

Geronimo and Alligator Creeks Watershed Partnership Wastewater Work Group

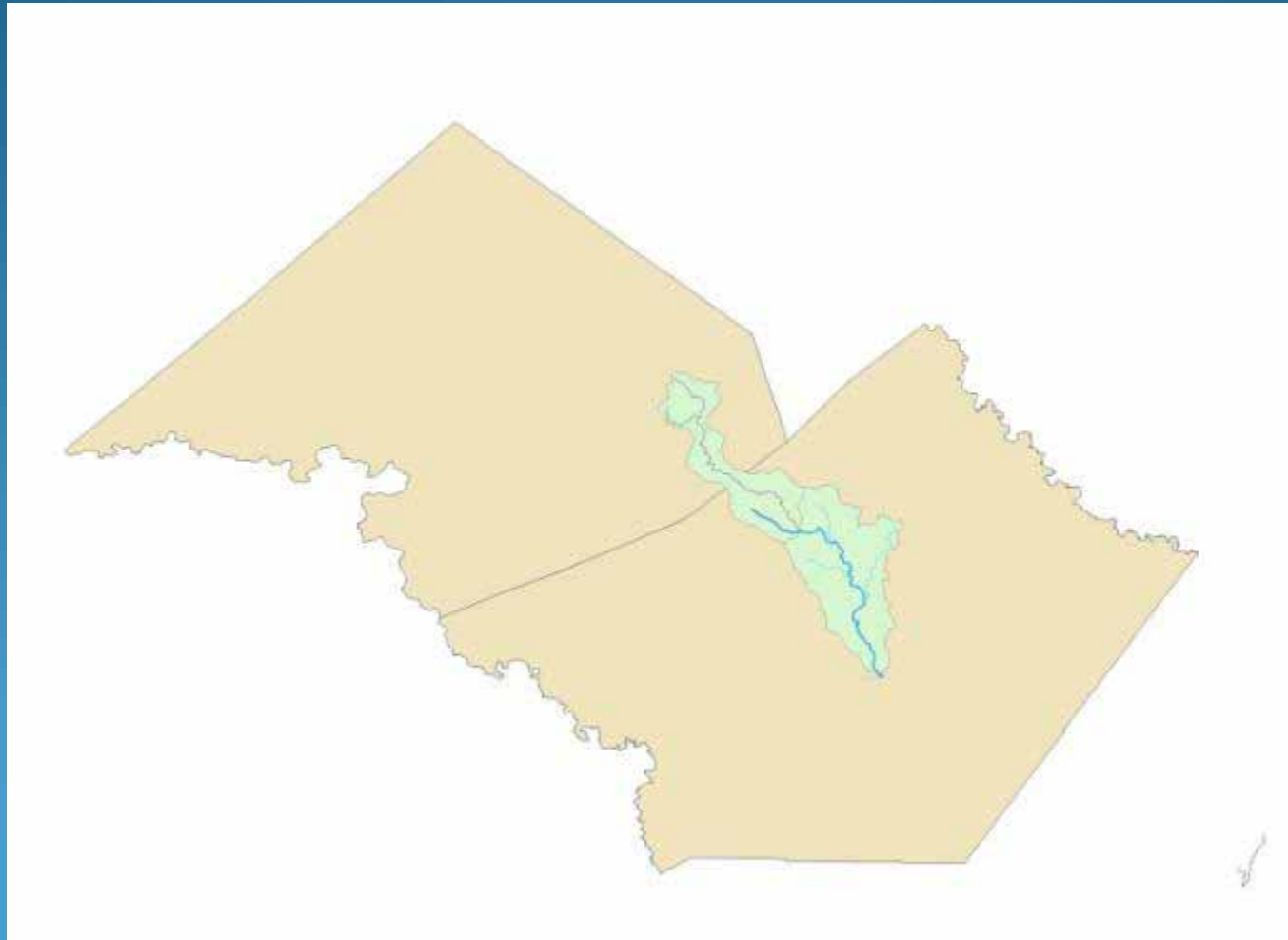
April 12, 2010



Wastewater Work Group

- The purpose of this Work Group is to discuss the specific causes and sources of nonpoint source 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, and repair/replacement of OSSFs are topics within the realm of this Work Group.

Geronimo and Alligator Creeks Watershed



County and Watershed Acreage

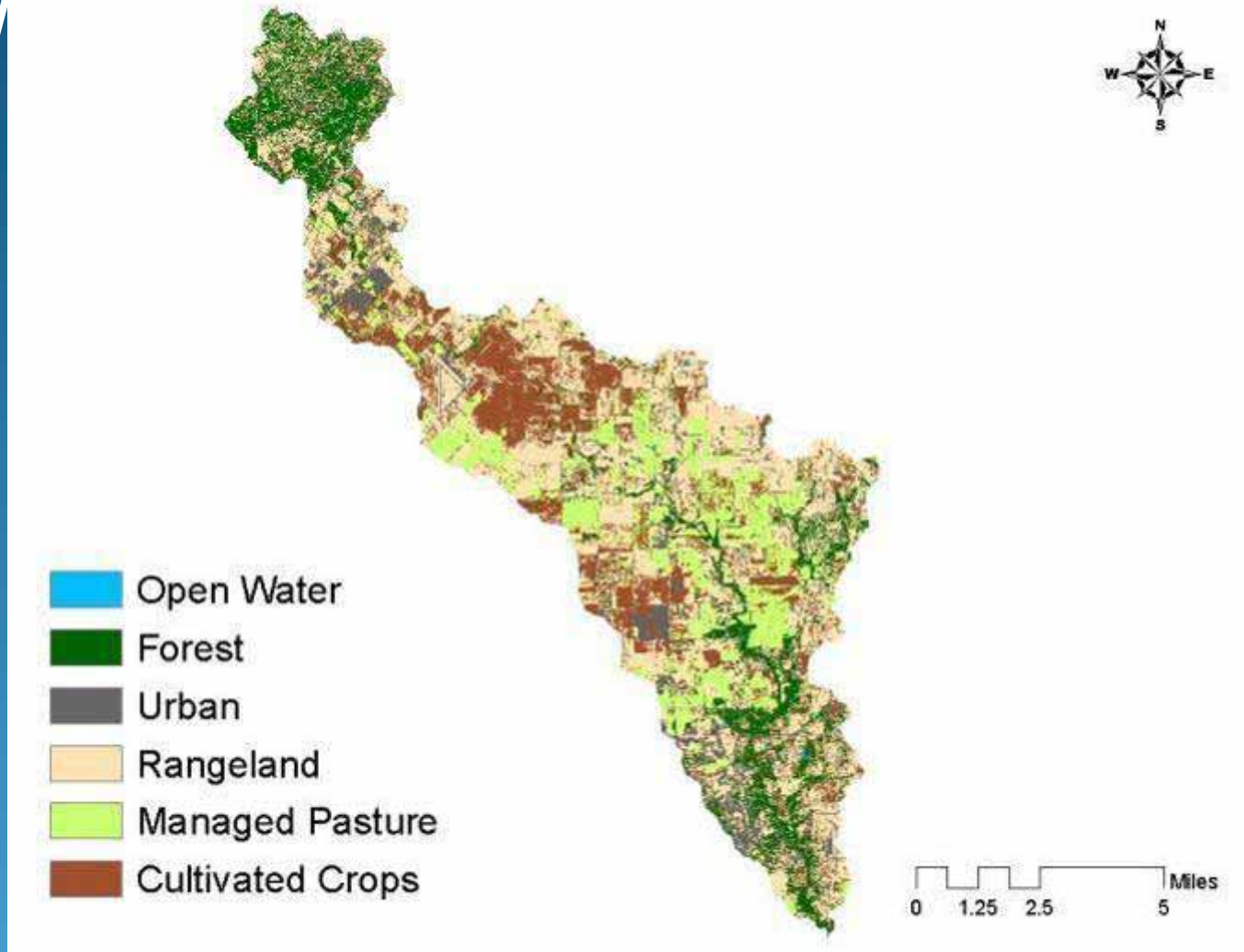
Acres

- Comal County Total: 366,238
- Guadalupe County 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



