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POWER PURCHASE AGREEMENT FOR RENEWABLE ENERGY FROM LANDFILL GAS - INSTALLATION OF GENERATING CAPACITY AT THE PRAIRIE BLUFF SANITARY LANDFILL
ENVIRONMENTAL ASSESSMENT
Chickasaw County, Mississippi

Prepared by:
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Purpose and Need for Action

The Tennessee Valley Authority (TVA) proposes to enter into a power purchase agreement (PPA) with Waste Management Renewable Energy LLC (WMRE) to purchase electric power generated at the Prairie Bluff Sanitary Landfill in Chickasaw County, Mississippi (Attachment 1) over a 20 year period. This power would be generated by a new landfill gas (LFG) powered reciprocating engine at a proposed facility at the landfill site.

TVA produces or obtains electricity from a diverse portfolio of energy sources such as nuclear, fossil, hydro, solar, wind, and biomass. In order to help fulfill the objectives of its 2011 Integrated Resource Plan (IRP; TVA 2011) and 2008 Environmental Policy (TVA 2008), TVA has recently undertaken efforts to expand the contribution of renewable and low greenhouse gas-emitting sources in its generation portfolio.

LFG is generated as a natural part of landfill waste decomposition. The utilization of LFG from biomass for the production of electricity would qualify as a renewable power source. The more energy generated from renewable resources such as LFG, the less energy would need to be generated from nonrenewable resources such as fossil fuels. The proposed facility would utilize LFG as an energy source for generating electricity that would otherwise be combusted by flares into the atmosphere.

The Prairie Bluff Sanitary Landfill is on private land and the generation facility would be constructed and operated by WMRE. TVA has prepared this environmental assessment (EA) under the National Environmental Policy Act (NEPA) and TVA's NEPA implementing procedures to assess the potential impacts of the proposal.

Proposed Action

Under the proposed action, TVA would execute a PPA with WMRE that would result in the installation of a 1.6 megawatt (MW) electric generating facility fueled by LFG from the Prairie Bluff Sanitary Landfill. The PPA would allow TVA to purchase electricity for a 20 year period. The landfill is operated by WMRE and presently burns excess LFG emitting from the decomposing buried waste using an open flare. It is connected to a gas collection and control system (GCCS) in the landfill, and filtration systems to remove particulate matter which would also supply fuel in the form of LFG.

The installation of a reciprocating engine system would result in an electric generating capacity of 1.6 MW at the landfill. Implementation of the proposal would reduce the amount of LFG being incinerated in the flares or escaping directly into the air (i.e., fugitive emissions) and reduce methane (a greenhouse gas) emissions from the landfill. The new generating unit would be placed within a 466 square foot (sq ft) container immediately adjacent to the landfill. The site has been previously cleared and leveled within the landfill boundaries (Attachment 2). The proposed additions and modifications (Attachment 2) include the following:

- Construction of facility site including; water and electric service, and gas line from the existing LFG collection and flare site (Attachment 3).
- Construction of a 466 sq ft container for one unit.

- Installation of a power generation unit, which is rated at 2,233 horsepower at 100 percent load and has a heat input of 17.85 million British thermal units (Btu) per hour. The unit would be a Caterpillar Model G3520C reciprocating internal combustion engine (Attachment 4), one electrical generator, auxiliary systems to connect with the GCCS, a treatment system consisting of a filtration system to remove particulate matter10 microns and larger, to compress and dehydrate the gas before use, and connectors to the existing open process flare for control of excess gas.

Background

Prairie Bluff Sanitary Landfill and Recycling Center operated since 1988 by WMRE, is a municipal solid waste disposal facility near Houston, Mississippi (Attachment 1). Facilities at the Landfill include a solid waste disposal area, recycling center, scale house, and other ancillary facilities. The landfill is permitted for solid waste disposal of household wastes, commercial solid waste, industrial solid waste, nonhazardous sludge, and small quantity generator waste, as described in the Mississippi Department of Environmental Quality's (MDEQ) Nonhazardous Solid Waste Management Regulations. The permitted design capacity for the facility is 46,330,000 cubic yards. Respecting emissions, the Landfill currently operates under provisions of the MDEQ Operating Air Permit No. 0380-00039 issued by MDEQ on November 24, 2006.

Chickasaw County, Mississippi's air quality is in attainment status for small particulate matter ($PM_{2.5}$) and for ozone levels (the 8-hour standard).Presently, the LFG released from the Prairie Bluff Landfill is being incinerated using an open flare unit. The United States Environmental Protection Agency (USEPA) estimates that a LFG-to-energy (LFGTE) project can capture up to 60-90 percent of the LFG being emitted from a landfill; the remainder escapes as fugitive emissions to the atmosphere (USEPA LFG Energy Project Development Handbook). As solid waste continues to be added to the landfill and the existing and future waste decomposes, more LFG will be generated. The facility is not classified as a major hazardous air pollutant (HAP) facility, and the installation of generating engines would not change its classification.

Other Environmental Reviews and Documentation

This EA tiers from TVA's final environmental impact statement (EIS), titled *TVA's Environmental Future* (TVA 2011).

Permits, Licenses, and Approvals

The landfill facility is subject to the New Source Performance Standards (NSPS) requirements of 40 CFR 60, Subpart WWW for Municipal Solid Waste Landfills. This facility is also subject to the Maximum Achievable Control Technology (MACT) requirements of 40 CFR 63 Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills.

WMRE has applied for a revised Title V Operating Permit and a Prevention of Significant Deterioration (PSD) Permit for the reciprocating engine system from the MDEQ (Attachment 2). The application will have a 45-day public comment period.

Alternatives

TVA is considering two alternatives: the No Action Alternative and Action Alternative where TVA would enter into a PPA that involves installation of the LFG fueled engine system

which would provide electric generating capacity from the facility. The study area for this EA includes the area where the reciprocating engine would be installed. TVA considers the archaeological area of potential effect (APE) to be the footprint of the proposed facilities where ground disturbance would occur and the architectural APE to be a 0.5-mile radius around the proposed new facilities.

The No Action Alternative

Under the No Action Alternative, TVA would not purchase power from the facility, and the LFG-fueled engine system would not be installed by WMRE. The excess LFG produced by the landfill would continue to be flared to the atmosphere, up to 3,000 standard cubic feet per minute (scfm).

The Action Alternative

Under the Action Alternative, TVA would enter into a PPA to purchase electric power generated from the proposed WMRE facility. In order to serve as a control device and generate electricity for sale to TVA, an LFG-fueled engine system utilizing a Caterpillar G 3520C reciprocating engine would be installed by WMRE along with the container, site preparation, and associated facilities. Only the LFG produced by the landfill and collected by WMRE would be used in the engine to produce up to 1.6 MW of power. It is estimated that 75 percent of the LFG produced would be collected with the existing gas collection system, of which 600 scfm would be sent to the LFG-fueled Caterpillar engine with the balance sent to the flare. The area where the proposed generation facility would be placed has been previously disturbed during the site preparation phase of constructing the landfill, and associated facilities.

Comparison of Alternatives

As the landfill waste decomposes, LFG is generated as a natural part of the process. LFG levels will continue to rise as additional waste is added to the landfill and the older waste decomposes. This would increase the amount of LFG that would need to be flared if the LFG-fueled engines were not installed. The landfill accepts approximately 150,000 to 200,000 tons of waste per year.

For safety purposes, LFG producing facilities must have the capability to flare all of the LFG adequately, as if no LFG was being used in the engine. The flares are outfitted with pilot lights and autore-light safety features in order to maintain a constant flame. These measures are to ensure air quality compliance in case of engine failure. Flares are also necessary to burn excess LFG in case more is emitted by the landfill than the engine can process at a given time. Any excess LFG that could not be processed by the engine would be flared to the atmosphere.

Preferred Alternative

TVA's Preferred Alternative is the Action Alternative under which TVA would enter into a PPA with WMRE to purchase power generated from the installation of the LFG engine system at the Prairie Bluff Sanitary Landfill.

Affected Environment and Environmental Consequences

Site Description

The Prairie Bluff Sanitary Landfill is located northwest of Houston, Mississippi. The landfill and surrounding areas are found within the Flatwoods/Blackland Prairie Margins region of the Southeastern Plains Ecoregion of Mississippi (Chapman et al. 2004). The

Flatwoods/Blackland Prairie contains several north-south trending bands of sand and clay formations. The natural vegetation type is a mixed deciduous forests dominated by oak, hickory, and pine. The more acidic Flatwoods contain blackjack oak, post oak, southern red oak and shortleaf pine; while the Blackland Prairie margins are more diverse with black oak, mockernut and pignut hickory, sugar maple, tulip poplar, white ask and white oak. There are also scattered cypress-gum swamps and bottomland hardwoods in the alluvial areas near the streams. According to Chapman et al. (2004), the region is used for cattle production, some cropland, pasture and hay fields, and pine plantations.

The original terrain at the landfill site was primarily low rolling forested hills. Since the start of landfill operations, the original vegetation has been removed and the site altered to form the disposal cells of the landfill. The surrounding area is otherwise forested or agricultural with scattered rural residences.

Resources Not Adversely Impacted

Through internal scoping of the proposed action, TVA has determined that wetlands, aquatic ecology, hazardous and non hazardous wastes, and floodplains would not be adversely impacted by the proposed project.

Wetlands. The proposed project is located within the Southeastern Plains ecoregion. Wetlands in this region are primarily associated with floodplains and riverine settings; forested wetlands are the most common type of wetlands in this region (Omernik et al., 2011). Adjacent to the landfill site, National Wetland Inventory maps and aerial photography shows both forested and emergent wetlands are present along channelized tributaries of Houlka Creek immediately south and west of the landfill. Within the proposed project footprint, however, there are no wetlands present and there would be no impacts to wetlands. Therefore, the proposed action is consistent with Executive Order (EO) 11990 Protection of Wetlands.

Aquatic Ecology. The area where the proposed generation facility would be placed has been previously disturbed during the site preparation phase of constructing the landfill. No watercourses were identified within the project area. Therefore, no impacts to the aquatic ecology would occur.

Hazardous and Nonhazardous Wastes. The Prairie Bluff Sanitary Landfill is a Class 1 Municipal Solid Waste Facility, which means that it is permitted to handle standard municipal solid waste (e.g., yard waste, construction and demolition debris, biosolids). It does not accept any hazardous or biohazardous waste materials. Since no hazardous materials are accepted, they are not a component of the emitted LFG. No new hazardous secondary pollutants are expected to be generated by increased engine combustion of LFG, as opposed to continuing to combust LFG with the present flare configuration. The Action Alternative would not affect present landfill waste disposal operations.

Floodplains. The project site is not located within a floodplain. This review and determination of no effect satisfies the requirements for compliance with EO 11988, Floodplain Management.

Resources Minimally Impacted

The project's potential impact on terrestrial plants and animals, water quality, noise, transportation, and environmental justice were found to be minimal. These resources, along with environmental justice are evaluated in the following sections. This review and

determination of no effect satisfies the requirements of EO 13112, Invasive Species, EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, and EO 11514, Protection and Enhancement of Environmental Quality.

Plants. Within the footprint of the proposed action, the native vegetation has been cleared and all that remains are areas of herbaceous weedy species. Since almost 100 percent of the action area has been previous cleared of all native vegetation, no additional impacts to terrestrial plant communities would be expected.

Since there would be additional disturbance to the soil during construction of the generating facilities, and associated actions, such as road and gas-line construction, there is a minor potential for the introduction and spread of invasive plant species to the site and surrounding areas (USDA 2007). Several invasive plants are currently present in the area (EDDMapS 2011). It is recommended that disturbed areas be revegetated with native or non-native, noninvasive species.

Terrestrial Animals. The proposed activities would take place in a heavily-modified landscape dominated by a large landfill and its associated roads, buildings, and other facilities. No wildlife habitat occurs within the construction site while patches of lower-quality habitats occur adjacent to the project area. These habitats include mixed-deciduous forest, early successional patches used as right-of-ways, hedgerows, and other edge habitats.

Construction activities would occur within the boundaries of the current landfill site. A large engine, used to help generate power, would be installed in a container designed for that purpose. The site's footprint and impact on surrounding habitats are not expected to change due to activities related to this project. Wildlife species occurring in these habitats are common and widespread, such as American robin, northern cardinal, white-tailed deer, eastern cottontail rabbit, black rat snake, and yellow-bellied slider. Any disturbance to these habitats would be minimal and temporary.

Installing and operating the proposed LFG fuel-engine system and its associated facilities would have no effect on the wildlife or their habitats that occur near the site. Terrestrial animals that do occur in the immediate area surrounding the site are abundant and widespread. These species would not be adversely affected by construction activities occurring on an already highly-disturbed area such as this operating landfill site. No heronries, caves or other unique terrestrial habitats occur within three miles of the proposed route.

Water Quality. The area where the proposed facilities would be located has been substantively altered from any natural condition by previous development. As such, installation of the LFG-powered reciprocating engine at the landfill site would not involve significant disturbances as compared to present conditions. During construction, ground disturbance would be minimized and all work done in accordance to best management practices (BMPs). The project site is already cleared of vegetation, meaning that an increase of storm water runoff from an increase in impervious surface area from the proposed facilities would be minimal.

Noise. The addition of the reciprocating engine system would increase noise generation at the landfill. The closest private residence to the engine container is about a half mile away on County Road 219; the landfill operation is the dominant source of noise in the vicinity.

In a free-field state (i.e., a situation where there is no reflection of sound), the additional mechanical noise would be 85 decibels, A-weighted (dBA), per engine at a distance of 50 feet from the engine (Caterpillar 2006). Since the engine would be housed within a closed container, the majority of this sound would be muffled. Employees would wear standard hearing protection per Occupational Safety and Health Administration requirements. Stack exhaust would be vented to the outside of the container, so a portion of this noise could be audible to the public. Free-field exhaust noises per stack would be 86.1 dBA at a distance of 50 feet from the stack (Caterpillar 2006).

In a free-field environment where nothing is reflecting, absorbing, or blocking sound, a source's noise level decreases by about 6 dBA every time the distance from the object is doubled (The Engineering Toolbox 2010). This means that at a distance of 200 feet from the engine and exhaust stacks, the engine would generate about 16 decibels (dB), and the exhaust would generate about 36 dB of sound if the equipment had no shielding or muffling. These noise levels are considered faint to moderate. In comparison, busy traffic is approximately 80 dB (American Speech-Language-Hearing Association 2003).

Because of the proximity of the project location to the active landfill the additional sound generation would not significantly alter the environment from its present noise conditions. Further, the density of residences in the vicinity of the project is very low so no additional noise reduction systems would be necessary.

Transportation. The new engine would be shipped in a container approximately 11 by 6 by 6 feet, weighing approximately 17,670 pounds (Caterpillar 2009). The container would be moved to the project site using a commercial trailer truck on the existing local road network. There would be a temporary increase in the number of workers at the site during installation for a period of one or two weeks. This would be a minor increase in vehicle traffic compared to the normal busy traffic route of trucks coming in and out of the landfill to drop off waste.

Environmental Justice. Although there would be a temporary increase of workers during installation of the engine, the installation of the new engine system would not create or remove any permanent jobs at WMRE or have other potentially major effects. There would be no change in current operations of the landfill that could affect nearby residences as a result of this project. Therefore, it would not cause any disproportionate effects on low-income or minority populations in Chickasaw County as described in EO 12898 (federal actions to address environmental justice in minority populations and low-income populations). TVA is not subject to this Executive Order, but it considers environmental justice impacts as a matter of policy.

Potentially Impacted Resources and Resources of Special Concern

The impacts on threatened and endangered species, visual and cultural resources, and air quality were evaluated in greater detail because of the potential for these resources to be affected.

Threatened and Endangered Species Affected Environment - No federally listed, 18 state-listed plant species, and one Mississippi Champion tree (Sassafras) are known to occur within five miles of the proposed project in Chickasaw County, Mississippi (Table 1). Further, no designated critical habitats for plant species are known from within five miles of the proposed project.

Table 1. Federally and state-listed species known from within 5 miles of the Prairie Bluff Landfill in Chickasaw County, Mississippi

Common Name	Scientific name	Federal Status	State Status	State Rank
American bladdernut	*Staphylea trifolia*	--	SLNS	S3
American columbo	*Frasera caroliniensis*	--	SLNS	S2S3
American ginseng	*Panax quinquifolius*	--	SLNS	S2
Bur oak	*Quercus macrocarpa*	--	SLNS	S2
Canada moonseed	*Menispermum candense*	--	SLNS	S3
Canada wild ginger	*Asarum canadense*	--	SLNS	S2S3
Creamflower tick-trefoil	*Desmodium ochroleucum*	--	SLNS	S1
Dwarf larkspur	*Delphinium tricorne*	--	SLNS	S2
Goldenseal	*Hydrastis canadensis*	--	SLNS	S1
Great Indian plantain	*Cacalia muehlenbergii*	--	SLNS	S1
Greek valerian	*Polemonium reptans*	--	SLNS	S2S3
Green Violet	*Hybanthus concolor*	--	SLNS	S2
Horse-gentian	*Triosteum angustifolium*	--	SLNS	S3
Michigan lily	*Lilium michiganense*	--	SLNS	S1S2
Purple coneflower	*Echinacea purpurea*	--	SLNS	S3S4
Shooting star	*Dodecatheon meadia*	--	SLNS	S2
Smoother sweet Cicely	*Osmorhiza longistylis*	--	SLNS	S3
Wild hyacinth	*Camassia scilloides*	--	SLNS	S2S3

Source: TVA Natural Heritage database September 2011
State status abbreviations: SLNS =state listed, no status
State rank abbreviations: S1=critically imperiled with less than five occurrences; S2 =imperiled with six to twenty occurrences; S3 =rare or uncommon with 21 to 100 occurrences; S#S#=occurrence numbers are uncertain

Many of the plant species listed in Table 1 are found within the Tombigbee National Forest and associated with calcareous substrates. Habitat to support these state-listed species does not occur within or adjacent to the project area. No federally or state-listed terrestrial animals reported from within three miles of the project site. In addition no federally listed terrestrial animals have been reported from Chickasaw County, Mississippi. No watercourses were identified within the project area. No federally or state-listed aquatic species have been reported to occur within a ten-mile radius of the project area or in Chickasaw County, Mississippi.

Environmental Consequences - No suitable habitat for federally or state-listed aquatic, or terrestrial animal species occurs within the project area. Also, no known occurrences of federally or state-listed plant species or habitat to support these species are known on or immediately adjacent to the proposed project area. Under either alternative there would be no direct, indirect, or cumulative impacts to federally or state-listed species or their habitats as a result of the implementation of either alternative. The requirements of Section 7 of the Endangered Species Act are therefore, satisfied.

Cultural Resources

Affected Environment - The construction and operation of the Prairie Bluff Sanitary Landfill has resulted in significant ground disturbance including mechanized vegetation removal and deep excavation, in addition to deposition and compaction of solid waste. The U. S. Geological Service, Houston East and Houston West, Mississippi 7.5-minute quadrangles (1972) show nine houses and two outbuildings within the architectural APE. Based on recent aerial photography, eight of the houses appear to be extant. TVA Cultural Compliance staff conducted a field visit to the area in September 2011 and observed that

30-40 percent of the residences in the vicinity are mobile homes, and that dense vegetation currently screens views of the existing plant from all of the residences in the area.

For the proposed undertaking, the APE for archaeological resources consists of the footprint of the construction of facility site including water and electric service, the gas line from the existing LFG collection and flare site; the proposed engine container; and the installation of the power generation unit. The APE for historic architectural resources consists of a 0.5 mile radius surrounding the proposed power generation unit.

Environmental Consequences - As all construction would take place within the existing landfill, which has been extensively disturbed, there is no potential to disturb archaeological resources. The proposed engine container would have a lower elevation than the existing facilities, and the existing flue would be used for combustion of LFG. Based on the observations made during the field visit, TVA finds that none of the residences within the architectural APE are eligible for the NRHP as most do not appear to meet the minimum age criterion and none meets the significance criteria at 36 CFR Part 60.4. TVA finds further that the mature vegetation in the area screens views of the existing facilities, and would screen views of the proposed facilities, from all the residences in the architectural APE. Based on these findings TVA has determined that the proposed undertaking does not have the potential to cause direct, indirect, or cumulative impacts on historic properties within the APE.

Visual impacts

Affected Environment - The proposed project area lies in Chickasaw County, Mississippi, just north of the town of Houston. The site is less than one mile west of state route (SR) 15, a north/south highway connecting Houston to Pontotoc. The area is sparsely populated. There are residences scattered about SR 15 and Chickasaw County Road 27, a gravel road that leaves SR 15 leading west to the perimeter of the Prairie Bluff Landfill site. Topography in the area is gently sloping. Mature hardwood and pine forestland surrounds the site. There is a single gated primary entrance to the site that connects to SR 15. WMRE presently operates a landfill at the Prairie Bluff site. There are buildings and appurtenances on the site that support the landfill operation, as well as a flare stack that burns excess gas generated from the waste. The existing scenic attractiveness is common to minimal and the scenic integrity ranges from moderate to very low.

Environmental Consequences - Under the No Action Alternative, TVA would not execute the agreement with WMRE and the facility would not be built. Current operations of the site would continue and there no changes would occur in the existing scenic value.

Under the Action Alternative, TVA would agree to purchase power from WMRE and the facility would be built as described. The new construction would generally not be visible from public roads and residences in the vicinity due to the existing vegetation and topography. Views available at the interior of the site would remain in context with the existing levels of development and landscape character. Discernable increases in traffic would be probable during construction phases of the project, but any discernable increases would be temporary. At completion and during operation of the proposed facility, there would be only minor impacts to existing scenic resources.

Air Quality

Affected Environment - Through its passage of the Clean Air Act (CAA), Congress has mandated the protection and enhancement of our nation's air quality resources. National

Ambient Air Quality Standards (NAAQS) for the following criteria pollutants have been set to protect the public health and welfare:

- sulfur dioxide (SO_2),
- ozone (O_3),
- nitrogen dioxide (NO_2),
- particulate matter whose particles are <= 10 micrometers (PM_{10}),
- particulate matter whose particles are <= 2.5 micrometers ($PM_{2.5}$),
- carbon monoxide (CO), and
- lead (Pb).

Chickasaw County, Mississippi's air quality is in attainment with all the aforementioned NAAQS.

The Landfill currently operates under provisions of the MDEQ Operating Air Permit No. 0380-00039, issued by MDEQ on November 24, 2006. The landfill is subject to New Source Performance Standards, but has not reached the level of emissions for non-methane organic compounds (NMOCs) that require collection and flaring of LFG. However, WRME has nevertheless installed an LFG collection system and a 3000 scfm flare station in advance of potentially reaching the regulatory threshold (50 megagrams). The flare is currently operated intermittently.

Other regulatory considerations for air quality include the following. As Prairie Bluff Landfill is located in an attainment county; Nonattainment New Source Review (NSR) rules do not apply. Under National Emission Standards for Hazardous Air Pollutants (NESHAPs), codified in 40 CFR Parts 61 and 63, Prairie Bluff Landfill is subject to *Subpart M of 61.154-National Emission Standards for Asbestos* because it is currently accepting asbestos. Prairie Bluff Landfill complies with the applicable requirements of this regulation.

The hazardous air pollutant rule (Maximum Achievable Control Technology or MACT) for municipal solid waste landfills was recently promulgated as 40 CFR Part 63 Subpart AAAA. This MACT would apply once the facility reaches the noted emission levels and is required to install a landfill gas collection system. Projections of gas waste accumulation and gas production indicate that Prairie Bluff Landfill would not be subject to this rule during the current air permit term. Prairie Bluff Landfill currently does not have the potential to emit regulatory threshold levels of any pollutant (e.g., carbon monoxide, nitrogen oxides, sulfur dioxide, and particulate matter) regulated under New Source Review (NSR) requirements. Therefore, the facility is not subject to NSR rules and would remain a minor source not subject to Prevention of Significant Deterioration (PSD) program requirements. The proposed Caterpillar G3520C engine will not be subject to 40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines because the engine was built before 2010 when the rule went into effect. These regulations were promulgated to minimize the deterioration of air quality from existing and new air pollutant sources.

LFG emissions from landfills are a natural part of the breakdown of waste. In an uncontrolled state, this LFG seeps out of cracks and fractures in the ground to the atmosphere as gas pressure builds within the landfill from the decomposition process. LFG

is comprised primarily of methane, CH_4, and carbon dioxide, CO_2 formed by bacteria breaking down the waste material during the decomposition process. Non-methane organic compounds (NMOCs), nitrogen oxides, and carbon monoxide, are secondary pollutants which result from combusting methane (either in the existing flare or the proposed engine), and can react chemically in the atmosphere to form ozone [40 CFR Part 52, §52.21(b)]. Nitrogen oxides and sulfur dioxide can react chemically to form $PM_{2.5}$. Less than 1 percent of LFG is NMOCs (USEPA 2010a).

Methane or CH_4 is a compound of concern to air quality because of its potency as a greenhouse gas. When compared to CO_2, methane is approximately 21 times more powerful in its ability to warm the atmosphere than carbon dioxide (USEPA 2010a). LFG containing methane is also an odor nuisance; a health hazard and is potentially explosive in high concentrations. Because of these properties, operators at landfills such as Prairie Bluff maintain methane concentrations at safe levels by collecting and flaring the methane as it is released from the landfill. This combustion (i.e., burning) breaks methane down into water, nitrogen oxides, and carbon monoxide. Other by-products of combustion compounds in the LFG may be sulfur dioxide and particulate matter. The proportions of these later chemical compounds depend on the material decomposed to initially form the LFG.

Environmental Consequences - Under the No Action Alternative, the reciprocating engine/generator system for electrical generation would not be installed. Methane and other volatile compounds being emitted from the landfill would continue to escape and the total amount of LFG produced annually would increase as mass of accepted waste increased. The landfill could continue to intermittently and voluntarily operate the flare. When the emissions of NMOC reach a level of 50 megagrams per year, collection and flaring of LFG would be required. Combusting LFG in flares achieves the same methane safety goals as combusting LFG in an engine system, but would not utilize the energy available within the gas source.

Under the proposed action, a landfill gas to-energy system would be installed. The USEPA estimates that an LFGTE project can capture up to 60-90 percent of the LFG being emitted from a landfill. The remainder escapes as fugitive emissions to the atmosphere (USEPA 2010a). The LFGTE system will meet requirements of all applicable air quality regulations, as described in (Attachment 5). Emissions from both the flare and the spark ignition reciprocating engine operating under the proposed action are shown in Table 2. These small levels indicate that the direct, indirect and cumulative effects from these emissions would be minor and insignificant.

Landfill gas-to-energy (LFGTE) projects are considered environmentally favorable because they improve air quality (USEPA 2010b). This result accrues from the direct reduction of methane emissions; an indirect reduction of carbon dioxide emissions from the replacement of fossil fuels burned, and total greenhouse gas reductions. Combustion by the flare or engine would constitute controls on landfill emissions (Table 3). The combustion of both fossil fuels and LFG produce carbon dioxide; however, the USEPA does not consider carbon dioxide emitted from LFGTE projects to be a climate change contributor, “because the carbon was contained in recently living biomass and would have been emitted through the natural decomposition process” (USEPA 2010b). Therefore the carbon dioxide found in landfill gas is considered biogenic. Also, as methane is a greenhouse gas that has an effect on the atmosphere 21 times that of carbon dioxide, the conversion of methane to carbon dioxide by an LFGTE project would reduce potential effects related to total

greenhouse gas emissions (Table 3). LFGTE projects also enhance air quality by reducing volatile organic compound emissions.

Table 2. Prairie Bluff Landfill Emission Summary (ton/yr)

Source	VOCs	CO	PM[1]	NO_X	SO_2
Landfill Gas (Fugitives)	4.85	1.26			
3000 SCFM Flare	0.07	40.47	1.84	7.44	8.82
Fugitive Particulate			6.88		
Solidification Emissions			0.56		
CAT G3520C Engine	4.09	88.97	3.78	12.93	9.64
Leachate Storage/Handling	0.01	0.31	0.44	1.77	0.00
Gasoline Tank	0.17				
Totals	9.19	131.01	13.50	22.13	18.46

Notes:
[1] PM includes particles finer than10 microns.

The installation of the reciprocating engine would modestly increase the secondary pollutant emissions relative to the flare (Table 2). This is based on the assumption that 25 percent of the gas produced was not captured and burned. The landfill, flare and LFGTE system is projected to emit 9.19 tons per year of VOCs if the engine is run continuously (8,760 hours per year) at maximum load. The increases in the emissions of the secondary pollutants would be associated with a decrease in the levels of methane escaping from the landfill as waste decomposition continues in the landfill. Overall, this situation would be a benefit in view of methane's high potency as a greenhouse gas; however the quantity would be insignificant.

The generation of the secondary emissions may also be somewhat compensated for by the decreased need to burn fossil fuels for this amount of power generation (up to 1.6 MW of new power generation). Air quality compliance with standards prescribed under the federal CAA and MDEQ regulations would continue to be achieved for the operation of the flare and the proposed generator engine. Compliance with applicable permit limits and mitigation measures would ensure that direct, indirect, and cumulative impacts to air quality remain minor.

Table 3. Greenhouse Gas Emissions (methane and carbon dioxide) from Sources at Prairie Bluff Landfill in Tons/Year

Greenhouse Gas	Emission Before Controls[1]	Emission after Controls[1]	Change with Controls[1]
Carbon Dioxide	27,990	46,222	+18,232
Methane	10,201	2,654	-7547
Total[2] $CO_{2\ eq}$	219,730	92,493	-127,237

Notes:

[1] Controls include either or both combustion in the flare or the engine powering the generator.

[2] Total CO_2 equivalents were calculated from information for methane and carbon dioxide emissions in Table 5 of the project air permit application and using the USEPA calculator (USEPA 2011) at http://www.epa.gov/cleanenergy/energy-resources/calculator.html.

