Alexandria/Arlington
Resource Recovery Facility

First Quarter 2014
Summary Operating Report

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Definition of Abbreviations & Acronyms

Abbreviation/Acronym	Definition
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_x	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_2	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
First Quarter 2014 Summary 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 2013 calendar year. This report is prepared for the first quarter of the 2014 fiscal year and summarizes Facility operations between July 1, 2013 and September 30, 2013. This report identifies the fiscal year and quarter beginning on July 1, 2013, as FY14 and Q1FY14, respectively.

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 Q1FY14. The operation of the Facility, maintenance, safety, and overall cleanliness continue to be above average. Environmental performance was acceptable with three (3) reportable environmental excursions throughout the quarter, which are summarized in Section 6.0 of this report.

During Q1FY14, the Facility experienced four (4) instances of unscheduled downtime for the boilers totaling 118.1 hours, and one (1) instance of unscheduled downtime for the turbine generators totaling 1.3 hours. Beginning September 21, 2013, Boiler No. 2 experienced 113.6 hours of downtime for scheduled maintenance. No other scheduled downtime was experienced by the boilers or turbine generators during the quarter. The boilers experienced five (5) instances of standby time totaling 179.6 hours, and the turbine generators experienced five (5) instances of standby time totaling 172.5 hours during the quarter. A detailed listing of downtime is provided in Section 5.1 of this report.

Average waste processed during the quarter was 944.4 tons per day, or 96.9% of nominal facility capacity. Waste deliveries averaged 957.2 tons per day, which is 1.4% higher than the burn rate. The capacity utilization of 96.9% compares favorably to industry averages, which are generally in the 88% to 92% range.

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 1.4% from the corresponding quarter in FY13; steam production increased 0.2%, and electricity generated (gross) decreased 0.5% from the corresponding quarter in FY13. The increase in steam generation was attributable to the increase in MSW throughput, less (14.7 hours) downtime (scheduled, unscheduled, and standby) experienced by the boilers, offset by the lower (1.5%) average waste heating value during the quarter. The decrease in gross electrical generation in Q1FY14 as compared to Q1FY13 is attributable to more (54.6 hours) downtime experienced by the turbine generators.

3.0 Facility Inspection and Records Review

In August 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	Tipping Floor siding damaged	July 2012	C	Repair siding		Open
3	Pothole at truck entry roadway	May 2012	C	Repair		Open
4	Stormwater debris stops (Typical of 2) not in proper position	June 2013	C	Re-position stormwater debris stops. Replace if necessary.	August 2013	Closed
5	Overgrown foliage obstructing view of sign at the southeast corner of entrance road	June 2013	C	Cut foliage so all signs are visible	August 2013	Closed
6	Emergency lights not working in SDA Penthouse No. 3 - (See Figure 3)	August 2013	A	Replace/Repair emergency lighting		Open

4.0 Facility Operations

Monthly operating data provided by CAAI indicates that 86,884 tons of MSW were processed during Q1FY14, and a total 88,058 tons of MSW including 1,470 tons of Special Handling Waste were received. Total ash production during the quarter was 18,167 tons, which represents 20.9% of the waste processed. The average uncorrected steam production rate for Q1FY14 was 3.0 $tons_{steam}/ton_{waste}$, and 1.2% less than the corresponding quarter in FY13.

Chart 1: Tons of Waste Processed

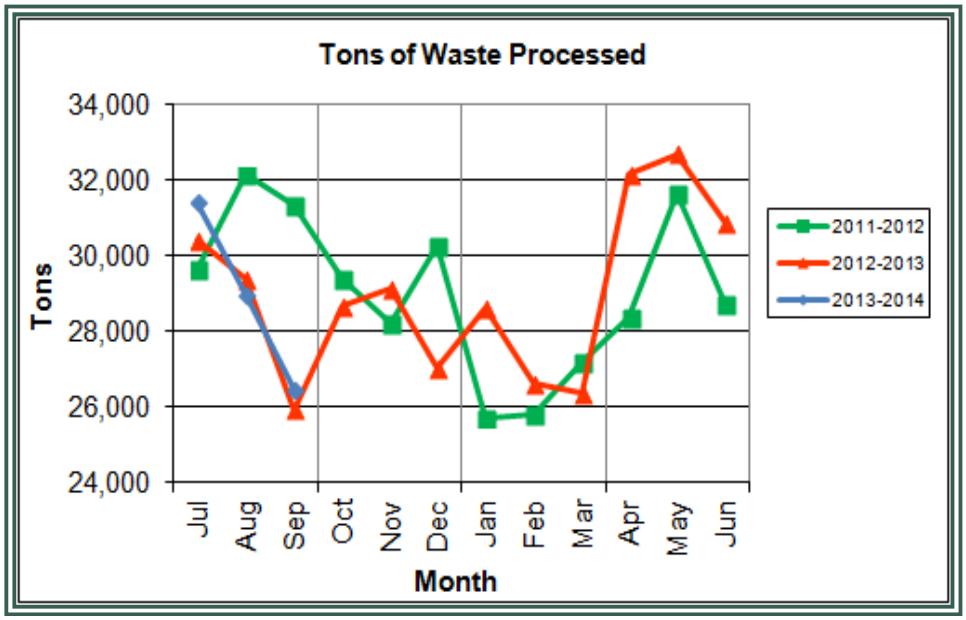


Chart 1 illustrates that Q1FY14 waste processed was higher (1.4%) than the corresponding quarter Q1FY13. CAAI reported that 443 tipping floor/MSW inspections were conducted during the quarter and three (3) notices of violation (NOV) were issued for the following:

- July – One (1) NOV was issued for a driver leaving the tipping floor with his forks up in the air
- August – One (1) NOV was issued for failure to obey the stop sign of the Tipping Floor
- September – One (1) NOV was issued for failure to obey the stop sign of the Tipping Floor

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

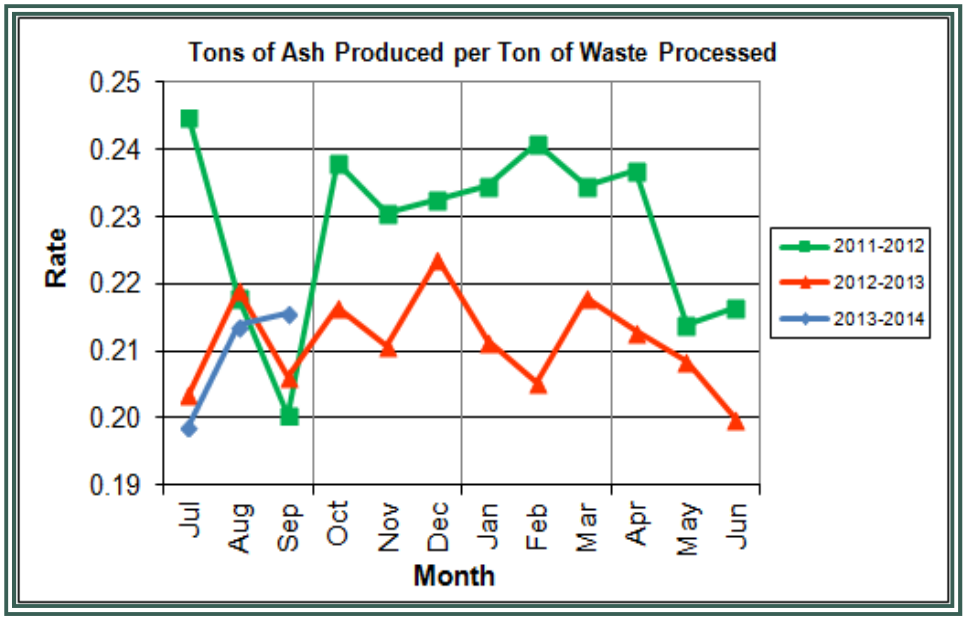


Chart 2 illustrates that ash production rates in Q1FY14 are lower (0.1%) at 20.9% of processed waste, compared to the corresponding quarter in FY13 when the ash production rate was 21.0% of processed waste.

