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BUREAU OF AIR REGULATION

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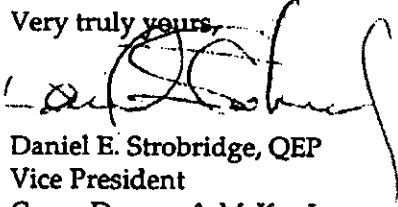
Mr. Hamilton S. Oven, Jr., P.E.  
Administrator, Office of Siting Coordination  
Florida Department of Environmental Protection  
2600 Blair Stone Road, MS 48  
Tallahassee, Florida 32399


Subject: Hillsborough County Resource Recovery Facility Expansion  
Response to Notice of Insufficiency

Dear Mr. Oven:

Enclosed, please find Hillsborough County's responses to the Department's Notice of Insufficiency related to the recently submitted Application for Power Plant Certification for expansion of the Hillsborough County Resource Recovery Facility. To assist in your review of our responses, we have restated each item of insufficiency and formatted them in *bold italics*, with our response immediately following. Further, we have compiled the responses into individual sections related to the agency/division generating the question (i.e. Section 1 - SWFWMD, Section 2 - FDEP Southwest District Air Program, etc.). As always, should you have any questions or require additional information, please do not hesitate to contact us at (813) 281-2900

Very truly yours,

  
Daniel E. Strobridge, QEP  
Vice President  
Camp Dresser & McKee Inc.

  
Jason M. Gorrie, P.E.  
Sr. Project Manager  
Camp Dresser & McKee, Inc.

c: Thomas G. Smith, HCSWMD

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**CDM**

## Section 6 FDEP Tallahassee Air Program Comments

*You requested concurrent processing of an air construction permit/PSD and a request to revise the current valid Title V permit. In order to process the request to revise the Title V permit with the AC/PSD permit, a compliance plan and schedule is required. Also, any air pollutants triggering CAM applicability require a CAM Plan to be submitted with the Title V permit part of the application. You may request that the Title V permit be revised in a separate action at a later date.*

RESPONSE: Comment is noted. Hillsborough County hereby withdraws its request to revise its Title V permit. Instead, the County will pursue revising the Title V permit at a later date.

*In the air permit application form, DEP Form No. 62-210.900 (1)-Form, the authorized representative is Barry M. Boldissar. What is the title of their position?*

RESPONSE: Mr. Boldissar is the Director of the Solid Waste Management Department for Hillsborough County.

### Proposed BACT Standards and Emission Limitations

*On December 19, 2005, the USEPA proposed to lower the air pollutant standards and emission limitations applicable to MWC units for PM, Cd, Pb, Hg, SO<sub>2</sub> and HCl [See 70 Federal Register 75347]. No changes were proposed to the existing federal NO<sub>x</sub> and PCDD/PCDF standards. EPA claims that the proposed regulation reflects the performance levels currently demonstrated by MWC's within the industry. The original standards were published in 1995 with a compliance deadline of 2000. EPA believes that the proposed emission limits can be achieved with existing air pollution control technology used by large MWC's. EPA expects no additional costs or economic impacts to comply with the new standards.*

*In light of this proposal, please reevaluate the proposed BACT standards and emission limitations.*

*Also, would the facility consider complying with the proposed federal requirements earlier than the federally established deadline for such requirements applicable to emissions monitoring and reporting?*

RESPONSE: A side-by-side comparison of the County's proposed BACT emissions limits and the EPA's proposed NSPS/EG standards are included in Appendix M. Please note that the proposed EPA standards were published after the County concluded its BACT analysis. Accordingly, the County did not have the benefit of reviewing the proposed EPA limitations and factoring them into the County's analysis.

It should be recognized that the EPA's new NSPS emission limits have only been proposed; they have not been adopted as final standards. Moreover, like any emission limit proposed by EPA, it is impossible to know precisely what the final standards will be or when the final standards will take effect. Indeed, the Integrated Waste Services Association (IWSA) and many others have asked the EPA to reconsider and revise the proposed emissions limits for MWCs. Given the uncertainty about the final standards, it would be premature to revise the County's BACT analysis before EPA issues its final standards.

