Texas State Soil and Water Conservation Board
State General Revenue Nonpoint Source Grant Program
FY 2014 Project 14-52

PROJECT SUMMARY PAGE			
Title of Project	Recreational Use Attainability Analysis for Ten Creeks in the Red River and Neches River Basins		
Project Goals/Objectives	• To collect the needed data to evaluate factors affecting attainment of recreational use in Segments 0201A, 0202A, 0202F, 0202G, 0202K, 0605A, 0606, 0606A, 0611C, and 0611D. • To facilitate public participation and coordinate stakeholder involvement to ensure that decision-making is founded on local input and that watershed action is successful • Develop a comprehensive GIS inventory and evaluate historical water quality data.		
Project Tasks	1) Project Administration; 2) Quality Assurance; 3) Assess Attainability of Recreational Use; 4) Public Participation and Stakeholder Facilitation; 5) Comprehensive GIS inventory and Water Quality Review		
Measures of Success	• Decision-making for RUAA is founded on local stakeholder input • Obtain access to private lands to conduct RUAA surveys • Complete two RUAA surveys at each selected site • Keep landowners and stakeholders informed regarding the RUAA • Factors affecting attainment of recreation use are assessed		
Project Type	Implementation ( ); Education ( ); Planning ( ); Assessment (X)		
Status of Waterbody on *2012 Texas Integrated Report*	Segment ID	Parameter	Category
	0201A – Mud Creek	Bacteria	5b
	0202A - Bois D'Arc Creek	Bacteria	5b
	0202F - Choctaw Creek	Bacteria	5b
	0202G - Smith Creek	Bacteria	5b
	0202K - Iron Ore Creek	Bacteria	5b
	0605A - Kickapoo Creek in Henderson County	Bacteria and dissolved oxygen	5b & 5c
	0606 – Neches River Above Lake Palestine	Bacteria, dissolved oxygen, and pH	5b & 5c 5b
	0606A – Prairie Creek	Bacteria	5b
	0611C - Mud Creek	Bacteria	5b
	0611D - West Mud Creek	Bacteria	5b
Project Location (Statewide or Watershed and County)	Mud Creek in Bowie County; Bois D'Arc Creek in Grayson and Fannin Counties; Choctaw Creek in Grayson County; Smith Creek in Lamar County; Iron Ore Creek in Grayson County; Kickapoo Creek in Henderson and Van Zandt Counties; Neches River Above Lake Palestine in Henderson, Smith, and Van Zandt Counties; Prairie Creek in Smith County; Mud Creek in Cherokee and Smith Counties; and West Mud Creek Cherokee and Smith Counties		
Key Project Activities	Hire Staff ( ); Surface Water Quality Monitoring ( ); Technical Assistance ( ); Education (X); Implementation ( ); BMP Effectiveness Monitoring ( ); RUAA (X); Demonstration ( ); Planning ( ); Modeling ( ); Bacterial Source Tracking ( ); Other (X)		
Texas NPS Management Program Elements	• Component 1 – Long Term Goal Objectives A, G • Component 1 – Short Term Goals 1A, 1B, 1C, 3D, 3F • Elements 2, 5		
Project Costs	$406,298		
Project Management	• Texas Institute for Applied Environmental Research at Tarleton State University		
Project Period	November 1, 2013 – November 30, 2015		

Part I – Applicant Information

Applicant							
Project Lead	Dan Hunter						
Title	Executive Director						
Organization	Texas Institute for Applied Environmental Research at Tarleton State University						
E-mail Address	dhunter@tiaer.tarleton.edu						
Street Address	201 St. Felix St.						
City	Stephenville	County	Erath	State	Texas	Zip Code	76402
Telephone Number	254-968-9566			Fax Number	254-968-9336		

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 the Texas Commission on Environmental Quality (TCEQ).
Texas Institute for Applied Environmental Research at Tarleton State University (TIAER)	Coordinate and manage all work described in Tasks. Responsible for project administration. Develop and maintain relationships with landowners and stakeholders. Perform RUAA survey activities. Develop GIS inventory. Facilitate public meetings. Develop final Technical Reports.
Soil and Water Conservation Districts Bowie County SWCD #408 Lamar County SWCD #415 Trinity-Neches SWCD #422 Smith County SWCD #426 Cherokee County SWCD #427 Van Zandt County SWCD # 505 Fannin County SWCD #520 Grayson County SWCD #524	Collaborate as critical local stakeholders and play a lead role in communicating with other local stakeholders.

