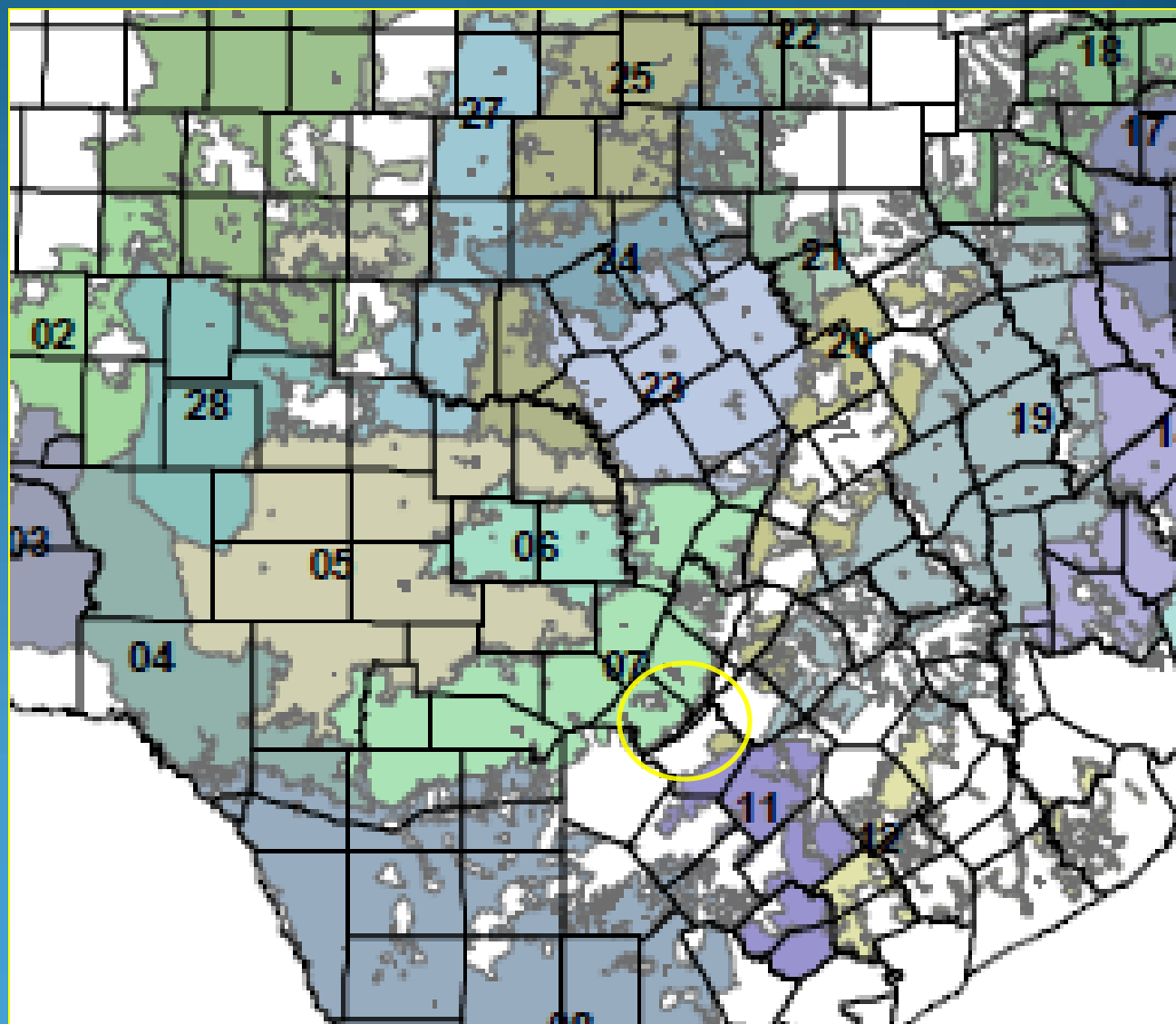
Estimated Whitetail Deer Population



■ Deer/1000 acres

Note: Average for the 4 years is 96.6

Watershed Area

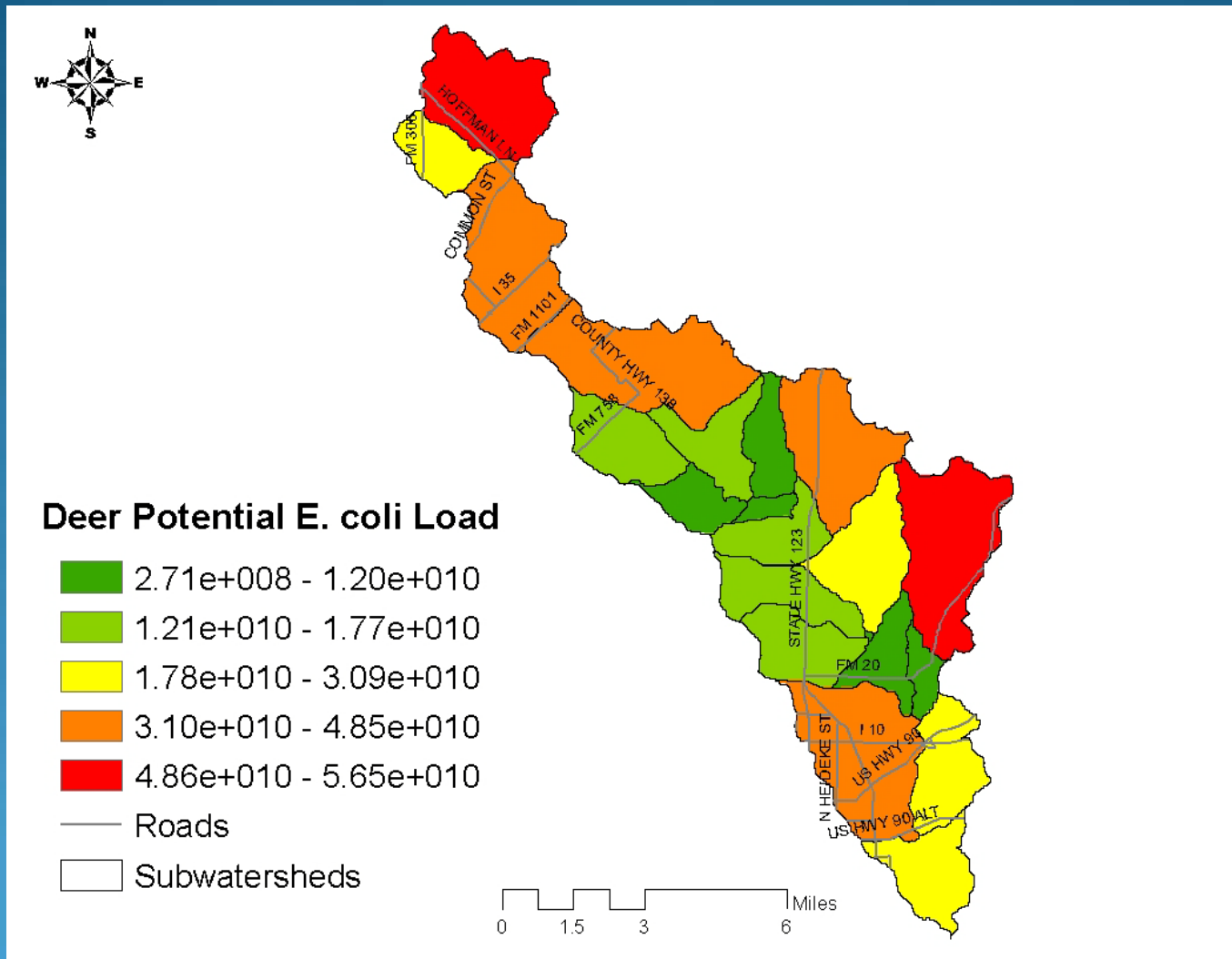


