

**Lone Star Healthy Streams
FY 06 CWA 319(h)
TSSWCB Agreement No. 06-05-07-02**

Quarter no. 4 From 10/1/07 Through 12/31/07

I. Abstract

This quarter, a very successful Lone Star Healthy Streams Steering Committee meeting was held to discuss the TSSWCB's Statewide Bacteria Initiative, the LSHS Education Program, and ongoing BMP evaluation studies. TWRI also coordinated a tour of the Welder Wildlife Refuge and watershed sites of the ongoing evaluation of BMPs being conducted there for staff from TSSWCB and TCEQ. The project website has been visited by an average of 26 unique visitors a month to date. Texas AgriLife Extension Service (Extension) continued to review the existing literature regarding BMPs and transform this information into PowerPoint presentations for dissemination to the public. GPS collars were installed on cattle from October 2-25 at the 2S Ranch to evaluate the percent time they spend in the riparian area when no alternative water is present. Analysis of this data has yet to be completed. Water samples were also collected at the 2S Ranch bi-monthly throughout the quarter. During this quarter, *E. coli* levels averaged 71 cfu/100 ml above the ranch and 116 cfu/100 ml below the ranch. Installation of automated samplers at the Welder Wildlife Refuge was completed this quarter and the samplers activated on October 30th. Unfortunately, only 0.49 inches of rainfall occurred in November and 0.33 inches in December, which is not sufficient to produce runoff. Sampling at Riesel was also initiated in coordination with USDA-ARS and Extension, but like the Welder, rainfall amounts have not been sufficient for producing runoff.

II. Overall Progress and Results by Task

TASK 1: Project Coordination and Administration

Subtask 1.1: TWRI, in coordination with TCE, will organize a Project Steering Committee to coordinate project efforts with all project participants. This Committee will be composed of TSSWCB, SWCDs, TCE, TAES, TWRI, NRCS, TDA, FSA, GLCI, and producer groups such as TFB and TSCRA. This Committee will meet at least semi-annually to provide input on the evaluation of BMPs and the education program; provide input into curriculum development, program delivery and CEU processes; discuss project status, provide input on demonstration/BMP evaluation efforts, and coordinate project activities.

The following actions have been completed during this reporting period:

- a. On November 29, the first LSHS Steering Committee Meeting was held following the TSSWCB Board Meeting in Temple to discuss the TSSWCB's Statewide Bacteria Initiative, the LSHS Education Program, and BMP evaluation studies (see attached agenda and sign in sheet).

- b. The second Steering Committee Meeting will be scheduled next quarter to meet in the spring.

30% Complete

Subtask 1.2: TWRI will prepare electronic quarterly reports for submission to the TSSWCB. All progress reports will be provided to the Steering Committee.

The following actions have been completed during this reporting period:

- a. TWRI submitted Year 1, Quarter 3 Progress Report on October 15, 2007.

30% Complete

Subtask 1.3: TWRI will conduct quarterly TTVN meetings as appropriate with project participants to discuss project activities, project schedule, lines of responsibility, communication needs, and other requirements.

The following actions have been completed during this reporting period:

- a. On December 3, TWRI coordinated a tour of the Welder Wildlife Refuge and watershed sites of the ongoing evaluation of BMPs being conducted there for staff from TSSWCB and TCEQ.

30% Complete

Subtask 1.4: TWRI will attend meetings with the TSSWCB project manager and other meetings, as needed, to review project status, deliverables, etc.

The following actions have been completed during this reporting period:

- a. TWRI attended the Association of Texas Soil and District Director's Annual Meeting at the Waco Convention Center on October 22-23.
- b. TWRI attended the November 29th State Board Meeting in Temple.

30% Complete

Subtask 1.5: TWRI will submit appropriate Reimbursement Forms.

The following actions have been completed during this reporting period:

- a. As of the last billing period which ended on October 31, 2007, \$80,816.74 or 20% of federal project funds had been expended.

20% Complete

Subtask 1.6: TWRI will develop (Months 1-3), host and maintain (Months 3-36) an internet website for the dissemination of information.

The following actions have been completed during this reporting period:

- a. In September 2007, TWRI developed the website titled "Improving Water Quality of Grazing Lands" to disseminate information on the Lone Star Healthy Streams project and related projects. It can be found at <http://grazinglands-wq.tamu.edu/index.php>

- b. The website was viewed by:
 - 19 unique visitors in September 2007 (not reported last quarter)
 - 39 unique visitors in October 2007
 - 15 unique visitors in November 2007
 - 31 unique visitors in December 2007
- c. The website will be continually updated as new data and information are obtained.

30% Complete

TASK 2: Compile Existing Information

Subtask 2.1: TCE will hire a LONE STAR HEALTHY STREAMS Extension Assistant to assist with and coordinate a review of the literature of the state of current knowledge regarding the effects of grazing animals on bacterial levels of riparian areas and associated water bodies and BMPs designed to minimize these impacts. Further, the Extension Assistant will lead all future LONE STAR HEALTHY STREAMS Program efforts.

