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consulting engineers and scientists

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June 10, 2009

Mr. Tom Lipetzky
Colorado Department of Agriculture
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000

Subject: Interim Report for: The Cataloging of Available Feedstock in Colorado for Use in Anaerobic Digestion for Production of Biogas
Contract Routing Number (CLIN#): 09BAA00159
Project No.: 4113.002

Dear Mr. Lipetzky:

Stewart Environmental Consultants, Inc. is providing this interim report to the Colorado Department of Agriculture (CDA) for the project of cataloging of available feedstock in Colorado for use in anaerobic digestion for the production of biogas. Producers of such feedstock of interest include: confined animal feeding operations (CAFOs) in Colorado (swine, sheep, poultry, and dairy and beef cattle), as well as animal renderers and large volume food processors in Colorado. We are gathering relevant information for assimilation into a database.

STATUS OF TASKS TO COMPLETE

Below is a brief status of the tasks as outlined in the "Statement of Work," with a narrative following.

- a. Stewart Environmental has identified CAFOs, animal rendering, and food processor facilities, and organized relevant information about them, such as contact info, location, species, and/or capacity, into spreadsheets. We may also include landfill biomass information if we can gather enough meaningful data.
- b. We have located geographic information system (GIS) coordinates of the CAFOs. We received GIS information on the landfills in Colorado, thanks to a connection with the Center for Energy & Environmental Security (CEES) at the University of Colorado at Boulder. We found an online GIS model for the biomass in Minnesota, conducted by the Minnesota Center for Energy and Environment. This online model is a good template for our project.
- c. The next steps for this project include conducting a telephone survey with representatives from each CAFO, animal rendering facility, and food processor to gather more information on their individual waste streams, treatment, and transport methods. Stewart Environmental will then develop a back-end database compatible with a proprietary web-enabled GIS presentation layer being developed by the College of Engineering, GIS Department at Colorado State University (CSU).

- d. There have not yet been any major problems in our research. We foresee some complications in acquiring all the necessary information from each facility while conducting the telephone survey, but, with some perseverance, we should be able to obtain sufficient information.
- e. We have identified a significant number of feedstock producers in northeast Colorado. This is where our primary focus will be for the cataloging effort.
- f. We are on schedule to have the final project report submitted in early November.

This interim report is a brief discussion of the status and findings to date.

BIOMASS LOCATION IDENTIFICATION

Stewart Environmental obtained CAFO records from the Colorado Department of Public Health and Environment (CDPHE) to identify exact locations of significant producers of high-strength organic waste suitable for anaerobic digestion. We received meat render contact information from the CDA's Animal Industry Division. We used the CDA's online Food & Agricultural Directory to find facility locations for the large-volume food processors in Colorado.

We intend to use the contact information that we have obtained to perform a telephone survey of the facility representatives. Information for each facility includes: current waste treatment methods and transportation pricing, the amount of certain species on site, and the facility's interest in transaction of their waste stream.

We will compile the above data into a database, which will serve as the platform to interact with commercially available ARC GIS software for future reference and/or public dissemination by CDA. For the final report, an overlay and analysis of transport methods will be included in hard copy.

As a possible value-added component to this contract, Stewart Environmental has learned that the Department of Engineering at CSU is developing a potentially open-source web-enabled GIS presentation layer. Though the software code will be proprietary to CSU, interaction on the presentation layer is likely to be open-source. If that is the case, the CDA will have an excellent opportunity to provide a publicly accessible biomass database. Stewart Environmental will endeavor to work with CSU to further understand how the CDA may benefit from integration of this data.

If you have any questions about this information or the status of our feasibility study, please contact us.

Sincerely,

STEWART ENVIRONMENTAL CONSULTANTS, INC.



R. Forbes Guthrie
Director, Business Development