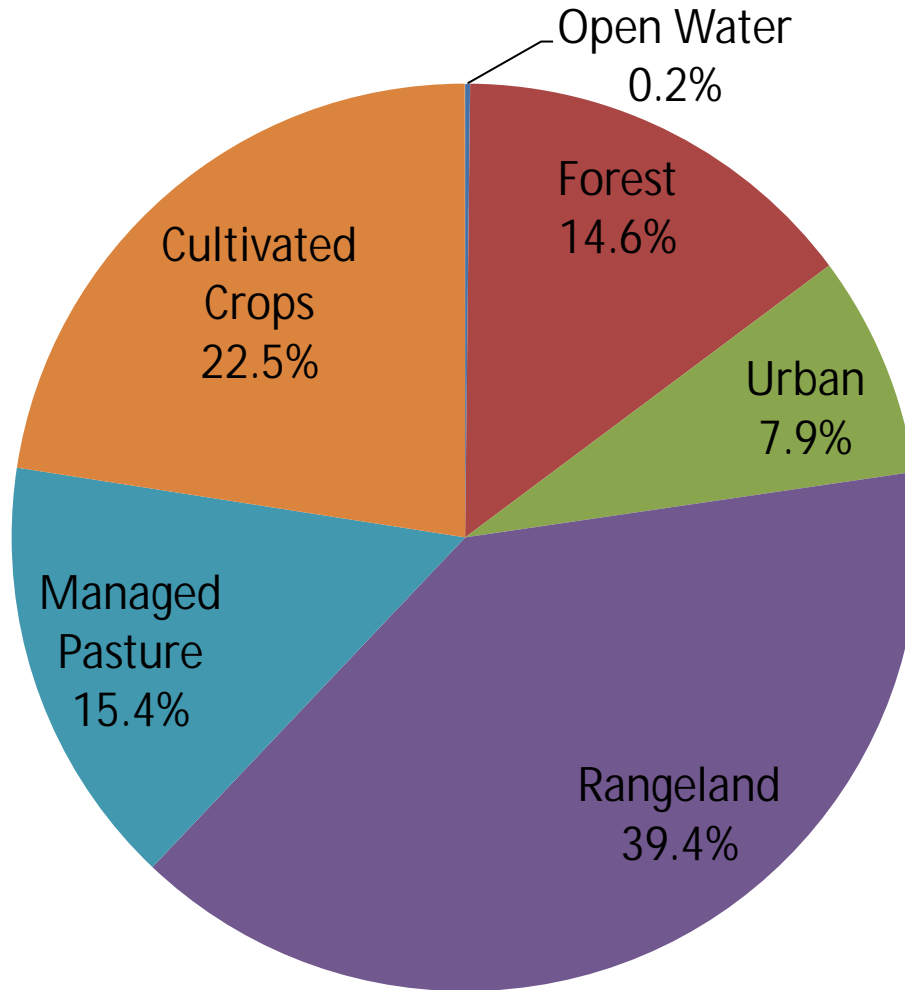
Land Use Definitions

- 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.

