

Project Title: Comprehensive 2-year abatement program for reducing the feral hog population in Hays County and Caldwell County, Texas

A. Project Description

1. Project Background

Feral hogs are one of the greatest wildlife damage management challenges in the United States. Feral hogs have established themselves across Texas and pose a variety of challenges, including direct deposition of bacteria; stream bank destabilization; agricultural damage; predation of livestock, pets and wildlife; transmission of disease and parasites; and environmental damage to both urban and rural environments. The National Feral Swine Mapping System (USDA-APHIS) reports 37 states with established populations of feral hogs. Nationwide, the population is now estimated at more than 4 million animals with an estimated 2.6 million in Texas alone, making them one of the most abundant large invasive animal species to be found in the United States at present. These animals have caused such concern at the national level that they have received specific attention from the Office of the President; Executive Order 13112 was issued to all federal agencies. This Executive Order calls upon agencies “whose actions may affect the status of invasive species” to detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner” through “eradicating, suppressing, reducing, or managing invasive species populations, preventing spread of invasive species from areas where they are present.” Only four terrestrial vertebrate species are classified by the USDA National Invasive Species Information Center as invasive species; one of these is the feral hog.

In Texas, the effects of feral hog activities on water resources include increased sediment, bacteria and nutrient loads, algae blooms, oxygen depletion, bank erosion, and habitat destruction. In areas where high numbers of hogs are present or where animals spend a significant portion of their time in and near streams, they can be a major contributor of bacteria and nutrients, which can substantially impact water quality. In addition to water quality issues, destruction of riparian habitat for native wildlife and the predation of wildlife is a concern for keeping ecosystems intact. The yearly damage and control costs have been reported to be >\$1.5 billion across the United States, annually. However, these values are far underestimated, as the monetary effects of problems associated with erosion, nutrient cycling, and water quality are just now being assessed by researchers. Feral hogs have caused a high level of economic, biologic, and natural resource damage as their numbers rapidly expand and their impact is now considered a national threat. The Texas A&M AgriLife Extension Service estimates that statewide annual economic damage caused by feral hogs is \$500 million.

Caldwell County Feral Hog Task Force

The Caldwell County Feral Hog Task Force (CCFHTF) consists of local landowners and includes representatives of the following businesses and organizations:

Plum Creek Watershed Partnership
USDA-Farm Service Agency
USDA-Natural Resources Conservation Service

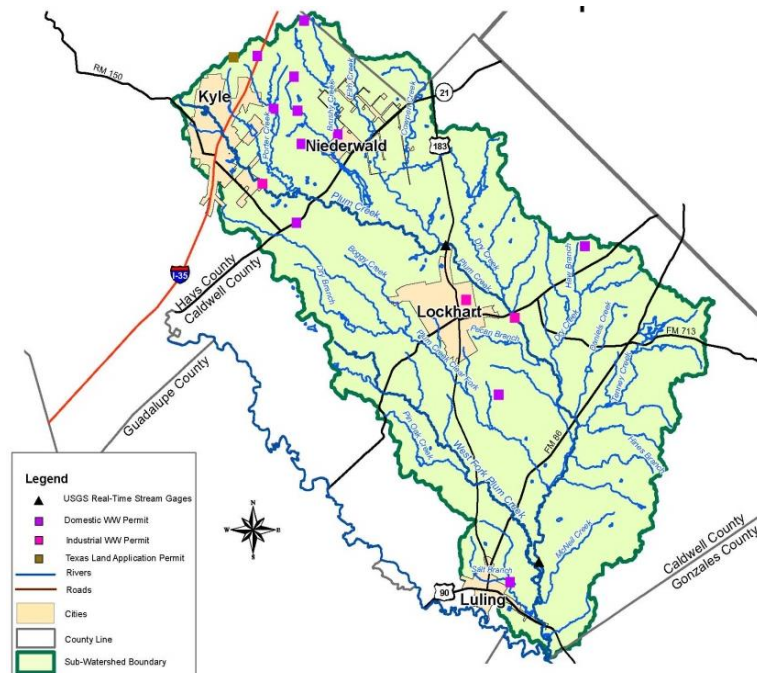
USDA-Wildlife Services
Texas Master Naturalist
Texas Parks and Wildlife Department
Texas A&M AgriLife Extension Service
Helicopter Tours of Texas
BSA Security Training
SH 130 Concession Company
Texas State Soil and Water Conservation Board
Guadalupe Blanco River Authority
Local City and County Officials

The CCFHTF was formed as an ad hoc community stakeholder group in 2013 in response to the severity of impacts felt by local landowners and citizens as a direct result of a large feral hog population that continues to expand its territory throughout Caldwell County. A Leadership Committee was voted upon by members attending the group's third meeting in May of 2013. On May 28, 2013, the Caldwell County Commissioner's Court, through resolution 16-2013, established the CCFHTF as an official Caldwell County Task Force. Resolution 16-2013 directed the County to appoint a member to the CCFHTF Leadership Committee, pledged services and support for the group and outlined goals and objectives for the development of a 2-year Feral Hog Action Plan to be followed by a 3-year Feral Hog Maintenance Plan.

