



**Texas State Soil and Water Conservation Board
 Clean Water Act §319(h) Nonpoint Source Grant Program
 FY 2010 Project Workplan 10-09**

SUMMARY PAGE

SUMMARY PAGE					
Title of Project	Building Partnerships for Cooperative Conservation in the Trinity River Basin				
Project Goals	Develop a peer network of private landowners engaged in cooperative conservation to advance the restoration and protection of water quality within the Trinity River Basin by: <ul style="list-style-type: none"> • Establishing relationships with stakeholders in the middle Trinity River Basin to create partnerships necessary for future WPP development and implementation • Promoting a healthy Trinity River Basin by increasing stakeholder awareness, understanding, and knowledge about the nature and function of watersheds, potential impairments, and watershed protection strategies to minimize NPS pollution • Developing citizen engagement and leadership capacity in resources management • Fostering a culture of cooperative natural resources stewardship with stakeholders throughout the middle basin 				
Project Tasks	1) Project Administration 2) Establish Communication With Primary Stakeholders In The Trinity River Basin 3) Provide and Deliver Educational Materials and Programs 4) Develop Interactive Website and Social Media Outreach To Increase Access To “All Things Trinity, All Things Conservation” 5) Develop a comprehensive GIS inventory and a Land Use/Land Cover Map				
Measures of Success	<ul style="list-style-type: none"> • Increased stakeholder knowledge and understanding of the nature and function of watersheds, potential impairments, and watershed protection strategies • Increased participant engagement in basin-level conservation leadership and stewardship activities 				
Project Type	Implementation (); Education (X); Planning (); Assessment (); Groundwater ()				
Status of Waterbody on 2008 Texas Water Quality Inventory and 303(d) List	<u>Segment ID</u>	<u>Parameter</u>	<u>Category</u>		
	0804G: Catfish Creek	macrobenthic community	5c		
		depressed dissolved oxygen	5c		
	0805: Upper Trinity River	bacteria	5a		
	0818: Cedar Creek Reservoir	pH	5c		
Project Location (Statewide or Watershed and County)	Middle Trinity River Basin in Johnson, Ellis, Kaufman, Van Zandt, Hill, Navarro, Henderson, Limestone, Freestone, Anderson, Leon, Houston, Madison, Grimes, Rockwall, and Walker Counties				
Key Project Activities	Hire Staff (X); Surface Water Quality Monitoring (); Technical Assistance (); Education (X); Implementation (); BMP Effectiveness Monitoring (); Demonstration (); Planning (); Modeling (); Bacterial Source Tracking (); Other ()				
Texas NPS Management Program Elements	Element One (LTG Objectives 1, 2, 5, 6, 7; STG 3A, 3B, 3D, 3F) Elements 2, 3, 4				
Project Costs	Federal	\$437,946	Non-Federal	\$293,569	Total \$731,515
Project Management	<ul style="list-style-type: none"> • Texas Water Resources Institute • Texas A&M AgriLife Extension Service • Institute of Renewable Natural Resources • Trinity Waters 				
Project Period	November 1, 2010 – October 31, 2014				

Part I – Applicant Information

Applicant							
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Co-Applicant							
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Title		Associate Professor and Extension Wildlife Specialist					
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Co-Applicant							
Project Lead		Roel Lopez					
Title		Interim Director					
Organization		Institute of Renewable Natural Resources					
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Co-Applicant							
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Title		Executive Director					
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City	Athens	County	Henderson	State	TX	Zip Code	75751
Telephone Number		214-454-4000		Fax Number		903-677-2694	

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
Texas Water Resources Institute (TWRI)	Provide overall project coordination, administration and reporting,
Texas A&M AgriLife Extension Service, Department of Wildlife and Fisheries Sciences (AgriLife Extension)	Education development and delivery
Trinity Waters (TW)	Education development and delivery; primary connection for Trinity River Basin stakeholders
Institute of Renewable Natural Resources (IRNR)	Website, Social Media, education development and delivery
Texas Wildlife Association (TWA)	Provide In-kind support of TW (non-federal match); help identify stakeholders, participate in planning, development and implementation of education and outreach efforts, and assist with planning stakeholder summits
Texas Parks and Wildlife Department (TPWD), Texas Freshwater Fisheries Center	Provide In-kind support of TW (non-federal support); delivery of pertinent wildlife & fisheries conservation education programs

Part II – Project Information

Project Type							
Surface Water	<input checked="" type="checkbox"/>	Groundwater	<input type="checkbox"/>				
Does the project implement recommendations made in a completed WPP or an adopted TMDL or approved I-Plan?				Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
If yes, identify the document.		N/A					
If yes, identify the agency/group that developed and/or approved the document.		N/A		Year Developed	N/A		

Watershed Information				
Watershed Name(s)	Hydrologic Unit Code (8 Digit)	Segment ID	305(b) Category	Size (Acres)
Richland	12030108	0817 0836 0837	CS CS N/A	583,130
Chambers	12030109	0814 0815 0816 0836	CS CS N/A CS	678,154
Upper Trinity	12030105	0805 0804	5a CN	885,823
Cedar	12030107	0818	5c	675,788
Lower Trinity-Tehuacana	12030201	0804	5c	1,365,306
Lower Trinity-Kickapoo	12030202	0803 0804	5c CN	2,070,505

Water Quality Impairment			
Describe all known causes (pollutants of concern) of water quality impairments or concerns from any of the following sources: 2008 Texas Water Quality Inventory and 303(d) List, Clean Rivers Program Basin Summary/Highlights Reports or other documented sources.			
IMPAIRMENTS (2008 Texas Water Quality Inventory)			
Segment 0803: Lake Livingston: From Livingston Dam in Polk/San Jacinto County to a point 1.8 km (1.1 miles) upstream of Boggy Creek in Houston/Leon County, up to normal pool elevation of 131 feet (impounds Trinity River)			
	Impairment	Category	Year Listed
0803_01 Lowermost portion of reservoir, adjacent to dam	pH	5c	2008
	sulfate	5c	2006
0803_02 Lower portion of reservoir, East Wolf Creek	sulfate	5c	2006
0803_03 Lower portion of reservoir, East Willow Springs	sulfate	5c	2006
0803_04 Middle portion of reservoir, East Pointblank	sulfate	5c	2006
0803_05 Middle portion of reservoir, downstream of Kickapoo Creek	sulfate	5c	2006
0803_06 Middle portion of reservoir, centering on US 190	pH	5c	2008
	sulfate	5c	2006
0803_07 Upper portion of reservoir, west of Carlisle	sulfate	5c	2006
0803_08 Cove off upper portion of reservoir, East Trinity	sulfate	5c	2006
0803_09 West Carolina Creek cove, off upper portion of reservoir	sulfate	5c	2006
0803_10 Upper portion of reservoir, centering on SH 19	sulfate	5c	2006
0803_11 Riverine portion of reservoir, centering on SH 21	sulfate	5c	2006
0803_12 Remainder of reservoir	sulfate	5c	2006

