



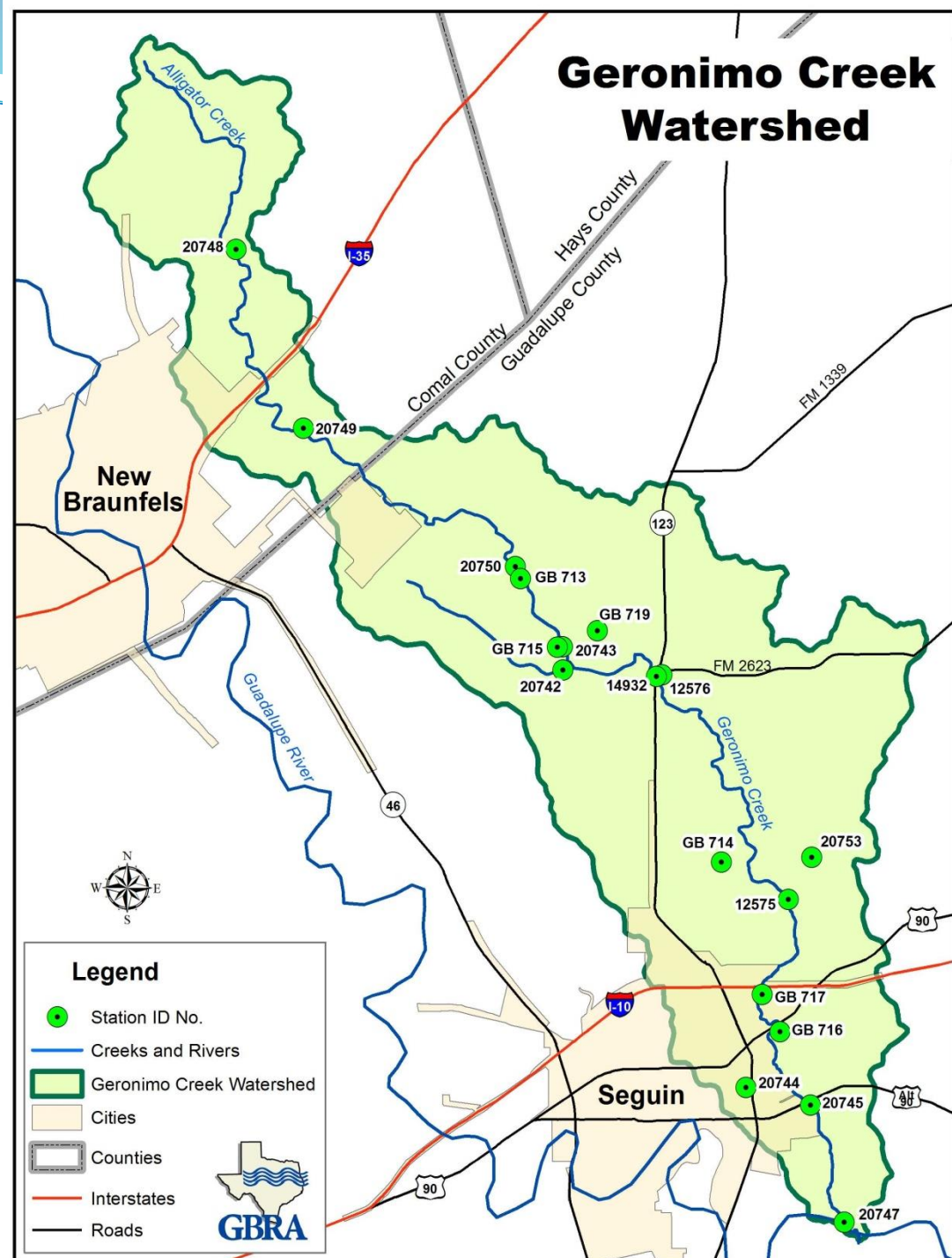
Geronimo and Alligator Creeks WPP Update

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Texas A&M AgriLife Extension

TEXAS A&M
AGRILIFE
EXTENSION

- Rapidly urbanizing
- Creeks are spring fed and from rainfall runoff
- There are no permitted discharges until near the Guadalupe River