The following actions have been completed during this reporting period:

- a. Garrett Norman was hired as the Lone Star Healthy Streams Extension Assistant.

100% Complete

Subtask 2.2: TCE will organize internal TCE Planning Team consisting of TCE personnel specializing in animal production systems and associated environmental issues.

The following actions have been completed during this reporting period:

- a. Complete. No activity to report this quarter.

100% Complete

Subtask 2.3: TCE will assess and inventory education/training materials within TCE and related materials developed through similar efforts in other states addressing bacteria from grazing cattle. In order to make the program more thorough, educational materials addressing nutrient and sediment runoff from grazing lands and proper grazingland management will also be assessed and inventoried.

The following actions have been completed during this reporting period:

- a. The Extension Assistant continues to review the existing literature regarding BMPs that help reduce livestock bacteria levels in water bodies.

60% Complete

TASK 3: Develop Bacterial Education Programs for Beef Cattle Producers

Subtask 3.1: TCE will facilitate the modification necessary to integrate existing materials from subtask 2.3 into the LONE STAR HEALTHY STREAMS Program.

The following actions have been completed during this reporting period:

- a. The Extension Assistant continues to transform information collected in subtask 2.3 into PowerPoint presentations for dissemination to the public in future educational programs.
- b. The information will also be made available via fact sheets and the Forages and TWRI web sites.

30% Complete

Subtask 3.2: TCE will develop a core land/grazing management educational component that provides growers with state-of-the-art production technology training on fundamental BMPs and strategies which can be employed to protect and conserve water resources from bacterial and other NPS contamination originating from grazing lands.

The following actions have been completed during this reporting period:

- a. Extension has begun development of an educational program for Lone Star Healthy Streams as outlined in subtask 3.1.

30% Complete

Subtask 3.3: TCE will integrate and coordinate the Lone Star Healthy Streams Program with the Texas Master Watershed Steward program to provide producers with a more comprehensive environmental education curriculum incorporating basic training in watershed form and function, watershed management, sources of nonpoint source (NPS) pollution and BMPs and strategies which can be employed to protect and conserve water resources.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter; however, LSHS will be integrated into future printings of the Texas Watershed Steward program.

17% Complete

Subtask 3.4: TCE will establish a continuing education component that enables acquisition of CEUs in both environmental and production management.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

Subtask 3.5: TCE will develop and provide a certificate of completion, or other mechanism enabling individuals to take credit for participation in education program.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

TASK 4: Education Program Testing and Delivery

Subtask 4.1: TCE will test the educational program in a pilot watershed selected with input from the Project Steering Committee. TCE will coordinate with local SWCDs and others, such as the NRCS, to deliver and evaluate the educational program.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

10% Complete

Subtask 4.2: To increase Program availability, Web-based and related local “on-demand” program delivery tools (i.e., CD, videos, worksheets) will be developed for both core and CEU components.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

Subtask 4.3: Evaluate changes in producer knowledge and awareness of important production and environmental issues.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

Subtask 4.4: Utilizing participants surveys, identify and address any barriers to producer participation and successful implementation of the program.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

Subtask 4.5: Make appropriate modifications to the program to facilitate greater producer participation and adoption of recommended BMPs.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

TASK 5: Evaluate And Demonstrate Value-Added BMPs To Reduce Bacteria Contamination Of Streams And Water Bodies From Grazing Lands

Subtask 5.1: TWRI will develop a Quality Assurance Project Plan (QAPP) that will detail project goals and objectives, the data needs to fulfill those objectives, lists field and laboratory methods, procedures and schedules to be followed, and specify a data management structure and quality assurance protocols. The QAPP will be developed using guidelines in EPA QA/R-5, "EPA Requirements for Quality Assurance Project Plans".

The following actions have been completed during this reporting period:

- a. The QAPP was approved on September 24, 2007.

100% Complete

Subtask 5.2: TWRI will provide annual revisions to the QAPP and amendments, as necessary, to the TSSWCB and EPA.

The following actions have been completed during this reporting period:

- a. No activity this quarter. The first annual revision is due September 24, 2008.

0% Complete

Subtask 5.3: TWRI and TCE will identify a cooperator to conduct the BMP demonstration/evaluation with assistance of the Steering Committee, local SWCD, NRCS, TWRI, and TCE agents.

The following actions have been completed during this reporting period:

- a. Complete. No activity to report this quarter.

100% Complete

Subtask 5.4: TWRI and TCE will assess cattle and other animal behavior to determine the amount of time spent in the stream and riparian area before and after BMP implementation. GPS tracking will be utilized.

The following actions have been completed during this reporting period:

- a. GPS collars were placed on cattle at the 2S Ranch on October 2, 2007 and removed October 25, 2007.

