I. Abstract
Activities this quarter have focused on the continued execution of project tasks. Sampling events have progressed well and sample delivery to the lab has been seamless. All samples were collected, labeled and delivered to the respective labs properly; data analysis was performed without fault and data are being inputted into a database at ANRA. Work on other aspects of the project is also progressing well. The GIS of the watershed and the LULC update are nearing completion. A stakeholder meeting was held in Nacogdoches on December 9th with primary discussions being on the development of a watershed steering committee. We had a great turnout and made new contacts thru the event. A project coordination meeting was held to discuss project tasks, goals, objective, lines of responsibility and the anticipated project timeline.

II. Overall Progress and Results by Task

TASK 1: Project 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 15th of January, April, July and October. QPRs shall be distributed to all project partners. Months 1 thru 36.

The following actions have been completed during this reporting period:

A. TWRI submitted Year 2, Quarter 1 project report for the Development of a Watershed Protection Plan for Attoyac Bayou to TSSWCB on October 13, 2010.

42% Complete

Subtask 1.2: TWRI will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly. Months 1 thru 36.

The following actions have been completed during this reporting period:

A. Expenditures thru November 11, 2010 total $110,490 or about 18% of the total project budget.

25% Complete

Subtask 1.3: TWRI will participate in meetings as appropriate in order to efficiently and effectively achieve project goals, coordinate monitoring efforts and summarize activities and achievements made throughout the course of this project. Months 1 thru 36.

The following actions have been completed during this reporting period:
A. A conference call was held October 22\textsuperscript{nd} to discuss project tasks, goals and deliverables, lines of responsibility and provide an update on project activities to date.

B. A stakeholder meeting was held in Nacogdoches on December 9\textsuperscript{th} and updated the public on project activities and begin steering committee formation.

\textbf{42\% Complete}

Subtask 1.4: TWRI will work with project personnel from ANRA, BAEN, CES, SAML, SFASU to prepare technical reports as required by project Tasks into published technical reports. These reports will be housed in the TWRI online Reports Database in definitely. Months 12 thru 36.

The following actions have been completed during this reporting period:

A. No activity to report at this time.

\textbf{0\% Complete}

\textbf{TASK 2: Quality Assurance}

Subtask 2.1: TWRI, with assistance from ANRA, BAEN, CES and SFASU will develop a QAPP for activities in Tasks 4, 5, 6, 7 and 8 consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5) and the TSSWCB Environmental Data Quality Management Plan. Months 1 thru 6.

The following actions have been completed during this reporting period:

A. The QAPP for the Development of a Watershed Protection Plan for Attoyac Bayou was approved by EPA on June 21\textsuperscript{st}.

\textbf{100\% Complete}

Subtask 2.2: TWRI will submit revisions and necessary amendments to the QAPP as needed. Months 6 thru 36.

The following actions have been completed during this reporting period:

A. A QAPP revision is underway to include information for RUAA sampling and analysis which is scheduled to begin this spring.

\textbf{10\% Complete}

\textbf{TASK 3: Public Participation and Stakeholder Coordination}

Subtask 3.1: CES, with assistance from ANRA, BAEN, Pineywoods RC&D, SAML, SFASU and TWRI, will facilitate public participation and stakeholder involvement in project meetings and activities. A master list of participants and potentially affected parties will be compiled and maintained by CES. Special care will be taken to engage a diverse group of stakeholders from throughout the watershed. Months 1 thru 36.

The following actions have been completed during this reporting period:

A. CES has continued to contact local stakeholders in the watershed and gaining their
support and buy-in for the project.

B. CES facilitated a stakeholder meeting in Nacogdoches on December 9th. Additional contacts made during this program were added to the stakeholder list.

**42% Complete**

Subtask 3.2: CES, with assistance from TWRI, will coordinate meetings, secure meeting locations, prepare and disseminate meeting notices and agendas. Meeting summaries will be prepared as appropriate and posted to the project website. It is anticipated that at a minimum, quarterly public meetings will be sufficient; however, if more meetings are deemed necessary, they will be scheduled accordingly. Meeting frequency may be adjusted throughout the course of the project to accomplish project goals. TSSWCB will review and approve all meeting notices, agendas, and meeting summaries prior to public dissemination. Months 1 thru 36.

The following actions have been completed during this reporting period:

A. CES with assistance from and in conjunction with ANRA, SFASU and TWRI planned and hosted a stakeholder meeting in Nacogdoches on December 9th, approximately 40 stakeholders were in attendance. The meeting was announced with multiple news releases and direct mailings.

