

**Watershed Protection Plan Development for Buck Creek
FY 06 CWA 319(h)
TSSWCB Project No. 06-11**

Quarter no. 1 From 1/1/2007 Through 3/31/2007.

I. Abstract

The Watershed Protection Plan Development for Buck Creek project is now underway. An initial meeting of project participants was held in January to discuss the work plan and lines of responsibility. The QAPP has been drafted and submitted to the TSSWCB for their review and submission to EPA. Sampling for the project will not begin until after the QAPP has been approved. Sampling under Phase I of the project has been extended to eliminate data gaps between Phase I and II of the project. Equipment and supply purchases have begun in preparation for the start of sampling and sample analysis. The Watershed Coordinator has done an excellent job of informally educating people about the start of the project and the upcoming stakeholder meetings and has already put together a sizeable mailing list of interested parties in and around the watershed.

II. Overall Progress and Results by Task

TASK 1: Project Coordination and Administration

Subtask 1.1: 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. An initial meeting was held in College Station on January 8th. Dr. John Sij, Dr. George Di Giovanni, Aaron Wendt, Lucas Gregory, and Phyllis Dyer (by phone) participated. The work plan was discussed at length and everyone was brought up to speed on who was responsible for what and how the project would proceed.

5% Complete

Subtask 1.2: TWRI will prepare electronic quarterly reports. All progress reports will also be provided to TAES and TCE project cooperators and participants, Hall-Childress, Collingsworth, and Donley SWCD directors and will be placed on the project website.

The following actions have been completed during this reporting period:

- a. Submitted Year 1, Quarter 2 report to TSSWCB on 4-13-07.

10% Complete

Subtask 1.3: *Representatives from 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:

- b. An initial meeting was held in College Station on January 8th. Dr. John Sij, Dr. George Di Giovanni, Aaron Wendt, Lucas Gregory and Phyllis Dyer (by phone) participated. The work plan was discussed at length and everyone was brought up to speed on who was responsible for what and how the project would proceed.

5% Complete

Subtask 1.4: *TWRI will submit appropriate Reimbursement Forms.*

The following actions have been completed during this reporting period:

- a. Appropriate reimbursement forms have been submitted to the TSSWCB.

5% Complete

Subtask 1.5: *TWRI will attend all stakeholder meetings as described in Task 6.*

The following actions have been completed during this reporting period:

- b. No activity to report at this time.

0% Complete

TASK 2: Quality Assurance Project Plan Development

Subtask 2.1: *TWRI will develop a QAPP that will detail project goals and objectives relating to water quality monitoring activities; identify the data needed to fulfill those objectives; list field and laboratory methods; describe procedures and schedules to be followed; and specify a data management structure and the quality assurance protocols.*

The following actions have been completed during this reporting period:

- a. The QAPP is being reviewed internally and will be submitted to the TSSWCB and EPA for review and approval.

25% Complete

Subtask 2.2: *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:

- b. No activity to report at this time.

0% Complete

TASK 3: Sanitary Survey of Buck Creek Watershed

Subtask 3.1: *TAES will acquire available literature, data, and information germane to describing the contributions, both spatially and temporally, and sources of bacterial loading in Buck Creek. The data analyses will include discussion of temporal (inter-annual, seasonal) and spatial trends in water quality, an evaluation of potential sources, and an identification of data gaps. This task will include an explanation of how BST methods provide useful data to assist in water quality management efforts where bacterial contamination is a concern.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 3.2: *TAES will perform an aerial assessment of watershed will be utilized along the main channel of Buck Creek to identify and characterize stream channel locations, vegetation dynamics, current land use, and potential bacteria sources to the creek. The area will be flown twice during the project to assist in determining possible contributions. This information will be supplemented with a review of current DOQQ photography. Information from this subtask will be crucial in the development of implementation strategies in the Watershed Protection Plan.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.
- b. This will take place in the fall or winter when foliage is at its lowest level.

0% Complete

Subtask 3.3: *TAES will conduct an inventory of existing land use patterns in the Buck Creek watershed utilizing available imagery.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 3.4: *TAES will conduct a survey of the watershed will be conducted to identify the potential sources of fecal matter to Buck Creek. Wildlife and domestic animal sources of observed scat can be identified. Concentrated waterfowl areas and bird rookeries or bat colonies may be identified. The utilization of waterways by wildlife, as well as dogs, cats, and other domestic animals will also be assessed. Human influences are also typically identified, including malfunctioning septic systems and sewer overflows.*

The following actions have been completed during this reporting period:

- b. No activity to report at this time.