Mitigation Measures

MDEQ regulates emissions, imposes compliance requirements, and ensures for monitoring compliance. TVA does not require any additional mitigation measures for this project. Emissions from the engines, flares, exhaust stacks, and the landfill must remain within acceptable air quality levels and be monitored at regular intervals, as prescribed in regulations promulgated under CAA and MDEQ, including the following:

- USEPA Resource Conservation and Recovery ACT (RCRA) regulation 40 CFR Part 258 (Subpart D) as incorporated in Section IV of the MDEQ's Nonhazardous Solid Waste Management Regulations.
- 40 CFR Part 60 Subpart WWW - Standards of Performance for Municipal Solid Waste Landfills
- 40 CFR 63.6, Compliance with Standards and Maintenance Requirements, and 40 CFR 63.10(b), General Recordkeeping and Reporting Requirements

The flare must operate with a flame present at all times, and the presence of the flame or a pilot flare must be monitored using a thermocouple or similar device. In addition to the thermocouples, a continuous flow meter, an automatic relight system with a propane pilot supply tank, and a backup temperature controller would also be installed. The flares must have the capacity to handle all of the LFG captured by the system in case of engine failure.

Acronyms and Abbreviations

APE	Area of Potential Effect
BMPs	Best Management Practices
Btu	British thermal units
$CO_{2\ eq}$	Carbon Dioxide Equivalent
CAA	Clean Air Act
dB	Decibels
dBA	Decibels, A-weighted
EA	Environmental Assessment
EO	Executive Order
GCCS	Gas Collection and Control System (GCCS)
HAP	Hazardous Air Pollutant
LFG	Landfill Gas
LFGTE	Landfill Gas-to-Energy
MACT	Maximum Achievable Control Technology
MDEQ	Mississippi Department of Environmental Quality
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NMOCs	Non-Methane Organic Compounds
NSPS	New Source Performance Standards
NSR	New Source Review
$PM_{2.5}$	Small Particulate Matter
PPA	Power Purchase Agreement
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery ACT
scfm	Standard Cubic Feet per Minute
sq ft	Square Foot
SR	State Route
WMRE	Waste Management Renewable Energy LLC
USEPA	United States Environmental Protection Agency

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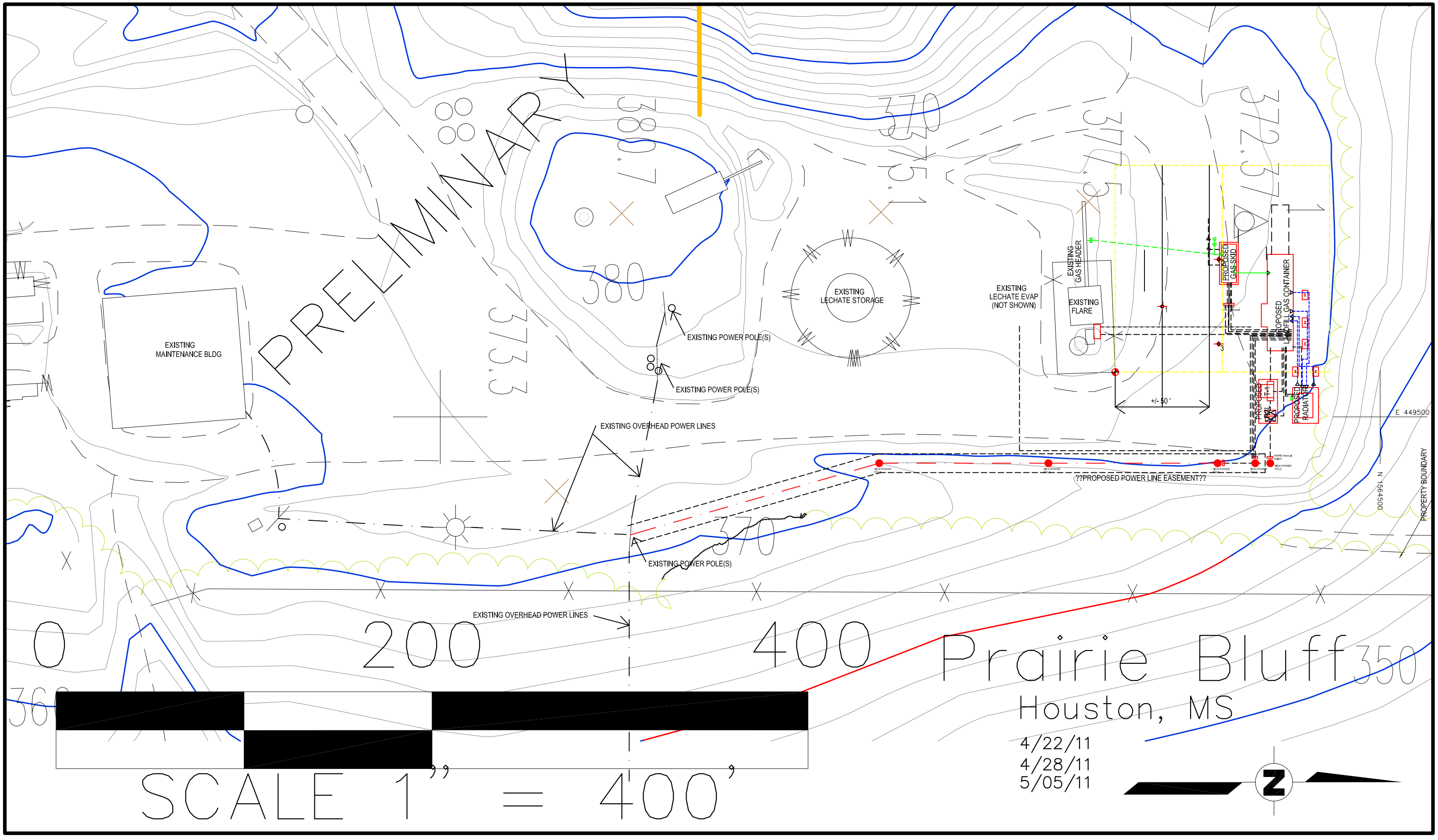
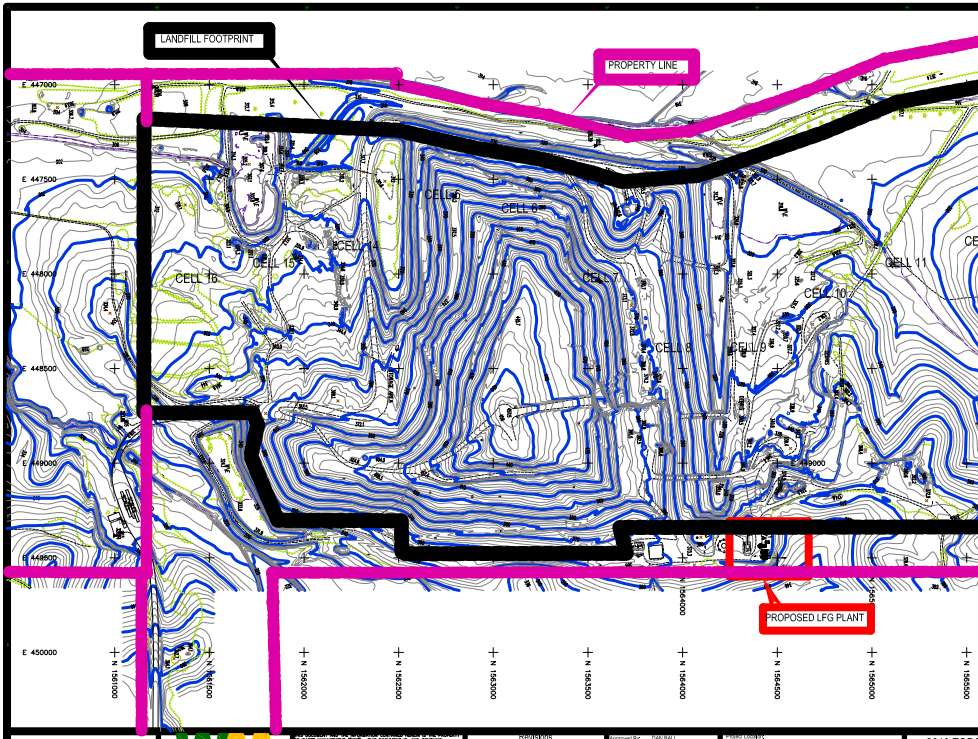
Attachments

Attachment 1 - Location and Vicinity of Project
Attachment 2 - Site Model
Attachment 3 - Plant Location
Attachment 4 - Generator Specifications
Attachment 5 - Operating Permit Title V Draft

Attachment 1. Location and Vicinity of Prairie Bluff Sanitary Landfill


PRELIMINARY
EXISTING MAINTENANCE BLDG
EXISTING LECHATE STORAGE
EXISTING POWER POLE(S)
EXISTING POWER POLE(S)
EXISTING OVERHEAD POWER LINES
EXISTING POWER POLE(S)
EXISTING OVERHEAD POWER LINES
EXISTING LECHATE EVAP (NOT SHOWN)
EXISTING GAS HEADER
EXISTING FLARE
PROPOSED GAS SKID
PROPOSED LIQUIDS GAS CONTAINER
PROPOSED RADIATOR
+/- 50 '
??PROPOSED POWER LINE EASEMENT??
PROPERTY BOUNDARY
E 449500
N 1564500
0
200
400
Prairie Bluff
Houston, MS
4/22/11
4/28/11
5/05/11
SCALE 1" = 400'



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REVISION NOTES			
No.	Description	Date	By

Approved By:	DAN BALL
Checked By:	SFE OPERATIONS
Drawn By:	Bullseye Design Services

PROJECT NAME
PRAIRIE BLUFF LANDFILL
HOUSTON, MISSISSIPPI

2010 TOPO
FEBRU

G3520C

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED:	1200	FUEL:	LOW ENERGY (1.43 CH4:CO2 RATIO)
COMPRESSION RATIO:	11.3:1	FUEL SYSTEM:	CAT LOW PRESSURE WITH AIR FUEL RATIO CONTROL
AFTERCOOLER - STAGE 1 MAX. INLET (°F):	218		
AFTERCOOLER - STAGE 2 MAX. INLET (°F):	130	FUEL PRESS. RANGE (PSIG):	1.5 - 5.0
JACKET WATER - MAX. OUTLET (°F):	230	MIN. METHANE NUMBER:	135
COOLING SYSTEM:	JW+1AC, OC+2AC	RATED ALTITUDE (FT):	2888
IGNITION SYSTEM:	ADEM3	AT AIR TO TURBO. TEMP. (°F):	77
EXHAUST MANIFOLD:	DRY	NOx EMISSION LEVEL:	1.0 g/bhp-hr
COMBUSTION:	LOW EMISSION	FUEL LHV (BTU/SCF):	456
		APPLICATION:	GENSET

RATING AND EFFICIENCY		NOTES	LOAD	100%	75%	50%
ENGINE POWER	(WITHOUT FAN)	(1)	BHP	2233	1675	1116
GENERATOR POWER	(WITHOUT FAN)	(2)	EKW	1600	1200	800
ENGINE EFFICIENCY	**(ISO 3046/1)**	**(3)**	**%**	**42.3**	**40.7**	**38.2**
ENGINE EFFICIENCY	(NOMINAL)	(3)	%	41.3	39.8	37.2
THERMAL EFFICIENCY	(NOMINAL)	(4)	%	40.3	40.3	39.9
TOTAL EFFICIENCY	(NOMINAL)	(5)	%	81.6	80.1	77.2

ENGINE DATA						
FUEL CONSUMPTION	**(ISO 3046/1)**	**(6)**	**BTU/bhp-hr**	**6013**	**6248**	**6669**
FUEL CONSUMPTION	(NOMINAL)	(6)	BTU/bhp-hr	6159	6400	6832
AIR FLOW (77 °F, 14.7 psi)		(7)	SCFM	4157	3155	2187
AIR FLOW		(7)	lb/hr	18429	13986	9697
COMPRESSOR OUT PRESSURE			in. HG (abs)	98.4	74.1	52.1
COMPRESSOR OUT TEMPERATURE			°F	355	284	204
AFTERCOOLER AIR OUT TEMPERATURE			°F	140	138	136
INLET MAN. PRESSURE		(8)	in. HG (abs)	88.1	67.3	47.2
INLET MAN. TEMPERATURE	(MEASURED IN PLENUM)	(9)	°F	140	138	136
TIMING		(10)	°BTDC	28	28	28
EXHAUST STACK TEMPERATURE		(11)	°F	914	961	984
EXHAUST GAS FLOW (@ stack temp.)		(12)	CFM	11657	9167	6470
EXHAUST MASS FLOW		(12)	lb/hr	20609	15685	10906

EMISSIONS DATA					
NOx (as NO2)	(13)	g/bhp-hr	1	1	1
NTE CO	(14)	g/bhp-hr	4.7	4.8	4.9
NOMINAL CO	(15)	g/bhp-hr	2.5	2.5	2.5
THC (molecular weight of 15.84)	(14)	g/bhp-hr	4.27	4.83	5.84
NMHC (molecular weight of 15.84)	(14)	g/bhp-hr	0.65	0.73	0.88
EXHAUST O2	(16)	% DRY	8.1	7.8	7.7
LAMBDA	(16)		1.66	1.62	1.58

HEAT BALANCE DATA					
LHV INPUT	(17)	BTU/min	229195	178623	127102
HEAT REJECTION TO JACKET	(18)	BTU/min	25129	22025	18409
HEAT REJECTION TO ATMOSPHERE	(19)	BTU/min	7210	6034	4857
HEAT REJECTION TO LUBE OIL	(20)	BTU/min	9888	9338	8840
HEAT REJECTION TO EXHAUST (LHV to 77°F)	(21)	BTU/min	69092	57306	42142
HEAT REJECTION TO EXHAUST (LHV to 350°F)	(21)	BTU/min	54952	45541	32974
HEAT REJECTION TO A/C - STAGE 1	(22)	BTU/min	12234	4476	-609
HEAT REJECTION TO A/C - STAGE 2	(23)	BTU/min	8978	6451	4142

CONDITIONS AND DEFINITIONS

ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1. DATA REPRESENTS CONDITIONS OF 77°F, 29.6 IN HG BAROMETRIC PRESSURE, 30% RELATIVE HUMIDITY, 10 IN H2O AIR FILTER RESTRICTION, AND 20 IN H2O EXHAUST STACK PRESSURE. ENGINE EFFICIENCY AND FUEL CONSUMPTION SPECIFICALLY NOTED AS ISO 3046/1 ARE REPRESENTED WITH 5 IN H2O AIR FILTER RESTRICTION AND 0 IN H2O EXHAUST STACK PRESSURE. CONSULT ALTITUDE CURVES FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE. NO OVERLOAD PERMITTED AT RATING SHOWN.

EMISSION LEVELS ARE BASED ON THE ENGINE OPERATING AT STEADY STATE CONDITIONS AND ADJUSTED TO THE SPECIFIED NOx LEVEL AT 100% LOAD. EMISSION TOLERANCES SPECIFIED ARE DEPENDANT UPON FUEL QUALITY. METHANE NUMBER CANNOT VARY MORE THAN ± 3. PUBLISHED PART LOAD DATA IS WITH AIR FUEL RATIO CONTROL.

ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS. PUMP POWER IS NOT INCLUDED IN HEAT BALANCE DATA.

FOR NOTES INFORMATION CONSULT PAGE THREE.

FUEL USAGE GUIDE

CAT METHANE NUMBER	40	50	60	70	80	90	100	110	120	130	140	150
IGNITION TIMING	-	-	-	-	-	-	-	-	24	26	28	30
DERATION FACTOR	0	0	0	0	0	0	0	0	1.00	1.00	1.00	1.00

ALTITUDE DERATION FACTORS

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.00	0.98	0.94	0.91	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.64
120	1.00	0.99	0.96	0.92	0.89	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.65
110	1.00	1.00	0.97	0.94	0.90	0.87	0.84	0.80	0.77	0.74	0.71	0.69	0.66
100	1.00	1.00	0.99	0.95	0.92	0.88	0.85	0.82	0.79	0.76	0.73	0.70	0.67
90	1.00	1.00	1.00	0.97	0.94	0.90	0.87	0.83	0.80	0.77	0.74	0.71	0.68
80	1.00	1.00	1.00	0.99	0.95	0.92	0.88	0.85	0.82	0.78	0.75	0.72	0.69
70	1.00	1.00	1.00	1.00	0.97	0.93	0.90	0.86	0.83	0.80	0.77	0.74	0.71
60	1.00	1.00	1.00	1.00	0.99	0.95	0.92	0.88	0.85	0.81	0.78	0.75	0.72
50	1.00	1.00	1.00	1.00	1.00	0.97	0.93	0.90	0.86	0.83	0.80	0.77	0.74

ALTITUDE (FEET ABOVE SEA LEVEL)

AFTERCOOLER HEAT REJECTION FACTORS

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.35	1.40	1.45	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
120	1.28	1.33	1.38	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
110	1.21	1.26	1.31	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
100	1.14	1.19	1.24	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
90	1.07	1.12	1.16	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
80	1.00	1.04	1.09	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
70	1.00	1.00	1.02	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

ALTITUDE (FEET ABOVE SEA LEVEL)

FREE FIELD MECHANICAL & EXHAUST NOISE

100% Load Data			dB(A)	(dB)							
Free Field Mechanical	DISTANCE FROM THE ENGINE (FEET)	3.2	108.5	51.5	78.7	88.2	92.9	99.9	97.3	93.2	99.2
		22.9	91.6	34.6	59.0	68.1	74.0	83.0	79.4	75.1	85.2
		49.2	85.0	28.0	55.2	64.7	69.4	76.4	73.8	69.7	75.7
Free Field Exhaust	DISTANCE FROM THE ENGINE (FEET)	4.9	106.1	67.5	86.5	96.0	88.5	88.7	90.1	95.6	92.7
		22.9	92.7	54.1	73.1	82.6	75.1	75.3	76.7	82.2	79.3
		49.2	86.1	47.5	66.5	76.0	68.5	68.7	70.1	75.6	72.7
			Overal SPL	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 khz

Octave Band Center Frequency (OBCF)

FUEL USAGE GUIDE:

This table shows the derate factor required for a given fuel. Note that deration occurs as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar Methane Number Calculation program.

ALTITUDE DERATION FACTORS:

This table shows the deration required for various air inlet temperatures and altitudes. Use this information along with the fuel usage guide chart to help determine actual engine power for your site.

INLET AND EXHAUST RESTRICTION CORRECTIONS FOR ALTITUDE CAPABILITY:

To determine the appropriate altitude derate factor to be applied to this engine for inlet or exhaust restrictions differering from the standard conditions listed on page 1, a correction to the site altitude can be made to adjust for this difference. Add 141 feet to the site altitude for each additional inch of H2O of exhaust stack pressure greater than spec sheet conditions. Add 282 feet to the site altitude for each additional inch of H2O of inlet restriction greater than spec sheet conditions. If site inlet restriction or exhaust stack pressure are less than spec sheet conditions, the same trends apply to lower the site altitude.

ACTUAL ENGINE RATING:

It is important to note that the Altitude/Temperature deration and the Fuel Usage Guide deration are not cumulative. They are not to be added together. The same is true for the Low Energy Fuel deration (reference the Caterpillar Methane Number Program) and the Fuel Usage Guide deration. However, the Altitude/Temperature deration and Low Energy Fuel deration are cumulative; and they must be added together in the method shown below. To determine the actual power available, take the lowest rating between 1) and 2).

1) (Altitude/Temperature Deration) + (Low Energy Fuel Deration)
2) Fuel Usage Guide Deration

Note: For NA's always add the Low Energy Fuel deration to the Altitude/Temperature deration. For TA engines only add the Low Energy Fuel deration to the Altitude/Temperature deration whenever the Altitude/Temperature deration is less than 1.0 (100%). This will give the actual rating for the engine at the conditions specified.

AFTERCOOLER HEAT REJECTION FACTORS:

Aftercooler heat rejection is given for standard conditions of 77°F and 500 ft altitude. To maintain a constant air inlet manifold temperature, as the air to turbo temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor to adjust for ambient and altitude conditions. Multiply this factor by the standard aftercooler heat rejection. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail. For 2 Stage Aftercoolers with separate circuits, the 1st stage will collect 90% of the additional heat.

SOUND DATA:

Data determined by methods similar to ISO Standard DIS-8528-10. Accuracy Grade 3. SPL = Sound Pressure Level.

NOTES

1 ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS. TOLERANCE IS ± 3% OF FULL LOAD.

2 GENERATOR POWER DETERMINED WITH AN ASSUMED GENERATOR EFFICIENCY OF 96.1% AND POWER FACTOR OF 0.8 [GENERATOR POWER = ENGINE POWER x GENERATOR EFFICIENCY].

3 ISO 3046/1 ENGINE EFFICIENCY TOLERANCE IS (+)0, (-)5% OF FULL LOAD % EFFICIENCY VALUE. NOMINAL ENGINE EFFICIENCY TOLERANCE IS ± 2.5% OF FULL LOAD % EFFICIENCY VALUE.

4 THERMAL EFFICIENCY: JACKET HEAT + STAGE 1 A/C HEAT + EXH. HEAT TO 350°F.

5 TOTAL EFFICIENCY = ENGINE EFF. + THERMAL EFF. TOLERANCE IS ± 10% OF FULL LOAD DATA.

6 ISO 3046/1 FUEL CONSUMPTION TOLERANCE IS (+)5, (-)0% OF FULL LOAD DATA. NOMINAL FUEL CONSUMPTION TOLERANCE IS ± 2.5 % OF FULL LOAD DATA.

7 UNDRIED AIR. FLOW TOLERANCE IS ± 5 %

8 INLET MANIFOLD PRESSURE TOLERANCE IS ± 5 %

9 INLET MANIFOLD TEMPERATURE TOLERANCE IS ± 9°F.

10 TIMING INDICATED IS FOR USE WITH THE MINIMUM FUEL METHANE NUMBER SPECIFIED. CONSULT THE APPROPRIATE FUEL USAGE GUIDE FOR TIMING AT OTHER METHANE NUMBERS.

11 EXHAUST STACK TEMPERATURE TOLERANCE IS (+)63°F, (-)54°F.

12 WET EXHAUST. FLOW TOLERANCE IS ± 6 %

13 NOX TOLERANCES ARE ± 18 % OF SPECIFIED VALUE.

14 NTE CO, CO2, THC, and NMHC VALUES ARE "NOT TO EXCEED".

15 NOMINAL CO IS A NOMINAL VALUE AND IS REPRESENTATIVE OF A NEW ENGINE DURING THE FIRST 100 HOURS OF ENGINE OPERATION.

16 O2% TOLERANCE IS ± 0.5; LAMBDA TOLERANCE IS ± 0.05. LAMBDA AND O2 LEVEL ARE THE RESULT OF ADJUSTING THE ENGINE TO OPERATE AT THE SPECIFIED NOX LEVEL.

17 LHV RATE TOLERANCE IS ± 2.5%.

18 TOTAL JW HEAT (based on treated water) = JACKET HEAT + STAGE 1 A/C HEAT + 0.90 x (STAGE 1 + STAGE 2) x (ACHRF-1). TOLERANCE IS ± 10 % OF FULL LOAD DATA.

19 RADIATION HEAT RATE BASED ON TREATED WATER. TOLERANCE IS ± 50% OF FULL LOAD DATA.

20 LUBE OIL HEAT RATE BASED ON TREATED WATER. TOLERANCE IS ± 20% OF FULL LOAD DATA.

21 EXHAUST HEAT RATE BASED ON TREATED WATER. TOLERANCE IS ± 10% OF FULL LOAD DATA.

22 STAGE 1 A/C HEAT (based on treated water) = STAGE 1 A/C HEAT + 0.90 x (STAGE 1 + STAGE 2) x (ACHRF-1). TOLERANCE IS ± 5 % OF FULL LOAD DATA.

23 STAGE 2 A/C HEAT (based on treated water) = (STAGE 2 A/C HEAT + (STAGE 1 + STAGE 2) x 0.10 x (ACHRF - 1)) + LUBE OIL HEAT. TOLERANCE IS ± 5 % OF FULL LOAD DATA.

Title V Air Permit Application Renewal

Prepared For

Waste Management of Mississippi, Inc.
Prairie Bluff Landfill and Recycling Center
1649 Highway 15 North
Houston, MS

Prepared By

Three Fold Consultants, LLC

March 2011

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FIGURE 1 **Site Location Map**

1. BACKGROUND

Waste Management of Mississippi, Inc. (WM) owns and operates the Prairie Bluff Landfill (Landfill) and Recycling Center located in Houston, Mississippi (Figure 1). Facilities at the Landfill include a solid waste disposal area, recycling center, scale house, and other ancillary facilities. The Landfill is permitted for solid waste disposal of household wastes, commercial solid waste, industrial solid waste, nonhazardous sludge, and small quantity generator waste, as described in the Mississippi Department of Environmental Quality's Nonhazardous Solid Waste Management Regulations.

The Landfill began accepting waste in 1988. The permitted design capacity for the facility is 46,330,000 cubic yards. The Landfill currently operates under provisions of the MDEQ Operating Air Permit No. 0380-00039 issued by MDEQ on November 24, 2006.

The current disposal area is designed in accordance with the United States Environmental Protection Agency (USEPA) Resource Conservation and Recovery ACT (RCRA) regulation 40 CFR Part 258 (Subpart D) as incorporated in Section IV of the MDEQ's Nonhazardous Solid Waste Management Regulations. The Landfill is subject to NSPS regulations concerning construction and operation of a Gas Collection and Control System (GCCS) in accordance with 40 CFR Part 60, subpart WWW.

2. ASSUMPTIONS

Annual estimates of non-methane organic compounds (NMOC) emissions have been performed by Prairie Bluff as required by NSPS regulations. Tier II estimation procedures have been used. Once estimated NMOC emission exceeds 50 megagrams per year (Mg/year), within one year, a landfill gas collection and control system design plan will be submitted to MDEQ. Based on the landfill's waste receipts (see Table 1) and the annual NMOC reports, Tier II results do not indicate that NMOC emissions will exceed 50 megagrams per year during the next permit term. WMMS has elected to install a collection and control system in advance of the regulatory requirement as a pollution control device.

A 3,000 SCFM flare station is currently in place as the landfill gas emission control system. As a Waste Management Renewable Energy (WMRE) Project, a Caterpillar G3520C reciprocating engine is proposed to be added as a control device and to produce electricity to sell to the grid. The engine is proposed in addition to the Flare. As discussed herein, the maximum landfill gas generated has been determined using the USEPA Landfill Gas Emissions Model, Version 3.02 (LandGEM). Using the AP-42 2.4.4.2 estimate of 75% of the gas is collected with the gas collection system, 600 SCFM is sent to the Caterpillar engine with the balance sent to the flare.

Other sources include fugitive particulate from travel on paved and unpaved roads and cell construction and solidification of wet wastes. The site also has a gasoline storage tank and a leachate evaporator which emits low levels of VOCs and combustion byproducts.

3. EMISSION ESTIMATES

Using LandGEM with AP-42 defaults (AP-42 2.4.4.1) to estimate uncontrolled emissions from the landfill (Emission Point No. AA-001). The permitting of the flare is based on the maximum gas recovery at the site less 600 SCFM of gas routed to the Caterpillar engine. Engine emissions are based on the maximum capacity of the engine. The model was used to estimate uncontrolled emissions of NMOC, volatile organic compounds (VOC), landfill gas constituents listed in Tables 2.4.1 and 2.4.2 of AP-42 Section 2.4. Estimated maximum uncontrolled emissions are given in Tables 2 and 3 for uncontrolled emissions and Tables 4 and 5 for controlled emissions. Tables 6 summarize emission by source for controlled emissions.

Appendix A includes uncontrolled and controlled emission calculations, model outputs and manufactures specifications.

Maximum estimated criteria pollutant emissions rates from the 3,000 SCFM flare (Emission Point No. AA-002) are based on the following:

- CO – 0.370 lb per million BTU (Manufacturer's Specification, Appendix A)
- NOx – 0.068 lb per million BTU (Manufacturer's Specification, Appendix A)
- $PM_{10}/PM_{2.5}$ – 17 lb per standard million cubic feet of methane (AP-42 Table 2.4-5)
- SO_2 – 500 ppmv (Conservative estimate)
- VOC – from Tier II testing NMOC concentration of 177 ppmvd from Tier II testing, as hexane, in the LFG, and 98-percent destruction efficiency. (AP-42 Table 2.4-3)

The maximum criteria pollutant emission rates from the Caterpillar engine (Emission Point No. AA-005) are based on the following:

- CO –4.13 grams per brake horsepower hour (g/bhp-hr), (Manufacturer's Specification, Appendix A)
- NOx – 0.60 g/bhp-hr or 2.95 lb/hr, (Manufacturer's Specification, Appendix A)
- $PM_{10}/PM_{2.5}$ – 48 lb per standard million cubic feet of methane (AP-42 Table 2.4-5)
- SO_2 – 500 ppmv (Conservative estimate)
- VOC – 1 g/bhp-hr), which is based on 100 percent of NMOC emissions and NMOC concentration of 20 parts per million volume dry basis (ppmvd) as hexane at 3-percent oxygen (O2) in the exhaust air.

Appendix A includes assumptions for uncontrolled and controlled emission calculations and model outputs.

Emission Point No. AA-003 is the fugitive emissions of particulate matter (PM_{10}) due to excavating and piling soil, driving waste trucks on paved and unpaved roads were computed following Sections 11.2.2 and 13.2.2 of AP-42. Appendix B includes fugitive dust emission calculations from the landfill.

Prairie Bluff Landfill currently stabilizes of wet wastes prior to disposal (Emission Point No. AA-004). Wet material is mixed with fly ash, cement, kiln dust or other drying agent. Emissions Calculations for Solidification are based on AP-42 Section 13.2.4, see Appendix C.