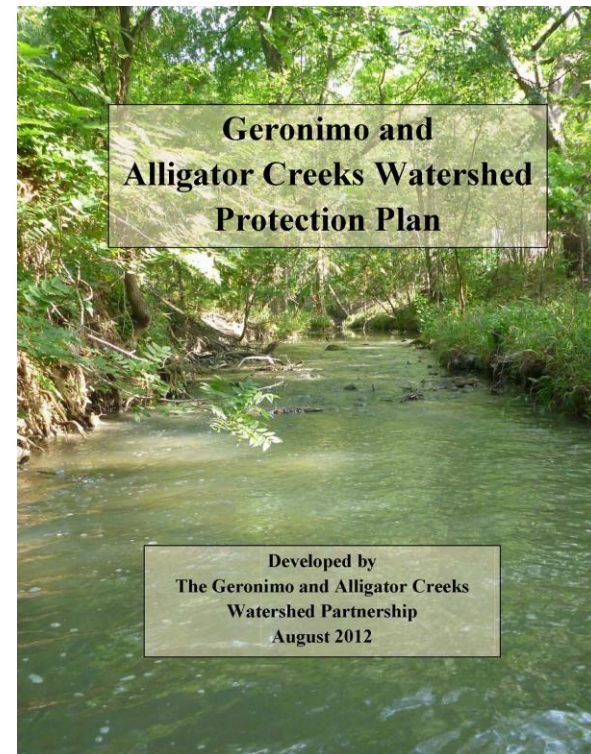




GERONIMO
CREEK

What is the Watershed Protection Plan?

- Contact recreation is not supported due to elevated bacteria concentrations and also has elevated nitrates
- The purpose is to restore and protect the creeks
- It was developed and managed through partnerships among federal, state, county, and local groups and organizations
- It is a summary of voluntary activities that can be done to reduce bacteria and nitrogen from entering the creeks

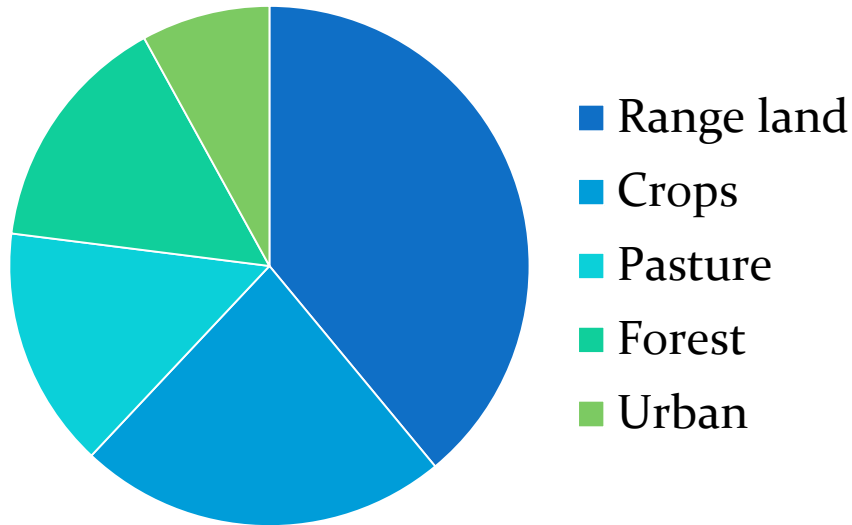


Where is it coming from?

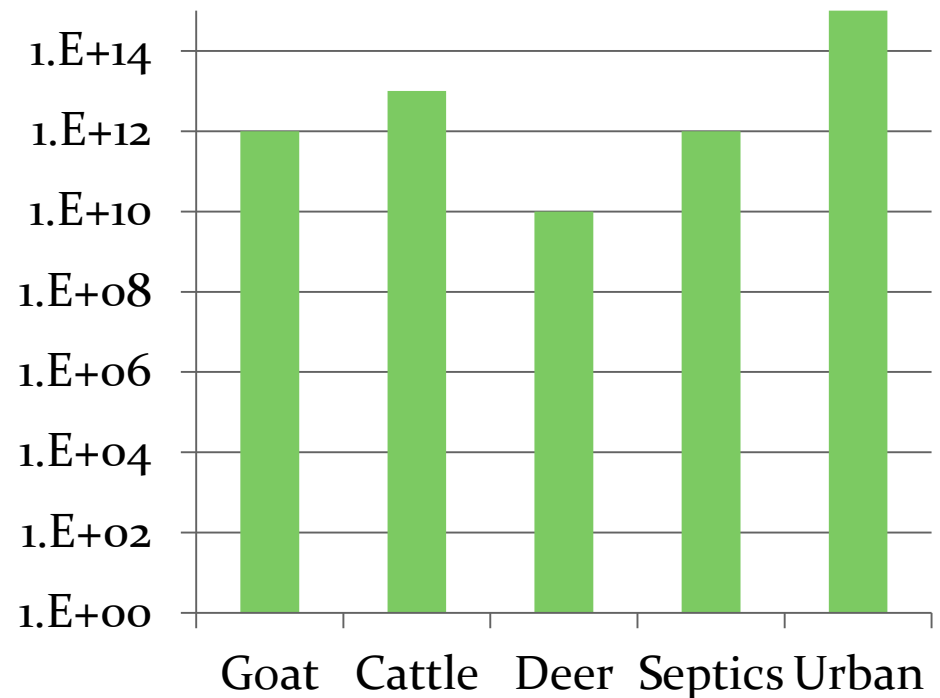
- The bacteria is coming from nonpoint sources
- Potential sources identified in the WPP
 - Urban sources such as dogs and urban runoff
 - Agricultural sources such as livestock, feral hogs, and wildlife
 - Failing septic systems