Part II – Project Information

Watershed Information				
Watershed Name	Hydrologic Unit Code (12 Digit)	Segment ID	305(b) Category	Size (Acres)
Mud Creek	120200010104 & 0105	0201A	5b	54,400
Bois D'Arc Creek	120200010201, 0202, & 0204-0206	0202A	5b	271,000
Choctaw Creek	120200010101-0103 & 0301	0202F	5b	138,000
Smith Creek	120200040207	0202G	5b	3,800
Iron Ore Creek	120200040104-0105	0202K	5b	28,300
Kickapoo Creek in Henderson County	111401010501-0503, 0505, 0506, & 0508	0605A	5b&5c	178,000
Neches River Above Lake Palestine	111401010101, 0103, 0104, 0107, & 0403	0606	5b&5c	90,100
Prairie Creek	111401060503-0505	0606A	5b	57,300
Mud Creek	111401010702	0611C	5b	502,000
West Mud Creek	111401010106	0611D	5b	59,200

Water Quality Impairment

Describe all known causes of water quality impairments from any of the following sources: 2012 Texas Integrated Report, Clean Rivers Program Basin Summary/Highlights Reports, or other documented sources.

Bacteria is listed on the *2012 Texas 303(d) List* as an impairment for assessment units 0201A Mud Creek, 0202A_02 Bois D' Arc Creek, 0202F_01 and 0202F_02 Choctaw Creek, 0202G_01 Smith Creek, 0202K_01 Iron Ore Creek, 0605A_01 Kickapoo Creek, 0606 Neches River above Lake Palestine, 0606A_01 and 0606_02 Prairie Creek, 0611C_01 Mud Creek, and 0611D_01 and 0611D_02 West Mud Creek. All ten assessment units are classified as category 5b indicating that a review of the water quality standards for the waterbody needs to be conducted before a management strategy is selected, including the possible revision to the water quality standards.

Mud Creek (AU 0201A_01) was first listed as impaired for bacteria in 2002 and remains on the 2012 Texas Integrated Report. In 2006, Mud Creek was also listed as impaired for depressed dissolved oxygen. Mud Creek extends from the confluence of the Red River to the upstream perennial portion of the stream northwest of De Kalb in Bowie County. Concerns for AU 0201A_01 include elevated concentrations of chlorophyll-a and ammonia.

Bois D' Arc Creek (AU 0202A_02) was first listed as impaired for bacteria in 2010. Bois D' Arc Creek, which extends from the confluence of the Red River upstream to the headwaters northwest of Whitewright in Grayson County, is divided into three assessment units: 0202A_01, 0202A_02, and 0202A_03. The impaired segment (0202A_02) extends from the confluence with Sandy Creek upstream to the confluence with Pace Creek. No other impairments or concerns

are noted for Bois D' Arc Creek.

Choctaw Creek (AU 0202F) was first listed as impaired for bacteria on the 2010 Texas Integrated Report and remains on the 2012 Texas Integrated Report. Both segments 0202F_01 and 0202F_02 are impaired. Assessment unit 0202F_01 extends from the confluence with the Red River upstream to the confluence with Post Oak Creek. Assessment unit 0202F_02 extends from the confluence with Post Oak Creek upstream to the headwaters near the intersection of SH 56 and SH 289 in Grayson County. Concerns are also noted in AU 0202F_01 for elevated concentrations of total phosphorus, orthophosphorus, and nitrate.

Smith Creek (AU 0202G) was first listed as impaired for bacteria on the 2006 Texas Integrated Report and remains on the 2012 303(d) list. Smith Creek is represented by one AU, which extends from the confluence with Pine Creek north of Paris to the upstream portion of the stream in north Paris in Lamar County. Concerns are also noted in AU 0202G_01 for elevated concentrations of ammonia, total phosphorus, and orthophosphorus.

Iron Ore Creek (AU 0202K) was first listed as impaired for bacteria on the 2010 Texas Integrated Report and remains on the 2012 303(d) list. Iron Ore Creek comprises one AU, which extends from the confluence with Choctaw Creek upstream to the headwaters near FM 120 west of Denison. No other impairments or concerns are noted for Iron Ore Creek.

Kickapoo Creek in Henderson County (AU 0605A_01) is listed in the 2012 Texas Integrated Report as impaired due to elevated bacteria (first listed in 2000) and depressed dissolved oxygen concentrations (first listed in 2006). The impaired AU for Kickapoo Creek (AU 0605A_01) extends from the confluence with Lake Palestine east of Brownsboro in Henderson County to the confluence with Slater Creek. Concerns due to elevated ammonia and chlorophyll concentrations are also noted for AU 0605A_01. Kickapoo Creek AU 0605A_02 extends from the confluence with Slater Creek upstream to confluence with unnamed tributary about 1.62 km north of FM 858 in Van Zandt County. While not impaired, concern for bacteria are noted for AU 0605A_02 as well as elevated ammonia concentrations the 2012 Texas Integrated Report to have a concern for bacteria.

Neches River Above Lake Palestine (AU 0606_01) was first listed for bacteria in 2008 and is also listed in the 2012 Texas Integrated Report as impaired due to depressed dissolved oxygen concentrations (first listed in 2004) and pH (first listed in 2002). Neches River Above Lake Palestine has two AUs and only AU 0606_01 from a point approximately 0.03 miles south of St. Louis Southwestern Railroad upstream to the confluence with Prairie Creek is listed for bacteria. Concerns in AU 0606_01 include elevated nitrate, orthophosphorus, and total phosphorus concentrations. AU 0606_02 extends from the confluence with Prairie Creek upstream to the Rhines Lake Dam and is listed for depressed dissolved oxygen and low pH.