The Plum Creek Watershed

The Plum Creek watershed is located in Central Texas. Plum Creek rises in Hays County and runs south through Caldwell County, and eventually joins the San Marcos River at their confluence north of Gonzales County. Plum Creek is 52 miles in length and the watershed has an area of 389 mi². From the national Watershed Boundary Dataset, the Plum Creek watershed encompasses the entirety of the 10-digit hydrologic unit 1210020304.

According to the 2010 *Texas Integrated Report for Clean Water Act Sections 305(b) and 303(d)*, Plum Creek is impaired by elevated bacteria concentrations and exhibits nutrient enrichment concerns for ammonia, nitrate+nitrite nitrogen, and total phosphorus. A federal Clean Water Act (CWA) §319(h) grant from the Texas State Soil and Water Conservation Board (TSSWCB) and the U.S. Environmental Protection Agency was used to develop a Watershed Protection Plan (WPP) for Plum Creek which was published in



February 2008. Information about the WPP is available at <http://plumcreek.tamu.edu/>. Sources of pollutants identified in the Plum Creek WPP include urban stormwater runoff, pet waste, failing or inadequate septic systems, wastewater treatment facilities, livestock, wildlife, and invasive species (feral hogs). Both direct and indirect evidence indicates that feral hogs are major contributors to the bacteria impairment and nutrient concerns in the Plum Creek watershed. Recent analyses strongly suggest that these animals are a key source of nonpoint source (NPS) pollution to this stream. 2008 estimates in the Plum Creek WPP indicate that there were approximately 5,000 feral hogs in the Plum Creek watershed at the time, depending on seasonal conditions.

TSSWCB and Texas AgriLife Extension Service have invested monies for a comprehensive education campaign on feral hog management in the Plum Creek watershed addressing issues identified in the Plum Creek WPP. A full time Extension Assistant was hired to spearhead educational efforts in the watershed. Education outlets took several forms including: one-on-one technical assistance site visits to landowners; face-to-face community presentations with 3,792 attendees; development of web-based reporting tools to gather information on number of feral hog sightings, hogs removed, and methods of capture; news releases with an audience considered to be several hundred thousand people; 16 hardcopy peer-edited articles (listed below in c. Additional Information), 7 of which were translated to Spanish; over 35,268 combined internet downloads/reads of the peer-edited articles; 10 internet web-videos viewed over 115,000 times.

In order to build on the established, and continuing, education campaign, Project Partners will provide operational and technical assistance as well as financial incentives to landowners to remove feral hogs from the Plum Creek watershed and surrounding counties to include the entirety of Hays County and Caldwell County. While the education campaign has proved very successful to date, landowners continue to comment that the lack of assistance for direct control of feral hogs is a limiting factor in the adoption of action by landowners.

2. Project Objectives

The primary objective of this project is to provide operational and technical assistance as well as financial incentives to landowners for direct control of feral hogs to abate impacts on agricultural resources, personal property, native wildlife, riparian habitat and water quality in Caldwell County, Texas. This project will be coordinated and administered through the CCFHTF. Project Partners expect to achieve an overall reduction in invasive species (feral hogs) and associated impacts to natural resources in the county. Landowners and agricultural producers will benefit by reductions in agricultural crop damage and wildlife habitat damage due to feral hogs. This project will demonstrate a countywide, landowner “cooperative” approach to implementing a comprehensive and integrated feral hog control program.

Feral Hog Population and Management Goals

While the exact population of feral hogs in Caldwell County has not been established, statewide estimates range from 8.9 to 16.4 feral hogs per square mile in areas deemed as suitable feral hog habitat (Timmons et al., 2012). Using this range, and assuming that 79% (conservative statewide average from Timmons et al. 2012) of the land mass in Caldwell County would be suitable for

sustaining feral hog populations, the approximate population of feral hogs in Caldwell County could be expected to range between 3,846 and 7,086 feral hogs, with the average being 5,466.

Very little data are available to determine the current feral hog harvest rate for Hays or Caldwell County. The statewide feral hog harvest rate in Texas stands at 29%; however, recent models have shown that up to 66% of the population will need to be removed annually on a long-term basis (i.e., five years or more) to reach a stable population (Timmons et al., 2012). To achieve this goal in the two-county project area, roughly 8,100 feral hogs will need to be harvested annually from Hays and Caldwell County. To actually reduce the population, the annual harvest will have to be much greater. When applying statewide feral hog harvest rate to Hays and Caldwell County, this project will need to remove an additional 4,537 feral hogs annually on top of existing management efforts in the two-county project area just to maintain a stable population. These estimates would appear to be quite conservative, based on local knowledge of the area. As such, the feral hog harvest goals for this project in the two-county area are as follows:

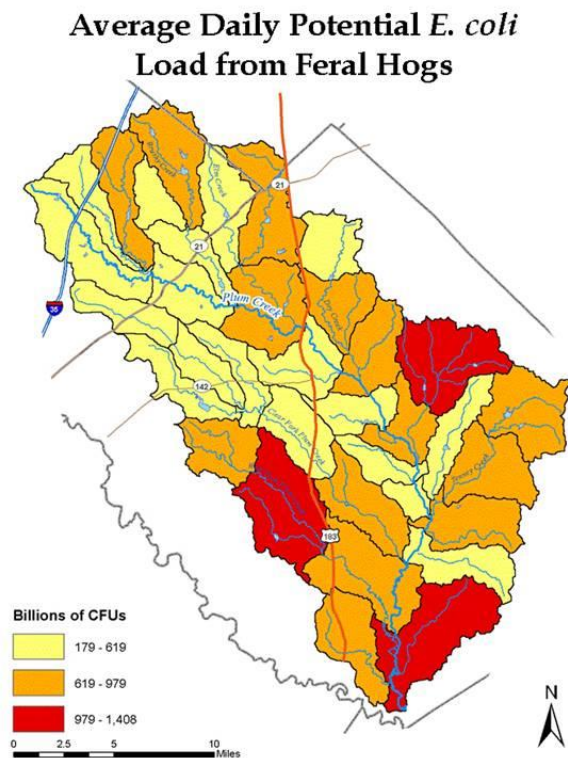
Year 1 = 6,100 feral hogs removed
Year 2 = 5,000 feral hogs removed

Project Partners have identified measurable performance items to evaluate the project, determine technical feasibility, and quantify the results of the project (listed below in #10 - Project Evaluation).

3. Project Methods

Location of Feral Hog Controls

The terms of use, installed locations of control methods and incorporation of aerial feral hog control will be considered at the discretion of the County Task Force. Primary considerations for placement and continued use include initial assessment of feral hog activity and damage, productivity of the control method once in place and cooperation of participating landowners. Every effort will be made to incorporate controls on contiguous properties to avoid the potential for feral hog population “safe havens”. While there is limited data for determining actual feral hog populations in the project area, land use and environmental data were used in the development of the Plum Creek WPP to model average daily potential *E. coli* loading from feral hogs in



sub-watersheds. Lands with the greatest potential for this type of pollutant loading will be considered key target areas when establishing a supporting landowner network for this project.

Trapping

This project will provide funds to purchase equipment for traps, design best suited traps (corral) and provide the technical assistance for trap (corral) installation on lands located within the jurisdictional boundaries of Hays and Caldwell County. Technical assistance and financial incentives will be provided to landowners through the Hays County Feral Hog Task Force and Caldwell Feral Hog Task Force.

While many landowners throughout Hays and Caldwell County are currently trapping feral hogs, the current level of trapping has not been sufficient to attain desired population control goals. As such, this project proposes to provide funds, materials and personnel to support the purchase and implementation of 10 Wireless Trapping Systems throughout the two-county area (see attached proposal). These traps would be made available to landowners within the project area at little or no cost.

Each county will contract with a two-person trapping team or approved contractor to install and operate the traps from October 1, 2013 through March 31, 2014 and again from October 1, 2014 through March 31, 2015. The traps will be available for approved, individual landowners to reserve and use April 1, 2014 through September 30, 2014 and starting again April 1, 2015.

Landowners utilizing the trapping systems during the 6-month contracted trapping period will be required to provide access to the trapping teams and pay a \$2 per hog trapped removal fee to the county providing the trapping system. During the 6-month contracted trapping period, possession of the hogs will be assumed by the contractors with the option for destruction/compost or resale of the hogs to an Approved Feral Swine Holding Facility (AFSHF).

Landowners utilizing the trapping systems outside of the 6-month contracted trapping period will be required to place a \$500 deposit for use of the trapping system and will be responsible for destruction/compost, personal consumption or resale of the hogs to an AFSHF. A \$50 per month fee will be paid by the landowner to the county providing the trapping system; however, financial hardship waivers will be considered by the individual County Task Force. Participating landowners must also agree to submit productivity reports on the trapping systems.

Landowner fees will be used to support current and future operations of the County Task Force.

Anticipated trapping rate = 30 feral hogs per month per trap
Estimated feral hogs removed from 2-year trapping program = 7,200

Aerial Control

Helicopter-based aerial control of feral hogs by the Texas Wildlife Services Program has proved successful in ecoregions with non-dense forest cover. Limited aerial control has been used in the Plum Creek watershed and elsewhere in Hays and Caldwell County. This project will provide funds to expand the use of aerial control in those portions of the two-county project area deemed appropriate for this management practice (see attached proposal). This project proposes to use a local company, Helicopter Tours of Texas (HToT), to provide this service. HToT has partnered with The BlackStone Group, LLC to provide highly trained aerial marksmen and has maintained a Texas Parks and Wildlife Department (TPWD), Aerial Wildlife Management Permit for 10 years.

Project Partners will work with landowners to develop a 150,000 acre cooperative agreement area to provide access for aerial control. Landowners with a desire to be included in the program will be required to pay an annual \$0.10 per acre fee. Participating landowners must also sign a mortality management agreement to ensure proper disposal/composting or personal consumption of feral hog carcasses when possible. This agreement will serve to minimize impacts to scavenger/predator populations and ensure that feral hog carcasses do not end up in waterways or public locations.

Landowner fees will be used to support current and future operations of the County Task Force.

Estimated feral hogs removed from 2-year aerial control program = 1,800

Feral Hog Round-Ups

The Texas Department of Agriculture (TDA) has designated October as Hog Out Month in Texas. As such, Project Partners intend to participate and mark this month with a variety of activities and promotions. This project proposes to hold an October Feral Hog Round Up in each Hays and Caldwell County. Project Partners will work with local feed stores to provide collection locations for receiving biological evidence (tails) of feral hogs harvested in each county. Project Partners will solicit local businesses to donate prizes and market the event. Cash prizes will also be provided to the top winners. This portion of the project will be supplied with funds received exclusively from the County budget allocation, landowner participation fees and local businesses. Funding received from each county's participation in 2012 TDA Hog Out County Grants Program may also be used toward this aspect of the project with no additional state funds requested.

