



Texas State Soil and Water Conservation Board
Clean Water Act §319(h) Nonpoint Source Grant Program
FY 2023 Workplan 23-13

SUMMARY PAGE						
Title of Project	Surface Water Quality Monitoring to Support the Implementation of the Plum Creek Watershed Protection Plan					
Project Goals	<ul style="list-style-type: none"> • Generate data of known and acceptable quality for surface and ground water quality monitoring of main stem and tributary stations • Collect water quality data for use in assessing water quality improvement and progress in achieving restoration • Communicate water quality conditions to the public and the Partnership in order to support adaptive management and to expand public knowledge on Plum Creek water quality data • Coordinate and conduct water resources and related environmental outreach/education efforts across the watershed 					
Project Tasks	(1) Project Administration; (2) Quality Assurance; (3) Water Quality Data Collection and Analysis					
Measures of Success	<ul style="list-style-type: none"> • Data of known and acceptable quality are generated for and groundwater 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 (X); Education (); Planning (); Assessment (); Groundwater ()					
Status of Waterbody on 2022 Texas Integrated Report	<u>Segment ID</u> 1810	<u>Parameter of Impairment or Concern</u> Bacteria Fish kill in water, fish community, macrobenthic community Ammonia-nitrogen, habitat, nitrate-nitrogen, total phosphorus			<u>Category</u> 4b CN CS	
Project Location (Statewide or Watershed and County)	Plum Creek Watershed in Caldwell and Hays Counties					
Key Project Activities	Hire Staff (); Surface Water Quality Monitoring (X); Technical Assistance (X); Education (X); Implementation (X); BMP Effectiveness Monitoring (); Demonstration (); Planning (); Modeling (); Bacterial Source Tracking (); Other ()					
2022 Texas NPS Management Program Reference	<ul style="list-style-type: none"> • Component 1 LTGs 1, 3, 7 • Component 1 STGs 1B, 1E, 3D, 3G • Component 3, Component 7 					
Project Costs	Federal	\$363,884	Non-Federal	\$213,710	Total	\$577,594
Project Management	• Guadalupe-Blanco River Authority					
Project Period	October 1, 2023 – September 30, 2026					

Part I – Applicant Information

Applicant							
Project Lead	Elizabeth Edgerton						
Title	Water Quality Program Supervisor						
Organization	Guadalupe-Blanco River Authority						
E-mail Address	eedgerton@gbra.org						
Street Address	933 E. Court Street						
City	Seguin	County	Guadalupe	State	TX	Zip Code	78130
Telephone Number	830-379-5822			Fax Number	830-379-7478		

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, and technical assistance

Part II – Project Information

Project Type						
Surface Water	<input checked="" type="checkbox"/>	Groundwater	<input type="checkbox"/>			
Does the project implement recommendations made in: (a) a completed WPP; (b) an accepted WPP; (c) an adopted TMDL; (d) an approved I-Plan; (e) a Comprehensive Conservation and Management Plan developed under CWA §320; (f) the <i>Texas Coastal NPS Pollution Control Program</i> ; or (g) the <i>Texas Groundwater Protection Strategy</i> ?				Yes	<input checked="" type="checkbox"/>	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 2022 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: <i>2022 Texas Integrated Report</i> , Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.
<p>2022 Texas Integrated Report – Plum Creek has been listed as impaired on the Texas Integrated Report since 2004 due to bacterial contamination. The geometric mean of data collected on the three assessment units on Plum Creek from December 1, 2013 through November 30, 2020 for the 2022 Texas Integrated Report was 259, 344, and 450 cfu/100mL downstream to upstream, respectively. The assessed geometric mean of data collected for the 2020 Texas Integrated Report was 223, 362 and 516 cfu/100 mL downstream to upstream, respectively. AU 1810_03, the uppermost AU, saw a significant decrease in the E. coli geometric mean from the 2020 to the 2022 IR, 66 cfu/100mL, while the middle AU saw a slight decrease, and the most downstream AU saw an increase. The upcoming 2023 CRP Basin Summary Report will look into these trends more closely to identify potential causes for the load reductions in the upper portion of the watershed.</p> <p>Clean Rivers Program 2018 Basin Summary Report - The 2018 Clean Rivers Program Basin Summary Report for the Guadalupe River Basin states that the analysis of the total phosphorus concentrations at the most downstream monitoring station 12640, near the San Marcos River confluence, indicated that they were significantly increasing over the 13-year study period. Total phosphorus significantly correlated with streamflow, and the changes in concentrations at this location was primarily linked to prolonged drought conditions throughout the watershed and corresponding increases in the proportion of wastewater in the creek. This effect was also noted in the upper portions of the watershed at station 17406, near Uhland, where nitrate nitrogen levels were significantly increasing over time. This portion of the watershed has also experienced increased wastewater nonpoint source influences due expansive population growth in the area. The nitrate nitrogen concentrations were decreasing in the middle portions of the watershed below the City of Lockhart at station 12647 over the same time period. This change was most likely due to dilution effects from rainwater near the City of Lockhart and best management practices (BMPs) associated with the watershed protection plan (WPP) implemented in this portion of the watershed. No significant changes in E. coli concentrations over time have occurred in the watershed. The BMPs implemented by the WPP have been effective in offsetting the increases in nonpoint source runoff associated with extensive population growth.</p> <p>Clean Rivers Program Basin Highlights Reports - The Clean Rivers Program Basin Highlights Reports for the Guadalupe River Basin since 2004 comment on the high E. coli, nitrate nitrogen and total phosphorus concentration in the Plum Creek watershed and the implementation efforts that have been undertaken as a part of the watershed protection plan in order to reduce these impairments and concerns. The 2022 Basin highlights report describes the</p>