Chart 3: Ferrous Recovery Rate

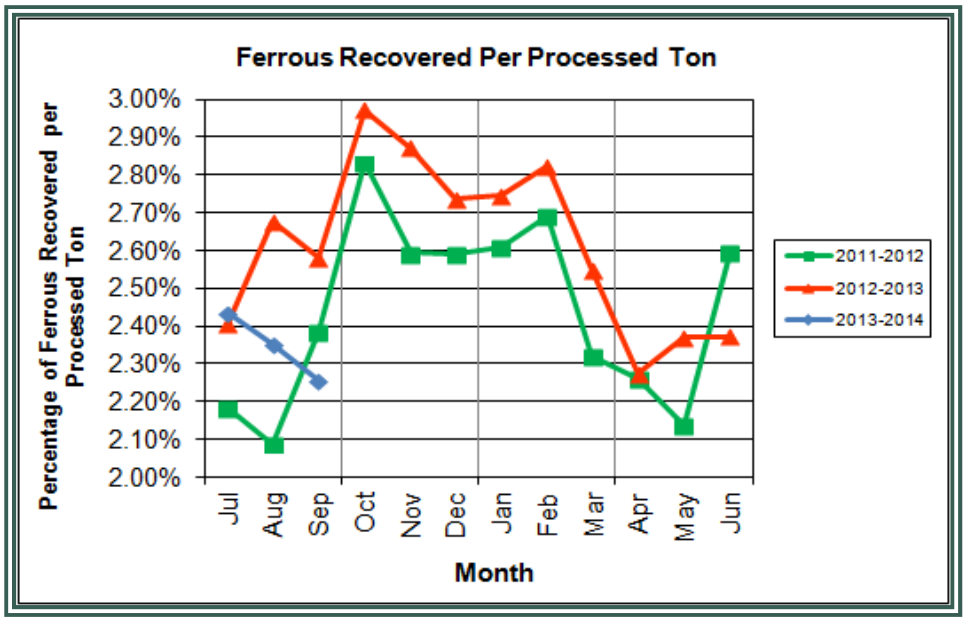
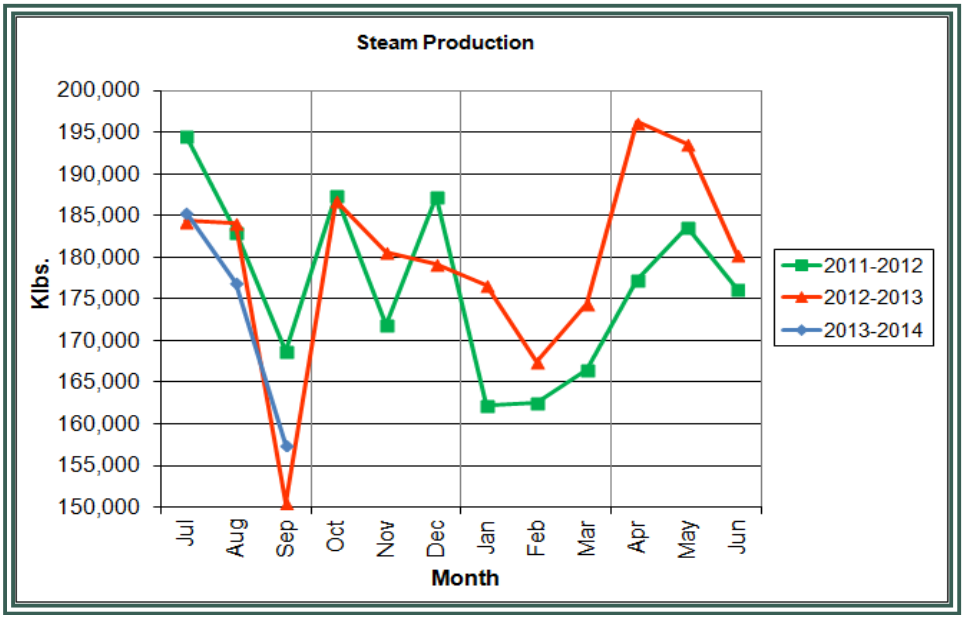


Chart 3 depicts the monthly ferrous metal recovery rate as a percentage of processed MSW tonnage. In Q1FY14, 2,043 tons of ferrous metals were recovered, which is 6.6%

lower than the corresponding quarter in FY13 and equivalent to 2.4% of processed waste. Ferrous metal recovered since the system was added in May 2007, totals 51,158 tons.

Chart 4: Steam Production



In Chart 4, the total steam production for Q1FY14 was 519,917 klbs., or 0.2% higher than the corresponding quarter in FY13. The slight increase in steam production is attributable to the increase in MSW throughput, less downtime (14.7 hours) (scheduled, unscheduled, and standby) experienced by the boilers, offset by the lower (1.5%) average waste heating value during the quarter.

Chart 5: 12-Month Rolling Steam Production

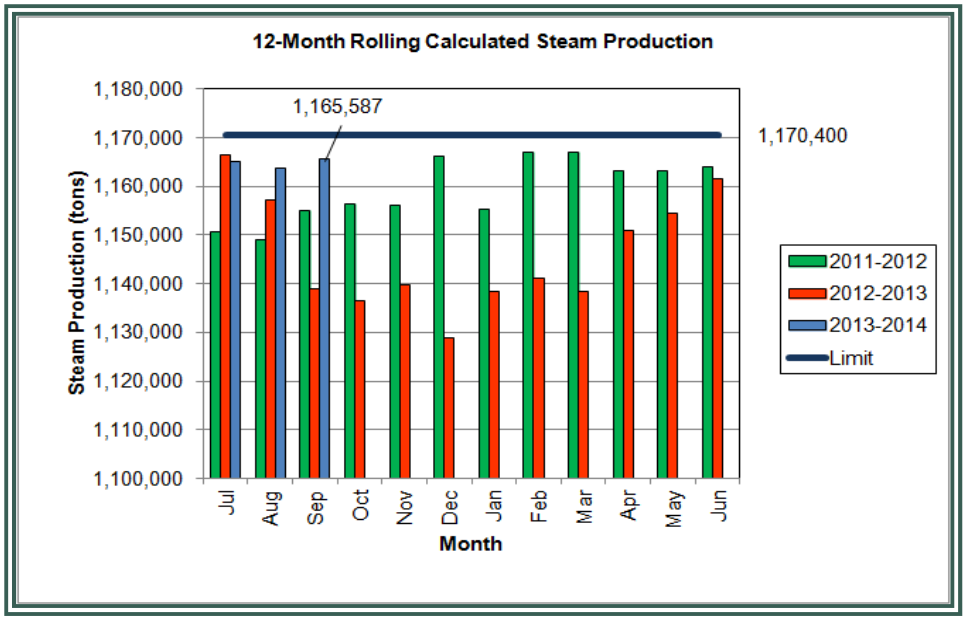
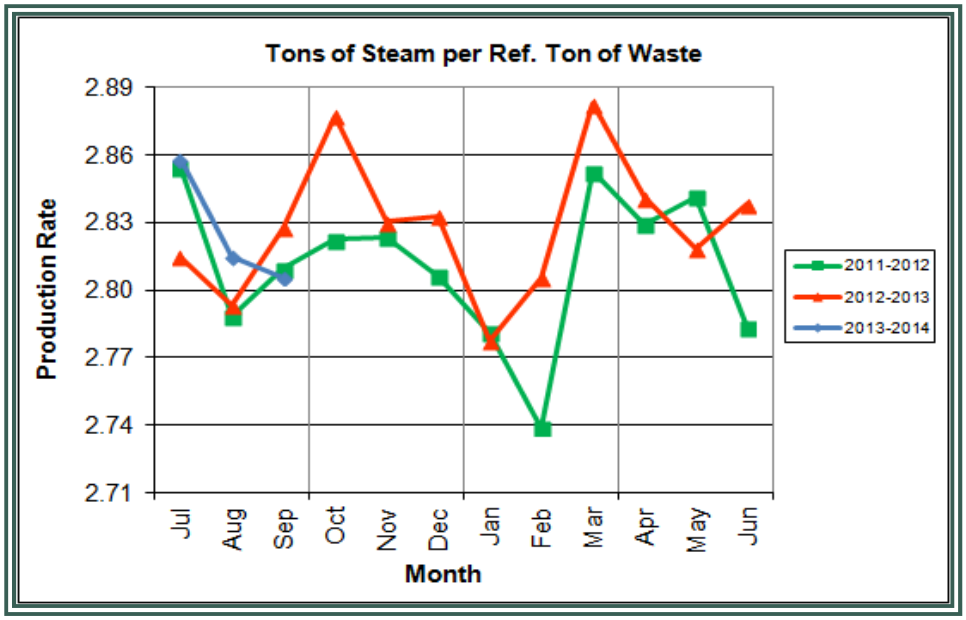


Chart 5 depicts the 12-month rolling steam production total for the period ending in September 2013. According to the Title V permit, the annual steam production for the Facility shall not exceed 1,170,400 tons on the basis of an average value of 3.34 lbs of steam per lb of MSW processed, calculated 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 September 2013 was 1,165,587 tons which is 99.6% 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, Q1FY14 tracked higher (0.6%), at 2.83 $tons_{steam}/ton_{ref}$, than the corresponding quarter in FY13.

