

# Alexandria/Arlington Resource Recovery Facility



## Fiscal Year 2013 Annual Operating Report

Prepared by:



HDR Engineering, Inc.  
5426 Bay Center Drive, Suite 400  
Tampa, Florida 33609



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## Definition of Abbreviations & Acronyms

<u>Abbreviation/Acronym</u>	<u>Definition</u>
APC	Air Pollution Control
Apr	April
Aug	August
Avg	Average
Btu	British thermal unit
CAAI	Covanta Alexandria Arlington, Inc.
CEMS	Continuous Emissions Monitoring System
CO	Carbon Monoxide
Dec	December
Feb	February
FMG	Facility Monitoring Group
FY	Fiscal Year
gal	Gallon
GAT	Guaranteed Annual Tonnage
HCl	Hydrochloric (Hydrogen Chlorides)
HDR	HDR Engineering Inc
ID	Induced Draft
Jan	January
Jul	July
Jun	June
klbs	Kilo-pounds (1,000 lbs)
kWhr	Kilowatt hours (1,000 watt-hours)
lbs	Pounds
LOA	Letter of Agreement
Mar	March
Max	Maximum
May	May
Min	Minimum
MSW	Municipal Solid Waste
MWhr	Megawatt hours
No	Number
NOV	Notice of Violation
Nov	November
NO <sub>x</sub>	Nitrogen Oxide
Oct	October
OSHA	Occupational Safety and Health Administration
PDS	Potomac Disposal Services
ppm	Parts per million
ppmdv	Parts per million dry volume
PSD	Prevention of Significant Deterioration
Q1	First Quarter
Q2	Second Quarter
Q3	Third Quarter
Q4	Fourth Quarter
RE	Reportable Exempt
RNE	Reportable Non-Exempt
SDA	Spray Dryer Absorber
Sep	September
SO <sub>2</sub>	Sulfur Dioxide
TCLP	Toxicity Characteristic Leaching Procedure
VADEQ	Virginia Department of Environmental Quality
WL	Warning Letter
yr	Year
YTD	Year to date



# Alexandria/Arlington Waste-to-Energy Facility

## Fiscal Year 2013 Operating Report

### 1.0 Purpose of Report

HDR Engineering, Inc. (HDR) was given authorization by the Facility Monitoring Group (FMG) to conduct quarterly inspections and provide quarterly monitoring reports regarding the operation and maintenance of the Alexandria/Arlington Waste-to-Energy Facility (Facility) for the first half of the 2013 calendar year. This report is prepared for the fourth quarter of the 2013 fiscal year and summarizes Facility operations between April 1, 2013 and June 30, 2013, as well as the entire fiscal year. This report identifies the fiscal year beginning on July 1, 2012, as FY13, and the quarter beginning on April 1, 2013 as Q4FY13.

This report is based upon the experience HDR has in the waste-to-energy industry, upon site observation visits and previous reports provided by HDR, and upon data provided by Covanta Alexandria / Arlington, Inc. (CAAI), the Facility operator.

### 2.0 Executive Summary

CAAI operated the Facility in an acceptable manner and in accordance with established waste-to-energy industry practices during Q4FY13. The operation of the Facility, maintenance, safety, and overall cleanliness continue to be above average. Environmental performance was very good with no reportable environmental excursions throughout the quarter.

During Q4FY13, the Facility experienced six (6) instances of unscheduled downtime for the boilers totaling 148.1 hours, and one (1) instance of unscheduled downtime for the turbine generators totaling 6.0 hours. No scheduled downtime was experienced by the boilers or turbine generators during the quarter. The boilers experienced no standby time, and the turbine generators experienced four (4) instances of standby time totaling 53.7 hours during the quarter. A detailed listing of unit downtime is provided in Section 5.1 of this report.



Average waste processed during the quarter was 1,051 tons per day, or 107.8% of nominal facility capacity. Waste deliveries averaged 1,054 tons per day, which is 0.3% higher than the burn rate. The capacity utilization of 107.8% compares favorably to industry averages, which are generally in the 88% to 92% range.

On an annual basis, average waste processed was 952.8 tons per day, or 97.6% of nominal facility capacity of 975 tons per day. Waste deliveries averaged 953.5 tons per day, which is 0.1% less than the annual burn rate. The annual capacity utilization of 97.6% compares very favorably to industry averages.

Performance trends for various measurements are presented in Section 4. In general, the Facility continues to demonstrate reasonable consistency in month to month performance throughout the most recent three year period tracked for detailed comparisons.

During the quarter, MSW processed increased 7.8% from the corresponding quarter in FY12; steam production increased 6.2%, and electricity generated (gross) increased 7.0% from the corresponding quarter in FY12. The increase in steam and gross electrical generation in Q4FY13 as compared to Q4FY12 is attributable to the increase in MSW throughput.

During FY13, MSW processed decreased 0.2% from FY12; steam production increased 1.6%, and electricity generated decreased 0.8%. The decrease in annual processed waste is attributable to increased downtime experienced by the boilers which totaled 1,385.3 hours (unscheduled, scheduled, and standby) in FY13 as compared to 1,013.6 hours (unscheduled, scheduled, and standby) experienced in FY12. The decrease in electrical generation is attributed to increased downtime experienced by the Turbine Generators which totaled 979.2 hours of downtime (unscheduled, scheduled, and standby) in FY13 as compared to 59.6 hours of downtime (unscheduled, scheduled, and standby) experienced in FY12. The decreased electrical generation was offset by the higher (1.0%) waste heating value experienced by the Facility in FY13 as compared to FY12.



### **3.0 Facility Inspection and Records Review**

In June 2013, HDR met with the Facility management and other plant personnel to discuss Facility operations and maintenance, acquire Facility data and reports, perform an independent visual inspection of the operating Facility, photograph areas of interest, and perform a review of recent Facility activity. This visit was coordinated with the scheduled FMG Meeting. At the time of the visit, HDR reviewed CAAI records, discussed performance issues with CAAI staff, and provided a verbal report and performance statistics. HDR maintains a running tabulation of the status of corrective actions and plant performance trends. CAAI provides the following documents for each month:

- Facility Monthly Operating Reports
- Monthly Continuous Emissions Monitoring System (CEMS) Reports

Table 1 summarizes maintenance, repair, and plant condition issues reported during this and prior audit reporting periods. An “A” indicates an issue of the highest priority and worthy of immediate attention. Such items are usually safety or operability issues. A “B” indicates that the issue needs to be dealt with as quickly as possible, but is not urgent. These items will usually result in a process improvement or will help avoid future “urgent” issues. A “C” indicates that the issue should be dealt with at the earliest convenience, but is not a priority issue. This category might include issues related to aesthetics, non-urgent maintenance, or housekeeping improvements which are not safety related.



**Table 1: Summary of Audit Report Deficiencies**

\*A is highest priority & demands immediate attention; B needs attention, but is not urgent; C can be addressed at earliest opportunity & is not urgent.

Item No.	Audit Report Deficiencies	Issue Reported	Priority *	Resolution/Status	Date Resolved	Open / Closed
1	Spider cracking at scale entry area	July 2010	C	Repair		Open
2	Spalling concrete at municipal scale platform. Note further deterioration observed during the June 2011 inspection.	July 2010	C	New steel decking installed on south scale. CAAI reports that north scale is to be replaced next year.	July 2013	Closed
3	Tipping Floor siding damaged	July 2012	C	Repair siding		Open
4	Pothole at truck entry roadway	May 2012	C	Repair		Open
5	Stormwater debris stops (Typical of 2) not in proper position (See Figure 1)	June 2013	C	Re-position stormwater debris stops. Replace if necessary.		Open
6	Overgrown foliage obstructing view of sign at the southeast corner of entrance road (See Figure 2)	June 2013	C	Cut foliage so all signs are visible		Open



## 4.0 Facility Operations

Monthly operating data provided by CAAI indicates that 95,680 tons of MSW were processed during Q4FY13, and a total 95,953 tons of MSW including 955 tons of Special Handling Waste were received. Total ash production during the quarter was 19.826 tons, which represents 20.7% of the waste processed. The average uncorrected steam production rate for Q4FY13 was 3.0 tons<sub>steam</sub>/ton<sub>waste</sub>, and 1.5% less than the corresponding quarter in FY12.

On an annual basis, 347,790 tons of MSW were processed during FY13, and a total of 348,022 tons of MSW and 2,665 tons of Special Handling Waste were received. Total ash production during FY13 was 73,446 tons, which represents 21.1% of the waste processed. The average uncorrected steam production rate for FY13 was 3.1 tons<sub>steam</sub>/ton<sub>waste</sub>, and 1.8% higher than the corresponding period last year.

**Chart 1: Tons of Waste Processed**

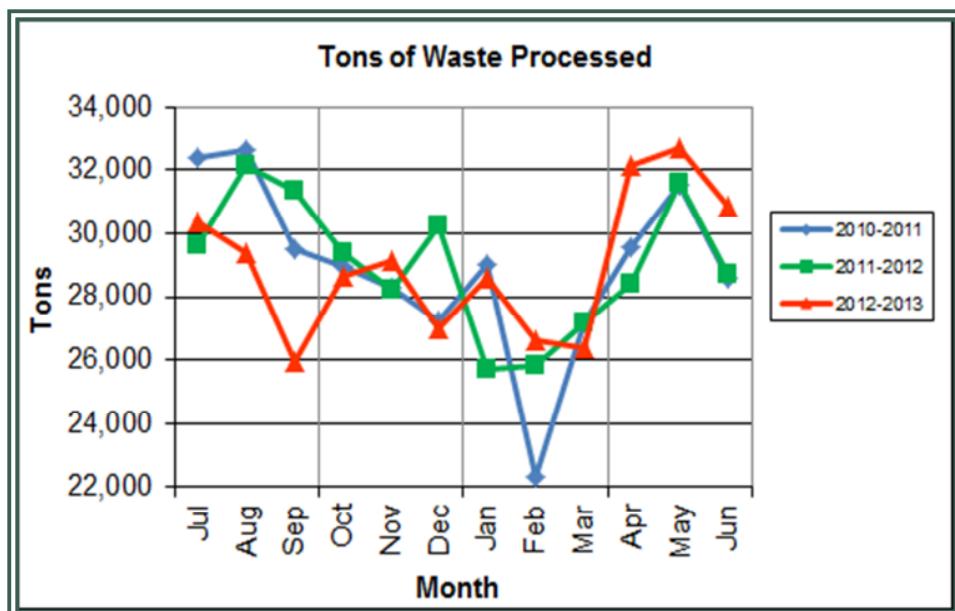


Chart 1 illustrates that Q4FY13 waste processed was higher (7.8%) than the corresponding quarter Q4FY12. CAAI reported that 456 tipping floor/MSW inspections were conducted during the quarter and four (4) notices of violation (NOV) were issued for the following:



- April – Two (2) NOV were issued for unacceptable waste and construction demolition debris
- May – One (1) NOV was issued for unacceptable waste
- June – One (1) NOV was issued for opening the tailgate prior to entering the tipping floor

**Chart 2: Tons of Ash Produced per Ton of Waste Processed**

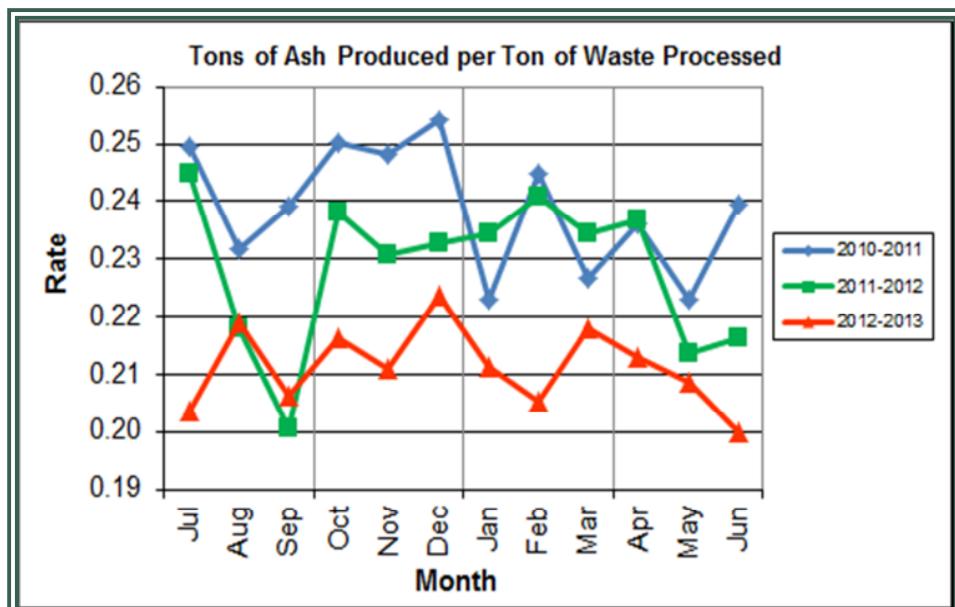


Chart 2 illustrates that ash production rates in Q4FY13 are lower (10.6%) at 20.7% of processed waste, compared to the corresponding quarter in FY12 when the ash production rate was 22.2% of processed waste.

