

Locally Driven Watershed Protection Planning in the Plum Creek Watershed

Nikki Dictson, Mark McFarland and Matt Berg
Texas AgriLife Extension Service

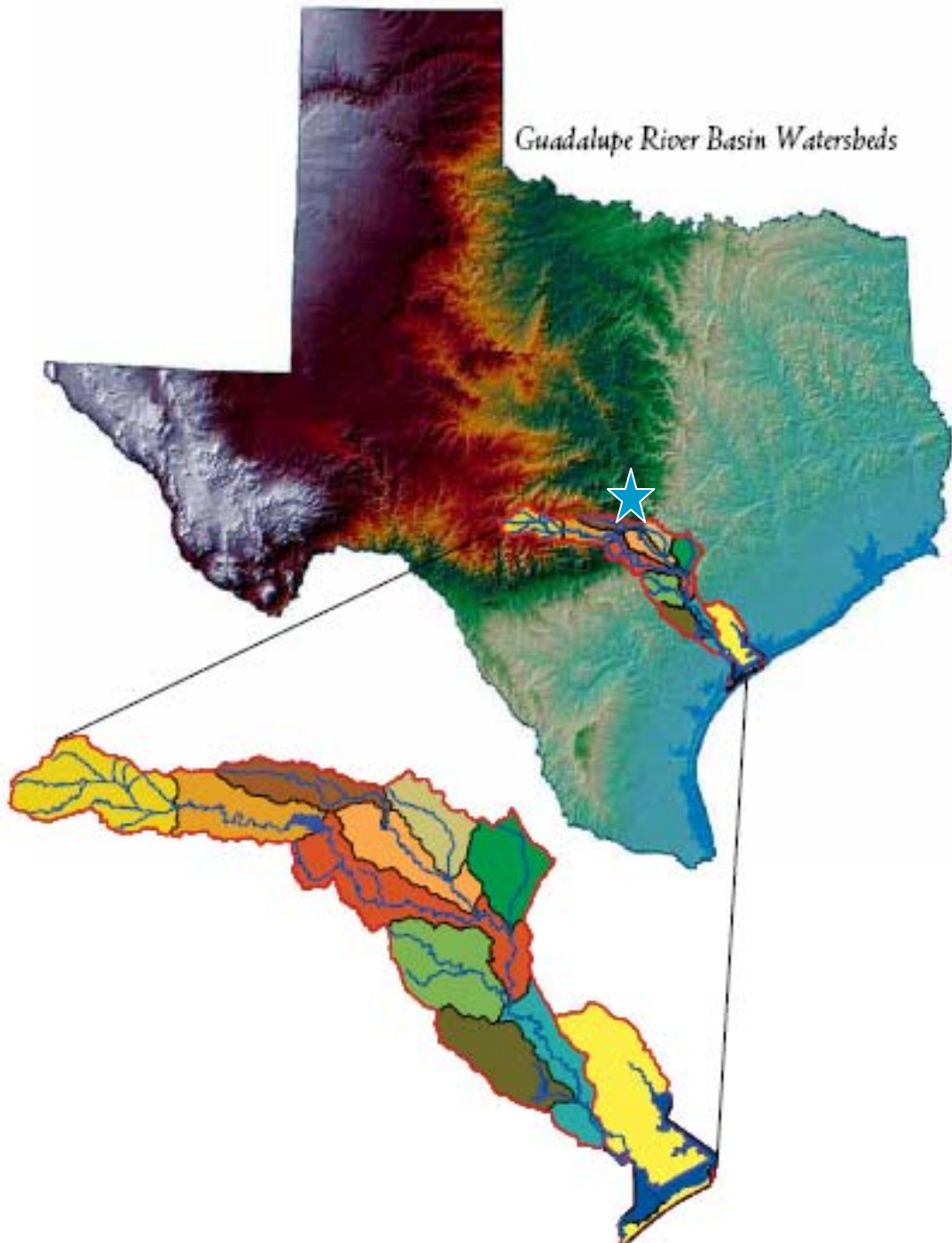
Watershed Protection Plan

- Texas AgriLife Extension Service partnered with the Texas State Soil and Water Conservation Board to pilot a project in an impaired waterbody that had not had a TMDL yet
- The Wharton Regional Watershed Coordination Steering Committee facilitated by the TSSWCB, selected Plum Creek for their pilot Project
- The nine element watershed protection plan was to be developed by local stakeholders in the watershed in 18 – 24 months