results of a recent Aquatic Life Monitoring Event that was performed in Plum Creek (under the 19-06 grant) at station 12640, Plum Creek at CR 135. Results showed that this Assessment Unit 1810_01 is meeting its aquatic life use designation for habitat and macrobenthic community, though it has a concern listed in the 2022 IR for impaired macrobenthic community.

2017 Nonpoint Source Management Program - Nonpoint source contamination is widespread in many Texas aquifers. While there are a variety of pollutants of concern in groundwater, the most widespread contaminant is nitrate. Potential nitrate sources may include failing septic systems, infiltration of stormwater runoff, over application of fertilizer on urban and agricultural land, and naturally occurring nitrate derived from the aquifer matrix. Sampling and analysis of drinking water wells conducted by the Texas Water Development Board (TWDB) in 2013 for the Gulf Coast Aquifer showed 12 wells of 317 sampled exceeded primary maximum contaminant levels for nitrate. From 2003 through 2013, the TWDB sampled 4,645 wells across the state for nitrate, with 1,429 presenting nitrate concentrations that exceeded the maximum contaminant level. An additional 1,751 wells showed the presence of nitrate, but did not exceed the maximum contaminant level (2014 Texas Integrated Report for the Clean Water Act Sections 305(b) and 303(d)). This sampling and analysis underscores the reason for the state's concern for the groundwater quality in Texas and potential impact from nonpoint source pollution.

2016 Bacterial Source Tracking Study

In 2016 a Bacterial Source Tracking (BST) study was conducted in the watershed by the GBRA and the Texas A&M University Soil and Microbiology Laboratory. Results from the study showed that most of the bacteria samples collected during the 12-month study came from wildlife sources, and less than 10% came from sources that could be identified as human. As of the 2022 Texas Integrated Report 1810 is listed as impaired for E. coli, and has concerns for fish community, macrobenthic community, habitat, Nitrate Nitrogen, Total Phosphorus, and Ammonia. Rapid urbanization in the watershed, leading to increased runoff, is a likely source for the continued increase in bacteria and nutrient loading in the creek. Continued engagement of the stakeholders in the watershed, and further BMP implementation is needed to mitigate bacteria and nutrient loading.

2015-2016 USGS Study to identify the Sources Nitrate, and Chemical Loadings in the Geronimo Creek and Plum Creek Watersheds – The TSSWCB funded the GBRA and USGS to conduct a study of the groundwater and surface water in the Plum Creek Watershed during four synoptic surveys events at varying stream flows. The purpose of this study was to characterize the sources of elevated nitrate nitrogen concentrations in the Plum Creek and underlying Leona aquifer by analyzing Nitrate-N concentrations and stable isotopes of nitrate including delta nitrogen-15 of nitrate ($\delta^{15}\text{N-NO}_3$) and delta oxygen-18 of nitrate ($\delta^{18}\text{O-NO}_3$) throughout the watershed. The report generated by this study found that the analysis of nitrogen isotope values indicates that Plum Creek watershed has multiple sources of nitrate, whose contributions are dependent on the type of site and the streamflow conditions. The report also stated that the sources of the nitrates in the groundwater and springs flows are most likely from diffuse sources that occur in conjunction with the mixing of nitrate from fertilizer applications and septic systems. The best management practices that were described and implemented in the Plum Creek WPP are designed to address both of these sources nonpoint source pollution. During low flow conditions a larger portion of the nitrates in the surface water are associated with WWTF discharges. The surface waters are influenced more by fertilizer and septic sources during higher flows conditions.