The annual ash production rate for FY13 was lower (7.4%) at 21.1% of processed waste, compared to FY12 when the annual ash production rate was 22.8% of processed waste. The significant decrease in ash production, which began in May 2012 is attributed to the installation of the “semi-dry” ash discharger spray system, and represents less moisture in the ash residue shipped to disposal.



**Chart 3: Ferrous Recovery Rate**

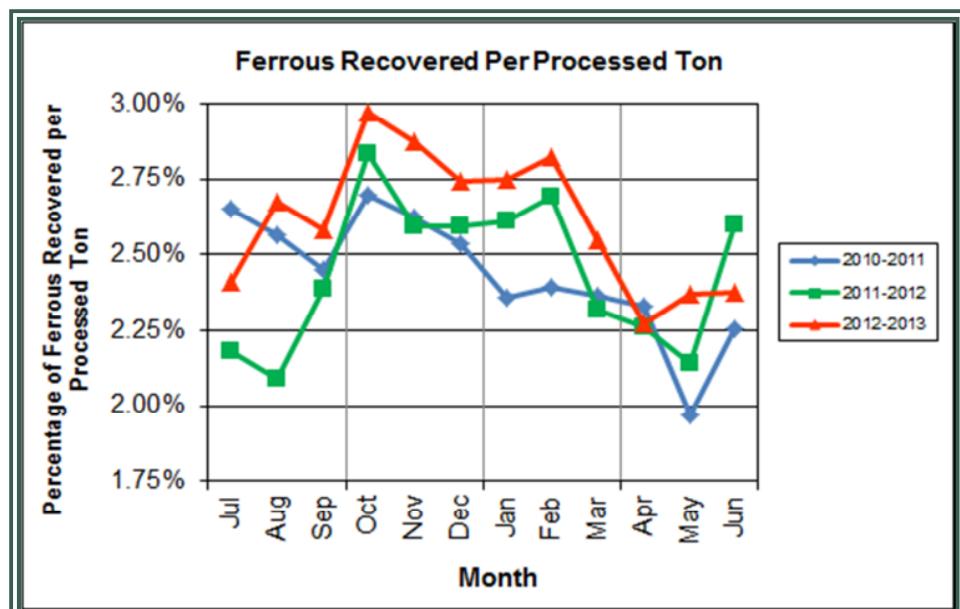
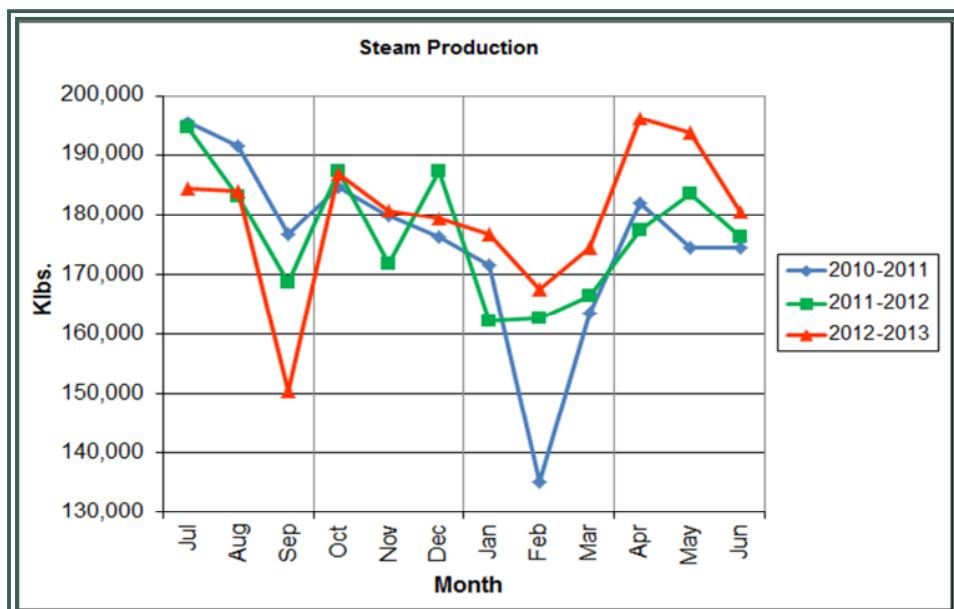


Chart 3 depicts the monthly ferrous metal recovery rate as a percentage of processed MSW tonnage. It should be noted that the metal recovery rate percentage increase correlates to the aforementioned ash generation rate decrease. This would indicate that the magnet is able to capture more ferrous materials from a drier residue stream. In Q4FY13, 2,238 tons of ferrous metals were recovered, which is 8.4% higher than the corresponding quarter in FY12 and equivalent to 2.3% of processed waste. Ferrous metal recovered since the system was added in May 2007, totals 49,115 tons.

In FY13, 9,063 tons of ferrous metals were recovered, which is 7.0% higher than FY12 and equivalent to 2.6% of processed waste.



**Chart 4: Steam Production**



In Chart 4, the total steam production for Q4FY13 was 570,212 klbs., or 6.2% higher than the corresponding quarter in FY12. The increase in steam production is attributable to increased (7.8%) waste processed, offset by a decrease (2.2%) in waste heating value.

Annual steam production for FY13 was 2,154,201 klbs., or 1.6% higher than FY12 which was 2,121,209 klbs. The increase in annual steam production can be attributed to an increase (1.0%) in waste heating value and firing the boilers harder, offset by an increase in downtime experienced by the boilers in FY13 (1,385.3 hours) as compared to FY12 (1,013.6 hours).



**Chart 5: 12-Month Rolling Steam Production**

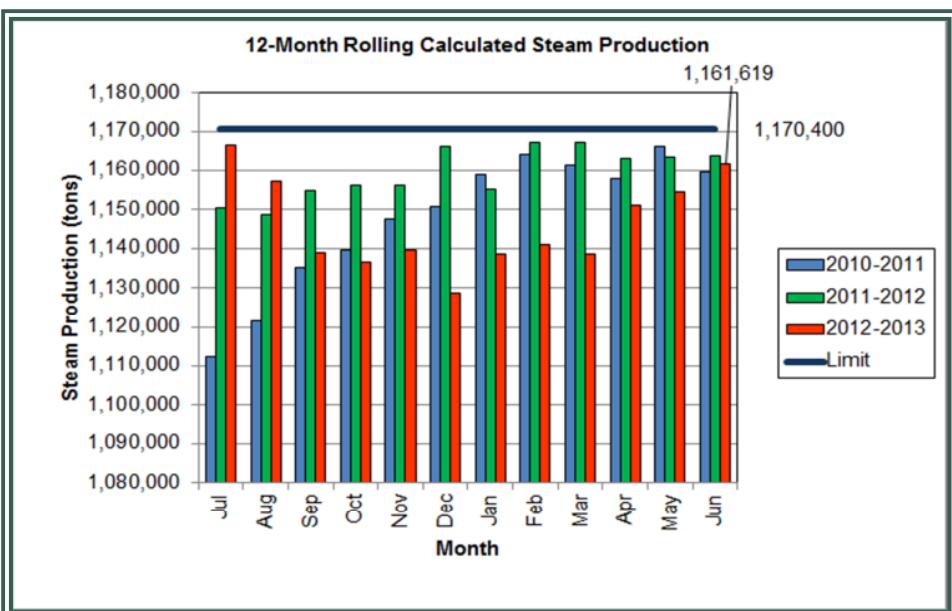
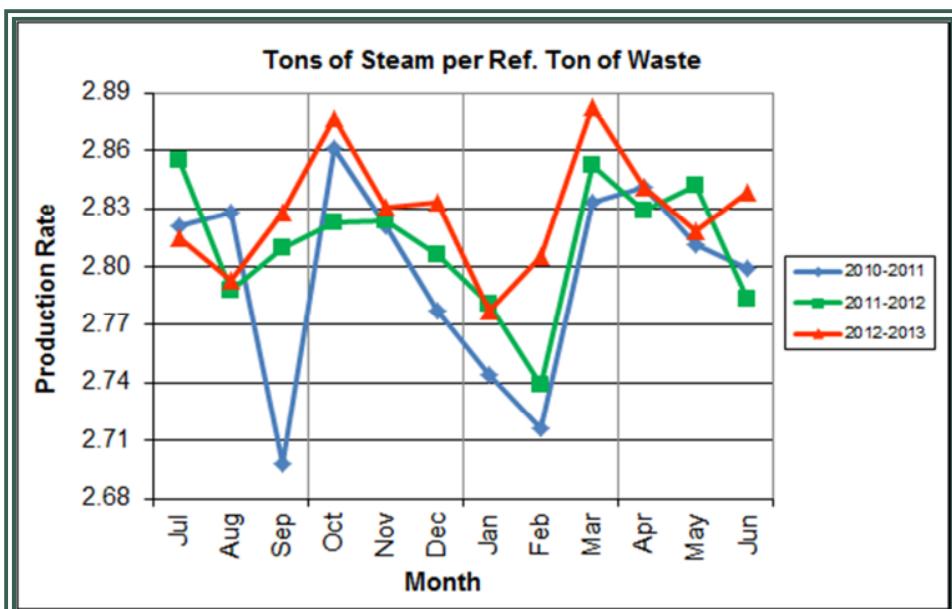


Chart 5 depicts the 12-month rolling steam production total for the period ending in June 2013. According to the Title V permit, the annual steam production for the Facility shall not exceed 1,170,400 tons on the basis of an average value of 3.34 lbs of steam per lb of MSW processed, calculated monthly as the sum of each consecutive 12 month period. The Facility was in compliance with the 12-month rolling steam production total every month in the quarter. The 12-month rolling total for steam production ending in June 2013 was 1,161,619 tons which is 99.2% of the limit.