Segment 0804G: Catfish Creek: Twenty mile stretch of Catfish Creek running upstream from US 287 in Anderson Co., to Catfish Creek Ranch Lake just upstream of SH 19 in Henderson Co.

	<u>Impairment</u>	<u>Category</u>	<u>Year Listed</u>
<i>0804G_01 Entire Segment</i>	depressed dissolved oxygen	5c	2006
	Impaired macrobenthic community	5c	2006

Segment 0805: Upper Trinity River: From a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson/Navarro County to a point immediately upstream of the confluence of Elm Fork Trinity River in Dallas County

	<u>Impairment</u>	<u>Category</u>	<u>Year Listed</u>
<i>0805_03 11 mile reach near S. Loop 12</i>	bacteria	5a	1996
<i>0805_04 Upper 8 miles</i>	bacteria	5a	1996

Segment 0818: Cedar Creek Reservoir: From Joe B. Hoggsett Dam in Henderson County up to normal pool elevation of 322 feet (impounds Cedar Creek)

	<u>Impairment</u>	<u>Category</u>	<u>Year Listed</u>
<i>0818_01: 1674</i>	pH	5c	2002
<i>0818_02: Caney Creek cove</i>	pH	5c	2002
<i>0818_03: Clear Creek cove</i>	pH	5c	2002
<i>0818_04: Lower portion of reservoir east of Key Ranch Estates</i>	pH	5c	2002
<i>0818_05: Cove off lower portion of reservoir adjacent to Clearview Estates</i>	pH	5c	2002
<i>0818_06: Middle portion of reservoir downstream of Twin Creeks cove</i>	pH	5c	2002
<i>0818_07: Twin Creeks cove</i>	pH	5c	2002
<i>0818_08: Prairie Creek cove</i>	pH	5c	2002
<i>0818_09 Upper portion of reservoir adjacent to Lacy Fork</i>	pH	5c	2002
<i>0818_11: Upper portion of reservoir east of Tolosa</i>	pH	5c	2002
<i>0818_12: Uppermost portion of reservoir downstream of Kings Creek</i>	pH	5c	2002

CONCERNS (2008 Texas Water Quality Inventory)

Segment 0804: Trinity River above Lake Livingston

	<u>Parameter</u>	<u>Category</u>
<i>0804_01: Lower 25 miles of segment</i>	bacteria	CN
	chlorophyll-a	CS
	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS
<i>0804_02: 12 miles upstream to 13 miles downstream US 79</i>	total phosphorus	CS
	chlorophyll-a	CS
	nitrate	CS
	orthophosphorus	CS
	nitrate	CS
<i>0804_03: 9.5 miles upstream to 15.5 miles downstream of US 287</i>	orthophosphorus	CS
	nitrate	CS
<i>0804_04: Upper 22 miles of segment</i>	orthophosphorus	CS
	chlorophyll-a	CS
	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS

Segment 0804G: Catfish Creek		
<i>0804G_01: Entire Segment</i>	<u>Parameter</u> bacteria	<u>Category</u> CN
Segment 0805 Upper Trinity River		
<i>0805_01: 25 mile reach near FM 85</i>	<u>Parameter</u> chlorophyll-a	<u>Category</u> CS
	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS
<i>0805_02: 25 mile reach near SH 34</i>	bacteria	CN
	chlorophyll-a	CS
	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS
<i>0805_03: 11 mile reach near S. Loop 12</i>	chlorophyll-a	CS
	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS
<i>0805_04: Upper 8 miles</i>	chlorophyll-a	CS
	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS
<i>0805_06 From 15.57 mi. upstream of SH 34 to 4.71 mi. downstream of S Loop 12</i>	nitrate	CS
	orthophosphorus	CS
	total phosphorus	CS
Segment 0814: Chambers Creek Above Richland-Chambers Reservoir		
<i>0814_03: Lower 8.5 miles of segment</i>	<u>Parameter</u> chlorophyll-a	<u>Category</u> CS
	depressed dissolved oxygen	CS
	orthophosphorus	CS
	total phosphorus	CS
Segment 0815: Bardwell Reservoir		
<i>0815_01: Entire reservoir</i>	<u>Parameter</u> nitrate	<u>Category</u> CS
Segment 0815A: Waxahachie Creek		
<i>0815A_01: Entire creek</i>	<u>Parameter</u> nitrate	<u>Category</u> CS
Segment 0817: Navarro Mills Lake		
<i>0817: Entire reservoir</i>	<u>Parameter</u> nitrate	<u>Category</u> CS
Segment 0818: Cedar Creek Reservoir		
<i>0818_01: 1674</i>	<u>Parameter</u> chlorophyll-a	<u>Category</u> CS
<i>0818_02: Caney Creek cove</i>	ammonia	CS
<i>0818_04: Lower portion of reservoir east of Key Ranch Estates</i>	chlorophyll-a	CS
<i>0818_05: Cove off lower portion of reservoir adjacent to Clearview Estates</i>	ammonia	CS
<i>0818_06: Middle portion of reservoir downstream of Twin Creeks cove</i>	chlorophyll-a	CS

0818_08: <i>Prairie Creek cove</i>	chlorophyll-a	CS
	ammonia	CS
0818_09: <i>Upper portion of reservoir adjacent to Lacy Fork cove</i>	chlorophyll-a	CS
0818_10: <i>Lacy Fork cove</i>	chlorophyll-a	CS
0818_11: <i>Upper portion of reservoir east of Tolosa</i>	chlorophyll-a	CS
0818_13 <i>Cedar Creek cove</i>	depressed dissolved oxygen	CS
	total phosphorus	CS
	orthophosphorus	CS
	chlorophyll-a	CS
	ammonia	CS

