

May 25, 2011

Mr. Jon Holtom, P.E.
Florida Department of Environmental Protection
Bob Martinez Center
2600 Blair Stone Road
Mail Station 5505
Tallahassee, Florida 32399

RECEIVED**MAY 26 2011****BUREAU OF
AIR REGULATION**

Re: Second Request for Additional Information, File Number 0570127-006-AV
Title V Air Operation Permit Renewal Application
McKay Bay Refuse to Energy Facility

Dear Mr. Holtom:

On October 28, 2010, the City of Tampa ("City") submitted a Title V Air Operation Permit renewal application ("Application") to the Florida Department of Environmental Protection ("Department" or "FDEP") for the City's McKay Bay Refuse to Energy Facility ("Facility"). On March 30, 2010, the Department issued a Second Request for Additional Information (2nd "RAI") concerning the Application. The additional information requested by the Department in the 2nd RAI focused on Compliance Assurance Monitoring (CAM) applicability and CAM plan requirements for particulate matter (PM), lead (Pb), HCl, and fluoride. In summary, the emissions units at the Facility are not subject to CAM based on one or more of the following exemptions:

1. They do not trigger the potential pre-control device major source emissions thresholds.
2. They demonstrate continuous compliance with the Facility's Continuous Emissions Monitoring system (CEMs) and Continuous Opacity Monitoring system (COMs).
3. They are not equipped with air pollution control devices.
4. They are equipped with devices that are considered to be inherent to the process/operation; or, they satisfy CAM by meeting the post-1990 40 CFR Subparts Cb/Eb Federal monitoring requirements for the same or similar pollutants. The USEPA letter dated July 7, 1999 supports the use of monitoring under the post-1990 40 CFR 60 Subparts Cb/Eb to satisfy CAM for the air pollutants specifically regulated under Subparts Cb/Eb for Municipal Waste Combustors which includes PM, metals and metal compounds (Cd, Hg, Pb), all acid gases (includes HCl and SO_x), organic compounds (including dioxins/furans), NO_x, and CO.



Any emissions limits (such as 129 MACT) derived from 1990 Clean Air Act Amendments are presumed to have sufficient monitoring as verified in the Part 64 CAM regulations and EPA guidance letters. This was further endorsed when EPA lowered the 129 limits in May 2006 and maintained the same monitoring requirements.

On behalf of the City, Malcolm Pirnie, Inc. (“Malcolm Pirnie”) and their subconsultant Earthshine Environmental, Inc. (Earthshine) are submitting the following responses to the Department’s 2nd RAI. The Department’s RAI comments are quoted in bold italics, followed by the City’s responses (“Responses”). The numbering/lettering designations of the comments and responses reflect the designations provided in the Department’s RAI letter.

Department RAI Comment 1:

- 1. To satisfy the intent of 40 CFR 64, CAM plans for particulate matter are required as a part of this Title V renewal permit in order to provide reasonable assurances that the control devices are maintained and operated to the same level as during the satisfactory compliance tests. Please provide the minimum pressure drop across your baghouses that corresponds to compliant particulate matter emissions rates. If the bags require a certain level of pre-coating in order to meet compliance, then this minimum pressure drop should correspond with the cleanest level to which the bags are rapped. Please also include a maximum manufacturer’s acceptable pressure drop for the baghouses that assures protection of the bags and the housing from rupture due to excessive pressure. As a second indicator, the CAM plan will also include the use of the continuous opacity monitors as a monitored indicator for any sudden and sustained increases in average opacity that could indicate a failure of the bags.***