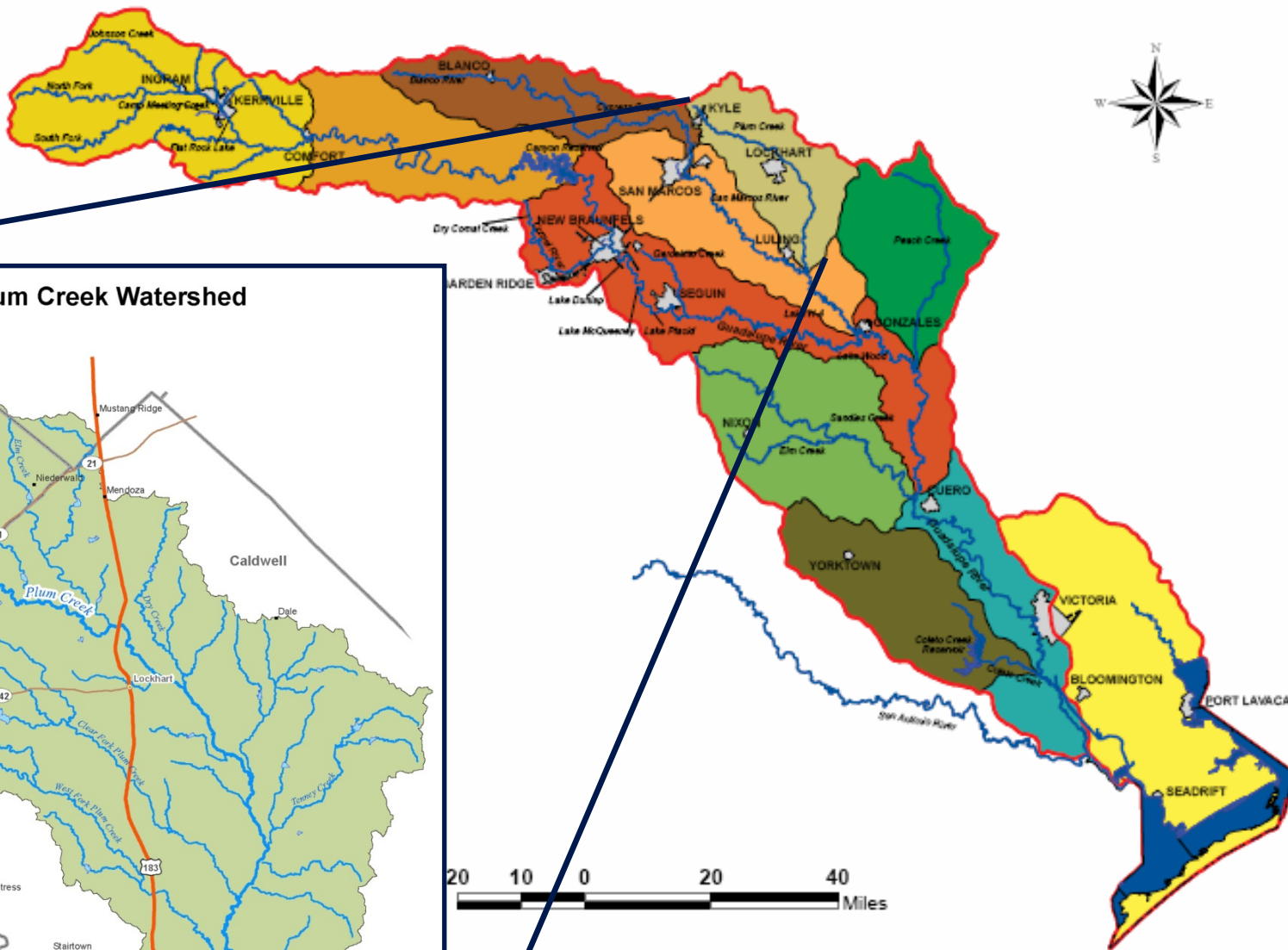
Pilot Project Goals

- The overall goal being to restore and protect the water quality and to remove Plum Creek from the 303(d) list
- Develop and deliver science-based watershed education, outreach and technology transfer to local stakeholders enabling them to address local water quality impairments
- Engage and facilitate stakeholders through the process of developing nine element Watershed Protection Plans