Estimated feral hogs removed from 2-year Feral Hog Round-Up program = 2,000

Wildlife / Other

Texas A&M AgriLife Extension has conducted research demonstrating it is possible to exclude feral hogs from accessing wildlife feeding stations. In order to prevent feral hogs from eating corn and supplemental feeds intended for white-tailed deer, this project will provide funds to purchase equipment and provide technical assistance for installation of wildlife feeder

enclosures. These enclosures would be expected to serve as a large-scale deterrent as this food source is made less accessible to the local feral hog population.

The County Task Force will make up to 100 enclosures available to participating landowners through a TDA sponsored 50% cost-share program. This program will be marketed extensively to bring additional attention to the program and TDA among hunters and wildlife enthusiasts.

Estimated feral hogs removed from 2-year wildlife feeder enclosure program = 100

Live Removal and Carcass Disposal

Proper disposal of feral hogs is a critical aspect of any successful abatement program. Technical assistance provided through this project will aid landowners in proper disposal of trapped and killed feral hogs, primarily through burial or composting. Talks are underway with nearby AFSHF operators to donate a portion of their proceeds from feral hogs provided by this project to local food banks.

Reporting

Project Partners will use web-based reporting tools (already developed) to gather information on number of feral hog sightings, hogs removed, and methods of capture. Current reporting shows the removal of 1,859 hogs from the Plum Creek Watershed (<http://plumcreek.tamu.edu/feral-hogs/>). This number is likely much lower than the actual number of feral hogs removed from the area. Project Partners will work with landowners, Texas A&M AgriLife Extension, local Wildlife Management Associations and volunteer groups to expand the list of registered users of this reporting tool to gain more accurate information on the actual number of feral hogs removed from the two-county project area.

Project Partners will develop and distribute appropriate promotional and educational publications to promote this project for particular audiences such as landowners, local and regional governmental entities, non-governmental organizations, and policymakers. Project Partners will make appropriate edits to content matter at <http://feralhogs.tamu.edu/>, <http://plumcreek.tamu.edu/feral-hogs/>, and other websites to highlight this project.

The results of the project, due to the removal of feral hogs in the Plum Creek watershed, will ultimately reduce pollutant contributions to streams, increase plant cover in riparian areas, decrease erosion, reduce predation on wildlife and livestock, and improve the health and function of riparian systems.

4. Location and Size of the project area

Hays County

According to the U.S. Census Bureau, the county has a total area of 680 square miles (1,416.7 km²), of which 678 square miles (1,411.5 km²) is land and 2 square miles (5.2 km²)

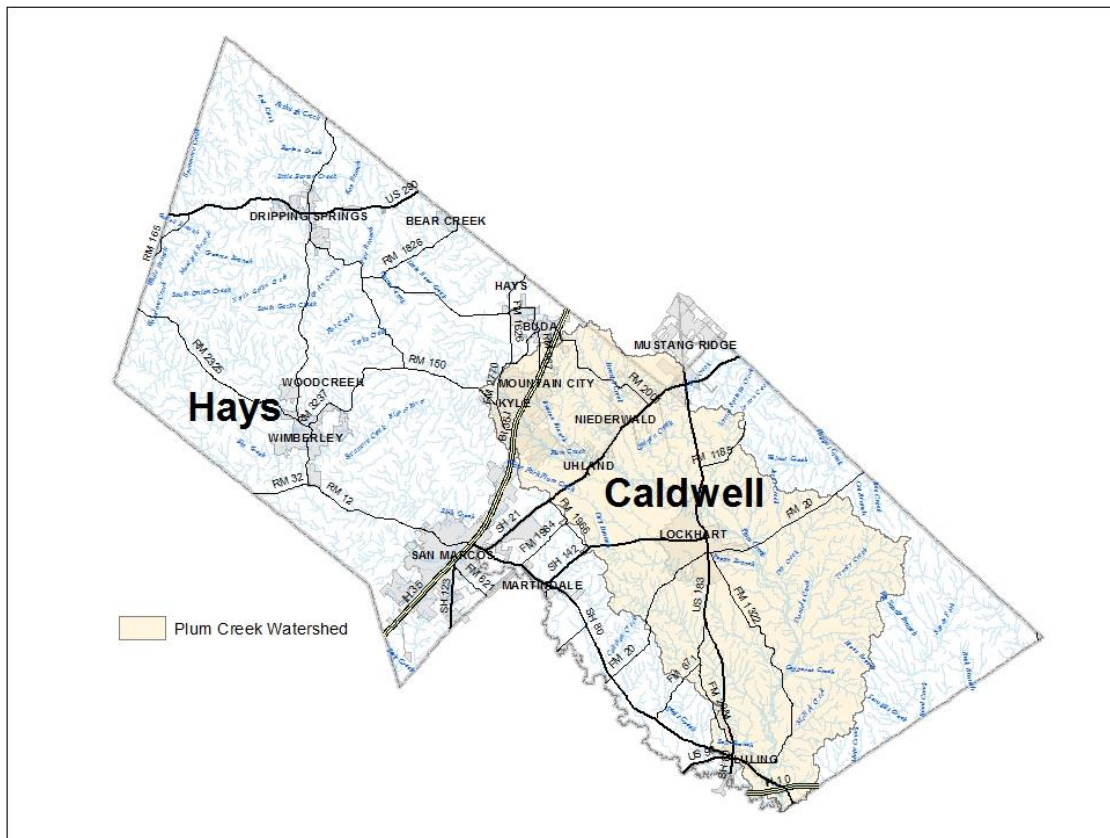
(0.31%) is water. The 2007 Census of Agriculture reports Hays County Land in Farms at 235,568 acres (248 square miles).