Prairie Bluff Landfill operates a leachate evaporator (Emission Point No. AA-006). Emissions from the evaporation, storage and handling of leachate were calculated based on recent analytical data and the assumption that all VOCs are emitted during evaporation and transfers. The concentration of VOCs in leachate is very low and does not result in a true vapor pressure above 3.5 Kpa (0.5 psi). Thus 40 CFR 60.110b "Subpart Kb" is not applicable. Calculations for leachate evaporator emissions and combustion byproducts are provided in Appendix D.

A 300 gallon gasoline tank is used at the site for fueling small equipment. Appendix E includes emission calculations from the tank.

4. REGULATORY REQUIREMENTS

4.1 Review of Federal Requirements

4.1.1 NSPS- Section 111 of the Clean Air Act and Subpart WWW of 40 CFR 60

Section 111 of the Clean Air Act established Standards of Performance for New Stationary Sources promulgated under Subpart WWW of 40 CFR 60 for new landfills and under Subpart Cc for existing landfills. Each Municipal Solid Waste Landfill (MSW) for which construction, modification or renovation commences on or after May 30, 1991 is affected under Subpart WWW. Furthermore, affected MSW landfills having design capacities greater than or equal to 2.5 million megagrams are subject to additional provisions of the standards. The design capacity of the landfill is approximately 32,053546 megagrams (greater than 2.5 million megagrams). Therefore, the requirements of Subpart WWW apply to Prairie Bluff expansion.

NSPS requires yearly calculation of NMOC emission rates and submittal of landfill gas collection and control system design within one year following the date NMOC emission exceeds 50 megagrams/year. Design plans for the landfill gas collection and control system will be submitted within one year following the date NMOC emissions estimate exceeds 50 Mg/year.

4.1.2 Prevention of Significant Deterioration Requirements (PSD)

PSD applies to a major source or a major modification in an attainment area. Since Prairie Bluff is not a major source of air contaminants (greater than 250 tons per year of criteria pollutants), nor is it a listed source category. Therefore, Prairie Bluff is not subject to PSD.

4.1.3 Non-Attainment New Source Review (NNSR)

Prairie Bluff is located in an attainment county. NNSR does not apply to this landfill.

4.1.4 Section 112 of Clean Air Act-National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Various Source Categories

These standards are codified in 40 CFR 61 and 63. Prairie Bluff is currently accepting asbestos. Therefore, Subpart M of 61.154-National Emission Standards for Asbestos applies to Central Landfill. Prairie Bluff complies with the applicable requirements of the regulation.

The MACT for municipal solid waste landfills was recently promulgated as 40 CFR Part 63 Subpart AAAA This MACT will become effective once the facility is required to install a landfill gas collection system. Prairie Bluff is not currently regulated under 40 CFR part 63 and does not anticipate that it will be during the permit term.

4.1.5 40 CFR 60.4200/40 CFR 60.4230

Federal requirements 40 CFR 60.4200 (Subpart IIII) /40 CFR 60.4230 (Subpart JJJJ) pertain to stationary compression ignition and spark ignition engines, respectively. The attached application includes several insignificant internal combustion engines. As defined in 40 CFR 60.1068.30, these engines are non stationary and not subject to Subpart IIII or Subpart JJJJ.

The only stationary engine will be the proposed Caterpillar G3520C engine fuel by landfill gas. The engine was manufactured in 2005 and is not subject to Subpart JJJJ.

4.1.6 Reporting of Greenhouse Gasses 40 CFR 98 Subpart HH

This information is currently in this application before it is required and can be used for information purposes only if the renewal Title V permit is issued before July 1, 2011. If the renewal Title V permit is

issued after July 1, 2011, then the application will not need to be amended before issuance of the permit since the information is included in this application.

As of July 1, 2011, GHG emissions will have to be added into the application. However, since the PTE method has not yet been chosen, this application will include 2 different PTE calculations for GHG for this facility including life of site gas curve and the next 5 years of emissions.

According to the landfill gas curve (LandGEM) included in Appendix A, the maximum collected gas is currently estimated to occur in 2068 and be 1423 scfm. With the life of site gas curve showing a maximum of 1423 scfm of collected gas in 2068 (more than 57 years from now), according to 40 CFR 70.2 and 71.2: Prairie Bluff is not a major source of Greenhouse Gas Emissions pursuant to the threshold of 100,000 tons per year total Greenhouse Gas emissions set forth in the definition of "major source" (PSD). Assuming collection and combustion of 1423 scfm of landfill gas at 50% methane, Prairie Bluff emissions of biogenic carbon dioxide would be 43,411 tons per year, emissions of anthropogenic methane would be 28 tons of CO_2e per year and includes of anthropogenic nitrous oxide of 82 tons of CO_2e per year. In total, and expressed as carbon dioxide equivalents, Prairie Bluff potential to emit anthropogenic and biogenic GHG emissions is 21,714 tons per year CO_2e, which does not exceed the 100,000 ton per year applicability threshold.

Since the life of this renewal Title V permit is approximately 5 years, potential emissions based gas curve predictions for the years of 2011 through 2015 are listed below in the following Table. In accordance with 40 CFR 70.2 and 71.2: Prairie Bluff would not be a major source of Greenhouse Gas Emissions pursuant to the threshold of 100,000 tons per year total Greenhouse Gas emissions set forth in the definition of "major source" (PSD). Assuming collection and combustion of landfill gas in scfm of landfill gas at 50% methane, the table below demonstrates the PTE of CO_2e by year for the next 5 years. In total, and expressed as carbon dioxide equivalents, Prairie Bluff potential to emit GHG emissions is listed below and in which none of the years does the CO_2e exceed the 100,000 ton per year applicability threshold.

GHG EMISSION PROJECTIONS – TITLE V PERMIT LIFE

Year	SCFM	Biogenic CO_2 Equivalents (TPY)	Anthropogenic Methane CO_2 Equivalents (TPY)	Anthropogenic Nitrous Oxide (TPY)	Total CO_2e (TPY)
2011	1,249	38,103	25	71	38,199
2012	1,246	38,011	25	71	38,107
2013	1,146	38,011	25	71	38,107
2014	1,249	38,103	25	71	38,199
2015	1,254	38,255	25	72	38,352

At the time of the submission of this application, there are no additional federal regulatory requirements applicable to greenhouse gas emissions from the Landfill and covered by Title V Permit Program Authority. Federal GHG Mandatory Reporting Rule requirements published at 40 CFR 98 were enacted under sections 114(a)(1) and 208 of the Clean Air Act and, as such, are not included in the definition of "applicable requirements", as found at 40 CFR 70.2 and 71.2, to be included in a Title V Permit. (See also, 74 FR 209, page 56,288.)"

Note that the Greenhouse Gas Reporting Rule does not belong in the Title V permit. This issue was discussed in the Preamble of the Rule in the October 30, 2009 Federal Register and is attached here.

According to the Q&A in the Preamble, the EPA received several comments about whether or not the requirements imposed by the GHG Reporting Rule are applicable under the Title V operating permit program. According to the EPA, as currently written, this GHG Reporting Rule the definition of "applicable requirement" at 40 CFR 70.2 and 71.2 do not include a rule such as this. Therefore, the GHG Reporting Rule does not belong in the Title V permit.

4.2 Review of Generally Applicable State Requirements

4.2.1 APC-S-1, Section 3- Specific Criteria for Sources of Particulate Matter

- "Smoke: No person shall cause, permit, or allow the emission of smoke from a point source into the open air from any manufacturing, industrial, commercial or waste disposal process which exceeds 40 percent opacity."

- "Equivalent Opacity: No person shall cause, allow, or permit the discharge into the ambient air from any point source or emissions, any air contaminant of such opacity as to obscure an observer's view to a degree in excess of 40% opacity."

- "General Nuisances: No person shall cause, permit, or allow the emission of particle, or any contaminants in sufficient amounts or of such duration from any process as to be injurious to humans, animals, plants, or property, or to be a public nuisance, or create a condition of air pollution" Also handling, transporting or storage of any material which allows or may allow necessary amounts of particulate matter to become airborne shall not be permitted.

- "New equipment: The owner or operator of any new air pollution control equipment, obtained after May 8, 1970 and vented to the atmosphere, shall have necessary sampling ports and ease of accessibility."

4.2.2 APC-S-1, Section 5-Specific Criteria for Sources of Chemical Emissions

"Miscellaneous Chemical Emissions: No person shall cause, permit, or allow the emission of toxic, noxious, or deleterious substances, in addition to those considered in APC-S-1 regulations, into the ambient air in concentrations sufficient to affect human health and well-being, or unreasonably interfere with the enjoyment of property or unreasonably and adversely affect plant or animal life beyond the boundaries of the property containing the air pollution source."

4.2.3 APC-S-4, Ambient Air Quality Standards

"There shall be no odorous substances in the ambient air in concentrations sufficient to adversely and unreasonably: (1) affect human health and well-being; (2) interfere with the use or enjoyment of property; or (3) affect plant or animal life. In determining that the concentrations of such substances in the ambient air are adversely and unreasonably, affecting human well-being or the use or enjoyment of property of plant or animal life, the factors to be considered by the Commission will include, without limiting the generality of the foregoing, the number of complaints or petitioners alleging that such a condition exists, the frequency of the occurrence of such substances in the ambient air as confirmed by the Department of Environmental Quality staff, and the land use of the affected area.

The Mississippi ambient air quality standard for particulate matter, as measured by the USEPA Reference Method for total suspended particulates or by an equivalent method, is 150 micrograms per cubic meter maximum 24-hour concentration not to be exceeded more than once per year.

5. COMPLIANCE DEMONSTRATION

5.1 General Recordkeeping Requirements

As required in Section 504 (c) of the Clean Air Act, inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions, inspection are contained in this permit application. The general recordkeeping requirements which will be followed by Prairie Bluff are as follows:

- Records will be maintained for five (5) years at the facility from the date of sample, measurement, report, or application; and

- Prairie Bluff will maintain the records specified as recordkeeping requirements under its permit issued pursuant the to the Title V permit.

5.2 General Reporting Requirements

Prairie Bluff will submit NMOC annual emissions report to MDEQ.

5.3 Compliance Procedures

Prairie Bluff is compliant with applicable requirements by following the above mentioned recordkeeping and reporting procedures.

6. PERMIT SHIELD

Prairie Bluff requests a permit shield to be granted for federally enforceable requirements regarding all the emission sources included in this Title V permit application Prairie Bluff in respect to our:

- determination of applicability and requirements under PSD, NSPS, NSR, MACT/NESHAP;

- interpretation of the frequency and procedure of monitoring, recording and record-keeping provisions of federally applicable requirements; and

- interpretation of appropriate means of compliance when more than one federal requirement applies to the same emission source.

Pursuant to APC-S-6.III.F, Prairie Bluff requests that MDEQ expressly include in the Title V permit a provision stating that compliance with the conditions of permit shall be deemed compliance with any applicable requirements as of the date of permit issuance.

Prairie Bluff requests that the permit shield apply specifically to the applicable requirements listed herein including Section N of the Title V application. Also, Prairie Bluff requests that the permit shield state that Prairie Bluff is not required to comply with these requirements and is not subject to enforcement actions in reference to inapplicable requirements.

The emission estimates contained in this application package are done following the assumptions and available information stated in Appendices A through E. Prairie Bluff does not claim the emission estimates to be totally comprehensive, inclusive or complete. Prairie Bluff requests a permit shield stating that if an updated emission factor/method is provided in the future, Prairie Bluff will continue demonstration of compliance using the methods and factors specified in this application and that this will not be considered as a violation by the regulatory agency.

APPLICATION DOCUMENTATION

The sections following this narrative include the completed application forms for Title V Permit to Operate an Air Emissions Source, air contaminant emission calculations and tables.

Tables

Table 1

Waste Management of Mississippi
Prairie Bluff Landfill
Emission Inventory - Landfill Gas Emissions (Source I.D. AA-001)
Waste Disposal Basis Information

1. Opened: 1988
2. Waste receipts and total waste-in-place are actual data thru 2010.
   Waste receipts and waste-in-place for 2011 and beyond are projections based on anticipated future business and growth.

Year	Time Since Initial Waste Placement (yrs)	Waste Receipts (Mg)	Waste Receipts (tons)*	Total waste-in-place (Mg)
1988	1	34,427	37,870	
1989	2	34,436	37,880	34,427
1990	3	34,409	37,850	68,864
1991	4	85,920	94,512	103,273
1992	5	128,655	141,520	189,193
1993	6	228,575	251,432	317,847
1994	7	540,348	594,383	546,422
1995	8	500,031	550,034	1,086,770
1996	9	504,461	554,907	1,586,801
1997	10	358,925	394,818	2,091,262
1998	11	255,448	280,993	2,450,187
1999	12	221,930	244,123	2,705,635
2000	13	217,475	239,223	2,927,565
2001	14	207,329	228,062	3,145,041
2002	15	199,670	219,637	3,352,369
2003	16	208,548	229,403	3,552,039
2004	17	201,637	221,801	3,760,587
2005	18	187,028	205,731	3,962,225
2006	19	193,186	212,505	4,149,253
2007	20	132,383	145,621	4,342,439
2008	21	131,897	145,087	4,474,822
2009	22	115,150	126,665	4,606,719
2010	23	112,205	123,426	4,721,869
2011	24	117,816	129,597	4,834,075
2012	25	123,707	136,077	4,951,890
2013	26	129,892	142,881	5,075,597
2014	27	136,386	150,025	5,205,489
2015	28	143,206	157,526	5,341,875

Table 2
Waste Management of Mississippi
Prairie Bluff Landfill
Emission Summary
Before Controls

	(lbs/hr)+				
	Landfill Gas Fug W/O Cont AA-001	**Fugitive Dusts AA-003**	**Solidification AA-004**	**Leachate Evap AA-006**	**Totals**
PM10		1.96	0.13	0.10	2.19
Total Suspended Particulate		17.46	0.17	0.10	17.72
1,1,1-Trichloroethane (methyl chloroform)*	0.0232				0.02
1,1,2,2-Tetrachloroethane*	0.0676				0.07
1,1-Dichloroethane (ethylidene dichloride)*	0.0844				0.08
1,1-Dichloroethene (vinylidene chloride)*	0.0070				0.007
1,2-Dichloroethane (ethylene dichloride)*	0.0147				0.01
1,2-Dichloropropane (propylene dichloride)*	0.0074				0.007
2-Propanol (isopropyl alcohol)	1.0932				1.09
Acetone	0.1478			0.005029	0.15
Acrylonitrile*	0.1219				0.12
Benzene*	0.3147				0.31
Bromodichloromethane	0.1861				0.19
Butane	0.1061				0.11
Carbon dioxide	6760.30				6760
Carbon disulfide*	0.0160				0.02
Carbon monoxide	1.4337			0.0697	1.50
Carbon tetrachloride*	0.0002				0.0002
Carbonyl sulfide*	0.0107				0.01
Chlorobenzene*	0.0102				0.01
Chlorodiflouromethane	0.0408				0.04
Chloroethane (ethyl chloride)*	0.0293				0.03
Chloroform*	0.0013				0.001
Chloromethane*	0.0222				0.02
Dichlorobenzene *	0.0112				0.01
Dichlorodifluoromethane	0.6891				0.69
Dichlorofluoromethane	0.0979				0.10
Dichloromethane (methylene chloride)*	0.4409				0.44
Dimethyl sulfide	0.1763				0.18
Ethane	9.7039				9.70
Ethanol	0.4550				0.45
Ethyl mercaptan	0.0514				0.05
Ethylbenzene*	0.1777				0.18
Ethylene dibromide	0.0001				0.00007
Fluorotrichloromethane	0.0379				0.04
Hexane*	0.2055				0.21
Hydrogen sulfide	0.4392				0.44
Mercury *	0.0000213				0.00002
Methane	2911				2911
Methyl ethyl ketone*	0.1856				0.19
Methyl isobutyl ketone*	0.0679				0.07
Methyl mercaptan	0.0435				0.04
Pentane	0.0862				0.09
Perchloroethylene (tetrachloroethene)*	0.2246				0.22
Propane	0.1777				0.18
Reduced Sulfur	2.9040				2.90
Toluene*	5.5182				5.52
Trichloroethene*	0.1345				0.13
t-1,2-dichloroethene	0.0999				0.10
Vinyl Chloride	0.1665				0.17
Xylene*++	0.4663				0.47

* Hazardous Air Pollutant

++Total of O, M, P Isomers

+ Hourly emissions increased by 25 %

Table 3
Waste Management of Mississippi
Prairie Bluff Landfill
Emission Summary
Before Controls

	(tons/yr)				
	Landfill Gas w/o Controls	**Fugitive Dusts**	**Solidification**	**Leachate Tank**	**Totals**
	AA-001	**AA-003**	**AA-004**	**AA-006**	
PM10		6.88	0.56	0.44	7.88
Total Suspended Particulate		61.17	0.73	0.44	62.34
1,1,1-Trichloroethane (methyl chloroform)*	0.0815				0.08
1,1,2,2-Tetrachloroethane*	0.2370				0.24
1,1-Dichloroethane (ethylidene dichloride)*	0.2958				0.30
1,1-Dichloroethene (vinylidene chloride)*	0.0247				0.02
1,2-Dichloroethane (ethylene dichloride)*	0.0516				0.05
1,2-Dichloropropane (propylene dichloride)*	0.0259				0.03
2-Propanol (isopropyl alcohol)	3.8305				3.83
Acetone	0.5179			0.01762	0.54
Acrylonitrile*	0.4272				0.43
Benzene*	1.1028				1.10
Bromodichloromethane	0.6522				0.65
Butane	0.3719				0.37
Carbon dioxide	27989.6105				27990
Carbon disulfide*	0.0562				0.06
Carbon monoxide	5.0235			0.3054	5.33
Carbon tetrachloride*	0.0008				0.0008
Carbonyl sulfide*	0.0374				0.04
Chlorobenzene*	0.0358				0.04
Chlorodiflouromethane	0.1430				0.14
Chloroethane (ethyl chloride)*	0.1026				0.10
Chloroform*	0.0046				0.0046
Chloromethane*	0.0777				0.08
Dichlorobenzene *	0.0393				0.04
Dichlorodifluoromethane	2.4146				2.41
Dichlorofluoromethane	0.3430				0.34
Dichloromethane (methylene chloride)*	1.5450				1.54
Dimethyl sulfide	0.6176				0.62
Ethane	34.0025				34.00
Ethanol	1.5943				1.59
Ethyl mercaptan	0.1802				0.18
Ethylbenzene*	0.6225				0.62
Ethylene dibromide	0.0002				0.00024
Fluorotrichloromethane	0.1328				0.13
Hexane*	0.7201				0.72
Hydrogen sulfide	1.5389				1.54
Mercury *	0.0001				0.00007
Methane	10201				10201
Methyl ethyl ketone*	0.6502				0.65
Methyl isobutyl ketone*	0.2380				0.24
Methyl mercaptan	0.1524				0.15
Pentane	0.3019				0.30
Perchloroethylene (tetrachloroethene)*	0.7869				0.79
Propane	0.6225				0.62
Reduced Sulfur	10.1757				10.18
Toluene*	19.3357				19.34
Trichloroethene*	0.4713				0.47
t-1,2-dichloroethene	0.3501				0.35
Vinyl Chloride	0.5835				0.58
Xylene*++	1.6339				1.63

* Hazardous Air Pollutant

++Total of O, M, P Isomers

+ Hourly emissions increased by 25 %

Table 4
Waste Management of Mississippi
Prairie Bluff Landfill
Emission Summary
With Controls

COMPOUND	(lbs/hr)+						
	Landfill Gas Fug w/Controls	Flare	Treatment System CAT G3520C	Fugitive Dusts	Solidification	Leachate Evap	Totals
	AA-001	AA-002	AA-005	AA-003	AA-004	AA-006	
PM10	0.10	0.52	0.86	1.96	0.13	0.10	3.45
Total Suspended Particulate		0.52	0.86	17.46	0.17	0.10	18.85
NOx		2.12	2.95			0.40	5.07
Carbon monoxide	0.3584	11.5504	20.31			0.07	32.22
SO_2		2.5180	2.20				4.72
Hydrochloric Acid		0.728	0.425				1.15
1,1,1-Trichloroethane (methyl chloroform)*	0.0058	0.0002	0.0004				0.01
1,1,2,2-Tetrachloroethane*	0.0169	0.0006	0.0012				0.02
1,1-Dichloroethane (ethylidene dichloride)*	0.0211	0.0007	0.0015				0.02
1,1-Dichloroethene (vinylidene chloride)*	0.0018	0.0001	0.0001				0.002
1,2-Dichloroethane (ethylene dichloride)*	0.0037	0.0001	0.0003				0.004
1,2-Dichloropropane (propylene dichloride)*	0.0018	0.0001	0.0001				0.002
2-Propanol (isopropyl alcohol)	0.2733	0.0095	0.0194				0.30
Acetone	0.0369	0.0002	0.0010			0.005029	0.04
Acrylonitrile*	0.0305	0.0002	0.0009				0.03
Benzene*	0.0787	0.0004	0.0022				0.08
Bromodichloromethane	0.0465	0.0016	0.0033				0.05
Butane	0.0265	0.0001	0.0008				0.03
Carbon dioxide	1690	8088	2730				12508.73
Carbon disulfide*	0.0040	0.00002	0.0001				0.004
Carbon tetrachloride*	0.0001	0.000002	0.000004				0.000
Carbonyl sulfide*	0.0027	0.000014	0.000076				0.003
Chlorobenzene*	0.0026	0.000089	0.000181				0.003
Chlorodiflouromethane	0.0102	0.000354	0.000723				0.01
Chloroethane (ethyl chloride)*	0.0073	0.000254	0.000519				0.01
Chloroform*	0.0003	0.000011	0.000023				0.00
Chloromethane*	0.0055	0.000192	0.000393				0.01
Dichlorobenzene *	0.0028	0.000097	0.000199				0.003
Dichlorodifluoromethane	0.1723	0.005975	0.012212				0.19
Dichlorofluoromethane	0.0245	0.000849	0.001735				0.03
Dichloromethane (methylene chloride)*	0.1102	0.003823	0.007814				0.12
Dimethyl sulfide	0.0441	0.000229	0.001249				0.05
Ethane	2.4260	0.012621	0.068788				2.51
Ethanol	0.1137	0.000592	0.003225				0.12
Ethyl mercaptan	0.0129	0.000067	0.000365				0.01
Ethylbenzene*	0.0444	0.000231	0.001259				0.05
Ethylene dibromide	0.00002	0.000001	0.0000005				0.00002
Fluorotrichloromethane	0.0095	0.000329	0.000672				0.01
Hexane*	0.0514	0.000267	0.001457				0.05
Hydrogen sulfide	0.1098	0.000571	0.003113				0.11
Mercury *	0.00001	0.000009	0.000005				0.00002
Methane	728	3.786475	20.637361				752.25
Methyl ethyl ketone*	0.0464	0.000241	0.001315				0.05
Methyl isobutyl ketone*	0.0170	0.000088	0.000482				0.02
Methyl mercaptan	0.0109	0.000057	0.000308				0.01
Pentane	0.0215	0.000112	0.000611				0.02
Perchloroethylene (tetrachloroethene)*	0.0561	0.001947	0.003980				0.06
Propane	0.0444	0.000231	0.001259				0.05
Reduced Sulfur	0.7260	2.518021	2.200000				5.44
Toluene*	1.3795	0.007177	0.039117				1.43
Trichloroethene*	0.0336	0.001166	0.002384				0.04
t-1,2-dichloroethene	0.0250	0.000866	0.001771				0.03
Vinyl chloride*	0.0416	0.001444	0.002951				0.05
Xylene*++	0.1166	0.000606	0.003305				0.12

* Hazardous Air Pollutant

++Total of O, M, P Isomers

+ Hourly emissions increased by 25 %

Table 5
Waste Management of Mississippi
Prairie Bluff Landfill
Emission Summary
With Controls

COMPOUND	(tons/yr)						
	Landfill Gas w/Controls AA-001	3000 SCFM Flare AA-002	Treatment System CAT G3520C AA-005	Fugitive Dusts AA-003	Solidification AA-004	Leachate Evap AA-006	Totals
PM10	0.44	1.84	3.78	6.88	0.56	0.44	12.94
Total Suspended Particulate	0.44	1.84	3.78	61.17	0.73	0.44	67.23
NOx		7.44	12.93			1.77	22.13
Carbon monoxide	1.26	40.47	88.97			0.31	131.01
SO_2		8.8231	9.64				18.46
Hydrochloric Acid		2.55	1.86				4.42
1,1,1-Trichloroethane (methyl chloroform)*	0.0204	0.0007	0.0018				0.02
1,1,2,2-Tetrachloroethane*	0.0592	0.0021	0.0053				0.07
1,1-Dichloroethane (ethylidene dichloride)*	0.0740	0.0026	0.0066				0.08
1,1-Dichloroethene (vinylidene chloride)*	0.0062	0.0002	0.0005				0.007
1,2-Dichloroethane (ethylene dichloride)*	0.0129	0.0004	0.0011				0.01
1,2-Dichloropropane (propylene dichloride)*	0.0065	0.0002	0.0006				0.007
2-Propanol (isopropyl alcohol)	0.9576	0.0332	0.0849				1.08
Acetone	0.1295	0.0007	0.0046			0.02	0.15
Acrylonitrile*	0.1068	0.0006	0.0038				0.11
Benzene*	0.2757	0.0014	0.0098				0.29
Bromodichloromethane	0.1631	0.0057	0.0144				0.18
Butane	0.0930	0.0005	0.0033				0.10
Carbon dioxide	5922	28342	11959				46222
Carbon disulfide*	0.0140	0.0001	0.0005				0.01
Carbon tetrachloride*	0.0002	0.000007	0.000017				0.0002
Carbonyl sulfide*	0.0094	0.0000	0.000332				0.01
Chlorobenzene*	0.0089	0.0003	0.000793				0.01
Chlorodiflouromethane	0.0357	0.0012	0.003167				0.04
Chloroethane (ethyl chloride)*	0.0256	0.0009	0.002272				0.03
Chloroform*	0.0011	0.0000	0.000101				0.001
Chloromethane*	0.0194	0.0007	0.001721				0.02
Dichlorobenzene *	0.0098	0.0003	0.000870				0.011
Dichlorodifluoromethane	0.6036	0.0209	0.053488				0.68
Dichlorofluoromethane	0.0857	0.0030	0.007598				0.10
Dichloromethane (methylene chloride)*	0.3862	0.0134	0.034225				0.43
Dimethyl sulfide	0.1544	0.0008	0.005472				0.16
Ethane	8.5006	0.0442	0.301293				8.85
Ethanol	0.3986	0.0021	0.014127				0.41
Ethyl mercaptan	0.0450	0.0002	0.001597				0.05
Ethylbenzene*	0.1556	0.0008	0.005516				0.16
Ethylene dibromide	0.0001	0.000002	0.000002				0.00006
Fluorotrichloromethane	0.0332	0.0012	0.002942				0.04
Hexane*	0.1800	0.0009	0.006381				0.19
Hydrogen sulfide	0.3847	0.0020	0.013636				0.40
Mercury *	0.0000	0.0000	0.000024				0.00007
Methane	2550	13.27	90.391640				2654
Methyl ethyl ketone*	0.1626	0.0008	0.005761				0.17
Methyl isobutyl ketone*	0.0595	0.0003	0.002109				0.06
Methyl mercaptan	0.0381	0.0002	0.001350				0.04
Pentane	0.0755	0.0004	0.002675				0.08
Perchloroethylene (tetrachloroethene)*	0.1967	0.0068	0.017431				0.22
Propane	0.1556	0.0008	0.005516				0.16
Reduced Sulfur	2.5439	8.8231	9.636000				21.00
Toluene*	4.8339	0.0251	0.171332				5.03
Trichloroethene*	0.1178	0.0041	0.010440				0.13
t-1,2-dichloroethene	0.0875	0.0030	0.007756				0.10
Vinyl chloride*	0.1459	0.0051	0.012926				0.16
Xylene*++	0.4085	0.0021	0.014478				0.43

* Hazardous Air Pollutant

++Total of O, M, P Isomers

Table 6
Waste Management of Mississippi
Prairie Bluff Landfill
Emission Summary (tpy)
With Controls

	Source	Total VOCs*	VOC HAPS	NON VOC HAPS**	CO	PM***	NOx	SO2	CFCs/HCFCs****	TRS*****
AA-001	Landfill Gas (Fugitives)	4.85	6.87	0.41	1.26				0.76	0.65
AA-002	3000 SCFM Flare	0.07	0.06	2.57	40.47	1.84	7.44	8.82	0.03	0.00
AA-003	Fugitive Particulate Emissions					6.88				
AA-004	Solidification Emissions					0.56				
AA-005	Cat G3520C Engine	4.09	0.29	1.90	88.97	3.78	12.93	9.64	0.07	0.02
AA-006	Leachate Storage/Handling	0.01	0.01	0.00	0.31	0.44	1.77	0.00		
T-1	Gasoline Storage Tank	0.17								
	Totals	**9.19**	**7.22**	**4.87**	**131.01**	**13.50**	**22.13**	**18.46**	**0.85**	**0.67**