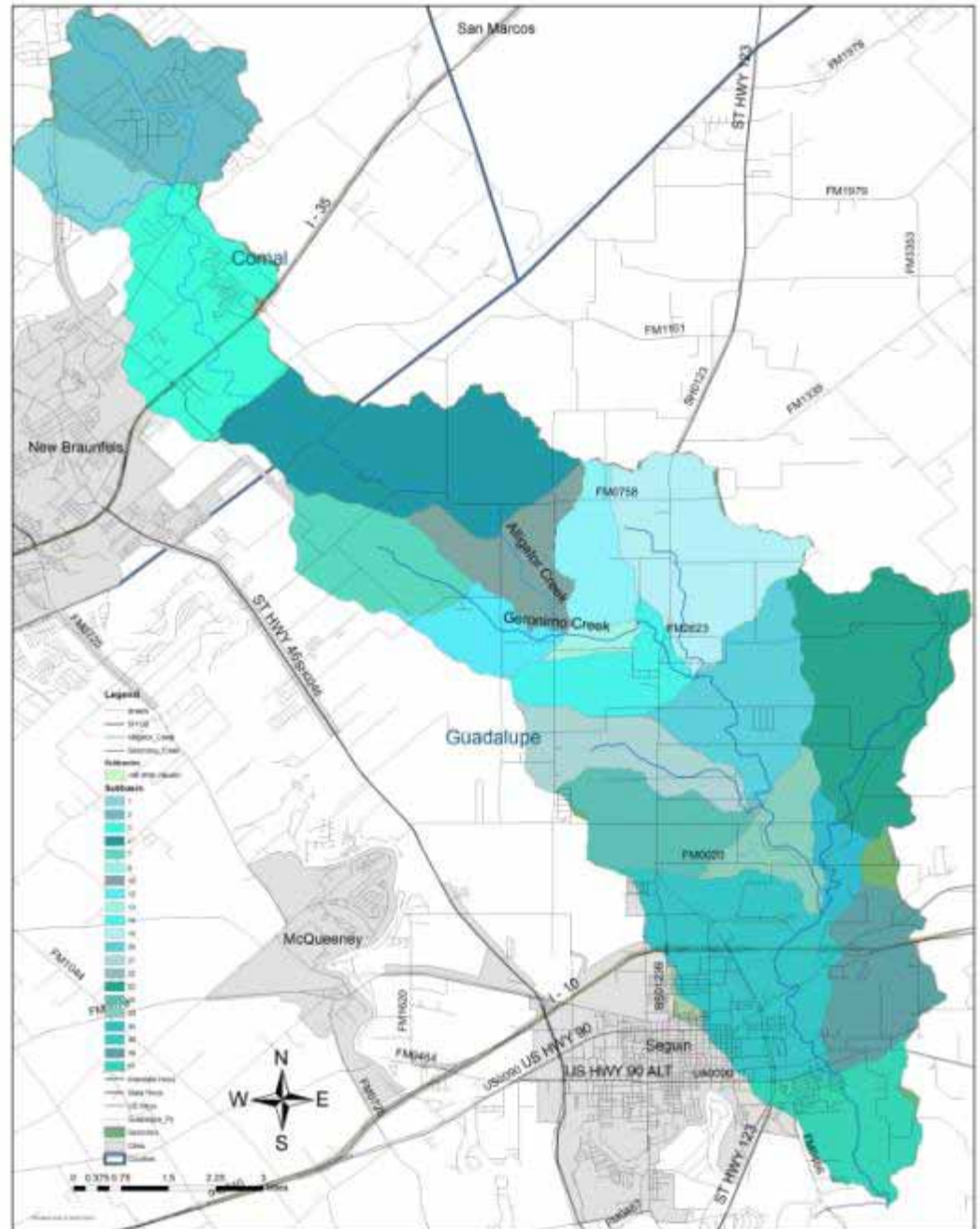
Land Use Percentages



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

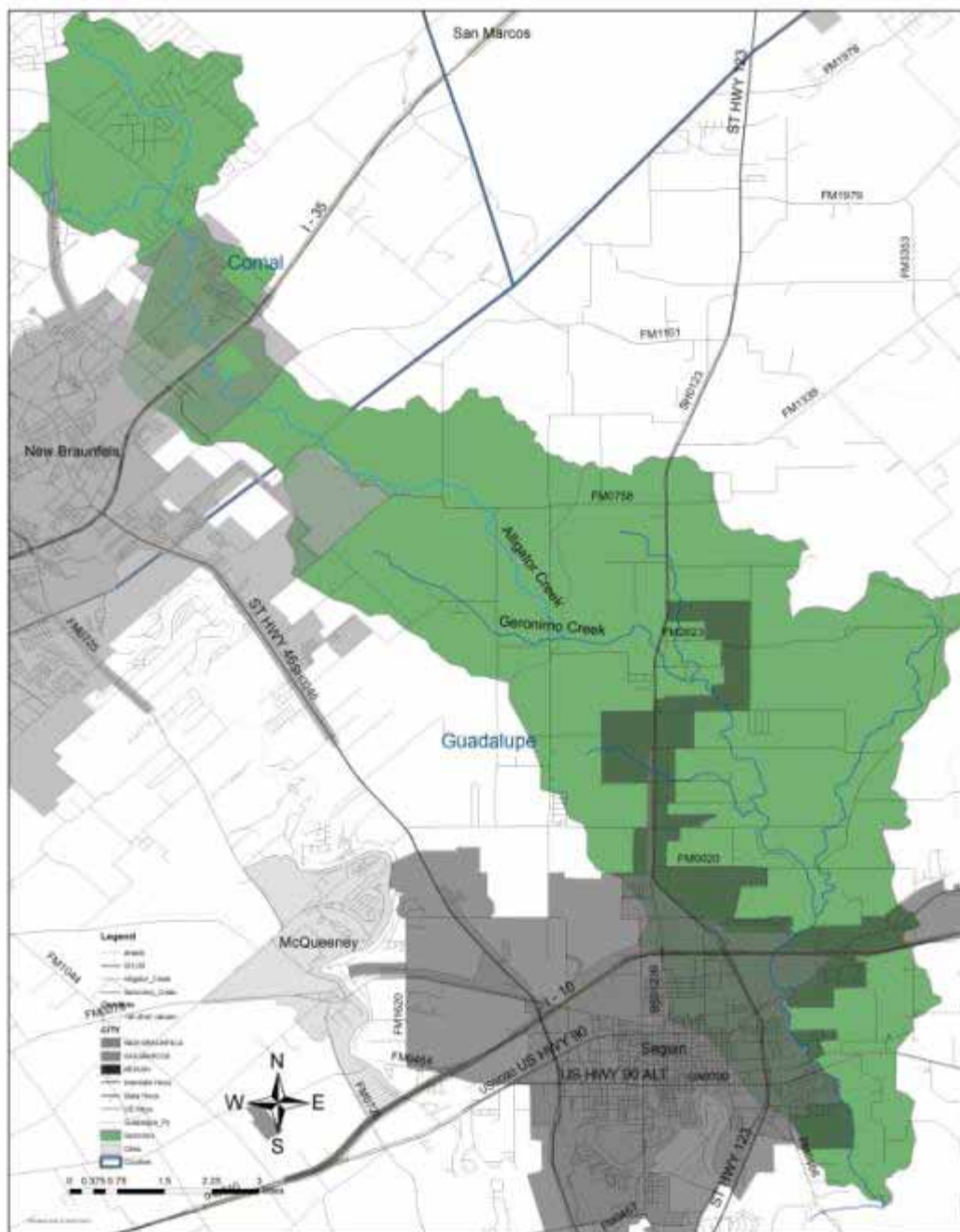
Subwatersheds

Geronimo and Alligator Creeks Watershed



