



**Texas State Soil and Water Conservation Board
 Section 319(h) Nonpoint Source Program
 FY 2006 Project Workplan (06-05)**

NONPOINT SOURCE SUMMARY PAGE for the CWA, Section 319(h) Agricultural/Silvicultural Nonpoint Source Program					
Title of Project:	<i>Lone Star Healthy Streams</i>				
Project Goals/Objectives:	The goal of this project is to reduce the levels of bacterial contamination of Texas watersheds from grazing livestock (beef cattle). This goal will be accomplished by meeting the objectives of 1) developing an educational curriculum that delivers current knowledge training in production and environmental management of grazing lands and their associated watersheds as part of the Long Star Healthy Streams program, 2) evaluating and demonstrating the effectiveness of value-added BMPs in reducing bacterial contamination of streams and water bodies from grazing lands, 3) testing the functionality of the education program and make necessary changes and program modifications, and 4) promoting Statewide adoption of appropriate best management practices (BMPs) and other watershed / water quality protection activities through education, outreach and technology transfer.				
Project Tasks:	1) Project Coordination and Administration, 2) Compile Existing Information, 3) Develop Bacterial Education Programs For Beef Cattle Producers, 4) Education Program Testing and Delivery, and 5) Demonstrate Value-Added BMPs To Reduce Bacteria Runoff From Grazing Lands.				
Measures of Success:	1) As measured by surveys and pre/post evaluations, increased knowledge and understanding by agricultural producers within the target area regarding production practices and related environmental and bacterial issues. 2) As measured by the adoption of recommended practices and other activities to address potential bacterial impairments caused by agricultural nonpoint source pollution. 3) As measured by a reduction in bacterial contamination in the pilot watershed.				
Project Type:	Statewide (X); Watershed Implementation / Education (X); Watershed Planning / Assessment (); Watershed Protection ()				
Status of Water Body: 2002 Water Quality Inventory and 303(d) List	<u>Segment ID:</u> Copano Bay (2472) Plum Creek (1810) Brazos River Abv Navasota (1242)	<u>Parameter:</u> Bacteria Bacteria Bacteria	<u>Category:</u> 5a Use concern 5c		
Project Location:	Best management practices will be evaluated at three locations: the Welder Wildlife Refuge located in the Copano Bay watershed, the USDA-ARS Grassland Soil and Water Research Laboratory near Riesel in the Brazos River above Navasota watershed, and a private ranch located in the Plum Creek watershed. In conjunction with these BMP demonstrations/evaluations, the education program will be piloted and then be made available to watersheds throughout the state.				
Key Project Activities:	Hire Staff (X); Monitoring (X); Regulatory Assistance (); Technical Assistance (); Education (X); Implementation (); Demonstration (X); Other ()				
NPS Management Program Elements:	Short-Term Goal 3, Objectives A, B, and D Milestone F				
Project Costs:	Federal:	\$404,673	Non-Federal Match:	\$271,098	Total: \$675,771
Project Management:	<ul style="list-style-type: none"> • Texas Water Resources Institute • Texas AgriLife Extension Service (AgriLife Extension) 				
Project Period:	September 1, 2006 – March 31, 2011				

Part I – Applicant Information

Applicant							
Project Lead		B.L. Harris					
Title		Acting Director					
Organization		Texas Water Resources Institute (TWRI)					
E-mail Address		bl-harris@tamu.edu					
Street Address		1500 Research Parkway, Suite 240A 2118 TAMU					
City	College Station	County	Brazos	State	TX	Zip Code	77843-2118
Telephone Number		(979) 845-1851		Fax Number		(979) 845-8554	

Project Co-Lead		Larry A. Redmon					
Title		Professor and Forage Specialist Soil and Crop Sciences					
Organization		Texas AgriLife Extension Service (AgriLife Extension)					
E-mail Address		lredmon@ag.tamu.edu					
Street Address		2474 TAMU					
City	College Station	County	Brazos	State	TX	Zip Code	77843-2474
Telephone Number		(979) 845-2425		Fax Number		(979) 845- 0456	