Chart 7: Calculated Waste Heating Value

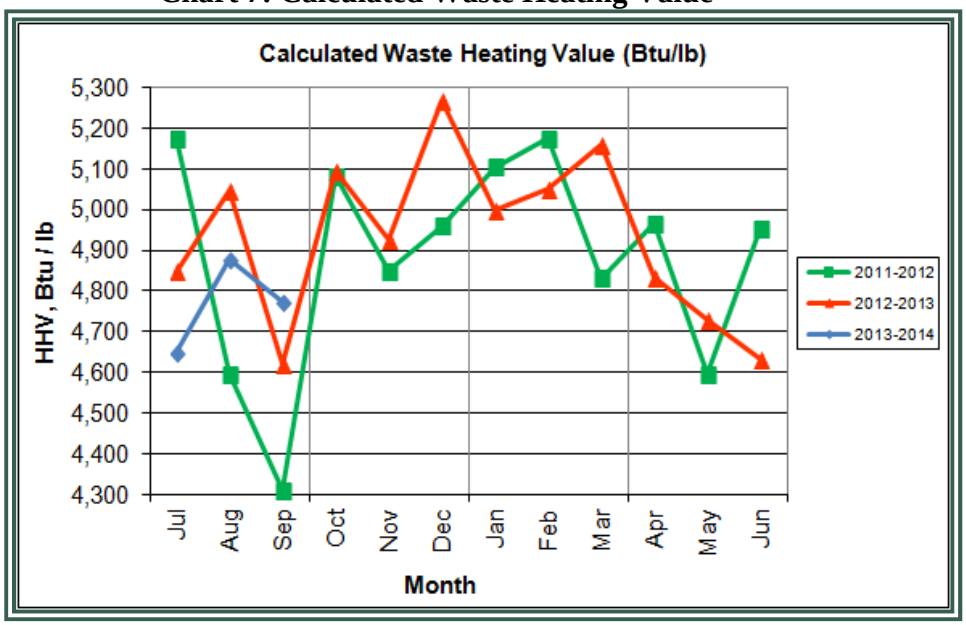


Chart 7 illustrates that Q1FY14 average waste heating value was lower (1.5%) at 4,766 Btu/lb than the corresponding quarter Q1FY13, which averaged 4,838 Btu/lb.

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)
Q1FY12	**Quarterly Totals**	**93,129**	**0**	**20,546**	**54**	**2,066**	**546,447**	**38,196**
	July-11	29,652	0	7,258	10	647	194,649	13,894
	August-11	32,130	0	7,003	10	671	183,063	12,686
	September-11	31,347	0	6,285	34	748	168,735	11,616
Q1FY13	**Quarterly Totals**	**85,696**	**0**	**17,970**	**242**	**2,187**	**518,902**	**36,007**
	July-12	30,390	0	6,185	151	732	184,330	13,067
	August-12	29,376	0	6,437	11	786	184,057	12,978
	September-12	25,930	0	5,348	80	669	150,515	9,962
Q1FY14	**Quarterly Totals**	**86,884**	**0**	**18,167**	**1,470**	**2,043**	**519,971**	**35,635**
	July-13	31,409	0	6,249	546	764	185,488	12,755
	August-13	29,000	0	6,206	676	682	176,948	12,208
	September-13	26,475	0	5,712	248	597	157,535	10,672
FY14 YTD Totals		**86,884**	**0**	**18,167**	**1,470**	**2,043**	**519,971**	**35,635**
FY13 Totals		**347,790**	**0**	**73,446**	**2,665**	**9,063**	**2,154,201**	**148,366**
FY12 Totals		**348,455**	**0**	**79,424**	**336**	**8,474**	**2,121,209**	**149,919**

Table 2 presents the production data provided to HDR by CAAI for Q1FY14 on both a monthly and quarterly basis. For purposes of comparison, data for Q1FY12 and Q1FY13 are also shown, as well as FY12, FY13 and FY14 year-to-date (YTD) totals.

In comparing quarterly totals, the data shows:

- More waste was processed in Q1FY14 than Q1FY13, and less than Q1FY12
- More steam was generated in Q1FY14 than Q1FY13, and less than Q1FY12
- Less electricity was generated in Q1FY14 than Q1FY13 and Q1FY12
- Significantly more supplemental waste was processed in Q1FY14 than Q1FY13 and Q1FY12.

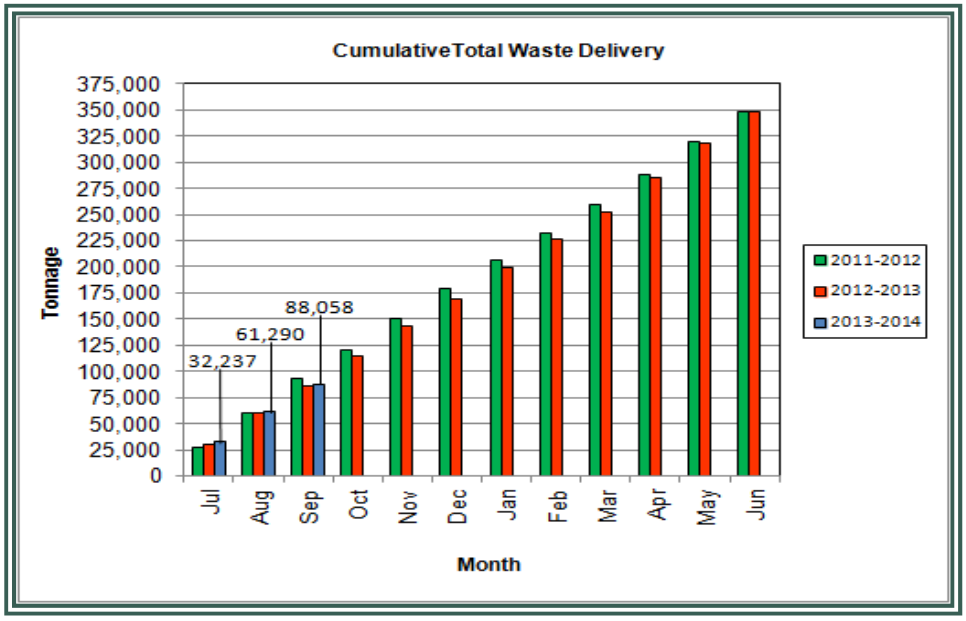
Please note the total steam generation figures presented in Table 2 do not correlate with the annual steam production limit from the Facility Permit; such limits apply on a 12-month rolling average monthly basis, and not a fiscal year basis. It is also worth noting that the quantity of supplemental waste, while still a small percentage of overall waste, has significantly increased (1,400+ tons) in Q1FY14 compared to the same periods in the prior two (2) fiscal years.