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 mi². According to the *2022 Texas Water Quality Inventory and 303(d) List*, Plum Creek (Segment 1810) is impaired by elevated bacteria concentrations (category 4b), exhibits nutrient enrichment concerns for ammonia, nitrate+nitrite nitrogen and total phosphorus, and also has concerns for impaired fish community, macrobenthic community, and habitat.

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://plumcreekwatershed.org>. 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, 10-07, 14-11, 17-09, and 19-06 GBRA collected water quality data to fill data gaps. During these projects, sampling of water quality data was periodically severely hampered by drought that covered the watershed, causing the tributaries to run dry and the springs to slow to almost negligible flow.

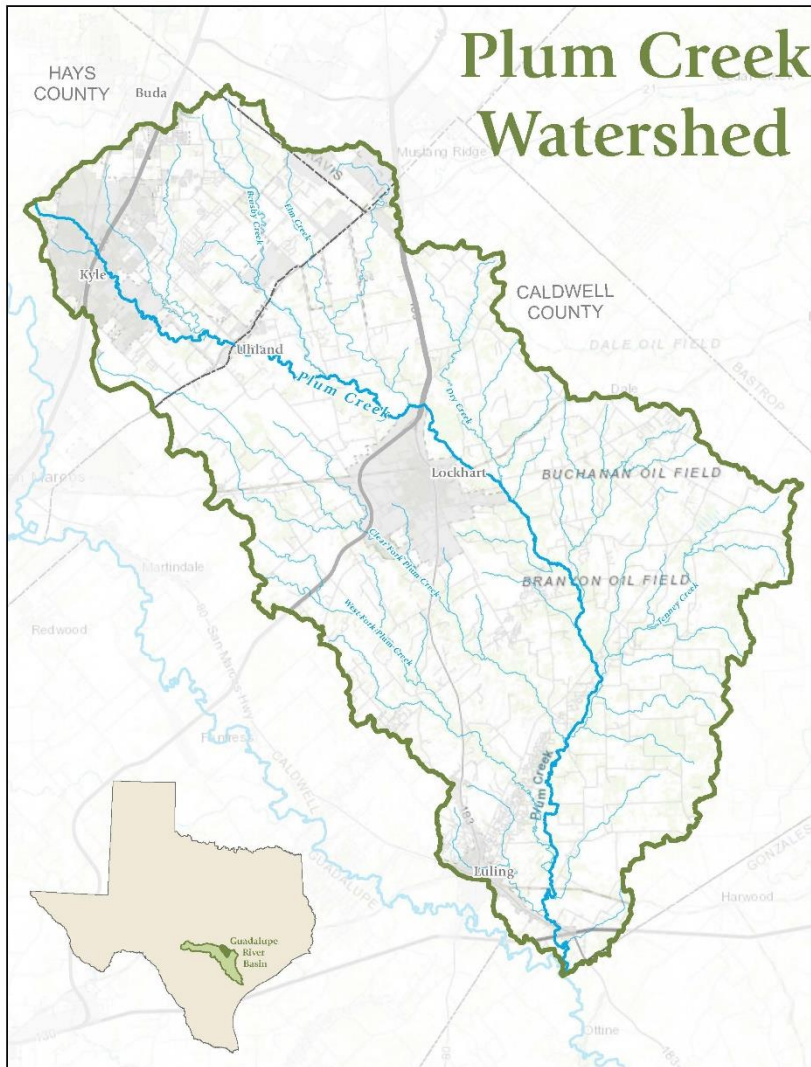
Facilitated by a local watershed coordinator, implementation of the Plum Creek WPP is currently underway. TSSWCB projects provide technical and financial assistance through the local SWCDs to agricultural producers in developing and implementing water quality management plans (WQMPs). In order to reduce 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, 14-11, 17-09, and 19-06. 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 the next three years. This will provide a more complete and representative data set to characterize the Plum Creek watershed and document water quality improvements, as well as help to identify areas to focus management efforts.

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's 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 that data of known and acceptable quality are generated in this project. The QAPP will be 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.] 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 4 sites monthly over 33 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 7 sites in the Plum Creek watershed.

