

Lane Regional Air Protection Agency  
Simple Air Contaminant Discharge Permit (Simple-ACDP)

**REVIEW REPORT**

**Aurora Innovations, Inc.**  
29862 East Enid Road  
Eugene, Oregon 97402

**Permit No. 200053**

1. **General Background Information**

Lane Regional Air Protection Agency (LRAPA) has reviewed the permit application received on August 10, 2015 from Aurora Innovations, Inc. (Aurora or facility). The contents of the application were the basis for the contents within the review report.

Aurora manufactures fertilizer and potting soil at their facility. The facility is located at 29862 East Enid Road, Eugene, Oregon. The facility currently has one (1) aggregate furnace with cyclone and baghouse, a soil mixing building with baghouse control, and an evaporator installed on site. Aurora has applied to install a second aggregate furnace with cyclone and baghouse control. The aggregate furnaces heat the aggregate ore to approximately 1,400° Fahrenheit, causing it to expand. It is then classified by size and bagged for shipment. The baghouses to the aggregate furnaces have a control efficiency of 99.2%. Natural gas is utilized for the furnaces and the evaporator. The operating schedule for the facility is 8,760 hours per year (24 hours per day, 7 days per week, and 52 weeks per year).

2. **Emission Units Description**

Emission Unit	EU ID	Pollution Control Device
Aggregate Furnaces #1 and #2	F1 & F2	4 Cyclones and 2 Baghouses
Soil Mixing Area	SM1	Baghouse
Evaporator**	E1	NA

\*\*Insignificant Emission Unit

3. **Reasons for Permit Issuance and Fee Basis**

The facility operates a process listed in LRAPA Title 37, Table 1, Part B (B75. All Other Sources not listed herein which would have actual emissions, if the source were to operate uncontrolled, of 5 or more tons a year of direct PM<sub>2.5</sub> or PM<sub>10</sub> if located in a PM<sub>2.5</sub> or PM<sub>10</sub> non-attainment area, or 10 or more tons of any single criteria pollutant in any part of Lane County) and is, therefore, required to obtain a permit. The primary reason for the permit issuance is that the facility is increasing production and requires to update the current Basic Air Contaminant Discharge Permit (ACDP) to a Simple ACDP. The facility is subject to the Simple "low" fee because the actual or expected emission of PM, PM<sub>10</sub> and PM<sub>2.5</sub> less than 10 tons per year.

4. **Other Permits**

No other permits have been issued or are required by LRAPA for this facility.

5. **Enforcement Actions**

The facility was issued a Notice of Non-Compliance (NON) on August 9, 2013 (NON 3442) for failure to submit an application and Land Use Compatibility Statement (LUCS) for Aurora's operations at 260 Grimes Street, Eugene, per compliance with the regulations in LRAPA Title 37.

On September 19, 2013 Aurora was issued a Notice of Civil Penalty (NCP) No. 13-3442 for not submitting an application and LUCS for their location on 260 Grimes Street, Eugene by the specified date.

LRAPA issued a Stipulated Final Order (SFO) No. 13-3442 on November 14, 2013 to Aurora with a penalty of \$2,500 which was reduced to \$1,250. Aurora paid the penalty on November 12, 2013 and the violation was closed.

6. **Plant Site Emission Limits (PSELs) Information**

The PSELs are set at the Generic PSEL levels in accordance with LRAPA Title 42-0040.

The facility is required to perform monthly recordkeeping and PSEL calculations to determine compliance with the PM, PM<sub>10</sub>, and PM<sub>2.5</sub> PSELs. The facility is required to record natural gas combusted in the furnaces and the evaporator and report information about PSELs and fuel combustion in an annual report.

**Annual PSELs**  
(tons)

Source	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC	GHG
Totals	24	14	9	99	39	0	0	74,000

7. **The Baseline Emission Rate (BER) and Significant Emission Rate (SER)**

The BER has been set at zero (0) tons per year for all pollutants except greenhouse gas (GHG) since this is a new source and was not in operation during the 1978 baseline year. The BER for GHG is not established because the facility did not exist during the GHG baseline period (2000-2010).

The PSEL increase over the baseline emission is less than the SER, as defined in LRAPA Title 12, for PM, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, VOC, and GHG. No further air quality analysis is required for these pollutants.

8. **Performance, Operational and Work Practice Standards and Limitations**

The particulate emissions from the facility point stacks are required to not to equal or exceed 20% opacity as a six (6) minute block average. The permit contains the applicable particulate matter in terms of the grain loading standards. [OAR 340-208-0110(4)]

The particulate matter emissions from the facility's air contaminant source (Furnace #1 and #2) must not exceed 0.14 grains per dry standard cubic foot for Furnace #1 and 0.10 grains per dry standard cubic foot for Furnace #2. [OAR 340-226-0210(2)(b) and (c)]

Baghouses and cyclones shall operate at all times the when process equipment is operational and shall be maintained with records of maintenance.

The facility must take reasonable precautions to prevent particulate matter from becoming airborne.