**42% Complete**

Subtask 3.3: As needed, other public meetings will be attended by appropriate project personnel, usually the Watershed Coordinator, in order to communicate the goals and objectives of the project, activities and accomplishments to affected parties. These may include, city council, county commissioner’s court, regional water planning, CRP meetings, SWCD meetings, etc. Months 1 thru 36.

The following actions have been completed during this reporting period:

A. No activity to report this quarter.

**25% Complete**

Subtask 3.4: TWRI and CES will work to develop and disseminate educational materials to watershed stakeholders. These materials will include flyers, letters, brochures, news releases and others. All documents, educational materials, press releases, etc. will be reviewed and approved by the TSSWCB project manager prior to dissemination. Months 1 thru 36.

The following actions have been completed during this reporting period:

A. Flyers and news releases were developed announcing the December 9th stakeholder meeting.

**42% Complete**

Subtask 3.5: TWRI will develop, host and maintain a project website that will be used as a clearing house for all project related information. All presentations, documents and results will be posted to this website. It will also serve as a means to disseminate information to stakeholders and the general public. Months 1 thru 36.
The following actions have been completed during this reporting period:

A. TWRI has continued to add content and refine the design/layout of the project website. It is available online at: [http://attoyac.tamu.edu](http://attoyac.tamu.edu)

B. During the quarter, the site received 115 individual visits with 48% of those being new visits.

**85% Complete**

**TASK 4: Watershed Survey and GIS Information Update**

Subtask 4.1: CES will collaborate with other project partners, local agencies and stakeholders to develop a comprehensive GIS inventory of the Attoyac Bayou watershed. This GIS will include the most recent information available on land use, elevation, soils, stream networks, reservoirs, roads, municipalities and satellite imagery or aerial photography. Locations of SWQM stations, USGS gages, public access points to the waterbodies, floodwater-retarding structures, wetlands, TPDES permittees (including WWTFs, CAFOs and MS4s), and subdivisions should also be included. Locations of possible bacteria sources, identified in Subtask 4.3, should be incorporated. The cumulative impact of TSSWCB-certified WQMPs on the management of agricultural lands as modeled in TSSWCB project 04-06 will also be documented. Months 3 thru 28.

The following actions have been completed during this reporting period:

A. CES and BAEN have continued searching for GIS information about the watershed.

B. No new information was identified this quarter.

**75% Complete**

Subtask 4.2: CES will work to update existing Land Use/Land Cover for the watershed to a level that is representative of current watershed conditions. Months 6 thru 15.

The following actions have been completed during this reporting period:

A. CES is has completed LU/LC development and has sent the initial iteration to BAEN for review and testing.

**95% Complete**

Subtask 4.3: CES will collaborate with other project partners, especially ANRA and SFASU, and local stakeholders to conduct source survey that accurately characterizes the potential sources of contamination in the watershed during varying spatial and temporal monitoring periods. Months 3 thru 24.

The following actions have been completed during this reporting period:

A. CES has continued to coordinating with other project personnel to collect pertinent GIS and source survey information.

**15% Complete**

Subtask 4.4: CES will combine findings from the watershed survey, GIS update and LU/LC...
update into a task final report. Months 20 thru 28.

The following actions have been completed during this reporting period:

A. Began drafting report content describing the development of the LU/LC layer for the watershed.

10% Complete

**TASK 5: Surface Water Quality Monitoring**

Subtask 5.1: SFASU, with help from other project partners (ANRA and CES), will conduct sampling site reconnaissance at the prospective sample sites listed in Table 1 (Project Narrative) to determine the suitability of sample collection at these locations. Once site selection has been finalized; those needing TCEQ station numbers will be submitted for a Station Location request (SLOC request) by SFASU. Months 1 thru 3.

The following actions have been completed during this reporting period:

A. All SLOC request have been finalized and informal Site IDs have been issued.

100% Complete

Subtask 5.2: SFASU will conduct routine, bi-weekly (twice monthly), ambient water quality monitoring at 10 locations throughout the Attoyac Bayou watershed (see Table 1 in the Project Narrative) over the course of 2 years. Sampling will include routine field parameters (Temp, pH, DO, conductivity, flow) and collection of water samples of the volume required by the QAPP. Water samples will be delivered to ANRA within the appropriate holding time for bacteriological and nutrient analysis (these analysis will include ammonia N, nitrate-nitrite N, dissolved Ortho-P, Total P, Total Suspended Solids, and E. coli enumeration utilizing the IDEXX method). 52 sampling events are scheduled for a total of 520 samples. Sampling efforts will be coordinated with ANRA and TCEQ.

