

**Texas AgriLife Research  
Texas Water Resources Institute**

**Water Quality Monitoring in the Buck Creek Watershed and Facilitation of Buck Creek  
Watershed Partnership**

**FY 10 CWA 319(h)  
TSSWCB Project No. 10-06**

Quarter no. 7 From 7.1.2012 Through 9.30.2012

**I. Abstract**

Work conducted this quarter includes continued stakeholder engagement through the delivery of the Buck Creek Watershed Partnership newsletter. Flow in the creek has once again ceased as the drought continues to impact this region of Texas. No water samples were collected this quarter.

In conjunction with this project, the Buck Creek WPP is still undergoing revision. Comments were received from USEPA on the draft WPP in mid-May. TWRI completed its response to comments in early August and delivered the WPP to TSSWCB for review. Comments from TSSWCB are anticipated early next quarter. Addressing these comments should conclude next quarter and it the plan will be re-released and delivered to USEPA for their official review.

**II. Overall Progress and Results by Task**

**TASK 1: Project Coordination and Administration**

*Subtask 1.1: TWRI 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 15<sup>th</sup> of January, April, July and October. QPRs shall be posted on the project website and distributed to all project partners.*

The following actions have been completed during this reporting period:

- a. Submitted Year 2, Quarter 3 report to TSSWCB on October 11, 2012.

**83% Complete**

*Subtask 1.2: TWRI will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.*

The following actions have been completed during this reporting period:

- a. As of October 11, 2012, a total of \$92,233 or approximately 80% of project funding has been expended.

**75% Complete**

Subtask 1.3: *TWRI will host coordination meetings, conference calls, or TTVN meetings, as appropriate, with project partners in order to efficiently and effectively achieve project goals, coordinate efforts and summarize activities and achievements made throughout the course of this project. TWRI will develop lists of action items needed following each project coordination meeting and distribute to project personnel.*

The following actions have been completed during this reporting period:

- a. TWRI maintained contact with project staff this quarter. No formal meetings were held.

**83% Complete**

## **TASK 2: Quality Assurance Project Plan Development**

Subtask 2.1: *TWRI will develop a QAPP for activities in Task 3 consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5) and the TSSWCB Environmental Data Quality Management Plan.*

The following actions have been completed during this reporting period:

- a. The QAPP was approved on April 12, 2011.

**100% Complete**

Subtask 2.2: *TWRI will submit revisions and necessary amendments to the QAPP as needed.*

The following actions have been completed during this reporting period:

- a. The annual QAPP revision was submitted to TSSWCB on 1.23.2012 for review and approval.
- b. No new activity to report on the annual QAPP revision.

**25% Complete**

## **TASK 3: Water Quality Data Collection and Analysis**

Subtask 3.1: *AgriLife Vernon will conduct routine water quality monitoring collecting water samples, field parameters (DO, pH, temperature, specific conductance) and streamflow. Samples will be collected once monthly from 7 sampling sites in the Buck Creek watershed (Sites 3, 5, 6, 10A, 10C, 11, and 13). Total number of samples budgeted for collection through this subtask is 126; however, the number actually collected will likely be lower due to the ephemeral nature of the creek.*

The following actions have been completed during this reporting period:

- a. The effects of the drought are still being felt on Buck Creek.
- b. The creek was once again dry for the entirety of the quarter. Pools that usually hold water were also dry or nearly dry.

**25% Complete**

Subtask 3.2: *AgriLife Vernon will conduct biased flow water quality monitoring collecting water samples, field parameters (DO, pH, temperature, specific conductance) and streamflow during 6 storm*

*events. Samples will be collected from 7 sampling sites in the Buck Creek watershed (Sites 3, 5, 6, 10A, 10C, 11, and 13). Total number of samples budgeted for collection through this subtask is 42.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

**10% Complete**

*Subtask 3.3: AgriLife Vernon will enumerate E. coli colonies in water samples collected in subtasks 3.1 and 3.2 using EPA Method 1603. E. coli counts will be recorded electronically and in hard copy format.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

**25% Complete**

*Subtask 3.4: AgriLife Vernon will assess nitrate levels in water samples collected in subtasks 3.1 and 3.2 using EPA Method 353.2. Nitrate concentrations will be recorded electronically and in hard copy format.*

The following actions have been completed during this reporting period:

- b. No activity to report at this time.

