

**ASSIGNMENT TO**  
**GENERAL AIR CONTAMINANT DISCHARGE PERMIT**

Lane Regional Air Protection Agency  
1010 Main Street  
Springfield, OR 97477  
Telephone: (541) 736-1056


Issued To:  
**Valley Environmental LLC**  
25272 South Central Point Road  
Canby, OR 97013

Information Relied Upon:  
Application Number: 69244  
Dated: February 2, 2023

Plant Site Location:  
Variable (Portable Air Curtain Incinerator)

Land Use Compatibility Statement:  
From: Lane County  
Dated: April 5, 2023  
See permit Conditions 3.0 and 12.6

**ASSIGNMENT:** The permittee identified above is assigned by the Lane Regional Air Protection Agency to the General ACDP listed below in accordance with ORS 468A.040, LRAPA 37-0060(2), and based on the land use compatibility findings included in the permit record.

  
Steven A. Dietrich, Director

5-2-23  
Dated

General ACDP Issued in Accordance with LRAPA Section 37-0060:

General ACDP Number	Expiration Date	Source Category Description
AQGP-031	09/21/2032	Incinerators with two or more tons per day capacity – air curtain incinerator, stationary or portable
Rule Citation	LRAPA 37-8010, Table 1, Part B, 39	
SIC	4953 – Refuse Systems	
NAICS	562213 – Solid Waste Combustors and Incinerators	

**SUPPLEMENTAL INFORMATION:**

<b>Facility Contact:</b>		
Name:	Ryan Ramage, Owner	
Phone number:	(503) 799-97428	
Email address:	rramage@valleyenvironmental.net	
<b>Permit Summary:</b>		
Source Test Requirement	Yes	Initial opacity test, Quarterly opacity test
NSPS (40 CFR Part 60)	Yes	CCCC, EEEE, IIII
NESHAP (40 CFR Part 63)	Yes	ZZZZ
<b>Reports Required:</b>		
Annual	Yes	February 15 each year
NSPS	Yes	Annual opacity test report
NESHAP	No	N/A
Other	N/A	N/A
<b>Public Notice:</b>	Category I	

JJW/rr: 05/02/2023



**LANE REGIONAL AIR PROTECTION AGENCY**  
**GENERAL AIR CONTAMINANT DISCHARGE PERMIT**

1010 Main Street  
Springfield, OR 97477  
Telephone: (541) 736-1056

This permit is being issued in accordance with the provisions of ORS 468A.040.

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**ISSUED BY THE LANE REGIONAL AIR PROTECTION AGENCY**

Signed copy on file with LRAPA

September 21, 2022

Steven A. Dietrich, Director

Date

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Source(s) Permitted to Discharge Air Contaminants (LRAPA 37-8010):

Table 1 Code	Source Description	SIC/NAICS
Part B, 39	Incinerators with two or more tons per day capacity – air curtain incinerator, stationary or portable	4953/ 562213

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## **1.0 PERMIT ASSIGNMENT**

### **1.1. Qualifications**

The permittee must meet all of the following conditions in order to qualify for assignment to this General Air Contaminant Discharge Permit (ACDP):

- a. The permittee is operating a fire box burner type air curtain incinerator with a certified Tier 4 engine or an electric motor listed in Condition 2.0 of this permit, including supporting activities;
- b. The permittee is not operating a trench burner air curtain incinerator;
- c. The permittee is operating the air curtain incinerator as an OSWI or a CISWI and complying with the applicable requirements for that type of ACI;
- d. The permittee is not having ongoing, recurring or serious compliance problems; and
- e. A Simple or Standard ACDP is not required for the source.

### **1.2. Assignment**

LRAPA will assign qualifying permittees to this permit that have and maintain a good record of compliance with LRAPA's air quality regulations and that LRAPA determines would be appropriately regulated by a General Air Contaminant Discharge Permit (ACDP). LRAPA may rescind assignment if the permittee no longer meets the requirements of LRAPA 37-0025(2) and LRAPA 37-0060 or the conditions of this permit.