Prairie Creek (AU 0606A_01 and AU 0606A_03) was first listed for bacteria in 2002 and is also listed in the 2012 Texas Integrated Report as impaired for bacteria. Prairie Creek has three AUs, although only AU 0606A_01 (from the confluence with Neches River in Smith County upstream to the confluence with Black Forest Creek) and AU 0606A_03 (from the confluence with Caney Creek upstream to confluence with unnamed tributary approximately 0.6 km downstream of the US 69 bridge crossing) are listed as impaired for bacteria. A concern for ammonia is also noted for AU 060A_03.

Mud Creek (AU 0611C_01) was first listed for bacteria in 2010. Concerns along AU 0611C_01 include ammonia and depressed dissolved oxygen. Mud Creek AU 0611C_01 extends from the confluence with Angelina River at the Cherokee and Nacogdoches county line south of City of Reklaw upstream to top of channelized/dredged portion about 2.3 km south of US 79. Mud Creek (AU 0611D_02) indicates concerns for bacteria and ammonia. Mud Creek (AU 0611D_02) extends from a point immediately upstream of channelized/dredged portion about 2.3 km south of US 79 upstream to confluence with Prairie Creek in Smith County.

West Mud Creek (AU 0611D_01 and AU 0611D_02) is represented by two AUs and was first listed for bacteria in 2010. West Mud Creek (AU 0611D_01) extends from the confluence with Mud Creek upstream to confluence with unnamed tributary about 75 m north of WWTP in the City of Tyler. West Mud Creek (AU 0611D_02) extends from the

confluence with unnamed tributary about 75 m north of WWTP in City of Tyler upstream to confluence of unnamed tributary about 300 meters upstream of the most northern crossing of US 69 in City of Tyler. Concerns for ammonia and nitrate are noted for AU 0611D_01 and for ammonia in AU 0611D_02.

Project Narrative

Problem/Need Statement

The ten creeks to be addressed are located in east Texas, five within the Red River Basin and five within the Neches River Basin. The five segments within the Red River Basin include Mud Creek (0201A), Bois D' Arc Creek (0202A), Choctaw Creek (0202F), Smith Creek (0202G), and Iron Ore Creek (0202K). Mud Creek (0201A) is located in Bowie County and includes portions of the City of De Kalb, Texas. Bois D' Arc Creek (0202A) is located primarily in Fannin County but also covers portions of Gray County and flows through the City of Bonham, Texas. Choctaw Creek (0202F) is located in Grayson County and flows through the City of Sherman, Texas. Smith Creek (0202G) is located in Lamar County and flows through the City of Paris, Texas. Iron Ore Creek (0202K) is located in Grayson County and includes part of the City of Sherman, Texas.

The five segments within the Neches River Basin include Kickapoo Creek (0605A), Neches River Above Lake Palestine (0606), Prairie Creek (0606A), Mud Creek (0611C), and West Mud Creek (0611D). Kickapoo Creek (0605A) is located in portions of Henderson, Smith, and Van Zandt Counties and flows northeast of the City of Athens and northwest of the City of Tyler, Texas. The Neches River above Lake Palestine (0606) is located in portions of Henderson, Smith, and Van Zandt Counties. Prairie Creek (0606A) is located in Smith County northwest of Tyler, Texas. Mud Creek (0611C) is located in portions of Cherokee and Smith Counties and includes portions of the Cities of Jacksonville and Rusk, Texas. West Mud Creek (0611C) includes portions of Cherokee and Smith Counties and the City of Tyler, Texas.

The TCEQ and the TSSWCB established a joint, technical Task Force on Bacteria Total Maximum Daily Loads (TMDLs) in September 2006 charged with making recommendations on cost-effective and time-efficient bacteria TMDL development methodologies. The Task Force recommended the use of a three-tier approach that is designed to be scientifically credible and accountable to watershed stakeholders. In June 2007, the TCEQ and the TSSWCB adopted the principles and general process recommended by the Task Force. Fundamental in the three-tier approach is ensuring that the appropriate water quality standard (i.e., designated use) is applied to the waterbody before initiating any watershed planning activity (e.g., TMDL or watershed protection plan).