An emission limitation or standard that is exempt from the requirements of 40 CFR 64 governs the regulation of PM at the facility. PSD-FL-086(A) limits PM emissions from the Municipal Waste Combustor (MWC) units to 27 mg/dscm, corrected to 7% O₂, which is based on the Federal 40 CFR 60, Subpart Cb requirements prior to promulgation of the new Subpart Cb PM emissions limit of 25 mg/dscm, corrected to 7% O₂. As demonstrated in the calculations provided, the new 40 CFR Subpart Cb PM emissions limit is more restrictive than the Facility’s PSD PM emissions limit. Therefore, because the Facility’s emissions units are subject to the requirements of 40 CFR Subpart Cb and these limits are more restrictive than the Facility’s PM emissions limit included in the PSD permit, the Facility is exempt from CAM requirements for particulate matter. The additional PSD limits for PM (0.0230 lb/MMBtu, 2.76 lb/hr, and 12.1 ton/yr) are equivalents of the 27 mg/dscm Subpart Cb limit.



PM Equivalency Calculations

New PM limit in 40 CFR 60.33b = 25 mg/dscm, corrected to 7% O₂

MWC Flowrate = 27,289.8 dscfm (original retrofit modeled flowrate corrected to 7% O₂)

$(25 \text{ mg/dscm}) \times (\text{g}/1000 \text{ mg}) \times (\text{lb}/453.59 \text{ g}) \times (\text{dscm}/35.31 \text{ dscf}) \times (7,000 \text{ gr/lb}) = 0.0109 \text{ gr/dscf}$

$(25 \text{ mg/dscm}) \times (\text{g}/1000 \text{ mg}) \times (\text{dscm}/35.31 \text{ dscf}) \times (27,289.8 \text{ dscf/min}) \times (\text{lb}/453.59 \text{ g})$

$\times (60 \text{ min/hr}) = 2.55 \text{ lb/hr}$

$(2.55 \text{ lb/hr}) \times (8760 \text{ hr/yr}) \times (\text{ton}/2000 \text{ lb}) = 11.19 \text{ tons/yr}$

$(2.55 \text{ lb/hr}) / 120 \text{ MMBtu/hr} = 0.0213 \text{ lb/MMBtu}$

PM limits in PSD-FL-086 = 2.76 lb/hr, 12.1 ton/yr, 0.0230 lb/MMBtu

Department RAI Comment 2:

- Depending on the inlet temperature to the baghouse and the potential for vaporization, the control efficiency for removing lead could vary. CAM applicability for the controlled emissions of lead is based on potential pre-controlled emissions being greater than the Title V threshold of 5 tons per year. The RAI response compared the different emissions limits for lead, but did not include an evaluation for potential pre-controlled lead emissions. Please provide calculations clearly showing the pre-controlled emissions potential for lead. If the pre-controlled emissions potential is greater than 5 tons per year, adding a baghouse inlet temperature indicator to the particulate matter CAM plan could be considered. If this option is selected, provide the maximum demonstrated inlet temperature that assures the lead has been sufficiently condensed to be captured by the baghouses.***

An emission limitation or standard that is exempt from the requirements of 40 CFR 64 governs the regulation of lead at the facility. PSD-FL-086(A) limits lead emissions from the MWC units to 0.44 mg/dscm, corrected to 7% O₂, which is based on the Federal 40 CFR, Subpart Cb requirements prior to the promulgation of the new Subpart Cb lead emissions limit of 0.40 mg/dscm, corrected to 7% O₂. As demonstrated in the calculations provided, the new 40 CFR Subpart Cb lead emissions limit is more restrictive than the Facility's PSD lead emissions limit. Therefore, because the Facility's emissions units are subject to requirements of Federal 40 CFR 60 Subpart Cb and these limits are more restrictive than the Facility's lead emissions limit included in the PSD Permit, the Facility is exempt from CAM requirements for lead. The additional PSD limits for lead (3.76E-04 lb/MMBtu, 0.0451 lb/hr, and 0.197 ton/yr) are equivalents of the old Federal limit.