Additionally, a subset of water samples (250) will be collected for BST analysis. All 250 samples will be prepared for Bacteroidales analysis (Subtask 8.1) and a 100 sample subset of the 250 total samples collected will be prepared for E. coli analysis (Subtask 8.2). SFASU will deliver these samples to the WET Lab at SFASU for preparation and storage utilizing the USEPA 1603 method. Samples will be transferred to the SAML at TAMU for BST analysis (Task 8). Months 6 thru 30.

The following actions have been completed during this reporting period:

A. Sampling continued this quarter and events have occurred as scheduled every other Monday.

B. Some sites have experienced no-flow periods and as such have not been sampled.

C. Samples were delivered to SAML as planned for BST analysis this quarter.

30% Complete

Subtask 5.3: SFASU will utilize automated sampling devices to collect stormflow samples at two locations (Attoyac Bayou @ SH 7 and Big Iron Ore Creek @ FM 354). These samples will be
picked up by SFASU and delivered to ANRA for analysis. It is anticipated that a minimum of 10 stormflow events will be sampled from each selected site yielding at least 20 total stormflow samples. These samples will be analyzed for the same parameters as listed in Subtask 5.2. Months 6 thru 30.

The following actions have been completed during this reporting period:
A. Sampling equipment has been installed for the automated sampling stations.
B. To date significant rainfall events have not been recorded.
C. Sampling should begin next quarter weather permitting.

30% Complete

Subtask 5.4: SFASU will collect water quality samples quarterly for five quarters from the four identified point source dischargers in the watershed. Sampling will include routine field parameters (Temp, pH, DO, conductivity) nutrient parameters and bacteria parameters. Water samples will be delivered to ANRA within the appropriate holding time for bacteriological and nutrient analysis. 20 samples have been budgeted for. Months 6 thru 21.

The following actions have been completed during this reporting period:
A. The first set of point source discharger samples were collected this quarter.

30% Complete

Subtask 5.5: ANRA will maintain a master database for housing all environmental water quality data collected through the project. SFASU will maintain a database of field parameter data collected under the project and transmit this data to ANRA for inclusion into the master database. Data collected and analyzed will be included ANRA’s CRP database and submitted to TSSWCB for transmittal to TCEQ for inclusion in SWQMIS. Data will be formatted consistent with TCEQ DRMG. A Station Location (SLOC) Request for any new monitoring stations will be submitted to TCEQ by SFASU (Subtask 5.1). Months 6 thru 36.

The following actions have been completed during this reporting period:
A. ANRA has begun entering laboratory analysis results into their Laboratory Information Management System (LIMS) to generate hardcopy lab data analysis reports.
B. Data have not been incorporated into the CRP database as we are awaiting official TCEQ Site IDs.

30% Complete

Subtask 5.6: ANRA and SFASU will collaborate to develop a technical report summarizing water quality data findings. ANRA will focus on describing the analytical analysis of water samples and streamflow while SFASU will focus on describing field conditions and parameters. This report will be incorporated in the WPP developed for the Attoyac Bayou watershed. Months 24 thru 30.

The following actions have been completed during this reporting period:
A. No activity to report at this time.
0% Complete

**TASK 6: LDC and SELECT data analysis**

Subtask 6.1: *BAEN, with cooperation from other project partners, will develop LDCs on currently available ammonia and bacteria data for each monitoring site on the Attoyac Bayou. LDCs developed will be consistent with EPA’s An Approach for Using Load Duration Curves in the Development of TMDLs, EPA’s Options for Expressing Daily Loads in TMDLs. Months 6 thru 12.*

The following actions have been completed during this reporting period:

A. Historical data for ammonia and bacteria have been downloaded for all available sites in the Attoyac Bayou and historical LDC development is in process.

10% Complete

Subtask 6.2: *BAEN, with cooperation from other project partners, will update LDCs developed using historic water quality data with water quality data collected under Task 5. LDCs will be used to estimate needed load reduction for ammonia and bacteria at each site in the waterbody. Months 24 thru 30.*

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete

Subtask 6.3: *BAEN, with cooperation from other project partners, will conduct watershed modeling using the SELECT approach for the Attoyac Bayou. Information collected in Tasks 4, 5, 7 and 8 will be incorporated with information from LDC analyses to estimate pollutant loadings from sources within the watershed and identify potentially critical loading areas. Months 24 thru 30.*

The following actions have been completed during this reporting period:

A. BAEN has received the updated LU/LC layer from CES and has begun initial model set up.

10% Complete

Subtask 6.4: *BAEN will combine results from LDC and SELECT analysis into a technical report that summarizes Task 6 findings. Months 28 thru 32.*