0% Complete

TASK 4: Micro-Watershed Monitoring and Sampling

Subtask 4.1: *TAES will perform routine sampling (grab sampling) at six locations (Sites 3, 4, 10a, 10b, 10c, 11) on Buck Creek.*

The following actions have been completed during this reporting period:

- a. Sampling will not begin until the QAPP has been approved. It is anticipated that the QAPP will be approved sometime in May 2007.

0% Complete

Subtask 4.2: *TAES will collect a minimum of 8 rain event/high flow grab samples from the Buck Creek sites over the course of the study.*

The following actions have been completed during this reporting period:

- a. Sampling will not begin until the QAPP has been approved. It is anticipated that the QAPP will be approved sometime in May 2007.

0% Complete

Subtask 4.3: *TAES will perform quarterly sampling (grab sampling) at seven tributary sites within the Buck Creek watershed when flow is present.*

The following actions have been completed during this reporting period:

- a. Sampling will not begin until the QAPP has been approved. It is anticipated that the QAPP will be approved sometime in May 2007.

0% Complete

Subtask 4.4: *TAES will compile and analyze the sampling data. Data will be for informational and assessment purposes due to the limited data previously collected.*

The following actions have been completed during this reporting period:

- a. No data analysis has occurred to date.

0% Complete

TASK 5: Bacterial Source Tracking

Subtask 5.1: *Stage 1 BST Assessment. Monthly targeted water grab sampling of creek segments at greatest risk for fecal pollution loading, as identified through the sanitary survey, will be performed for a period of six months (TAES-Vernon). Approximately 50 E. coli isolates from 50 different water samples will be analyzed using ERIC-PCR and RiboPrinting and compared with known isolates from the previously developed TAES-El Paso Texas E. coli source library to determine the need for the development of a local Buck Creek source library for Stage 2 of the BST work (TAES-El Paso). Enterococcus faecium human-specific enterococcal surface protein (esp) gene PCR will be performed by TAES-El Paso to determine if creek segments are being impacted by human or animal fecal pollution. Depending on the results of the Stage 1 BST work, the number of water and source isolates and the types (sewage or animal) of source samples listed below for Stage 2 may change.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 5.2: *Samples of fecal matter and/or domestic sewage will be collected from the major potential sources of fecal matter in the watershed. These sources will include domestic animals, wildlife, and human sources. In all, 100 known source samples from the Buck Creek watershed will be collected and processed for E. coli isolation and archival by TAES-Vernon. Bacterial cultures of E. coli isolates will be archived for future analyses and dissemination to other laboratories. E. coli isolates will be sent to the TAES-El Paso laboratory for BST analyses and selection of isolates for inclusion in the source library. It is anticipated that over 300 E. coli colonies from source samples will be screened by ERIC-PCR. Approximately 100 of those isolates will be selected for ribotyping BST analysis and inclusion in the source identification library. All sample collection, processing procedures and documentation will be specified in the QAPP.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 5.3: *Ambient water sampling, analysis and isolation of E. coli will be conducted by TAES – Vernon. Ambient water samples will be collected from at least 4 sites in the Buck Creek watershed on ten dates over a 1-year period. These dates would likely include at least five dry weather events and at least three post-rainfall events. Approximately five water samples would be collected on each date from each site; and ten samples from the vicinity of the Clean Rivers Program monitoring site. E. coli in water samples will be enumerated using USEPA Method 1603 by the TAES-Vernon laboratory. Following enumeration, TAES-Vernon will isolate E. coli from the samples and archive cultures. Bacterial cultures of E. coli isolates will be archived for future analyses and dissemination to other laboratories. E. coli isolates will be sent to the TAES-El Paso laboratory for ERIC-PCR and RiboPrinting BST analyses and source identification. The TAES-El Paso laboratory technician will coordinate sample shipment or collection (when necessary) with TAES-Vernon.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 5.4: *ERIC-PCR and RiboPrinting fingerprints of approximately 500 E. coli isolates from ambient water samples will be analyzed and compared to source library isolates using Applied Maths BioNumerics software by TAES El-Paso.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 5.5: *TAES-El Paso will compile and analyze the BST data. Water isolates will be identified to cattle, other livestock, avian and non-avian wildlife, domestic sewage, and pet sources. Results will help identify the sources needed to be addressed by the Watershed Protection Plan.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

TASK 6: Stakeholder Coordination and Education

Subtask 6.1: *The Vernon Research Tech II will receive training on watershed protection plan development and serve as the watershed coordinator for Buck Creek.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 6.2: The Vernon Research Tech II/Watershed Coordinator, with assistance from TWRI and TCE, will assemble a stakeholder group to provide input and assist in the development of a Watershed Protection Plan. The stakeholder group will be made up of landowners, elected officials, agency representatives, industry groups, and others as appropriate. Potential agency representatives and industry groups include soil and water conservation districts, county commissioners and judges, Texas State Soil and Water Conservation Board, Red River Authority, Texas Commission on Environmental Quality, Texas Cooperative Extension, Texas Agricultural Experiment Station, Texas Water Resources Institute, Texas Parks and Wildlife Department, Natural Resources Conservation Service, Farm Services Agency, Texas Cattle Feeders Association, and Texas Farm Bureau. Participation by all that may be affected will be encouraged throughout the process.