**Chart 6: Steam Production Rate**



In Chart 6, the conversion of raw waste tonnages into “reference tons” is another way of looking at the issue of steam production, and helps to determine whether changes are related to boiler performance or to fuel issues. “Reference tons” are adjusted to account for the calculated average fuel heating value, so that lower Btu fuel raw tonnages are adjusted upwards and vice versa. In this case, Q4FY13 tracked higher (0.5%), at 2.83 tons<sub>steam</sub>/ton<sub>ref</sub>, than the corresponding quarter in FY12.

The annual steam production rate for FY13 was 2.83 tons<sub>steam</sub>/ton<sub>ref</sub>, which is higher (0.6%) than FY12. The small magnitude of the year to year and quarter to quarter changes in this parameter is not significant, but rather indicates consistent performance.



**Chart 7: Calculated Waste Heating Value**

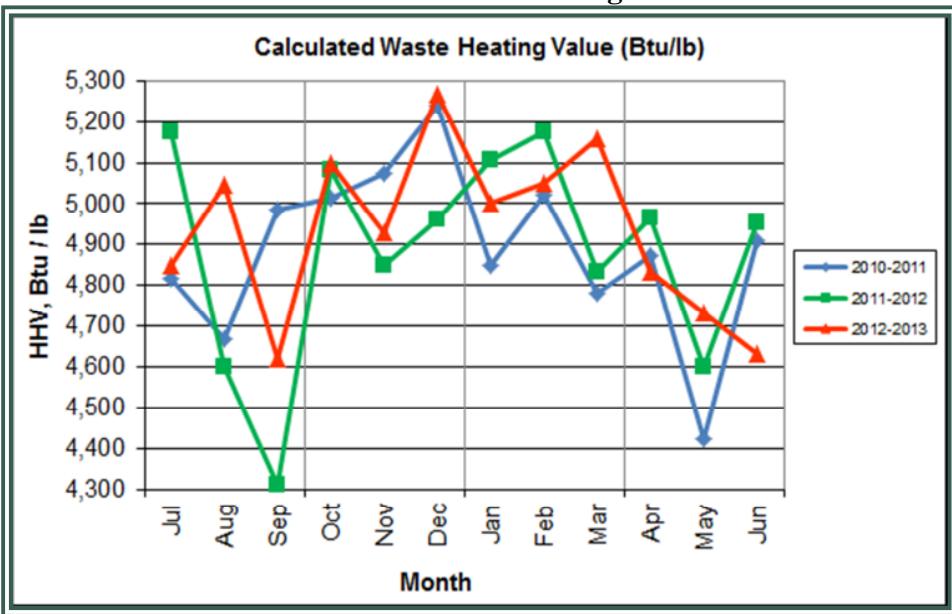


Chart 7 illustrates that Q4FY13 average waste heating value was lower (2.2%) at 4,733 Btu/lb than the corresponding quarter Q4FY12, which averaged 4,840 Btu/lb.

In FY13, the annual average waste heating value was higher (1.0%) at 4,935 Btu/lb than FY12, which averaged 4,884 Btu/lb.



**Table 2: Quarterly Performance Summaries**

Month		Waste Processed (tons)	Waste Diverted (tons)	Ash Shipped (tons)	Special Handling (Supplemental) (tons)	Ferrous Recovered (tons)	Steam Produced (klbs)	Net Electrical Generation (kWhr)
<b>Q4FY11</b>	<b>Quarterly Totals</b>	<b>89,697</b>	<b>0</b>	<b>20,856</b>	<b>61</b>	<b>1,954</b>	<b>530,976</b>	<b>37,591</b>
	April-11	29,570	0	6,981	29	689	181,991	13,047
	May-11	31,565	0	7,038	26	621	174,465	12,266
	June-11	28,562	0	6,837	6	644	174,520	12,278
<b>Q4FY12</b>	<b>Quarterly Totals</b>	<b>88,744</b>	<b>0</b>	<b>19,705</b>	<b>182</b>	<b>2,064</b>	<b>537,001</b>	<b>38,503</b>
	April-12	28,383	0	6,721	23	642	177,252	12,845
	May-12	31,623	0	6,762	68	676	183,629	12,961
	June-12	28,738	0	6,222	91	746	176,120	12,697
<b>Q4FY13</b>	<b>Quarterly Totals</b>	<b>95,680</b>	<b>0</b>	<b>19,826</b>	<b>955</b>	<b>2,238</b>	<b>570,212</b>	<b>41,391</b>
	April-13	32,147	0	6,844	403	731	196,219	14,536
	May-13	32,682	0	6,817	281	775	193,668	14,186
	June-13	30,851	0	6,165	271	732	180,325	12,669
<b>FY13 Totals</b>		<b>347,790</b>	<b>0</b>	<b>73,446</b>	<b>2,665</b>	<b>9,063</b>	<b>2,154,201</b>	<b>148,366</b>
<b>FY12 Totals</b>		<b>348,455</b>	<b>0</b>	<b>79,424</b>	<b>336</b>	<b>8,474</b>	<b>2,121,209</b>	<b>149,919</b>
<b>FY11 Totals</b>		<b>347,193</b>	<b>0</b>	<b>82,851</b>	<b>203</b>	<b>8,444</b>	<b>2,105,620</b>	<b>149,143</b>

Table 2 presents the production data provided to HDR by CAAI for Q4FY13 on both a monthly and quarterly basis. For purposes of comparison, data for Q4FY11 and Q4FY12 are also shown, as well as FY11, FY12 and FY13 totals.

On an overall basis, the data shows that more waste was processed, more electricity was generated, and more steam was produced in Q4FY13 as compared to Q4FY12. Please note the total steam generation figures presented in Table 2 do not correlate with the annual steam production limit from the Facility Permit; such limits apply on a 12-month rolling average monthly basis, and not a fiscal year basis. It is also worth noting that the quantity of supplemental waste, while still a small percentage of overall waste, has significantly increased (700+ tons) in Q4FY13 compared to the same periods in the prior two (2) fiscal years.

In comparing the annual totals, the data shows:

- Less waste was processed in FY13 than FY12, and slightly more than FY11
- More steam was generated in FY13 than FY12 and FY11
- Less electricity (net) was generated in FY13 than FY12 and FY11

The production and sale of less electricity despite higher steam generation is attributed to turbine-generator downtime associated with a major overhaul during FY13.

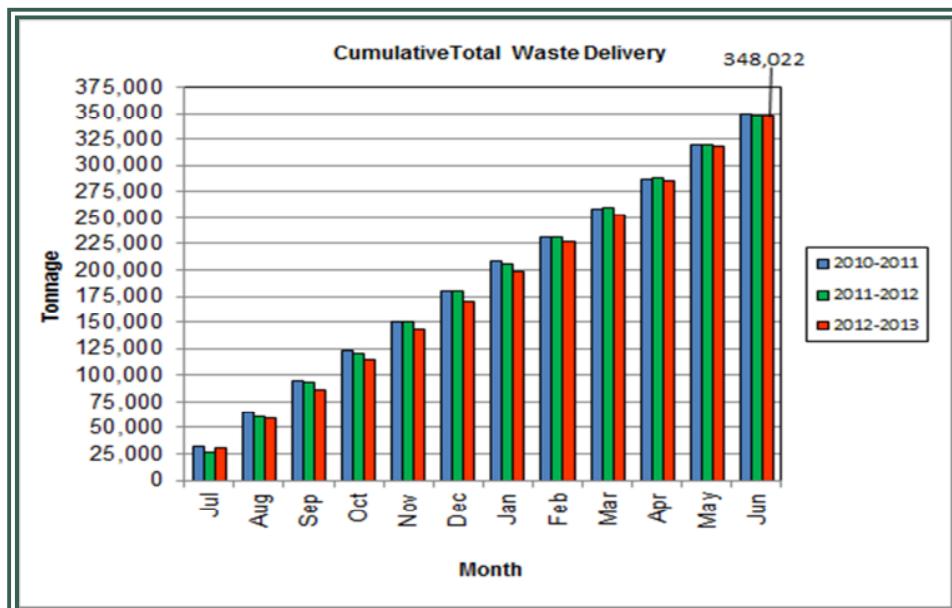


**Table 3: Jurisdictional vs. Non-Jurisdictional Waste Delivery**

		<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Totals</b>
<b>FY09</b>	<b>Jurisdiction waste toward GAT</b>	21,811	20,088	20,960	20,628	19,675	20,519	18,637	16,317	18,216	19,630	20,225	20,781	237,486
	<b>Spot Waste tons</b>	9,964	8,814	8,572	8,280	5,124	12,303	8,829	8,619	11,290	9,205	9,363	10,048	110,411
	<b>Supplemental Waste</b>	7	40	26	34	24	12	7	7	17	14	3	14	205
	<b>MSW Totals</b>	<b>31,782</b>	<b>28,943</b>	<b>29,558</b>	<b>28,942</b>	<b>24,823</b>	<b>32,833</b>	<b>27,473</b>	<b>24,943</b>	<b>29,523</b>	<b>28,849</b>	<b>29,591</b>	<b>30,843</b>	<b>348,103</b>
<b>FY10</b>	<b>Jurisdiction waste toward GAT</b>	19,355	18,924	19,036	18,555	18,523	18,388	16,380	14,635	19,308	19,423	18,764	19,796	221,087
	<b>Spot Waste tons</b>	8,261	10,117	6,996	9,817	7,253	8,117	8,677	7,598	9,293	10,568	10,187	10,830	107,713
	<b>Supplemental Waste</b>	10	7	12	6	8	4	9	7	19	8	11	8	109
	<b>MSW Totals</b>	<b>27,626</b>	<b>29,048</b>	<b>26,044</b>	<b>28,378</b>	<b>25,784</b>	<b>26,509</b>	<b>25,065</b>	<b>22,240</b>	<b>28,620</b>	<b>29,999</b>	<b>28,962</b>	<b>30,634</b>	<b>328,908</b>
<b>FY11</b>	<b>Jurisdiction waste toward GAT</b>	18,201	19,320	18,100	18,244	17,812	17,394	16,316	15,212	18,279	18,596	20,355	19,382	217,213
	<b>Spot Waste tons</b>	13,996	13,917	11,696	9,336	10,177	11,441	12,968	7,016	8,459	10,177	12,947	9,657	131,786
	<b>Supplemental Waste</b>	8	17	12	13	6	13	14	34	25	29	26	6	203
	<b>MSW Totals</b>	<b>32,205</b>	<b>33,254</b>	<b>29,808</b>	<b>27,593</b>	<b>27,995</b>	<b>28,848</b>	<b>29,298</b>	<b>22,262</b>	<b>26,763</b>	<b>28,803</b>	<b>33,328</b>	<b>29,044</b>	<b>349,202</b>
<b>FY12</b>	<b>Jurisdiction waste toward GAT</b>	18,112	20,021	19,304	17,796	17,523	17,211	16,202	14,952	17,430	18,338	20,138	18,361	215,381
	<b>Spot Waste tons</b>	8,901	13,623	13,303	9,788	11,976	11,900	10,276	10,697	10,283	10,029	11,333	10,177	132,295
	<b>Supplemental Waste</b>	10	10	34	15	15	21	12	22	15	23	68	91	336
	<b>MSW Totals</b>	<b>27,023</b>	<b>33,654</b>	<b>32,641</b>	<b>27,599</b>	<b>29,514</b>	<b>29,132</b>	<b>26,490</b>	<b>25,672</b>	<b>27,729</b>	<b>28,390</b>	<b>31,539</b>	<b>28,629</b>	<b>348,012</b>
<b>FY13</b>	<b>Jurisdiction waste toward GAT</b>	19,413	18,357	16,632 <sup>(2)</sup>	17,625 <sup>(3)</sup>	18,838 <sup>(4)</sup>	16,195	-	-	-	-	-	-	107,058 <sup>(1)</sup>
	<b>Spot Waste tons</b>	10,516	11,326	10,610	10,317	9,330	9,558	-	-	-	-	-	-	61,656 <sup>(1)</sup>
	<b>City Waste</b>	-	-	-	-	-	-	1,683 <sup>(5)</sup>	1,287	1,444	2,382	2,286	1,919	11,000 <sup>(1)</sup>
	<b>County Waste</b>	-	-	-	-	-	-	2,442 <sup>(5)</sup>	2,100	2,372	3,381	3,932	3,309	17,536 <sup>(1)</sup>
	<b>Municipal Solid Waste</b>	-	-	-	-	-	-	25,019 <sup>(5)</sup>	23,637	21,661	27,066	25,794	24,930	148,107 <sup>(1)</sup>
	<b>Supplemental Waste</b>	151	11	80	25	234	405	363	365	76	403	281	271	2,665 <sup>(1)</sup>
	<b>MSW Totals</b>	<b>29,928</b>	<b>29,683</b>	<b>27,241</b>	<b>27,942</b>	<b>28,167</b>	<b>25,753</b>	<b>29,507</b>	<b>27,388</b>	<b>25,552</b>	<b>33,231</b>	<b>32,293</b>	<b>30,429</b>	<b>348,022<sup>(1)</sup></b>
<p>Note (1): Values indicated are year to date (YTD) totals</p> <p>Note (2): Total includes 505 tons shortfall by PDS</p> <p>Note (3): Total includes 174 tons shortfall by PDS</p> <p>Note (4): Total includes 679 tons credited (subtracted) for the prior 2 months of shortfall tons by PDS</p> <p>Note (5): Beginning January 2013, the method in which waste was classified was modified as compared to prior periods due to change in contractual obligations and plant ownership</p>														