Segment 0836: Richland-Chambers Reservoir

	<u>Parameter</u>	<u>Category</u>
0836_04 <i>Upper portion of Chambers Creek arm</i>	chlorophyll-a	CS
	total phosphorus	CS
0836_05 <i>Lower portion of Richland Creek arm</i>	chlorophyll-a	CS
0836_06 <i>Upper portion of Richland Creek arm</i>	chlorophyll-a	CS

IMPAIRMENTS (Draft 2010 Texas Water Quality Inventory)

Segment 0804G: Catfish Creek (unclassified water body): Twenty mile stretch of Catfish Creek running upstream from US 287 in Anderson Co., to Catfish Creek Ranch Lake just upstream of SH 19 in Henderson Co.

	<u>Impairment</u>	<u>Category</u>	<u>Year Listed</u>
0804G_01 Entire Segment	Bacteria	5b	2010

Segment 0804H: Upper Keechi Creek (unclassified water body): From the confluence with segment 0804 Trinity River to the upper end of NHD stream Upper Keechi Creek (NHD RC 12030201001075)

	<u>Impairment</u>	<u>Category</u>	<u>Year Listed</u>
0804H_01 <i>From the confluence with segment 0804 Trinity River up to confluence with Twin Branch</i>	depressed dissolved oxygen	5b	2010

Segment 0836B: Cedar Creek: From the confluence with Richland Chambers Reservoir to the upper end of the creek

0836B_01	depressed dissolved oxygen	5b	2010
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CONCERNS (Draft 2010 Texas Water Quality Inventory)

Segment 0804: Trinity River Above Lake Livingston

	<u>Parameter</u>	<u>Category</u>
0804_07 <i>From just above the confluence with Richland Creek in Henderson County, up to the upper end of the segment.</i>	nitrate	CS
	total phosphorus	CS
	orthophosphorus	CS
	chlorophyll-a	CS

Segment 0804G: Catfish Creek

	<u>Parameter</u>	<u>Category</u>
0804G_01 Entire Segment	depressed dissolved oxygen	CS
	impaired macrobenthic community	CN

Segment 0804J: Fairfield Lake

	<u>Parameter</u>	<u>Category</u>
0804J_01: <i>Entire Segment</i>	chlorophyll-a	CS
	orthophosphorus	CS
	fish kill report	CN

Segment 0814: Chambers Creek Above Richland-Chambers Reservoir

0814_01: From the lower end of the segment up to just above the confluence with Cummins Creek

<u>Parameter</u>	<u>Category</u>
depressed dissolved oxygen	CS
total phosphorus	CS
orthophosphorus	CS
chlorophyll-a	CS

Segment 0836: Richland-Chambers Reservoir

0836_01: Lowermost portion of reservoir, adjacent to dam

0836_04 Upper portion of Chambers Creek arm

0836_05 Lower portion of Richland Creek arm

<u>Parameter</u>	<u>Category</u>
depressed dissolved oxygen	CS
chlorophyll-a	CS
total phosphorus	CS
chlorophyll-a	CS

Segment 0836B: Cedar Creek

0836B_01: Entire Segment

<u>Parameter</u>	<u>Category</u>
depressed dissolved oxygen	CS

Segment 0836C: Grape Creek

0836C_01: Entire Segment

<u>Parameter</u>	<u>Category</u>
depressed dissolved oxygen	CS
depressed dissolved oxygen	CN
depressed dissolved oxygen	CN

Segment 0836D: Post Oak Creek

0836D_01: Entire Segment

<u>Parameter</u>	<u>Category</u>
depressed dissolved oxygen	CS

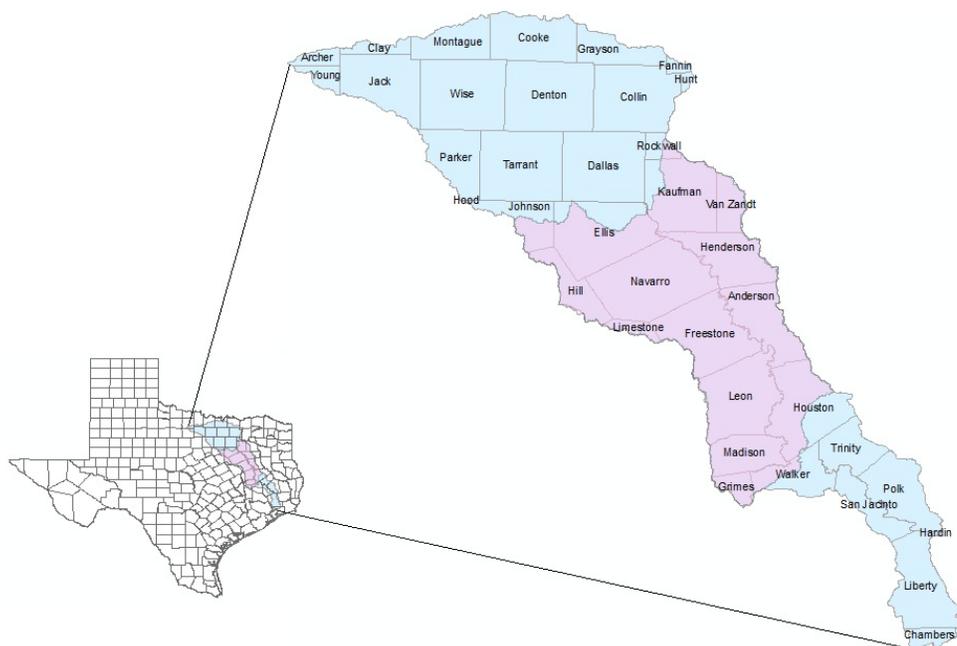
Project Narrative

Problem/Need Statement

Many Texans within the Trinity River Basin do not know the source of their drinking water, the factors that cause impairments to water quality, or the natural processes that can help abate NPS pollution. The Trinity River is a resource that is stretched to its usage capacity by two of the largest and fastest growing water consumers in the nation; Houston and Dallas/Fort Worth. The Trinity River and the rural portions of its watershed, the largest part being in the middle basin, are relied upon to provide water resources for the rural and urban populations both within and beyond the basin itself.