GBRA will conduct targeted watershed monitoring at 34 sites twice per quarter, once under dry weather conditions and once under wet weather conditions, collecting field, conventional, flow and bacteria parameter groups. Sampling period extends through 11 seasons. Spatial, seasonal and meteorological variation will be captured in these snapshots of watershed water quality. If GBRA previously captured the targeted weather conditions in a yearly quarter under similar conditions during the course of routine monitoring, the station will not be resampled.

GBRA will conduct 24-hour DO monitoring at 7 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 of the project, except for year 3, in which the diurnal sampling will end at the end of the contract period.

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 33 months. This will characterize WWTF contributions to flow regime and pollutant loadings.

GBRA will conduct spring flow monitoring at 3 springs once per quarter year collecting field, conventional, flow and bacteria parameter groups. The sampling period will extend over 11 seasons. Spatial and seasonal variation in spring flow will be captured. This will characterize groundwater contributions to flow regime and pollutant loadings.

One aquatic life monitoring event will be performed at Clear Fork Plum Creek at PR 10 (Station 20493) in order to gage the effects of WPP implementation efforts on the biological assemblages in the watershed. This monitoring will be accompanied by additional 24 hour dissolved oxygen, field and stream flow monitoring data.

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	AqHab	Benthics	Nekton
12556	Clear Fork Plum Creek at Salt Flat Road	3.1	RT		33	33	33	33			
12556	Clear Fork Plum Creek at Salt Flat Road	3.2	BF		11	11	11	11			
12556	Clear Fork Plum Creek at Salt Flat Road	3.3	BS	22			22				
12558	Elm Creek at CR 233	3.1	RT		33	33	33	33			
12558	Elm Creek at CR 233	3.2	BF		11	11	11	11			
12558	Elm Creek at CR 233	3.3	BS	22			22				
12640	Plum Creek at CR 135	3.1	RT			17					
12640	Plum Creek at CR 135	3.2	BF		11	11	11	11			
12640	Plum Creek at CR 135	3.3	BS	22			22				
12647	Plum Creek at Old McMahan Road (CR 202)	3.1	RT			17					
12647	Plum Creek at Old McMahan Road (CR 202)	3.2	BF		11	11	11	11			
12647	Plum Creek at Old McMahan Road (CR 202)	3.3	BS	22			22				
17406	Plum Creek at Plum Creek Road	3.1	RT			17					
17406	Plum Creek at Plum Creek Road	3.2	BF		11	11	11	11			
17406	Plum Creek at Plum Creek Road	3.3	BS	22			22				
20488	Brushy Creek at Rocky Road (Upstream of NRCS 14)	3.1	RT		33	33	33	33			
20488	Brushy Creek at Rocky Road (Upstream of NRCS 14)	3.2	BF		11	11	11	11			
20488	Brushy Creek at Rocky Road (Upstream of NRCS 14)	3.3	BS	22			22				
20500	West Fork Plum Creek at Biggs Road (CR 131)	3.1	RT		33	33	33	33			
20500	West Fork Plum Creek at Biggs Road (CR 131)	3.2	BF		11	11	11	11			
20500	West Fork Plum Creek at Biggs Road (CR 131)	3.3	BS	22			22				
12555	Salt Branch at FM 1322	3.2	BF		22	22	22	22			
12557	Town Creek at E. Market St. (Upstream of Lockhart #1 WWTP)	3.2	BF		22	22	22	22			
12559	Porter Creek at Dairy Road	3.2	BF		22	22	22	22			
12642	Plum Creek at Biggs Road (CR 131)	3.2	BF		22	22	22	22			
12643	Plum Creek at FM 1322	3.2	BF		22	22	22	22			
12645	Plum Creek at Young Lane (CR 197)	3.2	BF		22	22	22	22			
12648	Plum Creek at CR 186	3.2	BF		22	22	22	22			
12649	Plum Creek at CR 233	3.2	BF		22	22	22	22			
14945	Clear Fork Plum Creek at Old Luling Road (CR 213)	3.2	BF		22	22	22	22			
18343	Plum Creek Upstream of US 183	3.2	BF		22	22	22	22			
20480	Plum Creek Downstream of NRCS 1 Spillway	3.2	BF		22	22	22	22			
20481	Bunton Branch at Heidenreich Lane	3.2	BF		22	22	22	22			
20482	Brushy Creek at FM 2001 (Downstream of NRCS 12)	3.2	BF		22	22	22	22			
20489	Cowpen Creek at Schuelke Road	3.2	BF		22	22	22	22			
20496	Tenney Creek at Tenney Creek Road	3.2	BF		22	22	22	22			
20490	Clear Fork Plum Creek at Farmers Road	3.2	BF		22	22	22	22			
20493	Clear Fork Plum Creek at PR 10 (State Park)	3.2	BF		22	22	22	22			
20493	Clear Fork Plum Creek at PR 10 (State Park)	3.2	BS				2	2	2	2	2
20497	West Fork Plum Creek at FM 671	3.2	BF		22	22	22	22			
12538	Andrews Branch at CR 131	3.2	BF		22	22	22	22			
20495	Dry Creek at FM 713	3.2	BF		22	22	22	22			
20484	Plum Creek at Heidenreich Lane (Downstream of Kyle WWTP)	3.2	BF		22	22	22	22			
20501	Salt Branch at Salt Flat Road (Upstream of Luling WWTP)	3.2	BF		22	22	22	22			