*Total VOCs including those that are HAPs, Less exempt Compounds

**NON VOC HAPS includes: 1,1,1-Trichloroethane (methyl chloroform)*, Dichloromethane (methylene chloride)*, and Mercury

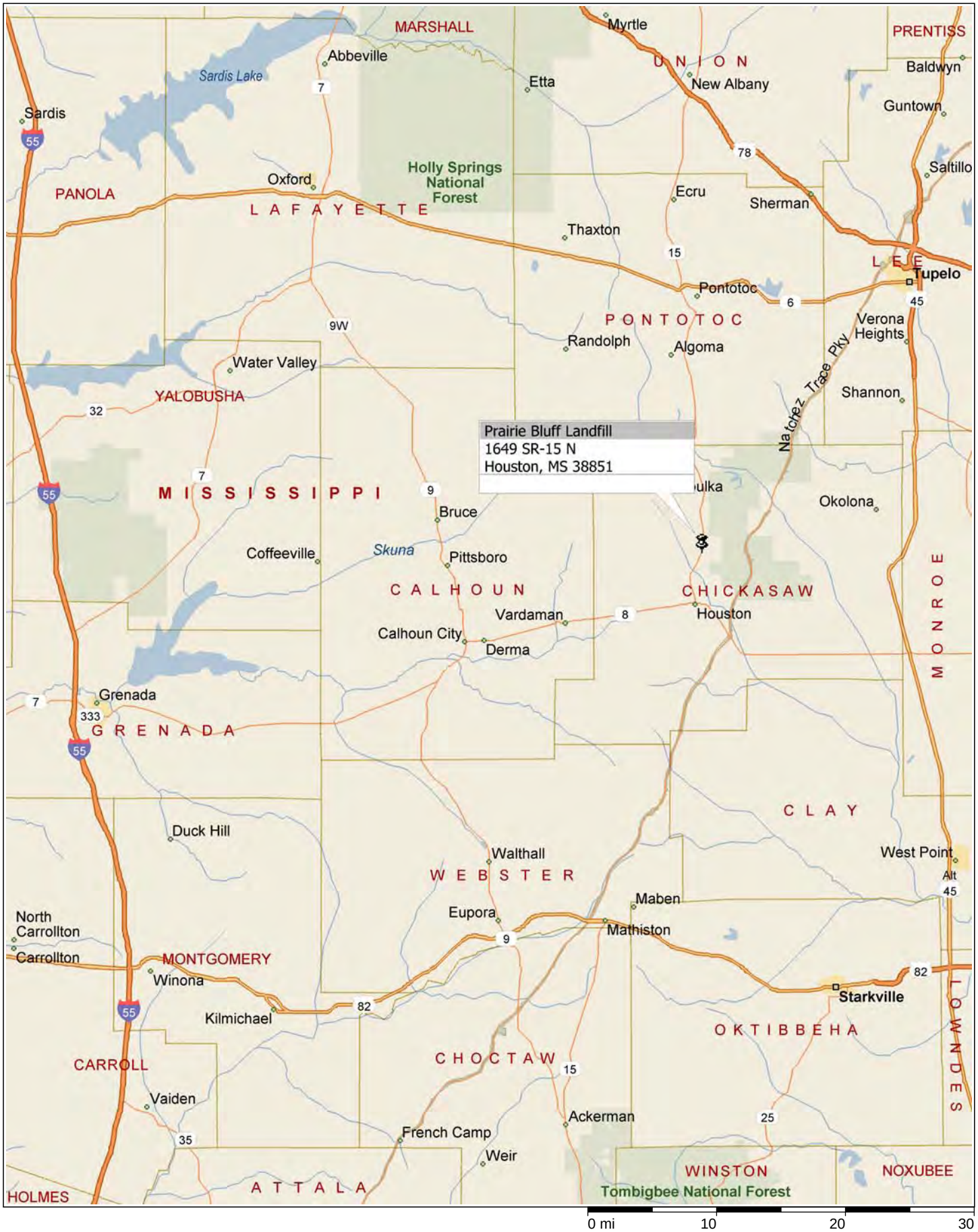
*** PM includes particulte finer than 10 µm

****CFCs/HCFCs includes: Chlorodiflouromethane, Dichlorodifluoromethane, Dichlorofluoromethane, and Fluorotrichloromethane

***** TRS includes: Carbon Disulfide, Carbonyl Sulfide, Dimethyl Sulfide, Ethyl Mercaptan, Hydrogen Sulfide, and Methyl Mercaptan

Figure

SITE LOCATION MAP: PRAIRIE BLUFF LANDFILL



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APPLICATION FOR TITLE V
AIR POLLUTION CONTROL PERMIT
TO OPERATE AIR EMISSIONS EQUIPMENT

FOR OFFICIAL USE ONLY

APPLICATION RECEIPT
DATE:

APPLICATION NO. :

FOR MODIFICATION :
MINOR
SIGNIFICANT

STATE OF MISSISSIPPI
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF POLLUTION CONTROL
AIR DIVISION
P.O. BOX 10385
JACKSON, MS. 39289-0385
PHONE NO.: (601) 961 - 5171

APPLICATION FOR TITLE V
AIR POLLUTION CONTROL PERMIT
TO OPERATE AIR EMISSIONS EQUIPMENT

PERMITTING ACTIVITY:

_____	**INITIAL APPLICATION**
X	**MODIFICATION**
X	**RENEWAL OF OPERATING PERMIT**

NAME: **Waste Management of Mississippi, Inc. – Prairie Bluff Landfill and Recycling Center**

CITY: **Houston**

COUNTY: **Chicksaw**

FACILITY No. (if known): 0380-00039

APPLICATION FOR TITLE V PERMIT TO
OPERATE AIR EMISSIONS EQUIPMENT

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OPERATING PERMIT APPLICATION REQUIREMENTS

All applications must be submitted on the form supplied by the Permit Board. Trivial activities as listed in Attachment A are presumed to emit less than 1 pound per hour of a pollutant that is not a hazardous air pollutant and less than 0.1 pound per hour of any hazardous air pollutant; these activities need not be reported in the application. Insignificant activities which are specified in Section VII.A. of Regulation APC-S-6 and listed herein also need not be included . For insignificant activities which are specified in Section VII.B. of Regulation APC-S-6, a list must be included in the application. An application may not omit information needed to determine the applicability of, or to impose, any applicable requirement, or to evaluate the fee amount required under the schedule pursuant to Section VI. of Regulation APC-S-6. The forms and attachments shall include the elements specified as follows:

A. Identifying information, including company name and address (or plant name and address if different from the company name), owner's name and agent, and telephone number and names of plant site manager/contact;

B. A description of the source's process and products by Standard Industrial Classification Code including any associated with any alternate scenario identified by the source;

C. Emission-related information as follows:

1. A qualitative description of all emissions units, including those not subject to applicable requirements but not those omitted under trivial or insignificant activities provisions;

2. A description of all emissions of pollutants for which the source is major and of all emissions of regulated air pollutants sufficient to determine or verify major source status, to determine or verify applicability of and compliance with applicable requirements, and to assess and collect permit fees, if the emissions basis for fees has not been previously determined. Fugitive emissions from individual components within a facility may be determined collectively based on their relationship to the associated process unless individual emission rates are needed to determine the applicability of an applicable requirement such as NSPS, NESHAPS, a MACT standard, etc. or to determine air quality impacts. Similarly, where individual components or units with a facility may be classified into a generic group due to the commonality of applicable requirements and /or the nature of operation, stack emissions may be determined collectively for the group unless individual emission rates are needed to determine applicability of an applicable requirement or to determine air quality impacts;

3. For each pollutant and emissions unit which is regulated, emission rates in TPY and in such terms as are necessary to establish compliance consistent with the applicable standard reference test method, except that, for pollutants and units which have no applicable requirements expressed in emission rate terms, emission rate quantification may be omitted;

4. To the extent it is needed to determine or regulate emissions, the information that follows: fuels, fuel use, raw materials, production rates, and operating schedules;

5. Identification and description of air pollution control equipment and compliance monitoring devices or activities;

6. Limitations on source operation affecting emissions or any work practice standards, where applicable, for all regulated pollutants at the Title V source;

7. Other information required by any applicable requirement (including information related to stack height limitations developed pursuant to Section 123 of the Federal Act); and

8. Calculations on which the information requested in this section is based.

D. Air pollution control requirements as follows:

1. Citation and description of all applicable requirements, and

2. Description of or reference to any applicable test method for determining compliance with each applicable requirement;

E. Other specific information that may be necessary to implement and enforce other applicable requirements of the Federal Act or of these regulations or to determine the applicability of such requirements;

F. An explanation of any proposed exemptions from otherwise applicable requirements;

G. Additional information as determined to be necessary by the Permit Board to define alternative operating scenarios identified by the source pursuant to Section III.A.9. of Regulation APC-S-6 or to define permit terms and conditions implementing 40 CFR 70.4(b)(12) or Section III.A.10. of Regulation APC-S-6;

H. A compliance plan for all Title V sources that contains all of the following:

1. A description of the compliance status of the source with respect to all applicable requirements;

2. A description as follows:

a) For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements;

b) For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis;

c) For requirements for which the source is not in compliance at the time of permit issuance, a narrative description of how the source will achieve compliance with such requirements;

3. A compliance schedule as follows:

a) For applicable requirements with which the source is in compliance, a statement that the source will continue to comply with such requirements;

b) For applicable requirements that will become effective during the permit term, a statement that the source will meet such requirements on a timely basis. A statement that the source will meet in a timely manner applicable requirements that become

effective during the permit term shall satisfy this provision, unless a more detailed schedule is expressly required by the applicable requirements;

c) A schedule of compliance for sources that are not in compliance with all applicable requirements at the time of permit issuance. Such a schedule shall include a schedule or remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the source will be in noncompliance at the time of permit issuance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based;

4. A schedule for submission of certified progress reports, to be submitted no less frequently than every 6 months for sources required to have a schedule of compliance to remedy a violation;

5. The compliance plan content requirements specified in this paragraph shall apply and be included in the acid rain portion of a compliance plan for an affected source, except as specifically superseded by regulations promulgated under Title IV of the Federal Act with regard to the schedule and method(s) the source will use to achieve compliance with the acid rain emissions limitations;

I. Requirements for compliance certification, including the following:

1. A certification of compliance with all applicable requirements by a responsible official consistent with Section II.E of Regulation APC-S-6 and Section 114(a)(3) of the Federal Act;

2. A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods;

3. A schedule for submission of compliance certifications during the permit term, to be submitted no less frequently than annually, or more frequently if specified by the underlying applicable requirement or by the Permit Board;

4. A statement indicating the sources compliance status with any applicable enhanced monitoring and compliance certification requirements of the Federal Act; and

J. The use of nationally-standardized forms for acid rain portions of permit applications and compliance plans, as required by regulations promulgated under Title IV of the Federal Act.

INSIGNIFICANT ACTIVITIES AND EMISSIONS

I. The following activities/emissions sources are not required to be included in a Title V permit application:

A. New or modified pilot plants, subject to temporary source regulations located in Section III.E. of regulation APC-S-6.

B. Maintenance and upkeep:

1. Maintenance, structural changes, or repairs which do not change the capacity of such process, fuel-burning, refuse-burning, or control equipment, and do not involve any change in quality, nature, or quantity of potential emissions of any regulated air pollutants; and

2. Housekeeping activities or building maintenance procedures;

C. Air conditioning or ventilation: comfort air conditioning or comfort ventilating systems which do not transport, remove, or exhaust regulated air pollutants to the atmosphere;

D. Laboratory equipment:

1. Laboratory equipment used exclusively for chemical or physical analysis for quality control or environmental monitoring purposes; or

2. Non-production laboratory equipment used at non-profit health or non-profit educational institutions for chemical or physical analyses, bench scale experimentation or training, or instruction;

E. Hot water heaters which are used for domestic purposes only and are not used to heat process water;

F. Fuel use related to food preparation by a restaurant, cafeteria, residential cooker or barbecue grill where the products are intended for human consumption;

G. Clerical activities such as operating copy machines and document printers, except operation of such units on a commercial basis;

H. Hand held equipment used for buffing, polishing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding, or turning of ceramic art work, precision parts, leather, metals, plastics, fiber board, masonry, carbon, glass, or wood;

I. Equipment for washing or drying fabricated glass or metal products, if no VOCs are used in the process and no oil or solid fuel is burned;

J. Water cooling towers (except at nuclear power plants); water treatment systems for process cooling water or boiler feed water; and water tanks, reservoirs, or other water containers not used in direct contact with gaseous or liquid process streams containing carbon compounds, sulfur compounds, halogens or halogen compounds, cyanide compounds, inorganic acids, or acid gases;

K. Domestic sewage treatment facilities (excluding combustion or incineration equipment, land farms, storage silos for dry material, or grease trap waste handling or treatment facilities);

L. Stacks or vents to prevent escape of sewer gases through plumbing traps;

M. Vacuum cleaning systems for housekeeping, except at a source with hazardous air pollutants;

N. Alkaline/phosphate washers and associated cleaners and burners;

O. Mobile sources;

P. Livestock and poultry feedlots and associated fuel burning equipment other than incinerators;

Q. Outdoor kerosene heaters;

R. Equipment used for hydraulic or hydrostatic testing;

S. Safety devices, excluding those with continuous emissions; and

T. Brazing, soldering, or welding equipment that is used intermittently or in a non-continuous

II. The following activities/emissions sources must be listed in the application but emissions from these activities do not have to be quantified.

A. All gas fired, #2 oil fired, infrared, electric ovens with no emissions other than products of fuel combustion;

B. Combustion units with rated input capacity less than 10 million Btu/hr that are fueled by:

1. Liquified petroleum gas or natural gas supplied by a public utility; or

2. Commercial fuel oil #2 or lighter;

C. Equipment used for inspection of metal products;

D. Equipment used exclusively for forging, pressing, drawing, spinning, or extruding metals;

E. Equipment used exclusively to mill or grind coatings and molding compounds where all materials charged are in paste form;

F. Mixers, blenders, roll mills, or calendars for rubber or plastics for which no materials in powder form are added and in which no organic solvents, diluents, or thinners are used;

G. All storage tanks used exclusively to store fuel oils, kerosene, diesel, jet fuel, crude oil, natural gas, or liquified petroleum gas (the application must list the size of the tank, date constructed and/or modified, type tank, and material stored);

H. Space heaters utilizing natural or LPG gas and used exclusively for space heating;

I. Back-up or emergency use generators, boilers or other fuel burning equipment which is of equal or smaller capacity than normal main operating equipment, cannot be used in conjunction with normal main operating equipment, and does not emit, have or cause the potential to emit of any regulated air pollutant to increase;

J. Blast cleaning equipment using a suspension of abrasives in water;

K. Die casting machines;

L. Foundry sand mold forming equipment to which no heat is applied and from which no organics are emitted.

M. Bark and wood - waste storage and handling;

N. Log wetting areas;

P. Log flumes;

Q. Sodium hydrosulfide storage tank;

R. Smelt dissolving tank view ports;

S. Spout cooling water storage;

T. Effluent drains;

U. White water chest;

V. Repupler vents;

W. Clay storage tank;

X. Alum storage tank;

Y. Starch storage tank;

Z. Steam vents and leaks;

AA. Deaerator vents;

AB. Mill air and instrument air system;

AC. Demineralizer water storage tank;

AD. Acid storage tank;

AE. Process water tank;

AF. Air purification system vents;

AG. Effluent neutralizing tank/system;

AH. Dregs washer;

AI. Lime silo;

AJ. Lime mud mix tank;

AK. H_2O_2 storage tank;

AL. Green liquor tank; and

AM. Tall oil storage tank.

III. Notwithstanding I. and II. above, the applicant shall include all emissions sources and quantify emissions if needed to determine major source status, to determine compliance with an applicable requirement and/or the applicability of any applicable requirement such as NSPS, NESHAP, MACT standard, etc. as such term is defined in Section I. of Regulation APC-S-6 or collect any permit fee owed under the approved fee scheduled.

IV. Notwithstanding I. and II. above, the applicant shall include all emission sources with a potential to emit:

1. greater than 1 pound per hour of any regulated pollutant that is not a hazardous air pollutant;
2. greater than 0.1 pound per hour of any hazardous air pollutant.

V. The permittee does not have to report the addition of any insignificant activity listed in Section I. above unless the addition is a Title I modification or requires a permit to construct. If a Title I permit or a Permit to Construct is required, then the modification procedures outlined in Section IV.E. of Regulation APC-S-6 shall be followed.

VI. The addition of any insignificant activity listed in Section II. above, shall be handled as an administrative amendment as defined in Section IV.D. of Regulation APC-S-6 unless the addition is a Title I modification or requires a Permit to Construct. If a Title I permit or Permit to Construct is required, then the modification procedures outlined in Section IV.E. of Regulation APC-S-6 shall be followed.

REGULATED AIR POLLUTANTS

Total suspended particulate matter
PM_{10}
Sulfur dioxide
Nitrogen oxides
Carbon monoxide
Volatile organic compounds(see note 1)
Lead
Dioxin/Furan
Fluorides
Hydrogen chloride
Hydrogen sulfide
Sulfuric acid mist
Total reduced sulfur
Reduced sulfur compounds
Arsenic
Asbestos
Beryllium
Benzene
Mercury
Radionuclides
Vinyl chloride
Carbon tetrachloride
Chlorofluorocarbon-11
Chlorofluorocarbon-12
Chlorofluorocarbon-13
Chlorofluorocarbon-111
Chlorofluorocarbon-112
Chlorofluorocarbon-113
Chlorofluorocarbon-114
Chlorofluorocarbon-115
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Hydrochlorofluorocarbon-251
Hydrochlorofluorocarbon-252
Hydrochlorofluorocarbon-253
Hydrochlorofluorocarbon-261
Hydrochlorofluorocarbon-262
Hydrochlorofluorocarbon-271
Halon-1211
Halon-1301
Halon-2402
Methyl chloroform

Note 1 - Volatile organic compounds (VOC) includes any compound of carbon, excluding carbon monoxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any such organic compound other than the following which have been determined to have negligible photochemical reactivity: Methane; ethane; methylene chloride; 1,1,1-trichloroethane; CFC-113; CFC-11;CFC-12; CFC-22; FC-23; CFC-114; CFC-115; HCFC-123; HFC-134a; HCFC-141b; HCFC-142b; HCFC-124; HFC-125; HFC-134; HFC-143a; HFC-153a; and perfluorocarbon compounds which fall into these classes: (i) Cyclic, branched, or linear, completely fluorinated alkanes; (ii) Cyclic, benched, or linear, completely fluorinated ethers with no unsaturations; (iii) Cyclic, branched, or linear completely fluorinated tertiary amines with no unsaturations; and (iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine. **For the purposes of this application hazardous air pollutants that are volatile organic compounds should be included as VOCs for reflection of total VOCs from the facility but need to be identified separately as well.**

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	Acetylaminofluorene(2)
107028	Acrolein
79061	Acrylamide
79107	Acrylic Acid
107131	Acrylonitrile
107051	Allyl Chloride
92671	Aminodipheyl(4)
62533	Aniline
90040	Anisidine(o)
7440360	Antimony Compounds
7440382	Arsenic Compounds (inorganic including arsine)
1332214	Asbestos
71432	Benzene
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl Chloride
7440417	Beryllium Compounds
192524	Biphenyl
117817	Bis(2-ethhylhexyl)phthalate(DEHP) (Dioctyl Phthalate)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	Butadiene(1,3)
7440439	Cadmium Compounds
156627	Calcium Cyanamide
105602	Caprolactam
133062	Captan
63252	Carbaryl
75150	Carbon Disulfide
56235	Carbon Tetrachloride
463581	Carbonyl Sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic Acid
532274	Chloroacetophenone(2)
108907	Chlorobenzene
510156	Chlorobenzinate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene (Neoprene; 2-Chloro-1,3-Butadiene)
7440473	Chromium Compounds (IV)
10210681	Cobalt Carbonyl (as Co)
7440484	Cobalt Compounds (metal, dust, and fumes as Co)
16842038	Cobalt Hydrocarbonyl (as Co)

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
65996818A	Coke Oven Emissions
1319773	Cresols/Cresylic acid
108394	Cresol(m)
95487	Cresol(o)
106445	Cresol(p)
98828	Cumene (Isopropylbenzene)
---	Cyanide Compounds (NOTE # 1)
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	Dibromo-3-chloropropane(1,2)
84742	Dibutylphthalate
106467	Dichlorobenzene(1,4)(p)
91941	Dichlorobenzidene(3,3)
111444	Dichloroethyl ether (Bis(2-chloroehtyl)ether)
542756	Dichloropropene(1,3)
62737	Dichlorvos
111422	Diethanolamine
121697	Diethyl aniline (N,N) (dimethylaniline (N,N))
64675	Diethyl Sulfate
119904	Dimethoxybenzidine(3,3')
60117	4 - Dimethyl aminoazobenzene
119937	Dimethyl benzidine (3,3')
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	Dimethyl hydrazine(1,1)
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	Dinitro-o-cresol(4,6), and salts
51285	Dinitrophenol(2,4)
121142	Dinitrotoluene(2,4)
123911	Dioxane(1,4) (1,4-diethyleneoxide)
122667	Diphenylhydrazine(1,2)
94757	d(2,4), salts and esters
106898	Epichlorohydrin (Chloro-2,3-epoxypropane(1))
106887	Epoxybutane(1,2) (1,2-Butylene oxide)
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (1,2-Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Azridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
50000	Formaldehyde
---	Glycol ethers (NOTE #2)
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen Fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
7439921	Lead Compounds
58899	Lindane (all isomers)
108316	Maleic anhydride
7439965	Manganese Compounds
7439976	Mercury Compounds
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
78933	Methyl ehtyl ketone (2-Butanone) (MEK)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	Methylene bis(2-chloroaniline)(4,4) (MOCA)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocynate (MDI)
101779	Methylenedianiline(4,4')
---	Mineral fibers (NOTE #3)
91203	Naphthalene
7440020	Nickel Compounds
7440020	Nickel, refinery dust
12035722	Nickel, subsulfide
98953	Nitrobenzene
92933	Nitrodiphenyl(4)
100027	Nitrophenol(4)
79469	Nitropropane(2)
62759	Nitrosodimethylamine(N) (Dimethylnitrosoamine)
59892	Nitrosomorpholine(N)
684935	Nitroso-N-methylurea(N)
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	Phenylenediamine(p)

HAZARDOUS AIR POLLUTANTS

CAS No.	CHEMICAL NAME
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Arochlors)
---	Polycylic Organic Matter (NOTE #5)
1120714	Propane sultone(1,3)
57578	Propiolactone(beta)
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2 dichloropropane)
75558	Propylene imine(1,2) (2-methyl aziridine)
75569	Propylene oxide
91225	Quinoline
106514	Quinone (1,4-Cyclohexadienedione)
---	Radionuclides (including radon) (NOTE #4)
7782492	Selenium Compounds
100425	Styrene
96093	Styrene oxide
1746016	Tetrachlorodibenzo-p-dioxin(2,3,7,8) (TCDD) (Dioxin)
79345	Tetrachloroethane(1,1,2,2)
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium Tetrachloride
108883	Toluene
95807	Toluene diamine(2,4) (2,4-diaminotoluene)
584849	Toluene diisocyanate(2,4)
95534	Toluidine(o)
8001352	Toxaphene (Chlorinated camphene)
120821	Trichlorobenzene(1,2,4)
79005	Trichloroethane(1,1,2)
79016	Trichloroethylene
95954	Trichlorophenol(2,4,5)
88062	Trichlorophenol(2,4,6)
121448	Triethylamine
1582098	Trifluralin
540841	Trimethylpentane(2,2,4)
75014	Vinyl Chloride
108054	Vinyl Acetate
593602	Vinyl Bromide
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (mixed)
108383	Xylene(m)
95476	Xylene(o)
106423	Xylene(p)

NOTE # 1: X'CN where X = H' or any other group where a formal dissociation may occur, for example: KCN or $Ca(CN)_2$.

NOTE # 2: Includes mono- and di- ethers of ethylene glycol, dietheylene glycol and triethylene glycol $R\text{-}(OCH_2CH_2)n\text{-}OR'$ where:

n = 1,2,3
R = alkyl or arl groups
R' = R,H, or group which, when removed, yield glycols ethers with the structure: $R\text{-}(OCH_2CH_2)n\text{-}OH$. Polymers are excluded from the glycol category

NOTE # 3: Includes glass microfibers, glass wool fibers, rock wool fibers, and slag wool fibers, each characterized as "respirable" (fiber diameter less then 3.5 micrometers) and possessing an aspect ratio (fiber length divided by fiber diameter) greater than 3.

NOTE # 4: A type of atom which spontaneously undergoes radioactive decay.

NOTE # 5: Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 Celsius.

Owners Information Section B

1. Name, Address & Contact for the Owner/Applicant

A. Company Name: Waste Management of Mississippi, Inc.

B. Mailing Address:
1. Street Address or P.O. Box: 1450 Country Club Drive
2. City: Jackson Sate: MS
4. Zip Code: 39209
5. Telephone No.: (601) 922-9647

C. Contact:

1. Name: Mark Noel
2. Title: Market Area Compliance Manager

2. Name, Address, Location and Contact for the Facility:

A. Name: Prairie Bluff Landfill and Recycling Center

B. Mailing Address:
1. Street Address or P.O. Box: 1649 Highway 15 North
2. City: Houston 3. State: MS
4. Zip Code: 38851
5. Telephone No.: (662) 456 - 9560

C. Site Location:
1. Street: 1649 Highway 15 North
2. City: Houston 3. State: MS
4. County: Chicksaw 5. Zip Code: 38851
6. Telephone No.: (662) 456 - 9560

Note: If the facility is located outside of the City limits, please attach a sketch or description to this application showing the approximate location of the site.

D. Contact:

1. Name: Charles Gardner
2. Title: Site Manager:

4. Number of Employees: 7

5. Principal Product(s): No products; waste disposal facility

6. Principal Raw Materials: N/A

7. Principal Process(es): Solid waste disposal

8. Maximum amount of principal product produced or raw material consumed per day:
NA

9. Facility Operating Schedule:

A. Specify maximum hours per day the operation will occur: 24

B. Specify maximum days per week the operation will occur: 7

C. Specify maximum weeks per year the operation will occur: 52

D. Specify the months the operation will occur: January thru December

10. Is this facility a small business as defined by the Small Business Act? No

11. **EACH APPLICATION MUST BE SIGNED BY THE APPLICANT.**

The application must be signed by a responsible official as defined in Regulation APC-S-6, Section I.A.26.

I certify that to the best of my knowledge and belief formed after reasonable inquiry, the statements and information in this application are true, complete, and accurate, and that, as a responsible official, my signature shall constitute an agreement that the applicant assumes the responsibility for any alteration, additions, or changes in operation that may be necessary to achieve and maintain compliance with all applicable Rules and Regulations.

David Myhan	*Area Vice President*
Printed Name of Responsible Official	**Title**
Date Application Signed	**Signature of Applicants Responsible Official**

EMISSIONS SUMMARY for the ENTIRE FACILITY

List below the total emissions for each pollutant from the entire facility in accordance with Operating Permit Application Requirements, pp. 3-5. For stack emissions, use the maximum annual allowable (potential) emissions. For fugitive emissions, use the annual emissions calculated using the maximum operating conditions.

POLLUTANT Footnote 1	ANNUAL EMISSION RATE	
	lb/hr	tons/yr
PM10	3.45	12.94
Total Suspended Particulate	18.85	67.23
NOx	5.07	22.13
Carbon monoxide	32.22	131.01
SO_2	4.72	18.46
Hydrochloric Acid	1.15	4.42
1,1,1-Trichloroethane (methyl chloroform)*	0.01	0.02
1,1,2,2-Tetrachloroethane*	0.02	0.07
1,1-Dichloroethane (ethylidene dichloride)*	0.02	0.08
1,1-Dichloroethene (vinylidene chloride)*	0.002	0.007
1,2-Dichloroethane (ethylene dichloride)*	0.004	0.01
1,2-Dichloropropane (propylene dichloride)*	0.002	0.007
2-Propanol (isopropyl alcohol)	0.30	1.08
Acetone	0.04	0.15
Acrylonitrile*	0.03	0.11
Benzene*	0.08	0.29
Bromodichloromethane	0.05	0.18
Butane	0.03	0.10
Carbon dioxide	12,509	46,222
Carbon disulfide*	0.004	0.01
Carbon tetrachloride*	0.0001	0.0002
Carbonyl sulfide*	0.003	0.01
Chlorobenzene*	0.003	0.01
Chlorodiflouromethane	0.01	0.04
Chloroethane (ethyl chloride)*	0.01	0.03

Chloroform*	0.0004	0.001
Chloromethane*	0.01	0.02
Dichlorobenzene *	0.003	0.011
Dichlorodifluoromethane	0.19	0.68
Dichlorofluoromethane	0.03	0.10
Dichloromethane (methylene chloride)*	0.12	0.43
Dimethyl sulfide	0.05	0.16
Ethane	2.51	8.85
Ethanol	0.12	0.41
Ethyl mercaptan	0.01	0.05
Ethylbenzene*	0.05	0.16
Ethylene dibromide	0.00002	0.00006
Fluorotrichloromethane	0.01	0.04
Hexane*	0.05	0.19
Hydrogen sulfide	0.11	0.40
Mercury *	0.00002	0.00007
Methane	752.25	2654
Methyl ethyl ketone*	0.05	0.17
Methyl isobutyl ketone*	0.02	0.06
Methyl mercaptan	0.01	0.04
Pentane	0.02	0.08
Perchloroethylene (tetrachloroethene)*	0.06	0.22
Propane	0.05	0.16
Reduced Sulfur	5.44	21.00
Toluene*	1.43	5.03
Trichloroethene*	0.04	0.13
t-1,2-dichloroethene	0.03	0.10
Vinyl chloride*	0.05	0.16
Xylene*++	0.12	0.43

Emission Summary

(Tons/yr)

Total VOCs	9.19
VOC HAPS	7.22
NON VOC HAPS	4.87
CO	131.01
PM_{10}	13.50
NOx	22.13
SO2	18.46
CFCs/HCFCs	0.85
TRS	0.67

1. All regulated air pollutants,including hazardous air pollutants emitted from the entire facility should be listed. A list of regulated air pollutants has been provided in Section A.

With the exception of the emissions resulting from insignificant activities and emissions as defined in Regulation APC-S-6, Section VII, the pollutants listed above are all regulated air pollutants reasonably expected to be emitted from the facility.

_____

SIGNATURE (must match signature on page 17)

SECTION C

For the sections listed below indicate the number that have been completed for each section as part of this application.