Table 3: Jurisdictional vs. Non-Jurisdictional Waste Delivery

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Totals
FY11	**Jurisdiction waste toward GAT**	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
	Spot Waste tons	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
	Supplemental Waste	8	17	12	13	6	13	14	34	25	29	26	6	203
	MSW Totals	**32,205**	**33,254**	**29,808**	**27,593**	**27,995**	**28,848**	**29,298**	**22,262**	**26,763**	**28,803**	**33,328**	**29,044**	**349,202**
FY12	**Jurisdiction waste toward GAT**	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
	Spot Waste tons	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
	Supplemental Waste	10	10	34	15	15	21	12	22	15	23	68	91	336
	MSW Totals	**27,023**	**33,654**	**32,641**	**27,599**	**29,514**	**29,132**	**26,490**	**25,672**	**27,729**	**28,390**	**31,539**	**28,629**	**348,012**
FY13	**Jurisdiction waste toward GAT**	19,413	18,357	16,632[2]	17,625[3]	18,838[4]	16,195	-	-	-	-	-	-	107,058
	Spot Waste tons	10,516	11,326	10,610	10,317	9,330	9,558	-	-	-	-	-	-	61,656
	City Waste	-	-	-	-	-	-	1,683[1]	1,287	1,444	2,382	2,286	1,919	11,000
	County Waste	-	-	-	-	-	-	2,442[1]	2,100	2,372	3,381	3,932	3,309	17,536
	Municipal Solid Waste	-	-	-	-	-	-	25,019[1]	23,637	21,661	27,066	25,794	24,930	148,107
	Supplemental Waste	151	11	80	25	234	405	363	365	76	403	281	271	2,665
	MSW Totals	**29,928**	**29,683**	**27,241**	**27,942**	**28,167**	**25,753**	**29,507**	**27,388**	**25,552**	**33,231**	**32,293**	**30,429**	**348,022**
FY14	**City Waste**	2,065	1,693	1,702										5,460[2]
	County Waste	3,459	3,079	2,784										9,322 [2]
	Municipal Solid Waste	26,167	23,604	22,034										71,804[2]
	Supplemental Waste	546	676	248										1,471 [2]
	MSW Totals	**32,237**	**29,053**	**26,768**										**88,058[2]**

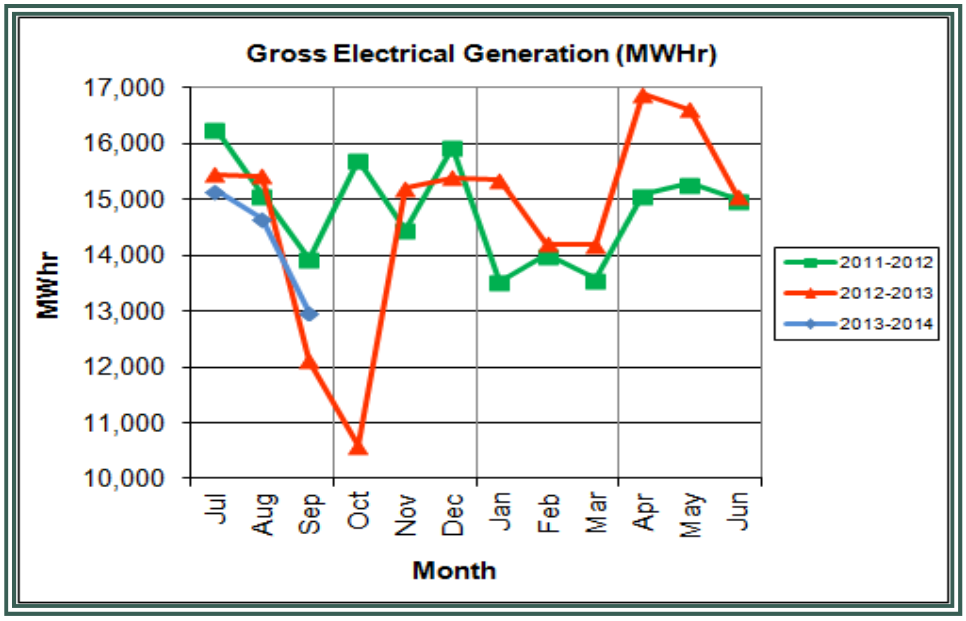
Note (1): Beginning January 2013, the method in which waste was classified was modified as compared to prior periods due to change in contractual obligations and plant ownership
Note (2): Values indicated are year to date (YTD) totals

Chart 8: Cumulative Total Waste Delivery



Depicted in Chart 8, for the period ending in September 2013; cumulative total waste delivery was 1.7% more compared to the same period in FY13.

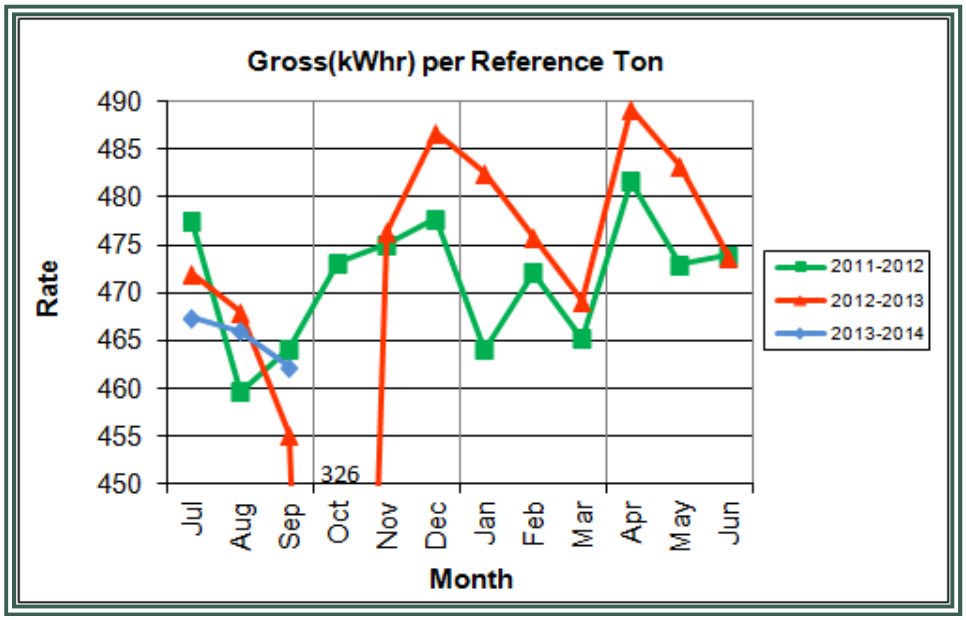
Chart 9: Gross Electrical Generation



During Q1FY14, the Facility generated 42,797 MWhrs (gross) of electricity compared to Q1FY13 generation of 42,989 MWhrs (gross), a 0.5% decrease. The decrease in gross electrical production is attributable to the increased downtime (54.6 hours) experienced by the turbine generators.

Note that the 3-year low of gross electrical production experienced in October 2012 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 evident in Chart Nos. 10 through 14, including sharp spikes 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 Q1FY14 was 465 kWhr, which is identical to the corresponding period in FY13. Since this calculated value uses reference or normalized tonnages of waste, it should cancel the effect of MSW heating value (Btu content) variability.

Chart 11: Net Conversion Rate

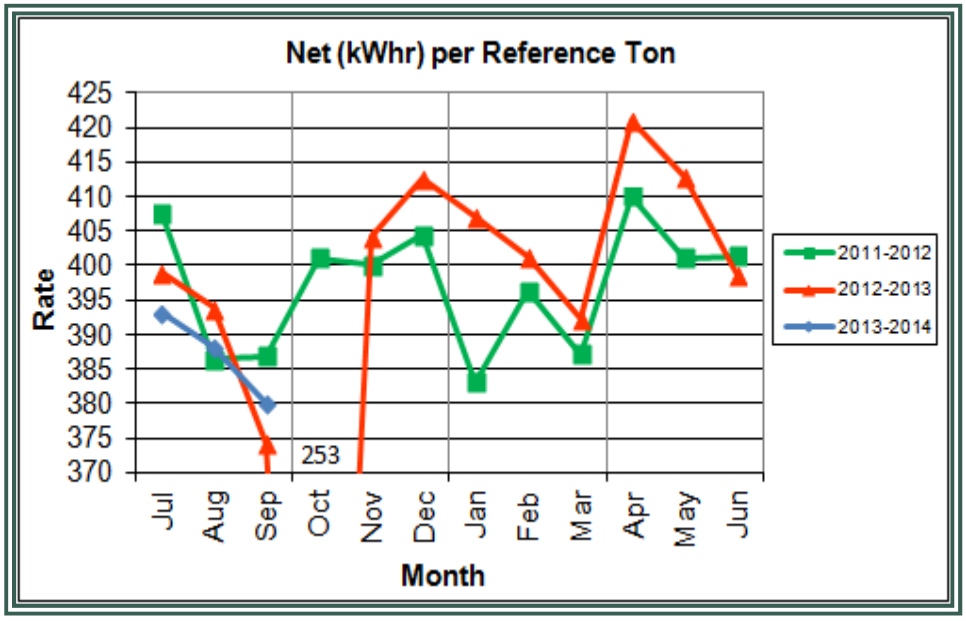


Chart 11 depicts the normalized net power (gross minus in-house usage) generation history. In Q1FY14, the average net electrical generation per reference ton was 387 kWhr, which is 0.5% lower than the corresponding quarter in FY13.

