

# Geronimo and Alligator Creeks Watershed Partnership

## GBRA River Annex in Seguin January 12, 2010 Agenda

- 6:00 Refreshments and Sign In**
- 6:30 Welcome**
- Judge Mike Wiggins, Guadalupe County
  - Debbie Magin, GBRA
- 6:35 Introductions and Discussion of the Steering Committee Members**
- Nikki Dictson, Texas AgriLife Extension Service
- 6:55 Geronimo and Alligator Creeks Watershed Partnership and Ground Rules**
- Nikki Dictson, Texas AgriLife Extension Service
- 7:35 Steps in Watershed Protection Planning**
- Nikki Dictson, Texas AgriLife Extension Service
- 7:50 Potential Point and Nonpoint Sources of Pollution**
- Ward Ling, Texas AgriLife Extension Service
- 8:05 Next Steps**
- Ward Ling, Texas AgriLife Extension Service
- 8:10 Open Discussion and Questions**
- Nikki Dictson, Debbie Magin and Ward Ling
- 8:30 Adjourn**



# Geronimo and Alligator Creeks Watershed Partnership

## **GBRA River Annex in Seguin Agenda February 9, 2010**

- 6:00 Refreshments and Sign In**
- 6:30 Welcome and Introductions**  
– Debbie Magin, GBRA
- 6:35 Update on Additional Steering Committee Members and Signing of the Ground Rules**  
– Nikki Dictson, Texas AgriLife Extension Service
- 6:45 Plum Creek Example of Watershed Protection Plan**  
– Nikki Dictson, Texas AgriLife Extension Service
- 7:00 Draft Outline of Geronimo and Alligator Creek Watershed Protection Plan**  
– Ward Ling, Texas AgriLife Extension Service
- 7:05 Watershed Characterization Data: Land Use and Water Quality**  
– Nikki Dictson, Texas AgriLife Extension Service  
– Ward Ling, Texas AgriLife Extension Service
- 7:50 Formation of Work Groups**  
– Nikki Dictson, Texas AgriLife Extension Service
- 8:20 Next Steps and Questions**  
– Ward Ling, Debbie Magin, and Nikki Dictson
- 8:30 Adjourn**

**Materials Provided: U.S. EPA nine elements, copy of Plum Creek Watershed Protection Plan, Outline of Geronimo and Alligator Watershed Protection Plan, and Ground Rules**



# Geronimo and Alligator Creeks Watershed Partnership

## Urban Nonpoint Source Work Group Meeting March 9, 2010

### 1:00 Welcome and Introductions

- Debbie Magin, GBRA
- Nikki Dictson, Texas AgriLife Extension Service
- Ward Ling, Texas AgriLife Extension Service

### 1:15 Watershed Data and Land Use Types

### 1:30 Nonpoint Pollutant Sources in the Watershed

### 1:45 Estimating Populations in the Watershed

### 2:15 Spatially Explicit Load Estimation Calculation Tool (SELECT)

### 2:30 Planning Documents for Cities of New Braunfels and Seguin

### 2:45 Next Steps

### 3:00 Open Discussion and Questions

### 3:30 Adjourn



# Geronimo and Alligator Creeks Watershed Partnership

## Agricultural Nonpoint Source Work Group Meeting March 9, 2010

### 5:00 Welcome and Introductions

- Debbie Magin, GBRA
- Nikki Dictson, Texas AgriLife Extension Service
- Ward Ling, Texas AgriLife Extension Service

### 5:15 Watershed Data and Land Use Types

### 5:45 Nonpoint Pollutant Sources in the Watershed

### 6:00 Estimating Livestock and Other Animal Populations in the Watershed

### 6:45 Spatially Explicit Load Estimation Calculation Tool (SELECT)

### 7:15 Next Steps

### 7:25 Open Discussion and Questions

### 8:00 Adjourn



# Geronimo and Alligator Creeks Watershed Partnership

## Wastewater Infrastructure Work Group Meeting Monday, April 12, 2010

- 2:00 Welcome and Introductions**
- Debbie Magin, GBRA
  - Nikki Dictson, Texas AgriLife Extension Service
  - Ward Ling, Texas AgriLife Extension Service
- 2:15 Watershed Data and Land Use Types**
- 2:45 Pollutant Sources in the Watershed**
- 3:00 Estimating Populations in the Watershed**
- 3:30 Spatially Explicit Load Estimation Calculation Tool**
- 3:45 Next Steps**
- 4:00 Open Discussion and Questions**
- 4:30 Adjourn**

*5/11 Steering Comm. - GBRA River Annex  
Watershed Tour - 5/10/10*



# Geronimo and Alligator Creeks Watershed Partnership

## **GBRA River Annex in Seguin January 12, 2010**

The meeting was opened by Guadalupe County Judge Mike Wiggins. Judge Wiggins spoke of the flood study that the county is currently funding and of the importance of sound water management and the county's commitment. Then Comal County Commissioner Greg Parker welcomed the attendees on behalf of Comal County and spoke of the county's commitment to the project.