An informed and engaged public is integral to sustaining this water resource, especially given the population projections for this region of the state as projected by the *2007 State Water Plan*. Management of rural lands is critical for sustainable water resources within the basin. Statewide, the population is predicted to double during 2000-2060 (20,851,790 and 45,558,282, respectively) and the demand for water is projected to increase from 17 to 21.6 million acre-feet. There is a need to provide training and technical resources to landowners about the importance of natural resource management and BMPs used in agricultural production and wildlife conservation. Education about cooperative conservation is a critical initial step to gain buy-in from stakeholders before development and implementation of WPPs in specific watersheds. TW is a growing landowner led group that will serve as the conduit for disseminating information to fellow citizens, stakeholders, and conservation partners to garner support for developing WPPs and/or TMDLs.

Flanked on the northern and southern ends by major metropolitan areas, the Trinity River Basin is home to more than 5.5 million people. The basin begins near the Texas-Oklahoma border in Clay, Archer and Montague counties. Lost, Hurricane, Grayson, White Rock, Denton and Clear Creeks eventually merge with the West, Elm and East forks to form the Trinity River near Dallas/Fort Worth which extends southeast about 512 miles, traversing 5 of the state's 10 eco-regions before emptying into the Gulf of Mexico via Trinity Bay (a sub-bay of Galveston Bay) near Houston. The entire Trinity River Basin covers over 18,000 square miles (7% of the total land area of Texas) and encompasses 38 Texas counties. Average annual precipitation within the Trinity River Basin ranges from 52 inches near the Gulf of Mexico to less than 36 inches at the headwaters, with extensive water-related human alterations throughout its length (Cathey et al. 2007).



As the Trinity River flows southward from the Dallas/Fort Worth metroplex to Trinity Bay, it is directly affected by human activities, especially the variety of land uses in the watershed. Some of the more prevalent activities within the basin include urbanization, commercial/industrial development, row crop farming, livestock production, outdoor recreation, and timber production. All of these major land uses have direct effects on the water quality and quantity as it moves through the basin; thus, leading to the need for responsible land stewardship and education to safeguard and improve water resources for present and future generations. In addition, 22 major

reservoirs have been built within the Trinity River Basin providing drinking water, flood control, and recreational opportunities to urban and rural communities.

Water uses in the basin are dominated by three categories: municipal 80% (city), industrial 4% (manufacturing, steam electricity, and mining), and agricultural 16% (irrigation and livestock). Municipal use; already substantial, is expected to increase dramatically.

The majority of the middle Trinity River is dominated by rural working lands made up of over 32,000 private farms and ranches that cover 75% of the Trinity River Basin. Natural habitats (wetlands, floodplains, bottomland hardwood forests, and native grasslands) on these private lands serve to maintain water quality, floodplain capacity, wildlife habitats and provide other environmental services. Over the last decade, land fragmentation pressures from urbanization and decreased economic land use in the Trinity have resulted in a loss of 184,000 acres from farms and ranches greater than 1,000 acres in size (Wilkins et al. 2009). Fragmentation and land use conversions have decreased the basin's natural ecosystems and the services they provide, but through education, planning, and good conservation practices, many of these lands can be restored.

The need for educational programs within this basin is evident. The University of North Texas *2006 Survey of Citizen Knowledge, Understanding and Concerns About Water and Watershed Issues in the Upper Trinity River Basin* demonstrated an apparent information gap for residents in the Trinity River Basin. This survey was funded in part by TSSWCB through project 01-19 *Envirocast®: Increasing Nonpoint Source Pollution Prevention Through Watershed Awareness in the Upper Trinity River Watershed*. 92% of 1,000 survey respondents in the upper Trinity River Basin were unaware that they lived in a watershed. 45% of the urban respondents did not know the source of their drinking water, yet 66% reported extreme concern for the adequacy of water supplies. Also, the vast majority of respondents had little understanding of watershed concepts but indicated concern with environmental issues. They advocated better land stewardship practices to make positive management decisions but simply lacked the guidance and resources to do so (Dickson 2006; unpublished data). With such a large percentage of the Texas population in one basin, it is important that stakeholders basin-wide understand the need for improved water quality to support drinking water needs as well as environmental services.

This project supports the Trinity River Basin Environmental Restoration Initiative initiated by Texas Governor Rick Perry in September 2006. This initiative is focused on building the capacity of organizations committed to "improving the quality of life, economic sustainability and ecological integrity of areas associated with the Trinity River Basin through a coalition of local communities, NGOs and stewards of private and public lands."

Seeking the highest return on the investment of these funds, this project will establish a conservation-minded framework of rural land managers in the Middle Trinity River Basin, primarily in Johnson, Ellis, Kaufman, Van Zandt, Hill, Navarro, Henderson, Limestone, Freestone, Anderson, Leon, Houston, Madison, Grimes, Rockwall and Walker Counties.

Project Narrative

General Project Description

This project will educate stakeholders in the Middle Trinity River Basin by increasing awareness of water quality issues and providing a variety of educational programs for landowners. Programs such as the Lone Star Healthy Streams Program (developed through TSSWCB projects 06-05 *Lone Star Healthy Streams* and 09-06 *Development of a Synergistic, Comprehensive Statewide Lone Star Healthy Streams Program*) for cattle producers, wildlife management programs for landowners, the Texas Watershed Steward Program (through TSSWCB project 07-09 *Statewide Implementation of the Texas Watershed Steward Program*), and other general water quality education and conservation programs will be delivered to stakeholders in the basin leading to an increase in knowledge and awareness of land stewardship and impacts on water quality. This increase in awareness of water quality issues and different conservation approaches to address them is expected to yield increased implementation of BMPs in the watershed. This increase in stakeholder involvement and knowledge will build the foundation for future development of WPPs in specific watersheds.