Project Partners	
Names	Roles & Responsibilities
Texas State Soil and Water Conservation Board (TSSWCB)	Project oversight
Texas Water Resources Institute (TWRI)	Project coordination and reporting (Task 1) and BMP demonstration and evaluation (Task 5)
Texas AgriLife Extension Service	Assist with project coordination and reporting (Task 1). Development and delivery of <i>Lone Star Healthy Streams</i> Program (Tasks 2-4). Assist BMP demonstration and evaluation (Task 5)
Texas AgriLife Research (Dr. Terry Gentry)	Oversee lab analysis of <i>E. coli</i> and <i>Bacteroidales</i> PCR
Texas AgriLife Research & Extension Center – Uvalde (Dr. Robert Lyons)	Education and outreach
Soil and Water Conservation Districts (SWCDs)	Assist AgriLife Extension with delivery and evaluation of the educational program
Natural Resources Conservation Service (NRCS)	Assist AgriLife Extension with delivery and evaluation of the educational program
Texas Department of Agriculture (TDA), Farm Services Agency (FSA), Grazing Lands Conservation Initiative (GLCI), Texas Farm Bureau (TFB), Texas and Southwestern Cattle Raisers Association (TSCRA), Independent Cattleman’s Association of Texas (ICAT)	Project Steering Committee

Part II – Project Information

Project Type

Surface Water	X	Groundwater				
Does the project implement recommendations made in a completed Watershed Protection Plan or approved TMDL Report or Implementation Plan?				Yes	No	X
If yes, identify the document.						
If yes, identify the agency/group that developed and/or approved the document.				Year Developed		

Watershed Information

Watershed Name(s)	Hydrologic Unit Code (8 Digit)	Segment ID	305 (b) Category	Size (mi ²)
Plum Creek	12100203	1810	Use Concern	388 mi ²
Copano Bay	12100405 - 12100407	2472	5a	2,652 mi ²
Brazos River abv Navasota	12070101	1242	5c	2,726 mi ²

Project Narrative

Problem/Need Statement

According to the *2004 Water Quality Inventory and 303(d) List*, 306 waterbodies are impaired in Texas with a total of 419 impairments. Of these, approximately half of the impairments are the result of excessive bacteria. Bacterial source tracking work completed in a number of these waterbodies (e.g. Peach Creek and Leon River) has identified a noticeable contribution from grazing cattle to the bacteria loading of these streams. Grazing lands, which represent the dominant land use in the majority of watersheds in Texas, have received little attention until now regarding the effect of grazing livestock on water quality. Thus, implementation of watershed management principles and practices on grazing lands will be critical to the success of water resource protection efforts in the state in years to come.

Education of landowners and voluntary adoption of BMPs could substantially reduce bacterial contamination of streams and waterbodies as well as reduce the likelihood of increased regulatory oversight of production practices and systems. The TSSWCB, local SWCDs and the USDA-NRCS support producers through technical assistance and cost-share programs that enable the implementation of BMPs. For such measures to be effective, however, they must be properly implemented and managed to ensure sustainability. In addition, these practices must be compatible with the overall management system and result in limited additional economic burden to agricultural producers.

Extension education programs are designed to target specific audiences and to deliver current, unbiased, science-based information and technology. The primary goal of these programs is to increase overall production unit profitability in a sustainable manner. Recently, the dominant environmental education components of these educational programs have been focused on supporting the Texas Department of Agriculture Pesticide Applicator Certification Program. Private pesticide applicator re-certification requires a licensed individual to obtain 15 hours of continuing education units (CEUs) every 5 years, with at least two hours addressing integrated pest management (IPM) and two hours addressing laws and regulations. Texas AgriLife Extension Service is one of the primary providers of training and continuing education for this program. With an increasing focus on more holistic watershed management, however, there is an opportunity for Extension personnel to use the *Lone Star Healthy Streams (LSHS)* Program as a vehicle to expand the overall knowledge base of beef cattle producers regarding watershed management and measures for reducing bacteria contamination of streams. Through linkages with existing programs, the burden on producers and County Texas AgriLife Extension Service (AgriLife Extension) faculty could be minimized, while the knowledge base and potential for producers to participate in, and ultimately affect changes in watershed protection, could be realized.