**25% Complete**

*Subtask 3.5: AgriLife Vernon will record and store all water quality data in electronic and hard copy formats. TWRI will transfer quarterly monitoring data from activities in Task 3 to TSSWCB for inclusion in TCEQ SWQMIS. Data will be transferred in the correct format using the TCEQ file structure, along with a completed Data Summary, as described in the most recent version of TCEQ Surface Water Quality Monitoring Data Management Reference Guide. Data Correction Request Forms will be submitted to TSSWCB whenever errors are discovered in data already reported. TWRI will also provide necessary information on this monitoring regime to RRA for inclusion in the Coordinated Monitoring Schedule.*

The following actions have been completed during this reporting period:

- c. No activity to report at this time.

**55% Complete**

*Subtask 3.6: AgriLife Vernon will develop a Technical Report that summarizes data collection and analysis results.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

**0% Complete**

#### **TASK 4: Maintain Stakeholder Communication**

Subtask 4.1: *TWRI and AgriLife Vernon will collaborate to develop and publish 4 semi-annual newsletters that provide updates on water quality data collection efforts and progress toward implementing the WPP and other relevant information. The newsletter shall be distributed as most appropriate to individual landowners and entities in the watershed.*

The following actions have been completed during this reporting period:

- a. The Buck Creek Watershed Partnership newsletter was delivered in July. See attached for a copy of this newsletter.

**75% Complete**

Subtask 4.2: *AgriLife Vernon or TWRI as appropriate will provide information to RRA for inclusion in the Clean Rivers Program Basin Summary Report and Basin Highlights Report. TWRI and/or AgriLife Vernon shall participate in RRA-sponsored meetings of the Clean Rivers Program Basin Steering Committee and Coordinated Monitoring meetings.*

The following actions have been completed during this reporting period:

- a. No new activity to report this quarter.

**50% Complete**

Subtask 4.3: *TWRI will ensure that the currently existing Buck Creek website (<http://buckcreek.tamu.edu/>) will be updated periodically to reflect accurate and current information regarding the project, WPP, implementation and other activities.*

The following actions have been completed during this reporting period:

- a. TWRI continues to maintain and update the project website.
- b. This quarter the website received 114 visits with 56% of those being new visits

**96% Complete**

Subtask 4.4: *TWRI and AgriLife Vernon will host and facilitate meetings of the Buck Creek stakeholders. Meetings will be held at a minimum of once annually for a total of 2 planned meetings. These meetings will be held to provide updates on the status of monitoring efforts, progress in identifying implementation funding, and movement towards water quality restoration.*

The following actions have been completed during this reporting period:

- a. No new action to report this quarter.

**75% Complete**

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

- Drought continues to grip the region and the creek is once again dry.
- A 6 month no-cost extension was requested and approved this quarter.

#### **IV. Projected Work for Next Quarter**

The following will be accomplished during the coming quarter:

- a. Continue sampling as planned.

# Buck Creek Watershed Partnership

July 2012 Newsletter

<http://buckcreek.tamu.edu>

## Buck Creek WPP Comments Received and Being Addressed

By Lucas Gregory

The Buck Creek Watershed Protection Plan (WPP) has made its way through the preliminary review process. Comments, questions and suggestions were received from EPA in mid-May and are actively being addressed. Many of the received comments and questions highlighted areas where some clarification or better wording was needed to make the intentions of the plan clear; however, several of the comments received were more substantial and require a fair amount of effort to address.

The manner in which pollutant loading to the creek was calculated, potential loadings from individual pollutant sources and the methods for selecting management recommendations are the items that received the most questioning. This information is largely contained in Chapters 7 and 9 and Appendices C, D and F. Specific questions related to exactly how loads and expected load reductions were calculated. To respond to these questions, the project team has been conferring and is reviewing the strategies used to develop these assessments. The team is currently developing a refined approach that more appropriately evaluates loadings to the creek and better estimates potential load reductions from recommended management measures. It is anticipated that addressing these and other comments will be concluded near the end of July 2012. You will be notified when the edits are completed and a revised draft will be posted on the project website.

At that point, the WPP will again go to EPA for review. EPA will review the plan to ensure that it meets its "9 Key Elements of a Successful Watershed Plan." This review should take approximately 60 days for EPA to complete. At that point, EPA will either agree that the plan does meet its "9 Key Elements" or indicate that it does not and for what reasons. Following this acceptance review, WPP implementation efforts in the watershed should be eligible for grant funding from EPA through its Clean Water Act Section 319(h) nonpoint source grant program.



