Texas State Soil and Water Conservation Board
State Nonpoint Source Grant Program
FY 2017 Workplan 17-58

SUMMARY PAGE			
Title of Project	Surface Water Quality Monitoring to Support Implementation of the Plum Creek Watershed Protection Plan		
Project Goals	• Generate water quality data of known and acceptable quality for surface and ground water on main stem and tributary stations • Support the implementation of the Plum Creek WPP by collecting water quality data for use in evaluating the effectiveness of BMPs, and in assessing water quality improvement and progress in achieving restoration • Communicate water quality conditions to the public and the Plum Creek Watershed Partnership Steering Committee in order to support adaptive management of the Plum Creek WPP and to expand public knowledge on Plum Creek water quality data		
Project Tasks	(1) Project Administration; (2) Quality Assurance; (3) Routine Ambient Surface Water Quality Monitoring; (4) Targeted Watershed Surface Water Quality Monitoring; (5) 24-hour DO Surface Water Quality Monitoring; (6) Effluent Surface Water Quality Monitoring; (7) Spring Flow Water Quality Monitoring; (8) Data Management		
Measures of Success	• Data of known and acceptable quality are generated for surface and ground water quality monitoring of main stem and tributary stations • Water quality data is used to evaluate progress in implementing the Plum Creek WPP and achieving water quality restoration • Water quality data is communicated to the public and the Plum Creek Watershed Partnership Steering Committee		
Project Type	Implementation ( ); Education (X); Planning ( ); Assessment (X); Groundwater (X)		
Status of Waterbody on *2014 Texas Integrated Report*	Segment ID 1810	Parameter of Impairment or Concern Bacteria Ammonia-nitrogen; nitrate nitrogen; total phosphorus	Category 4b CN
Project Location (Statewide or Watershed and County)	Plum Creek Watershed in Caldwell, Hays and Travis Counties		
Key Project Activities	Hire Staff ( ); Surface Water Quality Monitoring (X); Technical Assistance (X); Education (X); Implementation ( ); BMP Effectiveness Monitoring ( ); Demonstration ( ); Planning ( ); Modeling ( ); Bacterial Source Tracking ( ); Other ( )		
2012 Texas NPS Management Program Reference	• Component 1 LTGs 1, 3, 7 • Component 1 STGs 1B, 1E, 3F • Component 3		
Project Costs	$126,535		
Project Management	• Guadalupe-Blanco River Authority		
Project Period	December 1, 2017 – October 31, 2017		

Part I – Applicant Information

Applicant							
Project Lead	Michael Urrutia						
Title	Director of Water Quality Services						
Organization	Guadalupe Blanco River Authority						
E-mail Address	murrutia@gbra.org						
Street Address	933 E. Court St.						
City	Seguin	County	Guadalupe	State	Texas	Zip Code	78155
Telephone Number	(830) 379-5822			Fax Number	(830) 272-2757		

Project Partners	
Names	Roles & Responsibilities
Texas State Soil and Water Conservation Board (TSSWCB)	Provide state oversight and management of all project activities and ensure coordination of activities with related projects and TCEQ.
Guadalupe Blanco River Authority	Provide project administration, water quality monitoring, data and analysis review, outreach and education, technical assistance

Part II – Project Information

Project Type							
Surface Water	x	Groundwater					
Does the project implement recommendations made in (a) a completed WPP, (b) an adopted TMDL, (c) an approved I-Plan, (d) a Comprehensive Conservation and Management Plan developed under CWA §320, (e) the *Texas Coastal NPS Pollution Control Program*, or (f) the *Texas Groundwater Protection Strategy*?				Yes	X	No	
If yes, identify the document.	Plum Creek Watershed Protection Plan						
If yes, identify the agency/group that developed and/or approved the document.	Plum Creek Watershed Partnership facilitated by AgriLife Extension and TSSWCB			Year Developed	2008		

Watershed Information				
Watershed or Aquifer Name(s)	Hydrologic Unit Code (12 Digit)	Segment ID	Category on 2012 IR	Size (Acres)
Plum Creek	110901050702, 110901050703, 111002030102, 111301050208, 111302090204, 120100040204, 120301010104, 120500030306, 120601020401, 120702010804, 120702010805, 120800020403, 121002030401	1810	4b	288,240

Water Quality Impairment

Describe all known causes (i.e., pollutants of concern) and sources (e.g., agricultural, silvicultural) of water quality impairments or concerns from any of the following sources: *2014 Texas Integrated Report,* Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

2014 Texas Integrated Report - Plum Creek has been listed as impaired on the 303d List since the 2004 due to bacterial contamination. The geometric mean of data collected on the three assessment units on Plum Creek from December 1, 2005 through November 30, 2012 was 157, 200, 307 cfu/ 100 mL downstream to upstream respectively. The assessed 2014 geometric mean for all three assessment units was higher than the geometric mean reported in the 2012 assessment (150, 194 and 295 cfu/100mL).