TWRI, in coordination with TW, IRNR, and AgriLife Extension, will lead and coordinate this project. These agencies will maintain excellent communication among other federal, state, and local agencies and entities, ensuring effective performance. TWRI will supply all project deliverables to the TSSWCB. Finally, TWRI will cooperate with TW, IRNR, SWCDs, USDA-NRCS, Texas Forest Service, AgriLife Extension, and TSSWCB and other project personnel in all project activities, as appropriate.

IRNR, with input from project partners, will develop and maintain a stakeholder database and TW will utilize the information to effectively communicate and maintain contact with targeted stakeholders and landowners. In addition, fact sheets, newsletters and other water quality and educational materials developed during this project will be delivered to stakeholders. TW, IRNR, and AgriLife Extension will utilize local media outlets to promote educational events and publications, explaining BMP outcomes to landowners and natural resource professionals. This will increase communication as well as technology transfer between natural resource professionals and agricultural landowners.

AgriLife Extension will hire a WFSC Extension Associate to execute the educational programming tasks of the project. This WFSC Extension Associate will functionally serve as an education and outreach coordinator for the TW.

TW, IRNR and AgriLife Extension will (1) assemble and evaluate existing educational information, (2) develop needed educational programs, and (3) host and deliver educational programs to improve water quality within the basin. Educational programs on water quality, proper grazing management, wildlife management, wetland development, and other watershed management topics will be delivered by project personnel as well as TWA and TPWD personnel in coordination with local SWCDs, local AgriLife Extension Agents, USDA-NRCS field offices, the Texas Forest Service, and other stakeholders in the middle basin. Educational workshops will also be conducted to bring stakeholders in the middle basin together to discuss and promote “All Things Trinity, All Things Conservation”, and a series of educational workshops for mid basin stakeholders, culminating in a capstone summit, setting the stage for future WPP development.

In an effort to effectively deliver relevant programs to each region, a Land Use/Land Cover map derived from existing datasets of the Trinity River Basin will be developed by IRNR. The Land Use/Land Cover will be evaluated and characterized at the watershed and subwatershed scale. The maps will be evaluated by TW, IRNR, and AgriLife Extension and used to tailor programming to the specific needs of each region within the basin based on land use. TW, IRNR and AgriLife Extension will work with stakeholders to describe a surface water quality monitoring regime for specific watersheds within the Middle Trinity Basin, in anticipation of future WPP development.

To determine the effectiveness of the educational programs and increases in stakeholder knowledge, pre/post surveys will be utilized and evaluated by project personnel. Lastly, TW in collaboration with IRNR and AgriLife Extension will develop a web-based clearinghouse profiling the geographical, ecological, and sociological data of the Trinity River Basin to complement existing tools (Trinity River Information Management System [<http://trims.tamu.edu>], Texas Land Trends [<http://txlandtrends.org>], etc.) promoting land and water conservation stewardship management practices and case

models for private landowners in the Trinity River Basin. The website will contain all information related to the Trinity River Basin and conservation with the emphasis of TW's "All Things Trinity, All Things Conservation" to assist stakeholders in their efforts to engage in effective, innovative, and cooperative conservation practices. The website will be hosted and maintained by TW and IRNR as a conservation portal for an engaged Trinity River Basin constituency.

To increase stakeholder engagement and relay information, IRNR and the WFSC Extension Associate will deploy a Social Media Engagement (SoMe) model that will be used to create an outreach campaign that utilizes common social media platforms (Twitter, FaceBook, etc) to increase capacity and program buy-in. Current research supports the use of social media to reach out to audiences through non-traditional means in order to create a more social environment for information sharing. The SoMe model is in beta development at IRNR. The SoMe model was developed as a structured method to bring stakeholders and educational programs together for environmental awareness, problem solving, and crowd sourcing.

Tasks, Objectives and Schedules						
Task 1	Project Administration					
Costs	Federal	\$65,691	Non-Federal	\$44,036	Total	\$109,727
Objective	To effectively administer, coordinate, and monitor all work performed under this project including technical and financial preparation of status reports.					
Subtask 1.1	TWRI with the assistance of TW, AgriLife Extension, and IRNR will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs will document all activities performed within a quarter and will be submitted by the 15 th of January, April, July and October. QPRs will be posted to the project website and distributed to all project partners.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 1.2	TWRI 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 48	
Subtask 1.3	TWRI will host coordination meetings, conference calls, or TTVN meetings, at least quarterly with project partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements. TWRI will develop lists of action items needed following each project coordination meeting and distribute to project personnel.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 1.4	TW, IRNR, and AgriLife Extension, with assistance from TWRI, will collaborate to develop a Final Report.					
	Start Date	Month 32		Completion Date	Month 48	
Deliverables	<ul style="list-style-type: none"> • Quarterly progress reports in electronic format • Reimbursement Forms and necessary documentation in hard copy format • Lists of action items from project coordination meetings • Final Report in electronic and hard copy formats 					