Chart 12: Net Conversion Rate

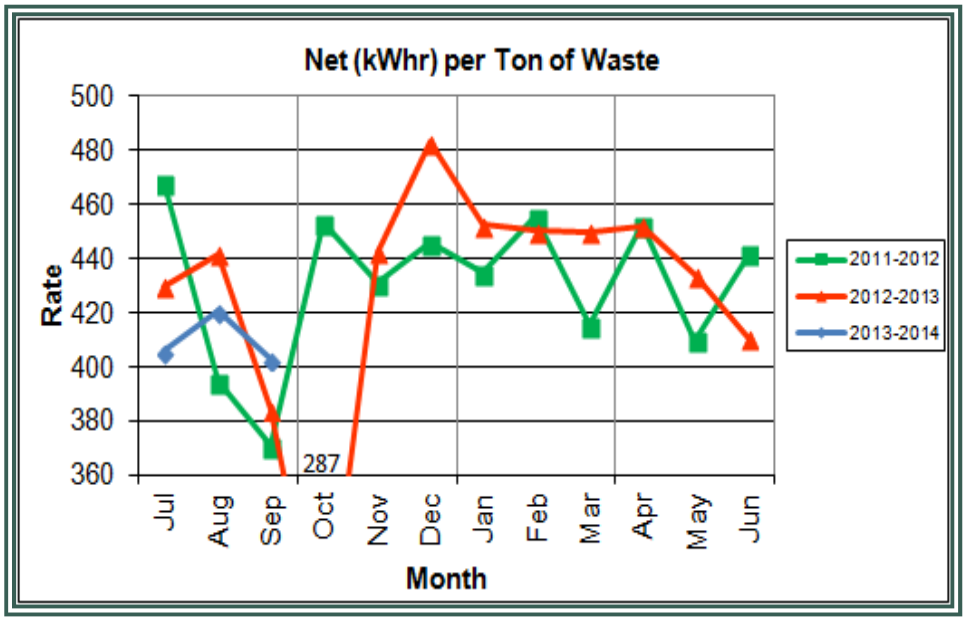
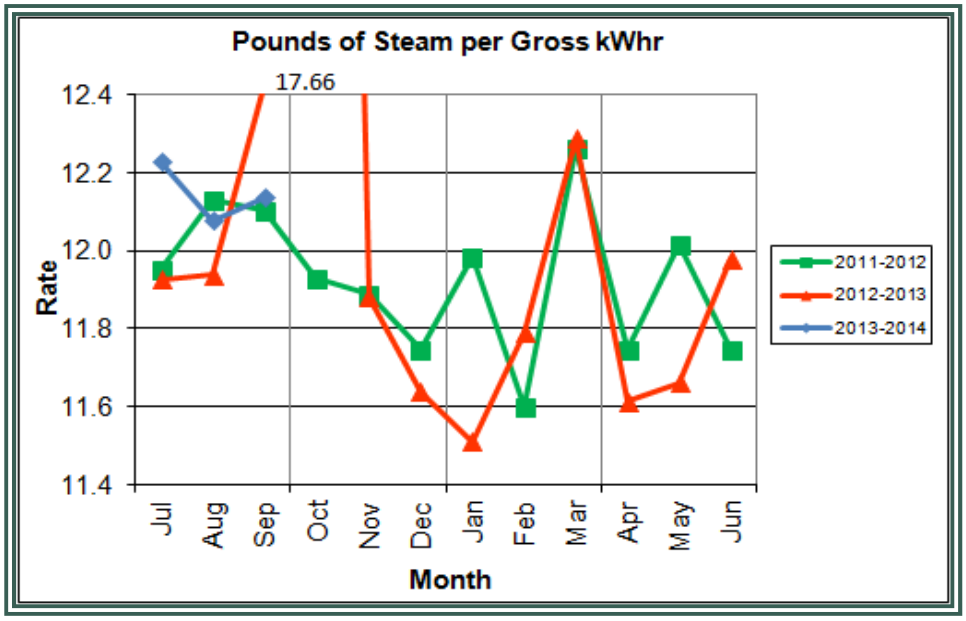


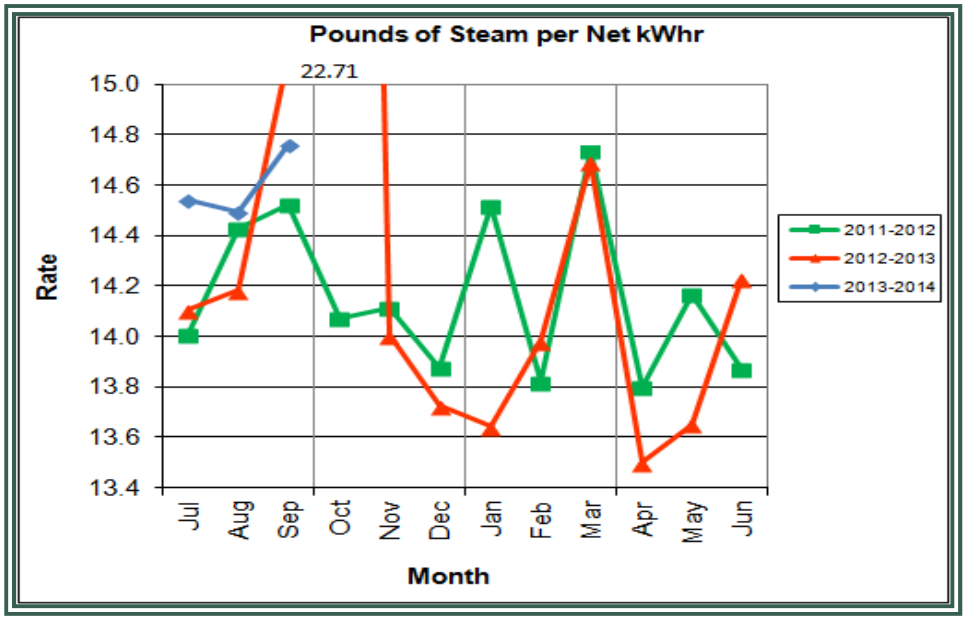
Chart 12 depicts the net power generation per processed ton. The net electrical generation per processed ton in Q1FY14 was 410 kWhr, which is 2.1% lower than the corresponding quarter in FY13.

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 Q1FY14 the average lbs of steam consumed per gross kWhr was 12.2, which is higher (0.7%) than the corresponding quarter Q1FY13. The average lbs of steam consumed per net kWhr was 14.6, which is higher (1.3%) than the corresponding quarter in FY13. The average steam temperature during the quarter was 693.2 F, which is lower (1.2%) than the average steam temperature of the corresponding quarter last year, and 6.8^{o} F lower than design temperature of 700^{o} F. These quarterly metrics are somewhat disappointing in that any performance improvements associated with (and expected from) the major turbine overhaul have largely disappeared. CAA responded that the overhauled turbine experienced control valve actuator problems that limited the load on TG No. 1 until a replacement actuator was installed in late September, 2013, and that additional improvement should be expected going forward.

Chart 14: Net Turbine Generator Conversion Rate



5.0 Facility Availability

Facility availabilities for Q1FY14 are shown in Table 4. According to CAAI reports, the average unit availabilities for Boiler Nos. 1, 2, and 3 for Q1FY14 were 100.0%, 93.5%, and 95.9%, respectively. The three-boiler average availability during the quarter was 96.5%, which is good.

During Q1FY14, the average availability for Turbine Generator Nos. 1 and 2 was 99.9% and 100.0%. The two-turbine generator average availability during the quarter was 100.0%, which is excellent.