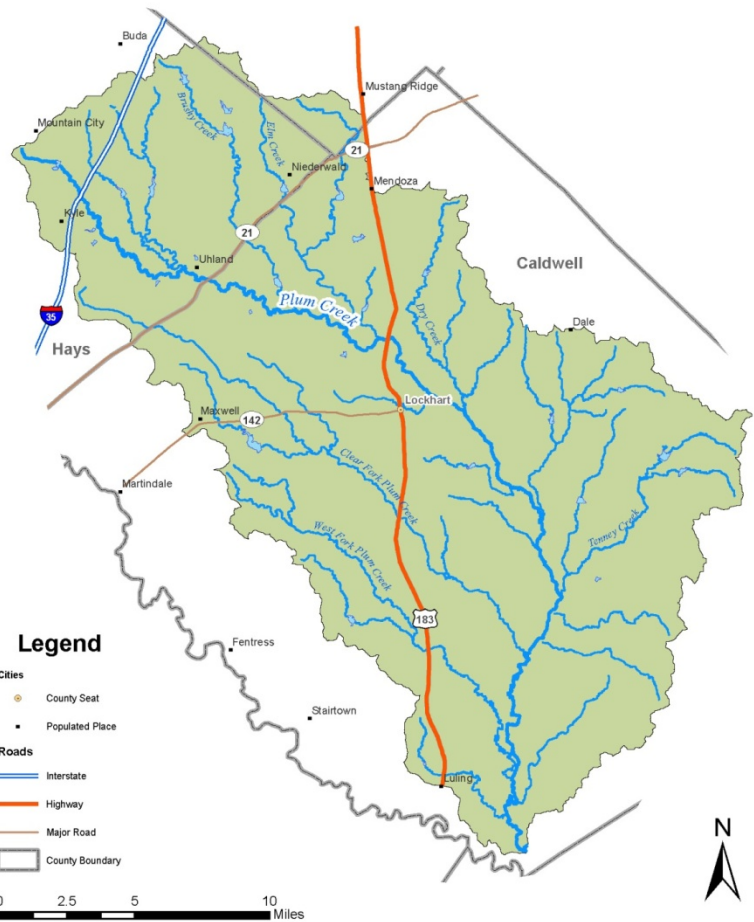


Plum Creek is
located in the
Guadalupe-
Blanco River
Basin

GUADALUPE RIVER BASIN WATERSHEDS



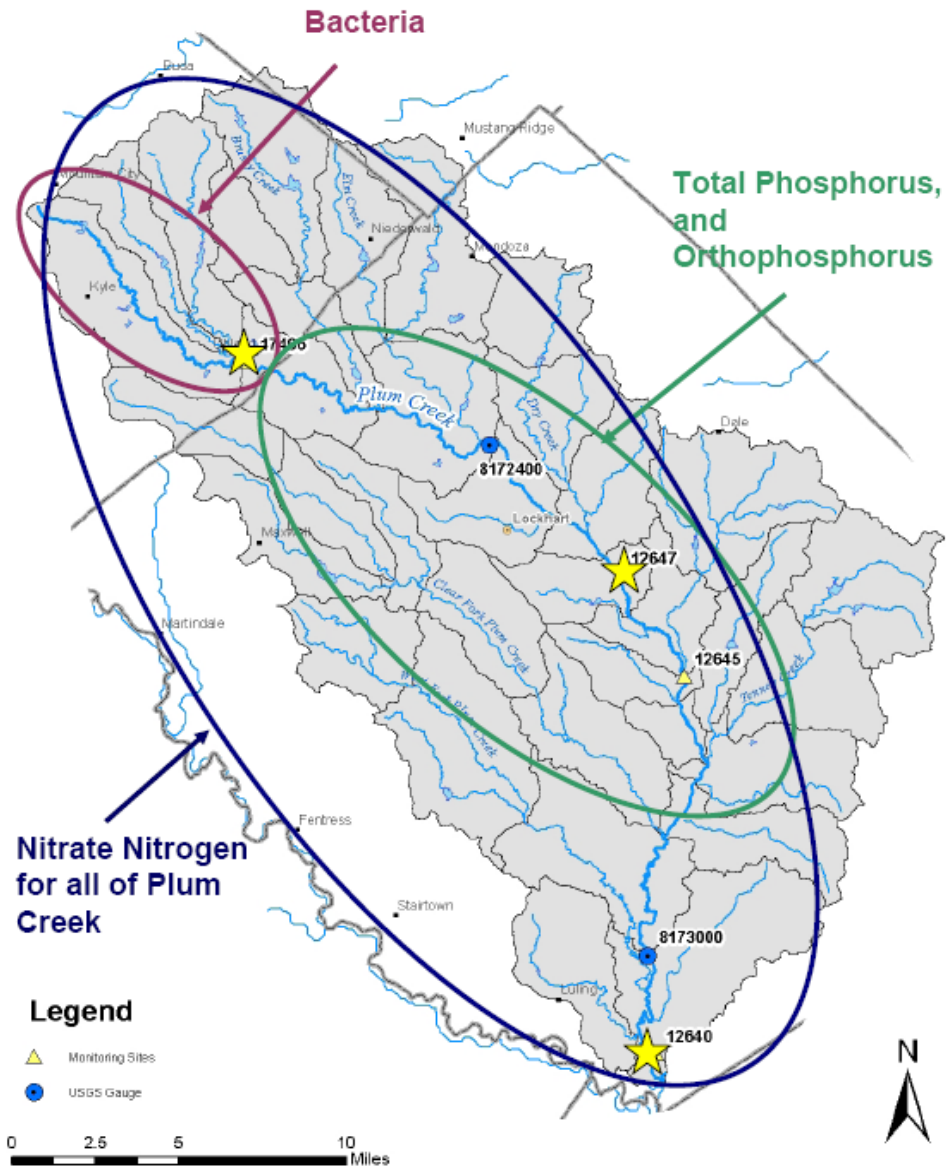
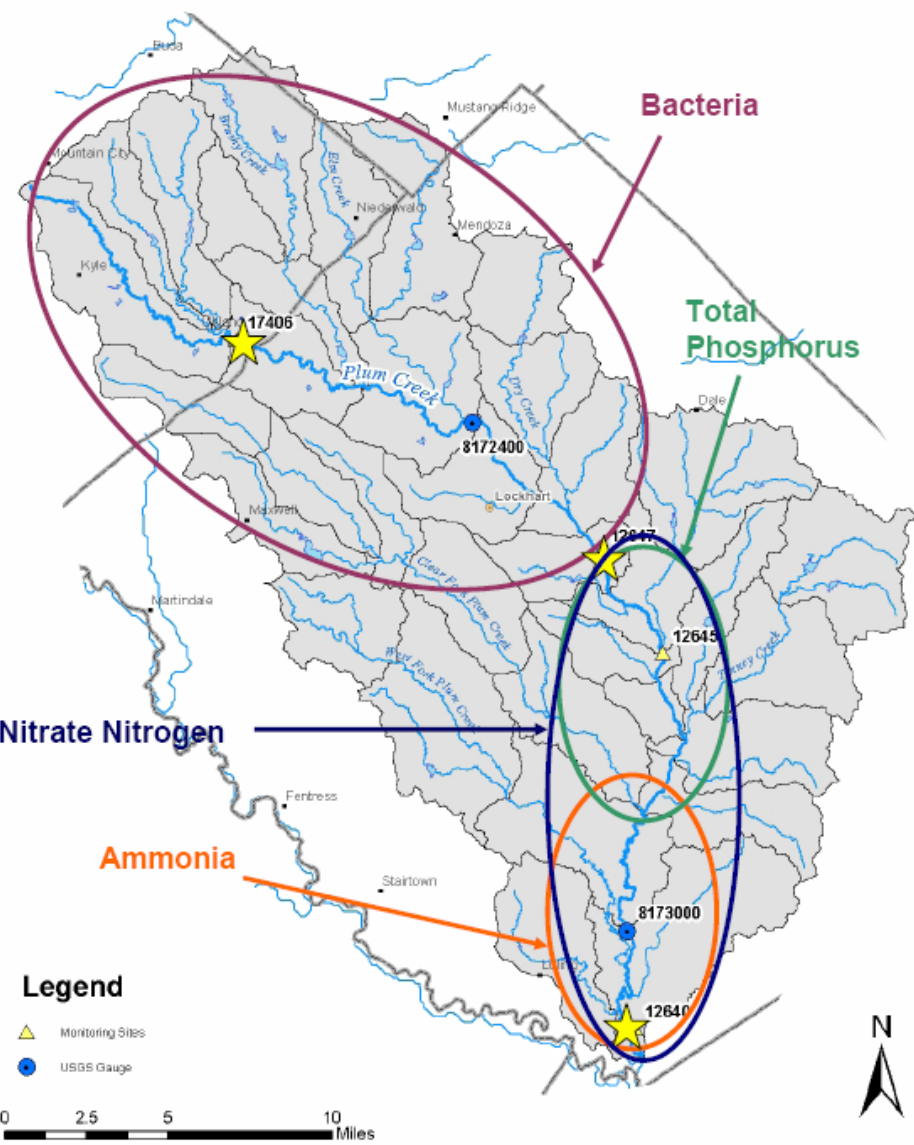
Plum Creek Watershed