Pb Equivalency Calculations

New Pb limit in 40 CFR 60.33b = 0.40 mg/dscm, corrected to 7% O₂
MWC Flowrate = 27,289.8 dscfm (original retrofit modeled flowrate corrected to 7% O₂)
(0.40 mg/dscm) x (g/1000 mg) x (dscm/35.31 dscf) x (27,289.8 dscf/min) x (lb/453.59 g)
x (60 min/hr) = 0.0408 lb/hr
(0.0408 lb/hr) x (8760 hr/yr) x (ton/2000 lb) = 0.179 tons/yr
(0.0408 lb/hr) / 120 MMBtu/hr = 0.00034 lb/MMBtu

Pb limits in PSD-FL-086(A) = 0.0451 lb/hr, 0.197 ton/yr, 0.000376 lb/MMBtu

Department RAI Comment 3:

- 3. Because the PSD permit established an annual emissions limit for hydrochloric acid (HCl) that is greater than the Title V applicability threshold of 10 tons per year, the waste combustors are subject to CAM for the controlled emissions of HCl. Please provide a CAM plan that assures the scrubber operates on an hourly basis as well as it did during the satisfactory HCl compliance tests.***

An emission limitation or standard that is exempt from the requirements of 40 CFR 64 governs the regulation of HCl at the facility. PSD-FL-086(A) limits HCl emissions from the MWC units to 29 ppmdv corrected to 7% O₂ or 95% reduction by weight or volume, whichever is greater. The PSD permit implements the federal Subpart Cb requirements, and the PSD limit of 67.9 tons per year per MWC unit is less restrictive than the federal limits, as shown in the equivalency calculations below. Therefore, Subpart Cb governs the regulation of HCl at the facility, and the facility is exempt from CAM requirements for hydrogen chloride.



Hydrogen Chloride (HCl) Equivalency Calculation

HCl limit in 40 CFR 60.33b = 29 ppm, corrected to 7% O₂

MWC Flowrate = 27,289.8 dscfm (original retrofit modeled flowrate corrected to 7% O₂)

$(27,289.8 \text{ dscfm}) \times (60 \text{ min/hr}) \times (29 \text{ parts}/10^6 \text{ parts}) \times (36.5 \text{ lb/lb-mole})$

$\times (1 \text{ lb-mole}/385.3 \text{ dscf}) = \underline{4.50 \text{ lb/hr}}$

$(4.50 \text{ lb/hr}) \times (8760 \text{ hr/yr}) \times (\text{ton}/2000 \text{ lb}) = \underline{19.7 \text{ tons/yr}}$

$(4.50 \text{ lb/hr}) / 120 \text{ MMBtu/hr} = \underline{0.375 \text{ lb/MMBtu}}$

Department RAI Comment 4:

- 4. Please provide an explanation for your assumed scrubber efficiency for fluoride of only 90%. Research shows reports listing fluoride removal efficiencies for dry scrubbers as high as 98%. Based on the PSD limit of 6.57 tons per year, a scrubber efficiency of only 94% could result in pre-controlled emissions of fluoride above the Title V threshold of 100 tons per year. If the pre-controlled potential emissions of fluoride are above 100 tons per year, please provide a CAM plan that assures the scrubber operates on an hourly basis as well as it did during the satisfactory fluoride compliance tests.***

The potential pre-control device fluoride emissions at the facility do not exceed the Title V threshold of 100 tons per year and are therefore exempt from the requirements of 40 CFR 64. The existing PSD permit limits fluoride (in the form of hydrogen fluoride (HF)) emissions to 6.57 tons per year per MWC unit. However, that limit was established when the facility was equipped with dry electrostatic precipitators (ESPs), before the major retrofit of the facility completed in 2001 & 2002. The retrofit included the installation of air pollution control equipment to comply with the emissions limits and monitoring requirements of the Federal Emissions Guidelines and 40 CFR Subpart Cb for large municipal waste combustors. Prior to the retrofit the Facility's air pollution control (APC) consisted of an ESP and there was no acid gas control equipment. Among other additions, the retrofit included the replacement of the ESP with a fabric filter baghouse and the installation of a spray dryer absorber (SDA). A continuous emissions monitoring system (CEMs) was also installed.