Project Narrative

General Project Description

This project will be a partnership among the primary federal and state agencies that interface with beef cattle producers relative to environmental management. A Project Steering Committee will be established and coordinated by TWRI to include representatives from the TSSWCB, SWCDs, NRCS, TWRI, AgriLife Extension, AgriLife Research, TDA, FSA, GLCI, and other state and federal agencies as appropriate, and representatives from key commodity groups and organizations including the Texas Farm Bureau, Texas and Southwestern Cattle Raisers Association, Independent Cattlemen's Association of Texas, the Texas Forage and Grassland Council, and other allied industries as appropriate. In addition, local producers will be asked to serve on the Project Steering Committee. This committee will provide input into evaluation of BMPs, curriculum development, program delivery and CEU processes.

AgriLife Extension will assess and compile current knowledge regarding BMPs designed to protect grazing lands watersheds from bacteria contamination. Based on this initial task, educational programs and materials will be developed and then tested in priority watershed(s). Concurrent with the development and testing of the educational program, BMPs will be demonstrated and evaluated to determine the efficacy of various value-added BMPs. BMPs that will be considered for evaluation include, but are not limited to the following: grazing management, shade, fencing, rip-rap, alternative water source development, riparian buffers, and combinations thereof. This evaluation will include an assessment of the effects of these BMPs on cattle behavior, bacteria levels, streambank stability, and the economic impact for beef cattle producers. At the grazing management sites, both *E. coli* (enumeration only) and *Bacteroidales* (library-independent PCR Bacteria Source Tracking) will be assessed in runoff to determine loadings and identify and quantify the specific sources of the loadings. The evaluation of *Bacteroidales* will also assist the state in developing cheaper, library-independent methods for Bacterial Source Tracking. At the stream sites, in addition to bi-monthly collections of *E. coli* and flow data, cross sections will be developed before and after BMPs are implemented to assess the impacts of BMP implementation on streambank stability.

Based on the results of the testing of the education program and BMP demonstration/evaluation, an educational program and associated materials will be developed and delivered state-wide to grazing lands owners and managers in priority watersheds to (1) bring heightened awareness of the issue regarding bacteria contamination of watersheds by grazing animals and (2) to encourage adoption of BMPs designed to reduce bacterial loading to Texas streams and water ways.

A LSHS Extension Assistant employed by AgriLife Extension will be responsible for helping develop, adapt and tailor the environmental and commodity specific LSHS educational Program. The LSHS Extension Assistant will coordinate with various specialists within AgriLife Extension to form an internal planning team. Program development, modifications and delivery will be subject to review by a multi-agency steering committee consisting of representatives from, but not limited to: TSSWCB, TDA, NRCS, GLCI, FSA, other state and federal agencies as appropriate, and representatives from key commodity groups and organizations including the Texas Farm Bureau, Texas and Southwestern Cattle Raisers Association, ICAT, the Texas Forage and Grassland Council, and other allied industry as appropriate. In addition, producers and soil and water conservation districts will be solicited to provide input into the curriculum development and program delivery processes. The Texas AgriLife Extension Service State Water Quality Coordinator will also provide guidance for the project.

Water Quality Impairment

Describe all known causes (pollutants of concern) of water quality impairments from any of the following sources: 2002 Water Quality Inventory and 303(d) List, 2002 Summary of Waterbodies with Water Quality Concerns (Secondary Concerns List) or Other Documented Sources (ex. Clean Rivers Program Basin Summary or Basin Highlights Reports).

<u>Waterbody (Segment)</u>	<u>Standards not met in 2004 (parameter)</u>	<u>2004 Concerns</u>
Plum Creek (1810)	Contact Recreation Not Supporting (bacteria)	Nutrient Enrichment (ammonia, nitrate+nitrite, phosphorus)
Copano Bay (2472)	Oyster Waters Not Supporting (bacteria)	Nutrient Enrichment (phosphorus) Aquatic Life Concern (D.O.)
Brazos River Abv Navasota	Contact Recreation Not Supporting (bacteria)	Public Water Supply Concern (increased costs due to demineralization)

Project Goals

The goal of this project is to reduce the levels of bacterial contamination of Texas watersheds from grazing livestock (beef cattle). This goal will be accomplished by meeting the objectives of:

- 1) developing an educational curriculum that delivers current knowledge training in production and environmental management of grazing lands and their associated watersheds as part of the Long Star Healthy Streams program,
- 2) evaluating and demonstrating the effectiveness of value-added BMPs in reducing bacterial contamination of streams and water bodies from grazing lands,
- 3) testing the functionality of the education program in priority watershed(s) and make necessary changes and program modifications based on the results of the pilot project, and
- 4) promoting Statewide adoption of appropriate best management practices (BMPs) and other watershed / water quality protection activities through education, outreach and technology transfer.

