ADDITIONAL TECHNICAL INFORMATION FOR A LANDFILL WASTE-TO-ENERGY FACILITY, INCLUDING FLARES

The following information will be used for the technical review of a permit to install application for a **landfill waste-to-energy facility.** This information is in addition to the general requirements outlined in the AQD document "Information for an Administratively Complete Permit to Install Application", Part 2 - Additional Supporting Information, Items A through F. All of the information may not be needed for each application. Also, this document may not be all inclusive. Additional information beyond that identified may be necessary to complete the technical review of any individual application. In the event a determination is made that new additional information is needed for a technical review, this document will be updated.

All referenced guidance documents are available at http://www.deq.state.mi.us/aps or you may contact the Permit Section at 517-373-7023.

A. Process Description

1. Provide the design capacity of the landfill in megagrams or cubic meters.
2. Provide an analysis of the landfill gas, identifying the concentration of all compounds.
3. Describe the air pollution control system to control the generated landfill gas.
4. If the generated landfill gas is combusted, identify and describe the combustion device(s) including the rate at which the landfill gas is combusted.
5. Provide the relationship between the electric generator power output and the following:
   a) Internal combustion engine horsepower
   b) Turbine efficiency

B. Regulatory Discussion

The following state and federal air pollution control regulations may be applicable. Please review these regulations carefully to determine if they apply to your process and summarize the results in the application. The Air Pollution Control Rules may be viewed and downloaded from the AQD website at: www.michigan.gov/deqair.

1. State of Michigan, Department of Environmental Quality, Act 451 of 1994, Natural Resources and Environmental Protection Act, Part 55 Air Pollution Control and the following promulgated rules:
   a) Rules 215 and 216 apply to an existing facility which has a current Renewable Operating Permit (ROP). A Permit to Install issued for the installation of new equipment or modifications to existing equipment is incorporated into an ROP pursuant to Rules 215 and 216.
   b) Rule 220 applies to a major source and/or a major modification at a source which is located in a non-attainment area. A non-attainment area is one where the National Ambient Air Quality Standards (NAAQS) are not being met. Rule 220 requires compliance with the lowest achievable emission rate (LAER) and an emission reduction (offset) for each non-attainment air contaminant emitted in significant quantities as defined by Rule 119(e). However, a source may choose to "net out" of the requirements of Rule 220. Refer to "Guidelines for a Netting Demonstration" for additional detailed information.
   c) If the process or equipment was installed or modified after April 17, 1992, Rules 224 – 230 apply. Rule 224 requires the application of Best Available Control Technology for toxics (T-BACT) for all non VOC toxic air contaminants (TACs). T-BACT does not apply to emissions of VOCs. Rule 225 limits the emission impacts of TACs and requires a demonstration that the proposed emission of each TAC complies with a health-based screening level. Compliance can be demonstrated using any of three methods described in Rule 227(1) including the use of computerized dispersion modeling. Refer to "Guidelines for Conducting a Rule 224 T-BACT Analysis," "TACs-Demonstrating Compliance with Rule 225," and "Dispersion Modeling Guidance" for additional detailed information.

d) If the process or equipment was installed or modified after August 1, 1979, Rule 702 applies. This rule requires Best Available Control Technology (BACT) for new sources of volatile organic compounds (VOCs). Refer to "Instructions for Conducting a BACT Analysis" for additional detailed information.

e) Rule 901 prohibits emissions of an air contaminant in quantities that cause either a) injurious effects to human health or safety, animal life, plant life of significant economic value, or property; or b) unreasonable interference with the comfortable enjoyment of life and property.

2. Federal Standards of Performance for New Stationary Sources (NSPS), 40 CFR, Part 60, Subpart WWW, Municipal Solid Waste Landfills.

3. National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR, Part 63, Subpart AAAA, Municipal Solid Waste Landfills.

4. The administrative rules of the Department require that proposed equipment be able to comply with other state laws prior to issuance of a Permit to Install. This includes obtaining other required permits and approvals. Provide documentation that the proposed facility complies with requirements for adequate groundwater protection. Include the name and contact information for MDEQ staff involved in any formal determination.

C. Control Technology Analysis

1. Rule 702 BACT applies to all sources of VOCs proposed to be installed within the State of Michigan. A Rule 702 BACT analysis is very similar to a PSD top-down BACT analysis. Michigan's air pollution control rules also define BACT as an emission limit. Rule 702 BACT should be applied on a flexible grouping of equipment – subdivisions of emission units and/or groupings of emission units – as long as it is logical to do so. Logical means that the principles on which the groupings (or subdivisions) are made are consistent with federal guidance and sound engineering practices. Refer to "Instructions for Conducting a BACT Analysis" for additional detailed information.

2. Best Available Control Technology for Toxics (T-BACT) means the maximum degree of emission reduction which the Department determines is reasonably achievable for each process that emits toxic air contaminants (TACs) taking into account energy, environmental and economic impacts, and other costs. T-BACT does not apply to VOCs. The analysis must be specific to the process and the TACs subject to a T-BACT review. T-BACT limits can be expressed as an emission limit, control equipment requirements, and/or work practice standards. Refer to "Guidelines for Conducting a Rule 224 T-BACT Analysis" for additional detailed information.

D. Emissions Summary and Calculations

1. Calculate the theoretical quantity of hydrogen chloride (HCl) formed from the combustion of chlorinated compounds in the landfill gas.

2. Calculate the theoretical quantity of sulfur dioxide (SO2) formed from the combustion of sulfur-bearing compounds in the landfill gas.

3. Calculate the emission rates of non-methane organic compounds (NMOC) in megagrams per year.