

Development and Implementation of an Environmental Training Program for Manure and Compost Haulers/Applicators in the Texas High Plains

Texas Cattle Feeders Association
Texas AgriLife Extension Service
Texas AgriLife Research
West Texas A&M University
FY09 CWA Section 319(h)

Quarterly Report Number 3 (cumulative)

Covering accomplishments October through December, 2010
January 14, 2011

TASK 1: Project Administration

Subtask 1.1 TCFA/ AgriLife Extension will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 15th of January, April, July and October. QPRs shall be distributed to all project partners. (Start Date: Month 1; Completion Date: Month 36)

- Procedures have been implemented to collect project information and work accomplished for each task and subtask.**
- 1st quarterly report – submitted to TSSWCB on April 13, 2010.**
- 2nd quarterly report – submitted to TSSWCB on July 15, 2010**
- 3rd quarterly report – submitted to TSSWCB on October 13, 2010**
- 4th quarterly report – submitted to TSSWCB on January 14, 2011**

25% Complete – On-going

Subtask 1.2 TCFA will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly. (Start Date: Month 1; Completion Date: Month 36)

- Contract in place between TSSWCB and TCFA.**
- Subcontract in place between TCFA and Texas AgriLife Extension Service/Texas AgriLife Research.**
- Subcontract in place between TCFA and West Texas A&M University.**
- TCFA controller has been briefed on the project and will be the lead person for tracking, billing and fiscal reporting.**
- TCFA controller has been working with TSSWCB staff and TCFA's auditor to help ensure correct tracking and submission of project-related expenses.**
- The first invoice for project activities was submitted to TSSWCB by TCFA in August 2010.**
- MBE/WBE forms were submitted to TSSWCB by TCFA in Oct. 2010.**
- Invoices from Texas AgriLife Research have been received, processed, and included in TCFA invoices submitted to the TSSWCB.**

25% Complete – On-going

Subtask 1.3 TCFA/ AgriLife Extension will attend and participate in public meetings, such as watershed stakeholder meetings, Clean Rivers Program meetings, and Soil and Water Conservation District (SWCD) meetings, in order to communicate project goals, activities and accomplishments to affected parties. (Start Date: Month 1; Completion Date: Month 36)

- The first Project Advisory Group meeting and project kick-off was held June 16, 2010 at the Texas A&M Research and Extension Center in Amarillo. Slide sets presented at the meeting are attached hereto and will be provided to our project webmaster, Jaclyn Tech, for subsequent publication. A list of attendees (n=26) is attached hereto.**
- Project description and goals presented at the annual Texas Cattle Feeders Association convention held in Oklahoma City, Oklahoma on October 24-26, 2010. attendees (~300)**
- Poster exhibit and a short 2 page project description were presented at the Texas Soil and Water Conservation District directors meeting in Lubbock, Texas on October 25-26, 2010.**

- **The second Project Advisory Group meeting was held January 5, 2010 at the Texas A&M Research and Extension Center in Amarillo. Slide sets presented at the meeting are attached hereto and will be provided to our project webmaster, Jaclyn Tech, for subsequent publication. A list of attendees (n=29) is attached hereto.**
- **Poster exhibit and a short 2 page project description will be presented at the Texas Cotton Growers Association trade show scheduled for March 31-April 1, 2011**

25% Complete – On-going

Subtask 1.4 The TCFA/ AgriLife Extension will host coordination meetings through video conferencing or other means with TSSWCB, project partners, and any subcontractors, as appropriate, at least quarterly in the first year to discuss project activities, project schedule, communication needs, deliverables and other requirements. Meetings will be held as needed in the second and third year of the project. (Start Date: Month 1; Completion Date: Month 36)