Water Quality Issues

2004 Assessment

2006 Assessment



Plum Creek Watershed Partnership

- December 15, 2005 - Plum Creek was selected by the Wharton Regional WCSC as the pilot watershed
- January 2006 - Meeting and watershed tour with key local agencies
- January thru March
 - Gathered Watershed Data
 - Conducted Meetings and Media Promoting Project



Project Partners



Media Promotion

- Initially developed and sent out 6 news releases that went out to over 100 papers and media outlets through Agriculture Communications.
- TSSWCB sent out a news release in January.
- We pitched these stories to the following local outlets:
 1. Austin American Statesman
 2. Country World
 3. San Marcos Record
 4. Kyle Eagle
 5. Hays Free Press
 6. Lockhart Post Register
 7. Luling News Boy

Meetings Promoting Plum Creek Watershed Partnership

- Caldwell-Travis County SWCD and Hays SWCD Board Meetings on January 11, 2006 and February 1, 2006
- Plum Creek Conservation District Board Meeting on Jan. 17
- Guadalupe-Blanco River Authority Board Meeting on Feb. 15
- Guadalupe-Blanco River Authority Clean Rivers Steering Committee Meeting March 23, 2006
- Hays County Wildlife Management Training on April 29, 2006
- Luling Kiwanis Club Meeting on May 10, 2006
- Luling Foundation Farm Field Day on May 8, 2006
- Kyle's Citizens Water Advisory Group Meeting on May 25, 2006
- TXDOT SH-130 Project Team



Websites and Brochures

- Created the Plum Creek Watershed Partnership Website <http://pcwp.tamu.edu> and informational brochure (fact sheet).
- Mailed out 700 brochures and invitations to the three Public Meetings and resent them after the first meeting.



Websites and Brochures



<http://pcwp.tamu.edu>

February 2006

The Plum Creek Watershed Partnership is a collaboration between local citizens and regional, state and federal agencies and to develop and implement a proactive strategy for protecting and improving water quality. The general public is invited to participate in work groups and as a member of the steering committee to assess water quality issues in the watershed and then develop a Watershed Protection Plan (WPP). The WPP will identify appropriate best management practices, needed education and awareness programs, and other measures that should be implemented to improve and protect water quality in Plum Creek.

Plum Creek begins in south-east corner of Hays County north of Kyle and runs south through Caldwell County and eventually joins the San Marcos River at their confluence at the northern border of Gonzales County. Plum Creek is 52 miles in length and has a drainage area of 388 square miles that includes the cities of Lockhart, Luling, Kyle, Mountain City, and portions of Buda. Other communities include: McNeil, Joliet, Brownsboro, Maxwell, Watts, Tilmon, McMahan, Dale,

Seawillow, Niederwald, Mendoza, Goforth, Uhland, Science Hall, and Soda Springs. According to the draft 2004 Texas Water Quality Inventory and 303(d) List, Plum Creek (Segment 1810) is impaired by elevated bacteria concentrations and exhibits elevated nutrient levels. These water quality issues, along with changing land use across the watershed and the potential for nonpoint source pollution, were considered when Plum Creek was selected by a regional water quality committee as a watershed that would best benefit from development and implementation of a WPP.

Contact Information

Website: <http://pcwp.tamu.edu/>

Nikki Dictson
Extension Program Specialist
Texas Cooperative Extension
979-458-3478
Email: n-dictson@tamu.edu
<http://watershedsteward.tamu.edu/>

Brian Koch
Regional Watershed Coordinator
Texas State Soil & Water Conservation Board
979-532-9496
Email: bkoch@tsswcb.state.tx.us
<http://www.tsswcb.state.tx.us/>



Soil & Crop Sciences, TAMU 2474, College Station, TX 77843-2474-979/845-4808*FAX 979/845-0456

March 20, 2006

Dear Citizens of the Plum Creek Watershed:

Texas Cooperative Extension and the Texas State Soil and Water Conservation Board are partnering with local citizens to protect and improve water quality in Texas' watersheds by helping to develop and implement watershed protection plans. Watershed Protection Plans are designed to restore and/or protect surface waters impacted by nonpoint source pollution by implementing best management practices. Plum Creek, which runs through Hays and Caldwell Counties, has been selected for development of a Watershed Protection Plan based on water quality data for bacteria and nutrients. We would like to invite you to participate in solving these water quality issues by attending one of three kick-off meetings of the Plum Creek Watershed Partnership.

Scheduled for April 10 in Lockhart, April 25 in Kyle, and April 26 in Luling, these meetings will provide an overview of what we know about Plum Creek water quality and how you can become involved in developing and implementing a Watershed Protection Plan for Plum Creek. Key local partners supporting the process include the Guadalupe Blanco River Authority, Plum Creek Conservation District, Caldwell-Travis SWCD and Hays County SWCD. Watershed protection plans are driven by the local community as local stakeholders help identify the potential causes and sources as well as select and promote implementation strategies that will improve water quality conditions and protect water resources in the region now, and into the future.

Your active participation is pivotal to the success of this project. In order to successfully develop and implement a Plum Creek Watershed Protection Plan, Texas Cooperative Extension and the Texas State Soil and Water Conservation Board need you. Please attend one of the three meetings scheduled in April. If you have any questions regarding this process, please contact Nikki Dictson with TCE at 979.458.3478 or n-dictson@tamu.edu, or Brian Koch with TSSWCB at 979.532.9496 or bkoch@tsswcb.state.tx.us. For further information, please visit <http://pcwp.tamu.edu/>. We want to thank you in advance for your dedication to the success of this project.