Tasks, Objectives and Schedules						
Task 1:	Project Coordination and Administration					
Costs:	Federal:	\$20,235	State:	\$13,554	Total:	\$33,789
Objective:	To effectively coordinate and monitor all work performed under this project including technical and financial supervision, preparation of status reports, and maintenance of project files and data. A Project Steering Committee will be organized to coordinate project efforts with all project participants. TWRI will perform accounting functions for project funds and be responsible for developing timely and accurate reports. Progress reports shall document all activities performed within a quarter and shall be submitted not later than thirty (30) days after the close of the quarter.					
Subtask 1.1:	TWRI, in coordination with AgriLife Extension, will organize a LSHS Steering Committee to coordinate project efforts with all project participants. This Committee will be composed of TSSWCB, SWCDs, AgriLife Extension, AgriLife Research, TWRI, NRCS, TDA, FSA, GLCI, and producer groups such as TFB and TSCRA. This Committee will meet at least semi-annually to provide input on the evaluation of BMPs and the education program; provide input into curriculum development, program delivery and CEU processes; discuss project status, provide input on demonstration/BMP evaluation efforts, and coordinate project activities.					
	Start Date:	Month 1		Completion Date:	Month 54	
Subtask 1.2:	TWRI will prepare electronic quarterly reports for submission to the TSSWCB. All progress reports will be provided to the LSHS Steering Committee [Final report provided under Task 4].					
	Start Date:	Month 1		Completion Date:	Month 54	
Subtask 1.3:	TWRI will conduct quarterly meetings as appropriate with project participants to discuss project activities, project schedule, lines of responsibility, communication needs, and other requirements.					
	Start Date:	Month 1		Completion Date:	Month 54	
Subtask 1.4:	TWRI will attend meetings with the TSSWCB project manager and other meetings, as needed, to review project status, deliverables, etc.					
	Start Date:	Month 1		Completion Date:	Month 54	
Subtask 1.5:	TWRI will submit appropriate Reimbursement Forms.					
	Start Date:	Month 1		Completion Date:	Month 54	
Subtask 1.6:	TWRI will develop (Months 1-3), host and maintain (Months 3-48) an internet website for the dissemination of information.					
	Start Date:	Month 1		Completion Date:	Month 54	
Deliverables	<ul style="list-style-type: none"> • List of representatives requested to serve on Steering Committee • Quarterly Reports documenting the progress of LSHS Program activities • Meeting notices, agendas, meeting summaries, meeting materials, and lists of attendees of LSHS Steering Committee Meetings • Project Website • Reimbursement Forms 					

Tasks, Objectives and Schedules						
Task 2:	Compile Existing Information					
Costs:	Federal:	\$68,794	State:	\$46,087	Total:	\$114,881
Objective:	To compile current knowledge regarding the effects of grazing animals on bacterial levels of riparian areas and best management practices (BMPs) designed to minimize these impacts. Through support from an internal Planning Team, AgriLife Extension will build a diverse Program with a wide information base and benefits.					
Subtask 2.1:	AgriLife Extension will hire a LSHS Extension Assistant to assist with and coordinate a review of the literature of the state of current knowledge regarding the effects of grazing animals on bacterial levels of riparian areas and associated water bodies and BMPs designed to minimize these impacts. Further, the Extension Assistant will lead all future LSHS Program efforts.					
	Start Date:	Month 1	Completion Date:	Month 48		
Subtask 2.2:	AgriLife Extension will organize an internal AgriLife Extension Planning Team consisting of AgriLife Extension personnel specializing in animal production systems and associated environmental issues.					
	Start Date:	Month 1	Completion Date:	Month 12		
Subtask 2.3:	AgriLife Extension will assess and inventory education/training materials within AgriLife Extension and related materials developed through similar efforts in other states addressing bacteria from grazing cattle. In order to make the program more thorough, educational materials addressing nutrient and sediment runoff from grazing lands and proper grazingland management will also be assessed and inventoried.					
	Start Date:	Month 1	Completion Date:	Month 48		
Deliverables	<ul style="list-style-type: none"> List of AgriLife Extension representatives requested to serve on the Planning Team Schedule, agenda, attendance list and summaries of AgriLife Extension Planning Team meetings Technical report describing compiled information 					