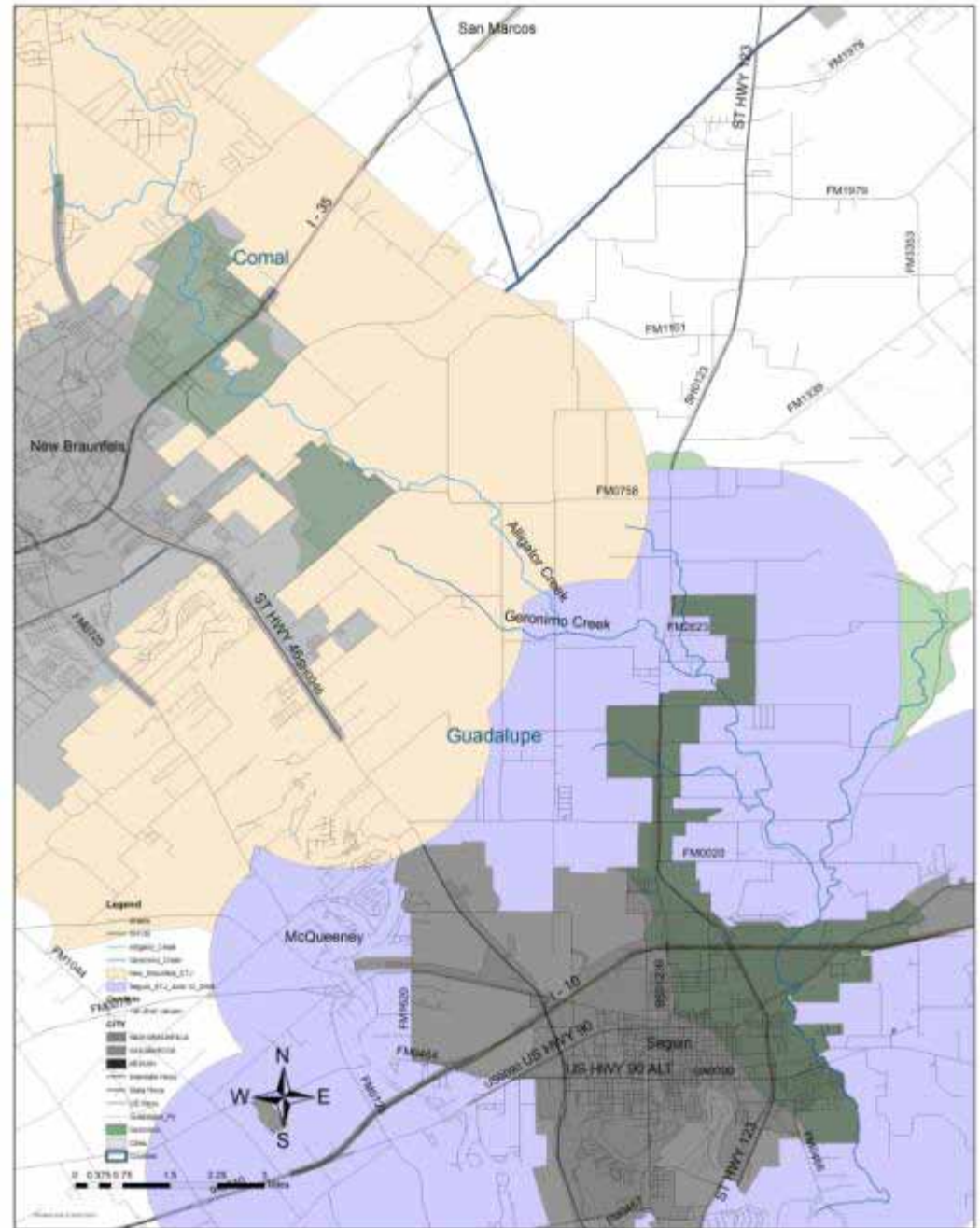
City Limits

Geronimo and Alligator Creeks Watershed



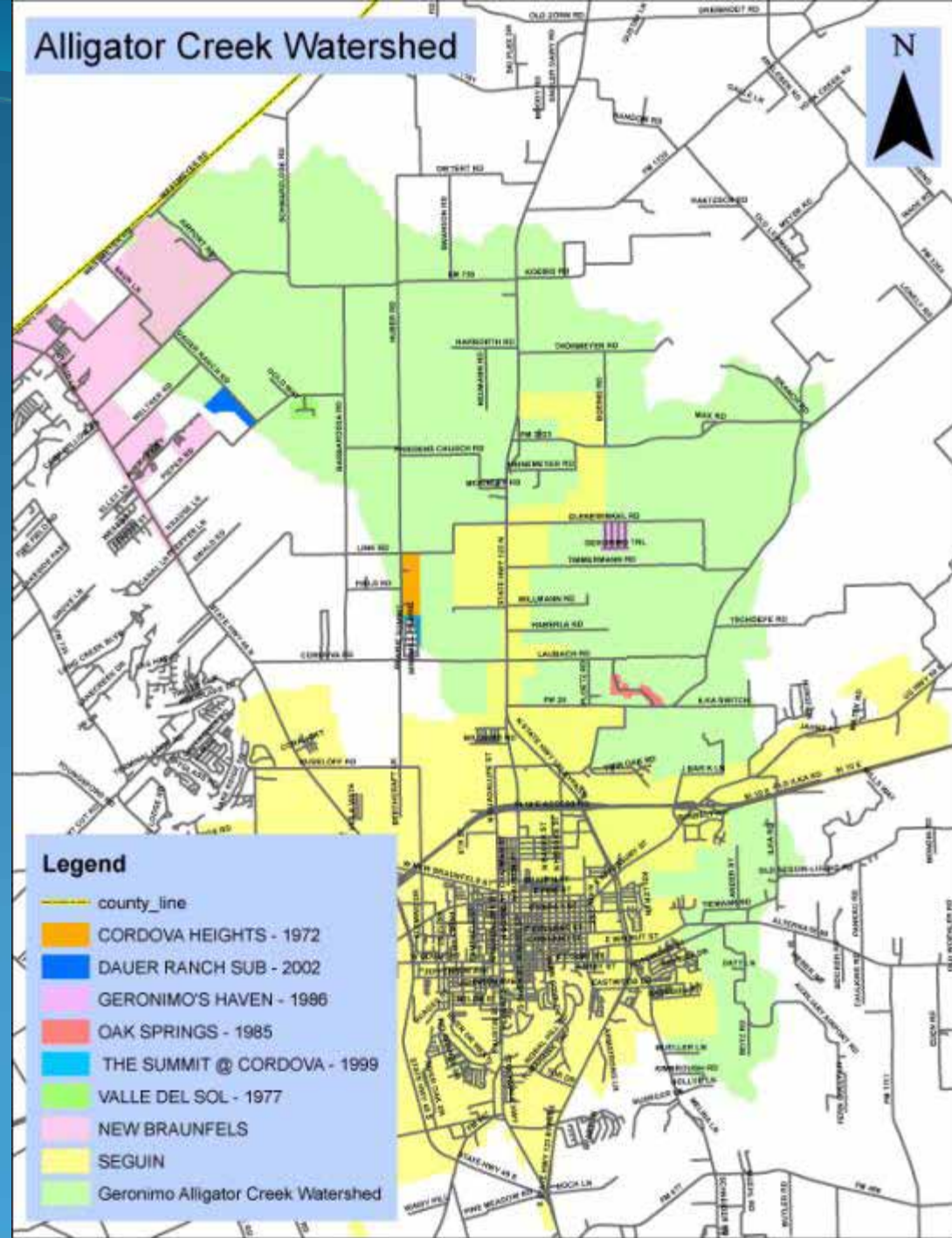
Extra Territorial Jurisdictions (ETJ)