Sincerely,

Rachel A. Bauer
Caldwell County Extension Agent

Bryan Y. Davis
Hays County Extension Agent

Enc: Plum Creek Watershed Partnership Information





plum creek watershed partnership

HOME

PROJECT OVERVIEW

MEETINGS

WATER QUALITY

NEWSLETTER

LINKS

PARTNERS

plum creek watershed partnership

The Plum Creek Watershed Partnership supports the development of a Watershed Protection Plan (WPP) and promotes a sustainable, proactive approach to improving water quality at the local level. A steering committee made up of local stakeholders will assess the water quality issues and develop the WPP. The WPP will determine necessary education and awareness campaigns, best management practices, and other measures to be implemented to improve and protect the water quality in Plum Creek. Texas State Soil and Water Conservation Board (TSSWCB) and Texas Cooperative Extension have partnered to facilitate plan development and education and awareness, along with the TSSWCB Wharton Regional Office- Watershed Coordination Steering Committee.

Plum Creek rises in Hays County north of Kyle and runs south through Caldwell County, passing Lockhart and Luling, and eventually joins the San Marcos River at their confluence in north Gonzales County. Plum Creek is 52 miles in length and has a drainage area of 397 square miles. According to the draft 2004 Texas Water Quality Inventory and 303(d) List, Plum Creek (Segment 1810) exhibits elevated nutrient levels and is impaired by elevated bacteria concentrations. These water quality issues, in conjunction with land use across the watershed, increasing urban development, oil and gas production and potential for agricultural nonpoint source pollution, were considered when Plum Creek was selected for the WPP process.





**Steering
Committee**

**Watershed
Stakeholders**

**Technical
Advisory Group**

Work Groups

Outreach &
Education

Agriculture
Nonpoint
Source

Urban
Stormwater &
Nonpoint
Source

Wastewater &
Industry

Water Quality &
Habitat

Plum Creek Watershed Partnership Meetings

- April 2006 – Three Public Meetings in Watershed (116)
- May 9, 2006 – First Steering Committee Meeting (49)
- June 20, 2006 – Steering Committee Meeting/Work Groups (42)
- July 2006 – Five Work Group Meetings
- August 10, 2006 – Steering Committee/Technical Advisory Group Meeting (45)

Monthly meetings of either steering committee/
partnership or work group meetings.

Technical Advisory Group Members

- Texas Commission on Environmental Quality (TCEQ)
- Texas AgriLife Extension Service
- Texas Department of Agriculture (TDA)
- Texas Department of Transportation (TxDOT)
- Texas Farm Bureau (TFB)
- Texas Parks and Wildlife Department (TPWD)
- The Railroad Commission of Texas (RRC)
- Texas State Soil and Water Conservation Board (TSS)
- Texas Water Development Board (TWDB)
- USDA Natural Resources Conservation Service (NRCS)
- U.S. Environmental Protection Agency (EPA)
- U.S. Geological Survey (USGS)

What is a WPP?

- We needed explain what a Watershed Protection Plan and how it could benefit them by being a tool to better leverage resources
- They were not familiar with their own watershed or its issues
- It was going to be difficult to keep up the level of engagement in the process so it needed to be quick, efficient and still comprehensive
- Most Importantly, that it is a voluntary, proactive approach

Watershed Tour

- On July 27, 2006 from 9:00 am to 4:00 pm.
- 62 participants and speakers
- Tour Stops included:
 - Urban - Plum Creek Subdivision in Kyle at headwaters
 - GBRA's Plum Creek Monitoring Site near Uhland
 - Lockhart Springs in Lockhart
 - Don Meador, Ag Producer
 - Drive on south eastern side of Watershed / Oil Wells
 - Lockhart WWTP Tour by GBRA



The Nine Elements

- Identification of the causes.
- Estimate of needed load reductions.
- Description of management measures.
- Estimate of technical and financial assistance needed to implement the plan.
- Information/education component to enhance public understanding.
- Schedule for implementation.
- Description of interim, measurable milestones.
- Set of criteria to determine whether load reductions are being achieved.
- Monitoring component to evaluate effectiveness of implementation.

Major Tasks

- Identify pollutant sources
- Gather data and information and identify gaps
- Estimate pollutant loads
- Set Goals and Objectives
- Identify BMPs that could be implemented to reduce pollution
- Identify Outreach and Education that is needed
- Develop an Implementation Plan & Schedule



Potential Sources

Potential Sources	Bacteria	Nutrients	Other
Septic Systems	X	X	X
<u>Wildlife</u>			
Deer	X	X	
Feral Hogs	X	X	
Cropland		X	
<u>Livestock</u>			
Sheep and Goats	X	X	
Horses	X	X	
Cattle	X	X	
Oil and Gas Production			X
Urban Runoff	X	X	X
Wastewater Treatment Facilities	X	X	