Land Use % Cover



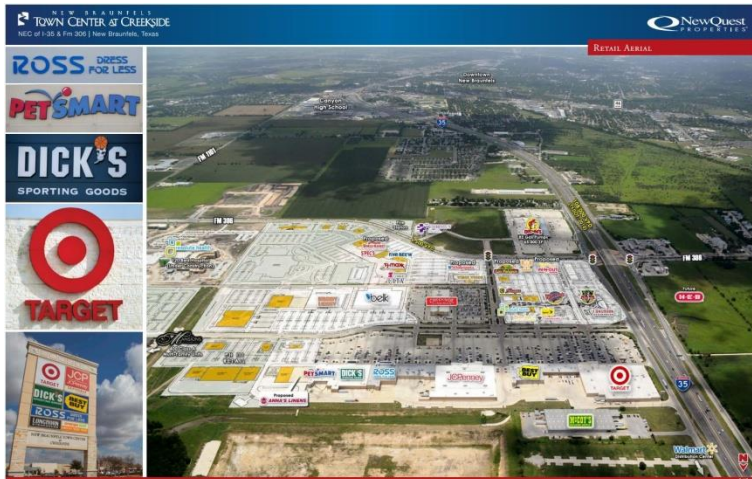
Potential *E. coli* Loading



- In terms of loading, urban runoff was higher than all the other sources, but occupies the lowest land cover %.

Source of Nitrates in Groundwater

- United States Geological Survey Report developed in 2017
- Study performed in cooperation with GBRA and Texas State Soil and Water Conservation Board
- Determined the main contribution is from fertilizer and a smaller portion from septic systems



What is being done?

- Issues along creek
- SWCD Field Technician
- LSHS Workshops
- Septic System Workshops
- Annual Creek Clean Up
- Flow Gage Station
- Bacterial Source Tracking
- Feral Hog Control
- Revegetating Geronimo Creek
- LID at ILSOLC



Issues along the creek

- TxDOT contractor working under Alt. Hwy 90, working without stormwater controls in place



Investigation

- Contacted the TCEQ San Antonio Field Office
- A Field Investigator came out and did an inspection
- Contractor was cited for improper storm water controls



Field Technician

- Cris Perez, is an employee of the Comal-Guadalupe SWCD
- He is a field technician who works with agricultural producers to manage runoff from their operations



Lone Star Healthy Streams Workshop

- Goal is protection of Texas waterways from bacterial contamination from livestock and feral hogs
- Half day workshops for area agricultural producers



Homeowner Septic System Maintenance Class

- Class is conducted in the Spring and Fall past 5 years
- 6 hr in-depth class on aerobic systems
- Guadalupe County homeowners with aerobic systems are required to have a maintenance contract for first 2 years of a new system
 - Next class will be Jan-Feb 2019

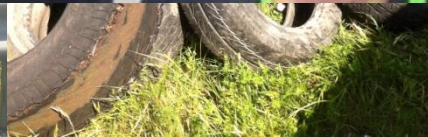


A group of volunteers wearing yellow safety vests are participating in a creek clean-up event. They are standing in a grassy area near a creek, filling black plastic bags with trash. In the background, there are trees and a yellow diamond-shaped sign on a post. The scene is outdoors and appears to be a natural area.