### **1.3. Permitted Activities**

- a. Until this permit expires, is modified, or is revoked, the permittee is allowed to discharge air contaminants from processes and activities directly related to or associated with the air contaminant source(s) listed in Condition 2.0 of this permit, in addition to any categorically insignificant activities, as defined in LRAPA title 12, at the source. Discharge of air contaminants from any other equipment or activity not identified herein is not authorized by this permit. If there are other emissions activities occurring at the site besides those listed in Condition 2.0 of this permit, the permittee may be required to obtain an associated General ACDP Attachment, a Simple or Standard ACDP, or a source specific Title V Operating Permit, if applicable.
- b. All conditions in this permit are federally enforceable, meaning that they are enforceable by LRAPA, EPA, and citizens under the Clean Air Act, except where noted. Those noted conditions are enforceable by only the state. [OAR 340-200-0040]

### **1.4. Incinerator Definitions**

- a. Other solid waste incineration (OSWI) unit means either a very small municipal waste combustion unit or an institutional waste incineration unit, as defined below.
- b. Institutional waste incineration unit means any combustion unit that combusts institutional waste (as defined in 40 C.F.R. 60.2977) and is a distinct operating unit of the institutional facility that generated the waste. Institutional waste incineration units include field-erected, modular, cyclonic burn barrel, and custom-built incineration units operating with starved or excess air, and any air curtain incinerator that is a distinct operating unit of the institutional facility that generated the institutional waste (except those air curtain incinerators listed in 40 C.F.R. 60.2888(b)).
- c. Commercial and industrial solid waste incineration unit (CISWI) means any distinct operating unit of any commercial or industrial facility that combusts, or has

combusted in the preceding 6 months, any solid waste as that term is defined in 40 C.F.R. part 241.

## 2.0 DEVICE, PROCESS AND POLLUTION CONTROL DEVICE IDENTIFICATION

The devices, processes, and pollution control devices regulated by this permit are the following:

Devices and Processes Description	Device ID	Pollution Control Device Description	PCD ID
Air Curtain Incinerator (1)	ACI	Operation of air curtain	NA
Blower Engine (1) (Tier 4 certified diesel engine or electric engine)	ENG	May include Diesel Particulate Filter, Diesel Oxidation Catalyst, and/or Selective Catalytic Reduction	NA
Ash Handling	ASH	NA	NA
Biochar Handling	BIOCHAR	NA	NA
Fugitive Emissions	FUG	Work practices	NA

## 3.0 RELATION TO LOCAL LAND USE LAWS

### 3.1. Relation to Local Land Use Laws

This permit is not valid outside of Lane County, or at any location where the operation of the permittee's processes, activities, and insignificant activities would violate any local land use or zoning laws. It is the permittee's responsibility to obtain local land use approvals as, or where, applicable before operating this facility at any location. For operation outside of Lane County, contact the Oregon Department of Environmental Quality for any necessary permits at (503) 229-5359.

## 4.0 GENERAL EMISSION STANDARDS AND LIMITS

### 4.1. Visible Emissions

The permittee must comply with the following visible emission limits from air contaminant sources other than fugitive emission sources, as applicable. Opacity must be measured as a three-minute aggregate using Modified EPA Method 9 in accordance with EPA Method 203B or an alternative monitoring method approved by LRAPA that is equivalent to Modified EPA Method 9.

- Emissions from the ACI and Blower Engine must not equal or exceed 20% opacity. [LRAPA 32-010(3)]
- The opacity limits for the ACI and Blower Engine in Condition 4.1.a apply at all times and compliance must be determined using the methods in Condition 10.1.e.
- The opacity limitations and monitoring requirements of this condition do not supersede the opacity limitations and monitoring requirements of Conditions 5.1, 5.2, and 5.4.