Geronimo and Alligator Creeks Watershed



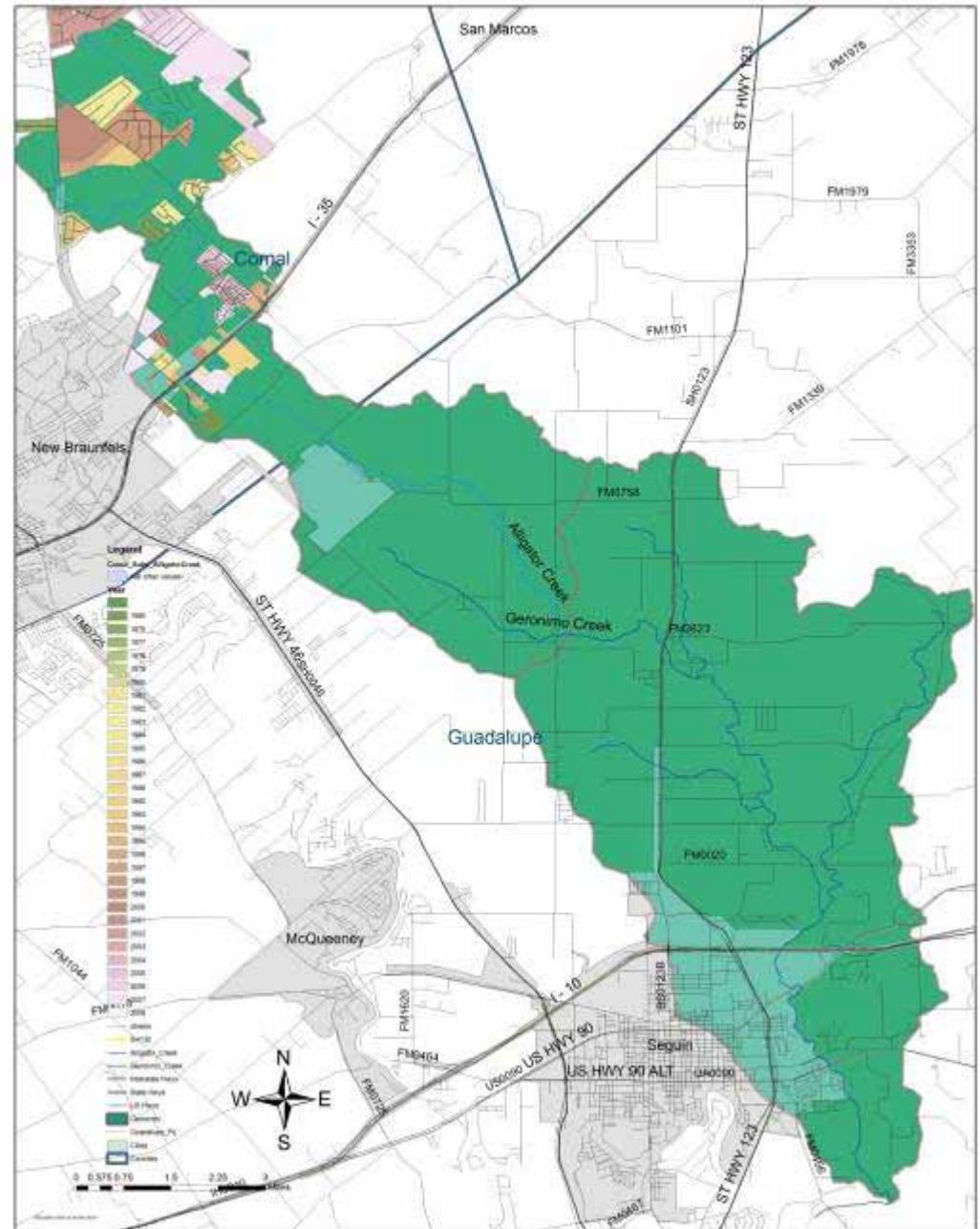
Subdivisions in Guadalupe County

Alligator Creek Watershed



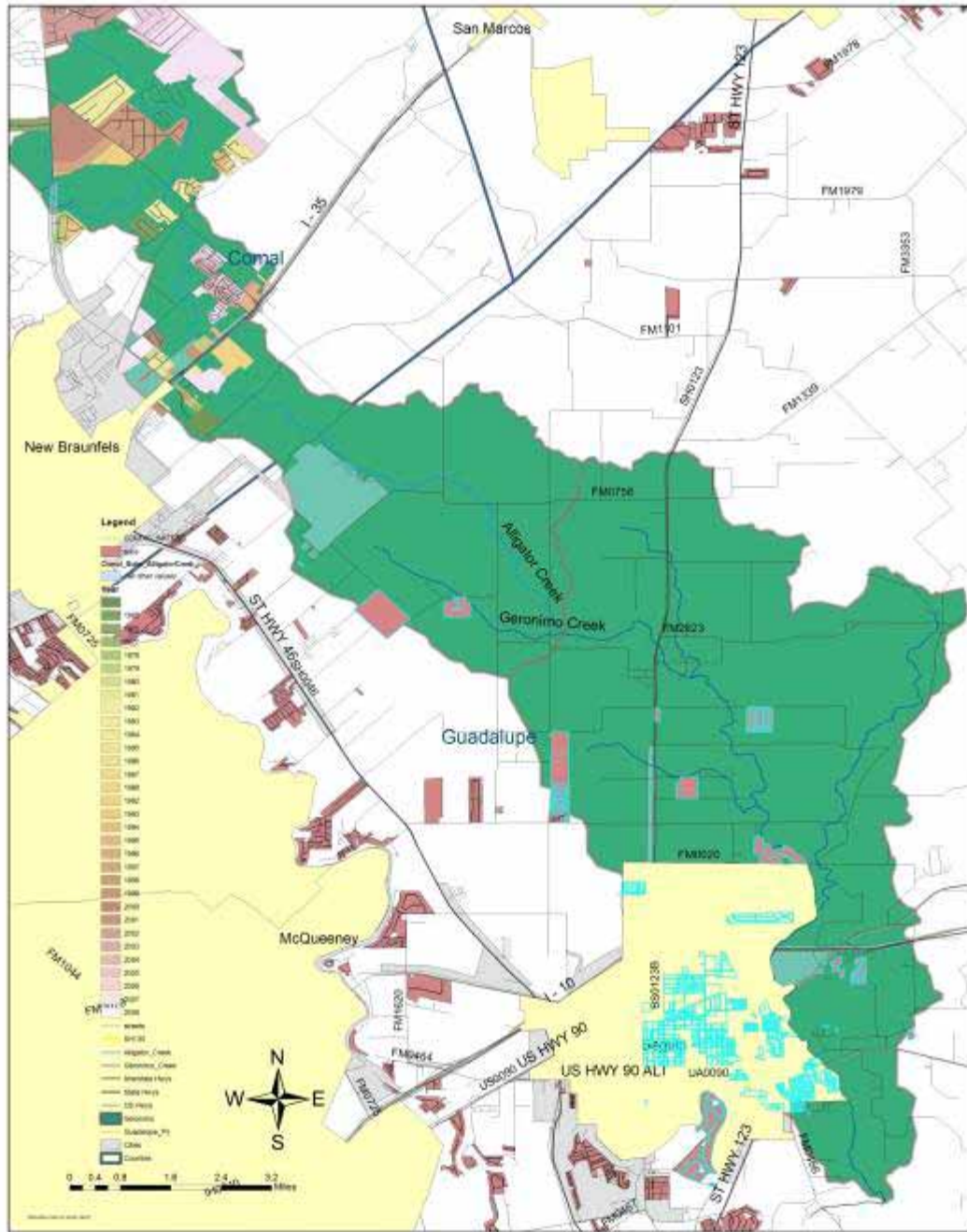
Subdivisions in Comal County

Geronimo and Alligator Creeks Watershed Comal County Subdivisions



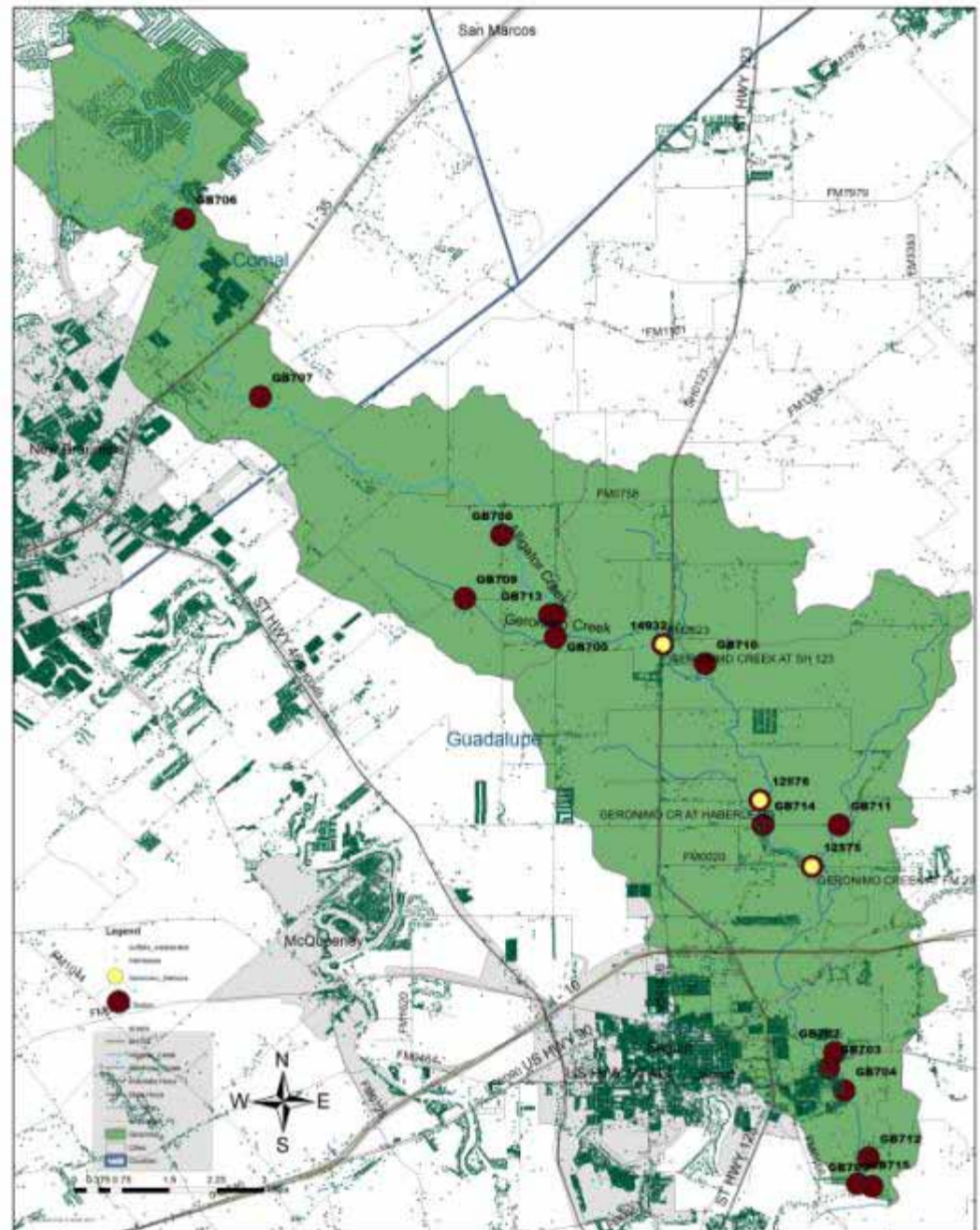
Sewer CCN for Comal and Guadalupe Counties

