

**Environmental Management of Grazing Lands
TSSWCB Agreement No. 06-14-07-14**

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

I. Abstract

Work this quarter focused on (1) completing installation of automated samplers and refurbishing the berms at the Welder Wildlife Refuge; (2) bi-monthly water sampling at the 2S Ranch and (3) conducting quarterly monitoring of cattle movement at the 2S Ranch using GPS collars. With the installation of the automated sampling equipment at the Welder Wildlife Refuge and initiating of sample collection at Riesel by TCE, everything is in place to begin monitoring should a runoff event occur next quarter. Work from this project was presented at the Copano Bay TMDL Meeting poster session in Refugio, the Lone Star Healthy Streams Steering Committee Meeting, and during a tour of the Welder by TCEQ and TSSWCB. The project was well received by all audiences. Work next quarter will focus on fence construction at the Welder, continued monitoring on the 2S ranch, and if runoff occurs, sampling at the Welder and Riesel.

II. Overall Progress and Results by Task

TASK 1: Project Coordination and Administration

Subtask 1.1: TWRI will prepare electronic quarterly reports for submission to the TSSWCB.

The following actions have been completed during this reporting period:

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

65% Complete

Subtask 1.2: TWRI will participate in meetings and teleconferences with the TSSWCB project manager, as needed, to review project status, deliverables, etc.

The following actions have been completed during this reporting period:

- a. TWRI visits regularly via telephone with the TSSWCB project manager to discuss project status and any issues as they arise.
- b. TWRI attended the Association of Texas Soil and District Director's Annual Meeting at the Waco Convention Center on October 22-23.
- c. TWRI attended the November 29th State Board Meeting in Temple.

65% Complete

Subtask 1.3: 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, \$79,687.61 of federal project funds had been expended.

80% Complete

Subtask 1.4: TWRI will coordinate this project with the Lone Star Healthy Streams project and related USDA-ARS efforts at Riesel.

The following actions have been completed during this reporting period:

- a. On November 29, work from this project was presented to the Lone Star Healthy Streams Steering Committee. The committee (Attachment 1) was very supportive of the ongoing work and provided valuable input on how to improve the program.

65% Complete

Subtask 1.5: TWRI will prepare a final report for submission to the TSSWCB summarizing the existing information on environmental management of grazing lands and describing results of the first year of the evaluation.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter.

0% Complete

TASK 2: Compile Existing Information

Subtask 2.1: TCE and TWRI will coordinate a review of literature of the state of current knowledge regarding environmental management of grazing lands.

The following actions have been completed during this reporting period:

- a. The Texas AgriLife Extension Service Extension Assistant has been working to establish a Power Point presentation for state-wide delivery, which includes a review of the current literature from other states on reducing bacteria contamination of streams.

30% Complete

TASK 3: Evaluation of Proper Grazing Management

Subtask 3.1: Purchase equipment as outlined in budget.

The following actions have been completed during this reporting period:

- a. Most purchasing has been completed; however 3 more batteries, solar panels, and ISCO housing will be needed for the A&M Farm sites as well as fencing material for all sites. Additional lab supplies will be purchased as funding allows.

90% Complete

Subtask 3.2: Refurbish and equip three small (1-2 acres) watershed sites on the Welder Wildlife Refuge to measure runoff and collect E. coli samples from three different treatments: (1) no grazing, (2) prescribed grazing, and (3) heavy grazing.

The following actions have been completed during this reporting period:

- a. ISCO sampler installation was completed at the Welder Wildlife Refuge on Oct. 30th.
- b. A dozer operator was contracted to refurbish the berms around each watershed site at the Welder Wildlife Refuge. Work was completed on November 6-7 (Attachment 2).
- c. Fence construction around each watershed site at the Welder Wildlife Refuge was initiated on December 12-13. Next quarter, fences will be construction will be completed so that grazing treatments can begin.

65% Complete

Subtask 3.3: Select ranch for evaluation of grazing management and complementary practices.

The following actions have been completed during this reporting period:

- a. Grazing management will be evaluated at the Welder Wildlife Refuge, Texas A&M Farm, and USDA-ARS Center at Riesel. Alternative water supplies and shade facilities will be evaluated at the 2S Ranch.

100% Complete

Subtask 3.4: Install sampling equipment on selected ranch needed to measure runoff and collect E. coli samples. On the private ranch selected, the effects of grazing management and complementary practices will be assessed over a three year period through the Lone Star Healthy Streams Project.

The following actions have been completed during this reporting period:

- a. Installation of the monitoring equipment is not needed at the 2S Ranch. Grab samples are collected every 1st and 3rd Thursday of each month for analysis of *E. coli*. Flow is estimated from flow depth in a 3 foot corrugated steel culvert on the ranch and estimated using Manning's Equation.
- b. Monitoring equipment is already in place at Riesel.
- c. Sampling equipment will be installed on the Texas A&M Farm to evaluate grazing management on irrigated Tifton 85.

65% Complete

Subtask 3.5: Collect runoff, rainfall, and E. coli data from Welder Wildlife Refuge and selected ranch.

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.

65% Complete

Subtask 3.6: Obtain data collected by USDA-ARS at Riesel on (1) ungrazed native prairie and (2) grazed improved pasture.