Clean Rivers Program 2013 Basin Summary Report - The 2013 Clean Rivers Program Basin Summary Report for the Guadalupe River Basin states that a review of the historical data from the Plum Creek at Plum Creek Road site (site no. 17406) shows trends of diminishing water quality. The most prominent water quality concerns are for nutrient and bacteria concentrations. The increased nutrient levels in the creek are due in large part because the stream is effluent-dominated. Additional wastewater effluent and nutrient loading has been added to the creek in recent years as the Kyle and Buda WWTPs have increased in capacity. The water quality data shows an increasing trend in total phosphorus concentrations over time. Nitrate nitrogen also shows an increasing trend over time. Nitrate-nitrogen is also showing an increase over time. Spikes in nitrate concentrations appear to be linked to low flow periods when the stream is effluent-dominated. Total phosphorus and nitrate nitrogen are of concern because of the potential for promoting nuisance algal blooms that can deplete oxygen in the stream, especially in the early morning hours, degrading the habitat for fish and aquatic invertebrates. Ammonia nitrogen exceeded the screening concentration 14.8% of the time but of more concern was the magnitude of the exceedences. Three of the 12 sampling events that exceeded the 0.33 mg/L screening concentration for ammonia nitrogen were greater than 10 mg/L. Ammonia nitrogen is a concern because of its toxicity to fish. Because of the effluent dominance of the stream, the most logical source of these nutrients is wastewater discharge but other sources of nutrients should be considered such as runoff carrying fertilizers from agricultural fields and lawns and organic wastes from animals such as livestock, pets and wildlife.

The median concentration for nitrate nitrogen exceeded the stream screening criteria of 1.95 mg/L 63 out of 67 measurements at the monitoring site on Plum Creek at CR202 (middle assessment unit). Sources of the nitrates at this location are most likely the springs that originate from the Leona formation as well as wastewater effluent. Total phosphorus concentrations are increasing over time at this monitoring station. Sources of total phosphorus include wastewater effluent, storm water that carries in fertilizers and organic material and failing septic tanks.

Ammonia nitrogen appears to be significantly increasing with time at the monitoring site in the lower assessment unit on Plum Creek. This is possibly due to reduction in flow due to drought conditions, which are causing the stream to be more heavily influenced by wastewater and groundwater. Total phosphorus concentrations show a significant increasing trend over time possibly due to the increased frequency of analysis in the later years of the historical record.

Annual Clean Rivers Program Basin Highlights Reports – GBRA's annual CRP Basin Highlights Report have discussed the impairments and concerns since 2007. Nutrient enrichment is a concern, likely due to high numbers of WWTFs contributing effluent. The southern part of the watershed has a history of oil and gas activities, leading to concerns for dissolved salts that can be contributed by improperly plugged oil and gas wells. The watershed is in an area being developed very rapidly. Concerns are the cumulative impacts on watersheds caused by construction and multiple subdivision development. Also the potential for impacts by agricultural NPS pollution exists. Nitrate-nitrogen and total phosphorus concentrations at these stations are some of the highest in the river basin. Both point and nonpoint sources contribute to the bacteria impairment. Based on land use analysis, sources of the pollutants include urban sources, such as urban runoff and pet waste, as well as agricultural activities and wildlife (deer) and invasive species (feral hogs) sources.

2012 Nonpoint Source Management Program - NPS contamination is widespread in many Texas aquifers. The most widespread contaminant is nitrate, with a variety of potential sources. Potential nitrate sources may include leaking septic systems, storm water runoff, over application of fertilizer on cropland, and naturally-occurring nitrate derived from the aquifer matrix. Nitrate is readily soluble and mobile in water, and is considered one of the major human health concerns in drinking water. Coincidentally, nitrate concentration may be an indicator of NPS pollution in groundwater, because it can move readily through the soil, entering aquifers by means of percolation. Nitrate in surface water indicates the potential for groundwater contamination. Other ambient groundwater quality constituents of concern are likely naturally occurring, and not necessarily good indicators of NPS influence on the aquifers.

Project Narrative

Problem/Need Statement

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 north of Gonzales County. Plum Creek is 52 miles in length and has a drainage area of 389 mi^2. According to the *2014 Texas Water Quality Inventory and 303(d) List*, Plum Creek (Segment 1810) is impaired by elevated bacteria concentrations (category 4b) and exhibits nutrient enrichment concerns for ammonia, nitrate+nitrite nitrogen and total phosphorus.

