

US EPA ARCHIVE DOCUMENT

State Innovation Grant Project
Rhode Island Department of Environmental Management (DEM)
Progress Report #7
 July 1, 2008 to September 30, 2008

Project Title: Underground Storage Tanks—Alternative Inspection Programs and the U.S. Energy Policy Act of 2005

Part 1 – Synopsis of Accomplishments. The major activities that took place during the reporting period included meetings/conference calls, finalization of facility and tank baseline data, completion of 5-year historical compliance data regression analysis, and ongoing interstate indicator comparative analysis. DEM and URI project participants met frequently and several conference calls with FL UST program personnel took place. Communication with NH and VT is also ongoing in an effort to establish a similar data comparison template. Information for the post-certification analysis is being gathered as 94 of the 100 randomly-selected facilities were inspected and data are being tabulated in Excel. Relative to the original work plan schedule and the key tasks associated with this reporting period, progress is summarized below.

Task	Original Completion Date	Status	Comments
Statistical analysis of RIDEM UST ERP data	June 1, 2008	Ongoing	Baseline facility- and tank-level data analysis completed (see attached file). Post-certification data gathering almost complete (94 of 100). QA/QC performed on 80 post-certification checklists.
Regression analysis of 5-year historical data	Jan. 1 2008 (start)	Completed	Regression analysis of 5-year historical data completed (see attached report). Main result shows that number of inspections has less effect on compliance rate – utilization of resources in other areas may be more productive
Design data collection template/criteria for partner states	Nov. 1, 2007	Ongoing with NH and VT	Completed for FL. Discussions with NH and VT (Mike Crow) ongoing.
Send out data collection template/criteria to partner states	Jan. 1, 2008	Completed for FL, on going with NH	Florida provided with table of formatted performance indicator data to begin analysis of FL data.
Begin Interstate Comparative Analysis	July 1, 2008 (start)	Ongoing	Using table provided, Florida has commenced data collection and grouping.

Part 2 – Narrative Discussion.

- *Statistical Analysis of ERP Data* - Finalization of the baseline data has resulted in the identification of 59 measurable facility and tank-level indicators, 35 performance trend indicators, and 24 non-measurable indicators (118 total, see attached Excel file “BaselineDataFinal.xls”). Any indicator that displays a compliance proportion of 0.95 or less is considered a potentially measurable

indicator whereas those indicators that were calculated to be over 0.95 are categorized as performance trend indicators, to be monitored for continued compliance. Additional statistical work (Wald, adjusted Wald, cluster analysis) was conducted relative to confidence interval calculations. The analysis of data at both the facility and tank-levels goes beyond the scope of work presented in DEM's original proposal and workplan, but is being performed to further support the validity of ERP when compared against a traditional inspection program as noted below.

Of the 100 randomly selected post-certification inspections, 94 were completed by DEM's Office of Waste Management as of September 30, 2008. Once the full set of post-certification inspections is completed, data can be organized and formatted to begin the performance measurement step of the analysis.

- *Regression Analysis of Rhode Island Historical Compliance Data* - In the last reporting period, it was determined that 5 years of historical data from 2001 to 2005 were available to perform a multivariate regression analysis to determine or confirm the influence of certain factors on compliance (measured as Total Number of Violations). Details are presented in the attached file titled "5-YearRegresAnalysis.doc." In summary, the most interesting finding is that the *number of inspections* had the least effect on compliance; thus it may be worthwhile to investigate alternate uses of resources that would better influence compliance.
- *Partner States* - Work with partner states to compare compliance rates for indicators is continuing. Roberta Dusky of FL DEP has begun to manually separate 2007 UST inspection data from the combined database that includes AST inspection information. There are a total of 20,800 compliance inspections for both UST and AST facilities, so this particular process to separate the data is quite time-consuming. The preliminary results indicate that approximately 3,800 facilities accounted for 12,000 UST violations. Once the UST inspections have been separated out, the analogous indicators will be assigned and compared with the RI list of indicators, where available. While regulations are similar in both states, there are many differences in formatting where regulatory requirements are not presented exactly the same, thus requiring even more effort to compare effectively. For the reasons mentioned above, more time than originally anticipated is needed to complete the comparative study. In any case, the comparative analysis has begun and is following the projected timeline (July 1, 2008 start date).

Work with New Hampshire is ongoing as the same baseline indicator table has also been forwarded to NH in hopes of setting up a similar comparative analysis. In addition, work with Vermont and Mike Crow continues. Similar difficulty with Vermont's data (EBPI data are aggregated into broad categories) exists, though it appears possible to disaggregate the data into a form that may be useful to the overall comparative analysis step of the project. It is anticipated that some results from this interstate analysis will be available by the beginning of 2009.

- *Economic Analysis* – While not a primary task of this proposed project, a first order economic evaluation was performed in previous reporting periods to compare the costs of ERP versus the traditional inspection approach for the RI UST program. A paper is still in the process of being written.
- *ERP Consortium Meeting* – In September 2008, Richard Enander of DEM presented UST project findings at the Second Annual National States ERP Consortium Meeting in Reno, NV. Professor Choudary Hanumara from URI's Department of Computer Science and Statistics also attended to provide an overview of statistical ERP tools.

Part 3 – Projection of Activities, Accomplishments, and Major Expenditures for Next Quarter Report. The final 6 post-certification inspections should be completed during the next reporting period and data incorporated into the ongoing statistical analyses. Much of the direct comparative indicator analysis with FL should be completed during the next reporting period, subject to FL work schedule. A visit to NH is planned to work on indicator comparisons between RI ERP and NH's traditional inspection programs. The economic analysis paper will also be more complete and possibly ready for publication. There will be no unusual expenditures expected for the next reporting period.

Part 4 – Financial Report. In this reporting period, \$12,691 was spent. Total grant expenditures as of September 30, 2008 are \$149,212. Almost all of the funds were used to support URI through the existing contract. The rate of spending is close to what was originally anticipated.

Attachments:

1. Excel file – Finalized UST Baseline Indicator List
2. Report –Regression Analysis of UST Compliance Data (5-Year Data)