The facility-wide fluoride emissions rate for the PSD permit was originally calculated at 4.2 lb./hr based on the boiler manufacturer's data, but was increased to 6.0 lb./hr. (equivalent to 6.57



tons per year per unit) during the PSD determination in 1982. Since the dry ESPs were not capable of controlling fluoride emissions, the PSD limit represented the pre-control device emissions rate at that time. However, that emission rate does not correlate with the actual fluoride emissions levels reported during annual stack testing on the post-retrofit facility.

No fluoride emission factors have been published in AP-42, so the most recent (2010) stack test data for fluoride was used in conjunction with an assumed control efficiency to obtain the pre-control emission estimate. The 2010 stack test results actually indicated a value of "<.0037 lb/hr", but to be conservative we used the .0037 lb/hr value in the calculations. The assumed scrubber (SDA) removal efficiency of 90% submitted previously was taken from a published source. However, since the potential pre-control emissions estimate is a calculation from a stack test, the removal efficiency of all control equipment between the boiler outlet and the stack (both the SDA and the fabric filter (FF) baghouse) should be included. Typical fluoride removal efficiencies of a combination SDA/FF system are approximately 95%.

Assuming 95% control efficiency, the calculated facility-wide potential pre-control fluoride emission estimate is shown below and is below the Title V threshold. It should be noted that even assuming a 99.9% control efficiency the calculated pre-control fluoride emissions would remain below the Title V threshold. Therefore, the CAM rule does not apply to the MWC units at the Facility for fluoride emissions.

Facility-Wide Pre-Control Fluoride Emissions Estimate

Emission rate¹ x # units x ton conversion x operating time² x efficiency factor = uncontrolled fluoride emissions estimate (95% control efficiency assumption)

$$(0.0037 \text{ lb./hr.}) \times (4 \text{ units}) \times (\text{ton}/2,000 \text{ lb.}) \times (8,760 \text{ hrs./yr.}) \times (100/(100-95)) = 1.30 \text{ tons/yr.}$$

1.30 tons/yr. < 100 tons/yr. (major source threshold for fluoride), so CAM rules are not applicable to fluoride for the MWC units.

Emission rate¹ x # units x ton conversion x operating time² x efficiency factor = uncontrolled fluoride emissions estimate (99.9% control efficiency assumption)

$$(0.0037 \text{ lb./hr.}) \times (4 \text{ units}) \times (\text{ton}/2,000 \text{ lb.}) \times (8,760 \text{ hrs./yr.}) \times (100/(100-99.9)) = 64.82 \text{ tons/yr.}$$

64.82 tons/yr. < 100 tons/yr. (major source threshold for fluoride), so CAM rules are not applicable to fluoride for the MWC units.

¹ Maximum fluoride emissions rate from 2010 stack test

² Operating time is based on 100% availability. Actual operating time is less than 8,760 hours per year.



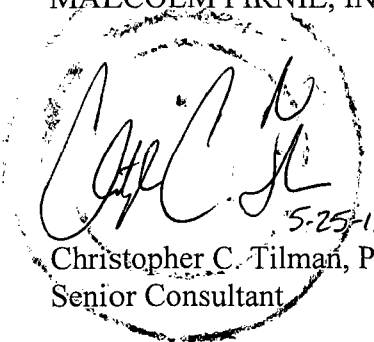
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We trust that the information presented herein, with the attached supporting documents, provides adequate information and clarification to address each of the Department RAI comments and fulfills the requirements for renewal of the Facility's Title V Air Operation Permit.

Should you have any questions or need additional information, please do not hesitate to contact me at (239) 738-3303 or Tamara Stankunas, Earthshine Environmental, Inc. at (813) 545-7067. We look forward to working with you and the Department.

Very truly yours,

MALCOLM PIRNIE, INC.



Christopher C. Tilman, P.E.
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