TSSWCB and AgriLife Extension established the Plum Creek Watershed Partnership (PCWP) in April 2006. The PCWP Steering Committee completed the "Plum Creek Watershed Protection Plan" in February 2008. Information about the PCWP is available at http://plumcreek.tamu.edu/. Sources of pollutants identified in the Plum Creek WPP include urban storm water runoff, pet waste, failing or inadequate on-site sewage facilities (septic systems), wastewater treatment facilities, livestock, wildlife, invasive species (feral hogs), and oil and gas production.

Through TSSWCB projects 03-19, *Surface Water Quality Monitoring to Support Plum Creek Watershed Protection Plan Development*, and 10-07, *Surface Water Quality Monitoring and Additional Data Collection Activities to Support the Implementation of the Plum Creek Watershed Protection Plan*, and project 14-11 of the same name. GBRA collected water quality data to fill data gaps. During these projects, sampling of water quality data was severely hampered by drought that covered the watershed, causing the tributaries to run dry and the springs to slow to almost negligible flow.

Facilitated by a local watershed coordinator, implementation of the Plum Creek WPP is currently underway. TSSWCB projects provide technical and financial assistance through the local SWCDs to agricultural producers in developing and implementing water quality management plans (WQMPs). In order to reduce feral hog impacts on the stream, education and technical assistance is being provided by AgriLife Extension to landowners in the watershed on strategies to reduce and manage feral hog populations. The cities of Kyle and Lockhart have completed projects with TCEQ

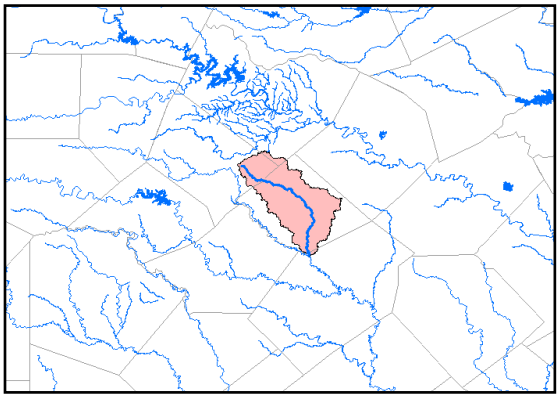
CWA §319(h) funding, including a project to retrofit detention facilities to improve water quality, educate and stencil storm sewer inlets, map existing storm water facilities, implement a dog waste collection station program, and coordinate city "housekeeping" activities designed to improve water quality (street sweeping, creek cleanup days, etc). Additionally, Lockhart evaluated their existing storm water system, identified and prioritized upgrades to the city's storm water management system including cleaning out and installing storm drain filters, and coordinated creek cleanup days, and household hazardous and electronic waste collection days. An education and outreach campaign was initiated during the watershed planning process that focused on educating watershed residents and landowners on the impacts of specific land use activities, illegal dumping, proper operation and maintenance of OSSFs and proper disposal of pet waste.

To demonstrate improvements in water quality, the Plum Creek WPP describes a water quality monitoring program designed to evaluate the effectiveness of BMPs implemented across the watershed and their impacts on instream water quality. Water quality data will be used in the adaptive management of the WPP in order to evaluate progress in implementing the Plum Creek WPP and achieving water quality restoration.

There is a need to continue the monitoring regime originally funded through TSSWCB project 03-19 and TSSWCB Clean Water Act Section 319 projects 10-07 and 14-11.This monitoring project is warranted to provide critical water quality data that will be used to judge the effectiveness of WPP implementation efforts and serve as a tool to quantitatively measure water quality restoration. This effort will continue stakeholder engagement by providing technical assistance and sharing of water quality data by attendance at partnership meetings and maintenance of project website.

Project Narrative

General Project Description (Include Project Location Map)



Through this project, GBRA will continue to collect surface water quality monitoring (SWQM) data to characterize the Plum Creek watershed, including the contributing wastewater effluents. Monitoring data will be used to assess and evaluate the effectiveness of the BMPs that have been or will be implemented in the watershed as a result of the Plum Creek WPP. The sampling regime will include diurnal, spring flow, and targeted monitoring under more elevated and typical base flow conditions over 9 months in 2017. This will provide a more complete and representative data set to characterize the Plum Creek watershed and document water quality improvements.

GBRA will conduct the work performed under this project including technical and financial supervision, preparation of status reports, and coordination with local stakeholders, surface water quality monitoring sample collection and analysis, and data management. GBRA will participate in the PCWP in order to communicate project goals, activities and accomplishments to affected parties. GBRA will continue to host and maintain an Internet webpage http://www.gbra.org/plumcreek/ for the dissemination of information. GBRA's Public Communication and Education staff will present information on Plum Creek, nonpoint source pollution and environmental education to schools in the watershed as well as at other environmental outreach opportunities.