- **Project management team conference calls were held on April 26, 2010, and June 1, 2010, with representatives from TSSWCB.**
- **A project management team (TSSWCB/TCFA/Texas AgriLife Extension Service/Texas AgriLife Research/West Texas A&M University) planning meeting was held following the Project Advisory Committee meeting on June 16, 2010.**
- **Project members met on July 7, 2010 at the Texas AgriLife Extension Center in Amarillo to work on finalizing demonstration site selection and treatments to develop QAPP.**
- **Project members from Texas AgriLife Extension Service Amarillo, TCFA, and Texas AgriLife Research Vernon had a meeting to discuss possible demonstration sites and the writing of the QAPP on July 27, 2010 at the AgriLife Research and Extension Center in Amarillo Tx.**
- **Project management team conference call was held on August 9, 2010 with representatives from TSSWCB.**
- **Project Manager Kevin Heflin met with PI's to discuss demonstration sites and QAPP progress on September 13, 2010.**
- **Project members from Texas AgriLife Extension Service Amarillo, and TCFA, had a meeting, on October 4, 2010, to discuss soil samples taken at one of the demonstration sites located in the Palo Duro Creek watershed.**
- **Project Members meet on October 14, 2010 to discuss the current draft of the QAPP.**
- **Project Members from Texas AgriLife Extension Service meet on November 22, 2010 to discuss the current draft of the QAPP.**
- **Project members from TCFA, WTAMU, and Texas Agrilife Research and Extension Service assembled at the Texas Agrilife Research facility, at Bushland Texas October 18-20, 2010, to determine the optimal method for calibrating a manure spreader.**
- **Project management team conference call was held on December 1, 2010 with representatives from TSSWCB.**
- **Project members met on January 3, 2011 to discuss the upcoming project advisory meeting on January 5, 2011.**
- **The second Project Advisory Group meeting was held January 5, 2010 at the Texas A&M Research and Extension Center in Amarillo.**

20% Complete – On-going

Subtask 1.5 TCFA/AgriLife Extension will develop and disseminate project informational materials, including, but not limited to, flyers, brochures, letters, news releases, and other appropriate promotional publications. As appropriate, TCFA will include information about the project in the TCFA e-Newsletter, in TCFA membership mailings, at the TCFA Annual Convention, and at the Annual Meeting of Texas SWCD Directors (TSSWCB must approve all announcements, letters and publications prior to distribution). (Start Date: Month 1; Completion Date: Month 36)

- **A news release coinciding with the Project Advisory Group/project kick-off meeting on for June 16, 2010, was published in the Amarillo Globe-News on June 23, 2010. The article is available on the web at http://www.amarillo.com/stories/062310/new_news9.shtml. The**

release was also picked up by *Manure Manager* magazine for their on-line edition on June 22, 2010; the weekly TSSWCB e-update on June 23, 2010; and the TCFA newsletter on June 25, 2010.

- A draft project overview handout was developed by TCFA and AgriLife for publication on the project website and to be used as a handout at the Soil and Water Conservation Districts Annual Meeting in Lubbock, Texas on Oct. 25-26 and at the Texas Cattle Feeders Association Annual Convention in Oklahoma City on Oct. 25-26.

20% Complete – On-going

Subtask 1.6 AgriLife Extension will develop (months 1-3), host and maintain (months 4-36) an internet webpage for the dissemination of project information. (Start Date: Month 1; Completion Date: Month 36)

- Ms. Jaelyn Tech (Texas Water Resources Institute), who assembled and managed the Buck Creek 319(h) web site, has agreed to serve as our project webmaster. A Texas A&M AgriLife internal contract has been submitted for final approval of the arrangement. A Linux-based, 100GB virtual machine/web server was to have been established for the project by now, but internal delays with the Information Technologies group on the main Texas A&M campus have pushed this task back. In the meantime, materials are being collected for immediate publication.
- Project members from TCFA and Texas AgriLife Extension meet on December 14, 2010 to discuss website design and implementation.
- Texas Water Resources Institute has agreed to temporarily host the project website until the Information Technologies group at Texas A&M University can allocate web server support. Brent Auvermann will be traveling to Texas A&M University on February 16, 2011 to further discuss the design of the website with Ms. Jaelyn Tech.