White-Tailed Deer

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

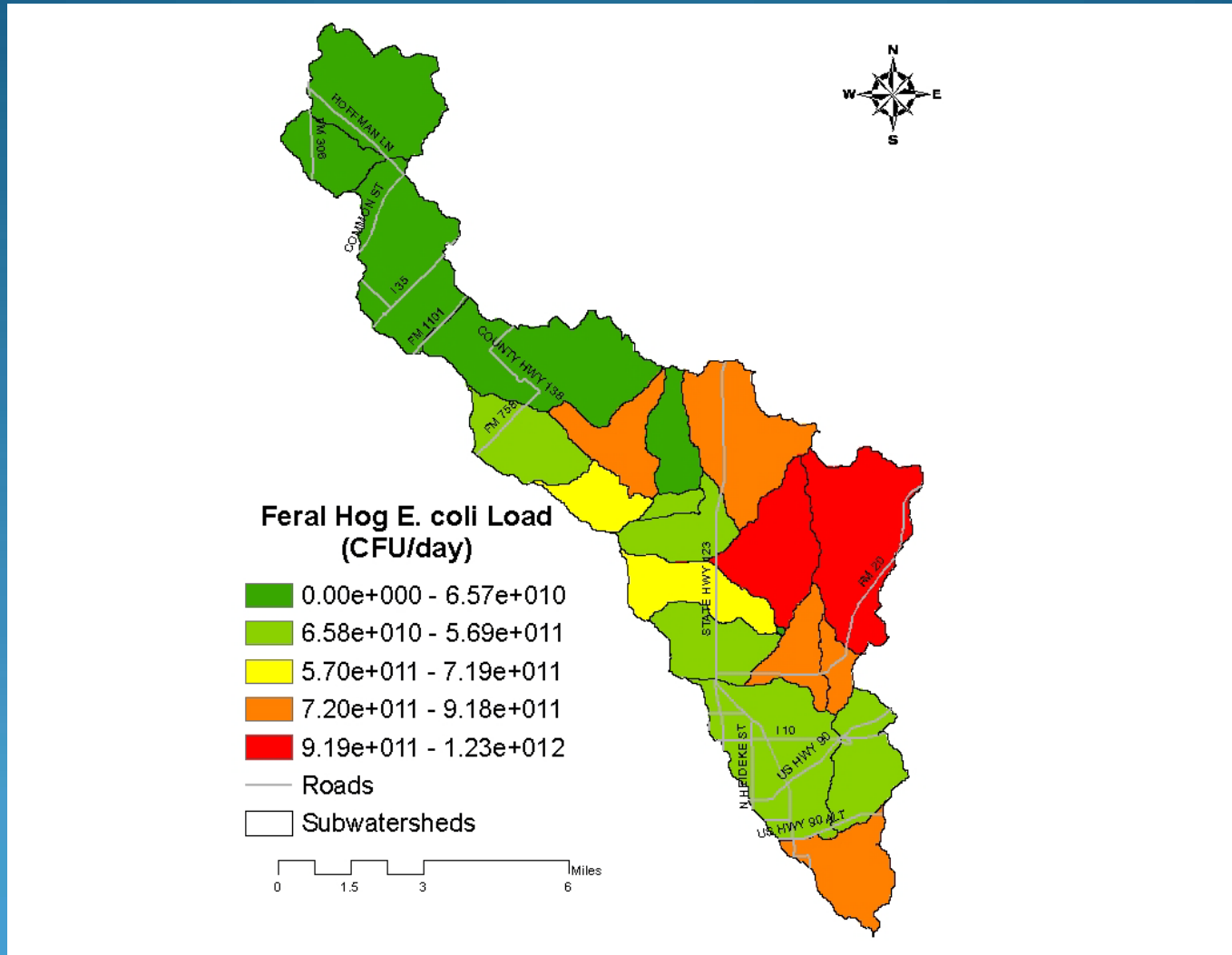
Daily Potential *E. coli* Loads from Deer



