

**Improving Water Quality by Developing, Implementing and Field Testing Innovative Methods  
FY 03 CWA 319(h)  
TSSWCB Agreement No. 03-10**

Quarter no. 3 From 4/01/04 Through 6/30/04.

**I. Abstract**

Project efforts during the third quarter primarily focused on selecting two technologies for year one evaluation. Technology providers and selected dairy cooperators met with project personnel on-site to developing an implementation, operation and sampling plan for each technology. In addition to establishing field work, TWRI worked with TIAER and TCE Soil, Water and Forage Testing Laboratory (SWFTL) to establish test methods and procedures to prepare project QAPP.

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

**TASK 1: Demonstration and Evaluation of New Technologies**

*Subtask 1.1: Identification of potential technology providers. TCE, TWRI, TFB, dairy industry representatives, EPA Region 6, TSSWCB, TCEQ, BRA, NRCS, and TAES will identify and select promising technologies represented by willing technology providers. (month 1 thru 3)*

The following actions have been completed during this reporting period:

- a. TCE received the following six proposed technologies in response to the project RFP.
  - 1) "Proposal for the Demonstration Project on the Treatment of Dairy Cattle Wastes in the Leon and Bosque River Watersheds" proposed by Micro<sub>2</sub>Tech (Georgetown, TX)
  - 2) "Demonstrate and Evaluate the Use of Technologies to Reduce Animal Waste Pollution" proposed by EnviroLink (Greeley, KS)
  - 3) "Bio-Regen Animal" proposed by Microganics, LLC (Southlake, TX)
  - 4) "Phosphorus Removal by Chemical Precipitation and Geotube<sup>®</sup> Dewatering" proposed by Miratech Division (Commerce, GA)
  - 5) "Electrocoagulation Technology" proposed by Ecoclean Industries, Inc. (Huntsville, TX)
  - 6) "Removal of Phosphorus by Struvite Precipitation" proposed by Animal-Agriculture Consulting, Inc. (Amarillo, TX)
- b. The 28 member technical committee (a sub part of the Advisory Committee) individually reviewed the 6 proposals.
- c. Technical committee met on 4-19-04 in Waco to discuss and rank the 6 proposed technologies. Committee selected the "Struvite" technology and the "Electrocoagulation" technology. The "Geotube" technology was ranked number 3 and in the event that "Struvite" or "Electrocoagulation" can not operate this year, the committee agreed that "Geotube" will be installed and tested during year one.
- d. TWRI notified all technology providers of committee selections via letter on 5-11-04.

**35% Complete**

*Subtask 1.2: Identification of dairy cooperators in the North Bosque watershed area that use a flush system and lagoons to remove, store, treat, and land-apply effluent (manure and process-generated wastewater). TCE, TSSWCB and TFB will identify dairy operations willing to participate in these demonstrations. (month 1 thru 3)*

The following actions have been completed during this reporting period:

- a. Following notice of selected technologies, TSSWCB and TCE personnel worked with technology providers in identifying and selecting a cooperative dairy. Efforts were made to select one dairy within each watershed (Bosque River and Leon River).
- b. TCE and TWRI personnel met with “Electrocoagulation” technology personnel, Mr. Alan Hansen, and the OSVE Dairy proprietor, Mr. Bert Velson, on 6-29-04. OSVE Dairy is located on Hwy 281 between Hico and Stephenville and is within the Bosque Watershed. Mr. Hansen reviewed dairy’s current waste management practices and explained technology operation and equipment to Mr. Velson. It is anticipated that “Electrocoagulation” technology will be implemented, optimized and sampling may begin by 9-04.
- c. TCE and TWRI personnel met with “Struvite” technology personnel, Dr. Dave Hutcheson, Mr. Paul Fagan and Mr. Daniel Champeau, and the Remington Tanner Dairy waste management personnel, Lance, on 6-29-04. Remington Tanner Dairy is located outside of Dublin within the Leon River Watershed. The “Struvite” technology will provide a comprehensive system of waste treatment at the dairy. Full implementation of the technology, however, is dependent upon potential funding in response to proposals currently submitted to various agencies. Animal-Agriculture Consulting assured TCE personnel that the status of their technology will be definite by 8-15-04. In the event that “Struvite” is not ready for implementation, project personnel will notify and invite the third ranked technology “Geotube” to install and optimize their system on a dairy within the Leon River Watershed.