10% Complete – On-going

Subtask 1.7 AgriLife Extension will hire a Project Manager to coordinate and manage the work of project partners and subcontractors, to facilitate the project advisory group, to assist with the environmental knowledge assessment, to lead the development of the environmental training curriculum, to lead program delivery, and to assist with BMP effectiveness monitoring. (Start Date: Month 1; Completion Date: Month 4)

- Mr. Kevin Heflin, Extension Associate, has been hired internally as the Project Manager of record, and he has been involved with all site tours and project activities. Additional support will be provided by Gary Marek and Jack Bush (Research Associates) and Brad Wilhite (Technician II) as needed.

100% Complete – On-going

Subtask 1.8 TCFA, in collaboration with project partners, will develop and submit a Final Report at the culmination of the project. This final report will document project performance related to each project goal and measure of success. A draft of this final report will be submitted to TSSWCB for review prior to completing the document. (Start Date: Month 34; Completion Date: Month 36)

0% Complete – On-going

TASK 2: Quality Assurance

Subtask 2.1 AgriLife Extension / AgriLife Research will develop a QAPP for activities in Task 9 consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5) and the TSSWCB Environmental Data Quality Management Plan.

All monitoring procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in the TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue (RG-415) and

Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416). (Start Date: Month 1; Completion Date: Month 6)

- A project QAPP is under development. The QAPP will include provisions consistent with other recently developed QAPPs for monitoring, sample collection and laboratory analysis.**
- The QAPP cannot be finalized and submitted until all field sites have been selected and all sampling/analysis activities decided. As detailed below, project leadership has conducted three separate site-reconnaissance tours with County Extension Agents (CEAs) in Deaf Smith, Wheeler, and Collingsworth Counties; and project leadership met in Amarillo on July 7, 2010, to prioritize sites desired and activities planned for each site. CEAs will be engaged following the July 7 meeting to contact landowners and request access to desired sites.**
- CEAs actively engaged in selecting and arranging our demonstration sites are Rick Auckerman (Deaf Smith), Dale Dunlap (Collingsworth), Kenny Brdecko (Wheeler), and Leonard Haynes (Donley).**
- Demonstration sites have been selected in Donley, Deaf Smith, and Wheeler counties.**
- The first draft (dated 9/22/2010) of the QAPP has been circulated for review and editing among the project management team.**
- QAPP was submitted for review and comments to the TSSWCB on November 12.**
- QAPP was returned to project members with comments on January 4, 2011 and is currently being reviewed and will be resubmitted with corrections to TSSWCB.**

90% Complete – On-going

Subtask 2.2 AgriLife Extension / AgriLife Research will submit revisions and necessary amendments to the QAPP as needed. (Start Date: Month 7; Completion Date: Month 36)

0% Complete – On-going

TASK 3: Environmental Knowledge Assessment

Subtask 3.1 AgriLife Extension will prepare a survey instrument, as appropriate, to assess the current level of environmental understanding and employee training offered by manure/compost haulers. (Start Date: Month 1; Completion Date: Month 5)

- We have decided to prepare two survey instruments. The first will be an in-person interview of manure haulers to describe current practices and assess spreader-calibration activities. The second will be directed to farmers and will assess basic knowledge of soil and manure testing as it relates to water quality.**
- A set of survey questions has been adapted from an existing, working document on manure quality developed by Sharon Sakirkin. Further development is planned for the third quarter.**
- Based on input received at the Jan. 5, 2011 Project Advisory Group meeting, three surveys will be finalized in the 1st quarter of 2011 (feedyards, manure/compost contractors, and farmers).**

35% Complete – On-going

Subtask 3.2 AgriLife Extension will update existing lists of manure/compost haulers in the Texas High Plains and conduct a pre-survey by mail, phone or in person (if needed) with haulers. (Start Date: Month 4; Completion Date: Month 9)

- An existing list of custom manure/compost haulers/applicators developed by TCFA and Texas AgriLife Extension Service as part of past projects is being reviewed and updated.**
- In advance of the Jan. 5, 2011 Project Advisory Group Meeting, feedyard managers were asked to invite manure/compost contractors to the meeting. The list of contractors has been expanded and includes current contract information.**