TCEQ Station ID	Site Description	Workplan Task	Monitor Type	DO 24hr	Bacteria	Conventional	Flow	Field	AqHab	Benthics	Nekton
20498	Copperas Creek at Wattsville Road (CR 140, Downstream of Cal-Maine)	3.2	BF		22	22	22	22			
20505	Richmond Branch at Dacy Lane	3.2	BF		22	22	22	22			
20503	Plum Creek at Lehman Road	3.2	BF		22	22	22	22			
20502	Bunton Branch at Dacy Lane (upstream of NRCS 5)	3.2	BF		22	22	22	22			
20479	Unnamed Tributary at FM 150 near Hawthorn Dr.	3.2	BF		22	22	22	22			
20492	10210-001 City of Lockhart and GBRA #1(Larremore plant)	3.4	-		33	33	33	33			
20494	10210-002 City of Lockhart and GBRA #2 (FM 20 plant)	3.4	-		33	33	33	33			
20499	10582-001 City of Luling	3.4	-		33	33	33	33			
20486	11041-002 City of Kyle and Aquasource Inc.	3.4	-		33	33	33	33			
99923	11060-001 City of Buda and GBRA	3.4	-		33	33	33	33			
99936	14431-001 GBRA Shadow Creek	3.4	-		33	33	33	33			
99937	14377-001 GBRA Sunfield	3.4	-		33	33	33	33			
20509	Lockhart Springs	3.5	BS		11	11	11	11			
20507	Clear Fork Springs at Borchert Loop (CR 108)	3.5	BS		11	11	11	11			
20508	Boggy Creek Springs at Boggy Creek Road (CR 218)	3.5	BS		11	11	11	11			

Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	\$0	Non-Federal	\$21,371	Total	\$21,371
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	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 1 st of January, April, July and October. QPRs shall be distributed to all Project Partners.					
	Start Date	Month 1		Completion Date	Month 36	
Subtask 1.2	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 36	
Subtask 1.3	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. 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 36	
Subtask 1.4	GBRA will develop a Final Report that summarizes activities completed and 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 36	
Deliverables	<ul style="list-style-type: none"> QPRs in electronic format Reimbursement Forms and necessary documentation in hard copy format Final Report in electronic and hard copy formats 					

Tasks, Objectives and Schedules						
Task 2	Quality Assurance					
Costs	Federal	\$0	Non-Federal	\$42,742	Total	\$42,742
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	GBRA will develop a QAPP for activities in Task #3 consistent with the most recent versions of <i>EPA Requirements for Quality Assurance Project Plans (QA/R-5)</i> and the <i>TSSWCB Environmental Data Quality Management Plan</i> . All monitoring procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in the <i>TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue (RG-415)</i> and <i>Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416)</i> . [Consistency with Title 30, Chapter 25 of the Texas Administrative Code, <i>Environmental Testing Laboratory Accreditation and Certification</i> , 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 3	
Subtask 2.2	GBRA will implement the approved QAPP. GBRA will submit revisions and necessary amendments to the QAPP as needed.					
	Start Date	Month 4		Completion Date	Month 36	
Deliverables	<ul style="list-style-type: none"> QAPP approved by TSSWCB and EPA in both electronic and hard copy formats Approved revisions and amendments to QAPP, as needed Data of known and acceptable quality as reported through Task #3 					