9. **National Emission Standards for Hazardous Air Pollutants (HAPs)**

There are no NESHAPs that are applicable to this source at this time. The facility has not quantified their HAPs due to the source type, but the HAPs are expected to be negligible.

10. **New Source Performance Standards (NSPSs)**

There are no NSPSs that are applicable to this source at this time.

11. **Typically Achievable Control Technology (TACT)**

LRAPA Title 32-008 requires a new emission unit at a facility to meet TACT if the emission unit has emissions of criteria pollutants greater than ten (10) tons per year of any gaseous pollutants or five (5) tons per year of particulate, the emission unit is not subject to the standards under LRAPA Title 32, Title 33, Title 39, or Title 46 for the pollutants emitted, and the facility is required to have a permit. The emission units at this facility are subject to the grain loading and visible emissions emission standards in Title 32 and are, therefore, not required to meet TACT. However, the type of controls used by the facility are considered TACT by LRAPA.

12. **New Source Review (NSR) and Prevention of Significant Deterioration (PSD)**

This facility is not subject to PSD for the affected criteria pollutants. The PSELs for the criteria pollutants are below the Significant Emission Rates (SERs) established in LRAPA Title 12. The facility is not subject to LRAPA's Prevention of Significant Deterioration (PSD) requirements for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, NO<sub>x</sub>, CO, and VOC, and GHG.

13. **Continuous Compliance**

A record of the following data is required to be maintained for a period of at least five (5) years at the plant site. [LRAPA 35-0160 and 42-0080].

Parameter (units)	Minimum Recording Frequency
Monitor pressure readings of each filter and baghouse and record in a log	Weekly
Aggregate throughput for each furnace (tons)	Monthly
Soil Mixing throughput (tons)	Monthly
Emission calculations as specified in permit Condition <b>Error! Reference source not found..</b>	Monthly
Maintenance of cyclones and baghouses and record in a log	As Performed
Furnaces fuel throughput (MMBtu or SCF)	Annually

14. **Reporting**

- a. An annual summary to document compliance with the Plant Site Emission Limits is required to be submitted by **February 15<sup>th</sup>** each year. The summary will contain the PM/PM<sub>10</sub>/PM<sub>2.5</sub> emission data as required per permit Condition 4 and the recordkeeping information in Condition 9.
- b. The facility is also required to submit an annual GHG report, as applicable, in accordance with OAR 340 division 215.
- c. The annual summary will also report any information as required per General Condition G15. [LRAPA 35-0160]

15. **Public Notice**

The draft permit was on public notice from April 12, 2016 to May 11, 2016. No written comments were submitted during the 30-day comment period.

BD/cmw  
5/12/2016

**Emissions Factors and Calculations:**

<b>Aurora Innovations</b>					
Permit No. 200053					
<b>Aggregate Furnaces Emissions</b>					
<b>Pollutant</b>	<b>Max Design Capacity (cubic ft/hr)</b>	<b>Emission Factors (lb/10<sup>6</sup> ft<sup>3</sup>)</b>	<b>Conversion Factor (tons/lb)</b>	<b>Annual Emissions (tons)</b>	<b>Annual Emissions x 2 furnaces (tons)</b>
PM/PM10/PM2.5	3,166	2.5	0.0005	0.03	0.07
SO2	3,166	1.7	0.0005	0.02	0.05
NOx	3,166	100	0.0005	1.39	2.77
CO	3,166	84	0.0005	1.16	2.33
VOC	3,166	5.5	0.0005	0.08	0.15
*Each Aggregate Furnace can operate 8,760 hours per year					
*Each Aggregate Furnace operates at a maximum rate of 3.166 MMBtu/hr					
*Each Aggregate Furnace operates at a maximum rate of 3.166 cubic feet per hour (1 cubic foot of natural gas = 1,000 BTU)					
*Gaseous emission factors were obtained from ODEQ Emission Factors for Gas-Fired Boilers					
*Annual Emissions (in tons) = Maximum gas usage x emission factor x 1 ton/2000 lbs x 8760 hours per year x 1/10 <sup>6</sup>					

Evaporator Emissions				
Pollutant	Max Design Capacity (cubic ft/hr)	Emission Factors (lb/10 <sup>6</sup> ft <sup>3</sup> )	Conversion Factor (tons/lb)	Annual Emissions (tons)
PM/PM10/PM2.5	0.395	2.5	0.0005	0.0000
SO2	0.395	1.7	0.0005	0.0000
NOx	0.395	100	0.0005	0.0002
CO	0.395	84	0.0005	0.0001
VOC	0.395	5.5	0.0005	0.0000
*Evaporator can operate 8,760 hours per year				
*Evaporator operates at a maximum rate of 0.395 MMBtu/hr				
*Evaporator operates at a maximum rate of 0.395 cubic feet per hour (1 cubic foot of natural gas = 1,000 BTU)				
*Gaseous emission factors were obtained from ODEQ Emission Factors for Gas-Fired Boilers				
*Annual Emissions (in tons) = Maximum gas usage x emission factor x 1 ton/2000 lbs x 8760 hours per year x 1/10 <sup>6</sup>				