Nikki Dictson, AgriLife, introduced the draft Steering Committee members, explained the overall structure of the group, responsibilities, and their task at hand. Discussion involved adding an additional agricultural producer and the suggestion of modifying the ground rules to allow for flexibility to elect a chairperson for the committee. Work group formation was discussed, and it was agreed to initially form 3 work groups: Agricultural Non-Point Source, Urban (or Urban Effects was in my notes??) Non-Point Source, and a Wastewater Work Group.

Nikki Dictson gave a presentation on the steps in watershed protection planning, and Ward Ling presented on point and nonpoint sources of pollution. Next steps were presented and the next meeting in February was set to be held at the River Annex in Seguin on February 9 at 6pm. Meeting was adjourned.

# Geronimo and Alligator Creeks Watershed Partnership

## **GBRA River Annex in Seguin February 9, 2010**

The meeting was opened by Debbie Magin, GBRA, and self introductions of meeting attendees followed. An update on the status of new Steering Committee members was given, and some discussion followed. The issue of whether or not to include Comal Independent School District on the Steering Committee was discussed. Following the discussion, the first order of business was to present the revised ground rules to the Steering Committee. Revisions included allowance for the Steering Committee to elect a chairperson if deemed necessary, and wording to describe the functions of the work groups. The ground rules were approved and signed by the Steering Committee members present.

Nikki Dictson, Agrilife Extension, presented an overview of the Plum Creek WPP and the components of the plan. This was followed by an explanation of the proposed components to the Geronimo and Alligator Creeks WPP.

Watershed characterization data was presented. This included a Google Earth flyover, land use data, point source locations, and a explanation and discussion of historical and ongoing data collection efforts in the watershed.

A brief overview of work group goals was provided and the attendees divided into the three work groups. Work group meeting dates and times were discussed, as well as a list of proposed topics/sources for the work groups to address throughout the life of the project. Project next steps were presented and meeting was adjourned.

# Proposed Draft Outline of Geronimo and Alligator Creek Watershed Protection Plan

## Executive Summary

1. Watershed Management Introduction.....	
2. Overview of the Watershed.....	
<i>Geography</i> .....	
<i>Physical and Natural Features</i> .....	
<i>Water Quality</i> .....	
3. The Geronimo and Alligator Creek Watershed Partnership.....	
<i>Partnership Formation and Mission</i> .....	
<i>Partnership Structure</i> .....	
4. Methods of Analysis.....	
<i>Land Use Classification</i> .....	
<i>Determining Sources of Pollution</i> .....	
5. Pollutant Source Assessment in the Geronimo and Alligator Creek Watershed .....	
6. Watershed Goals and Objectives.....	
<i>Bacteria</i> .....	
<i>Nutrients</i> .....	
7. Management Measures for Implementation.....	
8. Outreach and Education Strategy.....	
9. Measures of Success.....	
10. Monitoring Component.....	
11. Evaluation and Adaptive Management .....	
12. Project Implementation.....	
Appendices.....	
References.....	



January 04, 2010

## **Public invited to January watershed meeting in Seguin**

### **Event will address water quality in Geronimo, Alligator creeks**

**By:** Paul Schattenberg, 210-467-6575

**Contact(s):** Nikki Dictson: 979-575-4424, [n-dictson@tamu.edu](mailto:n-dictson@tamu.edu)

SEGUIN – The Texas AgriLife Extension Service, Guadalupe-Blanco River Authority and Texas State Soil and Water Conservation Board are inviting area residents to partner with them in addressing water quality issues in Geronimo Creek and Alligator Creek watersheds.

A meeting to address area water quality issues will be held Jan. 12 at the Guadalupe-Blanco River Authority Annex Building, 905 Nolan Street in Seguin.

Registration and refreshments will begin at 6 p.m., with presentations from 6:30-8:30 p.m.

The agenda includes a welcome by Guadalupe County Judge Mike Wiggins, discussion and selection of steering committee members, watershed partnership ground rules, water quality protection planning, discussion on sources of pollution, and a question-and-answer session.

"This will be our first meeting of the Geronimo and Alligator Creeks Watershed Partnership," said Nikki Dictson, AgriLife Extension water quality program specialist. "This meeting and all future meetings are being held to facilitate the public involvement in developing and implementing a watershed protection plan."