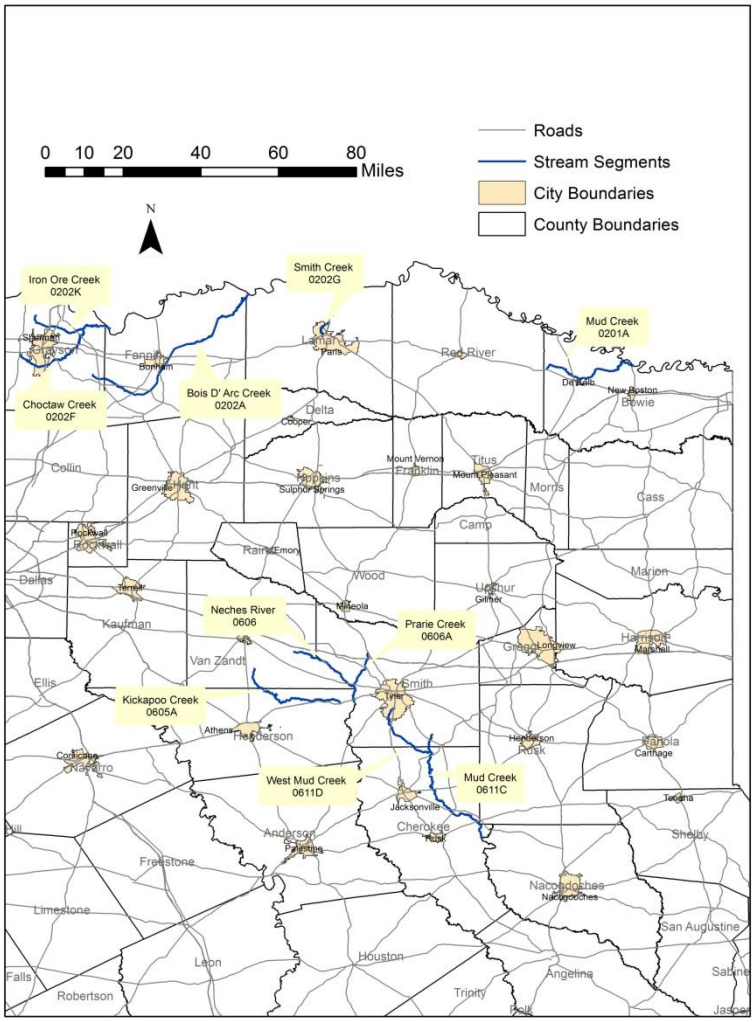
Major revisions to the Texas Surface Water Quality Standards (TSWQS) were adopted by TCEQ in 2010 and approved by EPA in 2011, including modifications to contact recreation use and bacteria criteria. As part of this process, TCEQ developed procedures for conducting RUAAs. In order for a new category of recreational use or a different bacteria water quality criterion to be applied to a waterbody, an RUAA will need to be conducted. TCEQ and TSSWCB have collaborated on developing a list of priority waterbodies for collecting information needed for RUAAs and the waterbodies for this project (Mud Creek [0201A], Bois D' Arc Creek, Choctaw Creek, Smith Creek, Iron Ore Creek Prairie Creek, Kickapoo Creek in Henderson County, Neches River above Lake Palestine, Mud Creek [0611C], West Mud Creek) are on that list. Since primary contact recreation use is presumed for the unclassified segments in the study area and it is not known with certainty that recreational use in these waterbodies occurs, the findings from an RUAA will provide information regarding the level of recreational use actually occurring in the waterbodies.

In accordance with the Watershed Action Planning process (http://www.tceq.texas.gov/waterquality/planning/wap/) and the *Memorandum of Agreement Between the TCEQ and the TSSWCB Regarding TMDLs, Implementation Plans, and Watershed Protection Plans*, the TSSWCB has agreed to take the lead role in addressing the bacteria impairments in this project's study area. Through this project, the TSSWCB and TIAER will work with local stakeholders to progress through the data collection components of an RUAA and at the end of this project have adequate data that either supports the existing designated use (primary contact recreation) or supports a change in designated use (e.g., secondary contact recreation) for the ten segments in this project: Mud Creek (0201A), Bois D' Arc (0202A), Choctaw Creek (0202F), Smith Creek (0202G), Iron Ore Creek (0202K), Prairie Creek (0606A), Kickapoo Creek in Henderson County (0605A), Neches River above Lake Palestine (0606), Mud Creek (0611C), West Mud Creek (0611D).

Project Narrative

General Project Description (Include Project Location Map)

Comprehensive RUAAs will be conducted on ten segments: Mud Creek (0201A), Bois D'Arc Creek (0202A), Choctaw Creek (0202F), Smith Creek (0202G), and Iron Ore Creek (0202K) in the Red River Basin and Prairie Creek (0606A), Kickapoo Creek (0605A), Neches River above Lake Palestine (0606), Mud Creek (0611C) and West Mud Creek (0611D) in the Neches River Basin. These comprehensive RUAAs consist of five main tasks: a) public participation and stakeholder interaction through educational outreach meetings, b) interviews and historical review of the recreational use of each waterbody, c) development of a comprehensive GIS inventory, d) review of water quality data, and e) completion of the required two RUAA surveys of each creek.