GBRA will develop a Quality Assurance Project Plan (QAPP) for monitoring activities to ensure data of known and acceptable quality are generated in this project. The QAPP will be consistent with *EPA Requirements for Quality Assurance Project Plans (QA/R-5)*, the *TSSWCB Environmental Data Quality Management Plan*, and TCEQ *Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods, 2012 (RG-415)* and *Surface Water Quality Monitoring Procedures, Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data, 2014(RG-416)*. GBRA will submit monitoring data to TCEQ for inclusion in the TCEQ Surface Water Quality Monitoring Information System (SWQMIS).

Currently, routine ambient water quality data is collected monthly at 3 main stem stations by GBRA (17406, 12640 and 12647) through the Clean Rivers Program. Ammonia nitrogen and total kjeldahl nitrogen are currently monitored at these 3 stations bimonthly. Through this project, GBRA will conduct routine ambient monitoring at an additional 5 sites monthly over 9 months, collecting field, conventional, stream flow and bacteria parameter groups. The GBRA will also collect additional bimonthly ammonia nitrogen and total kjeldahl nitrogen at stations 17406, 12640 and 12647. This will complement the existing routine ambient monitoring regime conducted by GBRA such that the same routine water quality monitoring is conducted monthly at 8 sites in the Plum Creek watershed.

GBRA will conduct targeted watershed monitoring at 37 sites twice per season, once under dry weather conditions and once under wet weather conditions, collecting field, conventional, flow and bacteria parameter groups. Sampling period extends through 3 seasons. Spatial, seasonal and meteorological variation will be captured in these snapshots of watershed water quality.

GBRA will conduct 24-hour DO monitoring at 8 sites monthly during the index period collecting field and flow parameter groups. These sites shall be the same as the sites for routine ambient monitoring. Sampling period extends over 8 months during the index period of each year, but this project will only collect diel samples for 7 months because sampling will end at the end of the contract period. GBRA will continue to maintain the continuous monitoring site throughout the project.

GBRA will conduct effluent monitoring at seven wastewater treatment facilities (WWTFs) once per month collecting field, conventional, flow, bacteria and effluent parameter groups. The sampling period will extend over 9 months. This will characterize WWTF contributions to flow regime and pollutant loadings. To supplement the data collected at the WWTFs, GBRA will compile all the weekly permit effluent monitoring data as submitted by permitees that includes BOD, total suspended solids, volatile suspended solids, *E. coli*, ammonia nitrogen and total phosphorus from seven WWTFs.

GBRA will conduct spring flow monitoring at 3 springs once per season collecting field, conventional, flow and bacteria parameter groups. The sampling period will extend over 3 seasons. Spatial and seasonal variation in spring flow will be captured. This will characterize groundwater contributions to flow regime and pollutant loadings.

GBRA maintains a real-time water quality monitoring station at the Plum Creek at CR 202 site and collects field data every 15 minutes. In order to continue to raise awareness of water quality and stewardship in the Plum Creek watershed and make water quality data available to the public, GBRA will continue to maintain the three kiosks in public locations in Kyle, Lockhart and Luling. These kiosks will link the public to the real-time monitoring site, the project web site, other pertinent water quality information, such as the GBRA *River of Life* and on-line training modules including the module on septic system operations.

GBRA will post monitoring data to the GBRA website in a timely manner. GBRA will summarize the results and activities of this project through inclusion in GBRA's Clean Rivers Program Basin Highlights Report. Additionally, the results and activities of this project will be summarized in quarterly reports to the stakeholders of the PCWP Steering Committee and in revisions to the Plum Creek WPP. GBRA will develop a final Assessment Data Report summarizing water quality data collected through Tasks 3.1-3.6. The Report shall, at a minimum, provide an assessment of water quality with respect to effectiveness of BMPs implemented and a discussion of interim short-term progress in achieving the Plum Creek WPP water quality goals.

List of monitoring locations and frequency of sample by type:

TCEQ Station ID	Site Description	Workplan Task	Monitor Type	DO 24hr	Bacteria	Conventional	Flow	Field
12556	Clear Fork Plum Creek at Salt Flat Road	3.1	RT		10	10	10	10
12556	Clear Fork Plum Creek at Salt Flat Road	3.2	BF		3	3	3	3
12556	Clear Fork Plum Creek at Salt Flat Road	3.3	BS	7			7	7
12558	Elm Creek at CR 233	3.1	RT		10	10	10	10
12558	Elm Creek at CR 233	3.2	BF		3	3	3	3
12558	Elm Creek at CR 233	3.3	BS	7			7	7
12640	Plum Creek at CR 135	3.1	RT		10	10	10	10
12640	Plum Creek at CR 135	3.2	BF		3	3	3	3
12640	Plum Creek at CR 135	3.3	BS	7			7	7
12647	Plum Creek at Old McMahan Road (CR 202)	3.1	RT		10	10	10	10
12647	Plum Creek at Old McMahan Road (CR 202)	3.2	BF		3	3	3	3
12647	Plum Creek at Old McMahan Road (CR 202)	3.3	BS	7			7	7
17406	Plum Creek at Plum Creek Road	3.1	RT		10	10	10	10
17406	Plum Creek at Plum Creek Road	3.2	BF		3	3	3	3
17406	Plum Creek at Plum Creek Road	3.3	BS	7			14	14
20488	Brushy Creek at Rocky Road (Upstream of NRCS 14)	3.1	RT		10	10	10	10
20488	Brushy Creek at Rocky Road (Upstream of NRCS 14)	3.2	BF		3	3	3	3
20488	Brushy Creek at Rocky Road (Upstream of NRCS 14)	3.3	BS	7			7	7
20491	Dry Creek at FM 672	3.1	RT		10	10	10	10
20491	Dry Creek at FM 672	3.2	BF		3	3	3	3
20491	Dry Creek at FM 672	3.3	BS	7			7	7
20500	West Fork Plum Creek at Biggs Road (CR 131)	3.1	RT		10	10	10	10
20500	West Fork Plum Creek at Biggs Road (CR 131)	3.2	BF		3	3	3	3
20500	West Fork Plum Creek at Biggs Road (CR 131)	3.3	BS	7			7	7
12555	Salt Branch at FM 1322	3.2	BF		6	6	6	6
12557	Town Creek at E. Market St. (Upstream of Lockhart #l WWTP)	3.2	BF		6	6	6	6
12559	Porter Creek at Dairy Road	3.2	BF		6	6	6	6
12642	Plum Creek at Biggs Road (CR 131)	3.2	BF		6	6	6	6
12643	Plum Creek at FM 1322	3.2	BF		6	6	6	6
12645	Plum Creek at Young Lane (CR 197)	3.2	BF		6	6	6	6
12648	Plum Creek at CR 186	3.2	BF		6	6	6	6
12649	Plum Creek at CR 233	3.2	BF		6	6	6	6
14945	Clear Fork Plum Creek at Old Luling Road (CR 213)	3.2	BF		6	6	6	6
18343	Plum Creek Upstream of US 183	3.2	BF		6	6	6	6
20480	Plum Creek Downstream of NRCS 1 Spillway	3.2	BF		6	6	6	6
20481	Bunton Branch at Heidenreich Lane	3.2	BF		6	6	6	6
20482	Brushy Creek at FM 2001 (Downstream of NRCS 12)	3.2	BF		6	6	6	6
20487	Brushy Creek at SH 21	3.2	BF		6	6	6	6
20483	Elm Creek at SH 21 (Downstream of NRCS 16)	3.2	BF		6	6	6	6
20489	Cowpen Creek at Schuelke Road	3.2	BF		6	6	6	6
20496	Tenney Creek at Tenney Creek Road	3.2	BF		6	6	6	6
20490	Clear Fork Plum Creek at Farmers Road	3.2	BF		6	6	6	6
20493	Clear Fork Plum Creek at PR 10 (State Park)	3.2	BF		6	6	6	6
20497	West Fork Plum Creek at FM 671	3.2	BF		6	6	6	6
12538	Andrews Branch at CR 131	3.2	BF		6	6	6	6
20495	Dry Creek at FM 713	3.2	BF		6	6	6	6
20484	Plum Creek at Heidenreich Lane (Downstream of Kyle WWTP)	3.2	BF		6	6	6	6
20501	Salt Branch at Salt Flat Road (Upstream of Luling WWTP)	3.2	BF		6	6	6	6
20498	Copperas Creek at Wattsville Road (CR 140, Downstream of Cal-Maine)	3.2	BF		6	6	6	6
20505	Richmond Branch at Dacy Lane	3.2	BF		6	6	6	6
20503	Plum Creek at Lehman Road	3.2	BF		6	6	6	6
20502	Bunton Branch at Dacy Lane (upstream of NRCS 5)	3.2	BF		6	6	6	6
20479	Unnamed Tributary at FM 150 near Hawthorn Dr.	3.2	BF		6	6	6	6
20492	10210-001 City of Lockhart and GBRA #1(Larremore plant)	3.4	-		10	10	10	10

TCEQ Station ID	Site Description	Workplan Task	Monitor Type	DO 24hr	Bacteria	Conventional	Flow	Field
20494	10210-002 City of Lockhart and GBRA #2 (FM 20 plant)	3.4	-		10	10	10	10
20499	10582-001 City of Luling	3.4	-		10	10	10	10
20486	11041-002 City of Kyle and Aquasource Inc.	3.4	-		10	10	10	10
99923	11060-001 City of Buda and GBRA	3.4	-		10	10	10	10
99936	14431-001 GBRA Shadow Creek	3.4	-		10	10	10	10
99937	14377-001 GBRA Sunfield	3.4	-		10	10	10	10
20509	Lockhart Springs	3.5	BS		3	3	3	3
20507	Clear Fork Springs at Borchert Loop (CR 108)	3.5	BS		3	3	3	3
20508	Boggy Creek Springs at Boggy Creek Road (CR 218)	3.5	BS		3	3	3	3