Table 4: Quarterly Facility Unit Availabilities

Availability	Q1FY14 Average
Boiler No. 1	100.0%
Boiler No. 2	93.5%
Boiler No. 3	95.9%
Avg.	*96.5%*
Turbine No. 1	99.9%
Turbine No. 2	100.0%
Avg.	*100.0%*

5.1 Facility Operations

During Q1FY14, the Facility experienced four (4) instances of unscheduled downtime for the boilers totaling 118.1 hours, and one (1) instance of unscheduled downtime for the turbine generators totaling 1.3 hours. Beginning September 21, 2013, Boiler No. 2 experienced 113.6 hours of downtime for scheduled maintenance. No other scheduled downtime was experienced by the boilers or turbine generators during the quarter. The boilers experienced five (5) instances of standby time totaling 179.6 hours, and the turbine generators experienced five (5) instances of standby time totaling 172.5 hours during the quarter. CAAI reports that the three (3) instances of standby time experienced by the boilers totaling 153.3 hours and the two (2) associated instances of standby time experienced by the turbine generators during September were a preventative measure to avoid exceeding the 350,000 ton 12-month rolling process limit which was at 99.7% through the end of September. Details of downtime events experienced during the quarter are portrayed in Tables 5 and 6 as follows:

Table 5: Boiler Downtime – Q1FY14

Boiler Number	Outage Begin Date	Outage End Date	Hours Unavailable	Downtime Classification	Reason Unavailable
1	7/15/13	7/16/13	14.0	Standby	Relay work being completed at Dominion Virginia Power Substation (Black Plant)
2	7/15/13	7/16/13	12.3	Standby	Relay work being completed at Dominion Virginia Power Substation (Black Plant)
3	7/14/13	7/17/13	74.9	Unscheduled	Waterwall leak repair, grate drive yoke replacement, and cleaning of gas paths in generating bank
3	8/1/13	8/1/13	15.7	Unscheduled	Repair of a broken grate drive yoke
2	8/18/13	8/18/13	5.6	Unscheduled	Feedchute plug
2	9/6/13	9/8/13	47.3	Standby	Preventative measure taken to avoid exceeding 350,000 ton rolling 12-month process limit
2	9/9/13	9/10/13	21.9	Unscheduled	Tube leak on the front wall elevation 150 Tube Nos. 1 and 14
3	9/13/13	9/15/13	49.5	Standby	Preventative measure taken to avoid exceeding 350,000 ton rolling 12-month process limit
2	9/21/13	9/26/13	113.6	Scheduled	Scheduled Outage
1	9/26/13	9/28/13	56.5	Standby	Preventative measure taken to avoid exceeding 350,000 ton rolling 12-month process limit
Total Unscheduled Downtime					**118.1 Hours**
Total Scheduled Downtime					**113.6 Hours**
Total Standby Downtime					**179.6 Hours**
Total Downtime					**411.3 Hours**

Table 6: Turbine Generator Downtime – Q1FY14

Turbine Generator Number	Outage Begin Date	Outage End Date	Hours Unavailable	Downtime Classification	Reason Unavailable
1	7/15/13	7/16/13	13.3	Standby	Relay work being completed at Dominion Virginia Power Substation (Black Plant)
2	7/14/13	7/6/13	55.8	Standby	Relay work being completed at Dominion Virginia Power Substation (Black Plant)
1	8/15/13	8/15/13	1.3	Unscheduled	Calibration of hydraulic actuator
2	9/13/13	9/14/13	38.5	Standby	Boiler No. 3 standby time for process limitations - Boiler Nos. 1 and 2 steam feeding Turbine Generator No. 1
1	9/23/13	9/24/13	15.4	Standby	Boiler No. 2 downtime for scheduled outage - Boiler Nos. 1 and 3 steam feeding Turbine Generator No. 2
2	9/24/13	9/26/13	49.5	Standby	Boiler No. 1 standby time for process limitations - Boiler Nos. 2 and 3 steam feeding Turbine Generator No. 1
Total Unscheduled Downtime			**1.3 Hours**		
Total Scheduled Downtime			**0.0 Hours**		
Total Standby Downtime			**172.5 Hours**		
Total Downtime			**173.8 Hours**		

As previously mentioned, scheduled maintenance was conducted on Boiler No. 2 during Q1FY14 beginning September 21, 2013, lasting 113.6 hours. Some significant maintenance items conducted during the outage included:

- Replacement of eight (8) driving beam grate support rollers
- Replacement of four (4) driving beam grate guide rollers
- Replacement of the 5th floor outlet side and 4th floor inlet side of the boiler generating bank baffle plates
- Calibration of pressure and flow transmitters
- Installation of new motors on the Under Fire Air (UFA), Over Fire Air (OFA), and Seal Air Fans
- Installation and calibration of a new carbon feeder on the No. 2 Carbon System

CAAI reports that it completed 2,306 preventative maintenance items during the quarter. Some significant maintenance items included:

- Replacement of No. 1 Auxiliary Cooling Water Pump Motor and coupling
- Replacement of semi-dry ash pump
- Repair of a hole in the pebble lime silo fill line at the bend on the top of the silo
- Replacement of the coolers on the No. 1 Air Pollution Control (APC) Air Compressor
- Replacement of the signaling card on the central fire alarm system
- Repair of the ladder to the upper slaker mezzanine level
- Replacement of the Boiler No. 3 Carbon Feeder
- Installation of a new air conditioning unit and receptacle for the lead mechanics office
- Installation of a light fixture in the north refuse crane MCC Room.
- Replacement of missing support boards on the cooling tower steps
- Fabrication and installation of new covers for the backs of all three (3) ash dischargers
- Fabrication of new shear pins for the ferrous magnet
- Replacement of the rear wheels on the ferrous magnet drum platform

- Repair of holes in the Boiler No. 3 Economizer above the double dump valve

5.2 Utility and Reagent Consumptions

Table 7: Facility Utility and Reagent Consumptions

Utility	Units	Q1FY14 Total	Q1FY13 Total	Q1FY14"Per Processed Ton" Consumption	Q1FY13"Per Processed Ton" Consumption
Purchased Power	MWhr	5,664	5,478	0.07	0.06
Fuel Oil	Gal.	12,000	13,880	0.14	0.16
Boiler Make-up	Gal.	2,195,000	2,033,000	25.26	23.72
Cooling Tower Make-up	Gal.	39,639,291	44,613,815	456.23	520.61
Pebble Lime	Lbs.	1,226,000	1,096,000	14.11	12.79
Ammonia	Lbs.	157,000	136,000	1.81	1.59
Carbon	Lbs.	104,000	102,000	1.20	1.19
Dolomitic Lime	Lbs.	382,000	316,000	4.40	3.69

Fuel oil usage during the quarter represents approximately 0.21% of the total heat input to the boilers, which compares favorably with industry averages, and is slightly lower than the percentage of heat input in Q1FY13 at 0.25%. 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 3.5% of steam flow, and is acceptable. Pebble lime usage, at 1,226,000 lbs. is higher (11.9%) than the corresponding quarter last year, and the quarterly consumption rate of 14.1 lbs/ton is below historical levels (16-18 lbs/ton).

In comparing Q1FY14 to Q1FY13 on a per processed ton consumption basis:

- the purchased power consumption rate was 2.0% higher
- the total fuel oil consumption rate was 14.7% lower
- the boiler make-up water consumption rate was 6.5% higher
- the cooling tower make-up water consumption rate was 12.4% lower
- the total pebble lime consumption rate was 10.3% higher
- the ammonia consumption rate was 13.9% higher
- the carbon consumption rate was 0.6% higher

- the total dolomitic lime consumption rate was 19.2% higher

The significant increase in dolomitic lime consumption rate was recorded while maintaining ash pH within the desired range.

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 Q1FY14 are summarized in Appendix A. The Facility experienced three (3) environmental exceedances during the quarter.

On July 14, 2013, Boiler No. 3 experienced an environmental exceedance when 4-hour Carbon Monoxide (CO) levels reached 469 ppm (100 ppm limit) due to a tube rupture. CAAI reports that a 1-minute CO alarm of 583 ppm was registered on the DCS and an auxiliary operator was immediately sent to inspect the conditions of the boiler and observed no visibility through the viewports. Shortly after this, a 1-hour alarm was registered at 270 ppm. The control room operator quickly attempted to control CO by lighting the auxiliary burner but attempts were unsuccessful. CAAI reports that operations determined that the boiler experienced a tube leak which was causing the elevated CO levels but the exact location could not be determined. The feed chute was closed and the boiler was taken offline. CAAI reported that the corrective action taken by operations to address the malfunction and minimize excess emissions was shutting down the boiler in a timely manner to address the ruptured tube. CAAI reported that the preventative measures taken to minimize the likelihood of a similar deviation in the future included inspecting other tubes in the affected unit prior to bringing the unit back online and continuing to inspect the condition of the tubes during semi-annual maintenance outages and any other time the boiler is offline.