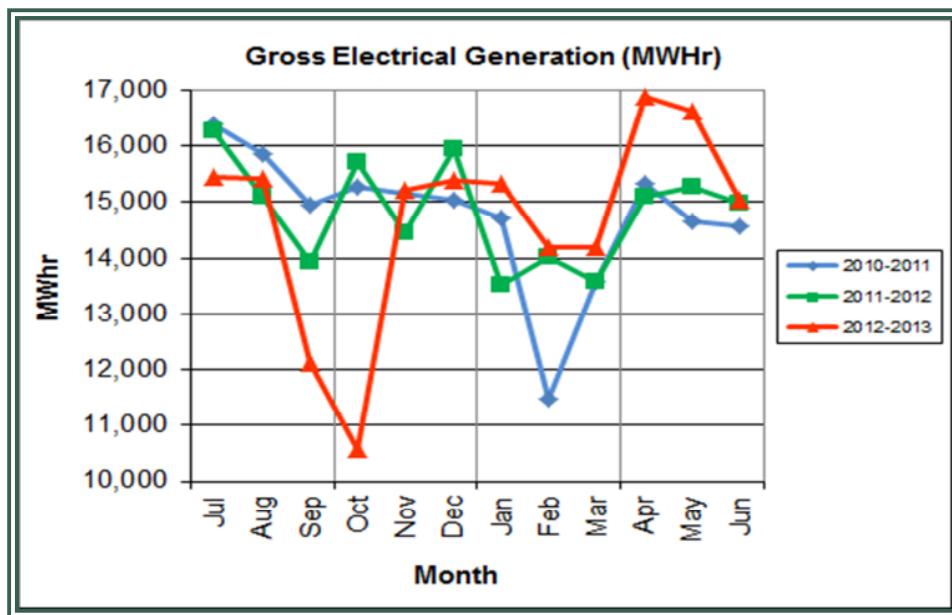


**Chart 8: Cumulative Total Waste Delivery**



Depicted in Chart 8, for the period ending in June 2013; cumulative total waste delivery was nine (9) tons more compared to the same period in FY12.

**Chart 9: Gross Electrical Generation**

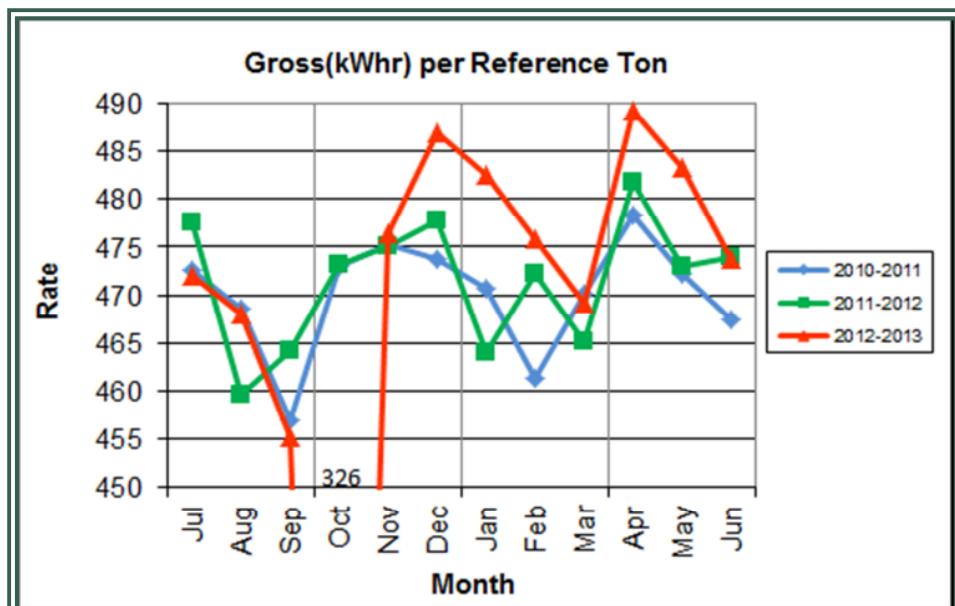


During Q4FY13, the Facility generated 48,557 MWhrs (gross) of electricity compared to Q4FY12 generation of 45,369 MWhrs (gross), a 7.0% increase. The increase in gross electrical production is attributable to the increase in processed waste (7.8%), and steam production (6.2%).



During FY13, the Facility generated 176,467 MWhrs (gross) of electricity compared to the FY12 generation of 177,907, a 0.8% decrease. The decrease in gross electrical generation for FY13 is attributable to increased turbine generator downtime which totaled 979.2 hours (scheduled, unscheduled and standby), as compared to the 59.6 hours (scheduled, unscheduled and standby) experienced in FY12. Note that the 3-year low of gross electrical production experienced in October was due to Turbine Generator No. 1 experiencing 494.5 hours of downtime for scheduled maintenance. Evidence of the downtime experienced by the Turbine Generators is also presented in Chart Nos. 10 through 14, where sharp spikes are depicted in the trends for the month of October 2012 when the Turbine Generator No. 1 Overhaul was conducted.

**Chart 10: Gross Conversion Rate**



As shown in Chart 10, the average gross electrical generation per reference ton of refuse processed during Q4FY13 was 482 kWhr, which is higher (1.3%) than the corresponding period in FY12. Since this calculated value uses reference or normalized tonnages of waste, it should cancel the effect of MSW heating value (Btu content) variability.

During FY13, the average gross electrical generation per reference ton of refuse processed was 463 kWhr, which is lower (1.8%) than FY12.



**Chart 11: Net Conversion Rate**

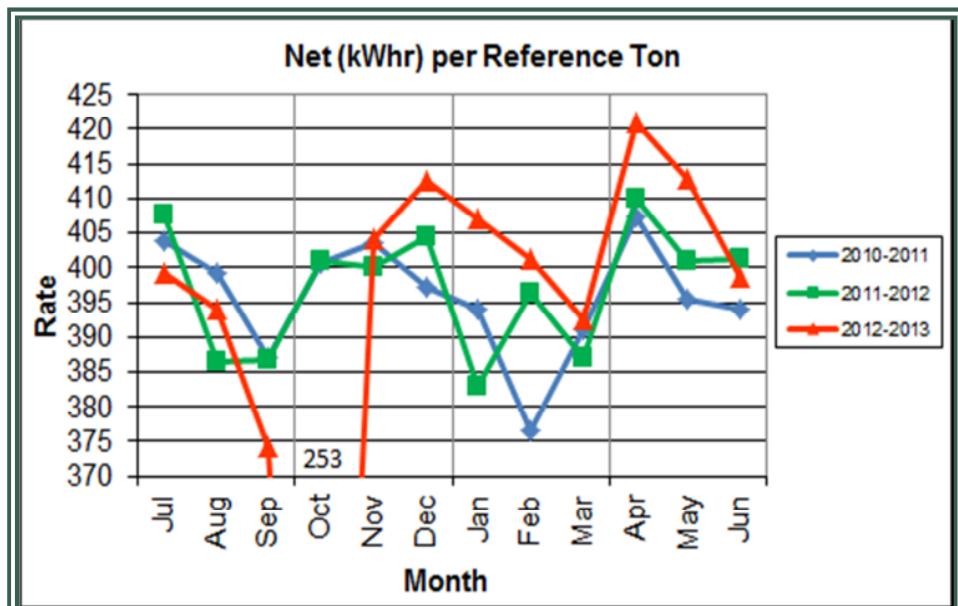


Chart 11 depicts the normalized net power (gross minus in-house usage) generation history. In Q4FY13, the average net electrical generation per reference ton was 411 kWhr, which is 1.7% higher than the corresponding quarter in FY12.

In FY13, the average net electrical generation per reference ton was 389 kWhr, which is 2.0% lower than FY12.



**Chart 12: Net Conversion Rate**

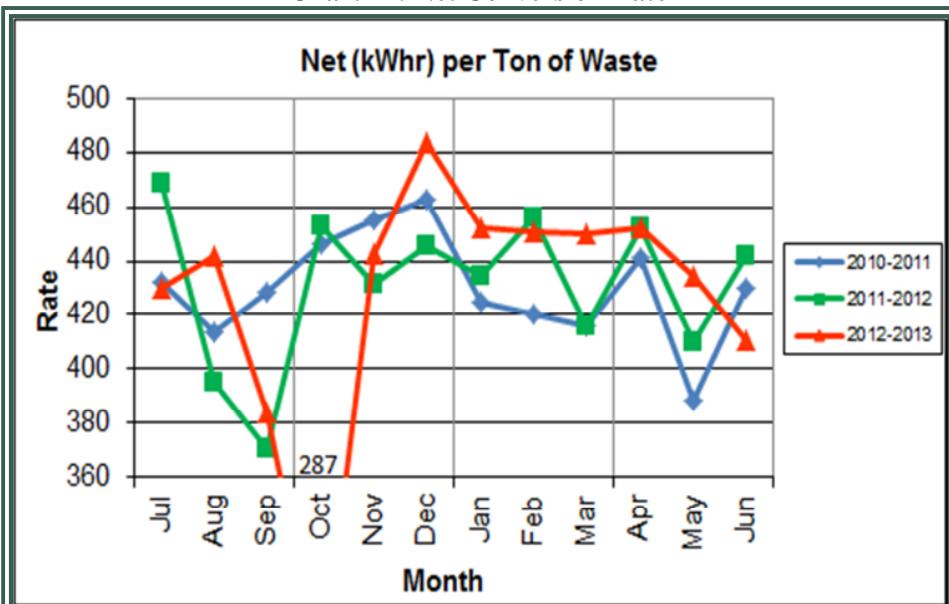
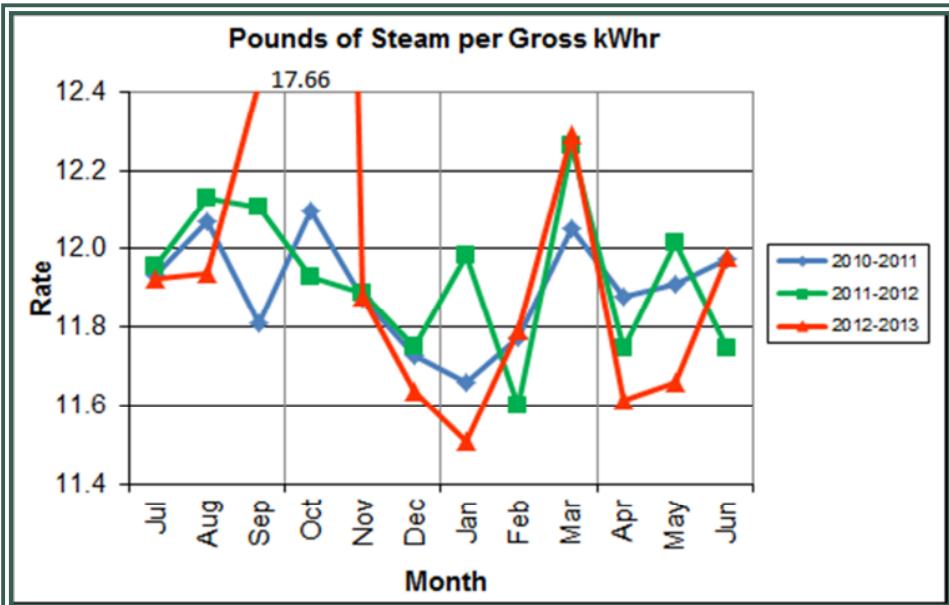