Geronimo and Alligator Creeks Watershed Sewer CCN Map

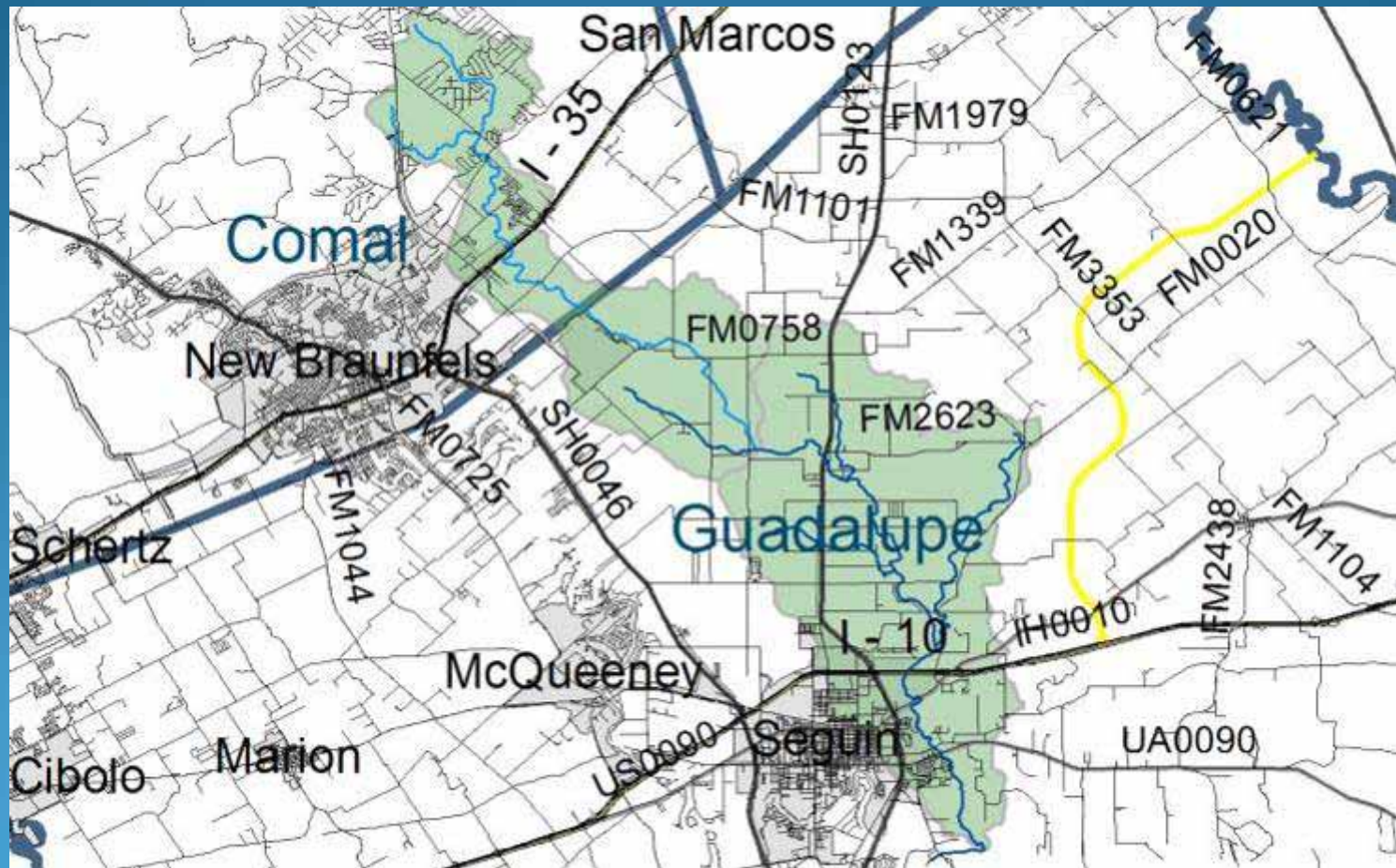


Sampling Stations and 911 Addresses

Geronimo and Alligator Creeks Watershed



State Highway 130



Wastewater Topics Identified at February Meeting

- Onsite Sewage Facilities
 - Where are they? ID problem areas, Proper Maintenance and Operation
- Wastewater Treatment Facilities
- High Density Growth
 - Package Plants and Industrial Plants
- Infrastructure/Sanitary Sewer Overflows
- Illegal Dumping

Sources of Bacteria with Data

- OSSF (Septic Tanks)
- WWTF

Population Estimates - Septics

- How do we estimate how many septics are in the watershed?
- Are there any surveys that can tell us where and how many systems there are and how many are malfunctioning?
- Yes, number of households from census or other data determined to be outside of sewer service.
- Reed, Stowe, and Yanke 2001 Study to Determine the Magnitude of, and Reasons for Chronically Malfunctioning On-Site Sewage Facility Systems in Texas.

Estimate Method for Septic Systems

$E. coli$ Ld = #Systems * failure rate * ppl/home * discharge (gal/pers) * concentration(MPN/100mL) * conversion factors

- # Systems

- #Homes from 2000 Census Blocks
- Remove areas falling within CCN boundary

- Failure Rate

- Septic Drainfield Limitation Class – SSURGO Soil
 - Very Limited (15%) , Somewhat Limited (10%), Slightly Limited (5%), NotRated (8%)