### 4.2. Fugitive Emissions

The permittee must take reasonable precautions to prevent fugitive dust emissions from leaving the property of a source for a period or periods totaling more than 18 seconds in a six-minute period. [LRAPA 48-015(1)]

- a. At least weekly, the permittee must conduct a six (6) minute visible emission survey of the closest publicly accessible area or road within 200 feet downwind from the fugitive emissions sources using EPA Method 22, except as allowed by Condition 4.2.b. The person conducting this survey does not have to be EPA Method 9 certified but the individual must be trained and knowledgeable with respect to the general procedures for determining the presence of visible emissions. For purposes of this survey, excessive fugitive emissions are considered to be any visible emissions that leave the plant site boundaries. No monitoring is required if the ACI and supporting activities are shut down. [LRAPA 32-007(1) and LRAPA 37-0060(1)(b)(c)]
  - i. If visible fugitive emissions are detected at the property boundary for more than 5% (18 seconds) of the survey time, the permittee must take corrective action which may include the following:
    - A. Applying water or other suitable chemicals on unpaved roads, materials stockpiles, and other surfaces which can create airborne dusts. Dust suppressant material must not adversely affect water quality;
    - B. Requiring slower driving speeds on unpaved roads;
    - C. Enclosing (full or partial) materials stockpiles in cases where application of water or other suitable chemicals are not sufficient to prevent particulate matter, including dust, from becoming airborne; and
    - D. Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne.
  - ii. The permittee must record in a log, the results of the EPA Method 22 emission surveys and any corrective actions taken.
- b. Visible emission surveys are not required if the ACI operates on federal or state lands where public access within 200 feet of the ACI is restricted.
- c. If requested by LRAPA, the permittee must: [LRAPA 48-015(2)&(3) and 34-016]
  - i. Prepare and submit a fugitive emission control plan within 60 days of the request;
  - ii. Implement the LRAPA approved plan whenever fugitive emissions leave the property for more than 18 seconds in a six-minute period; and
  - iii. Keep the plan on site and make the plan available upon request.

#### **4.3. Particulate Matter Emissions**

The permittee must not allow particulate matter emissions from the ACI and the Blower Engine to exceed 0.10 grains per dry standard cubic foot. [LRAPA 32-030(2)]

#### **4.4. Particulate Matter Fallout**

The permittee must not cause or permit the deposition of any particulate matter larger than 250 microns in size at sufficient duration or quantity as to create an observable deposition upon the real property of another person. [LRAPA 32-055] (LRAPA-only enforceable)

#### **4.5. Nuisance and Odors**

The permittee must not cause or allow air contaminants from any source subject to regulation by LRAPA to cause a nuisance. Nuisance conditions will be verified by LRAPA personnel. [LRAPA 49-010(1)&(2)] (LRAPA-only enforceable)

#### 4.6. Complaint Log

The permittee must maintain a log of all complaints received by the permittee in person, in writing, by telephone or through other means that specifically refer to air pollution or nuisance concerns associated with the permitted facility. Contact information for the permittee can be found on the Assignment to General Permit sheet. If LRAPA receives any complaints about operation of the ACI through the LRAPA complaint line, <https://www.lrapa.org/345/Submitting-a-Complaint>, LRAPA will notify the permittee and require the permittee to investigate the complaint and take action for complaint resolution. Documentation of complaints must include: [LRAPA 34-016]

- a. The date the complaint was received;
- b. The date and time the complaint states the condition was present;
- c. A description of the pollution, nuisance, or odor condition;
- d. The location of the complainant/exposure location relative to the ACI location;
- e. The status of ACI operation or activities during the complaint's stated time of pollution, nuisance, or odor condition; and
- f. A record of the permittee's actions to investigate the validity of each complaint and a record of actions taken for complaint resolution.

### 5.0 SPECIFIC PERFORMANCE AND EMISSION STANDARDS

#### 5.1. 40 C.F.R. Part 60 Subpart CCCC Opacity Limits for Commercial and Industrial Air Curtain Incinerators (CISWI)

When operating the ACI as a CISWI, the permittee must comply with the following visible emission limit for the ACI.