Section B __1__	Section L1 _____	Section M1 _____
Section C __1___	Section L2 _____	Section M2 _____
Section D __2___	Section L3 _____	Section M3 __1__
Section E __4___	Section L4 _____	Section M4 __1__
Section F _____	Section L5 _____	Section M5 _____
Section G _____	Section L6 _____	Section M6 _____
Section H _1___	Section L7 __2__	Section M7 __1___
Section I _____		Section M8 _____
Section J _____		Section N __1__
Section K _____		Section O __1__

As a minimum, sections B, C, M, N and O must be completed for the application to be considered complete.

Please list below all insignificant activities required by APC-S-6, Section VII.B that apply to your facility.

B.2. Combustion units that are fueld by commercial fuel oil #2 or lighter
AA-005 8 HP gas portable pump; AA-006 6 HP gas portable pump; AA-007 50 HP diesel air compressor;
AA-008 50 HP diesel portable pump; AA-009 50 HP diesel light plant; AA-010 25 HP diesel pressure washer;
AA-011 11 HP gasoline portable electric generator; AA-012 11 HP gasoline portable electric generator;
AA-013 11 HP gasoline portable electric generator; AA-014 11 HP gasoline portable electric generator;

G. All storage tanks used exclusively to store fuel oils
AA-015 Diesel Storage Tank (1000 gallons, 1994); AA-016 Gasoline Storage Tank (500 gallons, 1994);
AA-017 New Oil Storage Tank (1,500 gallons, 1994); AA-018 Used Oil Storage Tank (1,000 gallons, 1994)
AG. Effluent neutralizing tank / system
AA-019 leachate storage tank (110,000 gallons, 2003) and Leachate Evaporation System
Non VOC Parts Washer

RISK MANAGEMENT PLANS

If the source is required to develop and register a risk management plan pursuant to Section 112(r) of the Title III of the Clean Air Act, the permittee need only specify that it will comply with the requirement to register such a plan. The content of the risk management plan need not itself be incorporated as a permit term.

Please answer the following questions:

I. Are you required to develop and register a risk management plan pursuant to Section 112(r)?

__ Yes ___x___ No

Only if "yes", answer questions II., III., and/or IV.

II. Have you submitted the risk management plan to the appropriate agency (i.e. Mississippi Emergency Management Agency (MEMA), Federal Emergency Management Agency (FEMA), etc.)?

__ Yes _____ No

III. If yes, give agency name and date submitted. _____

_____

IV. If no, provide a schedule for developing and submitting the risk management plan to the appropriate agency and providing our agency with certification that this submittal was made

FUEL BURNING EQUIPMENT (page 1 of 2) SECTION D

1. Emission Point No. / Name: AA-002 Landfill Gas Flare

2. Equipment Description: 3000 SCFM Flare for combustion of the landfill gas collect from the gas collection System installed at the landfill

3. Was this unit constructed or modified after August 7, 1977? Yes x No
If yes please give date and explain. Flare constructed in 1996, installed in 2002.

4. Capacity: 3000 SCFM 5. Type of burner: Open flare

6. Usage Type (i.e. Space Heat, Process, etc.) : Emission controls

7. Complete the following table, identifying each type of fuel and the amount used. Specify the units for heat content, hourly usage, and yearly usage.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	ACTUAL YEARLY USAGE
Landfill Gas	506 BTU/ft^3	0.00469%	0%	60 min	8,760 hrs.

8. Please list any fuel components that are hazardous air pollutants and the percentage in the fuel.
HAPs from AP-42 2.4, see Appendix A

9. Operating Schedule: (Optional) 24 hours/day 7 days/week 52 weeks/year

10. Stack Data:

A. Height: 23 ft C. Exit gas velocity: 43.44 ft/s

B. Inside diameter: 12 in D. Exit gas temperature: 1400 deg f

11. UTM Coordinates:

A. Zone 16 B. North 3758955.003 C. East 315885.904

12. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

		CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-002	PM10	no			0.52	1.84			
AA-002	Total Suspended Particulate	no			0.52	1.84			
AA-002	NOx	no			2.12	7.44			
AA-002	Carbon monoxide	no			11.5504	40.47			
AA-002	SO_2	no			2.5180	8.8231			
AA-002	Hydrochloric Acid	no			0.728	2.55			
AA-002	1,1,1-Trichloroethane (methyl chloroform)*	no			0.0002	0.0007			

EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-002	1,1,2,2-Tetrachloroethane*	no			0.0006	0.0021			
AA-002	1,1-Dichloroethane (ethylidene dichloride)*	no			0.0007	0.0026			
AA-002	1,1-Dichloroethene (vinylidene chloride)*	no			0.0001	0.0002			
AA-002	1,2-Dichloroethane (ethylene dichloride)*	no			0.0001	0.0004			
AA-002	1,2-Dichloropropane (propylene dichloride)*	no			0.0001	0.0002			
AA-002	2-Propanol (isopropyl alcohol)	no			0.0095	0.0332			
AA-002	Acetone	no			0.0002	0.0007			
AA-002	Acrylonitrile*	no			0.0002	0.0006			
AA-002	Benzene*	no			0.0004	0.0014			
AA-002	Bromodichloromethane	no			0.0016	0.0057			
AA-002	Butane	no			0.0001	0.0005			
AA-002	Carbon dioxide	no			8088	28,342			
AA-002	Carbon disulfide*	no			0.00002	0.0001			
AA-002	Carbon tetrachloride*	no			0.000002	0.000007			
AA-002	Carbonyl sulfide*	no			0.000014	0.0000			
AA-002	Chlorobenzene*	no			0.000089	0.0003			
AA-002	Chlorodiflouromethane	no			0.000354	0.0012			
AA-002	Chloroethane (ethyl chloride)*	no			0.000254	0.0009			
AA-002	Chloroform*	no			0.000011	0.0000			

EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-002	Chloromethane*	no			0.000192	0.0007			
AA-002	Dichlorobenzene *	no			0.000097	0.0003			
AA-002	Dichlorodifluoromethane	no			0.005975	0.0209			
AA-002	Dichlorofluoromethane	no			0.000849	0.0030			
AA-002	Dichloromethane (methylene chloride)*	no			0.003823	0.0134			
AA-002	Dimethyl sulfide	no			0.000229	0.0008			
AA-002	Ethane	no			0.012621	0.0442			
AA-002	Ethanol	no			0.000592	0.0021			
AA-002	Ethyl mercaptan	no			0.000067	0.0002			
AA-002	Ethylbenzene*	no			0.000231	0.0008			
AA-002	Ethylene dibromide	no			0.000001	0.000002			
AA-002	Fluorotrichloromethane	no			0.000329	0.0012			
AA-002	Hexane*	no			0.000267	0.0009			
AA-002	Hydrogen sulfide	no			0.000571	0.0020			
AA-002	Mercury *	no			0.000009	0.0000			
AA-002	Methane	no			3.786475	13.27			
AA-002	Methyl ethyl ketone*	no			0.000241	0.0008			
AA-002	Methyl isobutyl ketone*	no			0.000088	0.0003			
AA-002	Methyl mercaptan	no			0.000057	0.0002			
AA-002	Pentane	no			0.000112	0.0004			

EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-002	Perchloroethylene (tetrachloroethene)*	no			0.001947	0.0068			
AA-002	Propane	no			0.000231	0.0008			
AA-002	Reduced Sulfur	no			2.518021	8.8231			
AA-002	Toluene*	no			0.007177	0.0251			
AA-002	Trichloroethene*	no			0.001166	0.0041			
AA-002	t-1,2-dichloroethene	no			0.000866	0.0030			
AA-002	Vinyl chloride*	no			0.001444	0.0051			
AA-002	Xylene*++	no			0.000606	0.0021			

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

FUEL BURNING EQUIPMENT (page 1 of 2) SECTION D

1. Emission Point No. / Name: AA-005/Caterpillar Landfill Gas Engine

2. Equipment Description: Internal combustion engine for prodcing electricity from Landfill Gas

3. Was this unit constructed or modified after August 7, 1977? Yes X No _____

If yes please give date and explain.The engine was manufactered 2005 and proposed for installation

In 2011 The engine was purchased used and previously installed and operated in 2006.

4. Capacity: 17.85 MMBTU/hr 5. Type of burner: Internal

6. Usage Type (i.e. Space Heat, Process, etc.) : Produce Electricity for the Grid

7. Complete the following table, identifying each type of fuel and the amount used. Specify the units for heat content, hourly usage, and yearly usage.

FUEL TYPE	HEAT CONTENT	% SULFUR	% ASH	MAXIMUM HOURLY USAGE	ACTUAL YEARLY USAGE
Landfill Gas	506 BTU/ft^3	0.00469%	0	60 min	8,760 hrs.

8. Please list any fuel components that are hazardous air pollutants and the percentage in the fuel.

HAPs from AP-42 2.4, see Appendix A

9. Operating Schedule: (Optional) 24 hours/day 7 days/week 52 weeks/year

10. Stack Data:

A. Height: 21 ft C. Exit gas velocity: 193 ft/s

B. Inside diameter: 1.17 ft D. Exit gas temperature: 984 deg F

11. UTM Coordinates:

A. Zone 16 B. North 3758955.003 C. East 315885.904

12. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

		CONTROL EQUIPMENT			ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)		PROPOSED ALLOWABLE EMISSION RATE (Optional)		
EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-005	PM10	no			0.86	3.78			
AA-005	Total Suspended Particulate	no			0.86	3.78			
AA-005	NOx	no			2.95	12.93			
AA-005	Carbon monoxide	no			20.31	88.97			
AA-005	SO_2	no			2.20	9.64			
AA-005	Hydrochloric Acid	no			0.425	1.86			
AA-005	1,1,1-Trichloroethane (methyl chloroform)*	no			0.0004	0.0018			
AA-005	1,1,2,2-Tetrachloroethane*	no			0.0012	0.0053			
AA-005	1,1-Dichloroethane (ethylidene dichloride)*	no			0.0015	0.0066			
AA-005	1,1-Dichloroethene (vinylidene chloride)*	no			0.0001	0.0005			
AA-005	1,2-Dichloroethane (ethylene dichloride)*	no			0.0003	0.0011			

EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-005	1,2-Dichloropropane (propylene dichloride)*	no			0.0001	0.0006			
AA-005	2-Propanol (isopropyl alcohol)	no			0.0194	0.0849			
AA-005	Acetone	no			0.0010	0.0046			
AA-005	Acrylonitrile*	no			0.0009	0.0038			
AA-005	Benzene*	no			0.0022	0.0098			
AA-005	Bromodichloromethane	no			0.0033	0.0144			
AA-005	Butane	no			0.0008	0.0033			
AA-005	Carbon dioxide	no			2730	11959			
AA-005	Carbon disulfide*	no			0.0001	0.0005			
AA-005	Carbon tetrachloride*	no			0.000004	0.00001			
AA-005	Carbonyl sulfide*	no			0.000076	0.00033			
AA-005	Chlorobenzene*	no			0.000181	0.00079			
AA-005	Chlorodiflouromethane	no			0.000723	0.00316			
AA-005	Chloroethane (ethyl chloride)*	no			0.000519	0.00227			
AA-005	Chloroform*	no			0.000023	0.00010			
AA-005	Chloromethane*	no			0.000393	0.00172			
AA-005	Dichlorobenzene *	no			0.000199	0.00087			
AA-005	Dichlorodifluoromethane	no			0.012212	0.05348			
AA-005	Dichlorofluoromethane	no			0.001735	0.00759			
AA-005	Dichloromethane (methylene chloride)*	no			0.007814	0.03422			
AA-005	Dimethyl sulfide	no			0.001249	0.00547			
AA-005	Ethane	no			0.068788	0.30129			
AA-005	Ethanol	no			0.003225	0.01412			
AA-005	Ethyl mercaptan	no			0.000365	0.00159			
AA-005	Ethylbenzene*	no			0.001259	0.00551			
AA-005	Ethylene dibromide	no			0.0000005	0.00000			

EMISSION POINT NO	POLLUTANT (note 1)	yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-005	Fluorotrichloromethane	no			0.000672	0.00294			
AA-005	Hexane*	no			0.001457	0.00638			
AA-005	Hydrogen sulfide	no			0.003113	0.01363			
AA-005	Mercury *	no			0.000005	0.00002			
AA-005	Methane	no			20.637361	90.3916			
AA-005	Methyl ethyl ketone*	no			0.001315	0.00576			
AA-005	Methyl isobutyl ketone*	no			0.000482	0.00210			
AA-005	Methyl mercaptan	no			0.000308	0.00135			
AA-005	Pentane	no			0.000611	0.00267			
AA-005	Perchloroethylene (tetrachloroethene)*	no			0.003980	0.01743			
AA-005	Propane	no			0.001259	0.00551			
AA-005	Reduced Sulfur	no			2.200000	9.63600			
AA-005	Toluene*	no			0.039117	0.17133			
AA-005	Trichloroethene*	no			0.002384	0.01044			
AA-005	t-1,2-dichloroethene	no			0.001771	0.00775			
AA-005	Vinyl chloride*	no			0.002951	0.01292			
AA-005	Xylene*++	no			0.003305	0.01447			

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: AA-001 Landfill Gas Fugitives

2. Process Description: Land Disposal of Municipal Solid Waste

3. Was this unit constructed or modified after August 7, 1977? ____x_____ yes _____no
   If yes please give date and explain. Landfill operations began in 1988

4. Capacity (tons/hr):_____NA

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

7. Stack Data:
   A. Height: Not applicable
   B. Inside diameter: Not applicable
   C. Exit gas velocity: Not applicable
   D. Exit gas temperature: Not applicable

8. UTM Coordinates:
   A. Zone 16 B. North 3758955.003 C. East 315885.904

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-000	PM10	no			0.10	0.44			
AA-000	Total Suspended Particulate	no			0.00	0.44			
AA-000	NOx	no			0.00	0.00			
AA-000	Carbon monoxide	no			0.3584	1.26			
AA-000	SO_2	no			0.00	0.00			
AA-000	Hydrochloric Acid	no			0.00	0.00			
AA-000	1,1,1-Trichloroethane (methyl chloroform)*	no			0.0058	0.0204			
AA-000	1,1,2,2-Tetrachloroethane*	no			0.0169	0.0592			
AA-000	1,1-Dichloroethane (ethylidene dichloride)*	no			0.0211	0.0740			
AA-000	1,1-Dichloroethene (vinylidene chloride)*	no			0.0018	0.0062			
AA-000	1,2-Dichloroethane (ethylene dichloride)*	no			0.0037	0.0129			
AA-000	1,2-Dichloropropane (propylene dichloride)*	no			0.0018	0.0065			
AA-000	2-Propanol (isopropyl alcohol)	no			0.2733	0.9576			
AA-000	Acetone	no			0.0369	0.1295			
AA-000	Acrylonitrile*	no			0.0305	0.1068			

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-000	Benzene*	no			0.0787	0.2757			
AA-000	Bromodichloromethane	no			0.0465	0.1631			
AA-000	Butane	no			0.0265	0.0930			
AA-000	Carbon dioxide	no			1690	5922			
AA-000	Carbon disulfide*	no			0.0040	0.0140			
AA-000	Carbon tetrachloride*	no			0.0001	0.0002			
AA-000	Carbonyl sulfide*	no			0.0027	0.0094			
AA-000	Chlorobenzene*	no			0.0026	0.0089			
AA-000	Chlorodiflouromethane	no			0.0102	0.0357			
AA-000	Chloroethane (ethyl chloride)*	no			0.0073	0.0256			
AA-000	Chloroform*	no			0.0003	0.0011			
AA-000	Chloromethane*	no			0.0055	0.0194			
AA-000	Dichlorobenzene *	no			0.0028	0.0098			
AA-000	Dichlorodifluoromethane	no			0.1723	0.6036			
AA-000	Dichlorofluoromethane	no			0.0245	0.0857			
AA-000	Dichloromethane (methylene chloride)*	no			0.1102	0.3862			
AA-000	Dimethyl sulfide	no			0.0441	0.1544			

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-000	Ethane	no			2.4260	8.5006			
AA-000	Ethanol	no			0.1137	0.3986			
AA-000	Ethyl mercaptan	no			0.0129	0.0450			
AA-000	Ethylbenzene*	no			0.0444	0.1556			
AA-000	Ethylene dibromide	no			0.00002	0.0001			
AA-000	Fluorotrichloromethane	no			0.0095	0.0332			
AA-000	Hexane*	no			0.0514	0.1800			
AA-000	Hydrogen sulfide	no			0.1098	0.3847			
AA-000	Mercury *	no			0.00001	0.0000			
AA-000	Methane	no			728	2550			
AA-000	Methyl ethyl ketone*	no			0.0464	0.1626			
AA-000	Methyl isobutyl ketone*	no			0.0170	0.0595			
AA-000	Methyl mercaptan	no			0.0109	0.0381			
AA-000	Pentane	no			0.0215	0.0755			
AA-000	Perchloroethylene (tetrachloroethene)*	no			0.0561	0.1967			
AA-000	Propane	no			0.0444	0.1556			
AA-000	Reduced Sulfur	no			0.7260	2.5439			

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-000	Toluene*	no			1.3795	4.8339			
AA-000	Trichloroethene*	no			0.0336	0.1178			
AA-000	t-1,2-dichloroethene	no			0.0250	0.0875			
AA-000	Vinyl chloride*	no			0.0416	0.1459			
AA-000	Xylene*++	no			0.1166	0.4085			

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: AA-003 Fugitive Particulates

2. Process Description: Travel on unpaved roads, travel on paved roads, cell construction

3. Was this unit constructed or modified after August 7, 1977? ____x_____ yes _____no
   If yes please give date and explain. Landfill Operations began 1988

4. Capacity (tons/hr): NA

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

7. Stack Data:
   A. Height: Not applicable
   B. Inside diameter: Not applicable
   C. Exit gas velocity: Not applicable
   D. Exit gas temperature: Not applicable

8. UTM Coordinates:
   A. Zone 16 B. North 3758955.003 C. East 315885.904

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-003	PM10	Yes	75%		1.96	6.88			
AA-003	Total Particulates	Yes	75%		17.48	61.17			

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: AA-004/ Solidification

2. Process Description: Mixing and drying of non hazardous sludges with drying agents that include but not limited to cement, fly ash, kiln dust, lime, or other non hazardous agent.

3. Was this unit constructed or modified after August 7, 1977? ____x_____ yes _____no
If yes please give date and explain. Proposed activity not implemented.

4. Capacity (tons/hr): 25 tons/hour

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Stabilization Agent	5 ton	25 tons	12,000 tons/year

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

7. Stack Data:
A. Height: Not applicable
B. Inside diameter: Not applicable
C. Exit gas velocity: Not applicable
D. Exit gas temperature: Not applicable

8. UTM Coordinates:
A Zone 16 B. North 3758955.003 C. East 315885.904

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		* yes/no	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-004	PM_{10}	no			0.13	0.56			
AA-004	Total Suspended Particulate	no			0.17	0.73			

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

* If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

MANUFACTURING PROCESSES (page 1 of 2) SECTION E

1. Emission Point No./ Name: AA-006 Leachate Handling and Evaporator

2. Process Description: Evaporation, pumping, storage and handling of leachate,

3. Was this unit constructed or modified after August 7, 1977? ____x_____ yes _____no
   If yes please give date and explain. Landfill constructed in 1987

4. Capacity (tons/hr): Not applicable

5. Raw Material Input:

MATERIAL	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

6. Product Output:

PRODUCT or BY-PRODUCT	QUANTITY/HR AVERAGE	QUANTITY/HR MAXIMUM	QUANTITY/YEAR
Not applicable			

7. Stack Data:
   A. Height: Not applicable
   B. Inside diameter: Not applicable
   C. Exit gas velocity: Not applicable
   D. Exit gas temperature: Not applicable

8. UTM Coordinates:
   A. Zone 16 B. North 3758955.003 C. East 315885.904

MANUFACTURING PROCESSES (page 2 of 2) SECTION E

13. POLLUTANT EMISSIONS:

Example emission rate calculations, monitoring data, or stack test data must be attached in accordance with Operating Permit Application Requirements, pp. 3-5.

EMISSION POINT NO.	POLLUTANT (note 1)	CONTROL EQUIPMENT		ACTUAL EMISSION RATE (in accordance with Operating Permit Application Requirements, pp. 3-5)			PROPOSED ALLOWABLE EMISSION RATE (Optional)		
		yes/no *	effic.	note 2	lb/hr	tn/yr	note 2	lb/hr	tn/yr
AA-006	PM_{10}	no			0.10	0.44			
AA-006	Total Suspended Particulate	no			0.10	0.44			
AA-006	NOx	no			0.40	1.77			
AA-006	CO	no			0.07	0.31			
AA-006	Acetone	no			0.005	0.02			

1. All regulated air pollutants including hazardous air pollutants emitted from this source should be listed in accordance with Operating Permit Application Requirements, pp. 3-5. A list of regulated air pollutants has been provided in Section A.
2. Provide emission rate in units of applicable emission standard, e.g. lb/MMbtu, gr/dscf, etc. This may not apply to every emission point or every pollutant from an emission point.

*If yes, attach appropriate Air Pollution Control Data Sheet from Section L or manufacturers specifications if other.

TANK SUMMARY (page 1 of 2) SECTION H

1. Emission Point No./Name: T-1/ 300 Gallon Gasoline Tank

2. Was this tank constructed or modified after August 7, 1977? _____X_____ yes _____no

   If yes please give date and explain.

3. Product Stored: Gasoline

   If more than one product is stored, provide the information in 4.A-E for each product.

4. Tank Data:

A.	True Vapor Pressure at storage temperature:	8.74	psia/°F
B.	Reid Vapor Pressure at storage temperature:	3.7	psia/°F
C.	Density of product at storage temperature:	6.2	lb/gal
D.	Molecular Weight of product vapor at storage temperature:	62	lb/lbmol
E.	Throughput for most recent calendar year:	2430	gal/yr
F.	Tank Capacity:	300	gal
G.	Tank Diameter:	4	feet
H.	Tank Height / Length:	5	feet
I.	Average Vapor Space Height:	1.9	feet
J.	Tank Orientation:	h	Vertical or Horizontal
K.	Type of Roof:	na	Dome or Cone

L. Is the Tank Equipped with a Vapor Recovery System? Yes x No

If Yes, describe on separate sheet of paper and attach. Indicate efficiency.

M. Check the Type of Tank:

X	Fixed Roof		External Floating Roof
	Pressure		Internal Floating Roof
	Variable Vapor Space		
	Other, describe:		

N. Check the Closest City:

	Jackson, MS		Birmingham, AL
x	Memphis, TN		Montgomery, AL
	New Orleans, LA		Baton Rouge, LA

O Check the Tank Paint Color:

	Aluminum Specular	Gray Light
	Aluminum Diffuse	Gray Medium

Red _____ White

x Other, describe: Green

P. Tank Paint Condition: Good Good or Poor

Q. Check Type of Tank Loading

1. Trucks and Rail Cars

_____ Submerged Loading of clean cargo tank

_____ Submerged Loading : Dedicated Normal Service

_____ Submerged Loading : Dedicated Vapor Balance Service

_____ Splash Loading of clean cargo tank

_____ Splash Loading : Dedicated Normal Service

_____ Splash Loading : Dedicated Vapor Balance Service

2. Marine Vessels

_____ Submerged Loading: Ships

_____ Submerged Loading: Barges

R. For External Floating Roof Tanks

1. Check the Type of Tank Seal:

Mechanical Shoe

_____ Primary Seal Only

_____ With Shoe-Mounted Secondary Seal

_____ With Rim-Mounted Secondary Seal

Liquid Mounted Resilient Seal

_____ Primary Seal Only

_____ With Shoe-Mounted Secondary Seal

_____ With Rim-Mounted Secondary Seal

Vapor Mounted Resilient Seal

_____ Primary Seal Only

_____ With Shoe-Mounted Secondary Seal

_____ With Rim-Mounted Secondary Seal

2. Type of External Floating Roof: _____ Pontoon

_____ Double-Deck

S. For Internal Floating Roof Tanks

1. Check the Type of Tank Seal:

Liquid Mounted Resilient Seal

_____ Primary Seal Only

_____ With Rim-Mounted Secondary Seal

Vapor Mounted Resilient Seal

_____ Primary Seal Only

_____ With Rim-Mounted Secondary Seal

2. Number of Roof Columns: _____

3. Length of Deck Seam _____ feet:

4. Area of Deck: _____ $feet^2$

5. Effective Column Diameter: _____ feet

6. Check the Type of Tank:

_____ Bolted with Column Supported Roof

_____ Welded with Column Supported Roof

Bolted with Self-Supported Roof

Welded with Self-Supported Roof

5. Emissions Summary

1.	Breathing Loss:	0.03	lb/hr	0.14	TPY
2.	Working Loss:	0.007	lb/hr	0.03	TPY
3.	Total Emissions:	0.037	lb/hr	0.17	TPY

6. UTM Coordinates:

A. Zone 16 B. North 3760139 C. East 315216

AIR POLLUTION CONTROL DEVICES SECTION L

1. If the air pollution control device is different from the attached forms, then submit drawings, specifications, manufacturer's data, etc.

2. Fill out one form for each air pollution control device and attach to the appropriate emission point description form.

OTHER AIR POLLUTION CONTROL EQUIPMENT / DEVICES SECTION L7

If air pollution control equipment/device(s) are different from the previous sections descriptions or new technology, then explain below and attach manufacturers specifications including efficiency.

Source PR-1 Landfill gas, Control Device A pre engineered skid mounted Landfill Gas Flare. Manufacturer's technical data attached. See calculations in Appendix A

Control Efficiency based on AP-42 Chapter, 5th Edition 13.2.2 "Municipal Solid Waste Landfills", November 1998.Chapter 2.4.

OTHER AIR POLLUTION CONTROL EQUIPMENT / DEVICES SECTION L7

If air pollution control equipment/device(s) are different from the previous sections descriptions or new technology, then explain below and attach manufacturers specifications including efficiency.

Source PR-4, Fugitive Particulates. Control: Wetting of roads to reduce fugitive dusts

Control Efficiency based AP-42 Chapter, 5th Edition 13.2.2 "Unpaved Roads", September 1998.

COMPLIANCE DEMONSTRATION (page 1 of 2) SECTION M

Completion of Section M is not required for a complete application. It is presented to merely reflect what may be required by the Enhanced Monitoring and/or the Periodic Monitoring Regulations. Upon promulgation of those regulations, this section will be revised to reflect the actual requirements. Until then, the information in this section should be utilized for planning purposes.

Choose the type of monitoring that is suggested for your source in the "Enhanced Monitoring Guideline". Fill out the appropriate form and attach to the corresponding emission point description pages.

A. Compliance Demonstration by Continuous Emissions Monitoring (CEM).

Sulfur Dioxide(SO_2)	Nitrogen Oxides (NO_x)	Oxygen (O_2)
Carbon Dioxide (CO_2)	Total Reduced Sulfur (TRS)	Opacity
Hydrogen Chloride (Hcl)	Carbon Monoxide (CO)	Flow
Hydrogen Sulfide (H_2S)	Volatile Organic Compound (VOC)	

B. Compliance Demonstration by Periodic Emission Monitoring using

SO_2 NO_x O_2 CO_2 CO HCl H_2S VOC Flow Moisture
Combustibles Combustion Efficiency

C. Compliance Demonstration by Monitoring Control System Parameters or Operating Parameters of a Process.

Baghouse	Pressure drop across baghouse, Broken bag detector, Opacity.
Mechanical Collectors	Pressure drop across collector, Hopper full detector, Opacity.
Electrostatic Precipitators	Primary and secondary voltage,Primary and secondary currents, Spark Rate, Broken wire detector, Rap cycle frequency, Resistivity measurement, Inlet water flow, Total solids, Opacity.
Thermal Incinerator	Firebox temperature.
Catalytic Incinerator	Catalyst bed temperature.
Flare	Pilot light detector, Temperature after flame zone.
Particulate Scrubber	Pressure drop across scrubber and demister, Scrubber fluid recirculation rate, Pump discharge pressure, Pump motor current.
Absorber for Gases	pH of fluid, Fluid recirculation rate, Air flow, Pressure drop across absorber and demister, Fluid temperature.
Carbon Absorber	Steam mass flow rate per regeneration cycle, Carbon bed temperature.
Condenser	Condenser exit temperature, Amount of solvent recovered daily.Charging rate, Production rate, Hours of operation, Secondary chamber temperature, Kiln or dryer exit temperature, Burner combustion efficiency, Power consumption, Static pressure, Fuel usage rate, Water injection rate.

D. Compliance Demonstration by Monitoring Maintenance Procedures.

Water quality testing
Sludge solids testing
Electrostatic precipitator cleaning frequency
Blacklight inspection of baghouses
Sludge mercury testing
Periodic inspection of process operating parameters
VOC leak testing
Soot blowing frequency
Fugitive dust control measures
Control equipment inspection Frequency
Reid vapor pressure testing

E. Compliance Demonstration by Stack Testing.

EPA Method 1 & 2 :	Flow (S-type pilot tubes, Hot-wire anemometer)
EPA Method 3 :	CO_2, O_2, CO (Orsat, Fyrite)
EPA Method 3A :	CO_2, O_2, (Analyzers)
EPA Method 4 :	Moisture (Wet bulb-Dry bulb, Impingers)
EPA Method 5 :	PM
EPA Method 6 :	SO_2 (Impingers)
EPA Method 6B :	SO_2 (24 hour average)
EPA Method 6C :	SO_2 (Analyzer)
EPA Method 7E :	NO_x (Analyzer)
EPA Method 9 :	Opacity (Visible emissions reader)
EPA Method 10 :	CO (Analyzer)
EPA Method 16 :	TRS (Gas Chromatograph)
EPA Method 16A :	TRS (Impingers)
EPA Method 16B:	TRS (Gas Chromatograph)
EPA Method 18 :	VOC (Gas Chromatograph)
EPA Method 21 :	VOC Leaks (Analyzer)
EPA Method 25A:	VOC (Analyzer with FID)
EPA Method 25B :	VOC (NDIR Analyzer)

F. Compliance Demonstration by Fuel Sampling and Analysis (FSA).

Coal Sampling
Coke sampling
Tire derived fuel sampling
Waste oil sampling
Sewage sludge sampling
Paper sludge sampling
Refuse derived fuel sampling
Landfill gas sampling

G. Compliance Demonstration by Recordkeeping.

Testing and monitoring records
Compliance schedule records
Process hours of operation records
Fuel usage records
As-applied coating & ink composition records
Records of malfunction
As-applied coating & ink records,
Transfer efficiency records
Production records

COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS SECTION M3

The monitoring of a control system parameter or a process parameter may be acceptable provided that a correlation between the parameter value and the emission rate of a particular pollutant is established in the form of a curve of emission rate versus parameter values. At least three sets of stack test data, that bracket the emission limit if possible, shall be used to define the emission curve. This data shall constitute the certification of the system and must be attached for approval. If it is not attached, it shall be submitted within 60 days from the date of startup of the system or the date of application, which ever is later.

