

US EPA ARCHIVE DOCUMENT

**State Innovation Grant Project
Narragansett Bay Commission
Progress Report - 10
April 1, 2011 – June 30, 2011**

Project Title: Sustainable Energy Management Practices for Wastewater Treatment Facilities

Part 1 – Synopsis of Accomplishments

During the current Project Reporting Period April 1st through June 30th, 2011 the following activities took place: the Project Partners (NBC, RIDEM, URI, National Grid, RIMES and EPA) continued to meet and participate on conference calls to discuss and plan activities associated with project development and implementation, NBC continued collecting energy use data from RI WWTFs for benchmarking, work on investigating the potential use of biodiesel glycerin as a wastewater treatment carbon source continued to remain on hold (this work will pick-up in the summer months of 2011), NBC's Pollution Prevention Engineer continued to research renewable energy opportunities for RI WWTFs and continued working with URI to investigate alternative sources of anaerobic digester feed (waste) materials to help improve biogas production, an Energy Efficiency Grant Proposal workshop was held on June 15th, 2011, NBC and National Grid began conducted Technical Assessments of 11 WWTFs and NBC began finalizing the format of the FOG-ERP Workbook for distribution to local restaurants.

Part 2 – Summary of Activities Accomplishments

I. WWTF Energy Focused Environmental Management System Project

EF-EMS Steering Committee

Throughout the previous Project Period (January 1, 2011 – March 31, 2011) the EF-EMS Steering Committee coordinated efforts with Mr. Ken Payne of the Rhode Island Office of Energy Resources (RIOER) to make available ARRA funding for Energy Efficiency Technical Assessments and Wastewater Treatment Facilities Energy Efficiency Upgrades. As a result of these efforts NBC received \$86,000 in ARRA grant funding to help pay for ½ the costs of conducting Energy Efficiency Technical Assessments (EETAs) of each participating RI WWTF with the other ½ of the TA costs being provided by National Grid and more than \$3,100,000 was awarded to 6 WWTFs to initiate 22 individual Energy Efficiency Measures.

Roundtable Meeting – ARRA Grant Applications

On June 15th NBC, the Rhode Island Office of Energy Resources (RIOER), and the Rhode Island Department of Environmental Management hosted a 2-hour workshop for WWTFs that received "Round-1" ARRA Energy Efficiency Grants from the RIOER. During the last hour of the workshop NBC presented information on developing applications proposals for Round 2 grants.

Energy Audits/Scoping Studies and Technical Assessments

Throughout the last project period the following activities took place regarding Energy Audits/Scoping Studies and Technical Assessments:

- On Friday, April 1, 2011, NBC's ESTA Manager and P2 Engineer attended a meeting with National Grid at RIDEM regarding the grants for energy efficiency and technical assessments.
- On Monday, May 23, 2011, NBC's P2 Engineer and Nation Grid's Technical Assessment Contractor, TNZ Energy, attended a meeting at the Westerly WWTF to help them complete their Technical Assessment.
- On June 7th NBC ESTA Program Manager met with National Grid, RIDEM and TNZ representatives to discuss progress being made with respect to the WWTF EF-EMS TA studies.
- On June 28th NBC's ESTA Program Manager met with National Grid, RIDEM to review project progress.
- On Thursday, June 2, NBC's P2 Engineer met with Eric Studer of TNZ to discuss custom energy efficiency measures at NBC.
- On Thursday, June 23, NBC's P2 Engineer contacted all RI POTWs with an offer to help them update their Portfolio Manager accounts.
- On Wednesday, June 22, NBC's P2Engineer participated in tours of the Bucklin Point Wastewater Treatment facility and the Bristol composting facility with URI students.

To-date Scoping Studies/Technical Assessments have been conducted of the following WWTFs:

Facility	Date	Energy Team Leader
Jamestown WWTF	July 1, 2009	Action Energy
Narragansett WWTF (Scarborough)	July 14, 2009	Action Energy
Bucklin Point WWTF	July 22, 2009	Action Energy
QPDC WWCP	August 25, 2009	NBC
Burriville WWTF	February 23, 2010	DMI
Smithfield WWTF	March 10, 2010	DMI
Cranston WWTF	March 24, 2010	DMI
South Kingstown	April 7, 2010	DMI
Quonset Point	April 21, 2010	DMI
Newport	April 28, 2010	DMI
Warren	May5, 2010	DMI
East Greenwich	May 12, 2010	DMI
Bucklin Point	May 19, 2010	DMI
Jamestown	May 26, 2010	DMI
Westerly	June 9, 2010	DMI
West Warwick	June 16, 2010	DMI