Tasks, Objectives and Schedules						
Task 3:	Develop Bacterial Education Programs For Beef Cattle Producers					
Costs:	Federal:	\$68,794	State:	\$46,087	Total:	\$114,881
Objective:	To develop State-wide educational programs that provide beef cattle producers and allied industry with a combination of production and environmental training enabling agricultural producers and allied industries to better able manage and protect their valuable land and water resources. AgriLife Extension will work in cooperation with the AgriLife Extension Planning Team, Steering Committee, other agencies and organizations, as appropriate, and with the local producers to develop the core curriculum and overall program delivery procedure. The AgriLife Extension Planning Team and Steering Committee will be used as the primary review panels to ensure that the program is compatible with other existing and planned programs conducted through state and federal agencies and organizations and industry.					
Subtask 3.1:	AgriLife Extension will facilitate the modification necessary to integrate existing materials from subtask 2.3 into the LSHS Program.					
	Start Date:	Month 1	Completion Date:	Month 54		
Subtask 3.2:	AgriLife Extension will develop a core land/grazing management educational component that provides growers with state-of-the-art production technology training on fundamental BMPs and strategies which can be employed to protect and conserve water resources from bacterial and other NPS contamination originating from grazing lands.					
	Start Date:	Month 3	Completion Date:	Month 54		
Subtask 3.3:	AgriLife Extension will integrate and coordinate the LSHS Program with the Texas Master Watershed Steward program to provide producers with a more comprehensive environmental education curriculum incorporating basic training in watershed form and function, watershed management, sources of nonpoint source (NPS) pollution and BMPs and strategies which can be employed to protect and conserve water resources.					
	Start Date:	Month 1	Completion Date:	Month 54		
Subtask 3.4:	AgriLife Extension will establish a continuing education component that enables acquisition of CEUs in both environmental and production management.					
	Start Date:	Month 6	Completion Date:	Month 54		
Subtask 3.5:	AgriLife Extension will develop and provide a certificate of completion, or other appropriate mechanism which enables individuals to take credit for participation in the education and training program.					
	Start Date:	Month 6	Completion Date:	Month 54		
Deliverables	<ul style="list-style-type: none"> Land/grazing management education curriculum addressing bacteria contamination of streams and water bodies Certificate of completion or other mechanism for CEU credit 					

Tasks, Objectives and Schedules						
Task 4:	Education Program Testing and Delivery					
Costs:	Federal:	\$68,794	State:	\$46,087	Total:	\$114,881
Objective:	To test the educational program in a pilot watershed, make necessary modifications and disseminate educational materials on a State-wide basis that promote adoption of BMPs that best protect the riparian areas from bacterial contamination due to grazing livestock. Throughout the process of program implementation in a pilot watershed(s), efforts will be made to assess the effectiveness of the program and to determine the feasibility and needs for further modification and enhancement.					
Subtask 4.1:	AgriLife Extension will test the educational program in a pilot watershed selected with input from the LSHS Steering Committee. AgriLife Extension will coordinate with local SWCDs and others, such as the NRCS, to deliver and evaluate the educational program.					
	Start Date:	Month 36	Completion Date:	Month 54		
Subtask 4.2:	To increase Program availability, Web-based and related local “on-demand” program delivery tools (i.e., CD, videos, worksheets) will be developed for both core and CEU components.					
	Start Date:	Month 36	Completion Date:	Month 54		
Subtask 4.3:	Evaluate changes in producer knowledge and awareness of important production and environmental issues.					
	Start Date:	Month 36	Completion Date:	Month 54		
Subtask 4.4:	Utilizing participants surveys, identify and address any barriers to producer participation and successful implementation of the program.					
	Start Date:	Month 36	Completion Date:	Month 54		
Subtask 4.5:	Make appropriate modifications to the program to facilitate greater producer participation and adoption of recommended BMPs.					
	Start Date:	Month 36	Completion Date:	Month 54		
Deliverables	<ul style="list-style-type: none"> • Schedule of program delivery including workshops, educational events and related activities • On-demand program delivery tools, CDs, Videos, Worksheets • LSHS Program promotional materials • Assessment of producer response to and participation in LSHS Program • Assessment of barriers and necessary modifications to ensure LSHS Program success • Final Report of LSHS Program including feasibility of Program expansion to additional target areas 					