- a. Within 60 days after the ACI reaches the charge rate at which it will operate, but no later than 180 days after its initial startup, emissions from the ACI must not exceed the following limits: [40 C.F.R. 60.2250]
  - i. 10% opacity except as described in Condition 5.1.a.ii below; and
  - ii. 35% opacity during the startup period that is within the first 30 minutes of operation.
- b. The opacity limit in Condition 5.1.a.i applies at all times except during periods of startup, shutdown, and malfunctions. Compliance must be determined using Condition 10.1.a; and [40 C.F.R. 60.8(c) and 40 C.F.R. 60.2250]
- c. The opacity limit in Condition 5.1.a.ii applies during the startup period that is within the first 30 minutes of operation except during malfunctions. Compliance must be determined using Condition 10.1.b. [40 C.F.R. 60.2250]
- d. The opacity limitations and monitoring requirements of this condition do not supersede the opacity limitations and monitoring requirements of Condition 4.1.

#### 5.2. 40 C.F.R. Part 60 Subpart EEEE Opacity Limits for Other Solid Waste Air Curtain Incinerators (OSWI)

When operating the ACI as an OSWI, the permittee must comply with the following visible emission limit for the ACI.

- a. Within 60 days after the ACI reaches the charge rate at which it will operate, but no later than 180 days after its initial startup, emissions from the ACI must not exceed the following limits: [40 C.F.R. 60.2971]

- i. 10% opacity except as described in Condition 5.2.a.ii below; and
- ii. 35% opacity during the startup period that is within the first 30 minutes of operation.
- b. The opacity limit in Condition 5.2.a.i applies at all times except during periods of startup and malfunctions. Compliance must be determined using Condition 10.1.c; and [40 C.F.R. 60.2971]
- c. The opacity limit in Condition 5.2.a.ii applies during the startup period that is within the first 30 minutes of operation except during malfunctions. Compliance must be determined using Condition 10.1.d. [40 C.F.R. 60.2971]
- d. The opacity limitations and monitoring requirements of this condition do not supersede the opacity limitations and monitoring requirements of Condition 4.1.

**5.3. 40 C.F.R. Part 63 Subpart ZZZZ Requirements for Internal Combustion Engine**

If the permittee utilizes a diesel-fired Blower Engine, the Blower Engine is subject to the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (40 C.F.R. Part 63, Subpart ZZZZ). Per 40 C.F.R. 63.6590(c)(1), the permittee must meet the requirements of Subpart ZZZZ by meeting the requirements of the Standards of Performance for Compression Ignition Internal Combustion Engines, 40 C.F.R. Part 60 Subpart IIII. No further requirements apply for this engine under Part 63 Subpart ZZZZ.

**5.4. 40 C.F.R. Part 60 Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

- a. Compliance Requirements: Permittees not utilizing an electric Blower Engine must purchase an engine certified to the emission standards in Condition 5.4.b. The engine must be installed and configured according to the manufacturer's emission-related specifications; [40 C.F.R. 60.4211(c)]
- b. Emission Standard Requirements: The permittee must comply with the emission standards by purchasing an engine certified by the manufacturer to meet the following emission standards: [40 C.F.R. 60.4204(b) and 40 C.F.R. 60.4201(a)]
  - i. Table 1 of §1039.101—Tier 4 Exhaust Emission Standards after the 2014 Model Year, g/kW-hr

Maximum engine power	Application	PM	NO <sub>x</sub>	NMHC	NO <sub>x</sub> + NMHC	CO
kW<19	All	0.40	--	--	7.5	6.6*
19≤kW<56	All	0.03	--	--	4.7	5.0**
56≤kW<130	All	0.02	0.40	0.19	--	5.0
130≤kW≤560	All	0.02	0.40	0.19	--	3.5
kW>560	Generator sets	0.03	0.67	0.19	--	3.5
kW>560	All except generator sets	0.04	3.5	0.19	--	3.5

\*The CO standard is 8.0 g/kW-hr for engines below 8 kW.

\*\*The CO standard is 5.5 g/kW-hr for engines below 37 kW.