With respect to early compliance, the expansion project will constitute a "new" municipal waste combustor and will be regulated pursuant to the NSPS, rather than the Emission Guidelines, when it commences operations. Accordingly, there is no compliance deadline for the new unit; it must be in compliance upon completion of construction. Hillsborough County is willing to consider early compliance for the three existing units at the Facility, but until the final standards are promulgated, the County cannot determine what it must do to come into compliance. For example, the County cannot accurately predict at this time whether it will need to make any capital improvements to the Facility. The County also cannot determine whether, or the extent to which, the County will need to renegotiate its contract with Covanta to obtain a guarantee that Covanta will operate the Facility in continuous compliance with the new EPA standards. Consequently, the County cannot commit to early compliance at this time.

#### CEMs

*As part of the EPA 12/19/05 proposed changes, the use of various CEMs was offered as alternatives to current testing and various parametric monitoring requirements. The use of PM CEMs would be allowed specifically as an alternative to PM testing. As part of this rulemaking, EPA may also include the optional use of available HCl CEMs, Hg CEMs, multimetal CEMs and dioxin/furan semi-continuous monitoring system/CEMs. Has the facility considered any of these CEMs?*

RESPONSE: The EPA's CEMs proposals have been questioned by the IWSA and others. It is impossible to know whether, or the extent to which, EPA's proposals will be changed before EPA adopts its final rules.

EPA's proposed changes to the NSPS would allow, but not require, the use of PM CEMs. The County understands that the rule would allow the installation and use of PM CEMs at any time. Under the provisions of the proposed rule, the County would have to notify DEP one month before starting use of the system, and notify DEP one month before stopping use of the system. The County is not currently considering installing PM CEMs, but may at a future date. The decision to install the CEMs would be based on a cost/benefit analysis. If the cost of installing and maintaining the CEMs could be offset by removing the continuous opacity monitor (COMs), discontinuing the monitoring of flue gas parameters, MWC load and/or activated carbon injection rate, along with the discontinuation of Method 5 stack testing, the County may consider it. However, the PM CEM methods available appear to require substantial Method 5 testing to develop the correlation curves required by

Performance Specification 11 in Appendix B of 40 CFR 60. The County may also consider the advantages of PM CEMs in having compliance be based on a 24-hour average, rather than on the average of three 1-hour stack tests (Method 5) or on a 6-minute average (opacity).

The County considers the possible use of HCl CEMs, multi-metal CEMs, and semi-continuous dioxin/furan sampling more speculative at this time. These are emerging technologies for which EPA has not yet written performance specifications. The preamble to the proposed rule states, "The EPA has not included such provisions in the proposed rules because it appears the current practice of continuous monitoring of SO<sub>2</sub> and PM in combination with the continuous monitoring of operating parameters (boiler load, fuel gas temperature and ACI rate) give a good indication of acid gas, metals and organics emissions from MWC units." The possible use of mercury (Hg) CEMs is discussed in response to the specific comment about Hg CEMs, below.

#### Proposed NO<sub>x</sub> BACT Emission Standard

*A NO<sub>x</sub> emission limitation of 110 ppmvd @ 7% O<sub>2</sub> on a 24-hour average with an ammonia slip of 50 ppmvd is proposed by the applicant as BACT. You proposed a lower 24-hour NO<sub>x</sub> standard than the new Lee County unit resulting in a 27% reduction. However, the Department believes a lower NO<sub>x</sub> standard is technically achievable and cost effective.*

RESPONSE: In response to DEP's comments on both the proposed NO<sub>x</sub> BACT emission limit, and on the proposed ammonia slip concentration, Hillsborough County has conducted additional investigations. The County has evaluated the following:

- A) Whether the proposed NO<sub>x</sub> emission limit of 110 ppmvd @ 7% O<sub>2</sub> on a 24-hour block arithmetic mean basis and with enhanced SNCR could be lower with a longer averaging period, specifically a one-month averaging period;
- B) The lower NO<sub>x</sub> exhaust concentrations achieved by enhanced SNCR at the Brescia, Italy, Waste-to-Energy Facility; and
- C) The trade-off between ammonia slip and NO<sub>x</sub> removal, and the feasibility of adding an ammonia scrubber to the proposed air pollution control equipment train.