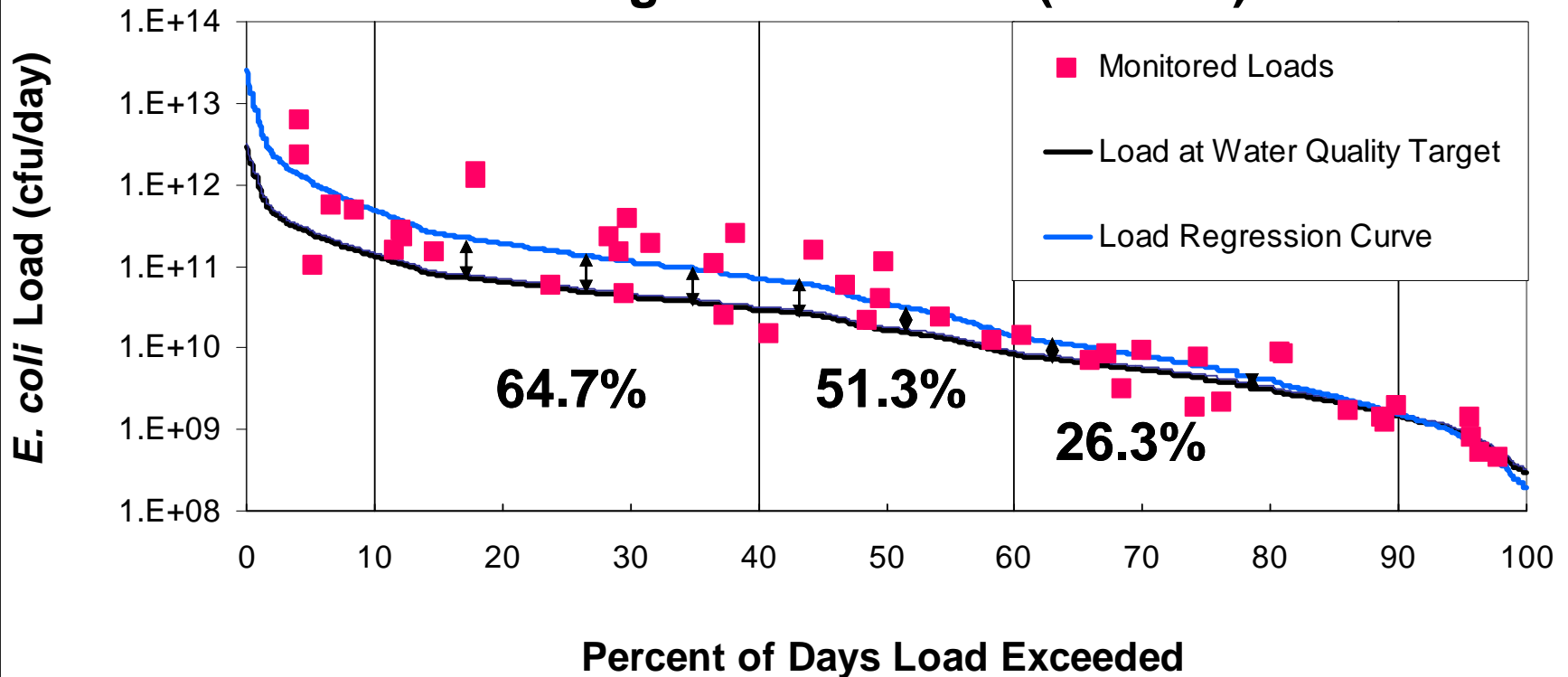
Assessment Tools

- TAMU team from Spatial Sciences Lab and Biological and Agricultural Engineering Dept.
- Load Duration Curves
- Spatially-explicit Geographic Information System (GIS) methodology – SELECT
- Soil and Water Assessment Tool - SWAT