Tasks, Objectives and Schedules				
Task 1	Project Administration			
Costs	$2,901			
Objective	To effectively administer, coordinate and monitor all work performed under this project including technical and financial supervision and preparation of status reports.			
Subtask 1.1	The GBRA will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 15th of March, June, September, and December. QPRs shall be distributed to all Project Partners.			
	Start Date	Month 1	Completion Date	Month 11
Subtask 1.2	The GBRA will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.			
	Start Date	Month 1	Completion Date	Month 11
Subtask 1.3	The GBRA will host coordination meetings or conference calls, at least quarterly, with Project Partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements. The GBRA will develop lists of action items needed following each project coordination meeting and distribute to project personnel.			
	Start Date	Month 1	Completion Date	Month 11
Subtask 1.4	The GBRA will develop a Final Report that summarizes activities completed, conclusions reached during the project and discusses the extent to which project goals and measures of success have been achieved.			
	Start Date	Month 1	Completion Date	Month 11
Subtask 1.5	GBRA will post monitoring data to the GBRA website in a timely manner. GBRA will summarize the results and activities of this project through inclusion in GBRA's Clean Rivers Program Basin Highlights Report. Additionally, the results and activities of this project will be summarized in quarterly reports to the PCWP Steering Committee and in revisions to the Plum Creek WPP. GBRA will maintain the three kiosks in public locations in Kyle, Lockhart and Luling. These kiosks will link the public to the real-time monitoring site, the project web site, other pertinent water quality information, such as the GBRA River of Life and on-line training modules including the module on septic system operations. GBRA will make presentations on the Plum Creek Partnership and WPP and general NPS pollution information to local schools and community organizations. GBRA will participate in the annual stream cleanups.			
	Start Date	Month 1	Completion Date	Month 11
Deliverables	• QPRs in electronic format • Reimbursement Forms and necessary documentation in hard copy format • Final Data Report in electronic and hard copy formats • Project website and kiosk maintenance • Final Report in electronic and hard copy formats			

Tasks, Objectives and Schedules				
Task 2	Quality Assurance			
Costs	$660			
Objective	To develop data quality objectives (DQOs) and quality assurance/control (QA/QC) activities to ensure data of known and acceptable quality are generated through this project.			
Subtask 2.1	The GBRA will develop a QAPP for activities in Task #3 consistent with the most recent versions of *EPA Requirements for Quality Assurance Project Plans (QA/R-5)* and the *TSSWCB Environmental Data Quality Management Plan.* All monitoring procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in the *TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue (RG-415)* and *Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416).* [Consistency with Title 30, Chapter 25 of the Texas Administrative Code, *Environmental Testing Laboratory Accreditation and Certification*, which describes Texas' approach to implementing the National Environmental Laboratory Accreditation Conference (NELAC) standards, shall be required where applicable.]			
	Start Date	Month 1	Completion Date	Month 11
Subtask 2.2	The GBRA will implement the approved QAPP. Cooperating Entity will submit revisions and necessary amendments to the QAPP as needed.			
	Start Date	Month 1	Completion Date	Month 11
Deliverables	• QAPP approved by TSSWCB • Approved revisions and amendments to QAPP, as needed • Data of known and acceptable quality as reported through Task #3.1 – 3.6			

Tasks, Objectives and Schedules				
Task 3	Water Quality Data Collection & Analysis			
Costs	$122,974			
Objective	To collect water quality data in the Plum Creek watershed to assess the effectiveness of implementing the Plum Creek WPP by enhancing current ambient monitoring regimes.			
Subtask 3.1	The GBRA will conduct routine ambient monitoring at 8 sites monthly, collecting field, conventional, flow and bacteria parameter groups. Sampling period extends over 10 months. Total number of sample events scheduled for collection through this subtask is 80. Currently, routine ambient monitoring is conducted monthly at 3 stations by the GBRA (station nos. 17406, 12640 and 12647) through the Clean Rivers Program. Total kjeldahl nitrogen and ammonia nitrogen will be collected at the 3 Clean Rivers Program monitoring stations on a bimonthly basis in order to supplement current data collection efforts. Sampling through this subtask will complement existing routine ambient monitoring regimes such that the same routine water quality monitoring is conducted monthly at 8 sites in the Plum Creek watershed. GBRA's Regional Laboratory will conduct sample analysis. Field parameters are pH, temperature, conductivity, and dissolved oxygen. Conventional parameters are total suspended solids, turbidity, sulfate, chloride, nitrate nitrogen, ammonia nitrogen, total kjeldahl nitrogen, chlorophyll a, pheophytin, total hardness, and total phosphorus. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity. Bacteria parameters are *E. coli*.			
	Start Date	Month 1	Completion Date	Month 11

<table>
<tr><td>Subtask 3.2</td><td>The GBRA will conduct targeted watershed monitoring at 37 sites twice per season, once under dry weather conditions and once under wet weather conditions, collecting field, conventional, flow and bacteria parameter groups. Of these 37 sites, 8 sites shall be the same as the sites for routine ambient monitoring described in Task 3.1, allowing for 29 sites for targeted watershed monitoring only. If the weather conditions being targeted were already captured at a station during the routine monthly monitoring described in subtask 3.1, then a separate biased for flow sample will not be collected under the similar weather conditions at the affected station for this subtask.