Tasks, Objectives and Schedules						
Task 3	Water Quality Data Collection & Analysis					
Costs	Federal	\$363,884	Non-Federal	\$149,597	Total	\$513,481
Objective	To collect water quality data in the Plum Creek watershed in order to maintain a continuous data record during the implementation of the Plum Creek WPP.					
Subtask 3.1	GBRA will conduct routine ambient monitoring at four sites once per month, collecting field, conventional, flow and bacteria parameter groups. The sampling period extends over 33 months. The number of samples planned for collection through this subtask is 132. Currently, routine ambient monitoring is conducted monthly at three stations by GBRA (17406, 12640 and 12647) through the Clean Rivers Program. GBRA will also collect additional bimonthly total kjeldahl nitrogen and ammonia nitrogen as a part of this subtask, at the three Clean Rivers Program monitoring stations in order to supplement current bimonthly CRP sampling for these parameters. The number of supplemental nutrient samples planned for collection at stations 17406, 1264, and 12647 under this subtask is 99. Sampling through this subtask will complement existing routine ambient monitoring regimes such that the same routine water quality monitoring is conducted monthly at seven sites in the Plum Creek watershed.					
	Field parameters are pH, temperature, dissolved oxygen and conductance. Conventional parameters are total suspended solids, turbidity, sulfate, chloride, nitrite nitrogen, 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 parameter is <i>E. coli</i> .					
	Start Date	Month 4		Completion Date	Month 36	

Subtask 3.2	<p>GBRA will conduct targeted watershed monitoring at 34 sites twice per quarter, once under dry weather conditions and once under wet weather conditions collecting field, conventional, flow and bacteria parameter groups. Of these 34 sites, 7 sites will be the same as the sites for routine ambient monitoring described in subtask 3.1, allowing for 27 sites of targeted watershed monitoring. If the targeted weather conditions 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 during the applicable yearly quarter for this subtask.</p> <p>The QAPP developed in Task 2 will precisely identify the sites. Sampling period extends through 11 yearly quarters. Total number of sample events scheduled for collection through this subtask is 671. Spatial, seasonal and meteorological variation will be captured in these snapshots of watershed water quality.</p> <p>Field parameters are pH, temperature, dissolved oxygen and conductance. Conventional parameters are total suspended solids, nitrate nitrogen, nitrite nitrogen, ammonia nitrogen, total kjeldahl nitrogen, and total phosphorus. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity. Bacteria parameter is <i>E. coli</i>. The GBRA's Regional Laboratory will conduct sample analysis.</p>
Subtask 3.3	<p>GBRA will conduct 24-hour DO monitoring at 7 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 22 months of the project. Total number of sample events scheduled for collection through this subtask is 154.</p> <p>Field parameters are pH, temperature, conductivity and dissolved oxygen. Flow parameters are flow collected by gage, electric, mechanical or Doppler, including severity.</p>
Subtask 3.4	<p>GBRA will conduct effluent monitoring at 7 WWTFs once per month, collecting field, conventional, flow, bacteria and effluent parameter groups. Sampling period extends through 33 months. Total number of sample events scheduled for collection through this subtask is 231.</p> <p>Field parameters are pH, temperature, conductivity and dissolved oxygen. Conventional parameters are total suspended solids, sulfate, chloride, nitrate nitrogen, nitrite 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 <i>E. coli</i>. Effluent parameters are BOD, COD, and CBOD. The GBRA's Regional Laboratory will conduct sample analysis.</p>
Subtask 3.5	<p>The GBRA will conduct spring flow monitoring at 3 springs once per yearly quarter collecting field, conventional, flow and bacteria parameter groups.</p> <p>Sampling period extends through 11 seasons. Total number of sample events scheduled for collection through this subtask is 33. Spatial and seasonal variation in spring flow will be captured.</p> <p>Field parameters are pH, temperature, conductivity and dissolved oxygen. Conventional parameters are total suspended solids, sulfate, chloride, nitrate nitrogen, nitrite 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 <i>E. coli</i>. The GBRA's Regional Laboratory will conduct sample analysis.</p>