Feral Hogs

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

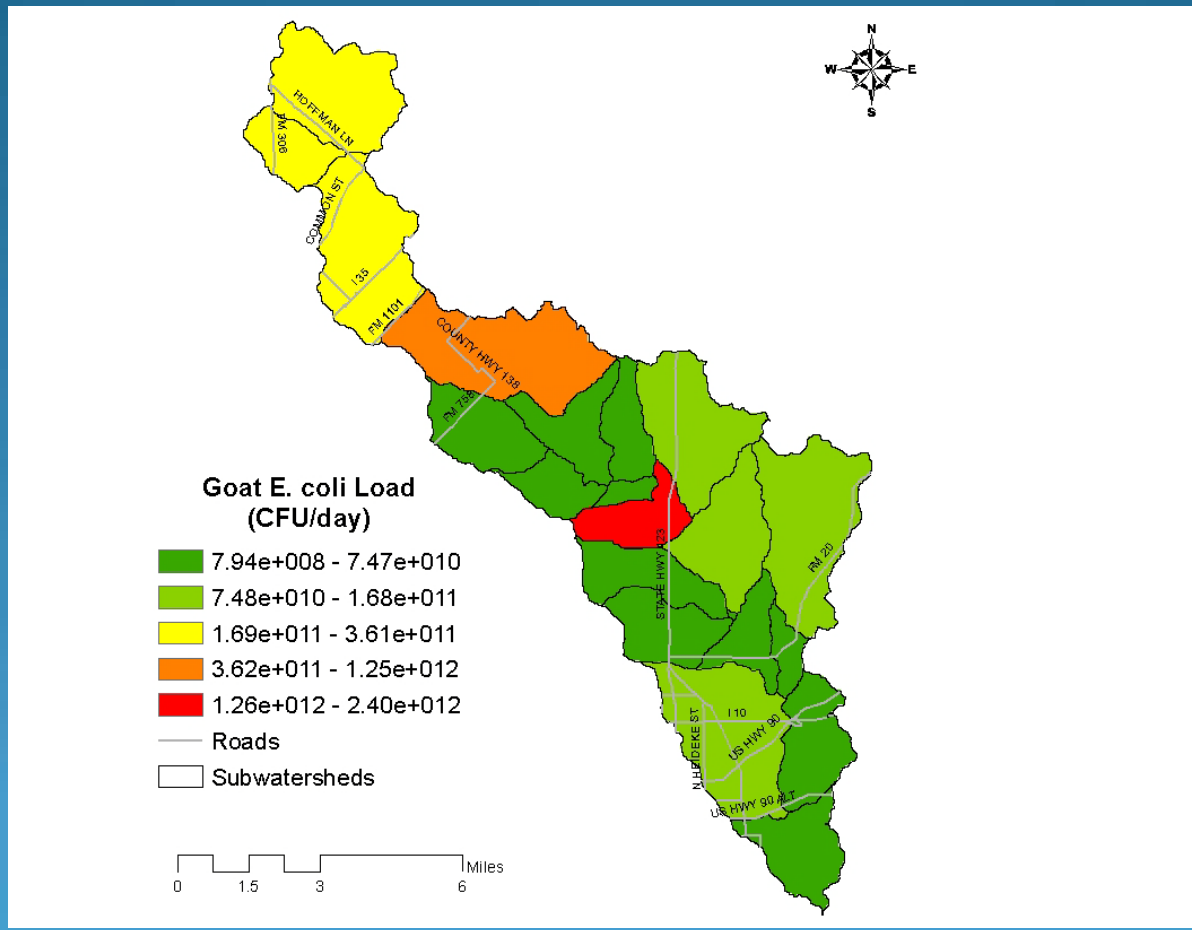
Daily Potential *E. coli* Loads from Feral Hogs



Goats

- The Work Group estimated:
 - 150 in Subwatershed 4
 - 300 in Subwatershed 10
 - 100 spread across Subwatersheds 1, 2, and 3
 - 200 evenly distributed around entire watershed
 - Land Use
 - Rangeland
 - Forest
 - Managed Pasture
- Estimated Watershed Population: 750