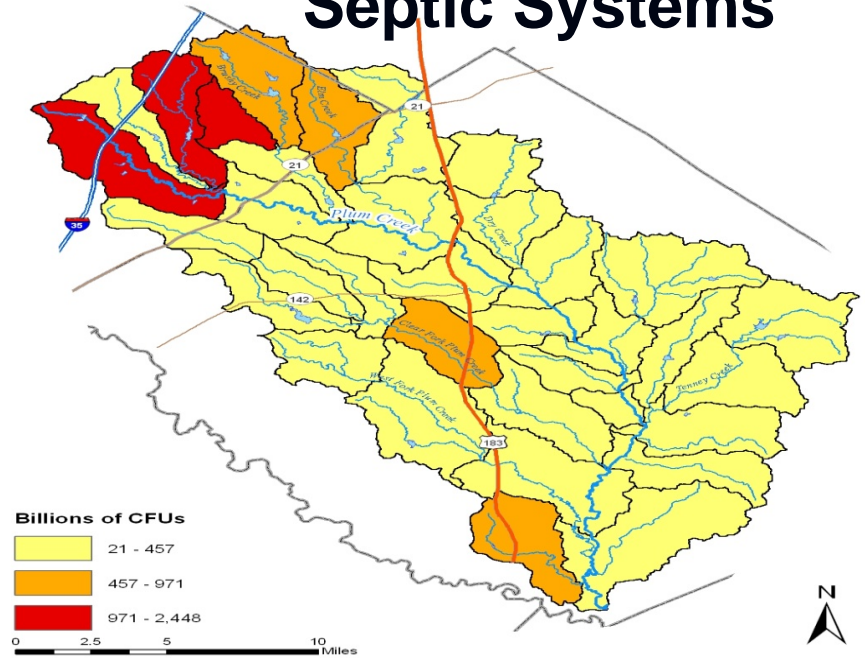
Bacteria LDC - Uhland

E. coli Load and Reductions Monitoring Station 17406 (Uhland)

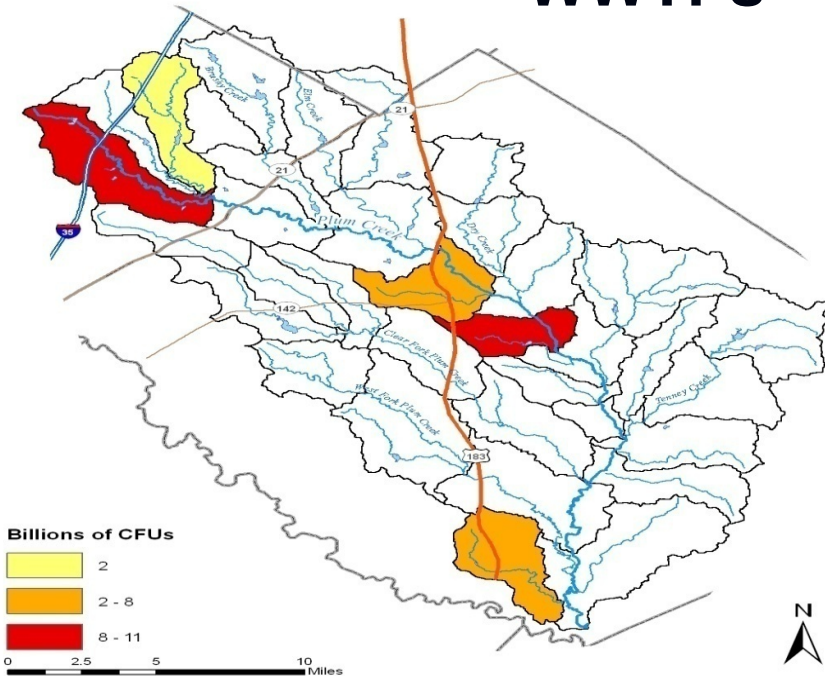


Average Daily Potential *E. coli* Load

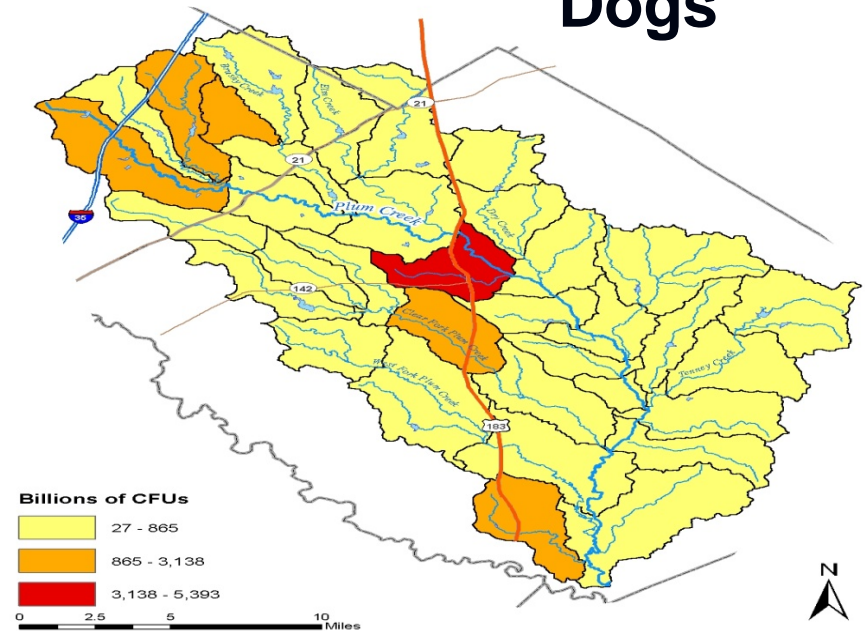
Septic Systems



WWTPs



Dogs



Plum Creek Watershed Protection Plan

Developed by
The Plum Creek Watershed Partnership

February 2008

Funding for the development of this Watershed Protection Plan was provided through a federal Clean Water Act §319(h) grant to the Texas Cooperative Extension, administered by the Texas State Soil and Water Conservation Board from the U.S. Environmental Protection Agency

Plum Creek Watershed Protection Plan

plum creek watershed partnership



- HOME
- CONTACT
- PROJECT OVERVIEW
- MEETINGS
- WATER QUALITY
- NEWSLETTER
- PUBLICATIONS
- WATERSHED PROTECTION PLAN
- LINKS
- PARTNERS
- FORUM

watershed protection plan

Download the Entire Draft of Plum Creek Watershed Protection Plan
Updated 11/29/2007

[Microsoft Word Document](#) (54.7 MB)
[Portable Document Format](#) (16.5 MB)

For dial-up users, download sections of the draft in separate PDFs, each under 1MB.

[Table of Contents, Introduction and Background](#) (710 KB)

[Water Quality and Watershed Partnership](#) (877 KB)

[Methods of Analysis](#) (345 KB)

[Estimate of Pollutant Loads and Required Load Reductions](#) (529 KB)

[Pollutant Sources A](#) (730 KB)

[Pollutant Sources B](#) (829 KB)

[Management Measures](#) (243 KB)

[Urban Management Measures](#) (244 KB)

[Wastewater Management Measures](#) (72 KB)

[Agricultural Management Measures](#) (140 KB)

[Wildlife and Feral Hog Management Measures](#) (45 KB)

[Outreach and Education](#) (686 KB)

[Measures of Success](#) (254 KB)

[Implementation Program](#) (349 KB)

[Appendix A - D](#) (146 KB)

[Appendix E - F](#) (1051 KB)

[Appendix G - I and References](#) (881 KB)



Status of the Plan

The Nine Elements

- ✓ Identification of the causes.
- ✓ Estimate of needed load reductions.
- ✓ Description of management measures.
- ✓ Estimate of technical and financial assistance needed to implement the plan.
- ✓ Information/education component to enhance public understanding.
- ✓ Schedule for implementation.
- ✓ Description of interim, measurable milestones.
- ✓ Set of criteria to determine whether load reductions are being achieved.
- ✓ Monitoring component to evaluate effectiveness of implementation.

Meetings with Cities and Counties

- Project Updates
- Discussion of Proposed Management Measures
- Discussion of how to implement the management measures
- Answered any Questions
- Requested a Letter of Support for the Watershed Protection Plan

Exciting Watershed Highlights

- Additionally selected by the Texas Tri-Agency Water Quality Team (EPA, TSSWCB, and TCEQ) as a WPP pilot project
- Received in September \$150,000 for water quality outreach and education from TCEQ Clean Water Act 106 funding for “Taking Charge of Water Quality”
- Water quality education and monitoring at 6 elementary schools in the watershed reaching 760 4th and 5th graders
- Coordinated with TCEQ for 2 Stormwater BMP Demonstrations and an Ag. Waste Collection Day
- Assisted the City of Kyle with a 319 Grant Proposal for Urban BMPs, planning and Outreach and Education



Challenges

- Data Gaps or lack of updated information
 - Population data, wildlife, livestock
 - Land Use data
 - Septic System information
 - Lack of electronic tracking data or historical data
 - BMP Efficiencies for bacteria
- Can easily determine an appropriate list of BMPs for Agriculture and Urban areas but
 - It is difficult to determine numbers and locations of specific practices without extensive survey or engineering effort
 - Time and effort is required to get commitments



We Did It!



- January 2008 concluded the comment period
- February 19, 2008 the Steering Committee will sign and adopt the Plum Creek Watershed Protection Plan



Thanks!

