



Frito Lay Casa Grande

Biomass Boiler Permitting

Permit # V20665.000



Andre Fuentes
Facilities & Environmental Manager

A little bit about our site...

The Casa Grande site started up our first production line which was Doritos in July of 1984. The PC or potato chip line was started not too long after.

The site now has 5 product lines,

- Potato chips (Lays, Ruffles & Wavy Lays)
- Tortilla chip (Doritos , Restaurant style & Santitas)
- Fritos corn chips
- Cheetos crunchy mellow and flaming hot
- Sun chips

Number Employees in 1984:

- 200 Employees
- 35 Mgnt.

Number Employees in 2015:

- 325+ Employees
- 20 Mgnt.

Within the last 5 years the site has added...

CNG (Compressed Natural Gas) semi trucks

Electric route vans

MBR- Water treatment plant

Solar panels- Placed over the parking lot, in front of the plant & the field to the west of the plant.

Bio Mass- Boiler which supplies steam for product lines

Clean Transportation...



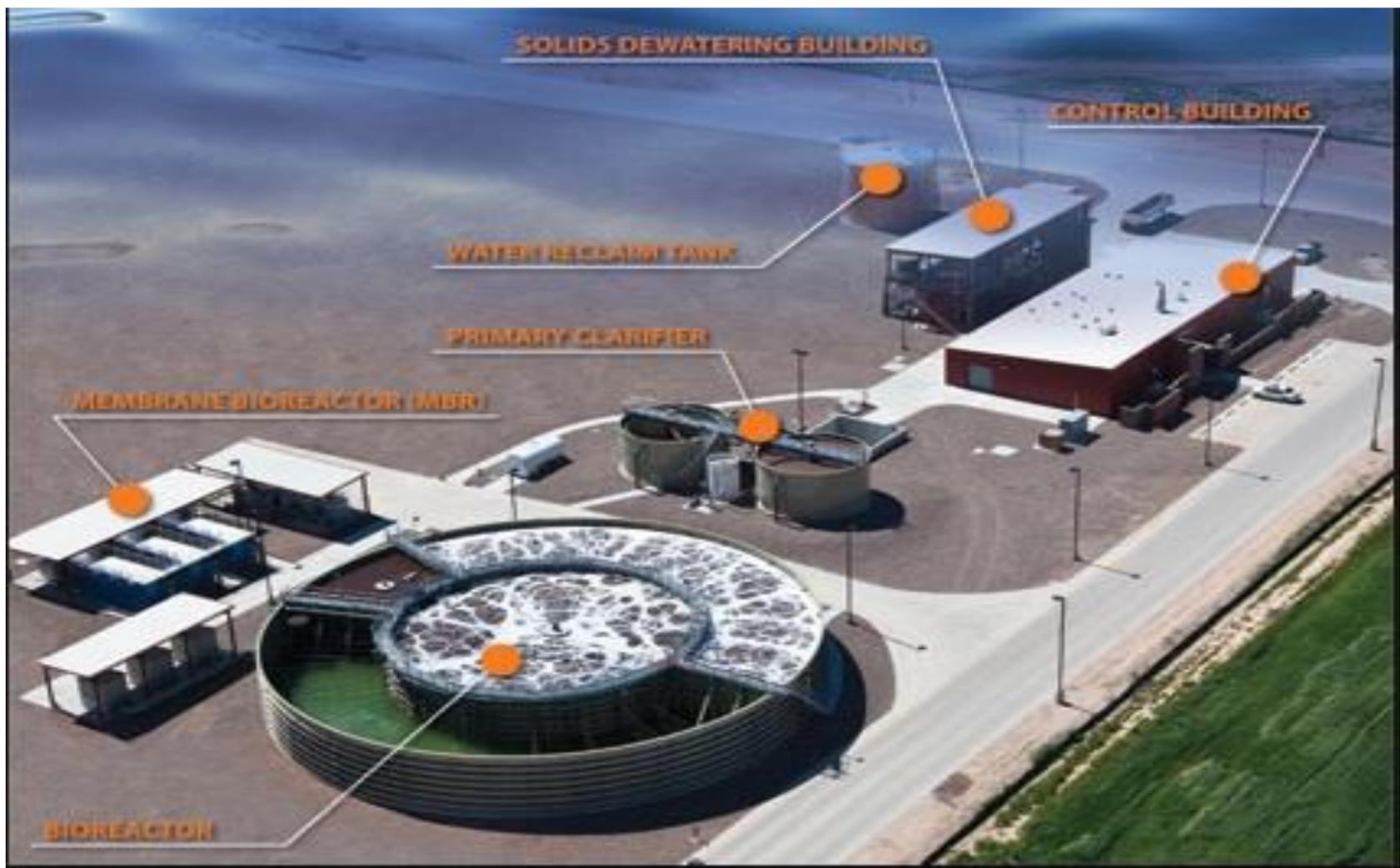
Currently we have 19 CNG (compressed natural gas) semi trucks