Annual Creek Clean Up Event

- Established the first event in 2013 on the first weekend in April
- In 6 years, over 1,100 volunteers have removed 15,950 pounds of trash and debris
- The 2018 event removed trash from 27 locations covering 17 miles of roadway and creek bank

Annual Creek Clean Up



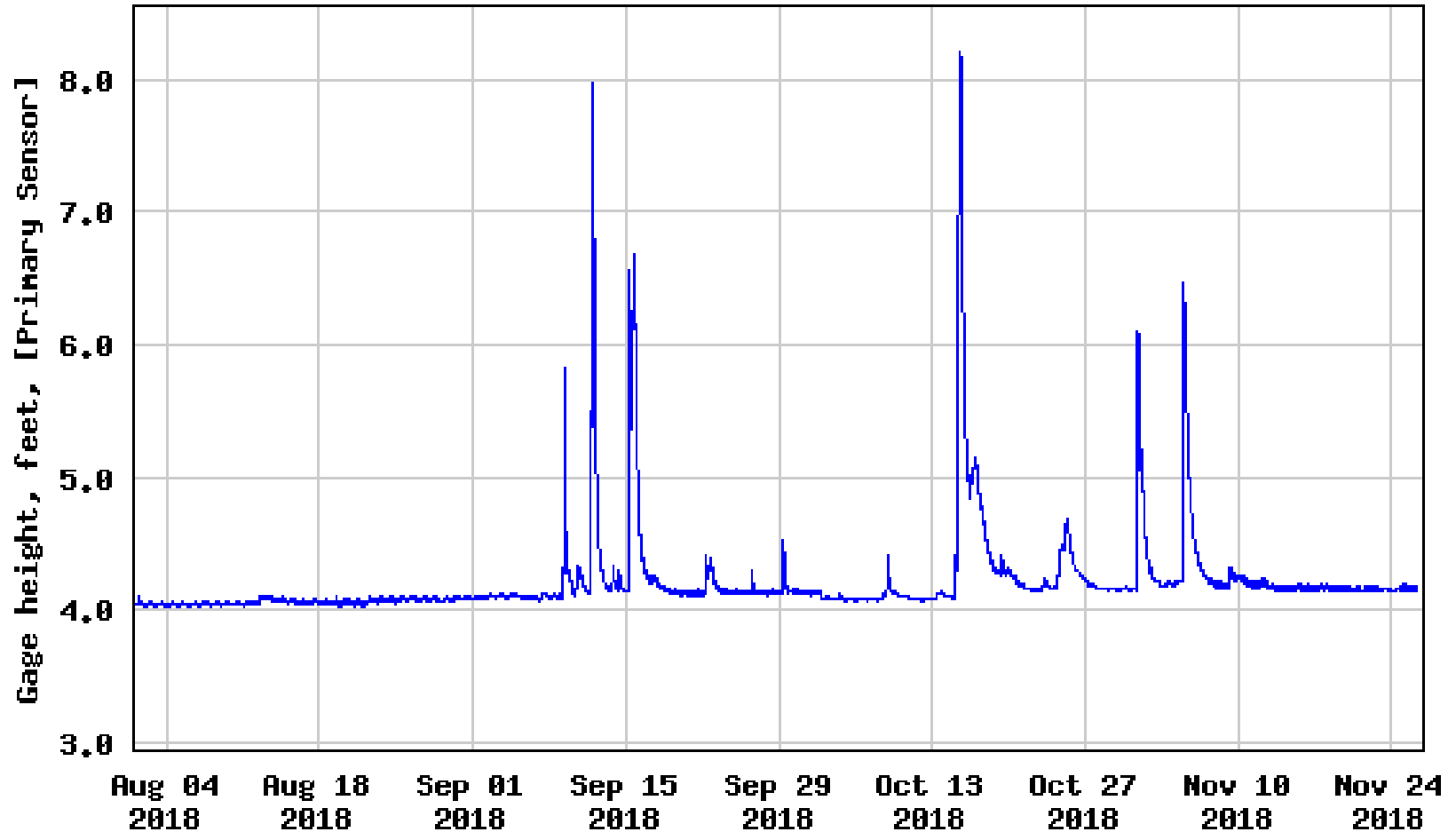
USGS Flow Gage Station

Installed April 2018 at the
Irma Lewis Seguin
Outdoor Learning Center
on Geronimo Creek