Dictson added that watershed protection plans are designed to use best management practices to restore and protect surface waters affected by pollution.

Geronimo Creek and its tributary, Alligator Creek, flow through Comal and Guadalupe counties near New Braunfels and Seguin, she said. They were identified for watershed protection plan development due to concerns about high levels of bacteria and harmful nutrients.

The 2008 Texas Water Quality Inventory published by the Texas Commission on Environmental Quality showed Geronimo Creek had elevated bacteria concentrations and nitrogen levels. The water body has been monitored by the Guadalupe-Blanco River Authority since 1996 as part of the Clean Rivers Program.

As area development and population growth continue and urban land use increases, the role of hydrology and the need for improved water quality will also increase, according to data by the cities of Seguin and New Braunfels and their respective water utilities.

“We are now inviting area residents and landowners to participate in solving these water quality issues by attending one of two project kick-off meetings and joining the Geronimo and Alligator Creeks Watershed Partnership,” Dictson said. “The public can join us at these meetings to hear how they can participate in the upcoming planning process.”

“The active participation of the citizens and landowners in the watershed is essential to the success of this important project,” said Debbie Magin, director of water quality services for the Guadalupe-Blanco River Authority.

Key local partners supporting the process include Comal and Guadalupe counties, the cities of Seguin and New Braunfels, New Braunfels Utilities and the Comal-Guadalupe Soil and Water Conservation District.

“The Texas State Soil and Water Conservation Board is providing funding for the Guadalupe-Blanco River Authority and the Texas AgriLife Extension Service to facilitate the stakeholder process for developing a Geronimo and Alligator Creeks Watershed Protection Plan through a Clean Water Act grant from the U.S. Environmental Protection Agency,” noted Loren Henley, the state board's project manager for Geronimo Creek.

For more information on the meetings or to RSVP, contact Dictson at 979-575-4424 or [n-dictson@tamu.edu](mailto:n-dictson@tamu.edu) or Magin at 830-379-5822, [dmagin@gbra.org](mailto:dmagin@gbra.org) .

More information on the Geronimo and Alligator Creeks Watershed Partnership can be found at <http://geronimocreek.org> .

# AgriLife NEWS

March 05, 2010

## Watershed group meetings slated for spring in Seguin, New Braunfels

**By:** Paul Schattenberg, 210-467-6575

**Contact(s):** Nikki Dictson, 979-575-4424, [n-dictson@tamu.edu](mailto:n-dictson@tamu.edu)

Debbie Magin, 830-379-5822, [dmagin@gbra.org](mailto:dmagin@gbra.org)

SEGUIN/NEW BRAUNFELS – The Geronimo and Alligator Creeks Watershed Partnership will conduct various workgroup meetings this spring in Seguin and New Braunfels.

Data obtained from these group meetings will be used in watershed characterization and evaluation toward developing a Watershed Protection Plan. The plan is a voluntary, locally driven means toward creating a sustainable, proactive approach for cleaning up and protecting watersheds such as Geronimo and Alligator Creeks, according to program coordinators.

Groups will identify and recommend strategies to reduce pollution from various sources, plus discuss outreach and education programs for target audiences associated with these sources.

“Area residents are invited to become a member of any group. We are asking people who live and work in the Geronimo and Alligator Creeks watershed to join at least one of the three work groups that interest them,” said Nikki Dictson, Texas AgriLife Extension Service program specialist.

Dictson said the names, times and locations for upcoming topical group meetings will be:

### Urban Nonpoint Source Work Groups:

· 1 p.m. on March 9 and Apr. 13, Continental Automotive Systems, 3740 North Austin St., Seguin. (Enter through the front lobby.)

### Agricultural Nonpoint Source Work Groups:

· 5 p.m. on March 9 and Apr. 13, Geronimo Volunteer Fire Department, 6551 N. State Hwy. 123, Seguin.

## Wastewater Work Groups:

· 2 p.m. on Apr. 12 and May 10, Navarro High School Library, 6350 North State Hwy. 123, Seguin.

“The agricultural work group will focus on the specific causes and sources of pollution stemming from agricultural and forestry activities on cropland, pastureland, and rangeland,” Dictson said. “That group also will look at potential impacts from livestock, native wildlife, and invasive species, such as feral hogs that are found in the watershed,”

“The urban work group will discuss specific causes and sources of nonpoint source pollution stemming from various urban sources that include pollution as a result of residential, commercial and industrial land use,” says Dictson.