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete

**TASK 7: Recreational Use Attainability Analysis**

Subtask 7.1: *Utilizing information from Task 4 (comprehensive GIS inventory and current land*
use classification) and other relevant information, CES and SFASU will identify sites for RUAA data collection. Proposed sites should be located in areas where the waterbody is accessible to the public and has the highest potential for recreational use (primary contact). Sites shall be identified for the Attoyac Bayou and the Terrapin, Waffelow, Naconiche, Little Iron Ore and West Creeks. Proposed sites shall at least include those from Task 5. The QAPP, as detailed in Task 2, will precisely identify selected sites. SFASU will submit Station Location Requests as needed to obtain TCEQ station numbers for new monitoring sites. Months 16 thru 28.

The following actions have been completed during this reporting period:

A. Work has continued by SFASU to refine a draft of proposed RUAA sampling sites document and associated map.

35% Complete

Subtask 7.2: CES and SFASU shall conduct a thorough historical information review of the recreational uses of the waterbody that occurred on and/or after November 28, 1975. Historical resources that should be examined include, but are not limited to, photographic evidence, local newspapers, museum collections, published reports, historical society records, and long-term landowners/residents. Texas Parks & Wildlife Department and commercial providers of outdoor recreation goods and services should be consulted for historical information. Months 16 thru 28.

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete

Subtask 7.3: CES and SFASU will conduct 2 field surveys at each selected RUAA site. Surveys shall be conducted during a normal (average) warm season (air temperature ≥ 70°F) during baseflow conditions. Baseflow conditions are sustained or typical dry, warm-weather flows between rainfall events, excluding unusual antecedent conditions of drought or wet weather. The surveys should be performed during the period people would most likely be using the waterbody for contact recreation, typically March to October (e.g., spring break, summer, holidays or weekends).

To ascertain the suitability of the streams for contact recreation use, field surveys shall document hydrological characteristics of the stream, such as width and depth of channel, flow/discharge, air/stream temperature, bank access, and stream substrate. Information to be collected shall at least satisfy those questions found on the Field Data Sheet from the TCEQ staff draft Recreational Use-Attainability Analyses (UAAs) – Procedures for a Comprehensive Recreational UAA and a Basic UAA Survey.

CES and SFASU shall document and describe antecedent (prior to fieldwork) rainfall conditions (approximately the previous 30 days) at each selected site. Months 16 thru 28.

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete
Subtask 7.4: CES and SFASU shall collect a digital photographic record of each selected site during the field surveys. Photographs shall include upstream, left and right bank, and downstream views. Any evidence of observed uses or indications of human use shall be photographed. Photographs should clearly depict the entire channel and each transect measured.

To aid in documenting existing uses, CES and SFASU shall install, operate, and maintain motion-capture cameras at selected monitoring locations from Task 5. (only those locations where bi-weekly sampling is conducted). Months 16 thru 28.

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete

Subtask 7.5: In order to obtain information on existing and historical uses and stream characteristics, CES and SFASU shall conduct interviews of 1) users present during the field surveys, 2) streamside landowners along the field survey transects, 3) local residents, and 4) commercial providers of outdoor recreation goods and services. Surveys shall include at least those questions found on the Interview Form from the TCEQ staff draft Recreational Use-Attainability Analyses (UAAs) – Procedures for a Comprehensive Recreational UAA and a Basic UAA Survey. Months 16 thru 28.

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete

Subtask 7.6: CES and SFASU will combine findings from historical review, field surveys, web searches and interviews into a technical report that meets criteria set forth in TCEQ’s Recreational Use-Attainability Analyses (UAAs) – Procedures for a Comprehensive Recreational UAA and a Basic UAA Survey. Results from this report will be included in the Attoyac Bayou WPP. Month 28 thru 32.

The following actions have been completed during this reporting period:

A. No activity to report at this time.

0% Complete

TASK 8: Bacterial Source Tracking

Subtask 8.1: SAML will conduct library-independent BST on 250 water samples utilizing the Bacteroidales PCR genetic test for human, ruminant, horse, and swine markers. The number of samples collected from each location may be adjusted depending on the size of each watershed in the study area and the complexity of sources as identified in the source survey (Task 4). Budgeted number of samples is 20 from each of Terrapin, Waffelow, Naconiche, Little Iron Ore and West Creeks for a total of 100 samples from the tributaries; 125 samples will be collected and analyzed from the Attoyac Bayou (25 from each sampling site); 21 stormflow samples as collected by automated equipment; 4 samples collected from WWTFs; in total, 250 samples will
be analyzed utilizing Bacteroidales PCR. Specific genetic markers for various animal sources are continually being developed by the scientific community and as new markers are identified, they should be included in this analysis as the budget allows. Water samples for this subtask shall be a subset of those collected by SFASU under Task 5. Month 6 thru 30.