RUAA survey site selection is predicated on reconnaissance trips, public participation, and stakeholder interaction. An initial reconnaissance trip will be completed prior to meeting with stakeholders about the project, and follow-up trips will occur when interaction with local landowners provides opportunities for additional sites. Two field surveys will be conducted at each of the selected sites by TIAER. Each survey will be conducted according to the February 2012 version of the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey* and will include the collection of transect information along a stretch of the creek at each site documenting the presence or absence of water recreation activities and characteristics regarding stream flow type and pool depths. Interview survey information will also be collected from individuals either actively recreating at each site or knowledgeable of the site and the project creeks in general. Each survey will be performed at a time of year under weather and hydrologic conditions that are conducive to observing recreational use, which means when air temperatures are warm to hot (>70° F). Field surveys will be conducted during the period people would most likely be using the waterbody for contact recreation. A historical information review will be conducted on recreation use that occurred on each creek on and after November 28, 1975.

The public education and stakeholder interaction task is critical to the success of the project. This task will be performed by TIAER to accomplish two complimentary goals – 1) obtaining landowner permission for access to sites along each project creek and 2) ensuring that decision-making regarding the RUAA is founded on local input. An initial public meeting will be held for each creek where the RUAA process is described and solicitation is made for access to the waterbody. Direct interaction with affected city councils, county commissioners' courts, and SWCDs will occur. Any necessary follow-up meetings will be conducted to further communicate the RUAA process and to obtain landowner permission for access to creek sites. A mid-project update meeting and a meeting to present findings of the RUAA surveys will also be conducted.

Project Goals (Expand from Summary Page)

- To collect needed data to evaluate factors affecting attainment of recreational use in Segments 0201A, 0202A, 0202F, 0202G, 0202K, 0605A, 0606, 0606A, 0611C, and 0611D by collecting all necessary data required for a Comprehensive RUAA; specifically, observations and physical measurements will be made of the waterbodies at several locations, survey information will be obtained from landowners familiar with the watershed and persons observed recreating in or near the bayou, and review of historical records from the study area.
- To facilitate public participation and coordinate stakeholder involvement to ensure that decision-making is founded on local input and that watershed action is successful by hosting and conducting public meetings, disseminating informational materials, and through direct interaction with affected local entities.
- To develop a comprehensive GIS inventory and evaluate historical water quality data.

Measures of Success (Expand from Summary Page)

- Decision-making for RUAA activities is founded on local stakeholder input garnered at public meetings and through direct interaction with affected landowners and entities
- Access to private lands is obtained from landowners to conduct RUAA surveys to obtain the desired density and spacing of RUAA sites; approximately 201 sites are needed
- Two RUAA surveys are completed at each selected site as described in TCEQ's 2012 RUAA guidance
- Landowners and stakeholders are kept informed regarding the RUAA through public notices and meetings and are solicited to participate through the RUAA surveys and interviews
- Factors affecting attainment of recreation use are assessed and adequate data of known and acceptable quality is provided that either supports the existing use or supports changing the water quality standard

2012 Texas Nonpoint Source Management Program Reference (Expand from Summary Page)

- Component 1 – Explicit short- and long-term goals, objectives and strategies that protect surface…water.
  - Long Term Goal – Objective A – Focus NPS abatement efforts, implementation strategies, and available resources in watersheds identified as impacted by NPS pollution.
  - Long-Term Goal – Objective G – Enhance public participation and outreach by providing forums for citizens… to contribute their ideas and concerns about the water quality management process.
  - Short-Term Goal One – Data Collection and Assessment – Objective A – Identify surface waterbodies… from the Texas Water Quality Inventory and 303(d) List… that need additional information to characterize non-attainment of designated uses and [water] quality standards.
  - Short-Term Goal One – Data Collection and Assessment – Objective B – Ensure that monitoring procedures meet quality assurance requirements and are in compliance with [the] EPA-approved… TSSWCB Quality Management Plan.
  - Short-Term Goal One – Data Collection and Assessment – Objective C – Conduct special studies to determine sources of NPS pollution and gain information to target… BMP implementation.
  - Short Term Goal Three – Education – Objective D – Conduct outreach…to facilitate broader participation and partnerships…[to] enable stakeholders…to participate in decision-making and provide a more complete understanding of water quality issues and how they relate to each citizen.
  - Short Term Goal Three – Education – Objective F – Implement public outreach and education to maintain and restore water quality in waterbodies impacted by NPS pollution.
- Component 2 – Working partnerships…[with] appropriate state, …regional, and local entities, private sector groups, and federal agencies.
- Component 5 – The State…identifies waters…impaired by NPS pollution and …establishes a process to progressively address these…waters by conducting more detailed watershed assessments…

Tasks, Objectives and Schedules				
Task 1	Project Administration			
Costs	$25,602			
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	TIAER will prepare electronic quarterly progress reports (QPRs) for submission to TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 15th of December, March, June and September.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 1.2	TIAER 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 24
Subtask 1.3	TIAER will host coordination meetings or conference calls with TSSWCB, and any Project Partners as appropriate, at least quarterly to discuss project activities, project schedule, communication needs, deliverables, and other requirements. TIAER will develop lists of action items needed following each project coordination meeting and distribute to project personnel, as appropriate.			
	Start Date	Month 1	Completion Date	Month 24
Deliverables	• Quarterly Progress Reports in electronic format • Reimbursement Forms, and necessary supporting documentation, in either electronic or hard copy format • List of action items needed from project coordination meetings			