Daily Potential E. coli Loads from Goats

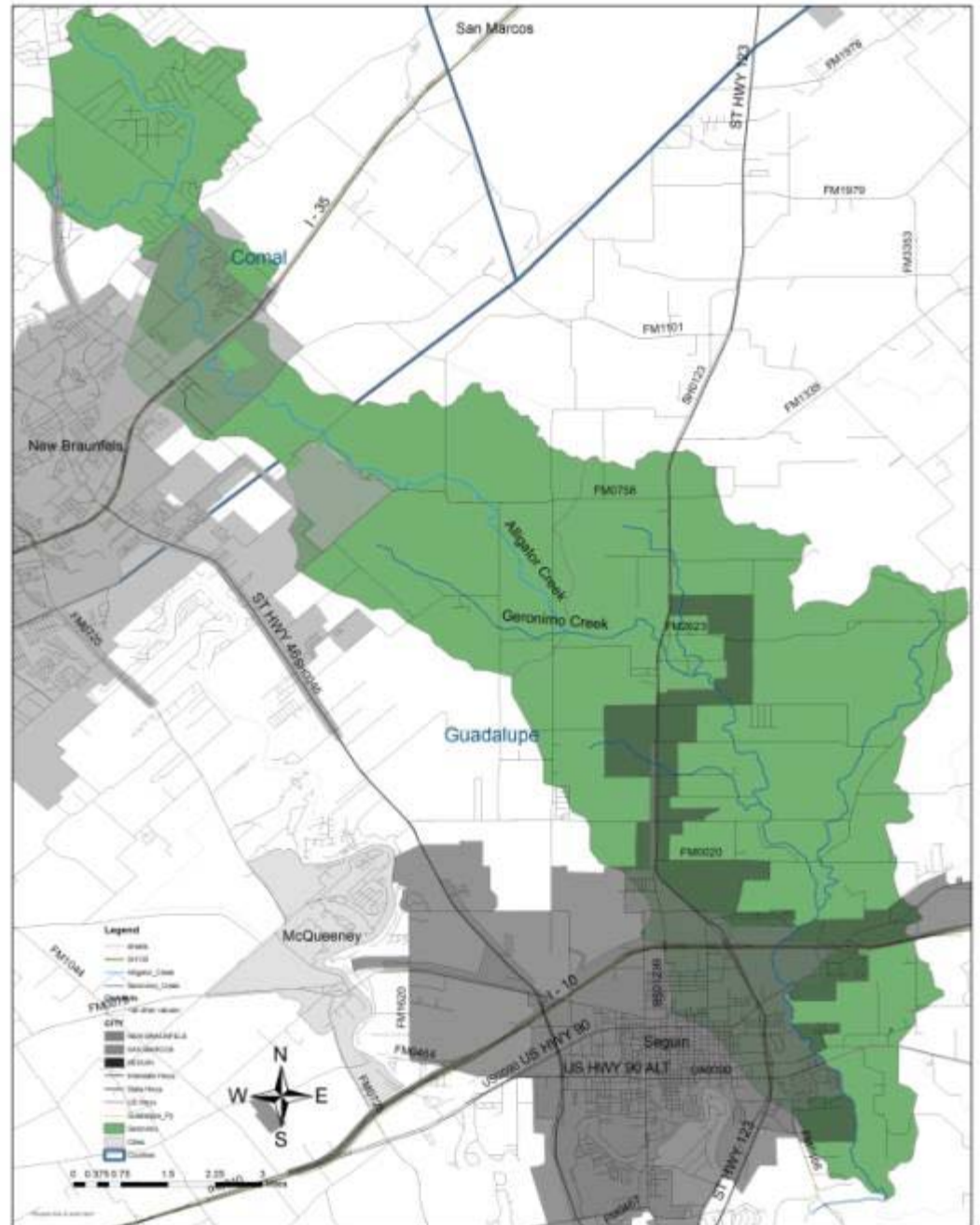


Urban Work Group

- 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

