

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

Quarter no. 8 From 7/01/05 Through 9/30/05

I. Abstract

Finalizing the demonstration and evaluation of the year one technologies and selection of the year two technologies were the main focus of the eighth quarter. Sampling of the Ecoloclean technology was completed and a demonstration of the technology was conducted. Analysis of the Ecoloclean sampling data has now begun. The Technology Advisory Committee met and selected two technologies for evaluation during year two of the study – EnviroLink’s L4DB microbial technology and Envirotech’s BauxsolTM technology.

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. Two technologies were evaluated for year one:
 - 1) “Electrocoagulation Technology” proposed by Ecoloclean Industries, Inc. (Huntsville, TX)
 - 2) “Phosphorus Removal by Chemical Precipitation and Geotube[®] Dewatering” proposed by Miratech Division (Commerce, GA)
- b. TCE received the following three proposed technologies in response to the year two RFP:
 - 1) “A Demonstration by Envirotech, Inc. of Phosphorus Removal From Liquid Manure Effluent at a Texas Dairy Farm by the Use of BauxsolTM,” proposed by Envirotech, Inc. (Atlanta, GA)
 - 2) “Demonstrate and Evaluate the Use of Technologies to Reduce Animal Waste Pollution” proposed by EnviroLink (Greeley, KS)
 - 3) “The Use of Oxy-ProTM in Reducing Animal Waste Pollution in the Upper North and North Bosque River Segments, Including the Leon River Watershed” proposed by Progressive Global Technologies, Inc.
- c. The Technology Advisory Committee met on 7-28-05, in Waco to discuss the three proposals received and select the two technologies to evaluate for this year. The Committee selected Envirotech’s “BauxsolTM” technology and EnviroLink’s “L4DB microbial” technology.
- d. TWRI notified all technology providers of committee selections via letter on 8-15-05.

66% 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. Envirotech’s Bauxsol™, technology will be demonstrated on the Aurora Organic Dairy (proprietor – Mr. Chuck Timmens), Leon Watershed.
- c. A cooperating dairy in the Bosque Watershed will be identified for demonstrating EnviroLink’s L4DB microbial technology.

50% 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. Year two technologies were identified on 7-28-05.
- b. Memorandums of Agreement between TCE and EnviroLink and Envirotech were drafted and are being finalized.
- c. Meetings with the technology providers were scheduled to discuss the MOAs, the specifics of each technology, and the timeline for their demonstration.
 - 1) Envirotech Meeting – 10-11-05 at 9:00 am at the Brazos River Authority, Waco
 - 2) EnviroLink Meeting – 10-20-05 at 9:00 am at the Brazos River Authority, Waco

33% Complete

Subtask 1.4: QAPP preparation and field data collection and analysis.

TCE will prepare the DQO and QAPP (August 2003 to August 2004)

The following actions have been completed during this reporting period:

- a. The amendment to the QAPP to allow for the analysis of Aluminum in samples was approved on 7-28-05.
- b. TIAER failed to meet the holding times for ortho-phosphate in 8 samples as a result of analyst error. As a result, the Project Manager was notified, the analyst was advised to pay closer attention to detail, and the sample data were QC flagged. The Corrective Action Report is attached (**Appendix A**).

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. Project personnel conducted sampling trips on 7-7-05, 7-12-05, 7-19-05, 7-26-05, and 8-2-05 to collect samples from the “Ecoloclean” Technology. The samples were submitted to TIAER for analysis.
- b. Project personnel met with Ecoloclean on 8-12-05 to discuss:
 - 1) the configuration of the system for each week of sampling and
 - 2) the economics of the system
- c. Results of all sample analysis from Ecoloclean technology have been received from TIAER. Project personnel are currently performing statistical analysis of data.

30% 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. A Dairy Technology Tour on the OSVE Dairy was held on 8-2-05. The Ecoloclean electrocoagulation technology was demonstrated to the tour participants while samples were collected by project staff (**Figures 1 and 2**).
- b. Submitted Year 2, quarter 4 report to TSSWCB on 10-7-05.

66% Complete



Figure 1. EC Unit: built on a filter press frame.



Figure 2. Collection of Ecoloclean samples.

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

- The final sampling of the Geotube technology and removal of the Geotubes from the cooperating dairy has been delayed as a result of communication difficulties with the technology provider, Miratech Division. A certified letter was sent to remediate this situation.
- The varying systems used by Ecoloclean have increased the complexity of the analysis of the technology. In addition, because TCE has not received economic data from Ecoloclean, economic analysis has not progressed. TCE is working closely with Ecoloclean to obtain the necessary information to complete the analysis of the technology.
- Because the project was not initiated until December 2003, the project will not be completed by March 31, 2006. A one-year no-cost extension will be requested to provide adequate time for completing the project.

IV. Projected Work for Next Quarter

The following will be accomplished during the coming quarter:

- a. Complete final sampling of Geotube and remove technology from cooperating dairy.
- b. Finalize analysis of Ecoloclean technology.
- c. Envirotech Meeting – 10-11-05 at 9:00 a.m. at the Brazos River Authority, Waco.
- d. EnviroLink Meeting – 10-20-05 at 9:00 a.m. at the Brazos River Authority, Waco.
- e. Initiate MOA's with Envirotech and EnviroLink.
- f. Identify dairy cooperator for EnviroLink in Bosque watershed.
- g. Begin installing year two technologies on cooperating dairies.
- h. Begin developing RFP for year three technologies.
- i. Request one year no-cost project extension.

Appendix A
Corrective Action Report # 05-0225