Chart 12 depicts the net power generation per processed ton. The net electrical generation per processed ton in Q4FY13 was 432 kWhr, which is 0.6% lower than the corresponding quarter in FY12.

In FY13, the net electrical generation per processed ton was 427 kWhr which is 1.1% lower than FY12.

**Chart 13: Gross Turbine Generator Conversion Rate**



Charts 13 and 14 illustrate the quantities of steam required to generate one kWhr of electricity, gross and net respectively. This measure is a turbine generator performance

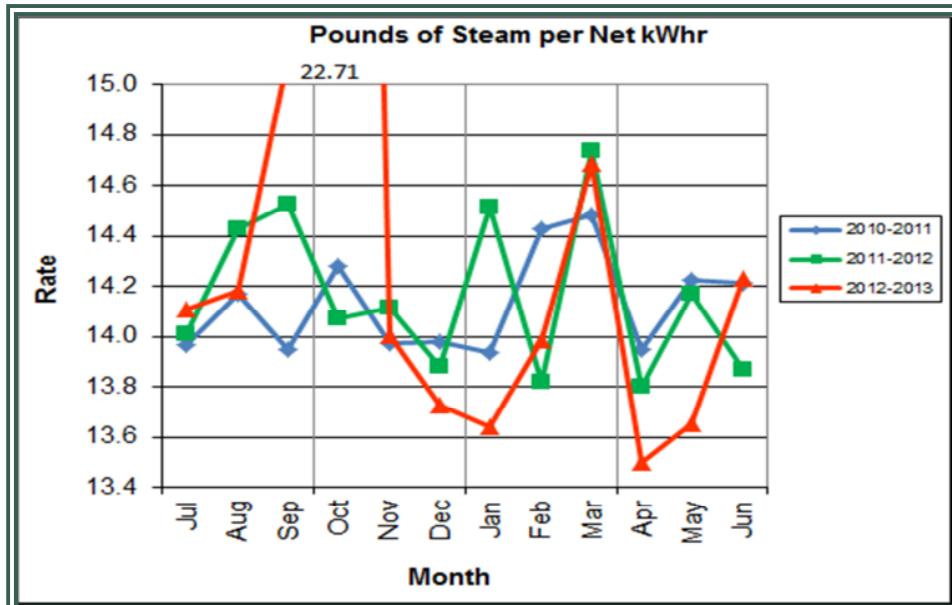


indicator, where lower steam rates indicate superior performance. For simplification, this calculated rate is based on the average for the two turbine generators. In Q4FY13 the average lbs of steam consumed per gross kWhr was 11.7, which is slightly lower (0.8%) than the corresponding quarter Q4FY12. The average lbs of steam consumed per net kWhr was 13.8, which is lower (1.2%) than the corresponding quarter in FY12. The average steam temperature during the quarter was 699.6 F, which is higher (1.3%) than the average steam temperature of the corresponding quarter last year, and 0.4° F lower than design temperature of 700° F.

In FY13, the average lbs of steam consumed per gross kWhr was 12.2, which is 2.4% higher than FY12. The average lbs of steam consumed per net kWhr in FY13 was 14.5, which is 2.6% higher than FY12. The average steam temperature for FY13 was 690.0° F, which is 0.4% higher than FY12, and 10.0° F lower than the design temperature of 700° F. It is noted that steam consumption per kWhr, both gross and net, are adversely affected by the very high levels associated with the aforementioned Turbine Generator No. 1 major overhaul in September/October 2012. For the periods following the overhaul, steam consumption is significantly lower (improved) indicating more efficient operation of the overhauled machine.



**Chart 14: Net Turbine Generator Conversion Rate**



## 5.0 Facility Availability

Facility availabilities for Q4FY13 are shown in Table 4. According to CAAI reports, the average unit availabilities for Boiler Nos. 1, 2, and 3 for Q4FY13 were 98.9%, 95.6%, and 98.8%, respectively. The three-boiler average availability during the quarter was 97.8%, which is good.

During Q4FY13, the average availability for Turbine Generator Nos. 1 and 2 was 100.0% and 99.7%. The two-turbine generator average availability during the quarter was 99.7%, which is excellent.

Overall boiler availability for FY13 was 95.3%, and overall turbine generator availability was 96.2%. Overall availabilities for the boilers are highly acceptable and above industry averages, noting that these reported availability metrics exclude standby time experienced during the fiscal year which amounted to 152.2 hours for the boilers and 297.6 hours for the turbine generators. Annual turbine-generator availability was negatively impacted by the Turbine Generator No. 1 overhaul.



**Table 4: Quarterly Facility Unit Availabilities**

Availability	Q1FY13 Average	Q2FY13 Average	Q3FY13 Average	Q4FY13 Average	FY13 Average
Boiler No. 1	95.4%	96.8%	92.8%	98.9%	96.0%
Boiler No. 2	94.7%	94.8%	93.2%	95.6%	94.6%
Boiler No. 3	90.2%	100.0%	92.4%	98.8%	95.3%
<i>Avg.</i>	<b>93.5%</b>	<b>97.2%</b>	<b>92.8%</b>	<b>97.8%</b>	<b>95.3%</b>
Turbine No. 1	97.5%	76.6%	100.0%	100.0%	93.5%
Turbine No. 2	97.5%	98.3%	99.6%	99.7%	98.8%
<i>Avg.</i>	<b>97.5%</b>	<b>87.5%</b>	<b>99.8%</b>	<b>99.9%</b>	<b>96.2%</b>

## 5.1 Facility Operations

During Q4FY13, the Facility experienced six (6) instances of unscheduled downtime for the boilers totaling 148.1 hours, and one (1) instance of unscheduled downtime for the turbine generators totaling 6.0 hours. No scheduled downtime was experienced by the boilers or turbine generators during the quarter. The boilers experienced no standby time, and the turbine generators experienced four (4) instances of standby time totaling 53.7 hours during the quarter. Details of downtime events experienced during the quarter are portrayed in Tables 5 and 6 as follows:



**Table 5: Boiler Downtime – Q4FY13**

Boiler Number	Outage Begin Date	Outage End Date	Hours Unavailable	Downtime Classification	Reason Unavailable
2	5/2/13	5/3/13	20.7	Unscheduled	Repair of a waterwall tube leak
3	5/5/13	5/5/13	14.4	Unscheduled	Repair of an economizer tube leak
1	5/12/13	5/12/13	9.0	Unscheduled	Repair of ash discharger wear plate
1	5/14/13	5/15/13	15.9	Unscheduled	Repair of a tube leak
3	5/27/13	5/27/13	12.7	Unscheduled	Repair of an economizer tube leak
2	6/18/13	6/21/13	75.4	Unscheduled	Blast cleaning of the gas paths to alleviate fouling
<b>Total Unscheduled Downtime</b>		<b>148.1 Hours</b>			
<b>Total Scheduled Downtime</b>		<b>0.0 Hours</b>			
<b>Total Standby Downtime</b>		<b>0.0 Hours</b>			
<b>Total Downtime</b>		<b>148.1 Hours</b>			

**Table 6: Turbine Generator Downtime – Q4FY13**

Turbine Generator Number	Outage Begin Date	Outage End Date	Hours Unavailable	Downtime Classification	Reason Unavailable
1	4/22/13	4/22/13	5.3	Standby	Dominion Power conducting testing
2	5/9/13	5/9/13	4.5	Standby	Dominion Power conducting testing
2	5/15/13	5/16/13	11.9	Standby	Lack of steam during boiler repairs
2	6/19/13	6/20/13	32.0	Standby	Repairs being made on Boiler No. 2
2	6/27/13	6/27/13	6.0	Unscheduled	Trouble shoot the servo actuator
<b>Total Unscheduled Downtime</b>		<b>6.0 Hours</b>			
<b>Total Scheduled Downtime</b>		<b>0.0 Hours</b>			
<b>Total Standby Downtime</b>		<b>53.7 Hours</b>			
<b>Total Downtime</b>		<b>59.7 Hours</b>			



As previously mentioned, no scheduled maintenance was conducted during Q4FY13. CAAI reports that it completed 2,408 preventative maintenance items during the quarter. Some significant maintenance items included:

- Replacement of a tine strut and tip on the south crane
- Modification of the dolomitic lime silo fill line at the cam lock cap
- Replacement of the control valve for Boiler No. 3 Economizer Hopper Double dump Valve
- Repair of the safety interlock on the tipping floor exit door by adjusting the sensitivity as the door would not stay closed
- Replacement of a faulty float switch for the settling tank fill basin
- Repair of two (2) tine tips on the north crane
- Repair of two (2) hopper safety light mounts on Boiler Nos. 2 and 3
- Replacement of several rocker arms on the main vibrating conveyor
- Replacement of the air regulator on the No. 2 Atomizer Lube Oil skid
- Replacement of rear entry door view port mounting bolts for all three (3) boilers
- Repair of a water leak on Boiler No. 3 feed chute water jacket
- Removal and replacement of the motor on the No. 2 Gardner Denver Air Compressor
- Replacement of No. 2 dolomitic lime screw conveyor, screws, hanger bearings, hangers, and shafts.
- Repair and replacement of various lighting fixtures and related switches, receptacles, and junction box covers as related to the safety committee walk down, snapshot findings, and safety audit findings
- Installation of conduit, wiring, and control logic to display cooling tower pH to the control room DCS.
- Replacement of the south truck scale



## 5.2 Utility and Reagent Consumptions

**Table 7: Facility Utility and Reagent Consumptions**

Utility	Units	Q4FY13 Total	Q4FY12 Total	Q4FY13"Per Processed Ton" Consumption	Q4FY12"Per Processed Ton" Consumption	FY13 Total
Purchased Power	MWhr	5,467	5,278	0.06	0.06	21,925
Fuel Oil	Gal.	13,450	9,470	0.14	0.11	50,890
Boiler Make-up	Gal.	2,080,000	1,610,000	21.74	18.14	7,540,000
Cooling Tower Make-up	Gal.	39,745,929	42,085,909	415.40	474.24	154,786,310
Pebble Lime	Lbs.	1,280,000	1,230,000	13.38	13.86	4,946,000
Ammonia	Lbs.	148,000	141,000	1.55	1.59	562,000
Carbon	Lbs.	106,000	106,000	1.11	1.19	410,000
Dolomitic Lime	Lbs.	238,000	450,000	2.49	5.07	896,000

Fuel oil usage during the quarter represents approximately 0.22% of the total heat input to the boilers, which compares favorably with industry averages, and is slightly higher than the percentage of heat input in Q4FY12 at 0.16%. Fuel oil is used to stabilize combustion of wet fuel, as well as during start-up and shut-down of the boilers for maintenance. Boiler makeup water usage during the quarter represents 3.0% of steam flow, and is acceptable. Pebble lime usage, at 1,280,000 lbs. is higher (4.1%) than the corresponding quarter last year, and the quarterly consumption rate of 13.4 lbs/ton is below historical levels (16-18 lbs/ton).