“Some of the potential pollution sources discussed in this work group will include runoff from paved areas, and pollution from pets and other non-livestock species,” said Ward Ling, AgriLife Extension program specialist. “It may also address urban growth and development and its effect on water quality and usage.”

The wastewater work group will address sources of pollution stemming from on-site sewage facilities and wastewater treatment facilities. This group will discuss the potential for regionalization of wastewater treatment, the feasibility for conversion of septic systems to more centralized wastewater treatment facilities and the repair or replacement of malfunctioning septic systems.

“Active participation by residents of the Geronimo and Alligator Creeks watershed is essential to successfully protect these vital, but limited, water resources,” said Debbie Magin, director of water quality services, Guadalupe-Blanco River Authority.

For more information or to sign up to be a member of one or more of these groups, contact Nikki Dictson at 979-575-4424, [n-dictson@tamu.edu](mailto:n-dictson@tamu.edu) , or Debbie Magin, Guadalupe-Blanco River Authority, 830-379-5822, [dmagin@gbra.org](mailto:dmagin@gbra.org) .

Additional information can be obtained from the AgriLife Extension offices in Comal or Guadalupe counties.

A Clean Water Act nonpoint source grant was provided to the Guadalupe-Blanco River Authority by the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency to facilitate the development of this watershed protection plan.

For more information on the efforts for the watershed protection plan, visit

<http://geronimocreek.org> .

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## AgriLife Communications

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## Geronimo and Alligator Creeks

Geronimo Creek and its tributary Alligator Creek are located in Comal and Guadalupe Counties. The almost 70-square-mile Geronimo Creek watershed lies within the larger Guadalupe River Basin. The lower portion of the Geronimo Creek watershed is in the extra-territorial jurisdiction (ETJ) of Seguin. The upper portion of the Alligator Creek watershed lies in the ETJ of New Braunfels. Alligator Creek begins on the west side of IH-35 and flows southeast, travelling through a rapidly developing area of the Austin-San Antonio corridor.

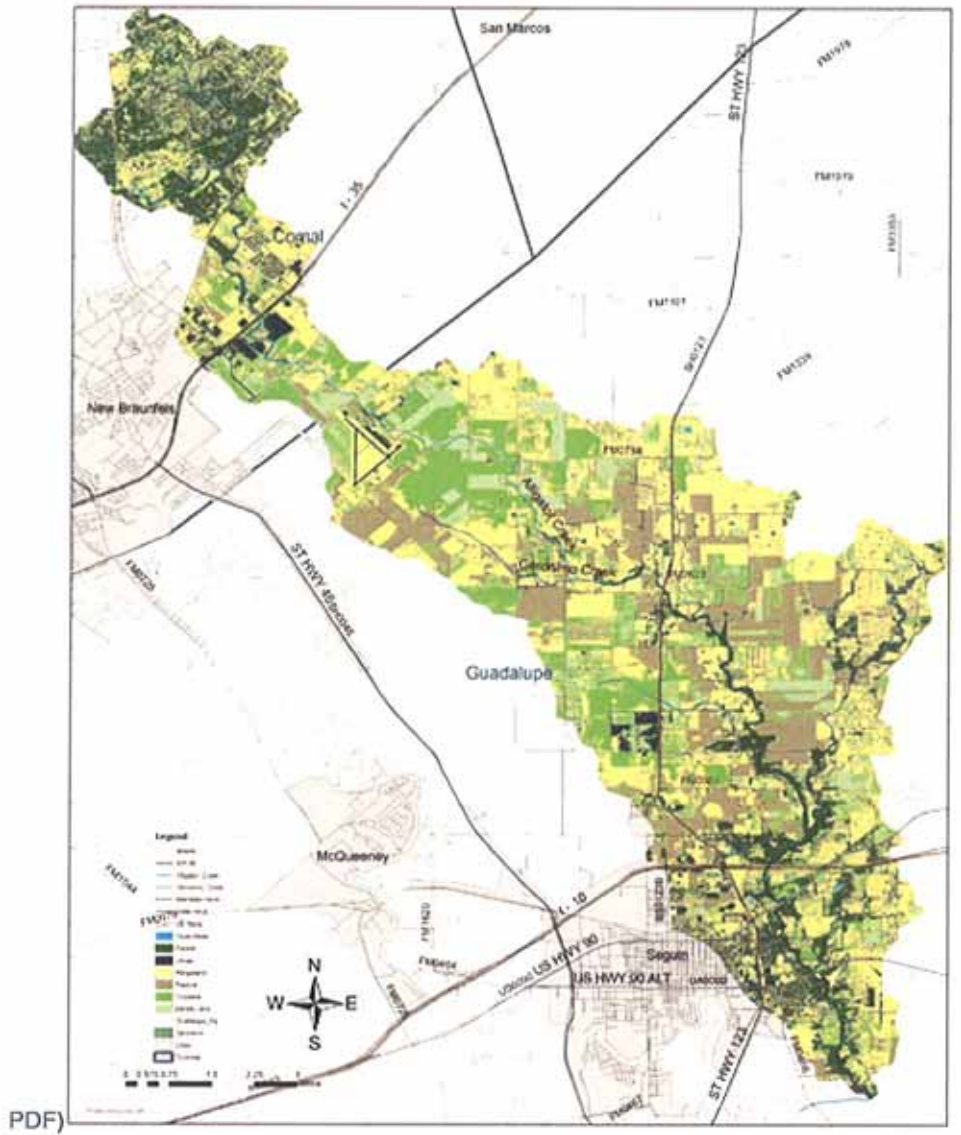
As development and population growth continue, the percentage of urban land use will rise and play an increasingly important role in the hydrology and water quality of Geronimo Creek and its tributaries.