- b. GPS collars are scheduled to be placed on cattle at the 2S Ranch on January 10, 2008 and removed on February 4, 2008 (tentative).
- c. Analysis of the data collected to date will begin next quarter as well.

30% Complete

Subtask 5.5: TWRI and TCE will assess water quality before and after BMP implementation. Bacteria (E. coli) will be the focus of this effort and will be monitored bi-monthly (enumeration only). Water quality will be assessed for 12 months prior to implementation and then 12 months following implementation.

The following actions have been completed during this reporting period:

- a. Water samples were collected above and below the 2S Ranch on October 4th and 18th, November 1st and 15th, and December 6th and 20th to evaluate bacteria levels prior to implementation of alternative water supplies. During this quarter, *E. coli* levels averaged 71 cfu/100 ml above the ranch and 116 cfu/100 ml below the ranch.
- b. Water samples are scheduled to be collected at the 2S Ranch on January 3rd and 17th, February 7th and 21st, and March 6th and 20th.
- c. Installation of automated samplers was completed at the Welder Wildlife Refuge and sampling was initiated on October 30, 2007. Since installation, rainfall amounts have not been sufficient for producing runoff.
- d. Sampling at Riesel has been initiated in coordination with USDA-ARS and TCE, but like the Welder, rainfall amounts have not been sufficient for producing runoff.

12% Complete

Subtask 5.6: In order to gain a more complete picture of the impacts of BMP implementation on stream bank stability and specific sources of bacteria, stream cross-sections will be performed at all stream sites before and after BMP implementation and Bacteroidales PCR (library-independent BST) will be assessed at runoff evaluation sites by TWRI, TCE, and TAES.

The following actions have been completed during this reporting period:

- a. *Bacteroidales* will be assessed in runoff samples from the Welder Wildlife Refuge and Riesel. To date, no samples have been collected due to insufficient rainfall.
- b. Stream cross-sections will be surveyed next quarter at the 2S Ranch.

0% Complete

Subtask 5.7: TWRI and TCE will provide funding to cooperating ranch to implement BMPs to reduce bacteria and other NPS runoff from grazing lands.

The following actions have been completed during this reporting period:

- a. TCE has developed draft drawings of portable shade facilities to be used to collect additional data regarding alteration of cattle behavior using shade. These structures are to be installed on the 2S Ranch in June 2008.

20% Complete

III. Related Issues/Current Problems and Favorable of Unusual Developments

- The name of Texas Cooperative Extension (TCE) was changed to Texas AgriLife Extension Service (Extension), effective January 1, 2008.

IV. Projected Work for Next Quarter

- The second meeting of the Lone Star Healthy Streams Steering Committee will be scheduled.
- TWRI will prepare and submit Year 1, Quarter 4 Progress Report on January 15th.
- TWRI will schedule and conduct a meeting with project participants to discuss project activities.
- TWRI will continue to work to improve the website.
- TCE will continue development of a technical report describing information compiled on current knowledge regarding the effects of grazing animals on bacterial levels of riparian areas and BMPs designed to minimize impacts.
- TCE complete development of land/grazing management education PowerPoint presentation addressing bacteria contamination of streams and waterbodies.
- TCE will continue work on development of fact sheets and other promotional materials for the program for distribution at educational events and web loading
- TCE will continue communication of issues with landowners via educational programs
- Runoff monitoring will be conducted at Riesel and the Welder Wildlife Refuge.
- GPS tracking of cattle on the 2S Ranch will be conducted January 10 – February 4.
- Analysis of GPS data will be initiated next quarter.
- Bi-monthly sampling will be conducted on the 2S Ranch.

Attachment 1

**Lone Star Healthy Streams Project
Steering Committee**

Board Room
Texas State Soil and Water Conservation Board
Temple, Texas

November 29, 2007 1:30 – 4:00 pm

MEETING AGENDA

- 1:30-1:45 Welcome and Introductions** Jerry Nichols, TSSWCB Chairman
- 1:45-2:00 TSSWCB Statewide Bacteria Initiative** John Foster, TSSWCB
- 2:00-2:45 Lone Star Healthy Streams Education Program** Dr. Larry Redmon, TCE
- Overview of existing and planned TCE education programs
 - Roundtable discussion on educational approach and curriculum
 - Roundtable discussion on delivery of education program
- 2:45-3:30 Best Management Practice Evaluation** Kevin Wagner, TWRI
- Overview of ongoing studies
 - Roundtable discussion on ongoing studies & additional research needs
- 3:30-3:45 Future Committee Meetings** Kevin Wagner, TWRI
- Expansion of Committee purpose to address other issues
 - Presentations on topics of interest
 - Updates on findings of BMP evaluations
 - Preview of Lone Star Healthy Streams Education Program
 - Next meeting date & location
- 3:45-4:00 Wrap Up** Dr. Allan Jones, TWRI
- 4:00 Adjourn**