In comparing Q4FY13 to Q4FY12 on a per processed ton consumption basis:

- the purchased power consumption rate was 3.9% lower
- the total fuel oil consumption rate was 31.7% higher
- the boiler make-up water consumption rate was 19.8% higher
- the cooling tower make-up water consumption rate was 12.4% lower
- the total pebble lime consumption rate was 3.5% lower
- the ammonia consumption rate was 2.6% lower
- the carbon consumption rate was 7.3% lower
- the total dolomitic lime consumption rate was 51.0% lower



The significant increase of fuel oil usage during the quarter is attributable to startup/shutdown activities associated with unscheduled and standby time. The significant decrease in dolomitic lime consumption rate was achieved while maintaining ash pH within the desired range, and may be related to the aforementioned decrease in ash moisture level.

## 6.0 Environmental

The retrofit air pollution control equipment maintained emission concentrations well within the established regulations. Average Continuous Emission Monitoring System (CEMS) data collected for each monthly period during Q4FY13 are summarized in Appendix A. The Facility experienced no environmental exceedances during the quarter. All environmental exceedances experienced during FY13 are summarized in Table 8 as follows:

**Table 8: Quarterly Environmental Excursions**

Date	Excursion	Exempt
8/8/12	Boiler No. 2 4-hour CO levels reached 142 ppm (100 ppm limit)	No
10/31/12	Boiler No. 3 4-hour CO levels reached 261 ppm (100 ppm limit)	Yes
12/26/12	Boiler No. 3 Opacity limit (10%) exceeded 13 times	Yes
2/21/13	Boiler No. 1 4-hour CO levels reached 181 ppm (100 ppm limit)	No

### 6.1 Nitrogen Oxide Emissions

During Q4FY13, the monthly emission concentrations of nitrogen oxides (NO<sub>x</sub>) averaged 165.7 ppmdv, 160.7 ppmdv and 160.7 ppmdv for Boiler Nos. 1, 2, and 3, respectively. CAAI continues to operate the units at the lower (160 ppmdv) set-points, except immediately following a scheduled outage and associated boiler cleaning.

### 6.2 Sulfur Dioxide Emissions

During Q4FY13 the monthly emission concentration of stack sulfur dioxide (SO<sub>2</sub>) averaged 2.0 ppmdv, 0.7 ppmdv, and 1.3 ppmdv for Boiler Nos. 1, 2, and 3, respectively. All of these stack SO<sub>2</sub> concentrations are significantly below the 40 CFR Subpart Cb requirement of 29 ppmdv @ 7% O<sub>2</sub>.



### **6.3 Carbon Monoxide Emissions**

During Q4FY13, the average CO emission concentrations on Boiler Nos. 1, 2, and 3 were 33.3 ppmdv, 32.0 ppmdv, and 26.3 ppmdv, respectively, and all are well within permit limits (100 ppmdv, hourly average).

### **6.4 Opacity**

During Q4FY13, the average opacity for Boiler Nos. 1, 2, and 3 was 0.3%, 0.3%, and 0.0% respectively. All of these averages are significantly below the 10% (6-minute) average permit limit.

### **6.5 Daily Emissions Data**

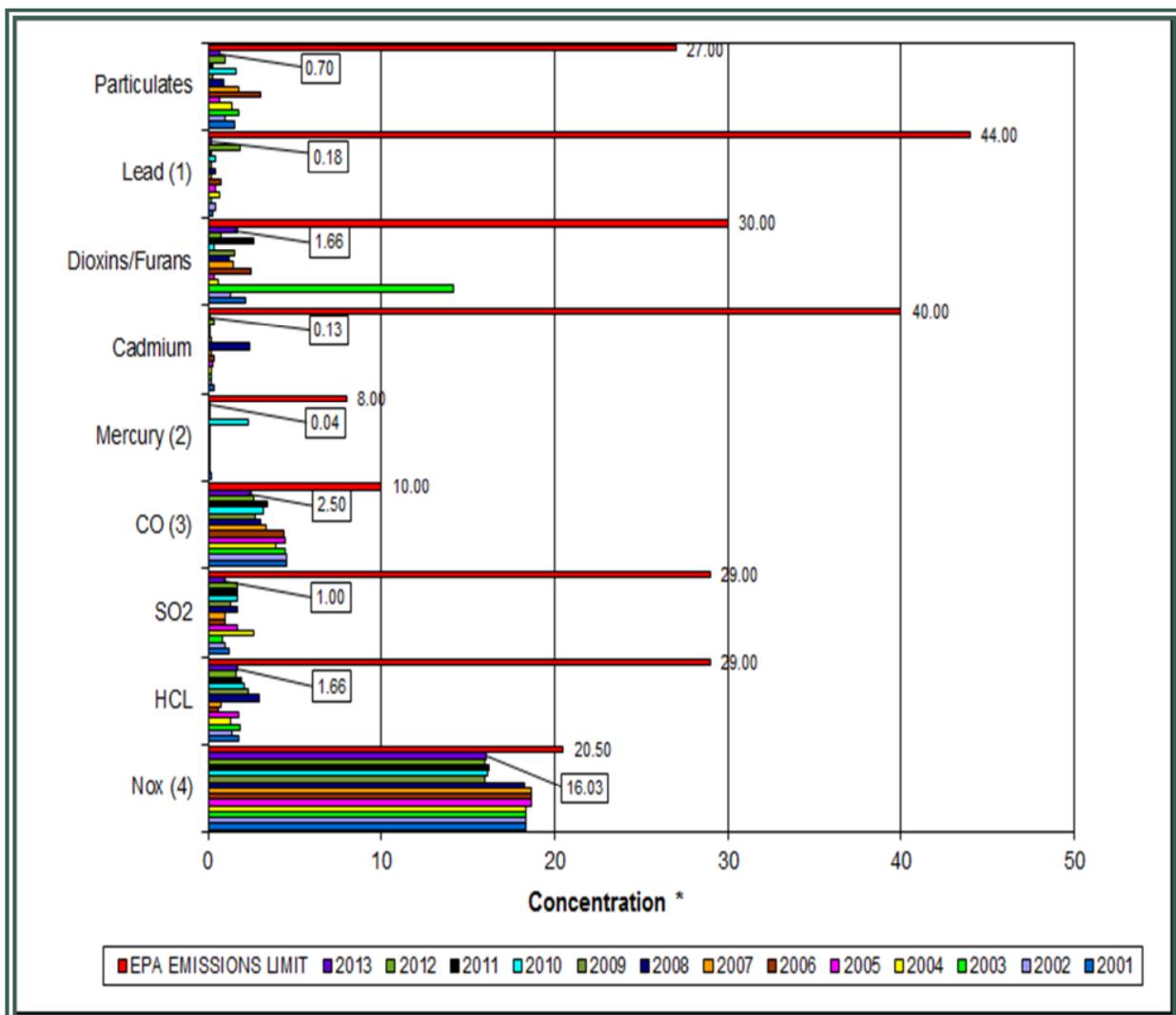
Appendix A, Tables 12, 13, 14 tabulate the monthly average, maximum, and minimum emissions data for each unit during Q4FY13. Excursions, if any, would appear in bold print. It should be noted that these tabulations of monthly averages, reported here for informational purposes, are based on tabulations of daily averages. These averages do not correlate with official reports to the regulatory agencies because of differences in averaging times and other technical differences required by agency report formats.

### **6.6 2013 Stack Testing**

Annual stack testing was conducted March 26<sup>th</sup> through March 29<sup>th</sup> by Testar Inc. Results through 2013 stack tests are summarized in Chart 15 and Table 9. The test results demonstrate compliance well within the permit limits for all parameters. In addition to the tests required by the Facility permit, additional tests for small particulate matter (PM < 2.5) were conducted as requested by the Trustees. While there are no current regulatory limits established for PM < 2.5, average results for 2013 were 0.005 Gr/DSCF (grains per dry standard cubic foot) corrected to 7% O<sub>2</sub>, compared to the 2012 Annual Stack Testing PM <2.5 Results which averaged 0.008 Gr/DSCF corrected to 7% O<sub>2</sub>.



**Chart 15: Stack Test Results through 2013**



Note (1): Lead emissions have been decreased by a factor of 10 for trending purposes

Note (2): Mercury emissions have been decreased by a factor of 100 for trending purposes

Note (3): CO emissions have been decreased by a factor of 10 for trending purposes

Note (4): NO<sub>x</sub> emissions have been decreased by a factor of 10 for trending purposes



