



WATER POLLUTION CONTROL**MEMORANDUM**

To: Gregg Mandsager, City Administrator

CC: Nancy Lueck, Finance Director
Fran Donelson, Secretary

From: Jon Koch, WPCP Director

Date: March 31, 2014

Re: Screening Study for High Strength Hauled Waste Dump Site

INTRODUCTION: A screening study is needed to proceed with the budgeted High Strength Hauled Waste Dump Site Project. This phase one of three study will be used for proposals to the DNR and to determine the plants ability to handle such wastes as fats, oils, greases (FOG) and other industrial organic discharges.

BACKGROUND: The Water Pollution Control Plant (WPCP) is not designed to accept hauled waste generated by restaurants in Muscatine. All grease interceptor and grease trap waste generated by the 100+ food service establishments in Muscatine must be hauled as far away as Cedar Rapids and Des Moines for proper disposal. These cities then receive fees and taxes to dump this waste. This material is also valuable for the production of biogas, a gas that is nearly identical to natural gas and is currently used to fire boilers at the plant. In larger quantities, this gas can be used to generate electricity, heat buildings and fuel vehicles. The WPCP has been experimenting with accepting a very limited amount of FOG and last year generated over \$40,000 in dumping fees. The current dump location is not sustainable for receiving large amounts of FOG and needs to be accessible seven days a week 24 hours a day.

RECOMMENDATION/RATIONALE: Staff recommends proceeding with a Professional Services Agreement with Stanley Consultants for \$20,500 to conduct the Phase 1 Screening Study. \$20,000 was budgeted for this study.

BACKUP INFORMATION:

1. Exhibit 1 Scope of Services



Background

City of Muscatine WPCP would like to develop a high strength waste (HSW) receiving facility to receive, blend and feed HSWs to the plant's anaerobic digestion system. The HSW receiving facility would provide an appropriate facility for disposal of commercial and industrial facilities in the area and produce additional digester gas (biogas) for use in heating, electric co-generation, or compressed natural gas (bio-CNG) that can be used to fuel vehicles. One of the anticipated benefits of HSW receiving is the potential to eliminate current natural gas purchases for digester heating during the coldest winter months. The development of the HSW facility and appropriate biogas processing and reuse systems is anticipated to occur in a multi-phase project consisting of screening study, feasibility study, and design. The receiving facilities will also incorporate a facility to receive grit/debris materials from city sewer vacuum trucks and commercial haulers that are bringing in car wash trap deposits which contain high volumes of sand/grit.

Basic Services

Phase 1 – Screening Study

1. Visit with Client to discuss study objectives, methodologies, and data/information needs.
2. Obtain, review, and analyze available existing data including:
 - a. Current HSW/septage receiving quantities/loads.
 - b. Current digester loadings.
 - c. Current digester gas production.
 - d. Heating demands for digester heating and building heating.
 - e. Plant electrical demands.
 - f. Gas consumption and amount flared.
 - g. Digester design information.
3. Determine the digester capacity available to receive and digest HSWs based on today's wastewater flows and loads and the overall capacity of the digesters to receive load.
4. Estimate the potential gas production quantities if the available digester capacity is filled with HSWs of variable strengths.
5. Compare estimated gas production with gas consumption on both an annual basis and during peak demand month.
6. Estimate worth of existing biogas production and after HSW receiving based on current natural gas pricing and equivalent worth of electricity and diesel fuel.
7. Develop HSW Receiving Facility concepts with Client input.
 - a. HSW facilities to be located south of the existing digesters will generally consist of two receiving bays.
 - i. One bay will be for unloading fat, oil, grease and high strength wastes.
 - ii. The other bay will be for unloading vacuum trucks with sewer debris and car wash trap contents.
 - b. Existing former digester(s) will be configured to allow waste segregation, blending, and feeding to the active digesters.
 - c. Special features such as screening, flushing and wash water, and heat tracing and tank heating, sampling provisions, and controlled pump metering will be identified.
8. Prepare study-level Engineer's estimate of probable construction cost.
9. Summarize results in a short report for consideration of Client prior to starting Phase 2 Feasibility Study or HSW Design. Three copies will be provided to Client.