### **30% Complete**

*Subtask 1.3: On-site installation and start-up of the six pilot-scale technologies to be demonstrated. Technology providers will carry out the task of equipment transport, on-site installation, set-up, and start-up. With permission from the cooperating dairy owner/operator, the technology provider will prepare the site to install and operate the system for demonstration. (First installation by August 2003, last installation 6 months before the end of the 3-year project)*

The following actions have been completed during this reporting period:

- a. No progress to report at this time.

### **0% Complete**

*Subtask 1.4: QAPP preparation and field data collection and analysis. TCE will prepare the DQO and QAPP, and collect samples from raw and treated effluent and resulting sludge. One of the evaluation tasks will be to analyze the sludge or by-product remaining after raw material treatment for P stability (August 2003 to May 2006)*

The following actions have been completed during this reporting period:

- a. Draft QAPP was reviewed by project cooperators. Upon evaluation, TIAER notified TWRI that in compliance with TCEQ Clean Rivers Program, the Laboratory made extreme changes

in procedures, methods, equipment, etc. and would no longer be able to provide the initially agreed upon methods for the project analysis. As a result, TWRI and TCE personnel contacted the TCE Soil, Water and Forage Testing Laboratory (SWFTL) in College Station to discuss potential methods and costs. It was agreed that due to budget constraints, TIAER would only test for all solids, pH, total phosphorus and soluble reactive phosphorus. TCE SWFTL would conduct the remaining analysis (TKN, K, other metals and salts).

- b. TWRI drafted second version of QAPP and sent to TIAER, SWFTL and TSSWCB for review and comment on 7-3-04.
- c. TWRI received edits from TSSWCB on 7-9-04.
- d. TWRI received edits from TIAER on 7-13-04.
- e. SWFTL anticipates submitting comments to TWRI by 7-15-04.
- f. Following revisions, TWRI will re-submit QAPP to TSSWCB for review and subsequently to EPA for approval. Anticipate QAPP approval within fourth quarter.

### **75% Complete**

*Subtask 1.5: Develop reports and outreach education materials. TCE in cooperation TWRI will produce educational brochures and publications on effectiveness of this innovative technology. Quarterly and final reports will be prepared and submitted in a timely manner.*

The following actions have been completed during this reporting period:

- a. Submitted Year 1, quarter 3 report to TSSWCB on 7-15-04

### **30% Complete**

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

The only issue of concern during quarter 3 was delay in the QAPP development. TWRI QA personnel in discussion with EPA and TSSWCB determined that utilizing TIAERs revised methodology and procedures as originally drafted would hinder final approval of QAPP. Therefore, an additional laboratory, SWFTL, was requested to provide services for sample analysis. Due to the unforeseen circumstances of TIAERs Laboratory modifications and the addition of SWFTL, the QAPP required complete revision and consequently, the process was delayed. TWRI anticipates the revised document will be submitted to EPA in quarter 4 and following QAPP approval, selected technologies will begin operation to reach maximum capacity allowing for sample collection and analysis to also commence in quarter 4.

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

The following will be accomplished during the coming quarter:

- a. QAPP will be submitted to EPA for approval.
- b. Selected technologies will be implemented by mid August.
- c. Once technologies reach maximum operation efficiency, sample collection and analysis will commence.
- d. Project personnel anticipate advisory committee members will be able to view technologies on dairy sites and review preliminary data by October, 2004.