From: Liu, Wei-Ting
To: Attalla, Yousry
Cc: Hauck, Paul
Subject: (Archived w/ Attachments) Steam Flow Tables
Date: Thursday, September 13, 2012 11:23:30 AM
Attachments: Steam Flow.xlsx
Combined Average Annual Emissions for Units 1 2 3.xlsx

Hello Joe,

Per our phone conversation on 9/12/12, here are the Specific Steam to Waste Ratios and analysis on the combined average annual emissions.

Table 4 – Specific Steam to Waste Ratios for HCRRF

Month	Days	Hours Operation Total for 1, 2, 3	Average Steam Flow	Waste Flow	Waste Flow	HHV	Heat Input
			lb/hour	ton/month	ton/day	Btu/lb	MMBtu/hour
Sep-11	30	1812	279,382	26,729	891	4928	366
Oct-11	31	2015	291,134	28,887	932	5307	412
Nov-11	30	2140	276,033	28,845	961	5420	434
Dec-11	31	2200	292,162	30,927	998	5489	456
Jan-12	31	1800	291,779	25,520	823	5420	372
Feb-12	28	2088	277,624	28,446	1,016	5409	458
Mar-12	31	1978	289,167	28,054	905	5382	406
Apr-12	30	2160	285,820	30,584	1,019	5360	455
May-12	31	2135	275,318	29,838	963	5276	423
Jun-12	30	2094	278,987	32,053	1,068	4759	424
Jul-12	31	2232	268,255	31,756	1,024	4871	416
Aug-12	31	1892	277,696	29,485	951	4744	376
Average / Unit			93,982	NA	321	5197	139

A value of 93,982 lb steam/hour equates to approximately 321 ton/day of waste throughput at a fuel heat content of 5197 Btu/lb. Assuming the maximum allowed 460 ton/day of waste throughput, then the production rate would be approximately 135,000 lb steam/hour. A similar exercise using the steam to heat ratio yield a steam production rate of 101,400 lb steam/hour.

The current capacity limitation of 102,000 lb steam/hour on a 4-hour block arithmetic average is unlikely to be exceeded.

Table 3 – Combined Average Annual Emissions for Units 1, 2, 3 – HCRRF Municipal Waste Combustors (2007-2011)

Sum of Emissions from Units 1, 2, 3

Pollutant	CO	NOX	SO	PM	Lead	Hg	HCl
Average (tons/year)	45	659	7	2.1	0.009	0.011376	17.50167
3% of average	1.36	19.78	0.22	0.06	< 0.000	<0.000	0.525
Significant Emission Rate	100	40	40	25	0.6	0.1	40

I've also attached the spread sheet from which I've put together the steam flow and the waste processed for Units 1, 2, & 3. I've also recently requested AORs from the Department for Hillsborough for the table "Combined Average Annual Emissions." Both files has my additional notes, consideration and data reduction. This is for your reference.

If you have any questions, feel free to call me.

Sincerely,

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