Nikki Dictson

2474 TAMU

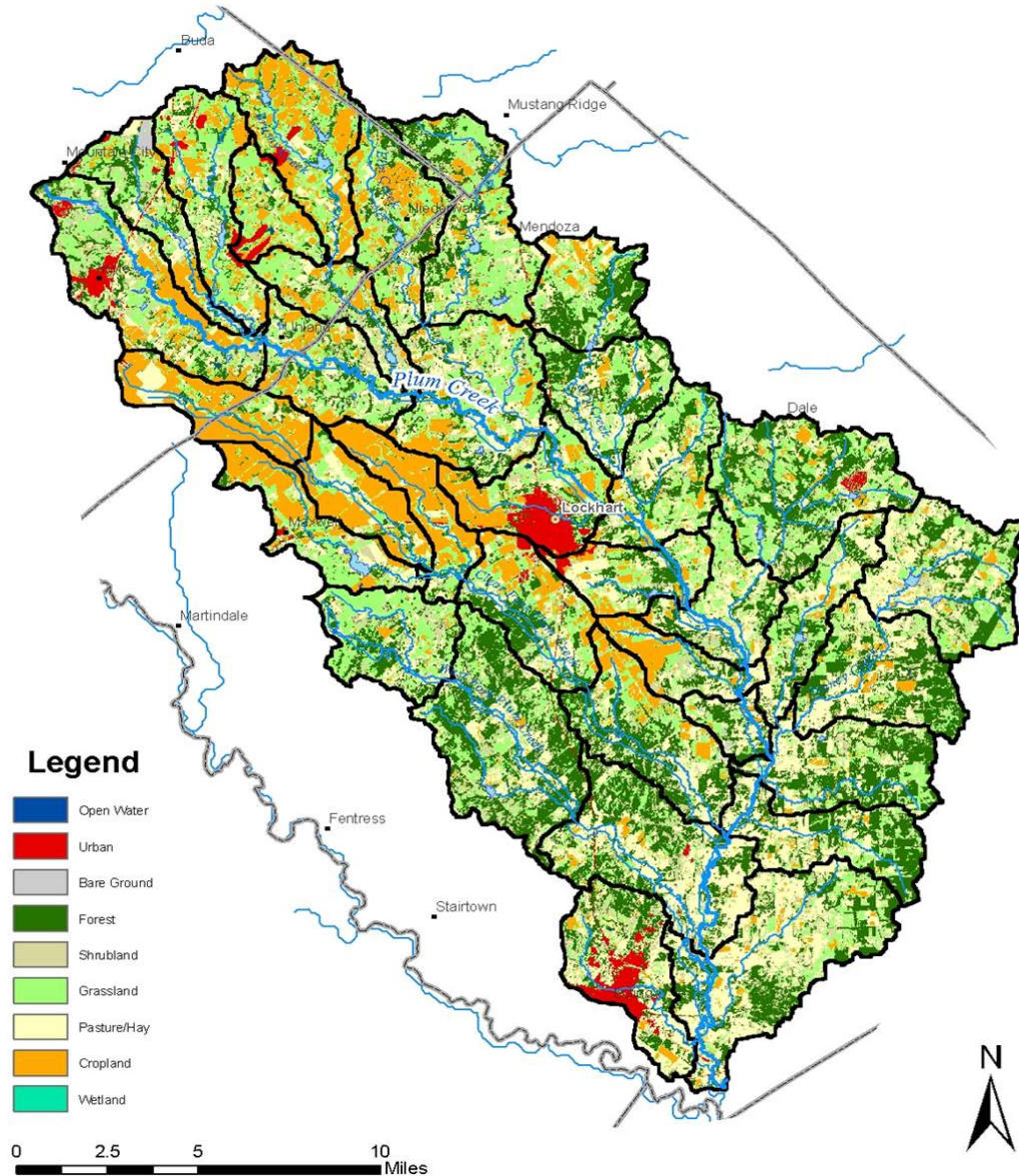
College Station, Texas 77845

n-dictson@tamu.edu

979-458-3478

<http://pcwp.tamu.edu>

Plum Creek Land Use



Media Promotion Continued

- TCE News Releases since January
 - Jan. 27, 2006, Texas Cooperative Extension Partnering in Plum Creek Watershed Pilot Program
 - March 30, 2006, Public Invited to Join Plum Creek Watershed Project
 - April 13, 2006, Plum Creek Watershed Partnership Under Way; Meetings Set for Kyle and Luling
 - April 19, 2006, Media Advisory: Watershed Meetings Set for Kyle, Luling
 - June 5, 2006, Public Invited to Plum Creek Watershed Project Meeting
 - June 8, 2006, Preventive Measures Can Help Protect Plum Creek Watershed

- TSSWCB News Release in January 6, 2006 – Plum Creek Selected for Watershed Protection Plan



Water Quality Issues

- Plum Creek was placed on the State of Texas 2004 303(d) List of Impaired Waters for exceeding the water quality standard for bacteria (*E. coli*) and does not support its designated use for contact recreation.
- Plum Creek is also listed for elevated nutrient concerns for nitrates and nitrites, ammonia, total phosphorous and orthophosphorus.
- Concerns for nutrients date back to the State of Texas 1998 305(b) report, which is a summary of all surface waters in Texas, and concerns for bacteria date back to the 2002 305(b) report.
- Based on monitoring conducted by the GBRA's Clean Rivers Program and the TCEQ, bacteria levels in Plum Creek exceed the stream standard of 126 org./100 ml for contact recreation

What is a WPP?

- Watershed Protection Plans (WPP) address complex water quality problems that cross multiple jurisdictions
- The goal is to improve, restore or maintain good water quality within a particular watershed
- WPPs are tools to better leverage the resources of local governments, state and federal agencies, and non-governmental organizations
- WPPs are a voluntary, proactive approach to integrating activities and prioritizing BMP implementation

Public Comment

- Articles in the papers, newsletters, and email
- Open Meeting in the watershed at Luling, Kyle and Lockhart from 10 am – 3 pm
- Received verbal and/or written comments from 39 individuals
- Approximately 65 involved participants
- About a 58% response rate up till now