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June 8, 2006

Ms. Trina Vielhauer  
Bureau Chief  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, FL 32399

Subject: Hillsborough County Resource Recovery Facility  
DEP File No. 0570261-007-AC;  
Permit No. PSD-FL-369

Dear Ms. Vielhauer:

On behalf of Hillsborough County ("County"), CDM is submitting the following comments about certain aspects of the draft PSD permit ("Draft Permit") that the Department of Environmental Protection ("Department" or "DEP") prepared for Unit 4 of the County's Resource Recovery Facility ("Facility"). We are submitting these comments now because we want to promptly address and resolve these larger issues with the Department. We may submit additional comments about other issues within the 30 day period for public comments.

**SNCR Operating Characteristics vis a vis NOx and NH3 emission limits**

The County agrees with the Department's goal to minimize NOx and NH3 emissions from the Facility and is prepared to work with the Department to achieve the lowest practical NOx and NH3 emission limits in the USA. The emission limits we applied for in our application would have been the lowest emission limits in the USA. We are very concerned that the limits imposed in the Draft Permit may promote undesirable secondary effects. These are briefly described below.

The County will need to inject urea at an aggressive rate if the Facility is to comply with the Department's proposed 90 ppmvd emission limit for NOx. Increasing the urea injection rate is likely to result in increased levels of ammonia slip, which may exceed 10 ppmvd.<sup>1</sup> Under certain operating and atmospheric conditions, the ammonia slip may produce a highly opaque plume of ammonium chloride, which may violate the 10% opacity limit. Even if the plume

<sup>1</sup> The emissions data for the MWC facility in Brescia, Italy, show that there can be significant levels of ammonia slip when facilities try to reduce NOx emissions to extremely low levels. The data for the Brescia facility were provided to the Department on February 28, 2006, in the County's response to the Department's Notice of Insufficiency.



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does not constitute a permit violation, the plume is likely to generate negative publicity and ill will for the Facility, the County, and the Department. Other operating experience with SNCR to produce NOx levels as low as that contemplated by the Draft Permit indicates that there will be other undesirable side effects such as plume formation and / or ammonia vapors in the workplace.

The County will properly design, construct, and operate its Facility to minimize the potential for these undesirable secondary effects. However, the Department should note that the Facility expansion constructor/operator does not guarantee these emission limits under the present construction and service agreements. Equally important is our understanding that FuelTech, a leading international supplier of SNCR systems, will not guarantee simultaneous compliance with the draft permit limits for NOx and NH3 for the Facility expansion. Further, it is our understanding that FuelTech will not guarantee the absence of an ammonium chloride plume because such plume is dependent, in part, upon local atmospheric conditions. If undesirable secondary effects occur during the initial operations of the Facility, the County will try to eliminate them by optimizing the Facility's operations. However, if the County uses its best efforts at every step of the process and still cannot prevent plumes or other undesirable effects from occurring on a persistent or regular basis, the County will need to obtain relief from the conditions in the Draft Permit without mandating the installation of additional air pollution control equipment.<sup>2</sup>

We recognize that the Department is not overly concerned about the potential for plumes or other undesirable secondary effects to occur because the Department is confident the County can simultaneously comply with all of the emissions limits and other conditions in the Draft Permit. Given the Department's confidence, the Department should grant the County's request for relief, because there presumably will be little risk for the Department that the relief mechanism will actually be used in the future. The Department also should grant the County's request for relief because, even if the likelihood of a problem is small, the County and the Department could experience significant difficulties and headaches if the Facility actually experiences problems with plumes.

In order to advance this project and the joint interest in having the lowest emissions from a new municipal waste combustor, the County proposes that if compliance with the Draft Permit limits for NOx and NH3 in Specific Condition 14 and 15 (NOx: 110 ppmdv as a daily average and 90 ppmdv as a 12 month rolling average, and NH3 10 and 15 ppmdv) creates

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<sup>2</sup> An ammonia scrubber could be installed to reduce the ammonia slip, but the County's analyses demonstrate that an ammonia scrubber is not cost-effective or appropriate in this case.



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unacceptable downstream effects (such as ammonia slip above permit limits, an ammonium chloride plume, ammonia vapor from ash management, etc.), then these NO<sub>x</sub> and NH<sub>3</sub> limits should be subject to change up to maximum values of 110 ppm<sub>dv7</sub> for NO<sub>x</sub> and 50 ppm<sub>dv7</sub> for NH<sub>3</sub>, and the appropriate time-weighted average (for NO<sub>x</sub>) should be established based on field experience. This approach would enable the Facility to aggressively pursue the lowest possible NO<sub>x</sub> emission limit while also having the ability to avoid an adverse operating condition.

The rationale for this proposed change includes:

- The Department's BACT Technical Evaluation relied heavily on SNCR operating data from Brescia. While these data demonstrate that lower NO<sub>x</sub> emissions (90 ppm<sub>dv7</sub> or less) can be achieved, the coincident ammonia slip is greater than that allowed by the Draft Permit and equally as important, other secondary effects such as a visible stack plume, workplace vapors, and NH<sub>3</sub> emissions above the proposed limit were apparently not considered by the Department.
- A 12-month rolling average of 90 ppm<sub>dv7</sub> does not provide true operating flexibility as suggested in the Department's "Technical Evaluation and Preliminary Determination". If we consider a basic situation (where the facility average is 90 ppm<sub>dv7</sub>), any day the Facility operates at 110 ppm<sub>dv7</sub> would require an offsetting day's operation at 70 ppm<sub>dv7</sub> just to average 90 ppm<sub>dv7</sub>. In its application the County mentioned the issues of simultaneous compliance with NO<sub>x</sub>, NH<sub>3</sub> and ambient phenomena when operating to meet low NO<sub>x</sub> emission limits. These issues are compounded by operating at 70 ppm<sub>dv7</sub> NO<sub>x</sub>. This situation is further complicated by the prudent need to have a compliance margin (approximately 10 ppm<sub>dv7</sub>) below the not-to-exceed permit limit.
- The PSD increments used throughout the County's application yielded results in full compliance with State and Federal standards. Therefore, Facility operation at or below these increments would have a smaller impact than that predicted in the application and as a result, a permit modification would not be required. Naturally, the resulting NO<sub>x</sub> emissions would also be the lowest in the USA.