- People per home – 2000 Census Blocks

- Discharge

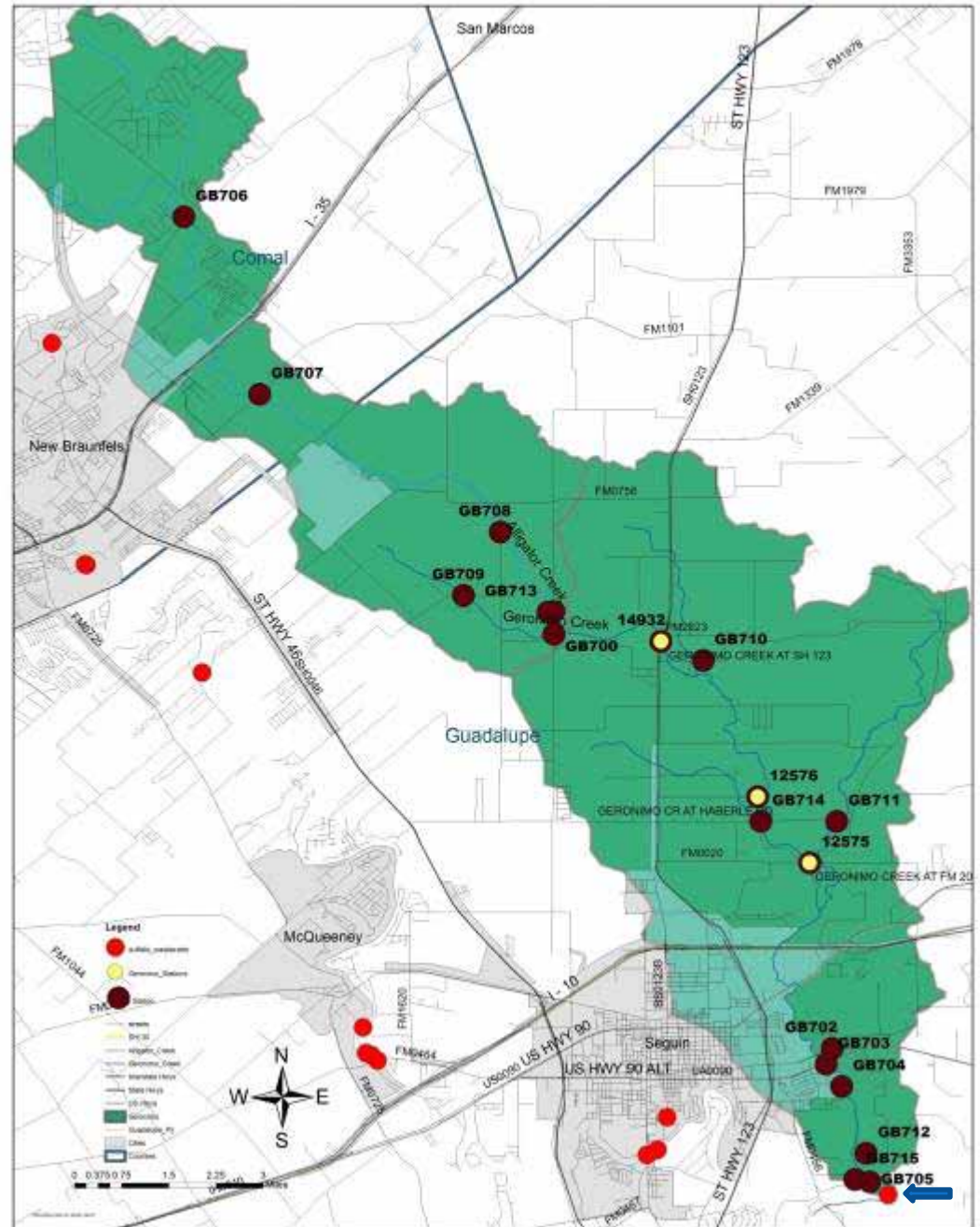
- 60 gal/person/day

- Concentration

- Fecal coliform $10^*10^6/100\text{mL}$ à $5^*10^6/100\text{mL}$ *E. coli*

A Single Wastewater Treatment Plant Discharges to Geronimo

Geronimo and Alligator Creeks Watershed
Sampling Sites and WWTP Discharge



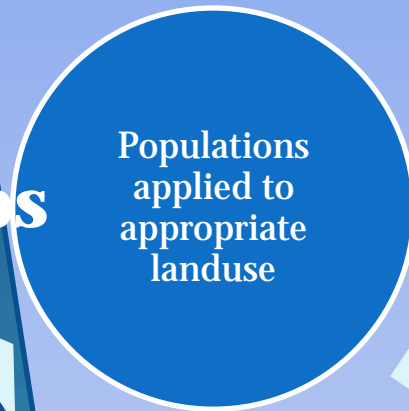
Seguin WWTF

- Located near on Geronimo Creek near confluence with the Guadalupe River
- Recently started self-monitoring for bacteria due to new permit requirement
- Monitored as part of the targeted monitoring program

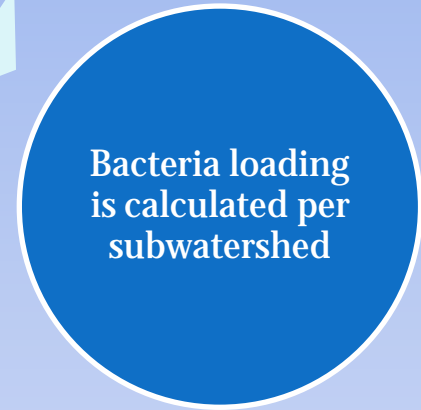
2000 Census Estimates for the Watershed

- 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%

Functions Of Work Groups



Functions of SELECT



SELECT

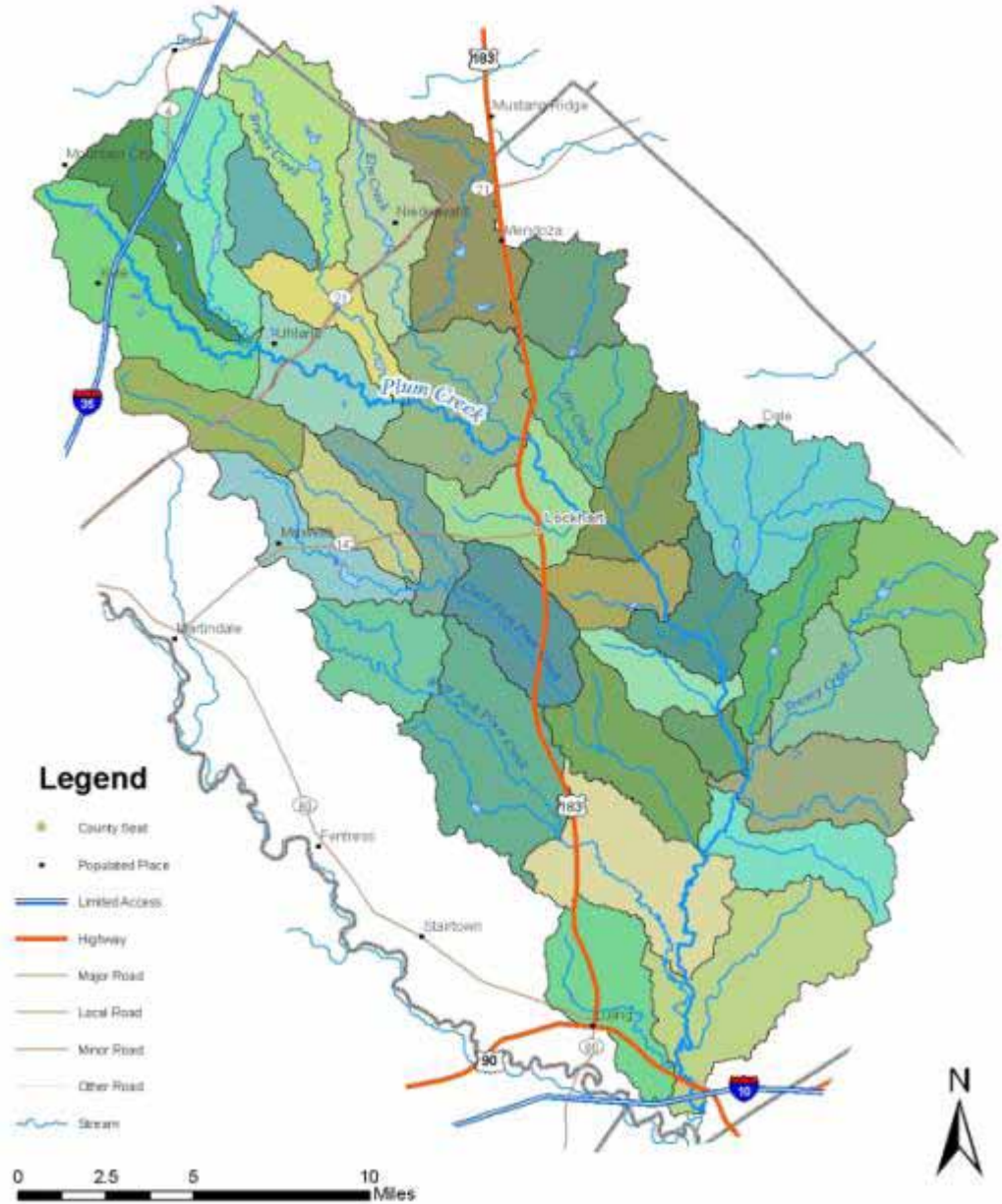
- Estimates loadings of pollutant sources that have been identified by stakeholders
- Makes loading estimates for subwatersheds and entire watershed
- Identifies areas and sources having greatest potential impact on water quality
- Can be used to direct implementation