The following actions have been completed during this reporting period:

- a. Initial communications have been made with many of the potential stakeholder group members and they have been informed about the upcoming process.
- b. A sizeable mailing list has already been compiled by the watershed coordinator and will be added to as more contacts are made.

5% Complete

Subtask 6.3: The stakeholder group will meet quarterly, or as needed. These meetings will be held within the Buck Creek watershed to solicit input on the development of the watershed plan. In addition, the status of monitoring and assessment efforts will be presented in the context of how a watershed plan will promote recovery or proper functions of the Buck Creek watershed.

In Year 1, a kick-off meeting will be held to initiate the formation of the stakeholder group and to provide an overview of the goals and objectives of the project and watershed plan. Additional meetings will be held as needed to provide stakeholders with a review of the state of our knowledge as to the state of Buck Creek, to facilitate stakeholder input on possible sources of the bacteria loading and other issues within the watershed, discuss the challenges in identifying potential sources of contamination, and develop an approach to generate the knowledge needed to formulate a science-based watershed protection plan.

In Year 2, stakeholder meetings will be held to discuss the results of the sanitary survey, obtain stakeholder input for the watershed protection plan, and provide landowners information on management practices for reducing bacteria.

In Year 3, stakeholders will be presented the results of the BST, discuss methods for reducing the bacteria from the identified sources, and finalize and approve the watershed protection plan.

The following actions have been completed during this reporting period:

- a. The Vernon Research Tech II/Watershed Coordinator has established personal communication with numerous stakeholders and agency personnel and has been keeping them updated on the project and what is happening.

2% Complete

Subtask 6.4: As appropriate, educational programs will also be provided in conjunction with the stakeholder meetings. Informational programs on topics such as principles of watershed hydrology, primary nonpoint source pollution types, and agricultural BMPs for protecting water quality (i.e. alternative watering, riparian management issues, livestock and wildlife management, grazing management, shade development, feeding strategies, cross fencing, and prescribed burning) will also be provided.

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 6.5: The Vernon Research Tech II/Watershed Coordinator will also meet semi-annually with each SWCD to discuss the status of the project and obtain any input the SWCDs have to offer regarding the project and watershed protection plan.

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 6.6: TWRI will develop (Months 1-3), host and maintain (Months 3-36) an internet website for the dissemination of information on educational, monitoring and demonstration activities taking place across the Buck Creek watershed. Website delivery of information will be the most time and cost effective way to disseminate information to interested people or groups.

The following actions have been completed during this reporting period:

- a. The website is currently under development and will be completed within the next quarter.

25% Complete

TASK 7: Watershed Protection Plan

Subtask 7.1: *TAES and TWRI will develop a Watershed Protection Plan for Buck Creek based on criteria set forth in the FY04 guidelines. Findings from Tasks 3-5 and stakeholder input obtained from Task 6 will be utilized to develop the plan.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

Subtask 7.2: *TSSWCB, TCE, RRA, and local SWCDs will assist with composition, editing, and publication of the final watershed protection plan, as needed.*

The following actions have been completed during this reporting period:

- a. No activity to report at this time.

0% Complete

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

- Phyllis has traveled to TAES El Paso and has learned proper bacterial isolation techniques from Dr. George Di Giovanni.
- A designated laboratory has been established at TAES-Vernon specifically for bacterial studies with limited access to protect the integrity of the study. Equipment is being purchased and adjustments being made to the new laboratory. The TAES-Vernon director has assisted in these changes by supplying some lab ware from existing inventory, buying cabinetry, and cost share improvements to the designated lab.
- Training of research technician in the collection of fecal samples, purification, and isolation of DNA from colonies was conducted at the TAES-El Paso laboratory under Dr. George DiGiovanni's tutelage.

IV. Projected Work for Next Quarter

The following will be accomplished during the coming quarter:

- The QAPP should be approved during the next quarter and will allow for sampling to begin.

- Initial stakeholder meetings will be held to begin informing stakeholders about the project and the process that will occur. Initial meetings will help to get the word out about the project.
- The project website will be completed during this next quarter. It will have the same web address (<http://twri.tamu.edu/buckcreek/>) as the old website and will include all information from the previous project under a “Bacterial Monitoring Project” tab. This website will be continually updated with project information as it is made available.