As of the 2010 census, there were 157,107 people residing in the county. The population density was 231 people per square mile. The county has shown some of the fastest growth in the nation, more than doubling over the past 20 years. From 1990 to 2000, the Hays County population increased 48.7%. From 2000 to 2010, the population increased an additional 61.0%.

Caldwell County

According to the U.S. Census Bureau, the county has a total area of 547 square miles (1,416.7 km²), of which 545 square miles (1,411.5 km²) is land and 2 square miles (5.2 km²) (0.31%) is water. The 2007 Census of Agriculture reports Caldwell County Land in Farms at 304,737 acres (476 square miles).

As of the 2010 census, there were 38,066 people residing in the county. The population density was 70 people per square mile. While much of the county is still considered rural, Caldwell County has shown significant growth over the past 20 years. From 1990 to 2000, the Caldwell County population increased 22.0%. From 2000 to 2010, the population increased an additional 18.2%.



5. Producer Participation

A review by NRCS indicates that over the past 6-7 years, there have been 130 participants in EQIP in the Plum Creek watershed in Caldwell County. Additionally, NRCS indicates there are 957 total farms in the Plum Creek watershed in Caldwell County. This is a 14% historical participation rate in traditional conservation programs associated with agriculture production. In January-February 2011, a small-scale feral hog abatement effort was conducted in two subwatersheds in the Plum Creek watershed. An estimated 94 cooperators representing 242 properties agreed to participate in the control effort. Wildlife Services removed over 370 feral hogs from the treatment area during two aerial control events.

Taking into account historical levels of participation in traditional NRCS conservation programs, as well as, participation in previous small-scale feral hog control efforts and on-going educational programming for feral hog management, Project Partners anticipate at least a 50% participation rate by landowners in the Plum Creek watershed for this project. The participation rate in the remainder of the two-county project area will likely be less; however, with significant media coverage in the area, expanded education and outreach activities in 2012, and a high demand for assistance with feral hog control a large number Hays and Caldwell County landowners are anticipated to participate in some aspect of this project. Technical assistance will be provided through this project to all landowners within two-county project area.

6. Project Action Plan and Timeline & 8. Project Deliverables/Products

Project duration: September 1, 2013 – August 31, 2015 (24 Months)

Task 1	Project Coordination and Administration			
Objective	To effectively administer, coordinate and monitor all work performed under this project including technical and financial supervision, and preparation of status reports.			
Subtask 1.1	The HCFHTF and CCFHTF will host coordination meetings or conference calls, at least quarterly, with Project Partners to discuss project activities, project schedule, communication needs, deliverables, and other requirements.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 1.2	Project Partners will each perform accounting functions for their portion of project funds and will submit appropriate Reimbursement Forms, and any TDA-required supplemental narratives to explain and support payment requests, to Hays County and/or Caldwell County at least quarterly.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 1.3	HCFHTF and CCFHTF, in coordination with Project Partners, will prepare and submit semi-annual progress reports to TDA.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 1.4	To increase awareness of and access to project information and educational materials, USDA-Wildlife Services and GBRA will add project-related content matter to the websites http://feralhogs.tamu.edu/ and http://plumcreek.tamu.edu/feral-hogs/ .			

	Start Date	Month 1	Completion Date	Month 24
Subtask 1.5	Project Partners will collaborate to develop an aggregate Final Report at the culmination of the project.			
	Start Date	Month 34	Completion Date	Month 24
Deliverables	<ul style="list-style-type: none"> • Reimbursement Forms and necessary documentation in hard copy format • Semi-Annual Progress Reports in electronic format • Final Report in electronic and hard copy formats • Project-related content matter on websites • Participation in at least one TDA Showcase or comparable TDA event 			