**Table 9: Stack Test Results through 2013**

		NOx(4) (ppmdv)	HCL (ppmdv)	SO <sub>2</sub> (ppmdv)	CO(3) (ppmdv)	Mercury(2) (ug/dscm)	Cadmium (ug/dscm)	Dioxins/Furans (ng/dscm)	Lead(1) (ug/dscm)	Particulates (mg/dscm)	P.M. 2.5 (gr/dscf)	
2003	Boiler 1	184.2	3.99	1.5	48.1	0.79	0.15		2.1	2.81	--	
	Boiler 2	181.1	0.71	0.7	44.3	0.45	0.18		1.3	1.06	--	
	Boiler 3	184.1	0.79	0.3	42.4	0.52	0.19	14.2	2.4	1.48	--	
	AVERAGE	<b>183.13</b>	<b>1.83</b>	<b>0.83</b>	<b>44.93</b>	<b>0.59</b>	<b>0.17</b>	<b>14.20</b>	<b>1.93</b>	<b>1.78</b>	--	
2004	Boiler 1	184	1.55	6	38	0.35	0.21		2.57	0.965	--	
	Boiler 2	181	1.23	1	49	1.56	0.247	0.578	13.0	1.80	--	
	Boiler 3	185	1.16	1	31	1.96	0.144		3.46	1.41	--	
	AVERAGE	<b>183.33</b>	<b>1.31</b>	<b>2.67</b>	<b>39.33</b>	<b>1.29</b>	<b>0.20</b>	<b>0.58</b>	<b>6.34</b>	<b>1.39</b>	--	
2005	Boiler 1	187	1.86	2	47	0.4	0.40	0.382	6.8	0.5	--	
	Boiler 2	186	1.83	1	48	0.4	0.2		4.9	0.8	--	
	Boiler 3	188	1.68	2	39	0.4	0.2		1.9	0.7	--	
	AVERAGE	<b>187.00</b>	<b>1.79</b>	<b>1.67</b>	<b>44.67</b>	<b>0.40</b>	<b>0.27</b>	<b>0.38</b>	<b>4.53</b>	<b>0.67</b>	--	
2006	Boiler 1	187	0.85	1	43	0.38	0.4		7.79	4.84	--	
	Boiler 2	185	0.483	1	47	0.4	0.19		2.51	2.15	--	
	Boiler 3	189	0.529	1	42	0.4	0.57	2.48	12.4	2	--	
	AVERAGE	<b>187.0</b>	<b>0.62</b>	<b>1.00</b>	<b>44.00</b>	<b>0.39</b>	<b>0.39</b>	<b>2.48</b>	<b>7.57</b>	<b>3.00</b>	--	
2007	Boiler 1	187	0.82	1	31	0.38	0.25		2.31	2.03	--	
	Boiler 2	185	0.68	1	36	0.39	0.19	1.42	2.12	2.04	--	
	Boiler 3	189	0.84	1	34	0.59	0.16		1.55	1.33	--	
	AVERAGE	<b>187.0</b>	<b>0.78</b>	<b>1.00</b>	<b>33.67</b>	<b>0.46</b>	<b>0.20</b>	<b>1.42</b>	<b>1.99</b>	<b>1.80</b>	--	
2008	Boiler 1	181	2.96	2	37	0.45	6.60	1.25	9.4	1.46	--	
	Boiler 2	182	3.52	2	30	0.42	0.50		2.6	0.82	--	
	Boiler 3	186	2.43	1	24	1.03	0.16		0.23	0.48	--	
	AVERAGE	<b>183.0</b>	<b>3.0</b>	<b>1.67</b>	<b>30.3</b>	<b>0.63</b>	<b>2.4</b>	<b>1.25</b>	<b>4.1</b>	<b>0.9</b>	--	
2009	Boiler 1	159	1.40	2	28	0.184	0.191		2.260	0.483	--	
	Boiler 2	158	2.12	1	25	0.271	0.143		0.894	0.068	--	
	Boiler 3	163	3.53	1	29	0.198	0.256	1.54	3.030	0.155	--	
	AVERAGE	<b>160</b>	<b>2.35</b>	<b>1.33</b>	<b>27.33</b>	<b>0.22</b>	<b>0.20</b>	<b>1.54</b>	<b>2.061</b>	<b>0.235</b>	--	
2010	Boiler 1	159	2.69	1	29	5.76	0.120		1.33	3.690	0.00410	
	Boiler 2	158	0.67	1	28	29.50	0.032	0.35	3.00	0.914	0.00630	
	Boiler 3	168	2.85	3	38	34.70	0.241		8.71	0.336	0.00990	
	AVERAGE	<b>161.7</b>	<b>2.07</b>	<b>1.67</b>	<b>31.67</b>	<b>23.32</b>	<b>0.13</b>	<b>0.35</b>	<b>4.347</b>	<b>1.647</b>	<b>0.007</b>	
2011	Boiler 1	167	2.15	2	28	0.36	0.140	2.67	1.72	0.130	0.00570	
	Boiler 2	159	1.14	1	38	0.44	0.140		1.46	0.350	0.00690	
	Boiler 3	161	2.40	2	37	0.36	0.110		1.47	0.350	0.00170	
	AVERAGE	<b>162.3</b>	<b>1.90</b>	<b>1.67</b>	<b>34.33</b>	<b>0.39</b>	<b>0.13</b>	<b>2.67</b>	<b>1.550</b>	<b>0.277</b>	<b>0.005</b>	
2012	Boiler 1	163	1.14	2	23	0.30	0.310		1.34	0.640	0.00932	
	Boiler 2	156	2.02	2	29	0.34	0.250	<b>0.75</b>	6.52	1.280	0.00782	
	Boiler 3	161	1.66	1	27	0.37	0.590		47.80	1.020	0.00679	
	AVERAGE	<b>160.0</b>	<b>1.61</b>	<b>1.67</b>	<b>26.33</b>	<b>0.34</b>	<b>0.38</b>	<b>0.75</b>	<b>18.553</b>	<b>0.980</b>	<b>0.008</b>	
2013	Boiler 1	164	1.48	1	28	0.36	0.134		1.45	0.637	0.00637	
	Boiler 2	158	1.98	1	25	0.37	0.112	1.66	1.05	0.737	0.00475	
	Boiler 3	159	1.52	1	22	0.42	0.137		3.03	0.733	0.00471	
	AVERAGE	<b>160.3</b>	<b>1.66</b>	<b>1.00</b>	<b>25.00</b>	<b>0.38</b>	<b>0.13</b>	<b>1.66</b>	<b>1.843</b>	<b>0.702</b>	<b>0.005</b>	
		EPA EMISSIONS LIMIT	<b>205</b>	<b>29</b>	<b>29</b>	<b>100</b>	<b>80</b>	<b>40</b>	<b>30</b>	<b>440</b>	<b>27</b>	--
		Percent of Limit for 2013	78.2%	5.7%	3.4%	25.0%	0.5%	0.3%	5.5%	0.4%	2.6%	--



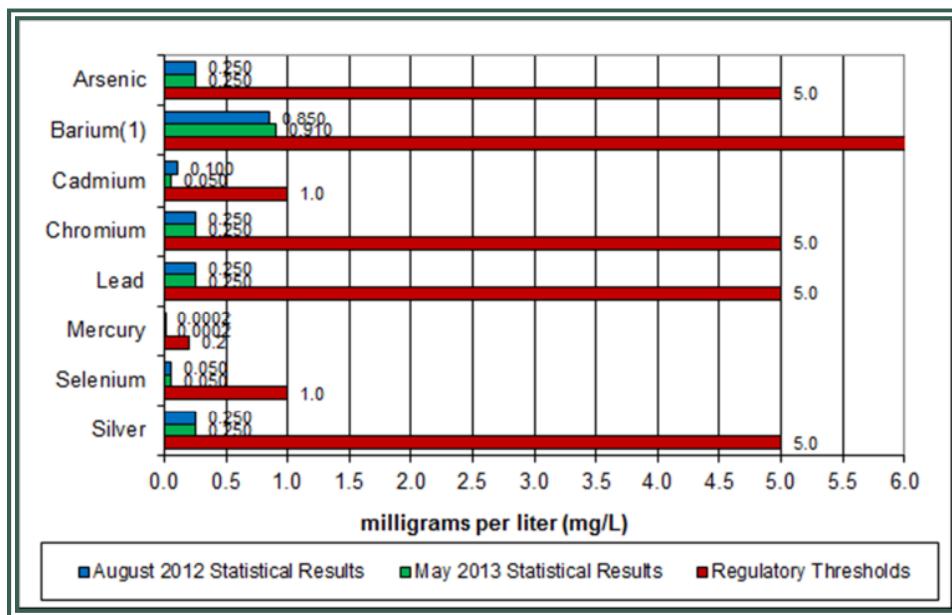
## 6.7 Ash System Compliance

The dolomitic lime feed rate is adjusted periodically in order to maintain a desired ash pH level in the range of 8.0 to 11.0. Since initial startup, the feed rate has varied from between 4 to 9 lbs per ton. Ash Toxicity (TCLP) tests were performed for field samples collected over a seven (7) day period in May 2013, and test results indicate that the average pH during testing was 10.3. Results from the TCLP testing conducted in May 2013 are depicted in Table 10 and Chart 16 below.

**Table 10: Comparison of Statistical Results and Regulatory Thresholds for Metal Analytes**

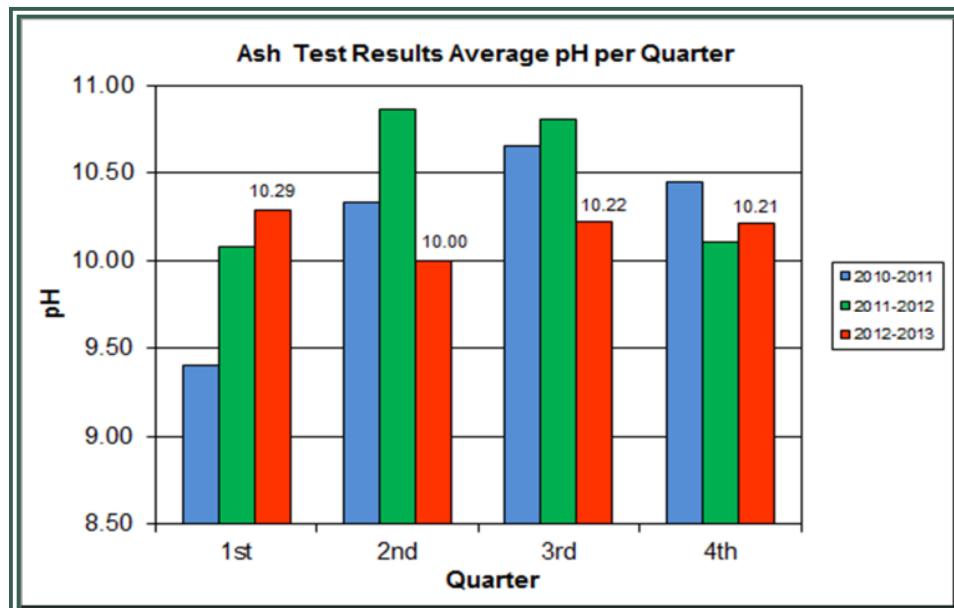
Metals	90% Upper Confidence (May 2013)	90% Upper Confidence (August 2012)	Regulatory Threshold (mg/L)	% of Threshold (May 2013)	% of Threshold (August 2012)
<b>Arsenic</b>	0.250	0.250	5.0	5.00%	5.00%
<b>Barium</b>	0.910	0.850	100.0	0.91%	0.85%
<b>Cadmium</b>	0.050	0.100	1.0	5.00%	10.00%
<b>Chromium</b>	0.250	0.250	5.0	5.00%	5.00%
<b>Lead</b>	0.250	0.250	5.0	5.00%	5.00%
<b>Mercury</b>	0.0002	0.0002	0.2	0.10%	0.10%
<b>Selenium</b>	0.050	0.050	1.0	5.00%	5.00%
<b>Silver</b>	0.250	0.250	5.0	5.00%	5.00%

**Chart 16: Ash Test Results**



CAAI also samples ash monthly, and documents pH reading to adjust dolomitic lime feed rate. The results for the ash pH tests are found below in Chart 17 where each quarter is represented by the average of the respective monthly readings. During Q4FY13, the average ash pH for in-house tests was 10.2.

**Chart 17: Ash Test Results**



## 6.8 Steam Production Issues

In October, 2007, VADEQ issued CAAI a “Warning Letter” (WL) regarding alleged violations of Condition 14 of the Facility’s Prevention of Significant Deterioration (PSD) permit issued in 2002. In response to the WL, CAAI recalculated annual steam production totals according to the VADEQ’s methodology which was to track the annual limit on a monthly basis, by adding the current month’s production to the previous 11 months’ total, and comparing it to the annual 1.12 million ton limit (Previously, CAAI tracked the annual limit on a calendar year basis, and not monthly). The recalculated data showed that the Facility exceeded the steam production limits on several occasions. Although there were not any exceedances of air emissions at the Facility, VADEQ issued a Notice of Violation (NOV) on February 29, 2008.

In March 2009, CAAI and VADEQ entered into a letter of agreement (LOA) to resolve the alleged violations. The tenets of the agreement stipulate that:



The annual steam production for the Facility shall not exceed 1,170,400 tons on the basis of an average value of 3.34 lbs of steam per lb of MSW processed, calculated monthly as the sum of each consecutive 12 month period, as compared to the measured totalized steam flow that was previously used.