Facility	Date	Energy Team Leader
East Providence	July 8, 2010	DMI
Bristol	May 2011	TNZ-TA
Bucklin Point WWTF	May 2011	TNZ-TA
East Providence	May 2011	TNZ-TA
Jamestown	May 2011	TNZ -TA
Scarborough	May 2011	TNZ -TA
Smithfield	May 2011	TNZ -TA
South Kingstown	May 2011	TNZ -TA
West Warwick	May 2011	TNZ -TA
Westerly	May 23, 2011	TNZ -TA
Woonsocket	May 2011	TNZ -TA
New Shoreham	June 29, 2011	TNZ -TA

Renewable Energy Applications

Throughout the current Project Period, NBC's Pollution Prevention Engineer compiled information and facility drawings for the New Shoreham WWTF to help develop a feasibility assessment on the potential use of renewable hydroelectric power and solar energy.

II. FOG Environmental Results Program Project

Biodiesel/Glycerin

In response to a request from the NBC's Bucklin Point (BP) WWTF, investigations have been initiated into the feasibility of utilizing a glycerin by-product from the production of biodiesel as a carbon source within the BP WWTF's biological nutrient removal (BNR) process. The BP WWTF BNR process consists of nitrification in which ammonia nitrogen is oxidized to form nitrate nitrogen followed by de-nitrification in which nitrate nitrogen is reduced to nitric oxide, nitrous oxide and nitrogen gas. In an effort to improve the effectiveness of the de-nitrification step the NBC is conducting a pilot study using glycerin, generated as a by-product from the local production of biodiesel, as a carbon source within the BNR de-nitrification process. The glycerin is injected into the anoxic zone of one aeration tank treatment train at the surface mixer. This allows for adequate mixing of the glycerin at a point within the treatment process where available carbon is at a minimum. The effect of the glycerin on treatment operation is monitored through the use of in-line sensors and sample collection and analysis. Efforts associated with this project were halted due to low atmospheric temperatures which tend to slowdown the biological nitrification/de-nitrification process. The pilot study will resume in August 2011. No SIG grant funds are being used for this study.

Restaurant FOG Self-Certification Workbook

On April 6th, 2011 NBC's ESTA Program Manager reviewed and modified the FOG ERP and met with RIDEM and URI to discuss the document. Based on discussions during this meeting several modifications to the formatting of the documents were planned

URI Anaerobic Digestion Biogas Project

Throughout this project period NBC continued efforts with URI regarding research on anaerobic digestion by supplying URI with various samples of digester sludge from the BP WWTF.

III. Miscellaneous Activities**National Grid Energy Efficiency Expo**

On Tuesday, June 7, NBC's P2 Engineer attended the National Grid Energy Efficiency Expo at Gillette Stadium.

Solar Energy Workshop

On Thursday, June 9, NBC's P2 Engineer attended a one-day workshop on solar photovoltaic energy systems.

WEF Energy and Water 2011 Conference

NBC will be displaying a poster and making a presentation on the EF-EMS project at the WEF Energy and Water Conference in Chicago July 31st through August 2nd 2011.

Part 3 – Projection of Activities, Accomplishments, and Major Expenditures for Next Quarter Report**I. WWTF Energy Focused Environmental Management System Project**

- A Roundtable Meeting will be scheduled for September/October 2011
- Complete Energy Use Technical Assessments in cooperation with National Grid and the RIOER in July/August 2011

II. FOG Environmental Results Program Project

- Finalize FOG-ERP Workbook
- FOG-ERP Steering Committee – Form Steering Committee and schedule first meeting
- ERP Certification – Mail out workbook and certification checklists

Part 4 – Financial Report

Project Expenses

A summary of grant related expenses to-date is as follows:

	Salary	Fringe	Non-Classified Limited	Total Personnel	Operating	Travel	Overhead Expenses	Match Funds	Grant Funds
NBC	\$64,516	\$35,484		\$100,000				\$50,000	\$50,000.00
RIDEM									\$0.00
RIMES				\$20,100					\$20,100.00
URI	\$102,835.03	\$23,364.90	\$11,411	\$137,611.32	\$70.00	\$1,951.53	\$35,367.17	\$33,512	\$175,000.02
Total:				\$257,711.32	\$70.00	\$1,951.53	\$35,367.17	\$83,511.88	\$245,100.02

Attachments:

1. Project Milestone Summary Table
2. Re-Formatted FOG ERP Workbook Sample Pages
3. New Shoreham – Sample Renewable Energy Assessment