Tasks, Objectives and Schedules						
Task 2	Establish Communication With Primary Stakeholders In The Trinity River Basin					
Costs	Federal	\$87,589	Non-Federal	\$58,714	Total	\$146,303
Objective	To develop a database of Middle Trinity River Basin stakeholders for use in establishing and maintaining communications during the duration of the project as well as publishing newsletters and utilizing local media for effective communication.					
Subtask 2.1	TW and the WFSC Extension Associate with assistance from TWA, IRNR and AgriLife Extension Co-PIs will identify and develop a database of primary Trinity River Basin stakeholders and establish a direct contact list. The database will be focused on landowners in the Middle Trinity River Basin.					
	Start Date	Month 1		Completion Date	Month 9	
Subtask 2.2	TW and AgriLife Extension will engage in direct peer-to-peer outreach with critical stakeholder groups and entities from across the Trinity River Basin, including regional councils of government (COGs), TWA, Tarrant Regional Water District (TRWD), Trinity River Authority (TRA), USDA Natural Resources Conservation Service (NRCS), Texas Farm Bureau, Texas and Southwestern Cattle Raisers Association, local soil and water conservation districts (SWCDs), local groundwater conservation districts (GCDs), TPWD, Texas Forest Service (TFS), local county forestry associations, Galveston Bay Estuary Program, Texas Commission on Environmental Quality, Texas A&M AgriLife Research Dallas and Overton Centers, County Extension Agents, and other potential partners.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 2.3	TW, AgriLife Extension, and IRNR will attend and participate in public meetings as appropriate in order to communicate project goals, activities and accomplishments to affected parties. Such meetings may include, but are not limited to, Clean Rivers Program Trinity River Basin Steering Committee and Coordinated Monitoring meetings, watershed stakeholder meetings for certain TMDLs and WPPs, and appropriate meetings of the critical stakeholder groups identified in subtask 2.2.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 2.4	TW and the WFSC Extension Associate with assistance from the IRNR and AgriLife Extension Co-PIs will utilize the database developed in subtask 2.1 to effectively communicate and maintain contact with targeted stakeholders and deliver educational factsheets, newsletters, and other promotional materials developed during the project to stakeholders. The database will be updated as needed.					
	Start Date	Month 9		Completion Date	Month 48	
Subtask 2.5	TW, AgriLife Extension and IRNR will develop and disseminate project informational materials, including, but not limited to flyers, brochures, news releases, and other appropriate promotional publications. Local media will be used for effective communication to promote educational events.					
	TCBF and AgriLife Extension will develop and publish 5 semi-annual newsletters that highlight “All Things Trinity, All Things Conservation”. The newsletter shall be distributed as most appropriate to individual landowners and entities in the watershed.					
As appropriate, TWRI will include information about the project in the <i>tx H₂O</i> , <i>New Waves</i> e-letter, AgriLife News.						
All documents, educational materials, etc. will be provided to the TSSWCB for review and comment prior to dissemination.						
Start Date	Month 12		Completion Date	Month 48		
Deliverables	<ul style="list-style-type: none"> • Database of stakeholders • Semi-annual newsletters as developed and distributed to stakeholders • Promotional materials, as developed and disseminated in state and regional magazines and newspapers 					

Tasks, Objectives and Schedules						
Task 3	Provide and Deliver Educational Materials and Programs					
Costs	Federal	\$131,384	Non-Federal	\$88,071	Total	\$219,455
Objective	To develop, deliver, and evaluate educational programs that will increase water quality and BMP awareness to targeted stakeholders in the Trinity River Basin					
Subtask 3.1	WFSC will hire an Extension Associate to compile existing information, develop education curriculum as needed, and help in the coordination of education programs. This WFSC Extension Associate will functionally serve as an education and outreach coordinator for the TW. This WFSC Extension Associate shall be initially based in College Station for the first year of the project and move accordingly with the growth of the program if needed. WFSC will hire a part time worker to aid in the development of publications and social media outlets for Trinity Waters.					
	Start Date	Month 1		Completion Date	Month 6	
Subtask 3.2	TW and the WFSC Extension Associate, with assistance from the IRNR and AgriLife Extension Co-PIs, will assess and inventory education/training and related materials developed through similar efforts in Texas and other states addressing water quality and associated data.					
	Start Date	Month 7		Completion Date	Month 18	
Subtask 3.3	In order to foster cooperative conservation across the Middle Trinity River Basin, TW and AgriLife Extension will develop a one-pager and standard presentation on “All Things Trinity, All Things Conservation” that can be distributed and/or delivered in conjunction with existing educational programs. WFSC Extension Associate has developed 4 additional presentations related to land management activities that have and will continue to be utilized at landowner workshops.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 3.4	TW and the WFSC Extension Associate in collaboration with the IRNR and AgriLife Extension Co-PIs will coordinate and collaborate with the critical stakeholder groups identified in subtask 2.2 to deliver and evaluate educational and outreach programs in the Trinity River Basin. These stakeholder and landowner training/networking programs will have a focus on general awareness, BMPs, NPS pollution, water quality, cooperative opportunities, ecosystem services, wildlife management, agency and university technical expertise, and peer networking. Specific existing educational programs to be delivered include but will not be limited to:					
	<ul style="list-style-type: none"> • AgriLife Extension grazing management and water quality programs for cattlemen (i.e., Lone Star Healthy Streams Program) • AgriLife Extension feral hog management workshops • AgriLife Extension wildlife management programs for landowners • General water quality education for landowners/stakeholders (i.e., Texas Watershed Steward Program) • AgriLife Extension wetlands and aquatics management educational programs • TWA “Women of the Land” program 					
Subtask 3.5	TW, IRNR, and AgriLife Extension will distribute educational materials and publications to landowners in the basin through exhibits, workshops, conferences, county programs, and other educational programs.					
	Start Date	Month 1		Completion Date	Month 48	
Subtask 3.6	TW in collaboration with IRNR and AgriLife Extension will conduct a series of educational workshops to bring stakeholders in each area together to discuss and promote “All Things Trinity, All Things Conservation”.					
	<ul style="list-style-type: none"> • 9 educational workshops for Middle basin stakeholders will be conducted, culminating in a capstone summit, setting the stage for future WPP development. • 3 webinars will be developed and posted, linked to the TW website, to further disseminate the information presented during the workshops for those who were unable to attend due to work or not living in close proximity to the workshop locations. The number of visitors to the links will be tracked. 					
Start Date	Month 13		Completion Date	Month 48		

Subtask 3.7	TW, IRNR and AgriLife Extension will utilize participant pre/post surveys at individual workshops and trainings conducted through subtasks 3.3-3.6, as well as evaluate changes in stakeholder knowledge and awareness of sustainable production and environmental issues.			
	Start Date	Month 9	Completion Date	Month 48
Subtask 3.8	AgriLife Extension will develop three publications that are directed toward the awareness and implementation of habitat restoration techniques that also improve water quality. These publications will be incorporated into the curriculum developed in Subtask 3.1 and distributed during the educational workshops delivered in Subtasks 3.4-3.6. One additional publication will be developed above and beyond the original three that were incorporated into the workshops.			
	Start Date	Month 1	Completion Date	Month 48
Deliverables	<ul style="list-style-type: none"> • Agendas and course material for training workshops, educational programs, and other activities • Meeting notices, materials, agendas, attendance lists from summits • Four AgriLife Extension publications directed at awareness and implementation of habitat restoration techniques to improve water quality • One-pager and standard presentation on “All Things Trinity, All Things Conservation” • Results from pre/post evaluation surveys conducted at selected meetings and workshops • Three webinars will be developed and posted on TW website 			