Currently we have 2 Electric Route trucks

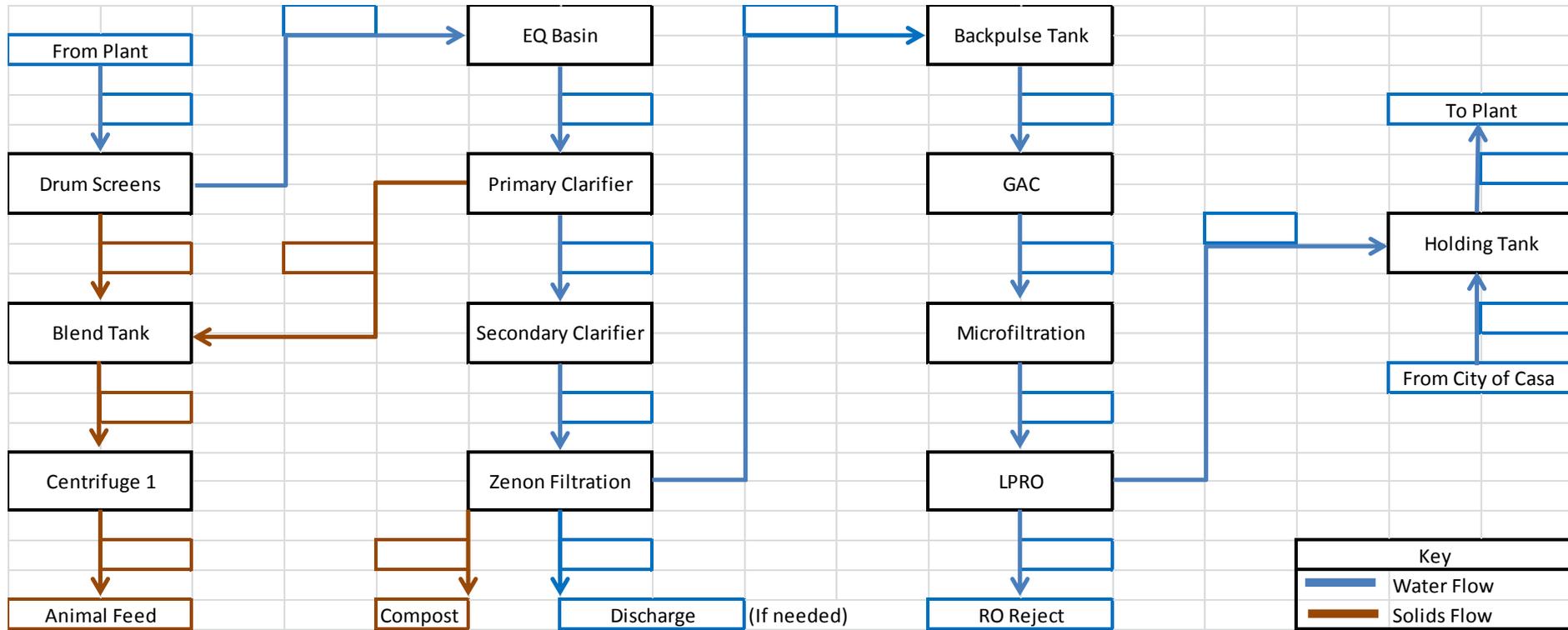


Recycle / Reuse of water...

Casa Grande's MBR (Membrane Bio Reactor)



MBR Process Flow



Power from the sun...



The site has solar panels positioned in front of, over the parking lot & to the west of the plant. Within a 24 hour period, this technology is able to provide 50% of our electricity.