On September 8, 2013, Boiler No. 2 experienced an environmental exceedance when 6-minute opacity levels averaged 12.0% (10% limit). CAAI reports that this exceedance occurred while starting up (before waste was fed) the boiler after it had been offline to

repair tube leaks. The auxiliary burners had been lit for startup and the opacity was steady at 4%. The control room operator started the Under Fire Air (UFA) Fan and within a couple minutes the DCS experienced a high alarm due to a 10.4% opacity reading. CAAI reports that the shift supervisor went outside to look at the stack and reported seeing a slight plume which appeared to be steam. Shortly after this observation was made, the UFA fan damper set-point was lowered and Boiler No. 2 fan was secured. CAAI reported that the corrective action taken was the control room operator attempted isolating cells but no change in opacity occurred as a result. With all the baghouse cells in service, the opacity continued to eventually drop below 1%. CAAI reports that the cause of the opacity exceedance was moisture in the baghouse flashing to steam when the UFA Fan was started. Once the bags dried out, the opacity exceedance was eliminated.

On September 9, 2013, Boiler No. 2 experienced an environmental exceedance when 4-hour CO levels reached 220 ppm (100 ppm limit) due to a tube rupture. CAAI reports that the event began with steam flow and economizer oxygen levels dropping slightly and CO levels rising to 619 ppm. The control room operator noticed the water level of Boiler No. 2 decreasing at this time so a tube rupture was immediately suspected to be the cause. The crane operator was immediately instructed to stop feeding trash and the refuse feed chute was closed, and the Boiler was taken offline. CAAI reported that the corrective action taken was the tubes were inspected and repaired.

A summary of environmental exceedances experienced by the Facility during Q1FY14 are shown in Table 8 as follows.

Table 8: Quarterly Environmental Excursions

Date	Excursion	Exempt
7/14/13	Boiler No. 3 4-hour CO levels reached 469 ppm (100 ppm limit)	Yes
9/8/13	Boiler No. 2 6-minute Opacity Average reached 12% (10% limit)	Yes
9/9/13	Boiler No. 2 4-hour CO levels reached 220 ppm (100 ppm limit)	Yes

6.1 Nitrogen Oxide Emissions

During Q1FY14, the monthly emission concentrations of nitrogen oxides (NO_x) averaged 164.3 ppmdv, 159.7 ppmdv and 159.0 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 Q1FY14 the monthly emission concentration of stack sulfur dioxide (SO_2) averaged 1.3 ppmdv, 1.3 ppmdv, and 1.0 ppmdv for Boiler Nos. 1, 2, and 3, respectively. All of these stack SO_2 concentrations are significantly below the 40 CFR Subpart Cb requirement of 29 ppmdv @ 7% O_2.

6.3 Carbon Monoxide Emissions

During Q1FY14, the average CO emission concentrations on Boiler Nos. 1, 2, and 3 were 36.7 ppmdv, 33.3 ppmdv, and 24.7 ppmdv, respectively, and all are well within permit limits (100 ppmdv, hourly average).

6.4 Opacity

During Q1FY14, the average opacity for Boiler Nos. 1, 2, and 3 was 0.2%, 0.1%, and 0.0% respectively. All of these averages are significantly below the 10% (6-minute) average permit limit.

6.5 Daily Emissions Data

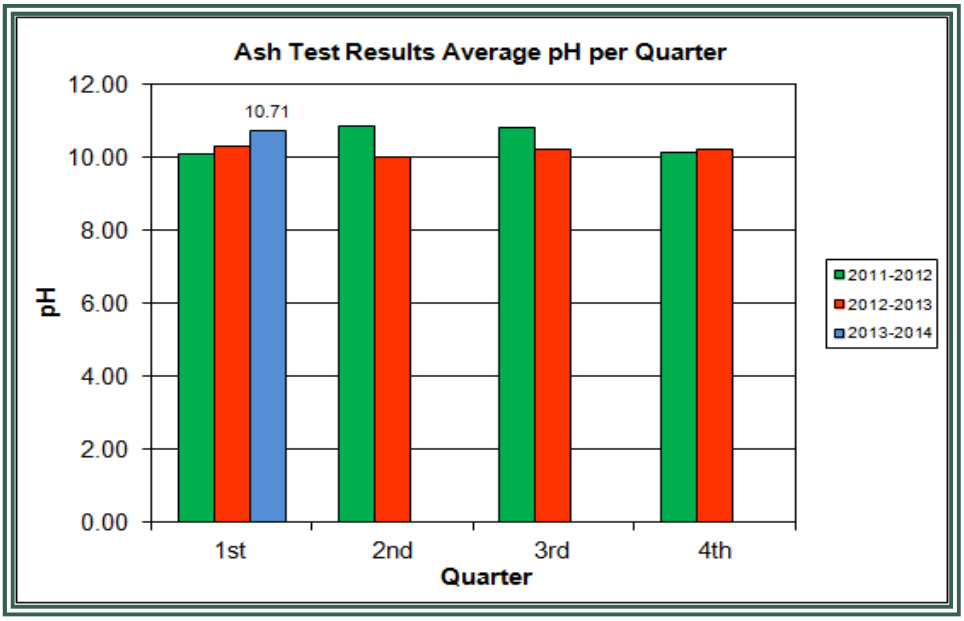
Appendix A, Tables 10, 11, 12 tabulate the monthly average, maximum, and minimum emissions data for each unit during Q1FY14. Excursions, if any, would appear in bold print. It should be noted that these tabulations of monthly averages, reported here for informational purposes, are based on tabulations 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 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 not performed during Q1FY14.

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 15 where each quarter is represented by the average of the respective monthly readings. During Q1FY14, the average ash pH for in-house tests was 10.7.

Chart 15: Ash Test Results



6.7 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 11 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 an 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 1,047 days without an OSHA recordable incident through the end of September 2013. Safety training was conducted during the quarter with themes as follows:

July 2013 – Mobile Equipment Safety
August 2013- Safety, Health, and Environmental Leadership Review
September 2013 – Lead, Arsenic, Cadmium, and Hexavalent Chromium

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 August 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 August 2013 inspection are presented in Table 9.