60% Complete – On-going

Subtask 3.3 AgriLife Extension will establish current state-of-knowledge by haulers for environmental management and training through compilation of pre-survey results and development of an interpretive summary. (Start Date: Month 9; Completion Date: Month 11)

0% Complete – On-going

Subtask 3.4 AgriLife Extension will conduct a post-survey of manure/compost haulers to assess adoption and implementation of BMPs and employee/equipment operator training programs. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

TASK 4: Project Advisory Group

Subtask 4.1 TCFA will meet with AgriLife Extension specialists and Extension agents in Potter, Lubbock and Wilbarger counties and USDA-NRCS Zone 1 personnel to brief them on the objectives of the project, to solicit nominations for the advisory group and to identify potential demonstration sites and potential crop producer collaborators. (Start Date: Month 1; Completion Date: Month 3)

- CEAs and NRCS Zone 1 personnel attended the June 16 project kickoff meeting in Amarillo and were briefed on the objectives of the project. Attendees provided guidance for preferred BMP emphasis. CEA-facilitated watershed tours were conducted in Deaf Smith (Tierra Blanca and Palo Duro Creeks; June 22), Collingsworth (Buck Creek; July 1), and Wheeler (Sweetwater Creek; June 14) Counties.**
- The project overview handout will be disseminated at the SWCD Annual Meeting on Oct. 25-26 and copies of the project overview will be emailed to the USDA-NRCS Zone 1 personnel.**
- Representatives from the NRCS and SWCD offices in Amarillo participated in the Jan. 5, 2011 Project Advisory Group meeting.**

25% Complete – On-going

Subtask 4.2 TCFA will identify members for the project advisory group. The advisory group will, at a minimum, consist of CAFO operators, manure and compost haulers, livestock industry organizations (i.e., Texas Farm Bureau (TFB), Texas Association of Dairymen (TAD), Texas and Southwestern Cattle Raisers Association (TSCRA), commodity organizations (i.e., Corn Producers Association of Texas, Plains Cotton Growers, Texas Grain Sorghum Producers Board), AgriLife Extension, TSSWCB, SWCDs, Texas Department of Agriculture (TDA), U.S. Department of Agriculture- Natural Resources Conservation Service (USDA-NRCS), Certified Crop Advisors (CCAs) and crop producers, stakeholders of the pilot watersheds (Buck Creek and Sweetwater Creek) and demonstration site cooperators. (Start Date: Month 1; Completion Date: Month 6)

- The Project Advisory Group met in Amarillo on June 16, 2010.**
- The Project Advisory Group met in Amarillo on January 5, 2011. A copy of the meeting notes taken at the meeting are attached hereto.**

80% Complete – On-going

Subtask 4.3 TCFA shall host meetings and/or conference calls of the project advisory group at least twice in the first year and annually thereafter. (Start Date: Month 6; Completion Date: Month 36)

- The first Project Advisory Group meeting was June 16, 2010, in Amarillo.**
- The second meeting for the Project Advisory Group was held in Amarillo on January 5, 2011 at the Texas AgriLife Research and Extension Center.**
- The third meeting for the PAG is tentatively scheduled for September 2011 and will include a site visit to the water quality demonstration in Deaf Smith County.**

25% Complete – On-going

Subtask 4.4 The project advisory group will discuss and prioritize criteria for selection of demonstration sites and provide input on the evaluation of BMP effectiveness. BMPs for protection of wellheads and sensitive areas, type of manure/compost application equipment and measurements of compaction, nutrient stratification and nutrient availability in no-till vs. conventional tillage, nitrogen mineralization rates, and other demonstration concepts. (Start Date: Month 6; Completion Date: Month 12)

- **Discussions of this kind took place during the project kickoff meeting on June 16, 2010. Preferred emphases were tillage, manure and soil sampling, credit for residual soil nutrients, and nutrient mobilization/immobilization.**