Tasks, Objectives and Schedules				
Task 2	Quality Assurance			
Costs	$9,989			
Objective	To develop and implement 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	TIAER will develop a quality assurance project plan (QAPP) covering activities outlined in Task 3 and Task 5 that is 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)*. All procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in the February 2012 version of the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey*.			
	Start Date	Month 1	Completion Date	Month 8
Subtask 2.2	TIAER will implement the approved QAPP. TIAER will submit revisions and necessary amendments to the QAPP as needed.			
	Start Date	Month 9	Completion Date	Month 24
Deliverables	• QAPP for Task 3 and 5 approved by TSSWCB in both electronic and hard copy formats • Approved revisions and amendments to the QAPP, as needed • Data of known and acceptable quality as reported through Task 3			

Tasks, Objectives and Schedules				
Task 3	Assess Attainability of Recreational Use			
Costs	$222,285			
Objective	To collect information that can be used to evaluate factors affecting attainment of recreational use in Mud Creek (0201A), Bois D'Arc Creek (0202A), Choctaw Creek (0202F), Smith Creek (0202G), Iron Ore Creek (0202K), Kickapoo Creek (0605A), Neches River Above Lake Palestine (0606), Prairie Creek (0606A), Mud Creek (0611C), and West Mud Creek (0611D).			
Subtask 3.1	TIAER will conduct at least one reconnaissance trip for each segment to assess potential survey sites. The goal will be to have approximately 3 sites per 5 miles of river (approximately 201 sites total). The reconnaissance should locate and document areas in which the waterbody is accessible to the public and involve contacting and coordinating with local streamside landowners (in conjunction with subtask 4.1) in order to obtain permission to access the waterbody from private property.			
	Start Date	Month 1	Completion Date	Month 6
Subtask 3.2	Utilizing information from subtask 3.1 (reconnaissance trip), subtask 5.1 (comprehensive GIS inventory), subtask 4.1 (public input), and other relevant information, TIAER will identify sites for RUAA data collection for each waterbody. Proposed sites should be located in areas where the waterbody is accessible to the public and has the highest potential for recreational use (primary contact). Because public access is limited along these waterbodies, other sites on private property will also be selected for the purpose of characterizing the physical characteristics of the streams to assist in determining the potential level of recreation use that could be supported. The sites should be well-spaced and, in general, distributed such that there are 3 sites for every 5 miles of stream. TIAER will prepare a Site Selection Rationale document for TSSWCB submission to TCEQ. The QAPP, as detailed in Task 2, will precisely identify selected sites.			
	Start Date	Month 5	Completion Date	Month 8
Subtask 3.3	TIAER shall conduct a thorough historical information review of the recreational uses of each waterbody back to November 28, 1975. Historical resources that should be examined include, but are not limited to, photographic evidence, local newspapers, museum collections, published reports, historical society records, and long-term landowners/residents. The Red River Authority of Texas (RRA), Angelina and Neches River Authority (ANRA), Texas Parks and Wildlife Department (TPWD), and commercial providers of outdoor recreation goods and services should be consulted for historical information.			
	Start Date	Month 1	Completion Date	Month 18
Subtask 3.4	TIAER will conduct 2 field surveys at each selected site (subtask 3.2). Surveys shall be conducted during a normal warm season (air temperature ≥ 70°F) during baseflow conditions. Baseflow conditions are sustained or typical dry, warm-weather flows between rainfall events, excluding unusual antecedent conditions of drought or wet weather. The surveys should be performed during the period people would most likely be using the waterbody for contact recreation, typically May to September (e.g., summer, holidays, and weekends). To ascertain the suitability of streams for contact recreation use, field surveys shall document stream characteristics, such as width and depth of channel and substantial pools, flow severity, bank access, dominant substrate, and conditions that may promote or impede recreational activities. Information to be collected shall at least satisfy those questions found on the Field Data Sheet from the February 2012 version of the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey*. TIAER shall document and describe antecedent (prior to fieldwork) rainfall conditions (approximately 30 days) at each selected site.			
	Start Date	Month 9	Completion Date	Month 12
Subtask 3.5	TIAER shall collect a digital photographic record of each selected site during the field surveys. Photographs shall, at a minimum, include upstream, left and right bank, and downstream views at the 0 m, 150 m, and 300 m transects. Any evidence of observed uses or indications of human use shall be photographed. Photographs should clearly depict the entire channel and each transect measured.			
	Start Date	Month 9	Completion Date	Month 12