Based on routine water quality sampling of Geronimo Creek, the stream is impaired by elevated bacteria concentrations and has nutrient enrichment concerns for nitrate-nitrogen. High bacteria concentrations do not support contact recreation use and high levels of nitrogen can cause algal blooms and excessive growth of aquatic vegetation.

The Geronimo and Alligator Creeks Watershed Protection Planning project is a locally driven process to develop and implement a plan that will improve and protect water quality in the watershed now and into the future. Please join us by attending meetings, signing up for email updates, and telling others about this important project!

[Geronimo Creek Watershed & Land Use Map](#) (Download as PDF)





A wide banner image showing a river flowing through a wooded area with trees in shades of brown and green. The text "Geronimo and Alligator Creeks Watershed Partnership" is overlaid in a white, serif font.

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## Project Overview

The Geronimo and Alligator Creeks Watershed Partnership (Partnership), a collaboration between local citizens, cities, counties, and state and federal agencies, has been formed. The purpose of the Partnership is to develop and implement a Watershed Protection Plan (WPP).

An Example of a Watershed Protection Plan: The Plum Creek Watershed Partnership

Anyone can be a member of the Partnership and participate on work groups. A Steering Committee has been formed as the decision-making body for the Partnership. Three work groups have been designated by the Steering Committee to address specific issues, identify and make recommendations on implementation strategies, and support development of the WPP. The three work groups are Urban Nonpoint Source Work Group, Agricultural Nonpoint Source Work Group, and the Wastewater Work Group. A Technical Advisory Group composed of personnel from key state and federal water quality agencies will provide support and guidance.

Through a federal Clean Water Act §319(h) grant from the Texas State Soil and Water Conservation Board, the Guadalupe-Blanco River Authority (GBRA) and the Texas AgriLife Extension Service are facilitating the stakeholder process for development of the Watershed Protection Plan.

Watershed Planning is driven by local stakeholders and includes the following key tasks: 1) identify desired water quality conditions and measurable goals, 2) prioritize appropriate management practices and needed education and awareness programs to achieve those goals, 3) assist in the development of the WPP document, 4) lead implementation of the plan at the local level, and 5) communicate implications of the WPP to other interested constituents within the watershed.

- Geronimo and Alligator Creeks Watershed Steering Committee
- Geronimo and Alligator Creeks Watershed Technical Advisory Group
- Geronimo and Alligator Creeks Watershed Work Groups
  - Urban Nonpoint Source Work Group
  - Agricultural Nonpoint Source Work Group
  - Wastewater Work Group
- Geronimo and Alligator Creeks Watershed Partnership Ground Rules







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## Meetings

Participation by stakeholders from throughout the watershed is essential for the planning process to be successful. Public meetings were held in the watershed during October 2009, while the planning process started in January 2010 at the first Partnership Meeting. Please plan to participate in this important effort to improve and protect your water resources and encourage others to do so as well.

### Workgroup Meetings in April

#### *Agricultural Nonpoint Source Work Group*

Tuesday, April 13, 2010 at 5:00 p.m.  
Geronimo Volunteer Fire Department  
6551 N. State Hwy. 123  
Seguin, TX 78155

#### *Urban Nonpoint Source Work Group*

Tuesday, April 13, 2010 at 1:00 p.m.  
Continental Automotive Systems  
3740 North Austin St.  
Seguin, Texas 78155  
Enter through the front lobby where the pond and flags are.