Tasks, Objectives and Schedules					
Task 5:	Evaluate And Demonstrate Value-Added BMPs To Reduce Bacteria Contamination Of Streams And Water Bodies From Grazing Lands				
Costs:	Federal:	\$178,056	State:	\$119,283	Total: \$297,339
Objective:	To evaluate and demonstrate the effectiveness of current and novel BMPs in reducing bacterial contamination from grazing lands in the pilot watershed. BMPs that will be considered for evaluation include, but are not limited to the following: grazing management, shade, fencing, rip-rap, alternative water source development, riparian buffers, and combinations thereof. Working in conjunction with TSSWCB and AgriLife Research, the TWRI, AgriLife Extension planning team, steering committee and personnel from industry and other agencies and organizations, as appropriate, will select an appropriate target watershed and conduct pilot testing of BMPs to evaluate and demonstrate their effectiveness.				
Subtask 5.1:	TWRI will develop a Quality Assurance Project Plan (QAPP) that will detail project goals and objectives, the data needs to fulfill those objectives, lists field and laboratory methods, procedures and schedules to be followed, and specify a data management structure and quality assurance protocols. The QAPP will be developed using guidelines in EPA QA/R-5, "EPA Requirements for Quality Assurance Project Plans".				
	Start Date:	Month 1		Completion Date:	Month 6
Subtask 5.2:	TWRI will provide annual revisions to the QAPP and amendments, as necessary, to the TSSWCB and EPA.				
	Start Date:	Month 6		Completion Date:	Month 54
Subtask 5.3:	TWRI and AgriLife Extension will identify a cooperator to conduct the BMP demonstration/evaluation with assistance of the Steering Committee, local SWCD, NRCS, TWRI, and AgriLife Extension agents.				
	Start Date:	Month 1		Completion Date:	Month 6
Subtask 5.4:	TWRI and AgriLife Extension will assess cattle and other animal behavior to determine the amount of time spent in the stream and riparian area before and after BMP implementation. GPS tracking will be utilized.				
	Start Date:	Month 6		Completion Date:	Month 32
Subtask 5.5:	TWRI and AgriLife Extension will assess water quality before and after BMP implementation. Bacteria (<i>E. coli</i>) will be the focus of this effort and will be monitored bi-monthly (enumeration only). Water quality will be assessed for 12 months prior to implementation and then 12 months following implementation.				
	Start Date:	Month 6		Completion Date:	Month 54
Subtask 5.6:	In order to gain a more complete picture of the impacts of BMP implementation on stream bank stability and specific sources of bacteria, stream cross-sections will be performed at all stream sites before and after BMP implementation and <i>Bacteroidales</i> PCR (library-independent BST) will be assessed at runoff evaluation sites by TWRI, AgriLife Extension, and AgriLife Research.				
	Start Date:	Month 6		Completion Date:	Month 54
Subtask 5.7:	TWRI and AgriLife Extension will provide funding to cooperating ranch to implement BMPs to reduce bacteria and other NPS runoff from grazing lands.				
	Start Date:	Month 11		Completion Date:	Month 35
Deliverables	<ul style="list-style-type: none"> • Approved QAPP • Approved annual revisions and amendments to QAPP • Report describing demonstration results • Fact sheet describing demonstration results 				

Measures of Success

- As measured by surveys and pre/post evaluations, increased knowledge and understanding by grazing lands producers within the target area regarding production practices and related environmental issues.
- As measured by the adoption of recommended practices and other activities to address potential impairments caused by agricultural nonpoint source pollution.
- As measured by a reduction in bacterial contamination in the pilot watershed.

