

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

Quarter no. 12 From 7/01/06 Through 9/30/06

I. Abstract

Final reports and fact sheets were finalized, approved, and posted to the TWRI website during the quarter. Efforts were made to resolve issues that arose with Envirotech and their desired treatment approach and its estimated costs. The company finally agreed to conduct preliminary tests on the lagoon and results showed that treating the entire lagoon would indeed be economically unfeasible. A letter from them is expected next quarter notifying us of their withdraw from the MOA and the project. EnviroLink continued sampling at the Sherywn Wood dairy near Stephenville and has now completed 4 sampling events. One proposal was received in response to the previously released RFP for year 3 technologies. A conference call was held to discuss their proposed treatment method; a vote was taken after discussions and the proposed treatment process was approved. The year 3 RFP was re-released in an effort to obtain a 6th technology for testing.

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. Year one projects have been completed. Fact sheets and reports have been completed are currently posted on the TWRI website for everyone to access at:
<http://twri.tamu.edu/project-info/NewTechnologies/>
- b. Year two technologies have been initiated:
 - 1) “A Demonstration by Envirotech, Inc. of Phosphorus Removal From Liquid Manure Effluent at a Texas Dairy Farm by the Use of Bauxsol™,” proposed by Envirotech, Inc. (Atlanta, GA) is in the preliminary stages of implementation. Initial samples have been collected for lab analysis to determine proper application rates for the lagoon.
 - 2) “Demonstrate and Evaluate the Use of Technologies to Reduce Animal Waste Pollution” proposed by EnviroLink (Greeley, KS) has been implemented. This technology is up and running with four sampling events already completed.
- c. Year three technologies are being selected:

- 1) One proposal was received in response to the RFP released in the previous quarter. Natural Biotechnology from California proposes to use a variety of *Lactobacillus* to reduce phosphorus from a dairy lagoon. A conference call was held on August 11 to discuss the proposal and its ability to meet the objectives of the project. A vote was taken and the majority approved this technology for implementation.
- 2) The RFP has also been re-released in an effort to obtain a 6th technology to demonstrate for the project. A deadline of November 15 was set to receive proposals.

83% 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. The year one technologies were implemented at the following dairies:
 - 1) “Ecoloclean” – OSVE Dairy (proprietor – Mr. Bert Velson), Bosque Watershed.
 - 2) “Geotube” – Triple X Dairy (proprietor – Mr. Wayne Moermen), Leon Watershed.
- b. The year two technologies have chosen the following dairies to apply their technology:
 - 1) “EnviroLink” - Sherwyn Wood Dairy (proprietor – Sherwyn Wood) Bosque watershed.
 - 2) “Envirotech” – John Koster Dairy (proprietor – John Koster) Leon watershed.
- c. Year three technologies are in the process of choosing dairies.
 - 1) “Natural Biotechnology” – Wild West Dairies located near Stephenville in the Bosque River watershed.
 - 2) The 6th technology will choose a dairy once that technology has been approved.

83% 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. EnviroLink has established its sampling protocol (attached at end of report).
- b. EnviroLink has also initiated its technology and has already completed two sampling events. Their technology is being tested at the Sherwyn Wood Dairy in the Bosque River watershed.
- c. Envirotech has conducted initial tests on the lagoons. Results from these test showed that treatment of an entire lagoon using their methods would not be economically feasible. As a result, we expect a letter of withdraw from Envirotech next quarter.

- d. Natural Biotechnology has also initiated discussions with the dairy and will conduct preliminary tests this fall before treating the lagoon.

60% Complete

Subtask 1.4: QAPP preparation and field data collection and analysis. TCE will prepare the DQO and QAPP (August 2003 to August 2004)

- a. Annual revisions to the QAPP have been completed and have been approved.

100% Complete

TCE will 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. Sampling is underway for the EnviroLink technology. Four sampling events have been completed to date. Sampling that occurred in this quarter was conducted on July 26, and August 31.
- b. Envirotech has not implemented their technology yet; initial sampling showed that costs to treat the entire lagoon are uneconomical. They plan to withdraw from the project.

40% Complete

Subtask 1.5: Develop reports and outreach education materials. TCE in cooperation with 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. Reports summarizing both the Ecoloclean electrocoagulation technology and the Geotube technology have been completed, approved, and are posted on the TWRI website.
- b. Fact sheets for the Ecoloclean electrocoagulation technology and the Geotube technology have been developed and are posted on the TWRI website.
- c. A survey was developed in August and sent out to Extension Agents in September for them to distribute at meetings with dairy producers. The intent of this survey is to gain knowledge about the project's effects on reducing the number of solicitations that dairy producers have received before and after this project was conducted.
- d. TWRI submitted the year 3, quarter 4 report to TSSWCB on October 13, 2006.

69% Complete

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

- a. Envirotech, Inc. agreed to proceed with treatment of the entire lagoon pending results of samples taken at the lagoon. The cost of treatment was an issue of concern and they wanted to treat two 250 gal. tanks instead of the entire lagoon. Preliminary test results did show that treating the entire lagoon would be uneconomical. They are planning to withdraw from the project.
- b. Dr. Mukhtar and Lucas Gregory met with Mark Yeager, the president of Natural Biotechnology to discuss the project and to make sure he understood the requirements of both parties.

IV. Projected Work for Next Quarter

The following will be accomplished during the coming quarter:

- a. The year 3 RFP has been re-released to various media outlets. Proposals will be accepted through November 15th for a 6th technology to test in this project.
- b. A site visit has been tentatively scheduled for the middle of November for Dr. Mukhtar, Lucas Gregory and Mark Yeager to meet at Wild West Dairies and discuss the dairy set up and how he plans to implement their technology.
- c. A memorandum of agreement will be signed between TCE and Natural Biotechnology during the next quarter.
- d. Dr. Mukhtar is planning to make a presentation next quarter about project results and activities.