- ii. Smoke emission standard: [40 C.F.R. 60.4201(a) and 40 C.F.R. 1039.105]  
The permittee operate the engine such that smoke does not exceed the following standards:



- A. 20% during the acceleration mode;
  - B. 15% during the lugging mode; and
  - C. 50% during the peaks in either the acceleration or lugging modes;
  - D. The opacity limitations and monitoring requirements of this condition do not supersede the opacity limitations and monitoring requirements of Condition 4.1;
- c. Operation and Maintenance Requirements: The permittee must operate and maintain the engine that achieves the emission standards as required in Condition 5.4.b.i over the entire life of the engine by performing the following: [40 C.F.R. 60.4206 and 60.4211(a)]
  - i. Operate and maintain the stationary engine according to the manufacturer's emission-related written instructions; and
  - ii. Change only those emission-related settings that are permitted by the manufacturer.
- d. Fuel Requirements: The permittee must use diesel fuel that meets the following per-gallon standards for nonroad diesel fuel: [40 C.F.R. 60.4207(b) and 40 C.F.R. 80.510(b)]
  - i. Sulfur content: 15 ppm maximum;
  - ii. Cetane index or aromatic content, as follows:
    - A. A minimum cetane index of 40; or
    - B. A maximum aromatic content of 35 volume percent.

#### **5.5. 40 C.F.R. Part 60 Subpart III General Provisions**

The permittee must comply with the applicable General Provisions as noted in Condition 18.0, Table 8 to Subpart III of Part 60 at the end of this permit. [40 C.F.R. 60.4218]

## **6.0 OPERATION AND MAINTENANCE REQUIREMENTS**

### **6.1. Air Curtain Incinerator Operation and Maintenance**

The permittee must comply with the following applicable conditions for the ACI: [LRAPA 37-0040, 37-0060, and 32-007]

- a. Firebox burning: The air blower manifold length must be equal to the length of the burning area for an ACI operation using a manufactured aboveground container with a blower system. For purposes of this permit, air curtain incinerators include only fire box burner units and not trench burner units;
- b. Manufacturer's specifications:
  - i. The ACI must meet manufacturer's specifications for installation, operation, and maintenance to ensure complete combustion of exhaust gas;
  - ii. Manufacturer's specifications must be kept on site, wherever the ACI is located, and be made available upon request by LRAPA staff;
- c. ACI operating locations:
  - i. The permittee must submit relocation notifications as required in Condition 12.6 if the ACI location is moved more than one mile away from the current location;
  - ii. The permittee must post signage on the roadway at the entrance of the relocated site for the entire time the ACI is operating at that site. Signage must include:
    - A. How long the ACI is expected to be at that location;

- B. How the public can obtain information about the ACI and a link or the QR Code to LRAPA's ACI website; and
- C. Name and phone number of a contact person with information concerning operation of the ACI;
- iii. The permittee may collocate the ACI with any other facility that requires an air quality permit but must apply for and receive a source specific Air Contaminant Discharge Permit or Title V Operating permit, whichever is applicable, containing all applicable requirements for the collocated sources within one year of the collocation if the collocated sources are determined to be a single source for permitting purpose; and
- iv. Distances from nearest exposure locations at operating locations must meet the requirements in Conditions 8.1 and 9.3;
- d. Operating Conditions:
  - i. The permittee must operate in accordance with the manufacturer's operating instructions and the ACI Operations Plan required in Condition 6.2, both of which must be kept on site with the ACI and be made available upon request by LRAPA staff;
  - ii. The ACI must be operated only by operators who have been properly trained through a certification program by the manufacturer of the ACI or by operators previously trained by the manufacturer before the operator is allowed to operate the ACI;
  - iii. The permittee must determine atmospheric conditions before the beginning of each burn to determine if burning is allowed that day. No fires are allowed to be started or material added to existing fires when any of the following occurs:
    - A. The local fire department or the Oregon Department of Forestry has banned burning for that area;
    - B. LRAPA has issued an air stagnation advisory for the area in which the ACI is operating. Air stagnation alerts are posted on the LRAPA website; or
    - C. LRAPA's Air Quality Index is 100 or greater at any LRAPA monitor within 20 miles of where the ACI is located, meaning air quality is unhealthy for sensitive individuals;
  - iv. Operation of the ACI is restricted to operation from 7 AM to 7 PM;
  - v. An operator must remain with the ACI at all times when it is operating;
  - vi. The Blower Engine must be equipped with a non-resettable run time meter;
  - vii. Start-up conditions: For conducting a cold start, the operator must use a propane or butane torch, driptorch, or flare to ignite the material inside the air curtain incinerator. The amount of any oil-based starter used must be minimized to ensure compliance with Conditions 4.1, 5.1.a.ii, and 5.2.a.ii. No accelerants (e.g., gasoline, diesel fuel, kerosene, turpentine) may be used outside of a cold start;
  - viii. Material must not be loaded into the ACI such that it will protrude above the air curtain;
  - ix. Flames must not be visible above the air curtain, except during loading;
  - x. Plumes of ash must not be generated due to excessive loading;
  - xi. The proper blower speed must be maintained so as to meet emissions standards and minimize smoke and ash becoming airborne. The blower must be operating