2005 Texas Nonpoint Source Management Program Document Reference

Goals &/or Milestone(s)

This proposal will assist the State in meeting Short-Term Goal Three for NPS Management - Education by conducting education and technology transfer activities to help increase awareness of NPS pollution and prevent activities contributing to the degradation of water bodies, by NPS pollution.

This proposal will assist the State in meeting the Objective of reducing the amount of NPS pollution entering the water bodies of Texas through pollution prevention activities and education by: enhancing existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education; administering programs to educate citizens about water quality and their potential role in causing NPS pollution; and conducting outreach through the Texas AgriLife Extension Service to facilitate broader participation and partnerships.

This proposal will assist the State in meeting Milestone (F) Implementation of Voluntary Actions in *2005 Texas Nonpoint Source Management Program* Priority Watersheds considered to be threatened by bacteria from beef grazing operations. Priority Watersheds include, but are not limited to the following: Plum Creek (1810), Copano Bay (2472), and Brazos River above Navasota River (1242) watersheds.

Part III – Financial Information

Budget Summary

Federal 319(h)	\$404,673	% of total project	60%
Non-Federal Match	\$271,098	% of total project (at least 40%)	40%
Total \$ Cost	\$675,771	Total project %	100%
Category	Federal	Non-Federal Match	Total
Personnel	\$199,806	\$150,539	\$350,345
Fringe Benefits	\$53,784	\$33,898	\$87,682
Subtotal Personnel & Fringe	\$253,590	\$184,437	\$438,027
Travel	\$43,544	\$0	\$43,544
Equipment	\$0	\$0	\$0
Supplies	\$26,626	\$0	\$26,626
Contractual	\$0	\$0	\$0
Construction	\$0	\$0	\$0
Other	\$28,130	\$0	\$28,130
Subtotal	\$98,300	\$0	\$98,300
Total Direct Costs	\$351,890	\$184,437	\$536,327
Indirect Costs (15%)	\$52,783	\$47,954	\$100,737
Unrecovered IDC	\$0	\$38,707	\$38,707
Total Project Costs	\$404,673	\$271,098	\$675,771

Budget Justification		
Category	Total Amount	Justification
Personnel & Fringe Benefits	\$438,027	<u>Federal:</u> <ul style="list-style-type: none"> • TWRI Project Manager @ 40% effort in yrs 1-3 and 12% in yr 4 • TWRI IT Associate @ 4.2% effort in yrs 1-3 • Extension Assistant (EA) @ 100% effort in yrs 1-4 • Student Worker @ 37.5% effort for 6 months of year 4 <u>Non-Federal Match:</u> <ul style="list-style-type: none"> • Co-PI, Professor and Forage Specialist • Assoc Prof & Ext Range Specialist • Asst Prof and Ext Forage Specialist • Asst Prof
Travel	\$43,544	<u>Federal:</u> <ul style="list-style-type: none"> • TWRI – \$1,612 annually for travel quarterly Steering Committee Meetings and monthly sampling trips • AgriLife Extension Specialists – \$5,824 annually • AgriLife Extension EA – \$3,450 annually for sampling and educational meetings
Equipment	\$0	N/A
Supplies	\$26,626	<u>Federal:</u> <ul style="list-style-type: none"> • TWRI – Miscellaneous supplies (\$739 annually) • AgriLife Extension Specialists – Miscellaneous supplies (\$2,805 annually) • AgriLife Extension EA – computer (\$1,500); digital projector (\$1,500); digital camera (\$1,000), color printer (\$2,500), miscellaneous supplies (\$950), BMP supplies on cooperator site (\$5,000)
Contractual	\$0	N/A
Construction	\$0	N/A
Other	\$28,130	<u>Federal:</u> <ul style="list-style-type: none"> • Water analyses (\$21,600 total) • Other Charges (\$2,000) • Refurbishing Cattle Collars (\$4,530)
Indirect	\$100,737	<u>Federal:</u> <ul style="list-style-type: none"> • 15% of Total Direct Federal <u>Non-Federal Match:</u> <ul style="list-style-type: none"> • 26% of Total Direct Non-Federal Match
Unrecovered IDC	\$38,707	<u>Non-Federal Match:</u> <ul style="list-style-type: none"> • 11% of Total Direct Federal