Tasks, Objectives and Schedules						
Task 4	Develop Interactive Website To Increase Access To “All Things Trinity, All Things Conservation”					
Costs	Federal	\$76,641	Non-Federal	\$51,374	Total	\$128,015
Objective	To make the educational materials developed under Task 3 easily accessible by the public, landowners, decision makers, and others through development of an interactive website.					
Subtask 4.1	TW and IRNR will create (Months 1-3), host and maintain (Months 4-48) a website that contains all related Trinity River Basin and conservation information with the emphasis of TW’s “All things Trinity, All things Conservation” to assist stakeholders in their efforts to engage in effective, innovative, and cooperative conservation practices.					
	Start Date	Month 1	Completion Date	Month 48		
Subtask 4.2	TW, through collaboration with IRNR and AgriLife Extension, will develop this web-based information clearinghouse, profiling geographical, ecological, and sociological data of the Trinity River Basin to complement existing tools (Trinity River Information Management System (TRIMS), Texas Land Trends, etc.) promoting land and water conservation stewardship management practices and case models for private landowners in the Trinity River Basin.					
	Start Date	Month 1	Completion Date	Month 48		
Subtask 4.3	Deployment of the Social Media Engagement (SoMe) model will be used to increase the effectiveness of communication, information transfer, community engagement, and social facilitation for problem solving in the Middle Trinity River Basin. IRNR will evaluate which model tools will be aligned to the outreach tasks and utilize social media channels (FaceBook, Twitter and others) to develop a virtual community of interest within the Trinity River Basin that can aid in meeting project objectives. The goal of the model deployment in to increase the reach and capacity of program efforts in the basin and to strengthen ties among stakeholders to the common objectives of the project. Google analytic trends will be monitored to gauge which social media tools bring the best impact to the project. In addition, 15 videos are being produced on rangeland and wildlife management that benefit watershed health that will be posted on the WFSC YouTube channel. These videos are above and beyond the original goals of the contract.					
	Start Date	Month 1	Completion Date	Month 48		

Deliverables	<ul style="list-style-type: none"> • A synthesis of user metrics will be delivered to show the effectiveness of the website • A user-friendly website that serves as a conservation information portal for an engaged Trinity River Basin constituency • The development of presence in social media channels (Twitter feeds, Facebook fan pages, etc.) that will lead to a tenfold increase in information distribution over time • Back channel analytics for social media engagement will be provided to direct program efforts and inform project partners about stakeholder engagement and knowledge gained • Production of 15 YouTube videos on rangeland and wildlife management activities that relate to watershed health
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Tasks, Objectives and Schedules						
Task 5	Develop a Comprehensive GIS Inventory					
Costs	Federal	\$76,641	Non-Federal	\$51,374	Total	\$128,015
Objective	To develop a comprehensive GIS inventory of the watershed and updated land use/land cover maps. To develop a prioritized list of watersheds for future water quality data collection and WPP development.					
Subtask 5.1	IRNR, with assistance from TW and AgriLife Extension, will develop a comprehensive GIS inventory for the Middle Trinity River Basin. Data should include the most recent information available (such as the TPWD Texas Ecological Systems Classification and Mapping Project) on land use, elevation, soils, stream networks, reservoirs, roads, public parklands, municipalities and satellite imagery or aerial photography. Locations of water quality monitoring 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. IRNR will seek input from local stakeholders, public officials, agency personnel and other means necessary to verify the accuracy of the information in the GIS inventory.					
	Start Date	Month 1		Completion Date	Month 12	
Subtask 5.2	TW and AgriLife Extension will utilize the GIS inventory (subtask 5.1) to develop watershed and subwatershed maps in order to best match education delivery with specific groups of stakeholders.					
	Start Date	Month 13		Completion Date	Month 36	
Subtask 5.3	TW and AgriLife Extension, utilizing the GIS inventory and LULC data, will work with stakeholders through the summits (subtask 3.6) to identify and prioritize a list of watersheds for future WPP development. The focus will be on identifying actions for addressing impaired waterbodies.					
	Start Date	Month 25		Completion Date	Month 36	
Subtask 5.4	TW and AgriLife Extension, in collaboration with other appropriate groups identified in subtask 2.2, will work with stakeholders to describe a surface water quality monitoring regime for watersheds identified through subtask 5.3. The monitoring regime should be designed to collect data necessary for the development of a WPP. The monitoring regime will take advantage of all available and suitable methodologies. The monitoring regime will be incorporated into a proposed scope of work and budget.					
	Start Date	Month 25		Completion Date	Month 36	
Deliverables	<ul style="list-style-type: none"> • GIS inventory • List of watersheds identified for future WPP development • Proposed scope of work and budget incorporating monitoring regime to collect data necessary for WPP development 					

Project Goals (Expand from Summary Page)
Develop a peer network of private landowners and other stakeholders engaged in cooperative conservation land

management practices to advance the restoration and protection of water quality within the Trinity River Basin. Broad goals include:

- Promoting a healthy Trinity River Basin by increasing stakeholder awareness, understanding, and knowledge about the nature and function of watersheds, potential impairments, and watershed protection strategies to minimize NPS pollution
- Developing citizen engagement and leadership capacity in community and watershed-level land and water resources management
- Fostering cooperative natural resources stewardship with stakeholders throughout the watershed
- Establishing relationships with stakeholders throughout the entire Trinity River Basin to create partnerships necessary for successful future WPP development and implementation
- Developing with stakeholder input an effective water quality sampling regime for future data collection to support future WPP development

Measures of Success (Expand from Summary Page)

- Increased stakeholder knowledge by a target of 50% and an understanding of the nature and function of watersheds, what potential impairments may be, and watershed strategies as indicated by pre/post surveys and stakeholder plans to adopt BMPs as well as engagement in other resource conservation practices
- Increased participant engagement in basin-level conservation leadership and stewardship activities as measured by the number of stakeholders that participate in educational programming, the number of stakeholders that utilize the web-based information clearinghouse and the amount of stakeholder participation in Trinity River Basin programs and activities.