Table 9: Facility Housekeeping Ratings – August 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 10: 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_2ec	SO_2sc	COsc	NO_xsc	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
Jul-13	AVG	88.4	52.0	2.0	38.0	163.0	0.2	302.0	17.4	3.4
	Max	90.5	178.0	4.0	49.0	185.0	1.9	303.0	20.4	3.8
	Min	86.1	27.0	0.0	28.0	160.0	0.0	296.0	16.2	3.1
Aug-13	AVG	79.7	32.0	1.0	34.0	165.0	0.2	302.0	16.7	3.2
	Max	88.7	57.0	3.0	45.0	174.0	0.5	303.0	17.8	3.9
	Min	70.2	18.0	0.0	24.0	164.0	0.0	302.0	16.1	2.8
Sep -13	AVG	83.1	30.0	1.0	38.0	165.0	0.3	302.0	17.1	3.1
	Max	89.8	105.0	5.0	49.0	186.0	0.6	303.0	22.1	3.7
	Min	72.5	18.0	0.0	24.0	160.0	0.1	302.0	16.3	2.8
Quarter Average		83.7	38.0	1.3	36.7	164.3	0.2	302.0	17.1	3.2
Quarter Max Value		90.5	178.0	5.0	49.0	186.0	1.9	303.0	22.1	3.9
Quarter Min Value		70.2	18.0	0.0	24.0	160.0	0.0	296.0	16.1	2.8
Limits:		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 11: 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_2ec	SO_2sc	COsc	NO_xsc	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
Jul-13	AVG	88.3	51.0	1.0	32.0	159.0	0.1	298.0	16.2	3.0
	Max	91.3	67.0	4.0	47.0	177.0	0.7	299.0	16.6	3.2
	Min	85.1	33.0	0.0	23.0	157.0	0.0	297.0	16.1	2.3
Aug-13	AVG	79.7	25.0	0.0	30.0	158.0	0.1	297.0	16.2	2.9
	Max	87.9	46.0	2.0	36.0	169.0	0.4	298.0	16.2	3.5
	Min	72.0	10.0	0.0	22.0	147.0	0.0	294.0	16.1	2.3
Sep -13	AVG	83.8	44.0	3.0	38.0	162.0	0.2	297.0	16.4	2.7
	Max	90.3	126.0	16.0	78.0	177.0	1.3	298.0	17.6	4.1
	Min	73.5	20.0	0.0	28.0	157.0	0.0	296.0	16.2	2.1
Quarter Average		83.9	40.0	1.3	33.3	159.7	0.1	297.3	16.3	2.9
Quarter Max Value		91.3	126.0	16.0	78.0	177.0	1.3	299.0	17.6	4.1
Quarter Min Value		72.0	10.0	0.0	22.0	147.0	0.0	294.0	16.1	2.1
Limits:		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 12: 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_2ec	SO_2sc	COsc	NO_xsc	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
Jul-13	AVG	83.2	46.0	2.0	30.0	158.0	0.1	295.0	16.4	3.4
	Max	91.4	91.0	6.0	175.0	183.0	1.1	300.0	17.6	3.9
	Min	74.5	16.0	0.0	14.0	132.0	0.0	290.0	16.2	3.1
Aug-13	AVG	80.3	43.0	1.0	21.0	159.0	0.0	295.0	16.3	3.2
	Max	87.6	71.0	5.0	30.0	170.0	0.0	297.0	17.4	3.9
	Min	72.6	19.0	0.0	14.0	158.0	0.0	295.0	16.0	2.5
Sep -13	AVG	85.2	42.0	0.0	23.0	160.0	0.0	295.0	16.3	3.2
	Max	90.4	66.0	2.0	33.0	162.0	0.0	296.0	17.1	3.5
	Min	79.1	28.0	0.0	15.0	159.0	0.0	294.0	16.0	2.9
Quarter Average		82.9	43.7	1.0	24.7	159.0	0.0	295.0	16.3	3.3
Quarter Max Value		91.4	91.0	6.0	175.0	183.0	1.1	300.0	17.6	3.9
Quarter Min Value		72.6	16.0	0.0	14.0	132.0	0.0	290.0	16.0	2.5
Limits:		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 PHOTOS – AUGUST 20, 2013

Figure 1: View of pit from Charging Floor

Figure 2: Cooling Towers from SDA Penthouse

Figure 3: Emergency lights not working in SDA Penthouse No. 3 - New Deficiency

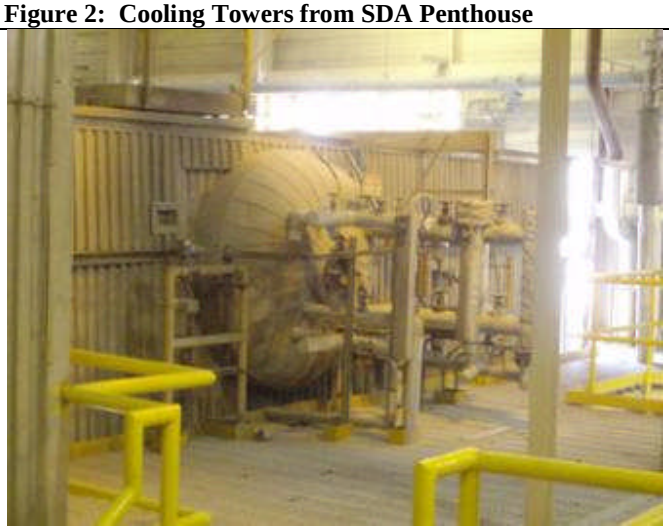


Figure 4: Steam Drum No. 1

Figure 5: Deaerator Vessel

Figure 6: Ammonia Leak Detector

Figure 7: Ammonia Injection System Piping

Figure 8: Freight elevator for Special Waste from Charging Floor

Figure 9: Retractable Sootblower - No issues to report

Figure 10: Boiler No. 2 Feedchute

Figure 11: Turbine Generator Deck - No issues to report

Figure 12: Ferrous Magnet

Figure 13: Air Pollution Control MCC Electrical Room - No issues to report

Figure 14: Dolomitic Lime Silo

Figure 15: Steam Coil Air Heater - No leaks observed

Figure 16: Ash Truck load-out in progress

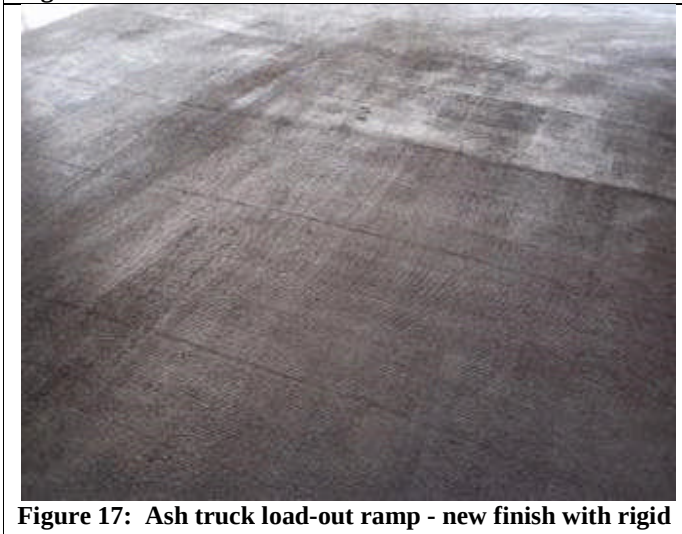


Figure 17: Ash truck load-out ramp - new finish with rigid grade for improved traction

Figure 18: Carbon Silo

Figure 19: Ammonia Storage Tank

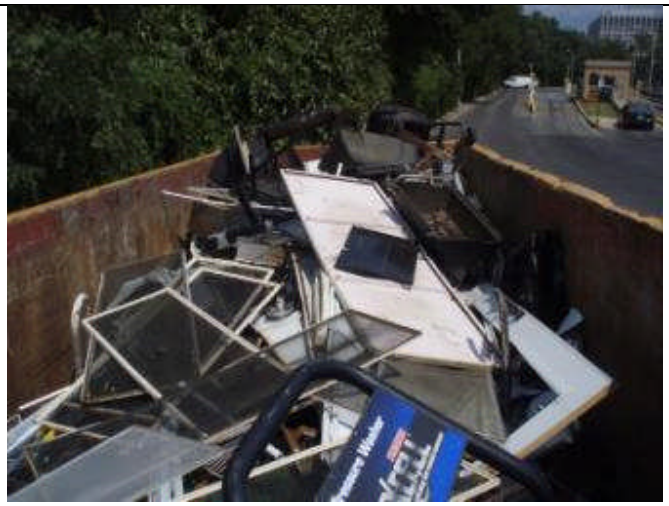


Figure 20: White goods roll-off

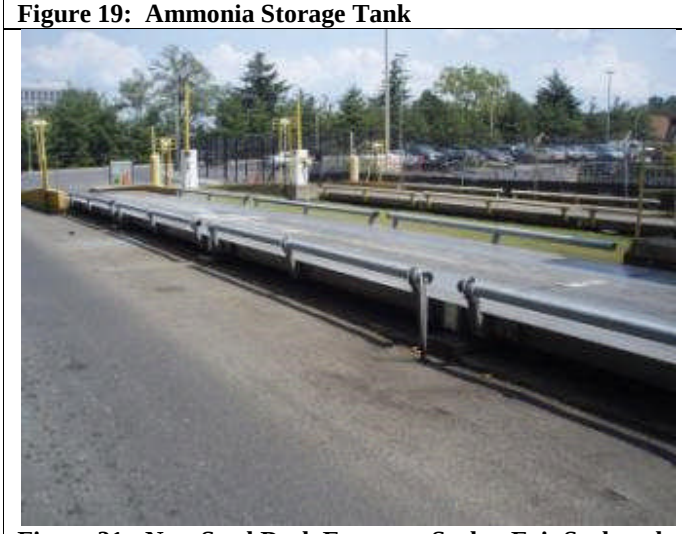


Figure 21: New Steel Deck Entrance Scale - Exit Scale to be replaced in 2014

Figure 22: Citizen's Drop Off

Figure 23: New Ferrous Magnet Shell - Existing shell being replaced from original system installation

Figure 24: Tipping Floor Bay Resurfaced