- when and as long as any material in the ACI is burning, except during the 30-minute startup period;
- xii. The Blower Engine must only be used to operate the ACI and cannot be used to operate any other equipment; and
  - xiii. Smoke must not be allowed to pass onto or across a public road.
- e. Material Stockpiles:
- i. The permittee must operate in accordance with the Material Stockpiles section of the ACI Operations Plan submitted to and approved by LRAPA in accordance with Condition 6.2;
  - ii. The permittee must manage material stockpiles in quantities and under conditions that prevent spontaneous combustion;
  - iii. The permittee must take adequate measures at the end of each day of operation to ensure that no emissions emanate from materials left in the ACI overnight by:
    - A. Letting the fire burn out completely; and
    - B. Quenching biochar if it is produced;
- f. Startup/Shutdown: The permittee must operate in accordance with the Startup/Shutdown section of the ACI Operations Plan submitted to and approved by LRAPA in accordance with Condition 6.2;
- g. Operation Monitoring: The permittee must keep records of the following information that must be initialed by the operator each time information is added:
- i. Location of the operation;
  - ii. The date of entry of the records;
  - iii. Date and time the ACI is ignited;
  - iv. Date and time the Blower Engine is started;
  - v. Date and time when the operator ceases feeding authorized materials to the ACI;
  - vi. Date and time the Blower Engine is turned off;
  - vii. Volume, estimated dry weight, and type of each material fed to the ACI each day;
  - viii. Total volume and total estimated dry weight of all materials fed to the ACI per day; and
  - ix. Hours of Blower Engine operation and blower engine fuel usage per day.
- h. Authorized Materials Management:
- i. The permittee must operate in accordance with the Authorized Materials Management section of the ACI Operations Plan submitted to and approved by LRAPA in accordance with Condition 6.2;
  - ii. Authorized materials: The permittee is only allowed to burn the materials listed below: [OAR 340-245-0110, 40 C.F.R. 60.2888 and 40 C.F.R. 60.2970]
    - A. 100% wood waste. Wood waste is untreated wood and untreated wood products, including tree stumps (whole or chipped), trees, tree limbs (whole or chipped), bark, sawdust, chips, scraps, slabs, millings and shavings. Wood waste from orchard trees (fruit or nut) and from Christmas tree farms are authorized materials. Wood waste does not include:
      - 1. Grass, grass clippings, bushes, shrubs, and clippings from bushes and shrubs from residential, commercial/retail, institutional, or