## Nitrogen Crediting in Buck Creek

By Alejandra Arreola-Triana

Researchers working on the Buck Creek Watershed Protection Plan (WPP) will hold a field day where area residents can learn how to take advantage of the nitrogen available within the Buck Creek Watershed.

The Rolling Plains Summer Crops Field Day will start at 7:30 a.m. on July 17 at the Chillicothe Research Station, located at 1340 FM 392 in Chillicothe, Texas. The event will include a field tour and discussions on topics such as irrigation water-use efficiency, tillage and nitrogen crediting.

Dr. Paul DeLaune, assistant professor of Environmental Soil Science at the AgriLife Research and Extension Center at Vernon, will talk to the Rolling Plains' residents about nitrogen crediting.

"Nitrogen crediting account for the nitrate that is in irrigation water," DeLaune said. "By using the nitrogen that is naturally available a producer can reduce the use of commercial fertilizer."

Reducing the use of fertilizers and "mining" nitrogen from local groundwater has the potential to improve water quality in the watershed.

"Buck Creek has been identified by the state as having a water quality concern due to elevated nitrate levels," DeLaune said. "Water quality data collected in Buck Creek through efforts to develop the Buck Creek WPP suggests that groundwater return-flow to the creek may contribute the nitrate seen in the creek."

With nitrogen crediting, DeLaune said, irrigators can apply less fertilizer than what is required by a crop and then make up for this deficit with the nitrogen available in their irrigation water. "Accounting for this available nitrogen in irrigation water has the potential to reduce nitrate levels in local groundwater resources." DeLaune said.

If this is done on a wide scale, DeLaune added, the nitrate levels in the groundwater can be reduced over time, which may result in a decrease in the quantity of nitrate making its way into the creek. "Accounting for all sources of nitrogen is the first step in developing a balanced nitrogen budget, which decreases the likelihood of over-applying nitrogen and movement of nitrogen below the root zone."

DeLaune said the nitrogen source is still unknown. "It should be noted that historical groundwater data pre-dating commercial fertilizer production indicate elevated nitrate levels in the groundwater," he said.

Dr. Bridget Scanlon from the Bureau of Economic Geology at the University of Texas is conducting research to help identify the source of nitrate in the Seymour Aquifer.

Nitrogen crediting not only benefits the Buck Creek Watershed, but also the producers' pocketbook. The potential savings depend on the amount of nitrate in their well and the amount of irrigation water applied, as well as the price of nitrogen. "The average nitrate concentration in the Seymour Aquifer is 13.5 mg/L," DeLaune said. "If a producer applies 12 inches of this water, he is applying 37 pounds of nitrogen per acre. If nitrogen costs \$0.60 per pound, then the producer will save \$22 per acre."

DeLaune currently has a demonstration of nitrogen crediting at the Chillicothe Research Station. "The demonstration consists of a fertility demonstration," he said, "where cotton was fertilized at different rates, either accounting or not accounting for groundwater nitrogen levels."

DeLaune's results so far show that applying nitrogen credits does not limit quantity or quality of cotton produced and can lead to substantial savings.

During the field day, producers will have the opportunity to see the demonstrations and observe some initial results.

For more information, about the field day contact DeLaune at 940-552-9941 ext. 207, or by email [pbdelaune@ag.tamu.edu](mailto:pbdelaune@ag.tamu.edu).

### AgriLife Extension helps test new mesquite control herbicide

Range specialists from the Texas AgriLife Extension Service have been working with Dow AgroSciences LLC to develop a new herbicide for mesquite control. The new herbicide, Sendero, is the "new standard for mesquite control in Texas," according to the company.

The recommended use for Sendero is 28 ounces per acre and it has a high, 56–75 percent, control rating. It has been approved by the U.S. Department of Agriculture Natural Resources Conservation Service. Use of Sendero as a broadcast application on mesquite has been approved for use in the Natural Resources Conservation Service Environmental Quality Incentives Program brush control program.

The new herbicide has many advantages such as having non-restricted use—meaning there is no need to apply for a pesticide license, no livestock grazing restrictions, and appears to be very specific to mesquite.

For more information on Sendero, read the AgriLife Today story at <http://today.agrilife.org/2012/06/19/agrilife-extension-helps-test-new-mesquite-control-herbicide/>.

#### Contact Information

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