#### *Wastewater Work Group*

Monday, April 12, 2010 at 2:00 p.m.  
Navarro High School Library  
6350 North State Hwy. 123  
Seguin, Texas 78155

### Meetings in May

#### *Wastewater Work Group*

Monday, May 10 at 2:00 p.m.  
Navarro High School Library  
6350 North State Hwy. 123  
Seguin, Texas 78155

*Geronimo and Alligator Creeks Partnership Meeting*

Tuesday, May 11, 2010 at 5:00 p.m.  
Sign in and Presentation beginning at 5:30 p.m.  
GBRA River Annex  
905 Nolan St.  
Seguin, TX 78155

**Past Meetings***Agricultural Nonpoint Source Work Group*

Tuesday, March 9, 2010 at 5:00 p.m.  
Geronimo Volunteer Fire Department  
6551 N. State Hwy. 123  
Seguin, TX 78155

- Agenda
- Powerpoint (slideshow version)
- Comal County Profile
- Guadalupe County Profile

*Urban Nonpoint Source Work Group*

Tuesday, March 9, 2010 at 1:00 p.m.  
Continental Automotive Systems  
3740 North Austin St.  
Seguin, Texas 78155

- Agenda
- Powerpoint (slideshow version)

*Geronimo and Alligator Creek Partnership Steering Committee Meeting*

Tuesday, February 9, 2010  
6:00 p.m. - 8:30 p.m.  
GBRA River Annex  
905 Nolan St.  
Seguin, TX 78155

- Agenda
- Powerpoint (slideshow version)
- Powerpoint (print version)

*Geronimo and Alligator Creek Partnership Steering Committee Meeting*

Tuesday, January 12, 2010  
GBRA River Annex

- Agenda
- Powerpoint (slideshow version)

- Powerpoint (print version)



*Public Meetings - Geronimo and Alligator Creek Partnership*  
October 6 and 8, 2009  
GBRA River Annex

- Agenda
- Powerpoint (slideshow version)
- Water Quality Conditions and Concerns
- Project Monitoring

### **Additional Watershed Meetings or Workshops**

*Guadalupe County Flood Protection Plan for Geronimo and Alligator Creeks Public Meeting and Workshop*  
Wednesday, November 4, 2009  
6:00 p.m. - 8:30 p.m.  
Navarro ISD Elementary Cafeteria

- Notice of Public Meeting
- Agenda

*Collection of Agricultural Waste Pesticides*  
Wednesday, October 28, 2009  
Guadalupe County  
Road and Bridge  
2605 N. Guadalupe St.  
Seguin, TX 78155  
Travis Franke  
County Extension Agent  
830-379-1972  
t-franke@tamu.edu



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## Water Quality

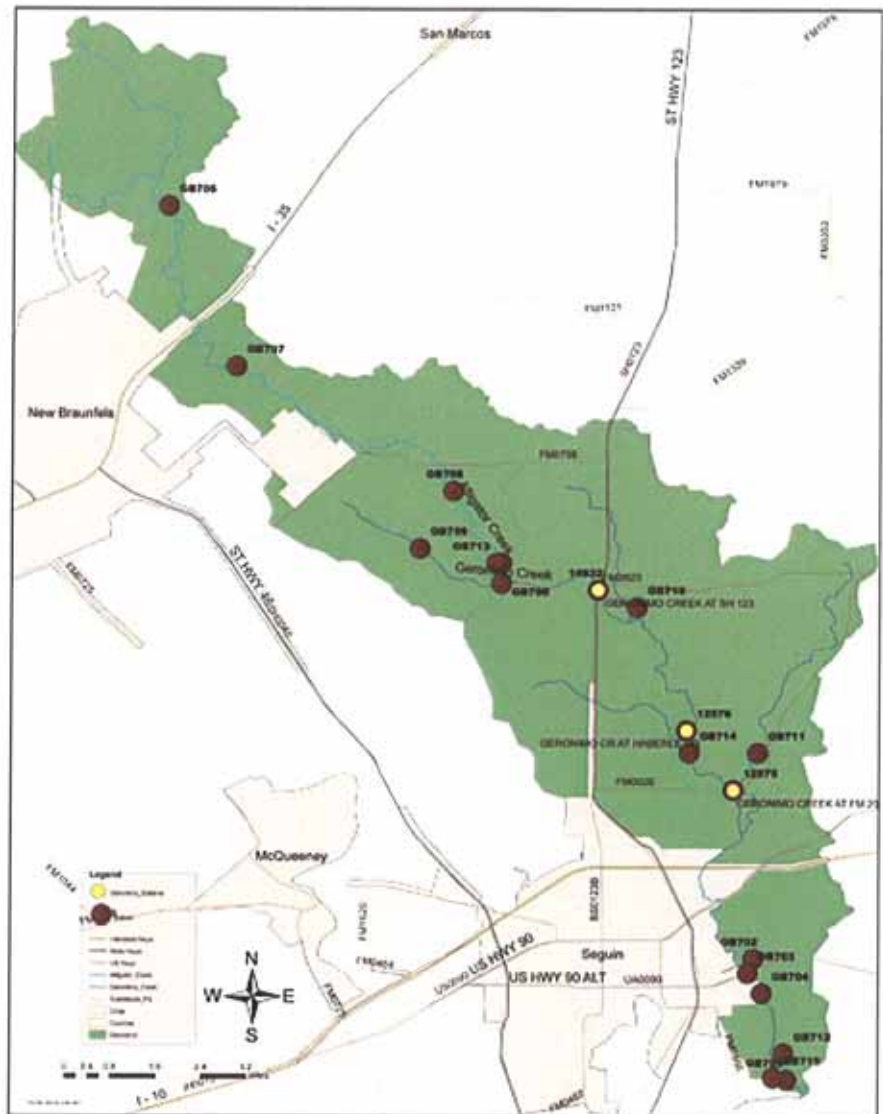
Geronimo Creek has been monitored by GBRA as part of the Clean Rivers Program since late 1996. The creek was monitored at the SH-123 crossing until August 2003, at which time the routine monitoring site was moved to the Haberle Road crossing. The new site was a past TCEQ monitoring site and an ecoregion reference site.