The Bio Mass Boiler

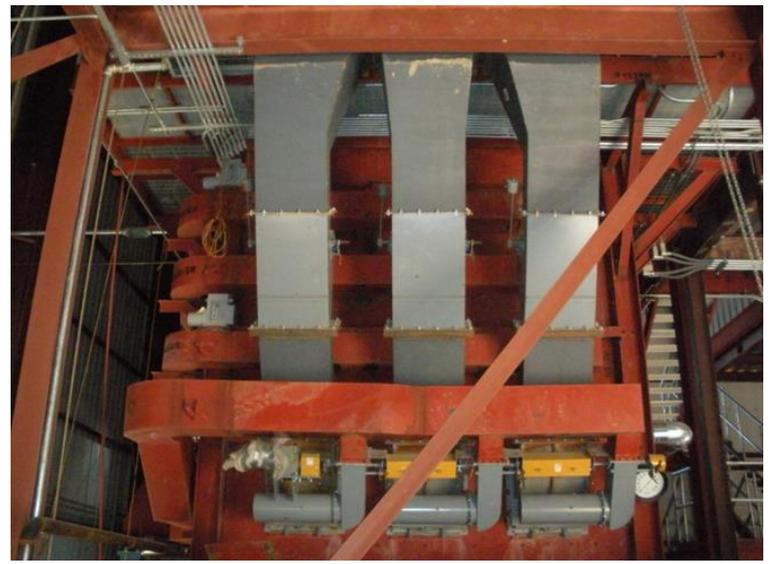


The Bio Mass Boiler produces steam for the product lines allowing the use of natural gas to be used only as a back up.

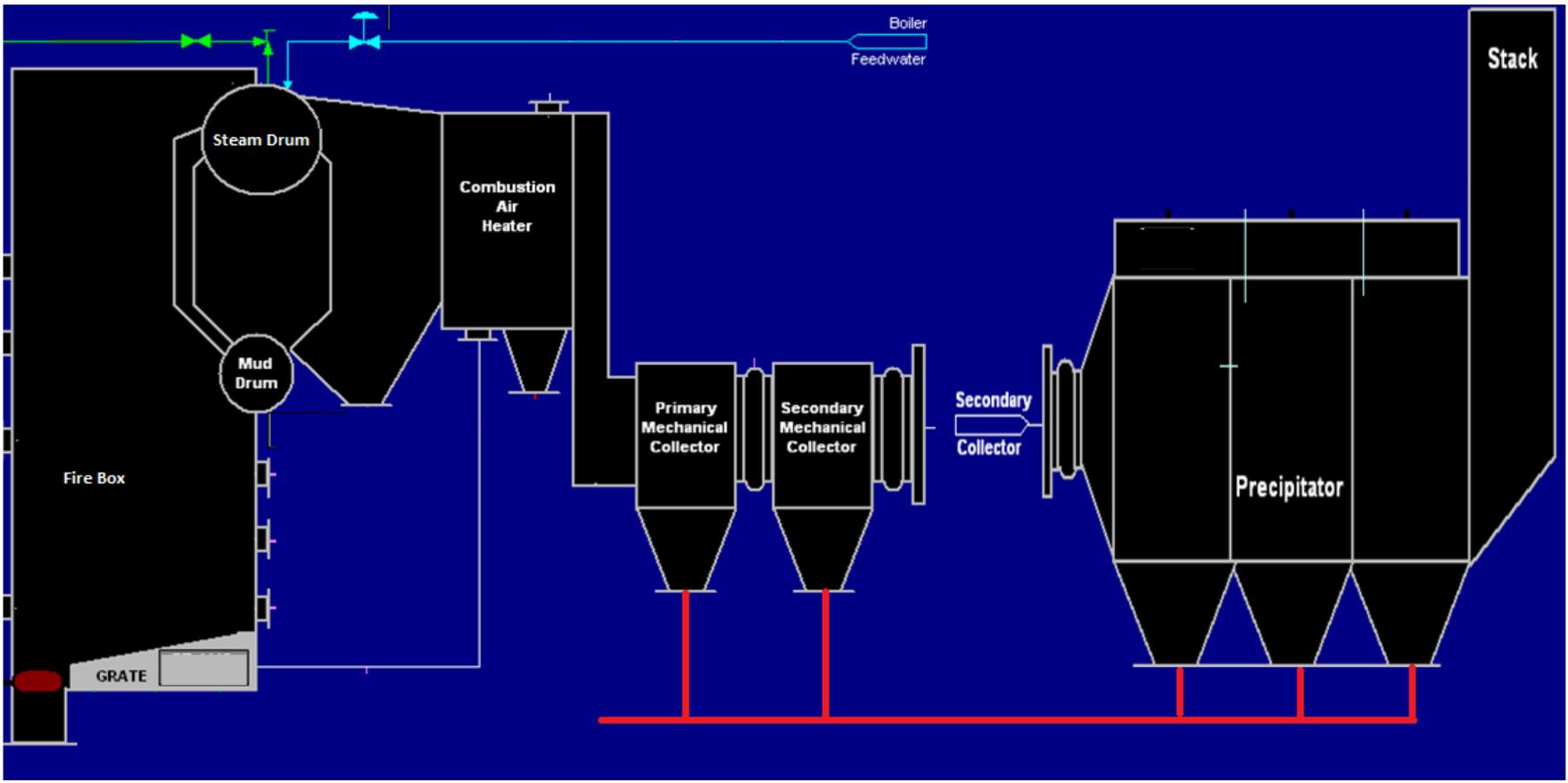
The fuel used to create the steam is a mixture of shredded white wood pallets and pecan shells which are loaded onto a conveyor and fed into the boiler.