Each of these is discussed below. The County's overall conclusion, after very careful consideration of each of the above and a strong interest in doing everything practically possible to lower the NO<sub>x</sub> concentration, is that the proposed limit of 110 ppmvd @ 7% O<sub>2</sub> on a 24-hour basis is BACT.

#### *Longer Averaging Period*

The County understands that the longest averaging period that would be acceptable to DEP and consistent with EPA's federal enforceability guidance would be a one-month block arithmetic average. The County evaluated the possibility of a lower

NO<sub>x</sub> limit for this averaging period, based on the conclusion of the BACT analysis that enhanced SNCR can achieve approximately 60% NO<sub>x</sub> removal efficiency on a continuous basis. Based on the available data for NO<sub>x</sub> inlet concentrations for Units 1-3, it appears that the inlet NO<sub>x</sub> concentrations at the Facility average approximately 300 ppm<sub>dvc</sub>, but vary significantly from 280 to 345 ppm<sub>dvc</sub>, as shown in Appendix N. Given the variable nature of the inlet concentrations, a lower outlet concentration is unlikely to be achieved on a continuous basis, even if a longer averaging period is used.

#### *Evaluation of NO<sub>x</sub> and Ammonia Slip Data from the Brescia Waste-to-Energy Facility*

The MWC facility in Brescia, Italy, has NO<sub>x</sub> control equipment similar to that determined to be BACT for the Facility's Unit 4: Flue Gas Recirculation, Enhanced SNCR, Spray Dryer, and Baghouse. Based on information provided by DEP for the Brescia facility, it appears that the Brescia Facility can control NO<sub>x</sub> using enhanced SNCR to approximately 70 ppm<sub>dvc</sub> (parts per million by dry volume corrected to 7% oxygen). Data from the Brescia Facility for 44 days of combined NO<sub>x</sub> and ammonia slip monitoring (sent to DEP on January 17, 2006), show that over this 44-day period, the NO<sub>x</sub> concentration averaged 48 ppm<sub>dvc</sub>. However, for the same period, the ammonia exhaust concentrations averaged 53 ppm<sub>dvc</sub>, with a range of 15 to 107 ppm<sub>dvc</sub>. These data suggest that, although lower concentrations of NO<sub>x</sub> are achievable with enhanced SNCR, relatively high ammonia slip is necessary to obtain these results. These higher amounts of ammonia slip are likely to produce an opaque ammonium chloride plume from the stack on a routine basis.

A recurring, opaque plume at the Facility would be unacceptable to the public, the County, and the Department. In addition to the environmental impacts associated with the ammonia slip, the aesthetic impacts of the plume would be significant. Given the extensive efforts that are being taken at the Facility to minimize all potential emissions, it would be very inappropriate to operate a part of the APC system in a manner that produces an unattractive, visible plume.

#### *Ammonia Scrubber Evaluation*

Based on a review of the Brescia facility data described above, NO<sub>x</sub> outlet concentrations lower than 110 ppm<sub>dv</sub> @ 7% O<sub>2</sub> are achievable if the associated ammonia slip could be controlled. Consequently, an ammonia scrubber would be necessary on the APC train to control ammonia slip (i.e., 50 ppm<sub>dv</sub>) that would be associated with a lower NO<sub>x</sub> limit.

The County has contacted various suppliers of ammonia scrubber technology and obtained budgetary cost estimates for this technology. Table 1 shows a summary of the estimated costs for ammonia scrubbing equipment. The total annualized cost for the ammonia scrubber is estimated to be approximately \$730,000 per year. This equates to an approximate cost to treat 61 tons of ammonia per year of \$24,000/ton of ammonia removed.