The following actions have been completed during this reporting period:

- a. Sampling at Riesel has been initiated in coordinated with USDA-ARS and TCE, but like the Welder, rainfall amounts have not been sufficient for producing runoff.

65% Complete

Subtask 3.7: Compare data collected at Riesel, Welder Wildlife Refuge, and selected ranch to identify regional differences and effects of grazing.

The following actions have been completed during this reporting period:

- a. No activity to report this quarter. This will be completed at the conclusion of the project during preparation of the final report.

0% Complete

TASK 4: Evaluation of Complementary Practices

Subtask 4.1: Install stream sampling equipment on ranch selected in Subtask 3.3 to measure stream flow and rainfall, and collect stream samples for E. coli analysis.

The following actions have been completed during this reporting period:

- a. Bi-monthly sampling on the 2S Ranch is being utilized to evaluate alternative water sources and possibly other practices. Because no sampling equipment was needed at the 2S Ranch, additional sites are being established at the Texas A&M Farm near College Station and equipment installed to evaluate grazing management practices.

65% Complete

Subtask 4.2: Initiate stream sampling and evaluation of cattle behavior (using GPS collars) to assess background conditions prior to implementation of complementary practices (i.e. alternative water supplies, fencing, etc.) in years 2 and 3 of the evaluation funded through the Lone Star Healthy Streams Project.

The following actions have been completed during this reporting period:

- a. Stream sampling conducted to date is described in Subtask 3.5 above.
- b. GPS collars were installed on 8 cows on the 2S Ranch from October 2 – 25. The GPS collars collect data points every 5 minutes allowing a detailed analysis of where cattle spend their time. The data has not been analyzed to date.

65% Complete

TASK 5: Technical Transfer

Subtask 5.1: TCE and TWRI will coordinate with the TSSWCB, NRCS, local SWCDs and others, to deliver current knowledge to landowners on production and environmental management of grazing lands and their associated watersheds to address water quality and other concerns in the state.

The following actions have been completed during this reporting period:

- a. In September 2007, TWRI the website titled “Improving Water Quality of Grazing Lands.” This website describes three ongoing projects evaluating BMPs and developing education programs. It can be found at the following web address: <http://grazinglands-wq.tamu.edu/index.php>. 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
- b. The website will be continually updated as new data and information are obtained.
- c. On December 2, information on the project was provided to stakeholders at the Copano Bay TMDL Meeting in Refugio during the poster session prior to the meeting.
- d. 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.
- e. Fact sheets and a presentation are currently being developed to deliver information to landowners across the state.
- f. A poster is being developed describing the project for presentation at the annual meeting of the Southern Branch of the American Society of Agronomy to be held in Dallas, TX Feb 3-5, 2008.

65% Complete

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

- N/A.

IV. Projected Work for Next Quarter

- Prepare and submit Year 1, Quarter 4 Progress Report.
- A reimbursement form will be submitted covering the period of 11/1/07 – 1/31/08.
- Continue compiling existing information on bacteria runoff from grazing lands.
- Construct fences at the Welder to control grazing on each site.
- Conduct bi-monthly sampling on the 2S Ranch.
- Evaluate cattle behavior on 2S Ranch using GPS collars from Jan. 10 – Feb. 4, 2008.
- Collect and analyze runoff samples from the Welder Wildlife Refuge and Riesel.
- Present a poster describing the project to the Southern Branch ASA, Feb 3-5, 2008
- Update the Lone Star Healthy Streams Steering Committee on the project's status and findings to date

Attachment 1 - LONE STAR HEALTHY STREAMS STEERING COMMITTEE

Name	Organization	City	Email
Ben Weinheimer	Texas Cattle Feeders Assoc.	Amarillo	ben@tcfa.org
Bill Hyman	Independent Cattlemen's Assoc	Lockhart	hyman@icatexas.com
Bill Steubing	Rancher (Plum Creek)	Maxwell	dsteubing@ncua.gov
Bob McCan	Victoria SWCD	Victoria	mcfadd@suddenlinkmail.com
Curtis Scrivner	Hall-Childress SWCD	Turkey	starrow@lyntegar.com
Daren Harmel	USDA-ARS	Temple	Daren.Harmel@ars.usda.gov
Jason Skaggs	TSCRA	Austin	jskaggs@texascattleraisers.org
John Foster	TSSWCB	Temple	jfoster@tsswcb.state.tx.us
Kevin Wagner	TWRI	College Station	klwagner@ag.tamu.edu
Larry Redmon	TCE	College Station	lredmon@ag.tamu.edu
Lynn Drawe	Welder Wildlife Foundation	Sinton	ldrawe@welderwildlife.org
Mark Mosely	GLCI	San Antonio	mark.moseley@tx.usda.gov
Ned Meister	TFB	Waco	nmeister@txfb.org
Richard Eyster	TDA	Austin	Richard.Eyster@tda.state.tx.us
Susan Baggett	NRCS	Temple	susan.baggett@tx.usda.gov
Terry Gentry	TAES	College Station	tgentry@ag.tamu.edu
Wilson Scaling	Little Wichita SWCD	Henrietta	scalingranch@comcell.net

Attachment 2 - Refurbishing berms at the Welder.