The 2008 Texas Water Quality Inventory has Geronimo Creek, Segment 1804A, listed with a concern due to elevated nitrate-nitrogen concentrations because all 60 measurements exceeded the screening level of 1.95 mg/L. In addition, the stream is listed as impaired because the geometric mean for E. coli bacteria (162 organisms per 100 milliliters) exceeded the contact recreation stream standard of 126 organisms per 100 milliliters. GBRA is currently monitoring and collecting additional data at 19 sites throughout the watershed. There are three historical monitoring sites that are identified on the map below.

### Geronimo Creek Watershed Stations Map

Using the map below, click on a station to get information on the location and a link to the current data collected at the site. Alternatively, you can also view a list of sampling sites.





**List of Stations**

Using the list below, click on a link in the Data Table column to get the current data collected at the site. Alternatively, you can also view a map of sampling sites.

Site No.	Site Name	Lat.	Long.	Sample Type	Data
12575	Geronimo Creek @ FM 20	29.62	97.93	targeted	PDF Excel
12576	Geronimo Creek @ Haberle Rd	29.63	97.94	routine	PDF Excel
14932	Geronimo Creek @ SH 123	29.67	97.97	routine	PDF Excel
GB700	Geronimo Creek @ Huber Rd, Upstream of Alligator Creek Confluence	29.67	97.99	routine	PDF Excel

GB701	Alligator Creek @ Huber Rd (Headwater)	29.68	97.99	routine	PDF Excel
GB702	Baer Creek @ East Walnut Street	29.58	97.93	routine	PDF Excel
GB703	Geronimo Creek @ Hwy 90A	29.66	97.60	routine	PDF Excel
GB704	Geronimo Creek at Mt. Vernon, downstream of Bear Creek Confluence	29.57	97.92	routine	PDF Excel
GB705	Geronimo Creek @ Hollub Lane	29.55	97.92	routine	PDF Excel
GB706	Alligator Creek @ FM 1102	29.77	98.08	targeted	PDF Excel
GB707	Alligator Creek @ FM 1101	29.73	98.06	targeted	PDF Excel
GB708	Alligator Creek @ CR 107A Barbarossa Rd	29.69	98.00	targeted	PDF Excel
GB709	Geronimo Creek @ CR 130 Pieper Rd	29.68	98.01	targeted	PDF Excel
GB710	Unnamed Tributary at CR 121 Heinemeyer Rd	29.67	97.96	targeted	PDF Excel
GB711	Unnamed Tributary @ CR 108 Laubach Rd	29.63	97.93	targeted	PDF Excel
GB712	10277-003 City of Seguin Geronimo Creek WWTF	29.55	97.92	WWTF	PDF Excel
GB713	Water Well near Alligator Creek Headwater Springs @ Huber Road	29.68	97.99	well	PDF Excel
GB714	Water Well near Geronimo Creek @ Laubach Rd	29.63	97.95	well	PDF Excel
GB715	Water Well near Geronimo Creek @ Hollub Lane	29.55	97.92	well	PDF Excel

### Description of Water Quality Field Parameters

**Field Parameters** are those water quality constituents that can be obtained on-site and generally include: dissolved oxygen (DO), conductivity, pH, temperature, stream flow (not in reservoirs), and secchi disc depth (reservoirs only).