<b>Table 1</b>	
<b>A Summary of Mercury Stack Testing Results</b>	
<b>Description</b>	<b>Wet Scrubber</b>
Estimated Capital Costs	\$3,000,000
Estimated Annualize Capital (7%, 20 yrs, cf = 0.09439)	\$300,000
Estimated Annual O&M Costs (15% of Capital)	\$450,000
<b>Total Annual Cost</b>	<b>\$730,000</b>
Ton of Ammonia Remove per Year	61
<b>Total Cost Per Ton of Ammonia Removed</b>	<b>\$24,000</b>

The installation of ammonia scrubbing technology at the Facility will create significant operational problems. The wastewater generated by the scrubber, like the other wastewater generated at the Facility, will be discharged to the adjacent WWTP. The Hillsborough County Water Department has expressed concern about the resultant ammonia loading to its WWPT, which may require costly wastewater pre-treatment technology to be installed. Additionally, because the ammonia scrubber relies on wet scrubbing technology, a significant vapor plume would be created.

CDM is continuing to work with Martin GMBH to explore SNCR control strategies that may be viable for optimizing urea injection (i.e., "Smart SNCR").

Ammonia Slip

*The new proposed unit at Lee County will be equipped with a selective non catalytic reduction system designed not to exceed a maximum NO<sub>x</sub> emission rate of 150 ppmvd corrected to 7 percent O<sub>2</sub> on a 24-hour block arithmetic mean as well as 110 ppmvd corrected to 7 percent O<sub>2</sub> on a 12-month rolling average and designed to meet a 15 ppmvd @ 7% O<sub>2</sub> ammonia slip on a 24-hour average. You proposed an ammonia slip of 50 ppmvd @ 7% O<sub>2</sub>. The lower ammonia slip permitted at Lee appears to be achievable. Please comment as to why a higher ammonia slip is being proposed.*

RESPONSE: The County acknowledges that an ammonia slip limit of 20 ppmdv @ 7% O<sub>2</sub> is likely achievable at NO<sub>x</sub> levels of 110 ppmdv @ 7% O<sub>2</sub>. See response to comment above.

Hg BACT Emission Standard

*A higher mercury standard was proposed than what the Lee County new unit is permitted. The Lee County standard for mercury is 28 µg/dscm, while you proposed a limit of 70 µg/dscm. Please comment as to why a higher limit is being proposed.*

RESPONSE: As discussed with the Department in December, the County wishes to revise its application as it relates to the proposed emission limitation for mercury. On Page 2-7, Table 2-3, and on Page 3-54, the proposed BACT emission limit for Hg is hereby revised to 28 µg/dscm or 85% control.

Hg CEMs

*In the U.S., stationary sources will be purchasing, installing and operating mercury CEMs to comply with the recently proposed federal Clean Air Mercury Rule (CAMR). Mercury CEMs are becoming commercially available. Have you considered the purchase, installation and operation an Hg CEMs?*

RESPONSE: The County will follow the development of mercury CEMs, and will consider installing them in the future, but the County is not currently planning to include mercury CEMs for Unit 4. EPA has conducted a study of mercury CEMs that suggests that more development is needed before they can be reliably applied to MWCs (Midwest Research Institute, 2003, Mercury CEMs Field Observations: September – December, 2002). Among other things, this study concluded:

- Operating experience for mercury CEMs is based on their use at European power plants, which have much more extensive air pollution control systems than U.S. power plants, and much lower SO<sub>2</sub> and NO<sub>x</sub> emissions. The European power plants present a very different gas matrix to the mercury CEMs than U.S. plants.
- Mercury CEMs are adversely affected by SO<sub>2</sub> exposure, and by build-up of ammonia salts from ammonia slip. All of the analyzers evaluated also showed some precipitate build-up of reddish-colored deposits believed to be selenium, which appear to adsorb elemental mercury and thus affect the reliability of the CEMs.

Hillsborough County recognizes that significant research is being conducted on Hg CEMs in conjunction with the implementation of the recently promulgated Clean Air Mercury Rule (CAMR). The County believes it is prudent to wait until the reliability of mercury CEMs is demonstrated for MWCs and the MWC flue gas environment, before the County adopts the use of this technology.

Mercury Stack Testing

*Please provide a summary of stack test results from other resource recovery units in Florida, specifically from the 3 existing HCRRF units and from the Pasco and Lee County units.*

RESPONSE: Table 2 shows a summary of the mercury stack testing for 2001 through 2005 for each unit at Hillsborough County, Pasco County, and Lee County.