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

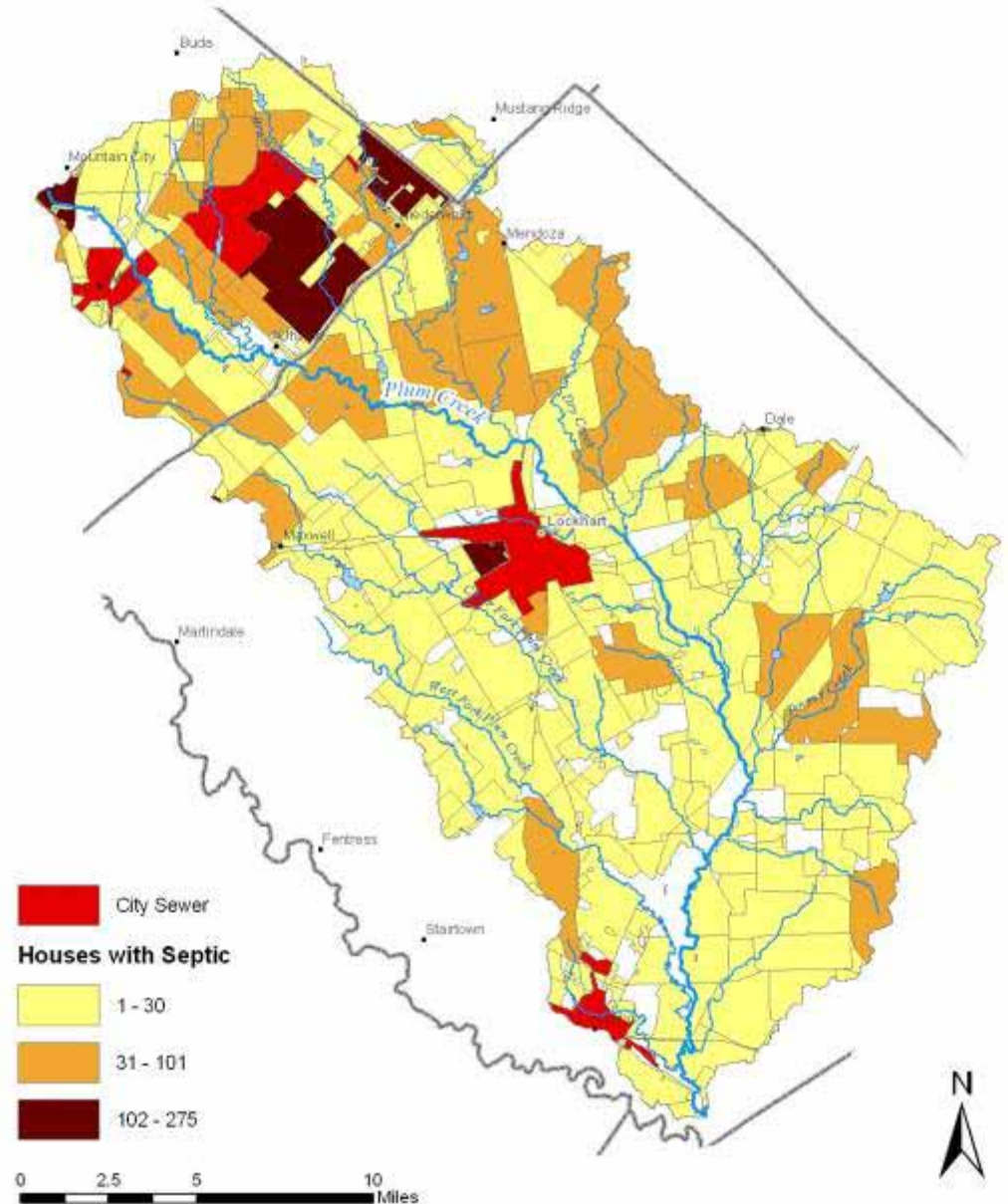
Plum Creek Watershed

Subwatersheds



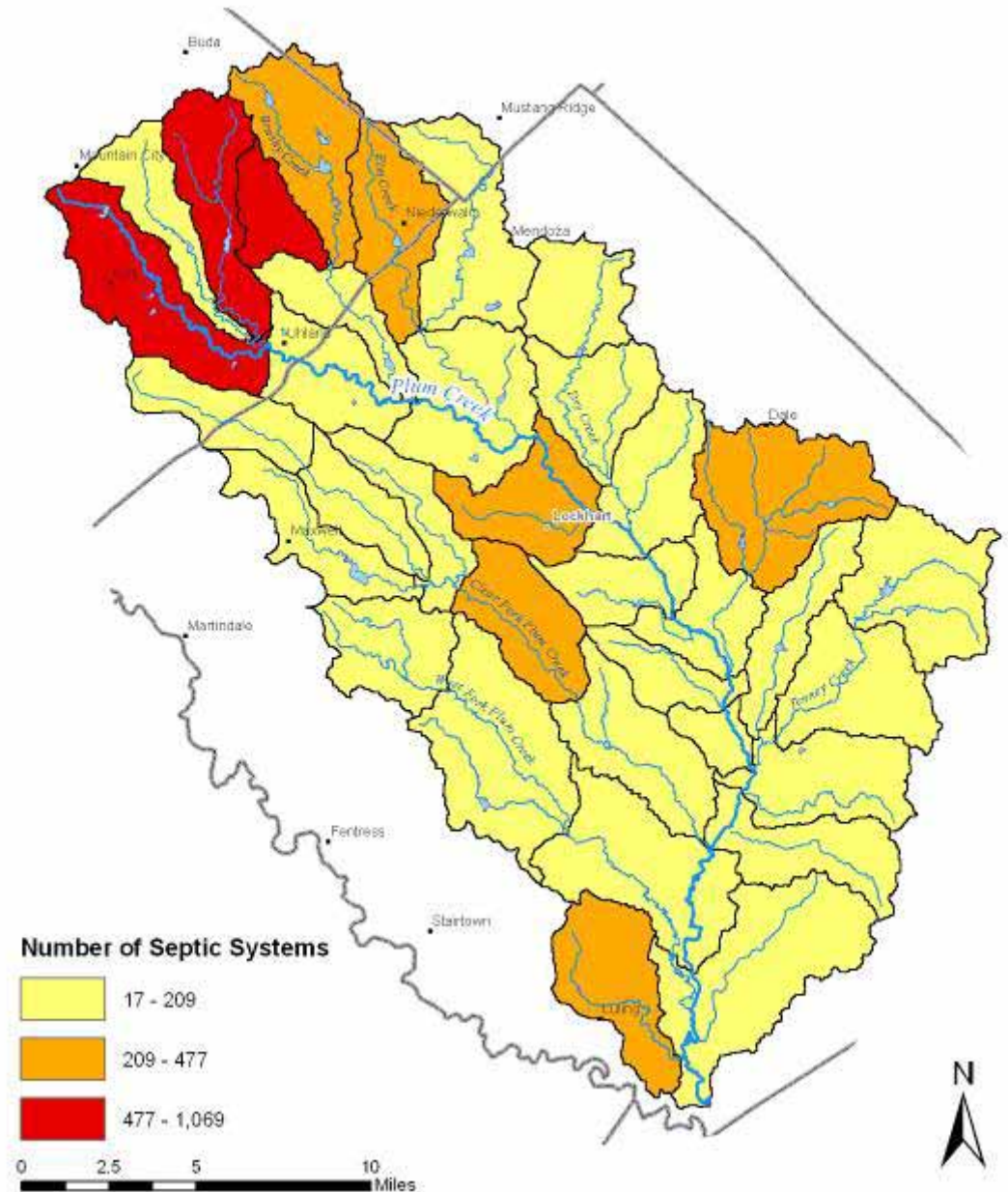
Septic System Distribution

Distribute
septics to
households
based on
census data
and sewer
data



Septic System Use

Density
determined by
sum of septics
in each
subwatershed



Average Daily Potential E. coli Load from Septic Systems

Loading determined from density