1. Emission Point No./Name : AA-001/Flare ***Applicable upon reaching 50 megagrams per year of Non Methane Organic Compounds (NMOCs).***

2. Method of monitoring description: Flare pilot light will be continuously monitored with thermocouple, fire eye or other approved device.

Attach separate sheets if needed.

3. Backup system (attach other compliance demonstration forms if needed): None

4. The monitoring system shall be subject to appropriate performance specifications, calibration requirements, and quality assurance procedures.

5. If a quality assurance / quality control plan is not attached with the application for approval, it shall be submitted within 60 days from the date of startup of the monitoring program or the date of application, which ever is later.

COMPLIANCE DEMONSTRATION BY MONITORING MAINTENANCE PROCEDURES SECTION M4

The monitoring of a maintenance procedure shall be acceptable provided that a correlation between the procedure and the emission rate of a particular pollutant is established in the form of a curve of emission rate versus the frequency of the procedure is performed. VOC or fugitive dust control programs are examples of procedures that could be monitored. The correlation shall be established using stack test data (if feasible). This data shall constitute certification of the system and must be attached for approval. If it is not attached, it shall be submitted within 60 days from the date of startup of the system or the date of application, which ever is later.

1. Emission Point No./Name : AA-001/Landfill ***Applicable upon reaching 50 megagrams per year of Non Methane Organic Compounds (NMOCs).***

2. Procedure being monitored: See Below

3. Method of monitoring description: See Below

Active gas collection system	Method 21, Part 60, App. A	Surface methane <500 ppmv	After collection/control system installation. Quarterly
	Method 3A, Part 60, App. A	Landfill O_2 concentration <5%	Monthly
	Method 3C, Part 60, App. A	Landfill N_2 concentration <20%	In lieu of O_2 concentration per Method 3A. Monthly
	Thermometer	Landfill gas temp <55°C	Monthly
	Calibrated pressure gauge	Negative pressure at wellhead	Demonstrates active gas extraction., Monthly
Flare	APC S-1 Section 3	Visible emissions from flare 40% Opacity	
	Flow	Record flow rate	Every 15 minutes

Attach separate sheets if needed.

4. Backup system (attach other compliance demonstration forms if needed): Not Required.

5. Frequency of certification: See Table Daily Weekly Monthly

6. Any failure to fulfill a maintenance requirement shall be reported as an excess emission.

7. Is this an existing maintenance procedure: Yes X No, **Gas system not required**

8. The monitoring system shall be subject to appropriate performance specifications, calibration requirements, and quality assurance procedures.

9. If a quality assurance / quality control plan is not attached with the application for approval, it shall be submitted within 60 days from the date of startup of the monitoring program or the date of application, which ever is later.

COMPLIANCE DEMONSTRATION BY RECORDKEEPING SECTION M7

1. Emission Point No./Name : AA-002/ Flare ***Applicable upon requiring to operate a NSPS WWW Landfill gas and collection system (GCCS)***

2. Pollutant: None

3. Material or parameter being monitored or recorded: Flow, Temperature

4. Method of monitoring and recordkeeping: Recorder, thermocouple

5. List any EPA methods used:

6. Compliance shall be demonstrated: **Every 15 minutes**

Daily Weekly Monthly Quarterly

Current Applicable Requirements and Status (page 1 of 2) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AA-001	40 CFR 60 subpart WWW	Non methane organic compounds	Tier 2 sampling	<50 megagrams	In
AA-001	40 CFR 61 subpart M	Asbestos	Not Applicable	Not Applicable	In
AA-001	40 CFR 60.18 General control device requirements.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Engines Insignificant Source	40 CFR 60 IIII	VOCs/CO	Not applicable		Not Applicable
AA-005	40 CFR 60 JJJJ	VOCs/CO	Not applicable		Not Applicable
Engines Insignificant Source	40 CFR 60 JJJJ	VOCs/CO	Not applicable		Not Applicable
AA-006	40 CFR 60 Subpart Kb	VOCs	Not applicable	Vapor Pressure	In

Future Applicable Requirements and Status (page 2 of 2) SECTION N

List applicable state and federal regulations and applicable test methods for determining compliance with each applicable requirement. Clearly identify federal regulations from state requirements. Provide the compliance status as of the day the application is signed.

Emission Point No.	Applicable Requirement	Pollutant	Test Method	Limits	Compliance Status IN / OUT
AA-001	40 CFR 63 subpart AAAA	Non methane organic compounds	Not Applicable	Not Applicable	In

COMPLIANCE CERTIFICATION SECTION O

1. Emission Point No./Name : AA-001

2. Indicate the source compliance status:

   A. X_____Where this source is currently in compliance, we will continue to operate and maintain this source to assure compliance for the duration of the permit.

   B. _____The Current Emissions Requirements and Status form (previous page) includes new requirements that apply or will apply to this source during the term of the permit. We will meet such requirements on a timely basis.

   C. _____This source is not in compliance. The following statement of corrective action is submitted to describe action which we will take to achieve compliance.

   1. Attached is a brief description of the problem and the proposed solution.

   2. We will achieve compliance according to the following schedule.

Progress reports will be submitted:

Starting date: _____ and every six (6) months thereafter

Problem	Action	Deadline

Appendix A
SOURCE AA-000/AA-001/AA-005
Landfill Gas Emission Calculations

PRINT DATE:	**03/03/11**
TITLE:	**Prairie Bluff LFG Emission Calculations**
PROJECT NAME:	**TITLE V**
SOURCE I.D. Landfill Gas AA-001, Flare AA-002, Cat Engine AA-005	

Uncontrolled emissions of landfill gas are calculated using guidance presented in AP-42 & NSPS ("Compilation of Air Pollutant Emission Factors") Section 2.4 ("Landfills"), November 1998.

EPA Landfill Emissions Model Version 3.02 was utilized to estimate methane emissions

LANDFILL GAS EMISSION MODEL PARAMETRS :

k, Methane (CH4) generation rate constant, yr^-1				0.04
Lo, Methane generation potential, m^3 CH4/Mg refuse				
AP-42 Value				100
Recoverable Gas				75%
Vol. % Methane				50%
Maximum Methane Flow (See attached Gas Curver Model Output)	**Cubic meter/yr**	**year:**	***2068***	14,120,000
Heat Content of Methane (btu/cubic ft)				1,012
Maximum Flow to Flare (maximum from gas curve less flow to engine) SCFM				822
Average Temperature landfill Gas (^oC)				25
Caterpillar Engine			Engine Rating HP	2233
			Fuel Heat Rating BTU/hr	17,850,000
Landfill Gas Flow to Engine (to maximum heat input) SCFM				600.00
Ratio of Maximum Gas sent to Engine vs Flare				42%
Note:				
Flare Emissions Based Maximum Gas collection, Year 2068, see Landgem Output				
Caterpiller Engine Emssions Based on Capacity of Engine				

TABLE A - SPECIATION OF LANDFILL EMISSIONS

Before Controls

Year ***2068***

SOURCE I.D. Landfill Gas AA-001, Flare AA-002, Cat Engine AA-005

COMPOUND	MEDIAN (a) ppmv	Potential to Emit Individual Compounds Emission Rate m^3/yr	MOLECULAR WEIGHT	Potential to Emit INMOC (Mg/yr)	INMOC (lbs/hr)+	INMOC (tons/yr)
VOC (Based On NMOC Tier 2 Testing)	177.00000	4,998.480	86.18	17.6177	5.5372	19.4024
1,1,1-Trichloroethane (methyl chloroform)*	0.48000	13.555	133.42	0.0740	0.0232	0.0815
1,1,2,2-Tetrachloroethane*	1.11000	31	167.86	0.2152	0.0676	0.2370
1,1-Dichloroethane (ethylidene dichloride)*	2.35000	66.36	98.96	0.2686	0.0844	0.2958
1,1-Dichloroethene (vinylidene chloride)*	0.20000	6	96.95	0.0224	0.0070	0.0247
1,2-Dichloroethane (ethylene dichloride)*	0.41000	11.58	98.96	0.0469	0.0147	0.0516
1,2-Dichloropropane (propylene dichloride)*	0.18000	5	112.99	0.0235	0.0074	0.0259
2-Propanol (isopropyl alcohol)	50.10000	1,415	60.11	3.4782	1.0932	3.8305
Acetone	7.01000	198	58.08	0.4702	0.1478	0.5179
Acrylonitrile*	6.33000	179	53.06	0.3879	0.1219	0.4272
Benzene*	11.10000	313.5	78.11	1.0014	0.3147	1.1028
Bromodichloromethane	3.13000	88	163.83	0.5923	0.1861	0.6522
Butane	5.03000	142	58.12	0.3376	0.1061	0.3719
Carbon dioxide	500,000	14,120,000	44.01	25,415	7987.90	27989.6
Carbon disulfide*	0.58	16	76.14	0.0510	0.0160	0.0562
Carbon monoxide	141.00	3,982	28.01	4.5614	1.4337	5.0235
Carbon tetrachloride*	0.004	0	153.84	0.0007	0.0002	0.0008
Carbonyl sulfide*	0.49	14	60.07	0.0340	0.0107	0.0374
Chlorobenzene*	0.25	7.06	112.56	0.0325	0.0102	0.0358
Chlorodiflouromethane	1.30	37	86.47	0.1298	0.0408	0.1430
Chloroethane (ethyl chloride)*	1.25	35	64.52	0.0931	0.0293	0.1026
Chloroform*	0.03	1	119.39	0.0041	0.0013	0.0046
Chloromethane*	1.21	34	50.49	0.0706	0.0222	0.0777
Dichlorobenzene *	0.21	6	147.00	0.0357	0.0112	0.0393
Dichlorodifluoromethane	15.70	443	120.91	2.1925	0.6891	2.4146
Dichlorofluoromethane	2.62	74.0	102.92	0.3114	0.0979	0.3430
Dichloromethane (methylene chloride)*	14.30	403.8	84.94	1.4029	0.4409	1.5450
Dimethyl sulfide	7.82	221	62.09	0.5608	0.1763	0.6176
Ethane	889.00	25,105	30.07	30.8749	9.7039	34.0025
Ethanol	27.20	768	46.08	1.4476	0.4550	1.5943
Ethyl mercaptan	2.28	64	62.13	0.1636	0.0514	0.1802
Ethylbenzene*	4.61	130	106.16	0.5652	0.1777	0.6225
Ethylene dibromide	0.001	0.028	187.88	0.0002170	0.0001	0.0002390
Fluorotrichloromethane	0.76	21.46	137.37	0.1206	0.0379	0.1328
Hexane*	6.57	186	86.17	0.6539	0.2055	0.7201
Hydrogen sulfide	35.50	1,003	34.08	1.3973	0.4392	1.5389
Mercury *	2.92E-04	0.008	200.61	0.000068	0.00002	0.000075
Methane	500,000	14,120,000	16.04	9,263	2911.2919	10,201
Methyl ethyl ketone*	7.09	200	72.10	0.5904	0.1856	0.6502
Methyl isobutyl ketone*	1.87	53	100.07	0.2161	0.0679	0.2380
Methyl mercaptan	2.49	70	48.11	0.1384	0.0435	0.1524
Pentane	3.29	93	72.15	0.2742	0.0862	0.3019
Perchloroethylene (tetrachloroethene)*	3.7300	105.335	165.85	0.7145	0.2246	0.7869
Propane	11.10	313	44.09	0.5652	0.1777	0.6225
Reduced Sulfur	250.00	7,060	32.00	9.2397	2.9040	10.1757
Toluene*	165.00	4,660	92.13	17.5572	5.5182	19.3357
Trichloroethene*	2.8200	79.64	131.39	0.4279	0.1345	0.4713
t-1,2-dichloroethene	2.84	80	96.92	0.3179	0.0999	0.3501
Vinyl chloride*	7.340	207	62.50	0.5298	0.1665	0.5835
Xylene*++	12.10	342	106.16	1.4836	0.4663	1.6339

(a) AP42 2.4 11/98
Amendments.

+ Hourly emisions increased by 25% to account for flow variations

++ Total of O, M, P isomers

Summary Report

Landfill Name or Identifier: Prairie Bluff Landfill Title V Renewal

Date: Tuesday, January 04, 2011

Description/Comments:

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^{n} \sum_{j=0.1}^{1} k L_o \left(\frac{M_i}{10} \right) e^{-k t_{ij}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation *(m^3/year)*
i = 1-year time increment
n = (year of the calculation) - (initial year of waste acceptance)
j = 0.1-year time increment
k = methane generation rate *($year^{-1}$)*
L_o = potential methane generation capacity *(m^3/Mg)*

M_i = mass of waste accepted in the ith year *(Mg)*
t_{ij} = age of the jth section of waste mass M_i accepted in the ith year *(decimal years, e.g., 3.2 years)*

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipa solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at http://www.epa.gov/ttnatw01/landfill/landflpg.html.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for convential landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

The 80-year waste acceptance limit of the model has been exceeded before the Waste Design Capacity was reached. The model will assume the 80th year of waste acceptance as the final year to estimate emissions. See Section 2.6 of the User's Manual.

LANDFILL CHARACTERISTICS

Landfill Open Year	**1988**	
Landfill Closure Year (with 80-year limit)	**2067**	
Actual Closure Year (without limit)	***2201***	
Have Model Calculate Closure Year?	**Yes**	
Waste Design Capacity	**32,053,546**	*megagrams*

MODEL PARAMETERS

Methane Generation Rate, k	**0.040**	*year $^{-1}$*
Potential Methane Generation Capacity, L_o	**100**	*m^3/Mg*
NMOC Concentration	**177**	*ppmv as hexane*
Methane Content	**50**	*% by volume*

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	**Methane**
Gas / Pollutant #2:	**Total landfill gas**
Gas / Pollutant #3:	**Carbon dioxide**
Gas / Pollutant #4:	**NMOC**

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
1988	34,427	37,870	0	0
1989	34,436	37,880	34,427	37,870
1990	34,409	37,850	68,864	75,750
1991	85,920	94,512	103,273	113,600
1992	128,655	141,520	189,193	208,112
1993	228,575	251,432	317,847	349,632
1994	540,348	594,383	546,422	601,064
1995	500,031	550,034	1,086,770	1,195,447
1996	504,461	554,907	1,586,801	1,745,481
1997	358,925	394,818	2,091,262	2,300,388
1998	255,448	280,993	2,450,187	2,695,206
1999	221,930	244,123	2,705,635	2,976,199
2000	217,475	239,223	2,927,565	3,220,322
2001	207,329	228,062	3,145,041	3,459,545
2002	199,670	219,637	3,352,369	3,687,606
2003	208,548	229,403	3,552,039	3,907,243
2004	201,637	221,801	3,760,587	4,136,646
2005	187,028	205,731	3,962,225	4,358,447
2006	193,186	212,505	4,149,253	4,564,178
2007	132,383	145,621	4,342,439	4,776,683
2008	131,897	145,087	4,474,822	4,922,304
2009	114,786	126,265	4,606,719	5,067,391
2010	112,205	123,426	4,721,506	5,193,656
2011	117,816	129,597	4,833,711	5,317,082
2012	123,707	136,077	4,951,527	5,446,679
2013	129,892	142,881	5,075,233	5,582,757
2014	136,386	150,025	5,205,125	5,725,638
2015	143,206	157,526	5,341,511	5,875,663
2016	143,206	157,526	5,484,717	6,033,189
2017	143,206	157,526	5,627,923	6,190,715
2018	143,206	157,526	5,771,129	6,348,242
2019	143,206	157,526	5,914,334	6,505,768
2020	143,206	157,526	6,057,540	6,663,294
2021	143,206	157,526	6,200,746	6,820,821
2022	143,206	157,526	6,343,952	6,978,347
2023	143,206	157,526	6,487,157	7,135,873
2024	143,206	157,526	6,630,363	7,293,400
2025	143,206	157,526	6,773,569	7,450,926
2026	143,206	157,526	6,916,775	7,608,452
2027	143,206	157,526	7,059,981	7,765,979

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	*(short tons/year)*	*(Mg)*	*(short tons)*
2028	143,206	157,526	7,203,186	7,923,505
2029	143,206	157,526	7,346,392	8,081,031
2030	143,206	157,526	7,489,598	8,238,558
2031	143,206	157,526	7,632,804	8,396,084
2032	143,206	157,526	7,776,009	8,553,610
2033	143,206	157,526	7,919,215	8,711,137
2034	143,206	157,526	8,062,421	8,868,663
2035	143,206	157,526	8,205,627	9,026,189
2036	143,206	157,526	8,348,832	9,183,716
2037	143,206	157,526	8,492,038	9,341,242
2038	143,206	157,526	8,635,244	9,498,768
2039	143,206	157,526	8,778,450	9,656,294
2040	143,206	157,526	8,921,655	9,813,821
2041	143,206	157,526	9,064,861	9,971,347
2042	143,206	157,526	9,208,067	10,128,873
2043	143,206	157,526	9,351,273	10,286,400
2044	143,206	157,526	9,494,478	10,443,926
2045	143,206	157,526	9,637,684	10,601,452
2046	143,206	157,526	9,780,890	10,758,979
2047	143,206	157,526	9,924,096	10,916,505
2048	143,206	157,526	10,067,301	11,074,031
2049	143,206	157,526	10,210,507	11,231,558
2050	143,206	157,526	10,353,713	11,389,084
2051	143,206	157,526	10,496,919	11,546,610
2052	143,206	157,526	10,640,124	11,704,137
2053	143,206	157,526	10,783,330	11,861,663
2054	143,206	157,526	10,926,536	12,019,189
2055	143,206	157,526	11,069,742	12,176,716
2056	143,206	157,526	11,212,947	12,334,242
2057	143,206	157,526	11,356,153	12,491,768
2058	143,206	157,526	11,499,359	12,649,295
2059	143,206	157,526	11,642,565	12,806,821
2060	143,206	157,526	11,785,770	12,964,347
2061	143,206	157,526	11,928,976	13,121,874
2062	143,206	157,526	12,072,182	13,279,400
2063	143,206	157,526	12,215,388	13,436,926
2064	143,206	157,526	12,358,593	13,594,453
2065	143,206	157,526	12,501,799	13,751,979
2066	143,206	157,526	12,645,005	13,909,505
2067	143,206	157,526	12,788,211	14,067,032

Results

Year	Methane			Total landfill gas		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
1988	0	0	0	0	0	0
1989	9.024E+01	1.353E+05	9.088E+00	3.378E+02	2.705E+05	1.818E+01
1990	1.770E+02	2.653E+05	1.782E+01	6.625E+02	5.305E+05	3.564E+01
1991	2.602E+02	3.900E+05	2.621E+01	9.742E+02	7.801E+05	5.241E+01
1992	4.752E+02	7.123E+05	4.786E+01	1.779E+03	1.425E+06	9.572E+01
1993	7.938E+02	1.190E+06	7.995E+01	2.972E+03	2.380E+06	1.599E+02
1994	1.362E+03	2.041E+06	1.372E+02	5.098E+03	4.083E+06	2.743E+02
1995	2.725E+03	4.084E+06	2.744E+02	1.020E+04	8.168E+06	5.488E+02
1996	3.929E+03	5.889E+06	3.957E+02	1.471E+04	1.178E+07	7.913E+02
1997	5.097E+03	7.640E+06	5.133E+02	1.908E+04	1.528E+07	1.027E+03
1998	5.838E+03	8.750E+06	5.879E+02	2.186E+04	1.750E+07	1.176E+03
1999	6.278E+03	9.411E+06	6.323E+02	2.350E+04	1.882E+07	1.265E+03
2000	6.614E+03	9.914E+06	6.661E+02	2.476E+04	1.983E+07	1.332E+03
2001	6.925E+03	1.038E+07	6.974E+02	2.592E+04	2.076E+07	1.395E+03
2002	7.197E+03	1.079E+07	7.248E+02	2.694E+04	2.157E+07	1.450E+03
2003	7.438E+03	1.115E+07	7.491E+02	2.785E+04	2.230E+07	1.498E+03
2004	7.693E+03	1.153E+07	7.748E+02	2.880E+04	2.306E+07	1.550E+03
2005	7.920E+03	1.187E+07	7.976E+02	2.965E+04	2.374E+07	1.595E+03
2006	8.099E+03	1.214E+07	8.157E+02	3.032E+04	2.428E+07	1.631E+03
2007	8.288E+03	1.242E+07	8.347E+02	3.103E+04	2.485E+07	1.669E+03
2008	8.310E+03	1.246E+07	8.369E+02	3.111E+04	2.491E+07	1.674E+03
2009	8.330E+03	1.249E+07	8.389E+02	3.119E+04	2.497E+07	1.678E+03
2010	8.304E+03	1.245E+07	8.363E+02	3.109E+04	2.489E+07	1.673E+03
2011	8.273E+03	1.240E+07	8.332E+02	3.097E+04	2.480E+07	1.666E+03
2012	8.257E+03	1.238E+07	8.316E+02	3.091E+04	2.475E+07	1.663E+03
2013	8.258E+03	1.238E+07	8.316E+02	3.091E+04	2.476E+07	1.663E+03
2014	8.274E+03	1.240E+07	8.333E+02	3.098E+04	2.481E+07	1.667E+03
2015	8.307E+03	1.245E+07	8.367E+02	3.110E+04	2.490E+07	1.673E+03
2016	8.357E+03	1.253E+07	8.417E+02	3.129E+04	2.505E+07	1.683E+03
2017	8.405E+03	1.260E+07	8.465E+02	3.147E+04	2.520E+07	1.693E+03
2018	8.451E+03	1.267E+07	8.511E+02	3.164E+04	2.533E+07	1.702E+03
2019	8.495E+03	1.273E+07	8.555E+02	3.180E+04	2.547E+07	1.711E+03
2020	8.537E+03	1.280E+07	8.598E+02	3.196E+04	2.559E+07	1.720E+03
2021	8.577E+03	1.286E+07	8.639E+02	3.211E+04	2.571E+07	1.728E+03
2022	8.617E+03	1.292E+07	8.678E+02	3.226E+04	2.583E+07	1.736E+03
2023	8.654E+03	1.297E+07	8.716E+02	3.240E+04	2.594E+07	1.743E+03
2024	8.690E+03	1.303E+07	8.752E+02	3.253E+04	2.605E+07	1.750E+03
2025	8.725E+03	1.308E+07	8.787E+02	3.266E+04	2.616E+07	1.757E+03
2026	8.758E+03	1.313E+07	8.820E+02	3.279E+04	2.625E+07	1.764E+03
2027	8.790E+03	1.318E+07	8.852E+02	3.291E+04	2.635E+07	1.770E+03
2028	8.821E+03	1.322E+07	8.883E+02	3.302E+04	2.644E+07	1.777E+03
2029	8.850E+03	1.327E+07	8.913E+02	3.313E+04	2.653E+07	1.783E+03
2030	8.878E+03	1.331E+07	8.942E+02	3.324E+04	2.662E+07	1.788E+03
2031	8.906E+03	1.335E+07	8.969E+02	3.334E+04	2.670E+07	1.794E+03
2032	8.932E+03	1.339E+07	8.995E+02	3.344E+04	2.678E+07	1.799E+03
2033	8.957E+03	1.343E+07	9.021E+02	3.353E+04	2.685E+07	1.804E+03
2034	8.981E+03	1.346E+07	9.045E+02	3.362E+04	2.692E+07	1.809E+03
2035	9.004E+03	1.350E+07	9.068E+02	3.371E+04	2.699E+07	1.814E+03
2036	9.027E+03	1.353E+07	9.091E+02	3.379E+04	2.706E+07	1.818E+03
2037	9.048E+03	1.356E+07	9.113E+02	3.387E+04	2.712E+07	1.823E+03

Results (Continued)

Year	Methane			Total landfill gas		
	(Mg/year)	*(m^3/year)*	*(av ft^3/min)*	*(Mg/year)*	*(m^3/year)*	*(av ft^3/min)*
2038	9.069E+03	1.359E+07	9.133E+02	3.395E+04	2.719E+07	1.827E+03
2039	9.088E+03	1.362E+07	9.153E+02	3.403E+04	2.725E+07	1.831E+03
2040	9.107E+03	1.365E+07	9.172E+02	3.410E+04	2.730E+07	1.834E+03
2041	9.126E+03	1.368E+07	9.191E+02	3.416E+04	2.736E+07	1.838E+03
2042	9.143E+03	1.370E+07	9.208E+02	3.423E+04	2.741E+07	1.842E+03
2043	9.160E+03	1.373E+07	9.225E+02	3.429E+04	2.746E+07	1.845E+03
2044	9.176E+03	1.375E+07	9.242E+02	3.435E+04	2.751E+07	1.848E+03
2045	9.192E+03	1.378E+07	9.257E+02	3.441E+04	2.756E+07	1.851E+03
2046	9.207E+03	1.380E+07	9.272E+02	3.447E+04	2.760E+07	1.854E+03
2047	9.221E+03	1.382E+07	9.287E+02	3.452E+04	2.764E+07	1.857E+03
2048	9.235E+03	1.384E+07	9.301E+02	3.457E+04	2.768E+07	1.860E+03
2049	9.248E+03	1.386E+07	9.314E+02	3.462E+04	2.772E+07	1.863E+03
2050	9.261E+03	1.388E+07	9.327E+02	3.467E+04	2.776E+07	1.865E+03
2051	9.273E+03	1.390E+07	9.339E+02	3.472E+04	2.780E+07	1.868E+03
2052	9.285E+03	1.392E+07	9.351E+02	3.476E+04	2.783E+07	1.870E+03
2053	9.296E+03	1.393E+07	9.362E+02	3.480E+04	2.787E+07	1.872E+03
2054	9.307E+03	1.395E+07	9.373E+02	3.484E+04	2.790E+07	1.875E+03
2055	9.318E+03	1.397E+07	9.384E+02	3.488E+04	2.793E+07	1.877E+03
2056	9.328E+03	1.398E+07	9.394E+02	3.492E+04	2.796E+07	1.879E+03
2057	9.337E+03	1.400E+07	9.404E+02	3.496E+04	2.799E+07	1.881E+03
2058	9.346E+03	1.401E+07	9.413E+02	3.499E+04	2.802E+07	1.883E+03
2059	9.355E+03	1.402E+07	9.422E+02	3.502E+04	2.805E+07	1.884E+03
2060	9.364E+03	1.404E+07	9.431E+02	3.506E+04	2.807E+07	1.886E+03
2061	9.372E+03	1.405E+07	9.439E+02	3.509E+04	2.810E+07	1.888E+03
2062	9.380E+03	1.406E+07	9.447E+02	3.512E+04	2.812E+07	1.889E+03
2063	9.388E+03	1.407E+07	9.454E+02	3.514E+04	2.814E+07	1.891E+03
2064	9.395E+03	1.408E+07	9.462E+02	3.517E+04	2.816E+07	1.892E+03
2065	9.402E+03	1.409E+07	9.469E+02	3.520E+04	2.818E+07	1.894E+03
2066	9.408E+03	1.410E+07	9.475E+02	3.522E+04	2.821E+07	1.895E+03
2067	9.415E+03	1.411E+07	9.482E+02	3.525E+04	2.822E+07	1.896E+03
2068	9.421E+03	1.412E+07	9.488E+02	3.527E+04	2.824E+07	1.898E+03
2069	9.052E+03	1.357E+07	9.116E+02	3.389E+04	2.714E+07	1.823E+03
2070	8.697E+03	1.304E+07	8.759E+02	3.256E+04	2.607E+07	1.752E+03
2071	8.356E+03	1.252E+07	8.415E+02	3.128E+04	2.505E+07	1.683E+03
2072	8.028E+03	1.203E+07	8.085E+02	3.006E+04	2.407E+07	1.617E+03
2073	7.713E+03	1.156E+07	7.768E+02	2.888E+04	2.312E+07	1.554E+03