80% Complete – On-going

Subtask 4.5 The project advisory group shall review project objectives, provide input on project activities; provide input into development of an environmental training curriculum for manure/compost haulers, program delivery, and CEU processes. (Start Date: Month 11; Completion Date: Month 16)

- **At the 2nd meeting of the project advisory group (PAG), members suggested that the compost application rate be increased within the 1 acre plots that will be used in the water quality demonstration.**
- **The PAG also suggested more soil samples within the demonstration plots used in the water quality demonstration. According to the PAG this could help explain the differences in soil phosphorus numbers between demonstration plots.**
- **The PAG also suggested additional manure application calibration events to be scheduled with commercial applicators.**

30% Complete – On-going

TASK 5: Manure Spreader Calibration Kits

Subtask 5.1 TCFA will identify options for field calibration of manure/compost spreader trucks. Options may include single-pass calibration using the calibration kits to be assembled in Subtask 5.2 and/or calibration using a whole-truck method (scale weights and area to which manure/compost has been applied). (Start Date: Month 4; Completion Date: Month 9)

- **TCFA staff have initiated a search of existing materials and methods to identify options and assemble prototype kits for field calibration.**
- **Prototype kits for field calibration have been assembled and field tested.**
- **Additional field testing of scales, tarps, tarp configuration, etc. is scheduled for Oct. 18-22, 2010 in Bushland, TX.**
- **The single pass calibration method was tested in the field on October 18-20, 2010 at the Texas AgriLife Research facility in Bushland Texas. Project personnel attempted to estimate the precision of the single pass calibration method by capturing the manure on tarps placed in the path of the manure truck during manure applications. The tarps varied in size, and were placed in different locations along the centerline path of the manure truck. The tarps ranged in size from 28"x28" (aspect ratio 1:1), 56"x56" (aspect ratio 1:1) and 28"x112" (aspect ratio 1:4). In the 11 calibration test runs conducted the aspect ratio of the tarps appeared to be the determining factor in the precision of the estimate. The demonstrations preliminary results were presented at the second Project Advisory Group meeting held on January 5, 2010 at the Texas A&M Research and Extension Center in Amarillo. Slide sets presented at the meeting are attached hereto.**

50% Complete – On-going

Subtask 5.2 TCFA will assemble manure/compost spreader truck calibration kits. Thirty kits to be assembled initially. Distribute one calibration kit to each manure/compost hauling company in Texas High Plains at no charge at public project events. Additional kits will be provided at a nominal charge. (Start Date: Month 9; Completion Date: Month 16)

- **The main components of the calibration kits have been acquired and are being field tested. After field validation, material lists for the calibration kits will be finalized.**

30% Complete – On-going

Subtask 5.3 AgriLife Extension will verify field-scale technique for whole-truck calibration. This method would serve as a complement to the single-pass calibration kits and would require gross wt., tare wt., effective spreader width and length of spreader travel. (Start Date: Month 5; Completion Date: Month 12)

- Texas AgriLife Extension has scheduled a field scale calibration event for September 2010. Calibration kits will be assembled and used to demonstrate calibration techniques with raw and composted cattle manure.**
- Field –scale whole truck calibration event has been moved to October 18-22, 2010.**
- Prototype calibration kits were field tested August 23, 2010, at the Texas AgriLife Research station at Bushland Texas, to determine optimal methods for manure spreader calibration, and to assess the calibration kit materials. The spreader truck capacity, manure spreading width, travel speed, chain speed, and travel distance were also evaluated to determine optimal settings for the October calibration event. TCFA, Texas Agrilife Extension Amarillo, and WTAMU participated in the event.**

50% Complete – On-going

TASK 6: Curriculum Development

Subtask 6.1 TCFA/ AgriLife Extension will produce educational materials, pamphlets and video (if appropriate) to provide for concise and accurate descriptions of manure calibration equipment options. Types of materials will be determined by the project advisory group (TSSWCB must approve all educational materials prior to distribution). (Start Date: Month 13; Completion Date: Month 36)