Subtask 3.6	In order to obtain information on existing and historical uses and stream characteristics, TIAER shall conduct interviews of 1) users present during the field surveys, 2) streamside landowners along the field survey transects, 3) local residents, and 4) commercial providers of outdoor recreation goods and services. Surveys shall include at least those questions found on the Interview Form from the February 2012 version of the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey*.			
	Start Date	Month 9	Completion Date	Month 18
Subtask 3.7	TIAER will combine findings from historical information review, field surveys, and user interviews into a Technical Report that shall at least include those contents described for a Comprehensive RUAA in the February 2012 version of the *TCEQ Procedures for a Comprehensive RUAA and a Basic RUAA Survey*. Per the *TCEQ Procedures*, separate Technical Reports will be developed for groups of waterbodies in different Basins.			
	Start Date	Month 13	Completion Date	Month 24
Deliverables	• Site Selection Rationale document for each waterbody • Contact Information Forms for each waterbody • Field Data Sheets and Data Summary in electronic format • Digital photographic record, cataloged in an appropriate manner • Interview Forms and Data Summary in electronic format • Technical RUAA report summarizing historical information review, field surveys, and user interviews, with waterbodies grouped by Basin			

Tasks, Objectives and Schedules				
Task 4	Public Participation and Stakeholder Coordination			
Costs	$123,317			
Objective	To facilitate public participation and coordinate stakeholder involvement to ensure that decision-making is founded on local input and that watershed action is successful.			
Subtask 4.1	TIAER will facilitate public participation activities and coordinate stakeholder involvement in the project. TIAER will develop (Months 1-3) and maintain (Months 4-24) a database of stakeholders likely to be affected by this project.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 4.2	TIAER will contact local entities listed on the Contact Information Form to notify them that a RUAA is being conducted in their watershed.			
	Start Date	Month 1	Completion Date	Month 3
Subtask 4.3	TIAER will provide logistical support for public meetings, including, but not limited to, securing meeting facilities, preparing/disseminating meeting notices and agenda, conducting meetings, and preparing meeting summaries. At a minimum, public stakeholder meetings shall consist of 1) an initial informational meeting prior to the first field survey event (~Month 7-8), 2) a project update meeting after the first field survey event (~Month 12-13), and 3) a summary of findings meeting presenting draft Technical Reports to stakeholders for review (~Month 18-19). A primary objective of the initial informational meetings is to discuss proposed sites and solicit landowner permission for private-land access to survey sites. Meeting frequency may be adjusted throughout the course of the project to accomplish project goals. TSSWCB will review and approve all meeting notices, agendas, materials, and summaries prior to public dissemination.			
	Start Date	Month 2	Completion Date	Month 24
Subtask 4.4	TIAER will attend and participate in other public meetings, as appropriate, in order to communicate project goals, activities, and accomplishments to affected parties. Such meetings include, but are not limited to, city council meetings, county commissioners' court meetings, SWCD meetings, RRA and ANRA Clean Rivers Program (CRP) Steering Committee and Coordinated Monitoring meetings, and other appropriate meetings of critical watershed stakeholder groups.			
	Start Date	Month 1	Completion Date	Month 24

Subtask 4.5	In order to engage the public and affected entities in the RUAA process, TIAER will develop and disseminate educational material to watershed stakeholders, including, but not limited to, flyers, brochures, letters, and news releases. TIAER will utilize all appropriate communication mechanisms including direct mail, e-mail, and mass media (print, radio, television). TIAER will provide information about the project to RRA and ANRA for inclusion in CRP Basin Summary Report and Basin Highlights Report. TSSWCB must approve all materials and publications prior to public distribution. TIAER will host and maintain a webpage to serve as a public clearinghouse for all project-related information. The website will serve as a means to disseminate information to stakeholders and the general public.			
	Start Date	Month 1	Completion Date	Month 24
Deliverables	• Stakeholder contact list, updated as appropriate • Public meeting notices, agendas, materials, summaries and lists of attendees • Educational materials, as developed and disseminated • List of other meetings attended and dates with brief summary of topics discussed and action needed included in QPRs • Information developed for inclusion in CRP materials • Content matter for webpage			

Tasks, Objectives and Schedules				
Task 5	GIS Inventory and Water Quality Review			
Costs	$25,105			
Objective	To develop a comprehensive GIS inventory for the study area and review historical water quality data.			
Subtask 5.1	TIAER will develop a comprehensive GIS inventory for each watershed. Data should include the most recent information available on land use/land cover classification, elevation, soils, stream networks, reservoirs, roads, public parklands, municipalities, and satellite imagery or aerial photography. Locations of SWQM stations, USGS gages, public access points to the waterbodies, floodwater-retarding structures, wetlands, TPDES permittees (including WWTFs, CAFOs and MS4s), and subdivisions should also be included, as well as, sites permitted for land application of sewage sludge and septage.			
	Start Date	Month 1	Completion Date	Month 8
Subtask 5.2	TIAER will conduct a historical data review for each waterbody in order to assess and characterize trends and variability in water quality, specifically bacteria. Historical data collection activities should concentrate on 1) ambient water quality data; 2) streamflow and water level data; 3) precipitation records; and 4) permitted facilities, discharges, and effluent quality. At a minimum, USGS, National Weather Service, TPWD, Texas Water Development Board (TWDB), RRA, ANRA, TCEQ, and the U.S. Environmental Protection Agency (EPA) should be queried for data related to the study area.			
	Start Date	Month 1	Completion Date	Month 18
Deliverables	• Comprehensive GIS inventory and characterizing trends and variability in historical water quality monitoring data to be used in the RUAA report.			