Dissolved Oxygen indicates the amount of oxygen available in the stream to support aquatic life. DO can be reduced by the decomposition of organic matter.

Conductivity is a measure of the water body's ability to conduct electricity and indicates the approximate levels of dissolved salts, such as chloride, sulfate and sodium in the stream. Elevated concentrations of dissolved salts can impact the water as a drinking water source and as a suitable aquatic habitat.

pH is a measure of the hydrogen ion concentration in an aqueous solution. It is a measure of the acidity or basic property of the water. Chemical and biological processes can be affected by the pH. pH can be influenced by dissolved constituents, such as carbon dioxide and by point and nonpoint source contributions to the stream.



Temperature of the water affects the ability of the water to hold dissolved oxygen. It also has an impact on the biological functions of aquatic organisms.

Stream Flow is an important parameter affecting water quality. Low flow conditions common in the warm summer months create critical conditions for aquatic organisms. Under these conditions, the stream has a lower assimilative capacity for waste inputs from point and nonpoint sources.

**Conventional Parameters** are typical water quality constituents that require laboratory analysis and generally include: nutrients, chlorophyll a, total suspended solids, turbidity, hardness, chloride, and sulfate.

Nutrients include the various forms of nitrogen and phosphorus. Elevated nutrient concentrations may result in excessive aquatic plant growth and can make a water body unfit for its intended use(s).

Chlorophyll a is a plant pigment whose concentration is an indicator of the amount of algal biomass and growth in the water.

Total Suspended Solids indicate the amount of particulate matter suspended in the water column.

Turbidity is a measure of the water clarity or light transmitting properties. Increases in turbidity are caused by suspended and colloidal matter such as clay, silt, finely divided organic and inorganic matter, plankton and other microscopic organisms.

Hardness is a composite measure of certain ions in the water, primarily calcium and magnesium. The hardness of the water is critical due to its effect on the toxicity of certain metals. Typically, higher hardness concentrations in the receiving stream can result in reduced toxicity of heavy metals.

Chloride and Sulfate are major inorganic anions in water and wastewater. Numeric stream standards for chloride and sulfate have been set on all of the classified stream segments in the basin. Both of these inorganic constituents can impact the designated uses and can come from point and nonpoint sources, such as wastewater discharges, oil field activities, and abandoned flowing wells from groundwater with elevated concentrations of dissolved solids.

Bacteria, specifically the *E. coli* bacteria, is used as an indicator of the possible presence of disease-causing organisms.

Biological and Habitat assessment includes collection of fish community data, benthic macroinvertebrate (insects) data, and measurement of physical habitat parameters. This information is used to determine whether the stream adequately supports a diverse and desirable biological community. The physical, chemical and biological data are used together to provide an integrated assessment of aquatic life support.

24 Hr DO studies perform measurements of DO in frequent intervals (e.g. one hour) in a 24-hour period. The average and minimum concentrations in the 24-hour period are compared to corresponding criteria. This type of monitoring takes into account the diurnal variation of DO and avoids the bias in samples taken only at certain times of the day.

Metals in Water, such as mercury or lead, typically exist in low concentrations, but can be toxic to aquatic life or human health when certain levels are exceeded. To obtain accurate data at low concentrations, the GBRA uses special clean methods that minimize the chance for sample contamination and provide high quality data.

Organics and Metals in Sediment could be a source of toxicants for the overlying water, though currently there are no numeric sediment standards.



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## Publications

### Publications

- [Geronimo and Alligator Creeks Watershed Partnership Information Sheet](#)

### Press Releases

- **March 5, 2010**  
Watershed group meetings slated for spring in Seguin, New Braunfels
- **January 4, 2010**  
Public invited to January watershed meeting in Seguin
- **September 18, 2009**  
October meetings to address water quality in Geronimo and Alligator Creeks
- **September 17, 2009**  
Local Watershed Planning Effort to Begin in Geronimo and Alligator Creeks

### Watershed Maps

- [General Watershed Map \(Download as PDF\)](#)
- [Geronimo Creek Watershed Stations Map \(Download as PDF\)](#)
- [Geronimo Creek Watershed & Land Use Map \(Download as PDF\)](#)

### Quarterly Reports & Associated Documents

- **October - December 2009**  
Progress Report  
Attachments
- **July - September 2009**  
Progress Report  
Attachments
- **April - June 2009**  
Progress Report
- **October 2008 - March 2009**  
Progress Report  
Attachments

### Communications

- **January 4, 2010**  
Letter of Invitation to Public Meeting
- **September 15, 2009**  
Letter of Invitation to Public Meeting





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