TABLE B Speciation of Controlled Emissions Year ***2068***

After Controls SOURCE I.D. Landfill Gas AA-001, Flare AA-002, Cat Engine AA-005

After Controls

COMPOUND	Uncontrolled Emissions		Percent Average Control Efficiency (a)		Combustion Product Emission Factors		Controlled Emissions					Fugitive Emissions		
							Flare			Cat G3520C Engine				
	+Max Lbs/hr	Tons/yr	Flare	Reciprocating Engine	Flare	Reciprocating Engine	Avg Lbs/hr	Max Lbs/hr+	Tons/yr	Lbs/hr	Tons/yr	Avg Lbs/hr	Max Lbs/hr+	Tons/yr
NOx	0.0000	0.0000	N/A	N/A	0.1 (b)	0.6 (c)	1.6982	2.1228	7.4382	2.9511	12.9258	0.0000	0.0000	0.0
PM10	0.0000	0.0000	N/A	N/A	17.0 (a)	48.0	0.4195	0.5244	1.8375	0.8640	3.7843	0.0000	0.0000	0.0
VOC	5.5372	19.4024	99.20	(c)	N/A	1.0 (c)	0.0154	0.01920	0.0673	4.9185	4.1 (d)	1.1074	1.3843	4.8506
1,1,1-Trichloroethane (methyl chloroform)*	0.0232	0.0815	98.00	93.00	N/A	N/A	0.0002	0.00020	0.0007	0.00041	0.0018	0.0046	0.0058	0.0204
1,1,2,2-Tetrachloroethane*	0.0676	0.2370	98.00	93.00	N/A	N/A	0.0005	0.00059	0.0021	0.0012	0.0053	0.0135	0.0169	0.0592
1,1-Dichloroethane (ethylidene dichloride)*	0.0844	0.2958	98.00	93.00	N/A	N/A	0.0006	0.00073	0.0026	0.0015	0.0066	0.0169	0.0211	0.0740
1,1-Dichloroethene (vinylidene chloride)*	0.0070	0.0247	98.00	93.00	N/A	N/A	0.0000	0.00006	0.0002	0.0001	0.0005	0.0014	0.0018	0.0062
1,2-Dichloroethane (ethylene dichloride)*	0.0147	0.0516	98.00	93.00	N/A	N/A	0.0001	0.00013	0.0004	0.0003	0.0011	0.0029	0.0037	0.0129
1,2-Dichloropropane (propylene dichloride)*	0.0074	0.0259	98.00	93.00	N/A	N/A	0.0001	0.0001	0.0002	0.0001	0.0006	0.0015	0.0018	0.0065
2-Propanol (isopropyl alcohol)	1.0932	3.8305	98.00	93.00	N/A	N/A	0.0076	0.0095	0.0332	0.0194	0.0849	0.2186	0.2733	0.9576
Acetone	0.1478	0.5179	99.70	97.20	N/A	N/A	0.0002	0.0002	0.0007	0.0010	0.0046	0.0296	0.0369	0.1295
Acrylonitrile*	0.1219	0.4272	99.70	97.20	N/A	N/A	0.0001	0.0002	0.0006	0.0009	0.0038	0.0244	0.0305	0.1068
Benzene*	0.3147	1.1028	99.70	97.20	N/A	N/A	0.0003	0.0004	0.0014	0.0022	0.0098	0.0629	0.0787	0.2757
Bromodichloromethane	0.1861	0.6522	98.00	93.00	N/A	N/A	0.0013	0.0016	0.0057	0.0033	0.0144	0.0372	0.0465	0.1631
Butane	0.1061	0.3719	99.70	97.20	N/A	N/A	0.0001	0.0001	0.0005	0.0008	0.0033	0.0212	0.0265	0.0930
Carbon dioxide	7987.90	27989.6	99.70	97.20	N/A	N/A	6471	8088	28342	2730	11959	1598	1997	6997
Carbon disulfide*	0.0160	0.0562	99.70	97.20	N/A	N/A	0.0000	0.00002	0.0001	0.0001	0.0005	0.0032	0.0040	0.0140
Carbon monoxide	1.4337	5.0235	N/A	N/A	0.370 (b)	4.1 (c)	9.2403	11.5504	40.4727	20.3134	88.9728	0.2867	0.3584	1.2559
Carbon tetrachloride*	0.0002	0.0008	98.00	93.00	N/A	N/A	0.000002	0.000002	0.000007	0.0000	0.0000	0.0000	0.0001	0.0002
Carbonyl sulfide*	0.0107	0.0374	99.70	97.20	N/A	N/A	0.00001	0.00001	0.0000	0.0001	0.0003	0.0021	0.0027	0.0094
Chlorobenzene*	0.0102	0.0358	98.00	93.00	N/A	N/A	0.0001	0.00009	0.0003	0.0002	0.0008	0.0020	0.0026	0.0089
Chlorodiflouromethane	0.0408	0.1430	98.00	93.00	N/A	N/A	0.0003	0.0004	0.0012	0.0007	0.0032	0.0082	0.0102	0.0357
Chloroethane (ethyl chloride)*	0.0293	0.1026	98.00	93.00	N/A	N/A	0.0002	0.0003	0.0009	0.0005	0.0023	0.0059	0.0073	0.0256
Chloroform*	0.0013	0.0046	98.00	93.00	N/A	N/A	0.0000	0.00001	0.0000	0.0000	0.0001	0.0003	0.0003	0.0011
Chloromethane*	0.0222	0.0777	98.00	93.00	N/A	N/A	0.0002	0.0002	0.0007	0.0004	0.0017	0.0044	0.0055	0.0194
Dichlorobenzene *	0.0112	0.0393	98.00	93.00	N/A	N/A	0.0001	0.0001	0.0003	0.0002	0.0009	0.0022	0.0028	0.0098
Dichlorodifluoromethane	0.6891	2.4146	98.00	93.00	N/A	N/A	0.0048	0.0060	0.0209	0.0122	0.0535	0.1378	0.1723	0.6036
Dichlorofluoromethane	0.0979	0.3430	98.00	93.00	N/A	N/A	0.0007	0.0008	0.0030	0.0017	0.0076	0.0196	0.0245	0.0857
Dichloromethane (methylene chloride)*	0.4409	1.5450	98.00	93.00	N/A	N/A	0.0031	0.00382	0.0134	0.0078	0.0342	0.0882	0.1102	0.3862
Dimethyl sulfide	0.1763	0.6176	99.70	97.20	N/A	N/A	0.0002	0.0002	0.0008	0.0012	0.0055	0.0353	0.0441	0.1544
Ethane	9.7039	34.0025	99.70	97.20	N/A	N/A	0.0101	0.0126	0.0442	0.0688	0.3013	1.9408	2.4260	8.5006
Ethanol	0.4550	1.5943	99.70	97.20	N/A	N/A	0.0005	0.0006	0.0021	0.0032	0.0141	0.0910	0.1137	0.3986
Ethyl mercaptan	0.0514	0.1802	99.70	97.20	N/A	N/A	0.0001	0.0001	0.0002	0.0004	0.0016	0.0103	0.0129	0.0450
Ethylbenzene*	0.1777	0.6225	99.70	97.20	N/A	N/A	0.0002	0.0002	0.0008	0.0013	0.0055	0.0355	0.0444	0.1556
Ethylene dibromide	0.0001	0.0002	98.00	97.20	N/A	N/A	0.0000005	0.0000006	0.000002	0.0000	0.0000	0.000014	0.000017	0.000060
Fluorotrichloromethane	0.0379	0.1328	98.00	93.00	N/A	N/A	0.0003	0.000329	0.0012	0.0007	0.0029	0.0076	0.0095	0.0332
Hexane*	0.2055	0.7201	99.70	97.20	N/A	N/A	0.0002	0.0003	0.0009	0.0015	0.0064	0.0411	0.0514	0.1800
Hydrogen sulfide	0.4392	1.5389	99.70	97.20	N/A	N/A	0.0005	0.0006	0.0020	0.0031	0.0136	0.0878	0.1098	0.3847
Mercury *	2.13E-05	0.0001	0.00	0.00	N/A	N/A	0.00001	0.00001	0.0000	0.000005	0.00002	0.00000	0.00001	0.00002
Methane	2911.3	10201.17	99.70	97.20	N/A	N/A	3.0292	3.7865	13.2678	20.6374	90.3916	582	728	2550
Methyl ethyl ketone*	0.1856	0.6502	99.70	97.20	N/A	N/A	0.0002	0.0002	0.0008	0.0013	0.0058	0.0371	0.0464	0.1626
Methyl isobutyl ketone*	0.0679	0.2380	99.70	97.20	N/A	N/A	0.0001	0.0001	0.0003	0.0005	0.0021	0.0136	0.0170	0.0595
Methyl mercaptan	0.0435	0.1524	99.70	97.20	N/A	N/A	0.0000	0.0001	0.0002	0.0003	0.0014	0.0087	0.0109	0.0381
Pentane	0.0862	0.3019	99.70	97.20	N/A	N/A	0.0001	0.0001	0.0004	0.0006	0.0027	0.0172	0.0215	0.0755
Perchloroethylene (tetrachloroethene)*	0.2246	0.7869	98.00	93.00	N/A	N/A	0.0016	0.00195	0.0068	0.0040	0.0174	0.0449	0.0561	0.1967
Propane	0.1777	0.6225	99.70	97.20	N/A	N/A	0.0002	0.0002	0.0008	0.0013	0.0055	0.0355	0.0444	0.1556
Reduced Sulfur/Sulfur Dioxide (e)	2.9040	10.1757	N/A	N/A	NA	NA	2.0144	2.5180	8.8231	2.2000	9.6360	0.5808	0.7260	2.5439
Toluene*	5.5182	19.3357	99.70	97.20	N/A	N/A	0.0057	0.0072	0.0251	0.0391	0.1713	1.1036	1.3795	4.8339
Trichloroethene*	0.1345	0.4713	98.00	93.00	N/A	N/A	0.0009	0.001166	0.0041	0.0024	0.0104	0.0269	0.0336	0.1178
t-1,2-dichloroethene	0.0999	0.3501	98.00	93.00	N/A	N/A	0.0007	0.000866	0.0030	0.0018	0.0078	0.0200	0.0250	0.0875
Vinyl chloride*	0.1665	0.5835	98.00	93.00	N/A	N/A	0.0012	0.0014	0.0051	0.0030	0.0129	0.0333	0.0416	0.1459
Xylene*++	0.4663	1.6339	99.70	97.20	N/A	N/A	0.0005	0.0006	0.0021	0.0033	0.0145	0.0933	0.1166	0.4085

Notes:

*** = Hazardous Air Pollutants listed in Title III of the 1990 Clean Air Act Amendments.**
+ Max Flare Hourly emisions increased by 25% to account for flow variations

++ Total of O, M, P isomers

(a) From AP42 11/98, pounds/per million cubic feet of methane

(b) Flare NOx/Carbon Monoxide Emssion Factor from Mannfacturer's Specifications, see attached.
Pounds/Million Btu of gas fired

(c) Cat G3520C Engine, g/bhp-hr, see attached Specifications

(d) Cat G3520C Engine, Annual VC 50.00%

LFG CH4%	506	btu/cf
LFG Heat Content	8760	
Annual Hours:		
	20	
NMOC Outlet (ppm) - NSPS Limit	7.0	
Assumed O2 %	15.53	(As Hexane at Assumed O2)
NMOC Outlet (ppm) - NSPS Limit		
	4500	
Assumed Stack Flow (dscfm)	17.8	Estimated Maximum (HHV)
Heat Input	0.93369	
NMOC (lb/hr) - NSPS "Limit"	0.05245	
NMOC (lb/mmbtu) - NSPS	4.09	
NMOC (TPY) - NSPS		

(e) Uncontrolled emited as reduced sulfur, controlled emited as SO_2, based on 500 ppm

TABLE C Speciation of Controlled Emissions (HAPs)

COMPOUND	Controlled Emissions Flare			Cat G3520C Engine		Fugitive Emissions		
	Avg Lbs/hr	Max Lbs/hr+	Tons/yr	Lbs/hr	Tons/yr	Avg Lbs/hr	Max Lbs/hr+	Tons/yr
1,1,1-Trichloroethane **(methyl chloroform)*	0.00016	0.00020	0.00071	0.0004	0.0018	0.00465	0.0058	0.0204
1,1,2,2-Tetrachloroethane*	0.00047	0.00059	0.0021	0.0012	0.0053	0.01353	0.0169	0.0593
1,1-Dichloroethane (ethylidene dichloride)*	0.00059	0.00073	0.0026	0.0015	0.0066	0.01688	0.0211	0.0740
1,1-Dichloroethene (vinylidene chloride)*	0.00005	0.00006	0.0002	0.0001	0.0005	0.00141	0.0018	0.0062
1,2-Dichloroethane (ethylene dichloride)*	0.00010	0.00013	0.0004	0.0003	0.0011	0.00295	0.0037	0.0129
1,2-Dichloropropane (propylene dichloride)*	0.00005	0.00006	0.0002	0.0001	0.0006	0.00148	0.0018	0.0065
Acrylonitrile*	0.00013	0.00016	0.0006	0.0009	0.0038	0.02439	0.0305	0.1068
Benzene*	0.00033	0.00041	0.0014	0.0022	0.0098	0.06295	0.0787	0.2757
Carbon disulfide*	0.00002	0.00002	0.0001	0.0001	0.0005	0.00321	0.0040	0.0140
Carbon tetrachloride*	0.00000	0.00000	0.0000	0.0000	0.0000	0.00004	0.0001	0.0002
Carbonyl sulfide*	0.00001	0.00001	0.0000	0.0001	0.0003	0.00214	0.0027	0.0094
Chlorobenzene*	0.00007	0.00009	0.0003	0.0002	0.0008	0.00204	0.0026	0.0089
Chloroethane (ethyl chloride)*	0.00020	0.0003	0.0009	0.0005	0.0023	0.00586	0.0073	0.0256
Chloroform*	0.00001	0.0000	0.0000	0.0000	0.0001	0.00026	0.0003	0.0011
Dichlorobenzene *	0.00068	0.0008	0.0030	0.0017	0.0076	0.00224	0.0028	0.0098
Dichloromethane **(methylene chloride)*	0.00306	0.00382	0.0134	0.0078	0.0342	0.08819	0.1102	0.3863
Ethylbenzene*	0.00018	0.0002	0.0008	0.0013	0.0055	0.03553	0.0444	0.1556
Hexane*	0.00021	0.0003	0.0009	0.0015	0.0064	0.04110	0.0514	0.1800
Hydrochloric Acid (see Table D)	0.58277	0.72846	2.55253	0.4254	1.8632			
Methyl ethyl ketone*	0.00019	0.0002	0.0008	0.0013	0.0058	0.03711	0.0464	0.1626
Methyl isobutyl ketone*	0.00007	0.0001	0.0003	0.0005	0.0021	0.01359	0.0170	0.0595
Mercury *	0.00001	0.00001	0.00003	0.000003	0.00001	0.00000	0.00001	0.00002
Perchloroethylene (tetrachloroethene)*	0.00156	0.00195	0.00682	0.0040	0.0174	0.04491	0.0561	0.1967
Toluene*	0.00574	0.0072	0.0251	0.0391	0.1713	1.10368	1.3796	4.8341
Trichloroethylene*	0.00093	0.001166	0.00409	0.0024	0.0104	0.02690	0.0336	0.1178
Vinyl chloride*	0.00116	0.0014	0.0051	0.0030	0.0129	0.03331	0.0416	0.1459
Xylene*	0.00049	0.0006	0.0021	0.0033	0.0145	0.09326	0.1166	0.4085
VOC HAPS	0.01	0.02	0.06	0.07	0.29	1.57	1.96	6.87
Non VOC HAPS	0.59	0.73	2.57	0.43	1.90	0.09	0.12	0.41
Total HAPs	0.60	0.75	2.62	0.50	2.18	1.66	2.08	7.28

NON VOC HAPS include: 1,1,1-Trichloroethane (methyl chloroform), HCl
Dichloromethane (methylene chloride), and Mercury

TABLE D Speciation of Controlled Hydrochloric Acid Emissions (HCl)

	Mass of Compound Sent to flare/engine (a)			Molecular	Moles of Compound Sent to Flare			Moles of HCl Produced per Mole of Compond	Mass of HCl Produced By Flare (a)		
	lb/hr		tpy		#moles/hr		#moles/yr		lb/hr		tpy
COMPOUND	AVG	MAX			AVG	MAX			AVG	MAX	
1,1,1-Trichloroethane (methyl chloroform)*	0.0081	0.0101	0.0353	133.42	0.00006	0.00008	0.53	3	0.007	0.008	0.029
1,1,2,2-Tetrachloroethane*	0.0235	0.0293	0.1027	167.86	0.00014	0.00017	1.22	4	0.020	0.026	0.089
1,1-Dichloroethane (ethylidene dichloride)*	0.0293	0.0366	0.1282	98.96	0.00030	0.00037	2.59	2	0.022	0.027	0.095
1,1-Dichloroethene (vinylidene chloride)*	0.0024	0.0031	0.0107	96.95	0.00003	0.00003	0.22	2	0.002	0.002	0.008
1,2-Dichloroethane (ethylene dichloride)*	0.0051	0.0064	0.0224	98.96	0.00005	0.00006	0.45	2	0.004	0.005	0.017
1,2-Dichloropropane (propylene dichloride)*	0.0026	0.0032	0.0112	112.99	0.00002	0.00003	0.20	2	0.002	0.002	0.007
2-Propanol (isopropyl alcohol)	0.3792	0.4739	1.6607	60.11	0.00631	0.00788	55.25	0	0	0	0
Acetone	0.0513	0.0641	0.2245	58.08	0.00088	0.00110	7.73	0	0	0	0
Acrylonitrile*	0.0423	0.0529	0.1852	53.06	0.00080	0.00100	6.98	0	0	0	0
Benzene*	0.1092	0.1364	0.4781	78.11	0.00140	0.00175	12.24	0	0	0	0
Bromodichloromethane	0.0646	0.0807	0.2828	163.83	0.00039	0.00049	3.45	2	0.029	0.036	0.126
Butane	0.0368	0.0460	0.1612	58.12	0.00063	0.00079	5.55	0	0	0	0
Carbon dioxide	2770	3463	12135	44.01	62.95053	79	551447	0	0	0	0
Carbon disulfide*	0.0056	0.0069	0.0244	76.14	0.00007	0.00009	0.64	0	0	0	0
Carbon monoxide	0.4972	0.6215	2.1779	28.01	0.01775	0.02219	155.51	0	0	0	0
Carbon tetrachloride*	0.0001	0.0001	0.0003	153.84	0.00000	0.00000	0.00	4	0.0001	0.0001	0.000
Carbonyl sulfide*	0.0037	0.0046	0.0162	60.07	0.00006	0.00008	0.54	0	0	0	0
Chlorobenzene*	0.0035	0.0044	0.0155	112.56	0.00003	0.00004	0.28	1	0.001	0.001	0.005
Chlorodiflouromethane	0.0142	0.0177	0.0620	86.47	0.00016	0.00020	1.43	1	0.006	0.007	0.026
Chloroethane (ethyl chloride)*	0.0102	0.0127	0.0445	64.52	0.00016	0.00020	1.38	1	0.006	0.007	0.025
Chloroform*	0.0005	0.0006	0.0020	119.39	0.00000	0.00000	0.03	1	0.0001	0.0002	0.001
Chloromethane*	0.0077	0.0096	0.0337	50.49	0.00015	0.00019	1.33	1	0.006	0.007	0.024
Dichlorobenzene *	0.0039	0.0049	0.0170	147.00	0.00003	0.00003	0.23	2	0.002	0.002	0.008
Dichlorodifluoromethane	0.2390	0.2987	1.0468	120.91	0.00198	0.00247	17.32	2	0.144	0.180	0.632
Dichlorofluoromethane	0.0339	0.0424	0.1487	102.92	0.00033	0.00041	2.89	2	0.024	0.030	0.105
Dichloromethane (methylene chloride)*	0.1529	0.1912	0.6698	84.94	0.00180	0.00225	15.77	2	0.131	0.164	0.576
Dimethyl sulfide	0.0611	0.0764	0.2678	62.09	0.00098	0.00123	8.62	0	0	0	0
Ethane	3.3656	4.2070	14.7414	30.07	0.11193	0.13991	980.47	0	0	0	0
Ethanol	0.1578	0.1973	0.6912	46.08	0.00342	0.00428	30.00	0	0	0	0
Ethyl mercaptan	0.0178	0.0223	0.0781	62.13	0.00029	0.00036	2.51	0	0	0	0
Ethylbenzene*	0.0616	0.0770	0.2699	106.16	0.00058	0.00073	5.08	0	0	0	0
Ethylene dibromide	0.0000	0.0000	0.0001	187.88	0.00000	0.00000	0.00	0	0	0	0
Fluorotrichloromethane	0.0131	0.0164	0.0576	137.37	0.00010	0.00012	0.84	3	0.010	0.013	0.046
Hexane*	0.0713	0.0891	0.3122	86.17	0.00083	0.00103	7.25	0	0	0	0
Hydrogen sulfide	0.1523	0.1904	0.6672	34.08	0.00447	0.00559	39.15	0	0	0	0
Mercury *	0.000007	0.0000	0.0000	200.61	0.00000	0.00000	0.00	0	0	0	0
Methane	1010	1262	4423	16.04	63	79	551447	0	0	0	0
Methyl ethyl ketone*	0.0644	0.0804	0.2819	72.10	0.00089	0.00112	7.82	0	0	0	0
Methyl isobutyl ketone*	0.0236	0.0294	0.1032	100.07	0.00024	0.00029	2.06	0	0	0	0
Methyl mercaptan	0.0151	0.0189	0.0661	48.11	0.00031	0.00039	2.75	0	0	0	0
Pentane	0.0299	0.0374	0.1309	72.15	0.00041	0.00052	3.63	0	0	0	0
Perchloroethylene (tetrachloroethene)*	0.0779	0.0974	0.3411	165.85	0.00047	0.00059	4.11	4	0.069	0.086	0.300
Propane	0.0616	0.0770	0.2699	44.09	0.00140	0.00175	12.24	0	0	0	0
Reduced Sulfur	1.0072	1.2590	4.4116	32.00	0.03148	0.03934	275.72	0	0	0	0
Toluene*	1.9139	2.3923	8.3828	92.13	0.02077	0.02597	181.98	0	0	0	0
Trichloroethene*	0.0466	0.0583	0.2043	131.39	0.00036	0.00044	3.11	3	0.039	0.049	0.170
t-1,2-dichloroethene	0.0347	0.0433	0.1518	96.92	0.00036	0.00045	3.13	2	0.026	0.033	0.114
Vinyl chloride*	0.0578	0.0722	0.2530	62.50	0.00092	0.00116	8.10	1	0.034	0.042	0.148
Xylene*++	0.1617	0.2022	0.7084	106.16	0.00152	0.00190	13.35	0	0	0	0
								Totals	0.58	0.73	2.55

(a) HCl emitted from Cat Engine based on Ratio of Gas sent Flare vs. Engine

ZEF: Landfill Gas
Open (Candlestick) Flare System

Part 1. General

1.01 Description

A. This section describes a candlestick flare system for the combustion of landfill gases. The flare system must be of industrial quality and completely manufactured (including control system) by the flare supplier. The flare manufacturer shall have a minimum 10 years experience in the design and manufacture of this type of equipment and have a minimum of 25 candlestick flares in successful operation in the United States.

B. The flare system to be supplied must be complete and operable as specified herein:

1.02 Design Criteria

A. The landfill gas utility flare shall be designed to operate continuously at the following operation conditions:

Landfill gas flow rate:	3,000 SCFM (maximum)
Composition:	30% - 50% CH_4 Remainder CO_2, air, and inert gases
Lower Heating Value (LHV):	_____ BTU/SCF (maximum)
Temperature:	100°F
LFG moisture content :	Saturated
Heat release:	_____MMBtu/Hr

B. Mechanical

Design Wind Speed:	110 mph
Seismic Zone:	4
Site Elevation:	_____ ft above sea level
Electrical Area:	Non-hazardous (unclassified)

C. Unit Design

Smokeless Capacity	100%
Pressure Drop	<5" w.c. from inlet through outlet of the flare
Turndown	>40:1

1.03 Performance Requirements

A. The candlestick flare system must be capable of achieving the following performance requirements:

1. The flare must be capable of sustaining stable combustion with 30% - 50% CH4 at the maximum required flow rate.
2. The flare must be capable of a minimum 40:1 turndown.
3. The flare exit velocity must be designed strictly in accordance with EPA 40 CFR Ch. 1 section 60.18, but shall not exceed 100 feet per second at any time.
4. The radiation on any point at grade shall not exceed 500 Btu/Hr-ft2 when the flare is firing at the maximum design heat release and with a 20 mph wind. This radiation is to be determined via the 3-point method utilizing the radiant heat fractions at each point.
5. Flame shape shall be determined and be based on the momentum flux differences between the landfill gas exiting the flare tip and the cross wind. The landfill gas should take into account the hydrocarbon concentration.
6. Flame length shall be determined and be based on the maximum design heat release with allowances for the molecular weight.
7. The pressure loss through the flare must be less than 5" w.c. from the inlet flange through the outlet of the flare.
8. Emissions from the flare shall not exceed the following:

   Nitrogen Oxide (NOx) - 0.068 lbs per MMBtu Fired
   Carbon Monoxide (CO) - 0.37 lbs per MMBtu Fired

9. The flare shall be capable of achieving a minimum destruction efficiency of >98% of total non-methane organic compounds (NMOCs).

Part 2 - Products

2.01 General

A. All equipment shall be designed and shall perform as a minimum in accordance with these specifications.
B. These specifications are intended to be specific in nature such that the flare operator will not be in danger from radiant heat emitted from the flame, and to determine the location of the flare from nearby structures, power lines, trees, etc., based on the flame shape and flame length.

G3520C

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED:	1200	FUEL:	LOW ENERGY (1.43 CH4:CO2 RATIO)
COMPRESSION RATIO:	11.3:1	FUEL SYSTEM:	CAT LOW PRESSURE WITH AIR FUEL RATIO CONTROL
AFTERCOOLER - STAGE 1 MAX. INLET (°F):	218	FUEL PRESS. RANGE (PSIG):	1.5 - 5.0
AFTERCOOLER - STAGE 2 MAX. INLET (°F):	130	MIN. METHANE NUMBER:	135
JACKET WATER - MAX. OUTLET (°F):	230	RATED ALTITUDE (FT):	1378
COOLING SYSTEM:	JW+1AC, OC+2AC	AT AIR TO TURBO. TEMP. (°F):	77
IGNITION SYSTEM:	ADEM3	NOx EMISSION LEVEL:	0.5 g/bhp-hr
SPARK PLUG TYPE:	J-GAP	FUEL LHV (BTU/SCF):	456
EXHAUST MANIFOLD:	DRY	APPLICATION:	GENSET
COMBUSTION:	LOW EMISSION		

RATING AND EFFICIENCY		NOTES	LOAD	100%	75%	50%
ENGINE POWER	(WITHOUT FAN)	(1)	BHP	2233	1675	1116
GENERATOR POWER	(WITHOUT FAN)	(2)	EKW	1600	1200	800
ENGINE EFFICIENCY	**(ISO 3046/1)**	**(3)**	**%**	**40.1**	**38.6**	**36.1**
ENGINE EFFICIENCY	(NOMINAL)	(3)	%	39.1	37.7	35.2
THERMAL EFFICIENCY	(NOMINAL)	(4)	%	41.3	40.6	42.2
TOTAL EFFICIENCY	(NOMINAL)	(5)	%	80.4	78.3	77.4

ENGINE DATA						
FUEL CONSUMPTION	**(ISO 3046/1)**	**(6)**	**BTU/bhp-hr**	**6354**	**6592**	**7047**
FUEL CONSUMPTION	(NOMINAL)	(6)	BTU/bhp-hr	6509	6753	7219
AIR FLOW (77 °F, 14.7 psi)		(7)	SCFM	4512	3415	2286
AIR FLOW		(7)	lb/hr	20006	15141	10136
COMPRESSOR OUT PRESSURE			in. HG (abs)	105.8	80.8	55.5
COMPRESSOR OUT TEMPERATURE			°F	375	306	220
AFTERCOOLER AIR OUT TEMPERATURE			°F	142	138	135
INLET MAN. PRESSURE		(8)	in. HG (abs)	94.4	71.5	48.9
INLET MAN. TEMPERATURE	(MEASURED IN PLENUM)	(9)	°F	142	138	135
TIMING		(10)	°BTDC	27	27	27
EXHAUST STACK TEMPERATURE		(11)	°F	898	943	984
EXHAUST GAS FLOW (@ stack temp.)		(12)	CFM	12476	9780	6770
EXHAUST MASS FLOW		(12)	lb/hr	22318	16940	11418

EMISSIONS DATA					
NOx (as NO2)	(13)	g/bhp-hr	0.5	0.5	0.5
NTE CO	(14)	g/bhp-hr	4.13	4.25	4.4
NOMINAL CO	(15)	g/bhp-hr	2.5	2.5	2.5
THC (molecular weight of 15.84)	(14)	g/bhp-hr	5.84	6.49	7.51
NMHC (molecular weight of 15.84)	(14)	g/bhp-hr	0.88	0.98	1.13
EXHAUST O2	(16)	% DRY	9.0	8.8	8.6
LAMBDA	(16)		1.71	1.67	1.57

HEAT BALANCE DATA					
LHV INPUT	(17)	BTU/min	242216	188451	134313
HEAT REJECTION TO JACKET	(18)	BTU/min	28738	23806	21929
HEAT REJECTION TO ATMOSPHERE	(19)	BTU/min	7210	6034	4857
HEAT REJECTION TO LUBE OIL	(20)	BTU/min	10108	9524	8917
HEAT REJECTION TO EXHAUST (LHV to 77°F)	(21)	BTU/min	76779	65253	45101
HEAT REJECTION TO EXHAUST (LHV to 350°F)	(21)	BTU/min	57574	47602	34587
HEAT REJECTION TO A/C - STAGE 1	(22)	BTU/min	13823	5157	102
HEAT REJECTION TO A/C - STAGE 2	(23)	BTU/min	8895	5684	4086

CONDITIONS AND DEFINITIONS

ENGINE RATING OBTAINED AND PRESENTED IN ACCORDANCE WITH ISO 3046/1. DATA REPRESENTS CONDITIONS OF 77°F, 29.6 IN HG BAROMETRIC PRESSURE, 30% RELATIVE HUMIDITY, 10 IN H2O AIR FILTER RESTRICTION, AND 20 IN H2O EXHAUST STACK PRESSURE. ENGINE EFFICIENCY AND FUEL CONSUMPTION SPECIFICALLY NOTED AS ISO 3046/1 ARE REPRESENTED WITH 5 IN H2O AIR FILTER RESTRICTION AND 0 IN H2O EXHAUST STACK PRESSURE. CONSULT ALTITUDE CURVES FOR APPLICATIONS ABOVE MAXIMUM RATED ALTITUDE AND/OR TEMPERATURE. NO OVERLOAD PERMITTED AT RATING SHOWN.