**Table 2**  
**A Summary of Mercury Stack Testing Results**

Date	Unit	Lee County			Pasco County			Hillsborough County		
		In	Out	%	In	Out	%	In	Out	%
2001	1	198	23	87	674	13	96	226	9.4	96
	2	119	28	76	219	12	95	145	5.8	96
	3	-	-	-	190	6	97	243	9.2	96
2002	1	240	12	95	109	12	88	142	6.5	95
	2	130	11	92	149	10	94	149	8.1	95
	3	-	-	-	144	3	96	149	8.1	95
2003	1	127	26	79	118	3	97	221	20.9	90
	2	257	31	87	143	5	96	156	8.01	95
	3	-	-	-	247	4	97	130	14.1	89
2004	1	173	23	87	127	13	87	145	14.5	90
	2	94	15	84	96	12	87	187	18.1	90
	3	-	-	-	116	7	93	106	18.9	82
2005	1	166	36	77	160	4	96	141	23	82
	2	183	14	91	101	8	92	77	21	72
	3	-	-	-	88	5	94	155	18	86

**Air Pollution Control Technology – Manufacturer Information**

*Please provide general manufacturer information for the BACT technology you propose specifically, the spray dryer absorber, a fabric filter baghouse, an activated carbon injection system and the "enhanced SNCR" system consisting of SNCR and flue gas recirculation.*

RESPONSE: Please refer to Appendix C and Appendix D for general information related to the proposed APC equipment.

Process/Operations Flow Diagrams

*Please provide a general process/operations flow diagram for the air pollution control equipment showing the layout of air pollution control equipment, flue gas streams, etc.*

*Please provide a process flow diagram, preferably design plans for the new proposed unit #4.*

RESPONSE: As indicated earlier, a list of preliminary drawings and specifications have been developed to estimate the cost of the project. The specifications for the APC equipment in Unit 4 were prepared as part of the preliminary design. The APC equipment that will be provided for the proposed Unit 4 is described in Appendices C and D. The proposed expansion will not proceed to the final design phase until the PPSA certification is issued.

Proposed Emission Reductions for Units 1-3

*As part of this permit application for the proposed new Unit #4, you propose to lower the existing allowable air pollutants standards and limitations for Units #1, 2, and 3. The proposed reductions cannot be considered as part of the application of BACT to Unit #4. Are these requested reductions used in the modeling analyses completed in this application?*

RESPONSE: The Application does not contain a request to lower the existing allowable emissions limits for Units 1, 2 and 3, and no reductions for these units were included in the dispersion modeling. This issue was discussed, however, during the County's meeting with DEP on December 19, 2005. The context of the discussion related to the NOx BACT evaluation for Unit 4. DEP pointed out at the meeting that NOx reductions at the existing units could not be considered as part of the BACT determination for Unit 4, so this idea was not pursued any further.

Air Modeling Review Comments

- 1. In the application, an analysis of soil and vegetation was done with respect to deposition. To complete the Additional Impact Analysis, are there any particularly sensitive species impacted from pollutants being released by the proposed facility expansion? Please include wildlife in your analysis.*

RESPONSE: No sensitive plant or animal species will be adversely affected by the operation of the Facility. The impacts to wildlife due to the Facility project were evaluated in Appendix 14 of Volume III of the Application, in a report entitled Human Health and Ecological Impact Analysis. The analysis evaluated the potential impacts to the natural communities of the Palm River and freshwater ponds. The assessment focused on three indicator species (i.e., aquatic life, the wood stork, and the river otter) that were considered to be at greatest risk based on habitat use, exposure potential and population status. These indicator species were selected because they represent three broad classes of wildlife (i.e., aquatic life, piscivorous birds and piscivorous mammals). The ecological risk assessment showed that the hazard quotients for aquatic life and

the selected terrestrial species were all less than the target level of 1.0, by at least a factor of 25. These results indicate that aquatic and terrestrial wildlife are not expected to be at risk from adverse effects of exposures to chemicals released during the operation of the Facility.