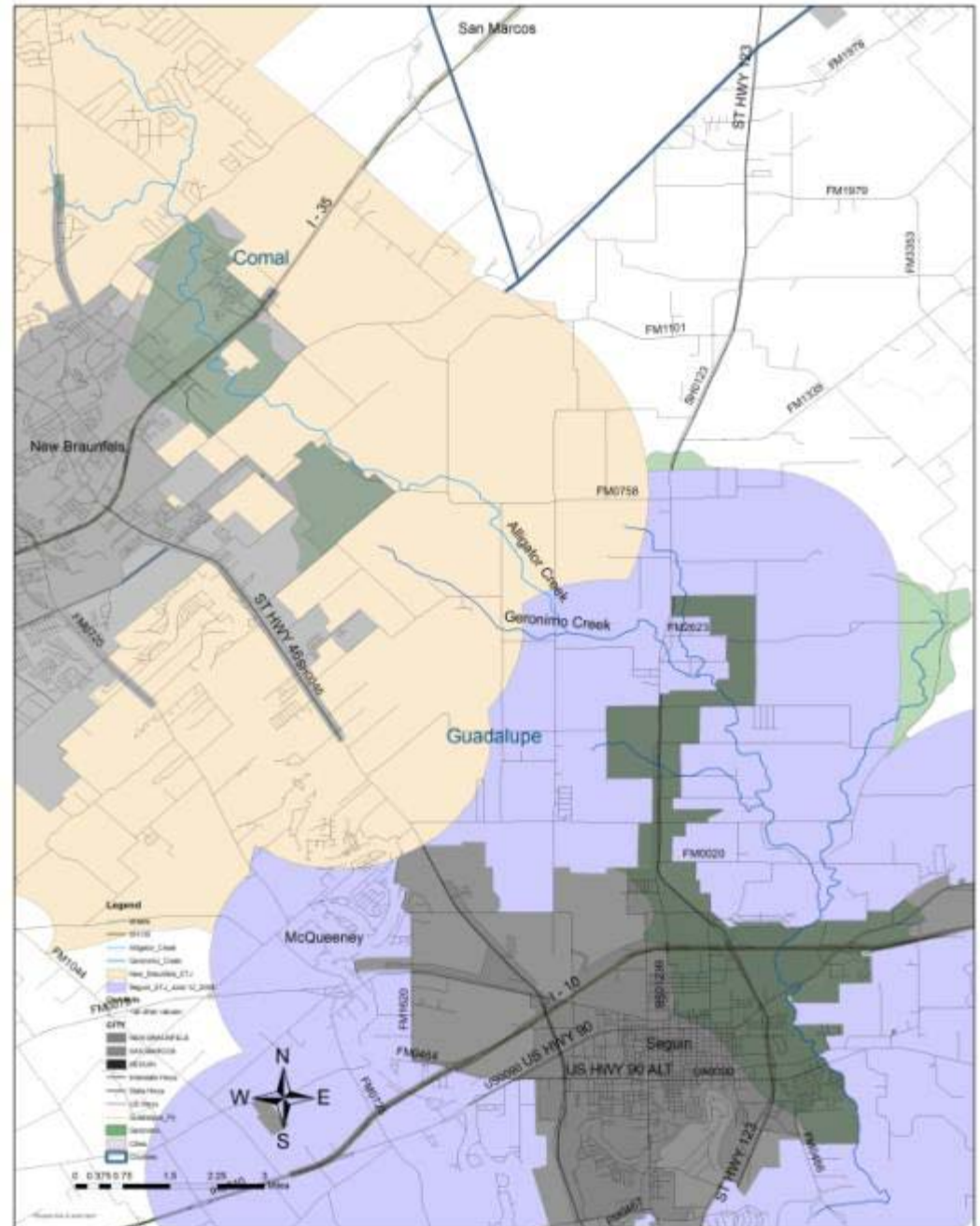
City Limits

Geronimo and Alligator Creeks Watershed



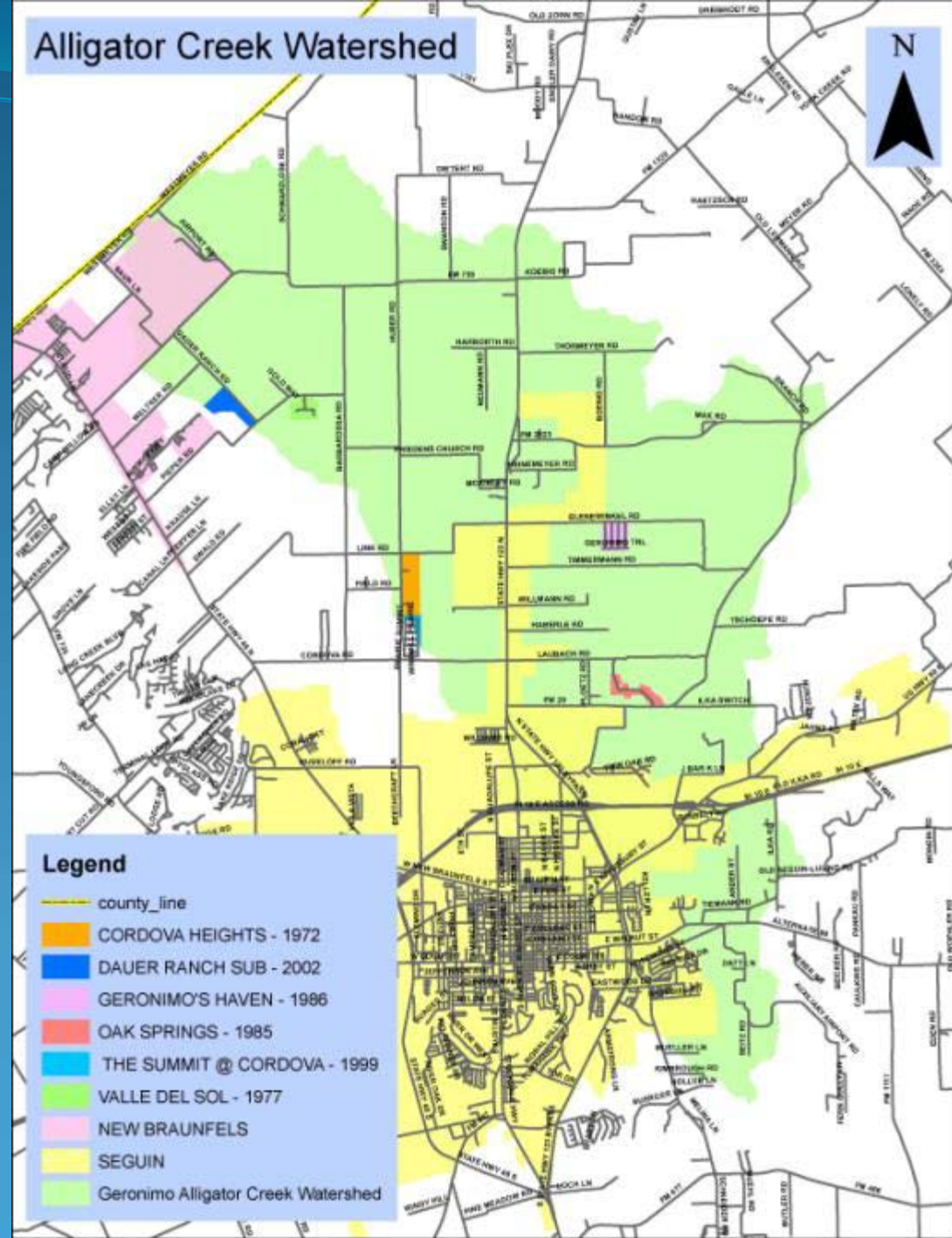
Extra Territorial Jurisdictions (ETJ)