The following actions have been completed during this reporting period:

A. SAML has archived Bacteroidales filters from 18 ambient water samples.

20% Complete

Subtask 8.2: SAML will conduct limited library-dependent BST and analyze E. coli isolates from 100 water samples (1 isolate per water sample) from across the study area utilizing the ERIC-PCR and RiboPrinting combination method. Isolates will be obtained from water samples collected at: each sampling site (8 samples from each, total of 80 samples), automated stormflow samples (8 samples from each, total of 16 samples) and 1 from each of the 4 WWTFs; yielding a total of 100 samples. This will serve to 1) confirm that the sources of E. coli and Bacteroidales are comparable and 2) assess the spatial and temporal adequacy of the Texas Known Source Library. Month 6 thru 30.

The following actions have been completed during this reporting period:

A. SAML has archived E. coli from 9 ambient water samples.

25% Complete

Subtask 8.3: SAML will add up to 30 known source fecal samples (1-2 isolates per fecal sample) to the Texas Known Source Library. Fecal samples will be added to the BST library utilizing the ERIC-PCR and RiboPrinting combination method. Samples for this subtask shall be collected by CES or SFASU under Task 5. Month 6 thru 30.

The following actions have been completed during this reporting period:

A. SAML has archived E. coli from 1 known source sample, a feral hog.

3% Complete

Subtask 8.4: SAML will assist CES in designing a watershed source survey (also known as a sanitary survey) (Task 4) that better characterizes possible sources of bacteria loadings in the study area. Results from the source survey will be used by SAML to make appropriate adjustments to the BST sampling design and assess the adequacy of the Texas Known Source Library. Month 1 thru 15.

The following actions have been completed during this reporting period:

A. SAML has participated in discussions with stakeholders and other project personnel to determine needs for a watershed source survey.

20% Complete

Subtask 8.5: BAEN will conduct watershed modeling for the study area (Task 6). SAML will work with BAEN to 1) integrate BST results into the model, to the extent possible, and 2) address and reconcile discrepancies between BST and modeling results. Month 7 thru 21.
The following actions have been completed during this reporting period:

A. No activity to report at this time.

**0% Complete**

Subtask 8.6: *CES and SFASU, as appropriate, will collect known source fecal samples from fresh road kill (less than 48 hrs old), known live sources, and other opportunistic sample sources (game taken by hunting or donated by stakeholders) in or very near the watershed. Samples will be delivered to the WET Lab at SFA for processing before being sent to the SAML at Texas A&M University in College Station. Month 6 thru 30.*

The following actions have been completed during this reporting period:

A. One known source sample has been sent to SAML for archival.

**3% Complete**

**TASK 9: Watershed Protection Plan Development**

Subtask 9.1: *CES will develop a WPP for the Attoyac Bayou watershed based on criteria set forth in the USEPA FY2004 NPS Program and Grants Guidelines for States and Territories. Findings from Tasks 4-8 and stakeholder input obtained from Task 3 will be utilized to develop the plan. Month 1 thru 36.*

The following actions have been completed during this reporting period:

A. No activity to report at this time.

**0% Complete**

Subtask 9.2: *TWRI, TSSWCB, ANRA, BAEN, Pineywoods RC&D, SAML, SFASU, and local SWCDs will assist with composition, editing, and publication of the final WPP, as needed. Month 1 thru 36.*

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**

**IV. Projected Work for Next Quarter**

Task 1. Work will continue in planning for coordination meetings amongst project personnel.

Task 2. QAPP will continue to be revised to include RUAA info.

Task 3. A stakeholder meeting will be conducted March 10th and planning will continue for this meeting. Anticipated topics of discussion are the formation of a watershed partnership.
and project steering committee as well as a brief discussion of the RUAA process. Stakeholders will continue to be engaged by the Watershed Coordinator.

Task 4. Continue to collect information for inclusion in the watershed GIS and recording information for the watershed source survey.

Task 5. Continue surface water quality monitoring and collect storm event samples, weather permitting.

Task 6. Work will continue on the development of historic LDCs.

Task 7. Work will continue on identifying sampling sites and developing a QAPP for this task.

Task 8. BST analysis and archival will continue with planned water sampling events.

Task 9. No work planned at this time.