Chart 5 on page 12 depicts the steam production total calculated monthly as the sum of each consecutive 12-month period.

While the agreement with DEQ settled a long-standing issue and clarifies the methodology to be used, HDR considers it to be a flawed approach, and not consistent with general industry practice. The DEQ approach relies on a more-subjective method of calculating steam flow based on the tonnage of waste processed. Determination of monthly tonnage of waste processed relies on estimates of the quantity of waste in the pit, based only on visual observation. In addition, it is well known that waste at the bottom of the pit has significantly higher density (weight per volume) than that at the top of the pit, and this is not factored into the monthly tonnage. Finally, the conversion of MSW tonnage to steam production ignores the variability in waste heating value.

## **7.0 Facility Maintenance**

Throughout the quarter, significant routine and planned maintenance was performed. HDR considers that the Facility is implementing a very effective maintenance regimen, and is performing routine and preventative maintenance, along with selected equipment replacements in a timely manner. CAAI monthly maintenance reports provide a detailed account of maintenance performed.

### **7.1 Safety**

The plant had no recordable accidents during the quarter. The plant has operated 955 days without an OSHA recordable incident through the end of June 2013. Safety training was conducted during the quarter with themes as follows:

April 2013 – Confined Space Entry and Permit Process

May 2013- Sprains and Strains/Stretch and Flex

June 2013 – Emergency Action Plan (EAP)



## 7.2 Facility Housekeeping

CAAI is performing Facility housekeeping and maintaining plant cleanliness in accordance with acceptable industry practices. A Site inspection was conducted in June 2013. At the time of the inspections, new deficiencies were recorded and prior deficiencies were given a status updates. Photos of interest from the inspection are depicted in Appendix B. The Facility housekeeping ratings from the June 2013 inspection are presented in Table 11.

**Table 11: Facility Housekeeping Ratings – June 2013**

Facility Area	Highly Acceptable	Acceptable	Needs Improvement	Unacceptable
Tipping Floor		✓		
Citizen's Drop-off Area		✓		
Tipping Floor Truck Exit		✓		
Front Parking Lot		✓		
Rear Parking Lot		✓		
Boiler House Pump Room		✓		
Lime Slurry Pump Room		✓		
Switchgear Area		✓		
Ash Load-out Area		✓		
Vibrating Conveyor Area	✓			
Ash Discharger Area		✓		
Cooling Tower Area		✓		
Truck Scale Area		✓		
SDA/FF Conveyor Area		✓		
SDA Penthouses		✓		
Lime Preparation Area		✓		
Boiler Drum Levels		✓		
Turbine Room	✓			
Electrical Room		✓		



## **APPENDIX A**

## **FACILITY CEMS DATA**



**Table 12: Unit #1 Monthly Summary for Reportable Emissions Data**

Group#-Channel#	G8-C35	G8-C28	G8-C8	G8-C4	G8-C12	G8-C34	G8-C37	G8-C40	G8-C39
Long Descrip.	U-1 Steam	U-1 Econ	U-1 Stack	U-1 Stack	U-1 Stack	U-1 Opaci	U-1 FF In	U-1 Carbo	U-1 Lime
Short Descrip.	SteamFl	SO <sub>2</sub> ec	SO <sub>2</sub> sc	COsc	NO <sub>x</sub> sc	Opacity	FF InTemp	CarbInj	LimeFlow
Units	K#/Hr	ppmc	ppm	ppmc	ppmc	%	deg F	#/hr	gpm
Range	0-100	0-2000	0-500	0-4000	0-1000	0-100	100-500	0-50	0-20
April-13	AVG	90.7	58.0	2.0	34.0	164.0	0.4	302.0	16.5
	Max	92.7	79.0	8.0	42.0	192.0	0.8	304.0	17.2
	Min	84.2	42.0	0.0	29.0	160.0	0.0	302.0	16.2
May-13	AVG	89.9	53.0	2.0	33.0	166.0	0.2	303.0	16.8
	Max	92.1	72.0	6.0	48.0	190.0	0.6	306.0	17.4
	Min	83.8	30.0	0.0	25.0	159.0	0.0	300.0	16.3
June-13	AVG	87.8	47.0	2.0	33.0	167.0	0.4	302.0	17.0
	Max	91.5	62.0	4.0	46.0	189.0	4.5	305.0	19.4
	Min	80.1	27.0	1.0	27.0	162.0	0.0	301.0	16.4
<b>Quarter Average</b>		89.5	52.7	2.0	33.3	165.7	0.3	302.3	16.8
<b>Quarter Max Value</b>		92.7	79.0	8.0	48.0	192.0	4.5	306.0	19.4
<b>Quarter Min Value</b>		80.1	27.0	0.0	25.0	159.0	0.0	300.0	16.2
<b>Limits:</b>		NA	NA	29	100	205	10	320	16(a)

(a) Carbon flow limit is a minimum value

\* Note: The data reported herein represent 24 hour average data for all parameters. Emissions excursions that are measured on shorter time intervals (ie., 4-hour block averages for CO) do not correlate with the 24 hour average data reported above.



**Table 13: Unit #2 Monthly Summary for Reportable Emissions Data**

Group#-Channel#	G8-C35	G8-C28	G8-C8	G8-C4	G8-C12	G8-C34	G8-C37	G8-C40	G8-C39	
Long Descrip.	U-2 Steam	U-2 Econ	U-2 Stack	U-2 Stack	U-2 Stack	U-2 Opaci	U-2 FF In	U-2 Carbo	U-2 Lime	
Short Descrip.	SteamFl	SO <sub>2</sub> ec	SO <sub>2</sub> sc	COsc	NO <sub>x</sub> sc	Opacity	FF InTemp	CarbInj	LimeFlow	
Units	K#/Hr	ppmc	ppm	ppmc	ppmc	%	deg F	#/hr	gpm	
Range	0-100	0-2000	0-500	0-4000	0-1000	0-100	100-500	0-50	0-20	
April-13	AVG	90.1	37.0	1.0	32.0	159.0	0.3	299.0	16.2	2.9
	Max	91.6	54.0	6.0	40.0	185.0	0.8	299.0	16.4	3.2
	Min	83.5	23.0	0.0	25.0	157.0	0.0	298.0	16.1	2.5
May-13	AVG	89.3	32.0	0.0	33.0	161.0	0.3	298.0	16.3	2.9
	Max	91.3	51.0	2.0	47.0	184.0	1.0	300.0	16.9	3.0
	Min	84.6	13.0	0.0	24.0	153.0	0.0	297.0	16.1	2.7
June-13	AVG	86.0	39.0	1.0	31.0	162.0	0.4	299.0	16.2	2.8
	Max	91.7	88.0	6.0	48.0	182.0	1.5	302.0	16.8	3.5
	Min	68.9	14.0	0.0	19.0	151.0	0.0	297.0	16.2	2.3
<b>Quarter Average</b>	88.5	36.0	0.7	32.0	160.7	0.3	298.7	16.2	2.9	
<b>Quarter Max Value</b>	91.7	88.0	6.0	48.0	185.0	1.5	302.0	16.9	3.5	
<b>Quarter Min Value</b>	68.9	13.0	0.0	19.0	151.0	0.0	297.0	16.1	2.3	
<b>Limits:</b>	NA	NA	29	100	205	10	320	17(a)		

(a) Carbon flow limit is a minimum value

\* Note: The data reported herein represent 24 hour average data for all parameters. Emissions excursions that are measured on shorter time intervals (ie., 4-hour block averages for CO) do not correlate with the 24 hour average data reported above.



**Table 14: Unit #3 Monthly Summary for Reportable Emissions Data**

Group#-Channel#	G8-C35	G8-C28	G8-C8	G8-C4	G8-C12	G8-C34	G8-C37	G8-C40	G8-C39	
Long Descrip.	U-3 Steam	U-3 Econ	U-3 Stack	U-3 Stack	U-3 Stack	U-3 Opaci	U-3 FF In	U-3 Carbo	U-3 Lime	
Short Descrip.	SteamFl	SO <sub>2</sub> ec	SO <sub>2</sub> sc	COsc	NO <sub>x</sub> sc	Opacity	FF InTemp	CarbInj	LimeFlow	
Units	K#/Hr	ppmc	ppm	ppmc	ppmc	%	deg F	#/hr	gpm	
Range	0-100	0-2000	0-500	0-4000	0-1000	0-100	100-500	0-50	0-20	
April-13	AVG	91.2	56.0	2.0	26.0	159.0	0.0	296.0	16.2	3.3
	Max	94.0	80.0	5.0	32.0	185.0	0.4	300.0	17.0	4.3
	Min	83.9	35.0	0.0	20.0	157.0	0.0	295.0	16.0	3.0
May-13	AVG	89.1	42.0	1.0	27.0	161.0	0.0	296.0	16.4	3.1
	Max	91.7	57.0	3.0	34.0	190.0	0.0	299.0	17.6	3.4
	Min	83.1	26.0	0.0	21.0	152.0	0.0	293.0	16.3	3.0
June-13	AVG	84.8	28.0	1.0	26.0	162.0	0.1	296.0	16.3	3.1
	Max	90.2	48.0	4.0	30.0	183.0	0.4	299.0	16.9	3.4
	Min	79.7	16.0	0.0	20.0	156.0	0.0	295.0	16.3	2.9
<b>Quarter Average</b>	88.4	42.0	1.3	26.3	160.7	0.0	296.0	16.3	3.2	
<b>Quarter Max Value</b>	94.0	80.0	5.0	34.0	190.0	0.4	300.0	17.6	4.3	
<b>Quarter Min Value</b>	79.7	16.0	0.0	20.0	152.0	0.0	293.0	16.0	2.9	
<b>Limits:</b>	NA	NA	29	100	205	10	320	16(a)		

(a) Carbon flow limit is a minimum value

\* Note: The data reported herein represent 24 hour average data for all parameters. Emissions excursions that are measured on shorter time intervals (ie., 4-hour block averages for CO) do not correlate with the 24 hour average data reported above.





## APPENDIX B SITE VISIT PHOTOS



Figure 1: Storm water debris stops (Typical of 2) not in proper position (New Deficiency)



Figure 2: Overgrown foliage obstructing view of sign at the southeast corner of entrance road (New Deficiency)



Figure 3: Pothole at truck entrance roadway approaching scales



Figure 4: Spider cracking of pavement still present at truck entrance



Figure 5: Cooling towers from SDA No. 3 Deck



Figure 6: Lime slurry piping in SDA No. 3 Penthouse





**Figure 7: Baghouse No. 2 Compartment Access Deck – No issues to report**



**Figure 8: Dolomitic Lime trough cover and screws removed for maintenance**



**Figure 9: Dolomitic Lime Silo**



**Figure 10: Rotary sootblowers on Boiler No. 1 Economizer**



**Figure 11: Auxiliary Burner**



**Figure 12: Waste freight elevator at Charging Floor**





Figure 13: Waste freight elevator from ground elevation



Figure 14: Waste Pit from Charging Floor



Figure 15: Turbine Generator Deck



Figure 16: Firing Aisle



Figure 17: Ferrous Magnet and Pan



Figure 18: Dolomitic Lime Screws removed for maintenance



Figure 19: Reverse Osmosis Skid



Figure 20: Condensate Pumps



Figure 21: Circulating Water Pumps



Figure 22: Boiler Feedwater Pumps



Figure 23: Ash Trailers



Figure 24: Citizen's Drop-off