Geronimo and Alligator Creeks Watershed



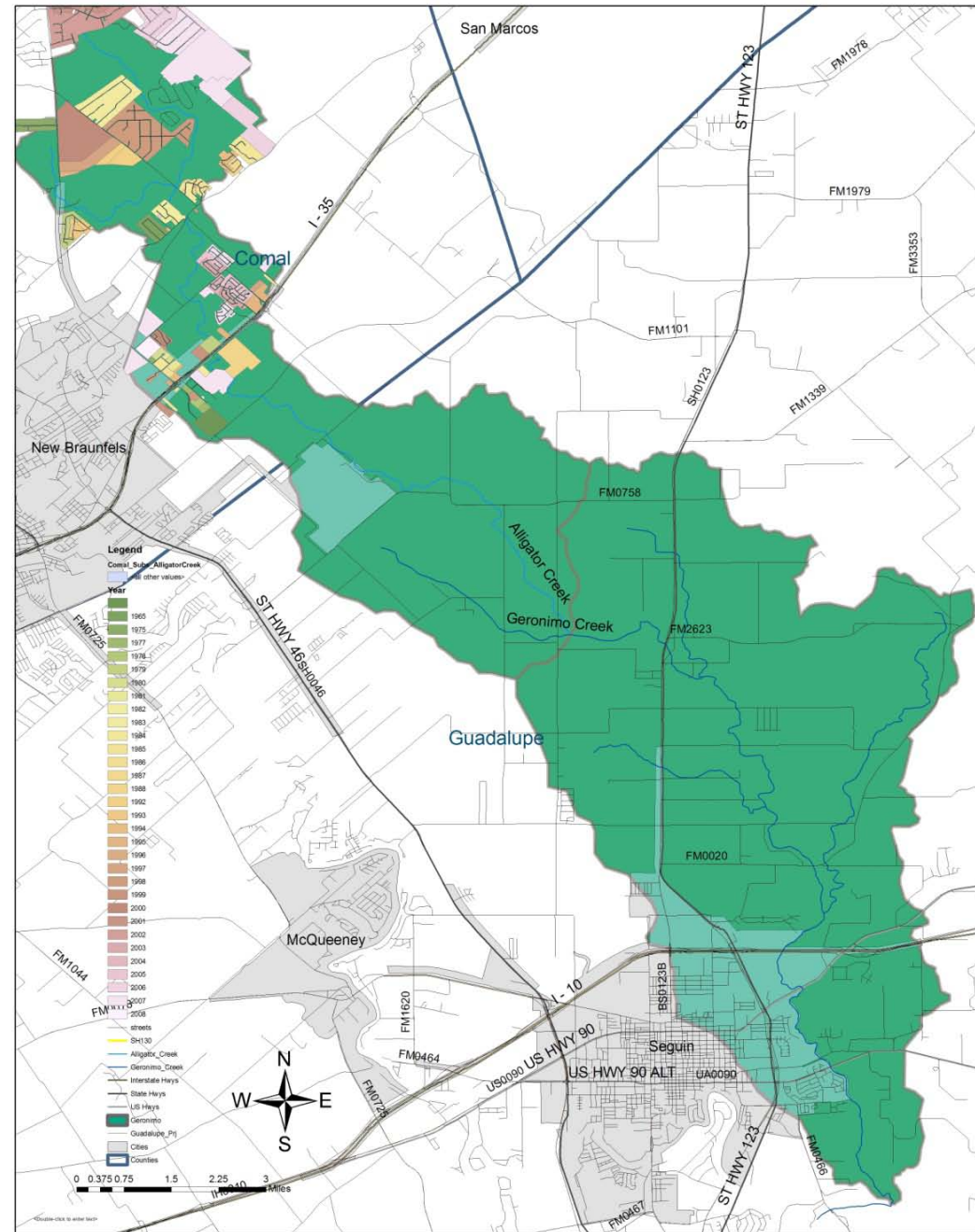
Subdivisions in Guadalupe County

Alligator Creek Watershed



Subdivisions in Comal County

Geronimo and Alligator Creeks Watershed Comal County Subdivisions



Sources of Bacteria with Data

- Urban Stormwater/ runoff
- Pets – Dogs

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)

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

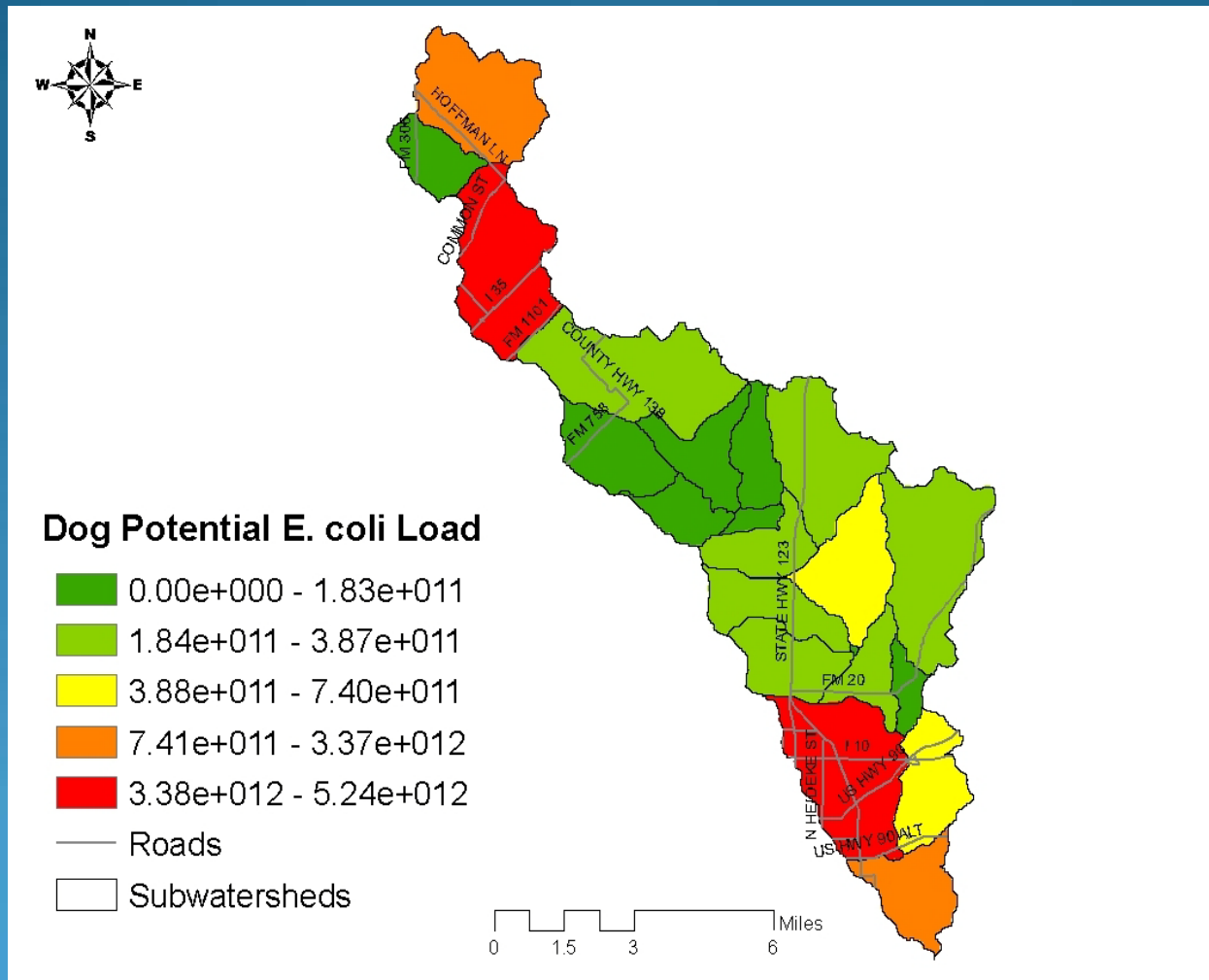
Dog Population Discussions

- Based on input from the March meeting, the 0.8 dog/household estimate was utilized in the preliminary model run
- Based on discussions from April and with local veterinarian information it was decided to use 1 dog/household

Dog Population Estimate

- The Work Group decided to use an estimate of 1.0 dog per household
- Utilized 911 addresses to determine the number of households
- Estimated watershed population: 6,362 dogs