- High Definition video and pictures will be taken at the field scale calibration event as described in subtask 5.3. Video and pictures will be used to produce educational materials detailing appropriate manure spreader calibration techniques.**
- High Definition video and pictures were taken at the field calibration event on October 18-22, 2010. Some of the pictures have been used in the slide sets presented at the January PAG meeting and are attached hereto.**

0% Complete – On-going

Subtask 6.2 AgriLife Extension will deploy educational materials at a national scale through the Livestock and Poultry Environmental Learning Center and the Extension Community of Practice (www.extension.org). (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

Subtask 6.3 AgriLife Extension will provide a template for field-level feedback from manure and compost haulers to verify implementation of single-pass and whole-truck methods. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

TASK 7: Demonstration and Program Delivery

Subtask 7.1 Select 3 to 4 demonstration sites based on the recommendations of the advisory group. Factors in selection of demonstration sites may include crop types, soil types, manure vs. compost, application rates, location of water wells, ability to sample down-gradient soils and date of previous manure/compost application, if any. At least 1 demonstration site will be selected within

- the Buck Creek Watershed and at least 1 demonstration site will be selected within the Sweetwater Creek Watershed. (Start Date: Month 1; Completion Date: Month 9)
- Initial contact has been made with County Extension Agents in several locations throughout the Texas High Plains to encourage them to begin identifying potential landowners to serve as project collaborators/demonstration sites.**
 - Potential demonstration sites have been identified in Donley, Wheeler, and Deaf Smith Counties following tours conducted by CEAs.**
 - A plan of action for each potential demonstration site has been discussed by PIs and will be conveyed to the CEAs before they meet with the landowners.**
 - County Extension Agents will be tasked with making first contact with landowners to determine willingness to cooperate.**
 - Potential demonstration sites were visited in Wheeler County on July 23, 2010. CEA Kenny Brdeko identified possible demonstration locations and a cooperative land owner in Wheeler County with land located in the Sweetwater Creek watershed. Project team members met with additional landowners and identified potential demonstration sites. A series of good site locations were identified and landowner approval/cooperation was obtained.**
 - Potential demonstration sites were visited in Donley County on August 3, 2010. CEA Leonard Haynes identified possible demonstration locations and a cooperative land owner in Donley County with land located in the Buck Creek watershed. Project team members met with a landowner, with intentions for this location to serve as the surface water quality evaluation. Two weeks later, the landowner declined to participate.**
 - On August 27, 2010, Ben Weinheimer visited with additional landowners in Donley County and met with feedyard managers at two feedyards in that area.**
 - Potential demonstration sites were visited in Deaf Smith County on September 9, 2010. PI's and project manager confirmed landowner participation in the project for both soil sampling and surface water quality evaluations. The help of Mr. Rick Auckerman, CEA-Deaf Smith County, was key to securing landowner cooperation.**
 - All demonstration site locations in Deaf Smith, Donley and Wheeler Counties have been selected and landowner cooperation has been confirmed.**

90% Complete – On-going

Subtask 7.2 Train custom manure hauler owners, equipment operators, certified crop advisors and crop producers on the principles of environmental management for land application of manure. (Start Date: Month 14; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.3 TCFA/ AgriLife Extension will host field days at each demonstration site at least once in Year 2 and once in Year 3. (Start Date: Month 13; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.4 TCFA will organize, in conjunction with all project partners, six seminars/workshops across the Texas High Plains for program delivery in Year 3. (Start Date: Month 13; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.5 TCFA will provide project results to state livestock organizations in Oklahoma, New Mexico, Kansas, Colorado and Nebraska. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.6 TCFA will present results of the project to the Property Rights and Environmental Management Committee at a National Cattlemen's Beef Association Annual Convention. (Start Date: Month 29; Completion Date: Month 30)

0% Complete – On-going

TASK 8: Technical Assistance

Subtask 8.1 Utilize group workshops, field days and hands-on demonstration of BMPs and ensure availability of education materials through websites. Notify custom manure haulers of the availability of on-site technical assistance and field training for owners and operators, and encourage implementation of USDA-NRCS conservation practices by landowners through the Environmental Quality Incentives Program (EQIP). (Start Date: Month 8; Completion Date: Month 12)