EMISSION LEVELS ARE BASED ON THE ENGINE OPERATING AT STEADY STATE CONDITIONS AND ADJUSTED TO THE SPECIFIED NOx LEVEL AT 100% LOAD. EMISSION TOLERANCES SPECIFIED ARE DEPENDENT UPON FUEL QUALITY. METHANE NUMBER CANNOT VARY MORE THAN ± 3. PUBLISHED PART LOAD DATA IS WITH AIR FUEL RATIO CONTROL.

ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS. PUMP POWER IS NOT INCLUDED IN HEAT BALANCE DATA.

FOR NOTES INFORMATION CONSULT PAGE THREE.

FUEL USAGE GUIDE

CAT METHANE NUMBER	40	50	60	70	80	90	100	110	120	130	140	150
IGNITION TIMING	-	-	-	-	-	-	-	-	24	26	28	30
DERATION FACTOR	0	0	0	0	0	0	0	0	1.00	1.00	1.00	1.00

ALTITUDE DERATION FACTORS

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	0.96	0.93	0.89	0.86	0.83	0.79	0.76	0.74	0.71	0.68	0.65	0.63	0.60
120	0.98	0.94	0.91	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.64	0.61
110	0.99	0.96	0.92	0.89	0.86	0.82	0.79	0.76	0.73	0.70	0.68	0.65	0.62
100	1.00	0.97	0.94	0.90	0.87	0.84	0.81	0.77	0.74	0.72	0.69	0.66	0.63
90	1.00	0.99	0.96	0.92	0.89	0.85	0.82	0.79	0.76	0.73	0.70	0.67	0.65
80	1.00	1.00	0.97	0.94	0.90	0.87	0.84	0.80	0.77	0.74	0.71	0.68	0.66
70	1.00	1.00	0.99	0.96	0.92	0.89	0.85	0.82	0.79	0.76	0.73	0.70	0.67
60	1.00	1.00	1.00	0.97	0.94	0.90	0.87	0.83	0.80	0.77	0.74	0.71	0.68
50	1.00	1.00	1.00	0.99	0.96	0.92	0.88	0.85	0.82	0.79	0.76	0.73	0.70

ALTITUDE (FEET ABOVE SEA LEVEL)

AFTERCOOLER HEAT REJECTION FACTORS

AIR TO TURBO (°F)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.33	1.37	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
120	1.26	1.31	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
110	1.19	1.24	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26
100	1.13	1.17	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
90	1.06	1.11	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
80	1.00	1.04	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

ALTITUDE (FEET ABOVE SEA LEVEL)

FREE FIELD MECHANICAL & EXHAUST NOISE

100% Load Data			dB(A)	(dB)							
Free Field Mechanical	DISTANCE FROM THE ENGINE (FEET)	3.2	108.5	51.5	78.7	88.2	92.9	99.9	97.3	93.2	99.2
		22.9	91.6	34.6	59.0	68.1	74.0	83.0	79.4	75.1	85.2
		49.2	85.0	28.0	55.2	64.7	69.4	76.4	73.8	69.7	75.7
Free Field Exhaust	DISTANCE FROM THE ENGINE (FEET)	4.9	106.1	67.5	86.5	96.0	88.5	88.7	90.1	95.6	92.7
		22.9	92.7	54.1	73.1	82.6	75.1	75.3	76.7	82.2	79.3
		49.2	86.1	47.5	66.5	76.0	68.5	68.7	70.1	75.6	72.7
			Overal SPL	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 khz

Octave Band Center Frequency (OBCF)

FUEL USAGE GUIDE:

This table shows the derate factor required for a given fuel. Note that deration occurs as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar Methane Number Calculation program.

ALTITUDE DERATION FACTORS:

This table shows the deration required for various air inlet temperatures and altitudes. Use this information along with the fuel usage guide chart to help determine actual engine power for your site.

INLET AND EXHAUST RESTRICTION CORRECTIONS FOR ALTITUDE CAPABILITY:

To determine the appropriate altitude derate factor to be applied to this engine for inlet or exhaust restrictions differering from the standard conditions listed on page 1, a correction to the site altitude can be made to adjust for this difference. Add 141 feet to the site altitude for each additional inch of H2O of exhaust stack pressure greater than spec sheet conditions. Add 282 feet to the site altitude for each additional inch of H2O of inlet restriction greater than spec sheet conditions. If site inlet restriction or exhaust stack pressure are less than spec sheet conditions, the same trends apply to lower the site altitude.

ACTUAL ENGINE RATING:

It is important to note that the Altitude/Temperature deration and the Fuel Usage Guide deration are not cumulative. They are not to be added together. The same is true for the Low Energy Fuel deration (reference the Caterpillar Methane Number Program) and the Fuel Usage Guide deration. However, the Altitude/Temperature deration and Low Energy Fuel deration are cumulative; and they must be added together in the method shown below. To determine the actual power available, take the lowest rating between 1) and 2).

1) (Altitude/Temperature Deration) + (Low Energy Fuel Deration)
2) Fuel Usage Guide Deration

Note: For NA's always add the Low Energy Fuel deration to the Altitude/Temperature deration. For TA engines only add the Low Energy Fuel deration to the Altitude/Temperature deration whenever the Altitude/Temperature deration is less than 1.0 (100%). This will give the actual rating for the engine at the conditions specified.

AFTERCOOLER HEAT REJECTION FACTORS:

Aftercooler heat rejection is given for standard conditions of 77°F and 500 ft altitude. To maintain a constant air inlet manifold temperature, as the air to turbo temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor to adjust for ambient and altitude conditions. Multiply this factor by the standard aftercooler heat rejection. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail. For 2 Stage Aftercoolers with separate circuits, the 1st stage will collect 90% of the additional heat.

SOUND DATA:

Data determined by methods similar to ISO Standard DIS-8528-10. Accuracy Grade 3. SPL = Sound Pressure Level.

NOTES

1 ENGINE RATING IS WITH 2 ENGINE DRIVEN WATER PUMPS. TOLERANCE IS ± 3% OF FULL LOAD.

2 GENERATOR POWER DETERMINED WITH AN ASSUMED GENERATOR EFFICIENCY OF 96.1% AND POWER FACTOR OF 0.8 [GENERATOR POWER = ENGINE POWER x GENERATOR EFFICIENCY].

3 ISO 3046/1 ENGINE EFFICIENCY TOLERANCE IS (+)0, (-)5% OF FULL LOAD % EFFICIENCY VALUE. NOMINAL ENGINE EFFICIENCY TOLERANCE IS ± 2.5% OF FULL LOAD % EFFICIENCY VALUE.

4 THERMAL EFFICIENCY: JACKET HEAT + STAGE 1 A/C HEAT + EXH. HEAT TO 350°F.

5 TOTAL EFFICIENCY = ENGINE EFF. + THERMAL EFF. TOLERANCE IS ± 10% OF FULL LOAD DATA.

6 ISO 3046/1 FUEL CONSUMPTION TOLERANCE IS (+)5, (-)0% OF FULL LOAD DATA. NOMINAL FUEL CONSUMPTION TOLERANCE IS ± 2.5 % OF FULL LOAD DATA.

7 UNDRIED AIR. FLOW TOLERANCE IS ± 5 %

8 INLET MANIFOLD PRESSURE TOLERANCE IS ± 5 %

9 INLET MANIFOLD TEMPERATURE TOLERANCE IS ± 9°F.

10 TIMING INDICATED IS FOR USE WITH THE MINIMUM FUEL METHANE NUMBER SPECIFIED. CONSULT THE APPROPRIATE FUEL USAGE GUIDE FOR TIMING AT OTHER METHANE NUMBERS.

11 EXHAUST STACK TEMPERATURE TOLERANCE IS (+)63°F, (-)54°F.

12 WET EXHAUST. FLOW TOLERANCE IS ± 6 %

13 NOX TOLERANCES ARE ± 18 % OF SPECIFIED VALUE.

14 NTE CO, CO2, THC, and NMHC VALUES ARE "NOT TO EXCEED".

15 NOMINAL CO IS A NOMINAL VALUE AND IS REPRESENTATIVE OF A NEW ENGINE DURING THE FIRST 100 HOURS OF ENGINE OPERATION.

16 O2% TOLERANCE IS ± 0.5; LAMBDA TOLERANCE IS ± 0.05. LAMBDA AND O2 LEVEL ARE THE RESULT OF ADJUSTING THE ENGINE TO OPERATE AT THE SPECIFIED NOX LEVEL.

17 LHV RATE TOLERANCE IS ± 2.5%.

18 TOTAL JW HEAT (based on treated water) = JACKET HEAT + STAGE 1 A/C HEAT + 0.90 x (STAGE 1 + STAGE 2) x (ACHRF-1). TOLERANCE IS ± 10 % OF FULL LOAD DATA.

19 RADIATION HEAT RATE BASED ON TREATED WATER. TOLERANCE IS ± 50% OF FULL LOAD DATA.

20 LUBE OIL HEAT RATE BASED ON TREATED WATER. TOLERANCE IS ± 20% OF FULL LOAD DATA.

21 EXHAUST HEAT RATE BASED ON TREATED WATER. TOLERANCE IS ± 10% OF FULL LOAD DATA.

22 STAGE 1 A/C HEAT (based on treated water) = STAGE 1 A/C HEAT + 0.90 x (STAGE 1 + STAGE 2) x (ACHRF-1). TOLERANCE IS ± 5 % OF FULL LOAD DATA.

23 STAGE 2 A/C HEAT (based on treated water) = (STAGE 2 A/C HEAT + (STAGE 1 + STAGE 2) x 0.10 x (ACHRF - 1)) + LUBE OIL HEAT. TOLERANCE IS ± 5 % OF FULL LOAD DATA.

Appendix B
SOURCE AA-003
Fugitive Particulate Emissions Emission Calculations

Waste Management of Mississippi
Prairie Bluff Landfill
Fugitive Particulate Emissions
Unpaved Roadway Emission Source AA-003

Equation 1a, AP 42 13.2.2 November 2006.)
E = k (s/12)^a (W/3)^b

Factor	Description		Value
E =	Emission factor (lb/VMT, equation from AP-42, Section 13.2.2,	PM	8.89
		PM10	0.24
		PM2.5	0.24
k =	Constant (lb/VMT, from AP-42, Table 13.2.2-2)	PM	4.90
		PM10	0.15
		PM2.5	0.15
s =	Silt content of road surface material (%, from AP-42, Table 13.2.2-1, mean value for) MSW landfill disposal routes)		6.40
a =	Constant (from AP-42, Table 13.2.2-2)	PM	0.7
		PM10	0.9
		PM2.5	0.9
W =	Mean vehicle weight (ton, calculated based on average hauling truck)		30
b =	Constant (from AP-42, Table 13.2.2-2)	PM	0.45
		PM10 & PM2.5	0.45

Equation 2, AP 42 13.2 November 2006.)
E ext = E[(365-rain days)/(365)]

TABLE 1.
PM Unpaved Roadway Emissions

Emission Source	Vehicle Miles Traveled (miles)	Annual Uncontrolled PM Emissions (lb/yr)	Annual Uncontrolled PM Emissions (tpy)	Rainfall Correction Eq 2 Rain days Fig 13.2.2-1 105	Control Efficiency (%)	Annual Controlled PM Emissions (tpy)
Trucks	38,000	337,970	168.99	71.2%	75.0%	30.09

TABLE 2.
PM10 Unpaved Roadway Emissions

Emission Source	Vehicle Miles Traveled (miles)	Annual Uncontrolled PM10 Emissions (lb/yr)	Annual Uncontrolled PM10 Emissions (tpy)	Rainfall Correction Eq 2 Rain days Fig 13.2.2-1 105	Control Efficiency (%)	Annual Controlled PM10 Emissions (tpy)
Trucks	38,000	9,124	4.56	71.2%	75.0%	0.81

TABLE 3.
PM2.5 Unpaved Roadway Emissions

Emission Source	Vehicle Miles Traveled (miles)	Annual Uncontrolled PM2.5 Emissions (lb/yr)	Annual Uncontrolled PM2.5 Emissions (tpy)	Rainfall Correction Eq 2 Rain days Fig 13.2.2-1 105	Control Efficiency (%)	Annual Controlled PM2.5 Emissions (tpy)
Trucks	38,000	9,124	4.56	71.2%	75.0%	0.81

Control Efficiency from Routine watering

C =	Average control efficiency (%, Figure 13.2.2-2) Moisture Ratio (M) =2	75.0

Annual Vehicle Mile Traveled:
19,000 trucks/yr 2.00 MILES 38,000 miles/yr

Reference:
Emission calculations based on AP-42 Chapter 13.2.2 "Unpaved Roads", December 2003.
Control Efficiencies for PM and PM10 taken from "Control of Open Fugitive Dust Sources"
EPA-450/3-88-008, September 1988.

Fugitive Particulate Emissions

Prairie Bluff Landfill

Paved Roadway

Fugitive Dust Emissions

AP-42 13.2.1 Paved Roads, November 2006, Equation #1

E = k(sL/2)^0.65 (W/3)^1.5-C*

Factor	Description		Value
E =	Emission factor (lb/VMT, equation from AP-42, Section 13.2.3)	PM	1.76
		PM-10	0.34
		PM2.5	0.0515
k =	Particle size multiplier (lb/VMT, AP-42, Table 13.2.1)	PM	0.082
		PM-10	0.016
		PM2.5	0.0024
sL =	Road surface silt loading (g/m², AP-42, Table 13.2.1-4, low end of range for (MSW landfills, representing normal Waste Management Operating Procedures.)		1.1
W =	Mean vehicle weight (ton, calculated based on average hauling truck)		30

The minimum silt loading from the range of values given in AP-42, 13.2.1-1 for paved roads

Travel Distance: 2.00 Miles 19,000 Trucks 38,000 miles

*C- emissions from brake dust and emissions (not subtracted from total)

Based on Figure 13.2.1-2, ~105 rain days/yr,

Natural Mitigation = (1-P/4N), eq. (2) AP-42, 13.2.1-1

P= "wet" days per year

N=# 365

Natural Mitigation = 93%

TABLE 4.

PM Paved Roadway Emissions

Emission Source	Vehicle Miles Traveled (miles)	Annual Unnontrolled PM Emissions (lb/yr)	Annual Controlled PM Emissions (lb/yr)	Annual Controlled PM Emissions (tpy)
Trucks	38,000	66,809	62,004	31.00

TABLE 5.

PM10 Paved Roadway Emissions

Emission Source	Vehicle Miles Traveled (miles)	Annual Controlled PM10 Emissions (lb/yr)	Annual Controlled PM10 Emissions (lb/yr)	Annual Controlled PM10 Emissions (tpy)
Trucks	38,000	13,036	12,098	6.05

TABLE 6.

PM2.5 Paved Roadway Emissions

Emission Source	Vehicle Miles Traveled (miles)	Annual Controlled PM2.5 Emissions (lb/yr)	Annual Controlled PM2.5 Emissions (lb/yr)	Annual Controlled PM2.5 Emissions (tpy)
Trucks	38,000	1,955	1,815	0.91

Waste Dumping, Deposition, and Covering

Emissions from waste dumping, deposition, and covering are estimated using equation (1) of AP-42
Section 11.2.2 ("Agricultural Tilling", May 1983):
Work on Section 9.1 "Tilling operations has been suspended

E = (4.80) x (K) x (s^0.6) where E = particulate emissions, lbs/acre
K = particle size multiplier (= 1.0 for TSP and = 0.21 for PM10)
s = silt content, %

The same silt content used for estimating road emissions will be used here.

Other basis information for estimating emissions from this activity:

Landfill cell area: 10 acres

Waste dumping, handling, etc. - -

E = (4.80) x (K) x (s^0.6)

= 14.62 lbs TSP/acre
= 3.07 lbs PM10/acre

Total waste handling particulate emissions = (lbs/acre) x (acres/cell) x (cells/yr)

= 146 lb/yr TSP = 0.07 tons/yr TSP
= 31 lb/yr PM10 = 0.02 tons/yr PM10

TABLE 7
Total Particulate Emissions

	PM (tpy)	PM10 (tpy)	PM2.5 (tpy)
Roadway	61.10	6.86	1.72
Waste Handling	0.07	0.02	0.02
Total	61.17	6.88	1.74

Appendix C
SOURCE AA-004
Solidification Basin Emissions Calculations

Waste Management of Mississippi
Prairie Bluff Landfill
Solidification Emission Calculations
Emission Source ID No. AA-004

1. The unloading of stabilization agents results in
emission potential.

Emissions associated with material Handling are predicted using AP-42 Chapter 13.2.4
Equation 1.

$$E=k(0.0032)(U/5)^{1.3}/(M/2)^{1.4}$$

k=	Particle size multiplier (dimensionless) *Obtained from AP-42 page 13.2.4-3*	k_{PM}	0.74
		k_{PM10}	0.35
U=	Mean wind speed (mph), *estimated conservative value*		15
M=	Material moisture content (%) *minimal amount from absorption of humidty*		1
E=	Emission Factor (lb./ton)	PM	0.026066
		PM_{10}	0.012329

Solidification material experience two transfers: upon delivery to interim area than
from interim area to solidification basin

Annual solidification material consumption:	12,000	tons/yr.
No. of Batches of material solidified per day:	5	batches/day (average)
No. of days solidification operations conducted:	312	days/yr.

Calculations

$Emissions_{PM=}$	626	lb./yr.
	0.31	ton/yr.
$Emissions_{PM10=}$	296	lb./yr.
	0.15	ton/yr.

2. Mixing of wet waste and solidification material within the basin is similar to agricultural tilling. Mixing
emissions are therefore estimated using equation (1) of AP-42 Section 11.2.2 ("Agricultural Tilling"), May 1983:
(Note: Work on AP-42 5th Edition 9.1 tilling operations has been suspended, resulting in use of the older method)

$$E = 4.80(K)(S^{0.6})$$

where E = particulate emissions, lbs/acre
K = particle size multiplier = 1.0 for total particulates (worst case)
S = silt content, %

For sawdust and rice hulls , S = 20 %

Area "tilled" during mixing is the open area of the solidification basin = 800 sq. feet
Note: Two (2) basins, ea. 20 ft x 20 ft

Mixing emissions (estimated using agricultural tilling equation):

= [(4.80) x (k) x ($S^{0.6}$) lbs/acre] x (basin area, sq.ft.) x (acre/43,560 sq.ft.) x (batches/day) x (days/yr)

Emission Source ID No. AA-004

Page 2

= 830 lbs/yr.

= 0.41 tons/yr.

Total Solidification PM_{10} Emissions:	0.15	tons/yr.
	0.41	tons/yr.
	0.56	tons/yr.
	0.13	lb./hr
Total Solidification PM Emissions:	0.31	tons/yr.
	0.41	tons/yr.
	0.73	tons/yr.
	0.17	lb./hr

Appendix D
SOURCE AA-006
Leachate Tank Storage & Handling Emissions Calculations

Waste Management of Mississippi **Page 1**
Prairie Bluff
Leachate Storage, Handling, and Evaporative Emissions **AA-006**

Basis Information:

1. Leachate generation: 4,000,000 gallons/yr

2. Leachate is remove from the landfill via leachate risers, pumped via forcemain treatment.
3. It is assumed that all volatile organic contaminants in leachate evaporate to atmosphere during leachate transfers and evaporation

Emissions, lbs/yr = (component concentration, ug/l) x (1 g/1,000,000 ug) x (3.785 l/gal) x (1 lbs/454 g) x (annual leachate generation, gal/yr)
Emissions, tons/yr = (Emissions, lbs/yr) x (ton/2000 lbs)

Average emissions, lbs/hr = (Emissions, lbs/yr) x (yr/8760 hrs)

Leachate Storage, Handling, and Evaporative Emissions

Based on summary of Leachate analytical, see attached

Compound	Concentration (PPB or ug/l)	Annual Emissions (tons/yr)	Annual Emissions (lbs/hr)
1,1,1,2-Tetrachloroethane	4	0.00007	0.000016
1,1,1-Trichloroethane*	5	0.00009	0.000020
1,1,2,2-Tetrachloroethane*	6	0.0001	0.000024
1,1,2-Trichloroethane	6	0.0001	0.000023
1,1-Dichloroethane*	16	0.0003	0.000063
1,1-Dichloroethene	6	0.0001	0.000022
1,2,3-Trichloropropane	11	0.0002	0.000043
1,2-Dibromo-3-Chloropropane*	16	0.0003	0.000060
1,2-Dichlorobenzene	9	0.0001	0.000033
1,2-Dichloroethane*	7	0.0001	0.000025
1,2-Dichloropropane*	6	0.0001	0.000021
1,4-Dichlorobenzene*	153	0.0025	0.000581
2-Hexanone	31	0.0005	0.000116
Acetone**	1057	0.0176	0.004023
Acrylonitrile*	71	0.0012	0.000269
Benzene*	9	0.0002	0.000035
Bromoform*	6	0.0001	0.000022
Bromomethane* (Methyl bromide)	8	0.0001	0.000030
Carbon disulfide*	7	0.0001	0.000028
Carbon tetrachloride*	6	0.0001	0.000022
Chlorobenzene*	6	0.0001	0.000023
Dichlorobromomethane	4	0.0001	0.000016
Chloroethane*	16	0.0003	0.000061
Chloromethane*	7	0.0001	0.000027
cis-1,2-Dichloroethene	6	0.0001	0.000023
cis-1,3-Dichloropropene*	5	0.0001	0.000021
Ethyl Benzene*	13	0.0002	0.000050
Iodomethane* (Methyl iodide)	10	0.0002	0.000037
Styrene*	7	0.0001	0.000026
Tetrachloroethene*	6	0.0001	0.000022
Toluene*	31	0.0005	0.000120
trans-1,2-Dichloroethene*	7	0.0001	0.000027
trans-1,3-Dichloropropene*	6	0.0001	0.000024
trans-1,4-Dichlorobutene-2	23	0.0004	0.000087
Trichlorofluoromethane	8	0.0001	0.000030
Vinyl acetate*	33	0.0005	0.000125
Vinyl chloride*	14	0.0002	0.000054
Xylenes (Total)*	29	0.0005	0.000109
Total:	1,670	0.027839	0.006356
(minus exempt cmpds & non-VOCs)	1057	0.017620	0.004023
Total VOCs:	613	0.0102	0.0023
Total HAPs:	500	0.008	0.002

* Hazardous Air Pollutant
** VOC Exempt

Burner Combustion Products Emissions*

Maximum BTU	=	6,000,000	BTU/hr
Landfill Gas	=	50%	Methane
Methane	=	981	btu/cubic ft
Maximum Gas Flow	=	12,232	SCF/Hr
	=	204	SCFM

Based on AP-42 Table 2.4-5
Boiler Steam Turbine Emission Factors

Nitrogen dioxide	33	$lb/10^6$ dscf
Carbon monoxide	5.7	$lb/10^6$ dscf
Particulate matter	8.2	$lb/10^6$ dscf

Thus:	lbs/hr	Tons/yr
Nitrogen dioxide *	0.40	1.77
Carbon monoxide*	0.07	0.31
Particulate matter (PM_{10})*	0.10	0.44
Total VOCs:	0.002	0.010
Total HAPs:	0.002	0.008

* Emissions are also accounted for in the Flare calculations. The routing of Landfill Gas to the leachate evaporator burner will reduce landfill gas to the flare by a corresponding amount. The leachate evaporator burner has lower emission factors for NOx, CO and PM_{10}. Thus, NOx, CO and PM_{10} emissions will be reduced with the use of the leachate evaporator.

Prairie Bluff Leachate Data Summary
(ug/l)

Constituent	Date	Sample Result																									
		7/9/1992	8/6/1992	8/16/1993	8/30/1994	12/7/1995	1/9/2003	7/10/2003	1/15/2004	8/16/1993	8/30/1994	3/6/1995	12/7/1995	3/6/1995	12/7/1995	12/7/1995	1/9/2003	7/10/2003	1/15/2004	1/9/2003	7/10/2003	1/15/2004	11/15/1996	11/6/1997	11/6/1997	Average
		Cell 1								Cell 2				Cell 3		Cell 4	Cell 5			Cell 7			Leachate Tank			
1,1,1,2-Tetrachloroethane							9	1	1								2.2	1	22	9	1	1	0.2	0.2		4
1,1,1-Trichloroethane*							14	1	1			0.7					3.4	1	25	14	1	1	0.3	0.3		5
1,1,2,2-Tetrachloroethane*							17	1	1			1		1			4.2	1	36	17	1	1.4	0.3	0.5		6
1,1,2-Trichloroethane							11	1	1			0.8		0.8			2.9	1	47	11	1	1.9	0.5	0.3		6
1,1-Dichloroethane*							21	2.7	2.3			92		20			5.2	2.2	38	21	0.73	1.5	3	4		16
1,1-Dichloroethene			ND	ND	ND	ND	16	1	1		ND	ND	ND	2	ND	ND	4.1	1	19	16	1	1	ND	1		6
1,2,3-Trichloropropane							24	1	1								6.1	1	63	24	1	2.5	0.3	0.3		11
1,2-Dibromo-3-Chloropropane*							31	1	1								7.7	1	94	31	1	3.8	0.7	0.7		16
1,2-Dichlorobenzene								10				2		6				10			39		0.4	1	0.4	9
1,2-Dichloroethane*			ND	ND	ND	ND	13	1	1	ND	ND	1	ND	1	ND	ND	3.2	1	43	13	1	1.7	ND	0.3		7
1,2-Dichloropropane*							15	1	1			0.8		0.6			3.8	1	31	15	1	1.2	0.5	0.5		6
1,4-Dichlorobenzene*		ND		ND	ND	0.000007		10		ND	ND	8	ND	6	ND	ND		10			34		ND	1000		153
2-Hexanone							50	5	5								12	5	190	50	5	7.5	3	3		31
Acetone**							130	13	23								34	120	11000	130	30	110	9	25		1057
Acrylonitrile*							34	20	20			4		4			20	20	710	34	20	28	2	2		71
Benzene*			ND	ND	ND	ND	16	4.6	4.1	ND	ND	15	ND	6	ND	ND	4.3	4.6	28	16	2.5	5.6	ND	4		9
Bromoform*							11	1	1			0.7		0.7			2.7	1	42	11	1	1.7	0.2	0.2		6
Bromomethane* (Methyl bromide)							20	1	1			1		1			5.1	1	49	20	1	2	1	1		8
Carbon disulfide*							22	1	1								5.5	6.7	20	22	1	1	0.4	0.4		7
Carbon tetrachloride*			ND	ND	ND	ND	19	1	1	ND	ND	0.8	ND	0.8	ND	ND	4.8	1	19	19	1	1	ND	0.4		6
Chlorobenzene*			ND	ND	ND	ND	16	5.4	5	ND	ND	0.5	ND	0.5	ND	ND	3.9	2.4	21	16	3	5	0.7	0.8		6
Dichlorobromomethane							9.8	1	1			0.4		0.4			2.4	1	25	9.8	1	1	0.3	0.3		4
Chloroethane*							18	11	10			42		19			4.5	0.79	47	18	0.83	1.9	26	8		16
Chloromethane*							19	1	1			2		2			4.8	1	38	19	1	1.5	0.4	0.4		7
cis-1,2-Dichloroethene							11	1	1								2.8	0.69	32	11	0.53	1.3	0.7	3		6
cis-1,3-Dichloropropene*							12	1	1								3	1	27	12	1	1.1	0.4	0.4		5
Ethyl Benzene*							16	1	1			43		27			9.9	7	32	15	5.7	1.3	8	4		13
Iodomethane* (Methyl iodide)							23	1	1								5.8	1	49	23	1	2	0.3	0.3		10
Styrene*							14	1	1								3.6	1	38	14	1	1.5	0.3	0.3		7
Tetrachloroethene*			ND	ND	ND	ND	16	1	1	ND	ND	0.7	ND	1	ND	ND	3.9	1	25	16	1	1	ND	0.3		6
Toluene*							31	1	1.7			33		270			3.4	1	35	14	1.6	2.8	2	12		31
trans-1,2-Dichloroethene*							23	1	1			1		1			5.9	1	32	23	1	1.3	0.3	0.3		7
trans-1,3-Dichloropropene*							10	1	1								2.6	1	41	10	1	1.6	0.3	0.3		6
trans-1,4-Dichlorobutene-2							38	1	5								9.6	1	150	38	1	5.8	0.6	0.6		23
Trichlorofluoromethane							20	1	1								5.1	1	36	20	1	1.4	0.8	0.8		8
Vinyl acetate*							71	5	5								18	5	170	71	5	6.8	2	2		33
Vinyl chloride*			ND	ND	ND	ND	16	0.52	1	ND	ND	47	ND	17	ND	ND	4	2.3	59	16	1.5	2.4	ND	3		14
Xylenes (Total)*							44	3	3								5.1	3.5	100	20	31	63	28	13		29

ND: Not Detected over reporting limit (not included

Appendix E
T-1
Gasoline Storage Tank Emissions

TANKS 4.0.9d
Emissions Report - Summary Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Prairie Bluff Gas Tank
City:	Houston
State:	Mississippi
Company:	Waste Management
Type of Tank:	Horizontal Tank
Description:	

Tank Dimensions

Shell Length (ft):		5.60
Diameter (ft):		3.00
Volume (gallons):		300.00
Turnovers:		0.00
Net Throughput(gal/yr):		5,000.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Red/Primer
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Memphis, Tennessee (Avg Atmospheric Pressure = 14.62 psia)

TANKS 4.0.9d
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Prairie Bluff Gas Tank - Horizontal Tank
Houston, Mississippi

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight
Gasoline (RVP 11)	All	74.75	62.29	87.21	66.59	7.5878	6.0241	9.4575	65.0000			92.00

TANKS 4.0.9d
Emissions Report - Summary Format
Individual Tank Emission Totals

Emissions Report for: Annual

Prairie Bluff Gas Tank - Horizontal Tank
Houston, Mississippi

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 11)	58.72	282.98	341.69