Daily Potential *E. coli* Loads from Dogs



Urban Runoff

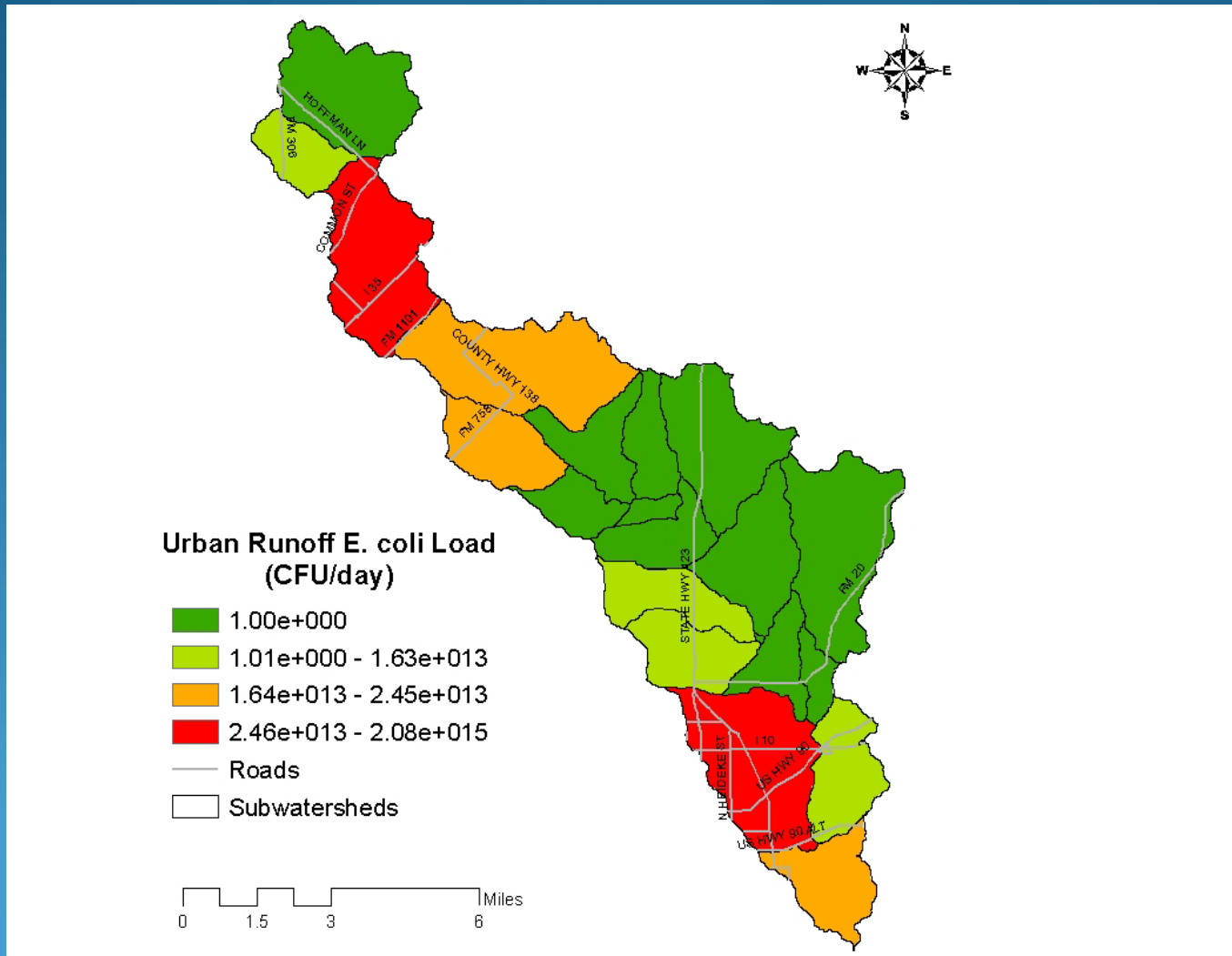
- Utilize PBS&J Report to determine concentration of bacteria in urban runoff
- Use historical rainfall amounts to determine average volume
- Delineate the urban areas where this type of runoff will occur

Urban Runoff

- Curve Number Approach
 - Curve number assigned determines runoff percent
 - Curve numbers were determined by land use
- Precipitation = based on annual average daily rainfall
- Runoff Volume = function of precipitation and curve number