Part III – Financial Information

Budget Summary	
Category	**Costs**
Personnel	$ 221,774
Fringe Benefits	$ 66,532
Travel	$ 42,021
Equipment	$ 0
Supplies	$ 10,975
Contractual	$ 0
Construction	$ 0
Other	$ 12,000
Total Direct Costs	$ 353,302
Indirect Costs (≤15%)	$ 52,996
Total Project Costs	$ 406,298

Budget Justification		
Category	Costs	Justification
Personnel	$ 221,774	• Project Manager/Public Participation Coordinator (~51%) • 1 Public Participation Coordinator (~34%) • Research Scientist – QAO & technical oversight (8%) • 2 Field Coordinators for RUAA surveys (~24%) • 2 Field Crew Team Leaders for RUAA surveys (~10%) • 2 Field Staff – assist with RUAA surveys (~24%) • Research Associate – GIS Specialist (~11%) • Programmer – data management & website maintenance (~5%) • 2 Student workers at assist with RUAA surveys (~10%) • 1 Graduate Asst. to assist with stakeholder outreach and website (~5%)
Fringe Benefits	$ 66,532	About 30% of Personnel based TAMUS fringe rate
Travel	$ 42,021	Travel for 2 reconnaissance trips per field survey area, stakeholder meetings (3 per watershed area – see more detailed justification below), other public meetings (at least 3 per watershed area – see below), 2 RUAA surveys per segment – includes lodging, per diem, vehicle rental and gas expenditures and travel for training/workshops.
Equipment	$ 0	N/A
Supplies	$ 10,975	2 Tablet computers for meetings, field supplies (waders, snake boots or chaps, power inverters, survey stakes, paint, batteries, ice & water for crew) and presentation materials and advertising for meetings.
Contractual	$ 0	N/A
Construction	$ 0	N/A
Other	$ 12,000	Miscellaneous charges, such as postage, shipping and overnight delivery, and training
Indirect	$ 52,996	Calculated at 15% of Total Direct Cost
SOURCE	TSSWCB will provide $406,298 non-federal funds sourced from state appropriations (FY2014 General Revenue) through the Nonpoint Source Grant Program to the Texas Institute for Applied Environmental Research at Tarleton State University.	

Detailed Travel Justification:
For travel, the 10 watersheds were divided into stakeholder groups for meetings based on proximity and similarity in administrative stakeholder constituencies. For stakeholder meetings and public outreach, the 10 watersheds were grouped as follows:

Stakeholder Group 1:
- Mud Creek (0201A) – overlays 1 county and 1 SWCD

Stakeholder Group 2:
- Bois D' Arc (0202A) – overlays 1 county and 1 SWCD

Stakeholder Group 3:
- Smith Creek (0202G) – overlays 1 county and 1 SWCD

Stakeholder Group 4:
- Choctaw Creek (0202F) and
- Iron Ore Creek (0202K) – overlays 1 county and 1 SWCD

Stakeholder Group 5:
- Prairie Creek (0606A),
- Neches River above Lake Palestine (0606), and
- Kickapoo Creek in Henderson County (0605A) – overlays 3 counties and 3 SWCDs

Stakeholder Group 6:
- Mud Creek (0611C) and
- West Mud Creek (0611D) – overlays 2 counties and 2 SWCDs

Administrative meetings include at least one per county and SWCD and 6 additional meetings for other administrative groups, such as municipalities.

For the RUAA surveys, the 10 watersheds were divided into 4 groups based on proximity and watershed size. For travel and personnel, it was assumed for the field surveys that 2 teams of 3 people each could complete 5 sites per day.

RUAA Survey Group 1:
- Mud Creek (0201A) – desired # sites 21
- Smith Creek (0202G) – desired # sites 3
- ~½ Bois D' Arc (0202A) – desired # sites 21 (total 41)

RUAA Survey Group 2:
- ~½ Bois D' Arc (0202A) – desired # sites 20 (total 41)
- Choctaw Creek (0202F) – desired # sites 26
- Iron Ore Creek (0202K) – desired # sites 11

RUAA Survey Group 3:
- Prairie Creek (0606A) – desired # sites 7
- Neches River above Lake Palestine (0606) – desired # sites 20
- Kickapoo Creek in Henderson County (0605A) – desired # sites 25

RUAA Survey Group 4:
- Mud Creek (0611C) – desired # sites 34
- West Mud Creek (0611D) – desired # sites 13