2. *In Section 6.2.5 of the application, it states that "FDEP guidance for calculating the PM<sub>10</sub> 24-hour average is to use the highest of the second highest results over one year of meteorological data, or the highest of the sixth highest results over five years of meteorological data." Although the highest sixth-high can be used to determine compliance with the PM<sub>10</sub> 24-hour NAAQS, the 24-hour PM<sub>10</sub> Significant Impact Analysis is compared to the highest second-high concentration. Please confirm that the resultant concentrations of the PM<sub>10</sub> 24-hour Class II Significant Impact analysis was compared to the high second-high, not the high sixth-high or submit new results based on the correct guidance.*

RESPONSE: The PM<sub>10</sub> 24-hour concentrations presented in Table 6-10 for comparison with the PSD Class II levels were incorrectly based on high sixth-high concentrations rather the high second-high. However, the difference between the two values for Unit 4 only was less 0.1 µg/m<sup>3</sup> (0.58 µg/m<sup>3</sup> compared to 0.59 µg/m<sup>3</sup>) and less than 0.01 µg/m<sup>3</sup> for the entire Facility. Thus, Unit 4 and the Facility will comply with the applicable PSD Class II increments

3. *Does the proposed expansion include any increases of fugitive emissions? Is there an increase in truck traffic that would cause an increase in particulates?*

RESPONSE: Fugitive sources (i.e., storage silos, material processing) are expected to have insignificant emissions of PM (less than 1 ton/yr), as discussed above. It is not expected that there will be any fugitive sources of other criteria pollutants. Vehicular traffic is considered a mobile source, and is not addressed as part of the facility. Because fugitive emissions are required to be kept at minimum levels by 40 CFR 50.55b, they will be *de minimus*.

4. *The application states that PM originates from three sources with regard to the processes of the facility. Are all sources of PM accounted for in the modeling?*

RESPONSE: Other sources of PM (i.e., storage silo's, material handling) are addressed in the text as insignificant sources and not included in the modeling.

5. *Please provide a text file detailing the contents of the modeling folders. For example, please indicate the difference between "ISCSILs-Revised 0905" and "ISCSILs-Revised 0905-25m." Please provide or locate in the application any background information pertaining to the folders named "Bay Dep" and "HRA Dep."*

RESPONSE: "ISCSILs-Revised 0905" contains all of the modeling for SIL using a first attempt coarse grid. The folder titled "ISCSILs-Revised 0905-25m" contains the identical modeling with a further refined 25-meter-spaced receptor grid

placed over the maxima found in the original modeling to further attempt to hone the maximum predicted concentrations.

Under this heading, modeling was divided into ALL (for all units), and New (for the new boiler unit). Under each of the aforementioned folders, modeling was further subdivided into PM (for particulates) and Others (for all other criteria pollutants).

Modeling included in the "Bay Dep" folder was undertaken to identify NO<sub>x</sub> loading to ocean water in the greater Tampa Bay area. Only the new boiler was modeled, and NO<sub>x</sub> was the only pollutant of interest.

Modeling included in the "HRA Dep" folder was performed for the human health risk analyses, and performed as requested by the risk assessor using applicable guidance. Modeling was divided into ALL units and the new unit alone. For all units, runs were performed using inputs specifically to account for either particulate deposition or gaseous deposition.

6. *Please verify the "Source" inputs with the "Description" statements in the modeling. For example, in the file named "ISCSILs-Revised0905\New\PM\U4PM1991.isc," one of the two sources is described as "MWC Stack All Units" when the source inputs are for Unit 4 only.*

RESPONSE: The Label to which the comment refers is a result of a manual entry in the LAKES environmental software. This source comment was not removed by the software during revisions to the modeling.

Sources included accurately reflect the model I/O filename. For example, "U4....inp" are inputs modeling only the new boiler unit. "ALL-....inp" are inputs modeling all boilers combined. Where PM is modeled, the cooling towers are also included.

7. *In the application, Table 6-3 lists twelve buildings for BPIP. In the modeling, eleven buildings are included. Please correct the modeling.*

RESPONSE: A previous version of the BPIP files was inadvertently forwarded with the application. The correct BPIP I/O files (showing 12 buildings) are provided as Appendix O.

8. *Please submit a plot plan. The UTM coordinates for Unit 4 used in the modeling cannot be verified without a plot plan.*

RESPONSE: The Plot Plan showing the survey coordinates is included in Appendix P.