The QAPP developed in Task 2 will precisely identify the sites. Sampling period extends through 3 seasons. Total number of sample events scheduled for collection through this subtask is198. Spatial, seasonal and meteorological variation will be captured in these snapshots of watershed water quality.

GBRA’s Regional Laboratory will conduct sample analysis.

Field parameters are pH, temperature, conductivity and dissolved oxygen. Conventional parameters are total suspended solids, nitrate nitrogen, ammonia nitrogen, total kjeldahl nitrogen and total phosphorus. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity. Bacteria parameters are E. coli.
<table><tr><td>Start Date</td><td>Month 1</td><td>Completion Date</td><td>Month 11</td></tr></table></td></tr>
<tr><td>Subtask 3.3</td><td>GBRA will conduct 24-hour DO monitoring at 8 sites monthly during the index period collecting field and flow parameter groups. These sites shall be the same as the sites for routine ambient monitoring described in Task 3. Sampling period extends over 8 months during the index period between March 15 and October 15. Samples will be collected during the index periods that fall in 7 months of the project. Total number of sample events scheduled for collection through this subtask is 56.

Field parameters are pH, temperature, conductivity and dissolved oxygen. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity.
<table><tr><td>Start Date</td><td>Month 3</td><td>Completion Date</td><td>Month 11</td></tr></table></td></tr>
<tr><td>Subtask 3.4</td><td>GBRA will conduct effluent monitoring at 7 WWTFs once per month, collecting field, conventional, flow, bacteria and effluent parameter groups.

Sampling period extends through 10 months. Total number of sample events scheduled for collection through this subtask is 70.

The GBRA’s Regional Laboratory will conduct sample analysis.

Field parameters are pH, temperature, conductivity and dissolved oxygen. Conventional parameters are total suspended solids, sulfate, chloride, nitrate nitrogen, ammonia nitrogen, total kjeldahl nitrogen and total phosphorus. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity. Bacteria parameters are E. coli. Effluent parameters are BOD, CBOD and COD.

To supplement the data collected in Subtask 3.4, the GBRA will compile all the weekly permit effluent monitoring data as submitted by permittees that includes BOD, total suspended solids, volatile suspended solids, E. coli, ammonia nitrogen and total phosphorus from seven WWTFs.
<table><tr><td>Start Date</td><td>Month 1</td><td>Completion Date</td><td>Month 11</td></tr></table></td></tr>
</table>

<table>
<tr><td>Subtask 3.5</td><td>The GBRA will conduct spring flow monitoring at 3 springs once per season collecting field, conventional, flow and bacteria parameter groups.

Sampling period extends through 3 seasons. Total number of sample events scheduled for collection through this subtask is 9. Spatial and seasonal variation in spring flow will be captured.

The GBRA’s Regional Laboratory will conduct sample analysis.

Field parameters are pH, temperature, conductivity and dissolved oxygen. Conventional parameters are total suspended solids, sulfate, chloride, nitrate nitrogen, ammonia nitrogen, total kjeldahl nitrogen and total phosphorus. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity. Bacteria parameters are E. coli.
<table>
<tr><td>Start Date</td><td>Month 1</td><td>Completion Date</td><td>Month 11</td></tr>
</table>
</td></tr>
<tr><td>Subtask 3.6</td><td>The GBRA will transfer monitoring data from activities in Tasks #3.1-3.5 to TSSWCB for inclusion in the TCEQ SWQMIS. Data will be transferred in the correct format using the TCEQ file structure, along with a completed Data Summary, as described in the most recent version of TCEQ Surface Water Quality Monitoring Data Management Reference Guide.

Data Correction Request Forms will be submitted to TSSWCB whenever errors are discovered in data already reported.