- **As of the Jan. 5, 2011 PAG meeting, the list of contractors has been expanded and includes current contract information. Additional work will be done the in 1st quarter of 2011 to finalize the contact list.**

25% Complete – On-going

Subtask 8.2 AgriLife Extension will establish a system of tracking and providing notifications on the availability of technical and financial assistance (i.e., mail, email, website subscription) to custom manure and compost haulers in the Texas High Plains region. (Start Date: Month 13; Completion Date: Month 36)

20% Complete – On-going

Subtask 8.3 TCFA, with assistance from local SWCDs, USDA-NRCS and the TSSWCB Hale Center Regional Office, will promote the availability of technical assistance and encourage adoption and implementation of USDA- NRCS conservation practices (or best management practices (BMPs)), described in the USDA-NRCS Field Office Technical Guide (FOTG) as effective at mitigating the environmental impact of manure/compost application.

TCFA, with assistance from local SWCDs and the TSSWCB Hale Center Regional Office, will promote the availability of technical assistance and encourage the development and implementation of TSSWCB-certified Water Quality Management Plans (WQMPs). A WQMP is a site-specific plan developed through and approved by SWCDs which includes appropriate land treatment practices, production practices, management measures, and technologies that prevent and abate agricultural and silvicultural nonpoint source pollution. The BMPs prescribed in a WQMP are defined in the NRCS FOTG. WQMPs afford agricultural producers an opportunity to comply with state water quality laws through traditional voluntary incentive-based programs.

TCFA, with assistance from local SWCDs and USDA-NRCS, will promote availability and utilization of cost-share funds through the EQIP State Resource Concern for AFO-CAFO Beef – Water Quality/Air Quality to aid in implementation of BMPs related to manure/compost application.

TCFA, with assistance from local SWCDs and the TSSWCB Hale Center Regional Office, will promote availability and utilization of cost-share funds through the WQMP Program (historically known as 503 cost-share) to aid in implementation of BMPs related to manure/compost application. (Start Date: Month 13; Completion Date: Month 36)

- **A project briefing/orientation conference call was conducted April 26, which included the field representatives for Soil and Water Conservation Districts and the USDA-Natural Resources Conservation Service – Zone 1 office (Lubbock/Amarillo region).**
- **Texas AgriLife Extension Service is assembling a table display for use at the SWCD Annual Meeting in Lubbock, Texas on Oct. 25-26, 2010.**

15% Complete – On-going

Subtask 8.4 TCFA/ AgriLife Extension will explore options for future development of a certification program for manure and compost haulers based on the outcomes of the training and demonstration efforts of this project.. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

TASK 9: BMP Effectiveness Monitoring

Subtask 9.1 TCFA/ AgriLife Extension and AgriLife Research, as appropriate, will establish control and treatment plots at one location in the Sweetwater Creek watershed, one location in the Buck Creek watershed and one location on the Caprock. Treatments may include application of manure and/or compost at single-year vs. multi-year agronomic rates. (Start Date: Month 6; Completion Date: Month 9)

- Potential demonstration sites have been identified in each of the specified areas, as mentioned in subtask 7.1.**
- Demonstration sites (n=15) have been identified and landowners have agreed to cooperate with the project in Deaf Smith, Wheeler, and Donley counties. Demonstration sites are located in Buck Creek, Sweetwater Creek, Palo Duro Creek, and Silver Creek watersheds. The demonstration sites are situated on irrigated agricultural lands with varying slopes, soil types, and cropping techniques. Details on each demonstration site location are included in the QAPP.**

90% Complete – On-going

Subtask 9.2 At one demonstration location, AgriLife Research will install automatic water samplers to collect runoff from the control and treatment plots. Water samples will be analyzed for nutrients and bacteria by the Texas AgriLife Research Laboratory at Vernon. (Start Date: Month 6; Completion Date: Month 9)