Subtask 3.6	GBRA will perform a multi-day aquatic life monitoring events on Clear Fork Plum Creek at PR 10 (Station 20493) in order to gage the effectiveness of implementation efforts on the abundance and diversity of aquatic life at this station. GBRA will perform an assessment of the biological assemblages and the biological habitat two times at the station during the biological index period (March 15 - October 15). At least one of the assessments performed at the station will occur during the biological critical period (July 1 – September 30). Native Texas wildlife specimens will be collected under a Texas Parks and Wildlife scientific collection permit. This event will be also be accompanied by 24 dissolved oxygen monitoring, field and flow parameter groups; specific parameters are defined in Subtasks 3.1 and 3.3.			
	Start Date	Month 4	Completion Date	Month 36
Subtask 3.7	GBRA will transfer monitoring data from activities in subtasks 3.1-3.6 to TCEQ for inclusion in the TCEQ SWQMIS at least biannually. 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 the <i>TCEQ Surface Water Quality Monitoring Data Management Reference Guide</i> . GBRA will post data from monitoring activities collected in subtasks 3.1-3.5 to the project website in a timely manner. Data Correction Request Forms will be submitted to TSSWCB whenever errors are discovered in data already reported. All monitoring data files, data summary reports, and data correction request forms will also be provided to Extension. GBRA will input monitoring regime, as detailed in the QAPP, into the TCEQ CMS.			
	Start Date	Month 4	Completion Date	Month 36
Subtask 3.8	GBRA will develop a final Assessment Data Report summarizing water quality data collected through Task 3. 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. GBRA will summarize the results from Task 3 in the GBRA’s Clean Rivers Program Basin Highlights Report. GBRA will provide updates on the results and activities of Task 3 to the Steering Committee.			
	Start Date	Month 4	Completion Date	Month 36
Deliverables	<ul style="list-style-type: none"> • Monitoring data files and Data Summary in electronic format • Data correction request forms (as needed) in electronic format • Monitoring data updates posted to the project webpage • Upload data to SWQMIS • Summary of findings from monitoring activities included in GBRA Clean Rivers Program (CRP) Basin Highlights Report (BHR) in both electronic and hardcopy formats • Final Assessment Data Report in both electronic and hard copy formats 			

Project Goals (Expand from Summary Page)	
	<ul style="list-style-type: none"> • Generate data of known and acceptable quality for surface water quality monitoring (routine ambient, targeted watershed, 24-hour D.O, Aquatic Life monitoring, WWTF effluent and spring flow) of main stem and tributary stations on segment 1810 (Plum Creek) for field, conventional, flow, bacteria, 24 hour dissolved oxygen, nekton, benthic macroinvertebrates, aquatic habitat 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 and to the Partnership 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)

- Provide technical assistance to the Partnership through collection and interpretation of water quality data.
- Data of known and acceptable quality are generated for surface water quality monitoring (routine ambient, targeted watershed, 24-hour D.O, Aquatic Life Monitoring, WWTF effluent and spring flow) of main stem and tributary stations on main stem and tributary stations on segment 1810 (Plum Creek) for field, conventional, flow, bacteria, 24 hour dissolved oxygen, nekton, benthic macroinvertebrates, aquatic habitat and effluent 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 Partnership in a timely fashion.

2022 Texas NPS Management Program Reference (Expand from Summary Page)

Components, Goals, and Objectives

Long-Term Goal – Protect and restore water quality affected by nonpoint source pollution through assessment, implementation, and education.

- Objective 1 – Focus nonpoint source abatement efforts, implementation strategies, and available resources in watershed and aquifers identified as impacted by nonpoint source pollution
- Objective 3 – Support the implementation of state, regional, and local programs to reduce nonpoint source pollution, such as the implementation of strategies defined in TMDL I-Plans, WPPs, and other water quality planning efforts in the state
- Objective 7 – Increase overall public awareness of nonpoint source 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 or TSSWCB Quality Management Plans
- Objective E – Conduct monitoring to determine the effectiveness of TMDL I-Plans, WPPs and BMP implementation

Short-Term Goal Three – Education

- Objective D – Conduct outreach through CRP, SWCDs, and other partners to enable stakeholders and the public to participate in decision-making and provide a more complete understanding of water quality issues and how they relate to each citizen.
- Objective G – Implement public outreach and education to maintain and restore water quality in water bodies impacted by nonpoint source pollution

Component Three – Combination of statewide nonpoint source programs and on-the-ground projects achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

Component Seven - Manage and implement the nonpoint source program efficiently and effectively, including necessary financial management.

Estimated Load Reductions Expected (Only applicable to Implementation Project Type)

N/A

**EPA State Categorical Program Grants – Workplan Essential Elements
 FY 2022-2026 EPA Strategic Plan Reference**

Strategic Plan Goal – 5.0 Ensure Clean and Safe Water for All Communities

Strategic Plan Objective – 5.2 - Protect and Restore Waterbodies and Watersheds

This workplan supports Goal 5 (Ensure Clean and Safe Water for All Communities) and Objective 5.2 (Protect and Restore Waterbodies and Watersheds) by funding the Texas State and Soil Water Conservation Board's NPS Program for state and local planning, education, assessments, watershed restoration and protection, best management practices, and related water quality activities.