Task 2	Promotion and Implementation of Caldwell-Hays Feral Hog Action Plan			
Objective	To work with landowners to promote and implement a local feral hog control program in Hays and Caldwell Counties.			
Subtask 2.1	Caldwell County and Hays County will each hire a team of two Feral Hog Control Technicians or secure a contract with an existing company to install monitor and remove feral hogs from 10 wireless trapping systems (5 in each county) throughout two separate 6-month contracted trapping periods. These trapping periods will last from October 1, 2013 through March 31, 2014 and October 1, 2014 through March 31, 2015.			
	Start Date	Month 1	Completion Date	Month 2
Subtask 2.2	Wireless trapping systems will be made available to approved landowners for use outside of the 6-month contracted trapping periods. Landowners utilizing the trapping systems outside of the contracted trapping period will be required to place a \$500 deposit for use of the trapping system and will be responsible for destruction/compost, personal consumption or resale of the hogs to an AFSHF. A \$50 per month fee will be paid by the landowner to the county providing the trapping system. The HCFHTF and CCFHTF will oversee the proper funding and use of trapping systems by individual landowners.			
	Start Date	Month 1	Start Date	Month 24
Subtask 2.3	The HCFHTF and CCFHTF will develop and distribute flyers, brochures, news releases, and other appropriate promotional publications to promote the availability of technical assistance and financial incentives for feral hog control. The HCFHTF and CCFHTF will sign-up landowners as cooperators in this two-county feral hog control program; the HCFHTF and CCFHTF will have a goal to sign-up at least 50% of landowners in the Plum Creek Watershed and 25% of landowners outside the watershed to achieve a “critical mass” of acreage actively managed for feral hog control.			
	Start Date	Month 1	Completion Date	Month 24

Subtask 2.4	<p>The Feral Hog Control Technicians and/or contractor will coordinate to meet monthly with the HCFHTF and CCFHTF to discuss project activities. The Technicians will maintain regular communication with the Plum Creek Watershed Coordinator and participate in appropriate meetings of the Plum Creek Watershed Partnership. The HCFHTF and CCFHTF will work with commodity organizations, such as Texas and Southwestern Cattle Raisers Association, Independent Cattlemen's Association of Texas, and Texas Farm Bureau, to educate their members on mitigating feral hog damage on their properties.</p>				
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Subtask 2.5	<p>The Feral Hog Control Technicians and/or contractor, with guidance from the online reporting system and the Plum Creek Watershed Partnership, will conduct feral hog control activities in the two-county project area and provide operational and technical assistance on feral hog abatement to landowners using traps and other control methods. Technicians and/or contractor will report hogs removed through the reporting system. Approved landowners utilizing the trapping system outside of the 6-month contracted trapping periods will be required to report hogs removed through the reporting system as part of their agreement.</p>				
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Subtask 2.6	<p>The HCFHTF and CCFHTF with assistance from Project Partners, will assist landowners in the two-county project area in applying for and obtaining financial incentives for 1) the installation and use of county-provided wireless trapping systems and construction of additional feral hog traps, and 2) for the construction of enclosure fences to keep feral hogs from eating supplemental feeds intended for other animals (e.g., white-tailed deer). The HCFHTF and CCFHTF will develop necessary forms to facilitate the administration and tracking of fees and cost-share.</p>				
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Subtask 2.7	<p>The HCFHTF and CCFHTF will assess and deploy wireless trapping systems through a needs-based approach. Eligible landowners must complete an application for use of the trapping systems to include 1) feral hog trapping/hunting history, 2) current/historic damage from feral hogs, and 3) secure deposit and signed agreement</p>				
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Subtask 2.8	<p>During the 6-month trapping periods, possession of feral hogs trapped will be assumed by the Feral Hog Control Technicians and/or contractor. The Feral Hog Control Technicians and/or contractor. The resale of live feral hogs by the Feral Hog Control Technicians and/or contractor to an AFSHF will be allowed. If hogs are not taken to an AFSHF, proper disposal techniques for trapped and/or killed feral hogs will be practiced. Project Partners will explore mortality management issues associated with disposal of feral hogs by private landowners. HCFHTF and CCFHTF, in collaboration with other Project Partners, will develop and distribute mortality management materials to landowners.</p>				
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Subtask 2.9	The HCFHTF and CCFHTF will work with nearby AFSHFs to have these facilities donate a share of any proceeds received from feral hogs accepted as part of the Hays-Caldwell Feral Hog Action Plan to local food banks. A Hogs for the Hungry Program will benefit local communities and encourage more widespread participation in the Project.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 2.10	The HCFHTF and CCFHTF will evaluate properties for the use of aerial control of feral hogs. If aerial control is appropriate, the HCFHTF and CCFHTF will sign landowners up and acquire all necessary permissions to conduct aerial control. HToT will conduct helicopter-based aerial feral hog control. GPS will be acquired and reported of areas flown in order to monitor areas flown and feral hog removal over time for population trend information.			
	Start Date	Month 1	Completion Date	Month 24
Subtask 2.11	The HCFHTF and CCFHTF will work with County Commissioners and Local Businesses to organize and promote a 2013 and 2014 Feral Hog Round-Up during the month of October in each Hays and Caldwell County.			
	Start Date	Month 1	Start Date	Month 24
Deliverables	<ul style="list-style-type: none"> • Promotional publications, as developed and distributed • Summary of control efforts in two-county project area, including maps and numbers of feral hogs live-trapped and abated through aerial control • Summary of financial incentives utilized for traps and exclosures, including maps 			

7. Project Management

Project Partners	
Entity	Roles & Responsibilities
Hays County Feral Hog Task Force [HCFHTF]	Provide oversight and management of all project activities in Hays County and ensure coordination of activities with related projects in Caldwell County. Manage grant funds and report to TDA.
Caldwell County Feral Hog Task Force [CCFHTF]	Provide oversight and management of all project activities in Caldwell County and ensure coordination of activities with related projects in Hays County. Manage grant funds and report to TDA.
Texas Department of Agriculture [TDA]	Provide oversight and management of project funds. Work with HCFHTF and CCFHTF to ensure TDA goals are being met.
Plum Creek Watershed Partnership	Provide technical assistance and guidance for development of feral hog control program and project activities.