Bacteria load = runoff volume * concentration

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



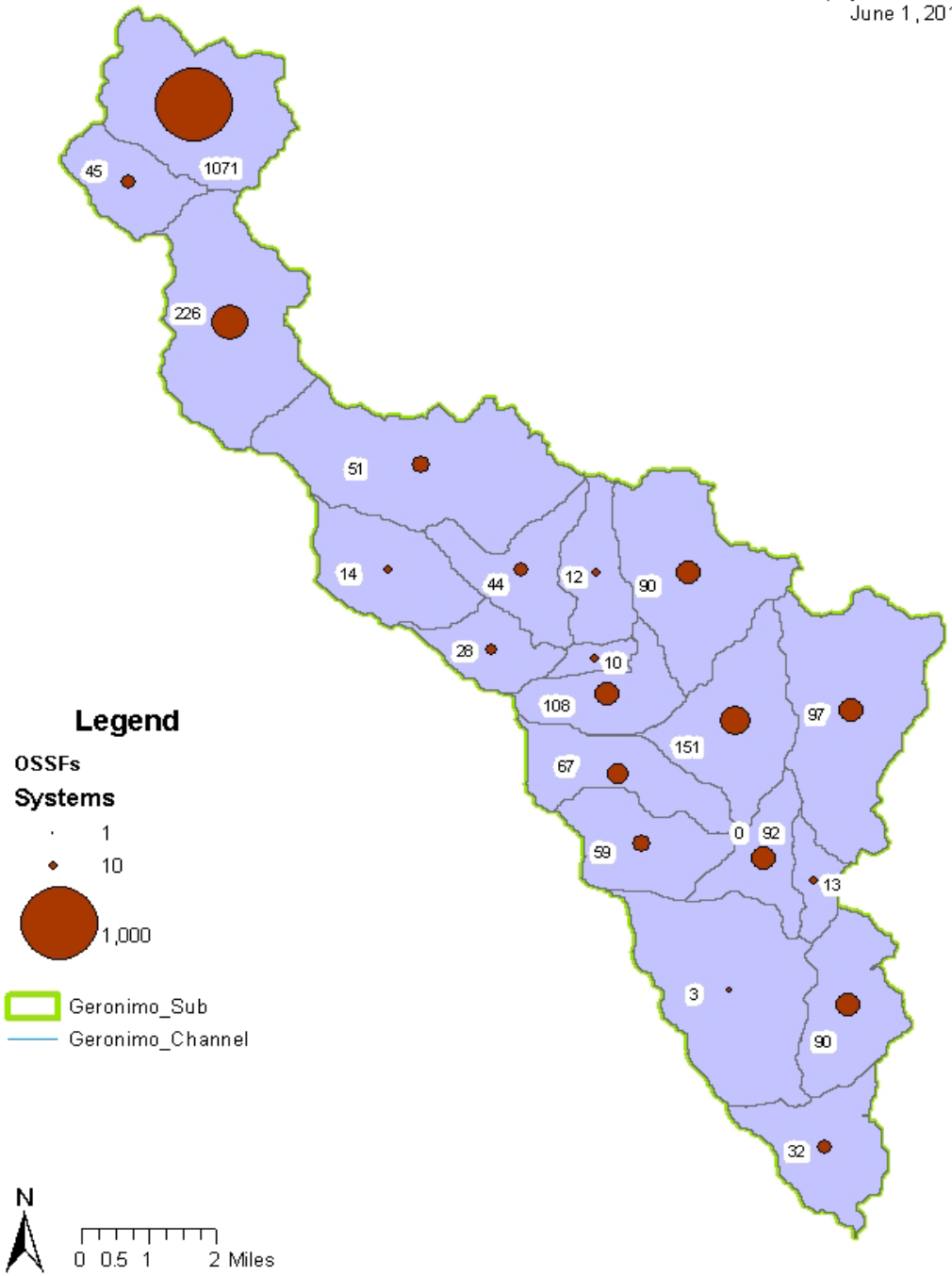
Wastewater Work Group

- The purpose of this Work Group is to discuss the specific causes and sources of pollution stemming from wastewater sources.
- Wastewater sources includes on-site sewage facilities (OSSFs or septic systems) and wastewater treatment facilities (WWTFs).
- Regionalization of wastewater treatment, the conversion of OSSFs to a centralized WWTF, the repair/replacement of OSSFs, and illegal dumping are topics within the realm of this Work Group.

Inputs Used for SELECT

- Soils data
- Septic system locations
 - GIS subdivision and 911 Address data from Guadalupe and Comal Counties
- WWTF data

Septic systems in the watershed



Loading Estimate for Septic Systems

Bacteria Load = Number of failing systems * flow * concentration

Number of failing systems

- Number of people per home from 2000 Census
- 911 addresses and then removed areas falling within CCN boundary of Seguin and areas delineated by NBU that are served by collection system
- Failure rate average based on soil data
 - Not rated 5%, somewhat limited 10%, very limited 15%

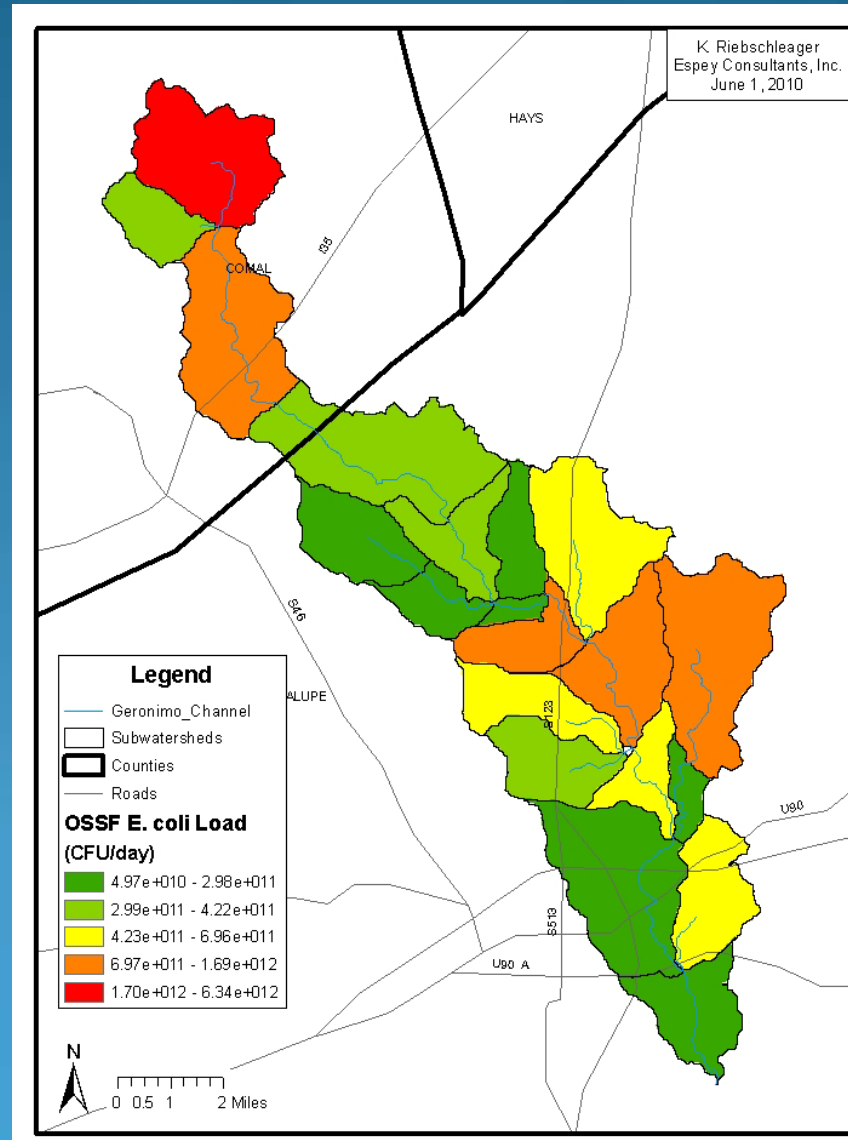
Flow

- 60 gal/person/day average

Concentration

- Average concentration of bacteria in effluent

Daily Potential *E. coli* Loads from Septic Systems



Questions?