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Processed Aggregate PM/PM10/PM2.5 Emissions									
Emission Unit	Maximum Rated Capacity (pounds/hour)	Maximum Rated Hours per year	Emission Factor	Uncontrolled Aggregate PM/PM10 Emissions (tons)	Uncontrolled Aggregate PM2.5 Emissions (tons)	Cyclone Control Efficiency (in %)	Baghouse Control Efficiency (in %)	Emissions (lbs/hour)	Emissions (tons/year)
Aggregate Furnace 1 (F1)	2,666	8,760	0.02	176	176	50.0%	99.2%	0.16	0.70
Aggregate Furnace 2 (F2)	2,666	8,760	0.02	176	176	50.0%	99.2%	0.16	0.70

Soil Mixing Area controlled by a Baghouse								
Source	Hourly Throughput (pounds)	Annual Throughput (tons)	Emission Factor (lb/ton)	Total Amount PM Emissions going to Baghouse (tons)	Baghouse Control Efficiency (in %)	PM/PM10 Hourly Emissions (lb/hr)	PM/PM10 Annual Emissions (tons)	PM2.5 Annual Emissions (tons)
Soil Mixing Area	7,374	32,298	6.70E-06	0.2165	97.8%	0.0011	0.0048	0.0048
Total						0.0011	0.0048	0.0048

Aurora Innovations							
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Totals with Controls							
Emission Units	PM	PM10	PM2.5	SO2	NOx	CO	VOC
Furnace Burners	0.07	0.07	0.07	0.05	2.77	2.33	0.15
Furnace PM Emissions	0.93	0.93	0.93	0.00	0.00	0.00	0.00
Soil Mixing/Bagging	0.0048	0.0048	0.0048	0.00	0.00	0.00	0.00
Evaporator	4.33E-06	4.33E-06	4.33E-06	2.9E-06	1.73E-04	1.45E-04	9.52E-06
<b>Totals</b>	<b>1.01</b>	<b>1.01</b>	<b>1.01</b>	<b>0.05</b>	<b>2.77</b>	<b>2.33</b>	<b>0.15</b>
Uncontrolled Totals							
Emission Units	PM	PM10	PM2.5	SO2	NOx	CO	VOC
Furnace Burners	0.07	0.07	0.07	0.05	2.77	2.33	0.15
Furnace PM Emissions	233.54	233.54	233.54	0.00	0.00	0.00	0.00
Soil Mixing/Bagging	0.2165	0.2165	0.2165	0.00	0.00	0.00	0.00
Evaporator	4.33E-06	4.33E-06	4.33E-06	2.9E-06	1.73E-04	1.45E-04	9.52E-06
<b>Totals</b>	<b>233.83</b>	<b>233.83</b>	<b>233.83</b>	<b>0.05</b>	<b>2.77</b>	<b>2.33</b>	<b>0.15</b>



This sheet calculates greenhouse gas emissions from fuel combustion. 1) Enter the combustion emission sources at the facility (e.g. "boiler 1") in the 1<sup>st</sup> column. 2) In the 2<sup>nd</sup> column, select the fuel type used in each emissions unit. If more than one fuel type was used in a single emissions unit, you must enter that same emissions unit on multiple rows and then enter the different fuel types in each row.

3) Enter the fuel quantities in the 3<sup>rd</sup> column and specify the unit of measure in the 4<sup>th</sup> column. Emissions are then calculated in metric tons of carbon dioxide equivalent (mtCO<sub>2</sub>e).

Enter emissions information				Convert to mmBtu		Emissions (kg/mmBtu)		CO <sub>2</sub> Equivalent			Anthropogenic (mtCO <sub>2</sub> e)		Biogenic (mtCO <sub>2</sub> e)
Emissions unit <sup>1</sup>	Fuel Type <sup>2</sup>	Quantity <sup>3</sup>	Fuel units <sup>3</sup>	HHV Units	HHV Unit	mmBtu	CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O	CH <sub>4</sub>	CO <sub>2</sub>	N <sub>2</sub> O	(mtCO <sub>2</sub> e)
Furnaces	Natural gas	54,375,416	Cubic ft	54,375,416	0.00103	55,789	0.001	53.06	0.0001	25	1	298	2
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0
				0	0	0	0	0	0	25	1	298	0

Anthropogenic combustion emissions (mtCO <sub>2</sub> e)	2,963
Biogenic combustion emissions (mtCO <sub>2</sub> e)	0
<b>Total combustion emissions (mtCO<sub>2</sub>e)</b>	<b>2,963</b>

Note that EPA's revised HHV for wood (changed from 15.38 to 17.48 mmBtu/short ton) is for a dry basis. Use the following formula to calculate a wet basis HHV:

$$(100-M) \times 17.48 \text{ mmBtu/short ton}$$

M = moisture content (percent)

Use this new HHV to replace the default HHV in the calculator above once the "wood/woodwaste" fuel type is selected.

<b>Conversion to short tons</b>	
Anthropogenic combustion emissions:	3,266
Biogenic combustion emissions:	0
<b>Total combustion emissions:</b>	<b>3,266</b>