Flow Data

USGS 08169780 Geronimo Ck nr Seguin, TX



---- Provisional Data Subject to Revision ----

Bacterial Source Tracking - 2019

- The process of identifying the source of bacteria, by analyzing the DNA found inside of the bacteria
- Can identify primary sources of bacteria
- Identify the relative abundance of bacteria, as it relates to sources



Feral Hog Control

- Bounty Program, trapping supplies, workshop, and webinars
- Participants accumulated points that made them eligible for a drawing to receive a \$500 voucher
- Bounty has been extended to Jan 2019

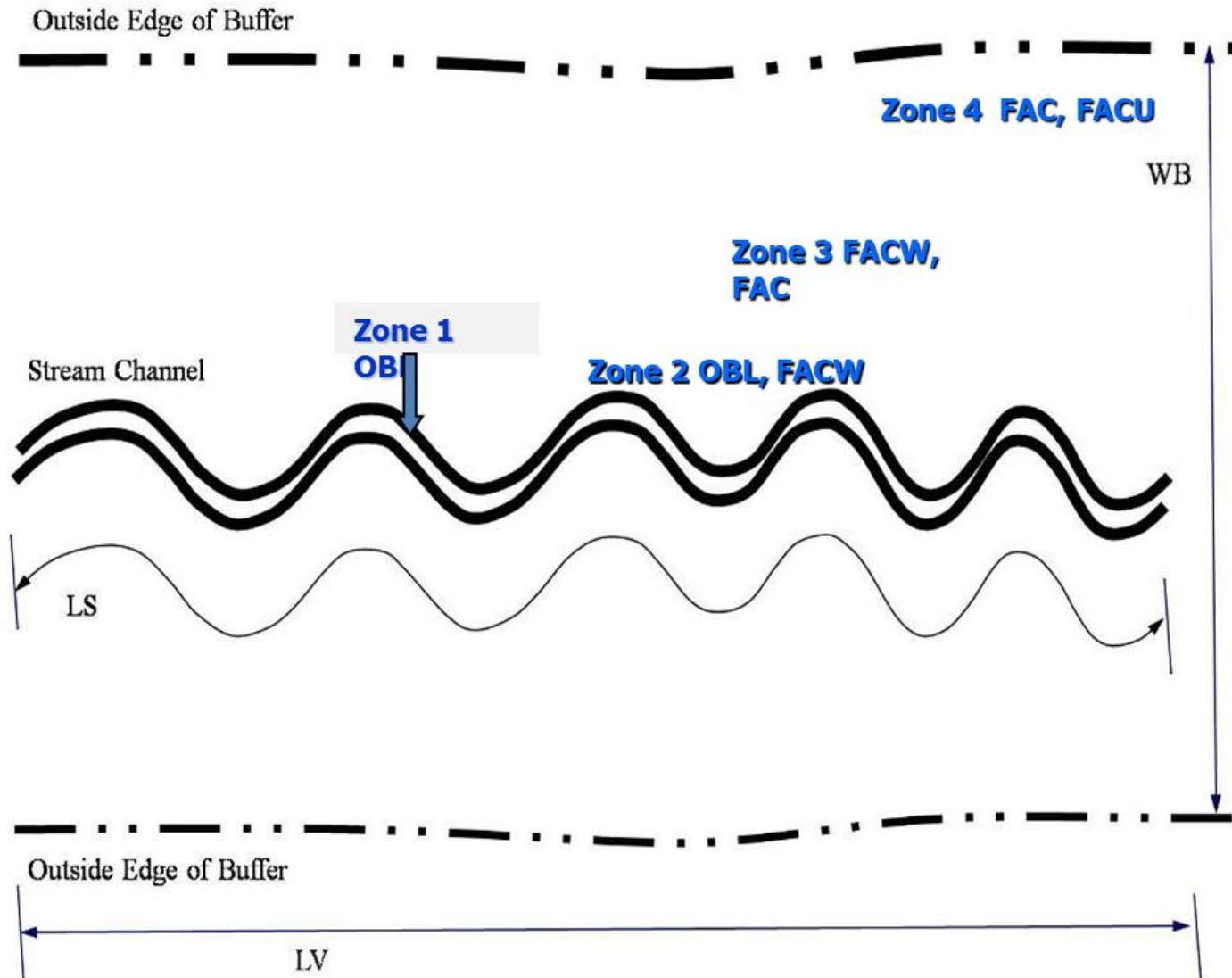


Revegetating Geronimo Creek

- Scientific study to examine the impact of removing invasive vegetation, and replacing it with native plants