Part III – Financial Information

Budget Summary				
Federal	\$	363,884	% of total project	63%
Non-Federal	\$	213,710	% of total project	37%
Total	\$	577,594	Total	100%
Category		Federal	Non-Federal	Total
Personnel	\$	0	\$ 90,992	\$ 90,992
Fringe Benefits	\$	0	\$ 36,852	\$ 36,852
Travel	\$	9,100	\$ 1,695	\$ 10,795
Equipment	\$	0	\$ 0	\$ 0
Supplies	\$	15,300	\$ 2,000	\$ 17,300
Contractual	\$	0	\$ 0	\$ 0
Construction	\$	0	\$ 0	\$ 0
Other	\$	339,484	\$ 52,144	\$ 391,628
Total Direct Costs	\$	363,884	\$ 183,683	\$ 547,567
Indirect Costs (≤ 15%)	\$	0	\$ 30,027	\$ 30,027
Total Project Costs	\$	363,884	\$ 213,710	\$ 577,594

Budget Justification (Federal)		
Category	Total Amount	Justification
Personnel	\$ 0	N/A
Fringe Benefits	\$ 0	N/A
Travel	\$ 9,100	<p>Mileage for sample collection at the state rate:</p> <ul style="list-style-type: none"> • Routine Ambient monitoring (average of 108 miles per monitoring event for 33 events) • Targeted Watershed monitoring (average of 236 miles per monitoring event for 22 events) • 24-hour D.O. monitoring (average of 108 miles per monitoring event for 11 events) • WWTFs effluent (average of 117 miles per monitoring event for 33 events) <p>Aquatic Life Monitoring at Station 20493 (average of 60 miles for 2 events)</p>
Equipment	\$ 0	N/A
Supplies	\$ 15,300	Supplies for water quality monitoring bottles (\$8,000), field probe replacement parts: pH sensor, DO membrane, conductivity/temperature sensor (\$4,000), probe calibration reagents (\$2,000), write-in-rain paper (\$300), biological monitoring supplies (\$1,000)
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 339,484	<p>Analyses of water quality monitoring samples described in Task 3:</p> <ul style="list-style-type: none"> • 4 Routine sites once per month for 33 months (\$55,176) • Supplemental nutrients at 3 routine sites bimonthly (\$4,641) • 34 Wet targeted sites once per season for 11 seasons (\$93,126) • 27 Dry targeted sites once per season for 11 seasons (\$73,953) • 7 WWTFs once per month for 33 months (\$100,023) • 3 Spring sites once per season for 11 seasons (\$10,065) <p>Maintenance and repair costs for field equipment (\$2,500)</p>
Indirect	\$ 0	N/A

Budget Justification (Non-Federal)		
Category	Total Amount	Justification
Personnel	\$ 90,992	Water Quality Program Supervisor (0.1 FTE per year for 3 years) Aquatic Biologist (0.05 FTE per year for 3 years) Water Quality Field Technician (0.2 FTE per year for 3 years for 2 employees) Habitat Conservation Plan Coordinator (0.02 FTE for 3 years) Education Administrator (0.02 FTE per year for 3 years) Education Administrative Technical Specialist (0.01 FTE per year for 3 years) Database Administrator (0.02 FTE per year for 3 years)
Fringe Benefits	\$ 36,852	Fringe calculated at 40.5% of non-federal personnel
Travel	\$ 1,695	Travel expenses to meetings, training events, or conferences related to water quality monitoring including travel, hotel and food expenses (\$1,695)
Equipment	\$ 0	N/A
Supplies	\$ 2,000	Supplies in support of water quality monitoring including waders, boots, field gear and clothing (\$700); monitoring supplies including buckets, seines, rubber gloves, measuring tapes (\$700); water quality equipment storage supplies (\$600).
Contractual*	\$ 0	N/A
Construction	\$ 0	N/A
Other	\$ 52,144	Clean Rivers Program monitoring at stations 12640, 12647 and 17406 (\$37,224); Volunteer labor calculated at a rate of \$12/hour for volunteer events such as Chisholm Trail, Lockhart Justice Center Rain Garden maintenance, and Annual Cleanups for an approximate total of 500 volunteer hours (500x12= \$6,000); Texas Stream Team Match Contribution (\$1000); GBRA Water Quality Intern at a rate of \$12 per hour for approximately 20 hours per month for 33 months (\$12x20x33=\$7,920).
Indirect	\$ 30,027	Indirect calculated at 33.0% of non-federal personnel