Biomass Fuel Process Flow



Biomass Flue Gas Flow



Permit Compliance - Opacity

- **Limits**
 - **Must maintain below 20% opacity, 6-minute average, at all times except during startups and shutdown periods. We have 3 hours from the time the precipitator is turned on to get opacity under control during startups.**
 - **Two 6-minute average opacity values above 20% within a 1 hour timeframe or one 6-minute average opacity value above 27% is considered an exceedance of permitted limits.**

- **Tracking & Tasks:**
 - **Continuous Opacity Monitoring System**
 - **Weekly Opacity & Steam flow Analysis**
 - **Monthly Opacity Screening**
 - **Annual Method 9**

Opacity Cont.

- Weekly Opacity & Steam flow Analysis**

DateTime	Temp	Opacity	Steam Flow	6 Minute Avg
4/26/15 12:00 AM	520.02	0.74	20.27	
4/26/15 12:01 AM	519.17	1.16	20.76	
4/26/15 12:02 AM	517.53	1.19	21.84	
4/26/15 12:03 AM	518.13	1.34	22.06	
4/26/15 12:04 AM	519.05	1.29	21.98	
4/26/15 12:05 AM	519.01	1.65	22.04	1.23
4/26/15 12:06 AM	519.46	1.42	21.88	
4/26/15 12:07 AM	518.57	1.76	20.93	
4/26/15 12:08 AM	517.93	1.81	22.42	
4/26/15 12:09 AM	518.77	1.40	21.55	
4/26/15 12:10 AM	519.21	1.61	21.28	
4/26/15 12:11 AM	518.77	1.46	21.95	1.58
4/26/15 12:12 AM	518.05	1.73	23.02	
4/26/15 12:13 AM	518.49	1.99	23.17	
4/26/15 12:14 AM	519.90	1.97	21.15	
4/26/15 12:15 AM	519.58	1.77	21.61	
4/26/15 12:16 AM	518.61	1.80	22.93	
4/26/15 12:17 AM	518.13	1.84	23.28	1.85
4/26/15 12:18 AM	519.78	1.81	23.77	
4/26/15 12:19 AM	521.31	1.62	22.77	
4/26/15 12:20 AM	521.03	1.62	21.98	
4/26/15 12:21 AM	520.46	1.15	21.89	
4/26/15 12:22 AM	519.62	1.83	22.55	
4/26/15 12:23 AM	520.46	1.75	24.45	1.63
4/26/15 12:24 AM	521.63	1.35	22.64	
4/26/15 12:25 AM	521.75	1.60	22.04	
4/26/15 12:26 AM	520.58	1.52	22.16	

If an exceedance is discovered, the county must be notified within 10 days along with the cause for the exceedance and actions to prevent in the future.

Opacity Cont.

- **Monthly Opacity Screen**

Frito Lay, Inc. - Casa Grande Permit# V20665.000			
Opacity Visual Screen Check - Biomass Boiler			
Year:	Date	Time	Observer - Signature
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
<i>Signature indicates emissions did not appear to exceed the permitted standard of 20% opacity for: all stacks, process emissions point, conveyor transfer points and fugitive sources; Section 6 (C)(1)(a)</i>			
<i>Visible emissions would require an opacity test performed by a certified opacity observer according to EPA Method 9 and Method 203C</i>			

Screen must be performed on stack, fuel handling, & ash handling areas

If screen captures event above limit, certified observer must perform method 9 and a copy must be sent to county within 10 days.

Opacity Cont.