All monitoring data files, Data Summary, and Data Correction Request Forms will also be provided to the Plum Creek Watershed Coordinator.
GBRA will post monitoring data from activities in Tasks 3.1-3.5 to the GBRA website in a timely manner.
GBRA will maintain the educational kiosks installed in public locations in Kyle, Lockhart and Luling. Each kiosk will contain a computer that provides a link to the real time flow data collected at USGS gaging stations in the Plum Creek watershed; provides a link to real-time data being recorded at the GBRA Plum Creek at CR 202 continuous water quality monitoring station; and, provides a link to the Plum Creek Watershed Partnership and the GBRA project webpages.</td></tr>
<tr><td>Deliverables</td><td>• Monitoring data files and Data Summary in electronic format
• Data Correction Request Forms (as needed) in electronic format
• Monitoring data updates posted to the GBRA website
• Maintenance of kiosks</td></tr>
</table>

Project Goals (Expand from Summary Page)

- Generate data of known and acceptable quality for surface and ground water quality monitoring (routine ambient, targeted watershed, 24-hour DO, effluent and spring flow) of main stem and tributary stations for field, conventional, flow, bacteria and effluent parameters.
- Support the implementation of the Plum Creek WPP by collecting water quality data for use in evaluating the effectiveness of BMPs, and in assessing water quality improvement and progress in achieving restoration.
- Communicate water quality conditions to the public through the project website and to the PCWP Steering Committee on project results and activities in order to support adaptive management of the Plum Creek WPP and to expand public knowledge on Plum Creek water quality data.

Measures of Success (Expand from Summary Page)

- Data of known and acceptable quality are generated for surface water quality monitoring (routine ambient, targeted watershed, 24-hour DO, effluent and spring flow) of main stem and tributary stations on Segment 1810 (Plum Creek) for field, conventional, flow, bacteria and effluent parameters.
- Data of known and acceptable quality are generated for groundwater monitoring of springs from the Leona Aquifer located along the Plum Creek for conventional and bacteria parameters.
- Water quality data is used to evaluate progress in implementing the Plum Creek WPP and achieving water quality restoration.
- Water quality data is communicated to the public and the PCWP Steering Committee in a timely fashion.
- Increased watershed stewardship among Plum Creek watershed stakeholders.

***2012 Texas NPS Management Program* Reference (Expand from Summary Page)**

Components, Goals, and Objectives

Component One – Explicit short- and long-term goals, objectives and strategies that protect surface and groundwater.

Long-Term Goal – To… restore water quality from NPS pollution through assessment, implementation, and education.

- Objective 1 – Focus NPS abatement efforts, implementation strategies, and available resources in watersheds identified as impacted by nonpoint source pollution.
- Objective 3 – Support the implementation of… programs to reduce NPS pollution, such as the implementation of strategies defined in… WPPs, and other water planning efforts in the state.

Objective 7 – Increase overall public awareness of NPS issues and prevention activities.

Short-Term Goal One – Data Collection and Assessment – Objective B – Ensure that monitoring procedures meet quality assurance requirements and are in compliance with EPA-approved TCEQ and/or TSSWCB Quality Management Plans.

Short-Term Goal Two – Data Collection and Assessment – Objective E – Conduct monitoring to determine effectiveness of… WPPs, and BMP implementation…

Short-Term Goal Three – Education – Objective F – Implement public outreach and education to maintain and restore water quality in water bodies by NPS pollution.

Component Three – Balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds.

EPA State Categorical Program Grants – Workplan Essential Elements
***FY 2011-2015 EPA Strategic Plan* Reference**

Strategic Plan Goal – Goal 2 Protecting America's Waters

Strategic Plan Objective – Objective 2.2 Protect and Restore Watersheds and Aquatic Ecosystems

Part III – Financial Information

Budget Summary		
Category	Cost	
Personnel	$	14,903
Fringe Benefits	$	6,036
Travel	$	2,555
Equipment	$	0
Supplies	$	1,764
Contractual	$	0
Construction	$	0
Other	$	95,979
Total Direct Costs	$	121,237
Indirect Costs (≤ 15%)	$	5,298
Total Project Costs	$	126,535

Budget Justification		
Category	Total Amount	Justification
Personnel	$ 14,903	• Director of Water Quality Services (0.05 FTE) • Water Quality Project Manager (0.1 FTE) • Water Quality Field Technician (0.06 FTE) • Water Quality Project Coordinator (0.04 FTE)
Fringe Benefits	$ 6,036	Fringe calculated at 40.5% of non-federal personnel
Travel	$ 2,555	Mileage for sample collection at the state rate (approximately 4775 miles for 55 trips).
Equipment	$ 0	N/A
Supplies	$ 1,764	Supplies for water quality monitoring, bottles, replacement field probes, write-in-rain paper, and equipment storage costs.
Contractual	$ 0	N/A
Construction	$ 0	N/A
Other	$ 95,979	Analyses of water quality monitoring samples described in Task 3. (80) routine ambient monitoring once per month; (198) targeted monitoring twice per season; (56) 24-hour D.O. monitoring monthly; (70) effluent monitoring once per month; and (9) spring flow monitoring once per season
Indirect	$ 5,298	4.37% of Direct Costs