Accordingly, the County respectfully requests the Department to amend the Draft Permit by adding the following language to the end of Specific Condition B.15:

The County may request relief from the requirements in this Specific Condition B.15 if:  
(a) the County demonstrates that it has taken reasonable measures to optimize the



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operation of Unit 4; and (b) notwithstanding the County's efforts, compliance with the 90 ppmvd NOx emission limit (12 month rolling average) results in the creation of unacceptable downstream affects such as ammonia vapors in the workplace from ash, a detached plume or other undesirable secondary conditions or effects. The maximum relief available from the Department is defined by the PSD increments (as TPY) in the County's application and the associated concentration as ppmvd<sup>7</sup>. The Department will grant relief in appropriate cases, but the Department reserves its exclusive right to determine whether any request for relief should be granted, granted subject to conditions, or denied.

### **Ammonia Slip**

Specific Condition B.14 limits ammonia slip to 10 ppmvd when Unit 4 is operated at 195 MMBtu/hr and 15 ppmvd when Unit 4 is operated at 260 MMBtu/hr. It is our understanding that the Department derived these emission levels from the preliminary SNCR equipment specifications prepared by FuelTech.

The FuelTech specifications should not be used as permit limits in this case because the specifications were based on a NOx emission rate of 110 ppmvd. Since the Department has imposed a NOx emission limit of 90 ppmvd, the Facility will need to inject more urea than FuelTech anticipated and the SNCR specifications will need to be revised. Increasing the urea injection rate is likely to cause increased ammonia slip.

We respectfully request the Department to reconsider the proposed ammonia slip limitations and adjust them in light of the proposed 90 ppmvd NOx emission level. Please recognize that, to achieve an annual average of 90 ppmvd, it will be necessary to operate at even lower levels to offset the emissions at times when the NOx levels are above 90 ppmvd.

### **Quarterly Stack Testing for Mercury**

During our meeting on May 11, 2006, the County agreed to install a continuous emissions monitor (CEM) for mercury within two years after Unit 4 becomes operational. However, the County was surprised to see in the Draft Permit that the Department also wants the County to conduct quarterly stack tests for mercury until such time as the mercury CEM is utilized for compliance purposes (see Specific Condition B.19). We believe the quarterly testing is not necessary or appropriate in this case.

Mercury emissions data from several municipal waste combustors were provided to the Department in our February 28, 2006 Response to the Department's Notice of Insufficiency.



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The data show that mercury emissions from municipal waste combustors routinely are controlled to levels less than 28 ug/dscm. Indeed, the stack test data for the three existing units at the County's Facility during 2000 through 2002 ranged from 5.41 to 9.70 ug/dscm. Given the existing stack test data, there is no reason to believe mercury emissions from Unit 4 will exceed 200 lbs/year (i.e., the PSD threshold).

The County's application for a PSD permit contains an extremely conservative analysis, which is intended to over-estimate the potential emissions and impacts from Unit 4. This worst case analysis shows that, theoretically, the mercury emissions from Unit 4 could exceed the PSD threshold. As a practical matter, however, the actual emissions from Unit 4 are not expected to be nearly as large as the hypothetical numbers that were used in the County's worst-case analysis. As noted on page 4-1 of the PSD application, the "estimated emissions rates for Unit 4 were based on 115 percent of design heat release rate (287.5 MMBtu per hour) firing 660 tons per day (tpd) of waste at 5, 227 Btu per pound and operations of 24 hours, 365 days per year." Thus, the calculated emissions rates in the PSD application for all pollutants are based on a hypothetical scenario in which Unit 4 is operated on a continuous basis, year-round, at its maximum capacity. The calculated emission rates for mercury also are extremely conservative. As shown on page 4-8 of the PSD application and Table A-2 of Appendix A, the emission rates for mercury were derived by calculating a maximum inlet concentration (0.89 mg/dscm) and then assuming that the outlet concentration will reflect an 85% reduction in the inlet mercury levels. This calculation is appropriate for a PSD applicability determination and an estimation of potential impacts, but the results should be used with caution. This conservative calculation implies that the mercury emissions from Unit 4 will continuously be in the range of 134 ug/dscm, but the stack test data show that the actual emissions are likely to be less than 10 ug/dscm during most, if not all, conditions.

In any event, quarterly stack tests for mercury should not be required in this case. The County has agreed to incur the expense associated with the installation and operation of a CEMS for mercury. The County should not be required to incur the additional expense of conducting quarterly stack tests for mercury on a permanent basis. Accordingly, the County respectfully requests the Department to eliminate the requirement in the Draft Permit for quarterly stack testing. If this proposal is unacceptable to the Department, the Department should amend the Draft Permit to state that the quarterly stack testing can be eliminated when the County installs and begins to operate the CEMS for mercury.



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**Conclusion**

Thank you for your prompt consideration of these issues. We look forward to working with the Department and resolving these issues in a mutually acceptable manner. Please call me at (813) 281-2900 if you have any questions.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Jason M. Gorrie', written over a horizontal line.

Jason M. Gorrie

Principal

Camp Dresser & McKee Inc.