2005 Texas Nonpoint Source Management Program Reference (Expand from Summary Page)

Goals and/or Milestone(s)

Element 1 – Explicit short- and long-term goals, objectives and strategies that protect surface...water

LTG: To protect and restore water quality from NPS pollution through assessment, implementation and education

1. Focus NPS abatement efforts ...and available resources in watersheds identified as impacted by NPS pollution.
2. Support the implementation of state, regional, and local programs to prevent NPS pollution through assessment ...and education.
3. Develop partnerships, [and] relationships ...to facilitate collective, cooperative approaches to manage NPS pollution.
4. Increase overall public awareness of NPS issues and prevention activities.
5. Enhance public participation and outreach by providing forums for citizens and industry to contribute their ideas and concerns about the water quality management process.

Goal Three – Education: Conduct education and technology transfer activities to help increase awareness of NPS pollution and prevention activities contributing to the degradation of water bodies, ... , by NPS.

- Objective A – Enhance existing outreach programs at the state, regional, and local levels to maximize the effectiveness of NPS education.
- Objective B – Administer programs to educate citizens about water quality and their potential role in causing NPS pollution.
- Objective D – Conduct outreach through the Clean Rivers Program, [AgriLife] Extension, SWCDs, and others to facilitate broader participation in decision-making and provide a more complete understanding of water quality issues and how they relate to each citizen.
- Objective F – Implement public outreach and education to maintain and restore water quality in waterbodies impacted by NPS pollution.

Element 2 – Working Partnerships and linkages to appropriate, state, interstate, tribal, regional, and local entities, private sector groups, and Federal agencies.

Element 3 – Balanced approach that emphasizes both statewide NPS programs and on-the-ground management of individual watersheds

Element 4 – Abatement of water quality impairments from NPS pollution and prevention of significant threats to water quality from present and future NPS activities

Part III – Financial Information

Budget Summary			
Federal	\$ 437,946	% of total project	60%
Non-Federal	\$ 293,569	% of total project (≥ 40%)	40%
Total	\$ 731,515	Total	100%
Category	Federal	Non-Federal	Total
Personnel	\$ 196,882	\$ 111,718	\$ 308,600
Fringe Benefits	\$ 61,700	\$ 26,555	\$ 88,255
Travel	\$ 12,140	\$ 0	\$ 12,140
Equipment	\$ 0	\$ 0	\$ 0
Supplies	\$ 3,500	\$ 0	\$ 3,500
Contractual	\$ 80,832	\$ 86,346	\$ 167,178
Construction	\$ 0	\$ 0	\$ 0
Other	\$ 25,769	\$ 0	\$ 25,769
Total Direct Costs	\$ 380,823	\$ 224,619	\$ 605,442
Indirect Costs (≤ 15%)	\$ 57,123	\$ 35,951	\$ 93,074
Unrecovered IDC		\$ 32,999	\$ 32,999
Total Project Costs	\$ 437,946	\$ 293,569	\$ 731,515

The TSSWCB CWA §319(h) NPS Grant Program has a 60/40% match requirement. The cooperating entity will be reimbursed 60% from federal funds and must contribute a minimum of 40% of the total costs to conduct the project. The 40% match must be from non-federal sources and should be described in the budget justification. Reimbursable indirect costs are limited to no more than 15% of total federal direct costs. The project budget generally covers a three year period.

Budget Justification (Federal)		
Category	Total Amount	Justification
Personnel	\$ 196,882	TWRI Project Manager (8% effort per year) WFSC Extension Associate (100% effort per year) WFSC Office Software Assistant (10% effort in year 4) IRNR Extension Program Specialist (10% effort per year) IRNR Web Design/Sys Admin (20% effort in year 1 & 10% effort in yrs 2-3) IRNR GIS Specialist (10% effort per year) IRNR Extension Program Specialist (Social Media) (20% in yr 1 & 2)
Fringe Benefits	\$ 61,700	17.1% plus group health of \$494/month per FTE (prorated)
Travel	\$ 12,140	TWRI Travel at (\$200 yrs 1-3) WFSC Travel at (\$3,480 yrs 1-3, \$800 yr 4) IRNR Travel at (\$100 yrs 1-3)
Equipment	\$ 0	N/A
Supplies	\$ 3,500	WFSC Supplies (\$3,500)
Contractual	\$ 80,832	TW Subcontract (Includes Personnel, Fringe, Travel, Equipment, Supplies, Contractual and IDC)
Construction	\$ 0	N/A
Other	\$ 25,769	Publications (\$9,048 in years 2 and \$8,221 in year 3) Facility Rental (\$1,500 yrs 1-3) Extension Programming (\$1,000 annually)
Indirect	\$ 57,123	15% of Total Direct Federal

Budget Justification (Non-Federal)		
Category	Total Amount	Justification
Personnel	\$ 111,718	TWRI Project Manager (2% annually) TWRI Acting Director (2.9% annually) WFSC Assoc. Prof / Wildlife Specialist (34% annually) IRNR Director (3% annually)
Fringe Benefits	\$ 26,555	17.1% plus group health of \$494/month per FTE
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual	\$ 86,346	TW Subcontract (Includes Personnel, Fringe, Contractual and IDC)
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 35,951	26% of Total Direct Non-Federal Costs
Unrecovered IDC	\$ 32,999	11% of Total Direct Federal

Contractual Budget Justification (Federal) – TW		
Category	Total Amount	Justification
Personnel	\$ 34,773	TW Director (25% annually)
Fringe Benefits	\$ 8,016	17.1% plus group health of \$230/month per FTE
Travel	\$ 6,000	\$2,000 annually
Equipment	\$ 2,500	Computer purchase/update
Supplies	\$ 3,000	\$1,000 annually
Contractual	\$ 16,000	\$8,000 for TW (Marketing, Branding Consultant) \$8,000 TWA
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 10,543	15% of Total Direct Federal

Contractual Budget Justification (Non-Federal) – TW		
Category	Total Amount	Justification
Personnel	\$ 41,727	TW Director (30% annually)
Fringe Benefits	\$ 9,619	17.1% plus group health of \$230/month per FTE
Travel	\$ 0	N/A
Equipment	\$ 0	N/A
Supplies	\$ 0	N/A
Contractual	\$ 20,000	\$6,667 annually
Construction	\$ 0	N/A
Other	\$ 0	N/A
Indirect	\$ 15,000	\$5,000 annually