- A potential demonstration site has been selected and a plan of action has been formalized for the CEA to present to the landowner.**
- A landowner has agreed to participate in the water quality study. The demonstration site is located in the Palo Duro Creek watershed in Deaf Smith County. Water sampling equipment will be installed after the current crop is harvested and the field has been prepared for the next crop rotation.**
- Project members started construction of the treatment plots for the water quality demonstration site located in Deaf Smith County on November 30 – December 2, 2010. Treatment plots were marked and GPS locations of the perimeters were collected. A tractor was used to make berms around each plot to prevent run on from the surrounding areas, and to channel the runoff from each plot to an automated water sampler. Water samplers will be installed in January on the concrete pads that were constructed at the runoff water discharge area of each plot. Black plastic was used to line the diversion berms at the downgradient side of each treatment plot to prevent erosion by the runoff water, and to help with long term berm stability in and around the water samplers.**
- Water samplers and H-flume supplies have been ordered and are expected to be installed in January 2011 by the project team.**
- Treatments for each of the plots were discussed by the PAG and their recommendations will be considered before treatments are applied. Proposed treatments for each plot are as follows: compost every year (2-5 tons/acre), manure every other year (10 tons/acre), commercial fertilizer (producer's current practice), and a single high frequency manure application (30 tons/acre). The producer will incorporate the manure/compost with a disk plow after the demonstration plots receive the treatments.**
- Manure will be applied by the WTAMU manure truck, while compost will be applied by a small scale tractor pulled compost spreader. Each spreader will be calibrated before applications are made to each treatment plot. The commercial fertilizer application technique will be up to the discretion of the producer.**

75% Complete – On-going

Subtask 9.3 At least annually, TCFA will collect soil samples from control and treatment plots using GPS grid soil sampling. Samples will be collected at the 0-6 inch depth and 6-24 inch depth across the grid. Composite samples will be submitted to a commercial soil testing laboratory for macronutrient, micronutrient, pH and organic matter. In a similar manner, soil samples will be

- collected at two distances down-gradient of the plots. Distances will be determined by site-specific topographic features of the site locations. (Start Date: Month 6; Completion Date: Month 36)
- Soil sampling has been conducted by TCFA staff (September 22, 2010) at one of the demonstration sites before a previously scheduled manure application event occurred. The laboratory fees associated with the analytical results will be paid for by other funds not associated with this project. All results will be made available to this Sec 319 project.**
 - All demonstration site locations have been digitized in GPS soil sampling software used by TCFA staff. Sample identification, labeling and chain of custody procedures have been implemented in accordance with the QAPP.**
 - Initial “Year 1” soil sampling has been completed for all demonstration sites and reported on at the second PAG meeting (Jan. 5, 2011). Slide sets presented at the meeting are attached hereto.**

35% Complete – On-going

Subtask 9.4 Water samples will be collected by TCFA from all water wells located within the boundaries of the control and treatment plots as well as any water wells (where access is granted) within 500 feet down-gradient of the plot locations. Water samples will be analyzed for bacteria and nutrients. (Start Date: Month 6; Completion Date: Month 36)

0% Complete – On-going

Subtask 9.5 TCFA will collect representative manure and/or compost samples prior to all planned land application events. Samples will be analyzed by a commercial testing laboratory for macronutrients, micro nutrients and moisture content. Split samples will also be provided to AgriLife Research for the BST library. (Start Date: Month 6; Completion Date: Month 36)

0% Complete – On-going

Activities Planned for Jan-March 2011

- Resubmit QAPP to TSSWCB.**
- Launch project website.**
- Conduct additional field evaluation of manure calibration kit materials, working with both commercial manure and compost spreader trucks.**
- Finalize materials list for manure calibration kits, purchase components and assemble kits.**
- Install runoff sampling equipment at surface water quality demonstration site in Deaf Smith County.**
- Prepare Environmental Knowledge Assessment instruments for distribution to the Project Advisory Group.**
- Update DRAFT manure/compost haulers list.**