Planting Zones



Species Planted – Zone 1

- Fall obedient plant
- Emory sedge
- Creeping spike rush
- Beaked spike rush
- Horse tail
- White star sedge



Species Planted – Zone 3 & 4

- Cherokee sedge
- Purple top
- Texas blue grass
- Lawn sedge
- Stream sedge
- Creek sedge
- Roughleaf dogwood
- Black willow
- Inland sea oats
- Turk's cap



Species Planted – Zone 5

- Cardinal flower
- Emory sedge
- Creeping spike rush
- Beaked spike rush
- White star sedge





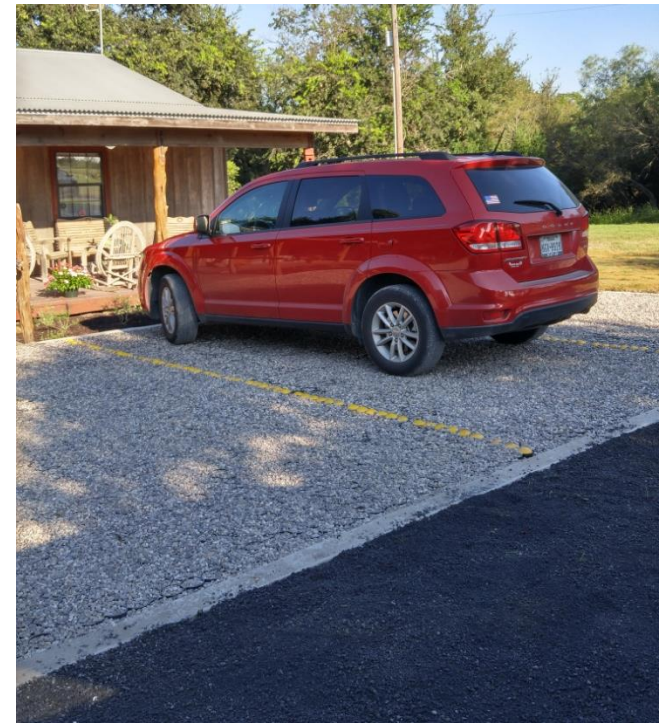






LID Workshops

- Introduce Low Impact Development structures and practices to decision makers, students, and public
- Combination of classroom presentations and outdoor demonstrations



What is Low Impact Development?

- Reduces stormwater runoff
- Reduces pollution in runoff
- Reduces impact to existing water supply
- Improves aesthetics over traditional construction techniques
- Restores and protects aquatic habitat through reduced erosion





RAINWATER HARVESTING

Rainwater harvesting reduces stormwater runoff and the problems associated with it. By harvesting rainwater and storing it, you can slowly release the water back into the soil, either through irrigation or direct application.

The capacity of the adjoining tank at the Outdoor Learning Center is 5,000 gallons. Collected water will be used in the garden, on golf courses, lawns and native grass demonstration areas.

The roof is only partially gabled because the goal was to capture rainwater for the garden and demonstration areas only.

Components of this rainwater harvesting system include: gutters, piping to the tank, tank, pump and associated piping to the garden and demonstration areas.

Benefits of Rainwater Harvesting

- Rainwater harvesting captures, stores, and stores rainwater for later use. It can also reduce runoff, erosion, and contamination of surface water.
- Rainwater can be used for nearly any purpose that requires water such as landscape and stormwater control, vehicle and livestock watering, in-home use, and the greenhouse.
- The practice of rainwater harvesting promotes water conservation because it reduces demand on municipal water supplies. It is a green strategy because the collected water becomes a free source of water during drought.

What is Stormwater?

- Stormwater is rain water falling off a hard surface (roof) it reaches a natural water body. It occurs when the rate of rainfall is greater than the infiltration rate.
- Runoff also occurs when the soil is saturated. Runoff occurs across the surface and flows into streams, creeks and rivers.
- Runoff of stormwater carries the dirt and other debris. The stormwater can also carry and deposit unwanted pollutants, such as sediment, nutrients and pesticides into nearby surface waters.

Did you know?
 One inch of rain on a 1,000 sq. ft. roof will collect 600 gallons of water. In theory, a one inch rainfall on a 100,000 sq. ft. roof will collect 60,000 gallons of water. That's more than most water you could use!













Questions and comments?



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