- **Annual Method 9**

Required to perform Method 9 on six areas in the Biomass Boiler Process:

- Fuel truck to fuel pile
- Fuel Pile to Conveyor
- Conveyor to Bark Bin
- Oversize Bin
- Undersize Bin
- Biomass Stack

Site was successful in removing enclosed ash conveyor & ash bin from annual method 9 (as long as monthly screens are successful)

VISIBLE EMISSION OBSERVATION FORM

Company Name Frito-Lay		Observation Date		Start Time	End Time
Location 1450 W. Maricopa Hwy		City Casa Grande		State AZ	Zip 85193
Process Equipment		Operating Mode			
Control Equipment		Operating Mode			
Describe Emission Point					
Height of Emission Point		Height Relative to Observer			
Start		End			
Distance to Emission Point		Direction to Emission Point			
Start		End			
Vertical Angle to Observation Pt.		Direction to Observation Point			
Start		End			
Describe Emissions					
Start		End			
Emission Color		If Water Droplet Plume (Circle)			
Start		End		Attached Detached N/A	
Point In The Plume At Which Opacity Was Determined					
Start		End			
Describe Plume Background					
Start		End			
Background Color		Sky Condition			
Start		End		Start	
Wind Speed		Wind Direction			
Start		End		Start	
Ambient Temp		Wet Bulb Temp		RH Percent	
Start		End			
<p style="text-align: center;">SOURCE LAYOUT SKETCH</p> <p>The sketch shows an 'EMISION OBSERVATION POINT' marked with an 'X' at the top. A vertical line connects it to the 'OBSERVER'S POSITION' at the bottom. A dashed line labeled 'SUN LOCATION LINE' extends from the observer's position at a 140-degree angle. To the left, a box contains symbols for 'STACK WITH PLUME', 'SUN', and 'WIND'. To the right, a circle is labeled 'DRAW NORTH ARROW'.</p>					
Additional Information					
Observer's Name (Print)					
Observer's Signature				Date	
Organization					
Certified by				Date	
Continue on reverse side					

Feedstock Testing

- **Required:**
 - **Site is required to obtain fuel certification annually from fuel supplier essentially certifying that the fuel we obtain is within specification according to our permitted limits and does not contain foreign material.**
 - **Annual Feedstock Testing: Site must test for Lead, Arsenic, Chlorine and Sulfur on an annual basis by collecting representative fuel samples on a monthly basis and combining for the annual sample.**
 - **Report must include estimated TPY emissions which is determined through the following set of conversions:**

Potential to Emit HAPs (tons/year) =

(2 lbs-PM10/hr) x (HAP concentration mg/kg) x (g/1000 mg) x (kg/1000 g) x (8760 hrs/yr) x (ton/2000 lbs)

Calculated Emissions

- The site is required to report on a semi-annual basis the PM2.5, PM 10, HAPs, rolling 12-month heat input in MMBtu, & Total biomass fuel burned.
- Heat input is determined by tracking biomass tons used on a monthly basis and converting to MMBtu using conversion factor generated through lab testing (BTU/lb)
- PM2.5, PM 10 & HAPs are estimated by utilizing emission factors generated from annual source testing & technical support documents

Example:

Utilized 15035.08 MMBtu in a month

EF for PM10 = .0269 lbs PM10/ MMBtu

$E (PM10) = .0269 \text{ lbs PM10/MMBtu} * 15035.08 \text{ MMBtu} * 1 \text{ ton}/2,000 \text{ lbs} = \underline{0.202 \text{ ton PM10 for that one month}}$

Source Testing

- **The site is required to perform PM stack testing annually and HAP testing every other year with current fuel mix.**
- **Source test protocol must be generated and submitted for review at least 60 days prior to the test**
- **Source test report must be generated and submitted 45 days after source test has been executed.**
- **During source testing, maximum load conditions are simulated in order to simulate maximum PM emission capacity of the biomass boiler and the PM and HAPs are tested utilizing a third party consultant.**
- **Excess steam is vented to atmosphere as the site does not normally run at maximum load.**
- **Parameters are recorded every 30 minutes such as:**
 - **Stack Temp, steam flow, feed water flow, calculated fuel flow, calculated heat input, dust collector differential pressure, ESP secondary voltages, drum pressure, and Boiler O₂.**

Summary

- **Opacity Limitations**
- **Opacity Monitoring Requirements**
- **County Notification**
- **PM Emission Limits**
- **HAP Emission Limits**
- **Heat Input Limits**
- **Fuel Specifications**
- **Source Testing Annually**
- **Semi-Annual Report**
- **Annual Emissions Report**