Hays County	Provide accounting services and financial oversight for all project activities in Hays County.
Caldwell County	Provide accounting services and financial oversight for all project activities in Caldwell County.

9. Benefits or Results Expected and Transferability

Project Partners expect to produce the following results or benefits. An overall reduction in invasive species (feral hogs) and associated impacts to natural resources which aids in accomplishing national objectives (i.e., Executive Order 13112). Landowners and agricultural producers will benefit by reductions in agricultural crop damage and wildlife habitat damage due to feral hogs. Entities responsible for water quality management will benefit by reductions in pollutant loadings (e.g., bacteria, nutrients, sediment) attributed to feral hogs. Specific implementation goals described in the Plum Creek WPP regarding feral hog control will be achieved. If an agreement with nearby AFSHF can be reached to donate proceeds from this project, benefits to economically-disadvantaged families relying on the food bank network will be achieved. The project will result in a sustainable and coordinated landowner-oriented feral hog control strategy in Hays and Caldwell County that can be transferred to other geographic areas. As described in the previous section in Tasks, progress during the project will be communicated via outreach activities to various local and statewide audiences. Measurable performance items to evaluate the project and quantify the results are described in the next section. Project Partners will also communicate results, after project conclusion, to 1) stakeholder groups across the state who have identified feral hog control as a strategy in WPPs and Total Maximum Daily Loads, and 2) federal, state, regional, and local governmental entities/agencies involved in feral hog control.

10. Project Evaluation

Project Partners will use the following measurable performance items to evaluate the project, determine technical feasibility, and quantify the results of the project.

- Pre-participation and post-participation surveys of landowners
- Number of feral hogs live-trapped and removed from watershed directly with funding through this project
- Number of feral hogs abated using aerial control
- Number of landowners signed up as cooperators in feral hog control and number of acres managed by these landowners
- Hours of technical assistance provided to landowners for feral hog control
- Demonstrated use of innovative technology to monitor feral hog activity and increase trapping efficiency
- Demonstrated beneficial use of proceeds from feral swine obtained by nearby AFSHFs through this project to fund local food banks

- Establishment of necessary infrastructure and capacity at both the local government level and individual landowner level to ensure long-term feral hog control in Hays and Caldwell County

B. Additional Information

Publications, selected

- Feral hog approved holding facility guidelines in Texas.* Texas A&M AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-488. November 2012.
- Feral hog population growth, density and harvest in Texas.* Texas A&M AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-472. August 2012.
- 2011 Annual Report on Managing Nonpoint Source Pollution in Texas.* TCEQ and TSSWCB. SFR-066/11. January 2012. <http://www.tsswcb.texas.gov/reports#nps>
- Plum Creek Watershed Protection Plan.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). February 2008. <http://plumcreek.tamu.edu/wpp/>
- Implementing Agricultural Nonpoint Source Components of the Plum Creek Watershed Protection Plan.* Project 08-07 Workplan. TSSWCB Nonpoint Source Grant Program. <http://www.tsswcb.texas.gov/managementprogram/browseactive>
- Surface Water Quality Monitoring and Additional Data Collection Activities to Support the Implementation of the Plum Creek Watershed Protection Plan.* Project 10-07 Workplan. TSSWCB Nonpoint Source Grant Program.
- Coordinating Implementation of the Plum Creek Watershed Protection Plan.* Project 11-07 Workplan. TSSWCB Nonpoint Source Grant Program.
- Feral Hogs Negatively Affect Native Plant Communities.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-467. January 2012. <http://plumcreek.tamu.edu/library/>
- Using Fences to Exclude Feral Hogs from Wildlife Feeding Stations.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5533. October 2011.
- Feral Hog Transportation Regulations.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-423. July 2011.
- Feral Hogs and Water Quality in Plum Creek.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-422. July 2011.
- Feral Hogs and Disease Concerns.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-421. July 2011.
- Feral Hog Laws and Regulations in Texas.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). SP-420. July 2011.
- Feral Hogs Impact Ground-nesting Birds.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). ESP-419. July 2011.
- Making a Feral Hog Snare.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5529. February 2011.
- Snaring Feral Hogs.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5528. February 2011.
- Door Modifications for Feral Hog Traps.* Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5527. February 2011.

Placing and Baiting Feral Hog Traps. Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5526. February 2011.

Box Traps for Feral Hogs. Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5525. February 2011.

Corral Traps for Feral Hogs. Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5524. February 2011.

Recognizing Feral Hog Sign. Texas AgriLife Extension Service (funding provided by TSSWCB to develop/publish). L-5523. February 2011.

C. Assessment of Environmental and Social Impacts

Feral swine impacts to the environment are well documented. Feral swine contribute significant bacterial (*E. coli*) loads to watersheds, change vegetative biomass and composition thus increasing runoff, serve as reservoirs for waterborne pathogens (toxoplasmosis, Brucella, influenza virus) and compete with native wildlife.

Effective control reduces both the number of feral swine on the landscape as well as the biomass of feral swine (Bodenchuk 2008). Long term control involves initial efforts to reduce numbers 66% or more followed by continued control in suitable feral swine habitat. Growth rates of uncontrolled feral swine populations indicate slow initial population growth (for 24 months) followed by exponential growth rates as subsequent litters begin breeding. While a host of environmental factors affect population growth, the number of piglets entering the population and surviving to first breeding is critical to slowing or reversing population growth. Control, based on adult removal only, will not check populations while integrated control targeting all segments of the population will effectively reduce populations.

Many stream segments in Texas have significant feral swine sourced bacteria. Data from the Welder Wildlife Foundation's refuge collected by USDA-APHIS National Wildlife Research Center indicate that feral swine spend significant time near water sources – of 17,000+ GPS locations, 24% were within 25m of water and 48% were within 100m (Campbell, pers. comm.). USDA-Wildlife Services (WS) data collected from the Leon River watershed indicate that feral swine sourced *E. coli* is pathogenic to both humans and livestock. In that area, 6 of 7 feral swine collected had *E. coli* strains that would be pathogenic to humans, while 4 of 7 had strains that would be pathogenic to livestock.

Trial control in the Plum Creek watershed in 2010 was conducted to determine the efficacy of control. Pre-control water sampling was conducted on two parallel tributaries (4 samples per tributary collected twice - 2 weeks apart - to determine if the two tributaries would serve as a treatment/no treatment pair). Feral swine were removed in 18,000 acres in one tributary with one water sampling conducted between the two aerial control efforts. Over 370 feral hogs were removed in the subject tributary. Two additional sampling periods were conducted post-control. *E. coli* levels were analyzed for each water sample and data were pooled for each stream. *E. coli* levels decreased 48% when comparing the treatment area with the no-treatment area while other bacterial levels did not increase as a result of the control.

Potential negative consequences of feral swine control are few. WS has initiated SOPs which preclude leaving carcasses in the water to decompose. With these SOPs in place, there is little risk of increased bacterial contamination as a result of feral swine control. In the above mentioned field trial, no additional bacterial loads were observed. In a similar control project in Hawaii, feral goats were aerial gunned and all environmental factors were monitored. In that project, the only observed environmental result was a one-week long spike in fly numbers.

WS analyzed the effects of feral swine control in its *Environmental Assessment for Predator Damage Management in the College Station District*, available at http://www.aphis.usda.gov/regulations/ws/ws_environmental_texas.shtml. While these actions could be categorically excluded from NEPA analysis under USDA-APHIS Implementing Regulations, WS analyzed predation management activities, including feral swine control, to determine if any adverse impacts might result. The analysis included all aspects of aerial and ground control methods (examining the effect of control on target populations, non-target and threatened/endangered species, humaneness and public safety) and concluded with a Finding of No Significant Impact (FONSI). The FONSI recognizes that significant adverse impacts will not occur, but WS believes that positive impacts will occur. Controlling feral swine will reduce bacteria and other pathogens in the watershed, allow plant succession to resume and reduce soil erosion; all benefitting the water quality in Plum Creek. Additionally, benefits to native wildlife and agricultural crops would be expected.

These environmental and social impacts are summarized in the table below:

Resource Concern	Adverse Impacts	Plans for Minimizing Adverse Impacts	Beneficial Impacts
Soil	If hogs are killed on-site, potential soil quality impacts.	Mortality management should address this concern and prevent or reduce these impacts.	Removal of feral hogs will reduce streambank erosion.
Water	If hogs are killed on-site, potential water quality impacts.	Mortality management should address this concern and prevent or reduce these impacts.	Removal of feral hog will reduce excessive levels of nutrients, suspended sediment, and pathogens in surface water.
Air	If hogs are killed on-site, potential air quality impacts.	Mortality management should address this concern and prevent or reduce these impacts.	
Plants			Removal of feral hogs will increase native plant growth in riparian corridor and reduce damage to agricultural crops.
Animals			Removal of feral hogs will reduce predation on native wildlife.

Resource Concern	Adverse Impacts	Plans for Minimizing Adverse Impacts	Beneficial Impacts
Human (economic and social)	Costs of feral hog removal. Long-term viability of sustained abatement of hogs.	This project will explore these costs and develop strategies to mitigate costs.	Removal of feral hogs will have positive impacts on soil, water, plant, and animal resources on which people depend for subsistence, employment, and recreation. Damage by feral hogs to crops, livestock, and wildlife will be reduced, increasing the profitability of those resources.

D. Budget Information

See Attached Spreadsheet for detailed information

State (TDA Grant)	\$745,793.50	% of total project	90.5
Non-State (Cooperator Match)	\$78,300.00	% of total project	9.5
Total Project Cost	\$824,093.50		

Category	State	Match	Total
Personnel	0	0	0
Fringe Benefits	0	0	0
Travel	13,560.00	0	13,560
Equipment	34,295.50	7,500.00	41,795.5
Supplies	12,000.00	0	12,000
Contractual	685,938.00	0	685,938
Construction	0	0	0
Other	0	70,800.00	70,800
Total Direct Costs	745,793.5	78,300	824,093.5
Indirect Costs	0	0	0
Total Project Costs	\$745,793.5	\$78,300	\$824,093.5

E. Attachments

1. Budget Spreadsheet
2. Wireless Traps Proposal
3. Helicopter Tours of Texas Proposal
4. Ortiz Game Management and Wildlife Development Proposal