- industrial sources as part of maintaining yards or other private or public lands;
- 2. Construction, renovation, or demolition wastes;
- 3. Clean lumber; and
- 4. Treated wood and treated wood products, including wood products that have been painted, pigment-stained, or pressure treated by compounds such as chromate copper arsenate, pentachlorophenol, and creosote, or manufactured wood products that contain adhesives or resins (e.g., plywood, particle board, flake board, and oriented strand board);
- B. 100% clean lumber. Clean lumber means wood or wood products that have been cut or shaped and include wet, air-dried, and kiln-dried wood products. Clean lumber does not include wood products that have been painted, pigment-stained, or pressure-treated by compounds such as chromate copper arsenate, pentachlorophenol, and creosote, or manufactured wood products that contain adhesives or resins (e.g., plywood, particle board, flake board, and oriented strand board);
- C. 100% yard waste. Yard waste means grass, grass clippings, bushes, shrubs and clippings from bushes and shrubs. Yard waste comes from residential, commercial/retail, institutional, or industrial sources as part of maintaining yards or other private or public lands. Only yard waste incidental to land clearing is allowed. Yard waste does not include two items:
  - 1. Construction, renovation, and demolition wastes; and
  - 2. Clean lumber.
- D. 100% mixture of only wood waste, clean lumber and/or yard waste;
- iii. Agricultural waste is not allowed;
- iv. Dirt on the authorized materials must be minimized;
- v. The authorized materials must be as dry as possible;
- vi. Unless an alternative method is approved in writing by LRAPA, the permittee must use the University of Washington's [Piled Fuels Biomass and Emissions Calculator](https://depts.washington.edu/nwfire/piles/) (<https://depts.washington.edu/nwfire/piles/>) on the Oregon Department of Forestry's website to estimate the amount of dry material burned each day (the "consumed fuel tons" column, not emissions) using the machine piles option and the following information:
  - A. Shape and measured dimensions the piles;
  - B. Estimated pile volume that is soil. Pile quality should be 'Clean (0% soil)' since soil must be minimized. If stumps are included, pile quality should be 'Dirty (>0 to 10% soil)';
  - C. Packing ratio;
  - D. Pile wood species
  - E. Pile quality; and
  - F. Consumption (assume 100% for ash and 95% for biochar);
- vii. A visual onsite inspection of the ACI and the material must be conducted prior to start of each burn. Any unauthorized material must be removed prior to burning;
- i. Ash/Biochar Handling and Disposal:

- i. The permittee must operate in accordance with the Ash/Biochar Handling and Disposal section of the ACI Operations Plan submitted to and approved by LRAPA in accordance with Condition 6.2;
- ii. The permittee must remove ash/biochar from the ACI during burning as necessary to maintain efficient combustion;
- iii. The permittee must allow the ash/biochar to cool and must quench the ash/biochar prior to its removal to prevent the ash/biochar from becoming airborne;
- iv. The permittee must remove ash/biochar from the ACI in such a manner as to minimize the ash/biochar from becoming airborne. If any ash/biochar becomes airborne, the permittee must perform an EPA Method 22 visible emission survey to determine the accumulated emission time in accordance with Condition 4.2; and
- v. The permittee must ensure that all material removed from the ACI is:
  - A. Completely extinguished before being disposed of or placed in contact with combustible material;
  - B. Stored in a manner that does not constitute a fire hazard; and
  - C. Not allowed to smolder or burn outside of the ACI.

**6.2. Air Curtain Incinerator Operations Plan [LRAPA 32-007]**

- a. The permittee must maintain a copy of the LRAPA-approved ACI Operations Plan onsite at all times and comply with the ACI Operations Plan immediately upon startup.
- b. The ACI Operations Plan must include sections for each of the activities listed below and how the permittee will operate and manage the following:
  - i. Operating Conditions in accordance with Condition 6.1.d;
  - ii. Material Stockpiles in accordance with Condition 6.1.e;
  - iii. Startup/Shutdown procedures in accordance with Condition 6.1.f;
  - iv. Authorized Materials Management in accordance with Condition 6.1.h;
  - v. Ash/Biochar Handling and Disposal in accordance with Condition 6.1.i;
- c. The permittee must review the ACI Operations Plan at least once every six months to determine if any change to the plan is needed;
- d. Any changes to ACI Operations Plan must include explanations for why the changes are necessary and must be submitted to LRAPA at least 30 days prior to any change. Changes may be implemented after approval from LRAPA or within 30 days of submittal of the revised plan, whichever comes first; and
- e. The current ACI Operations Plan must be kept on site with the ACI and be made available upon request.

**6.3. 40 C.F.R. Part 60 Subpart IIII Operation and Maintenance of Internal Combustion Engine**

- a. If the ACI is equipped with a diesel-fired Blower Engine, the permittee must demonstrate compliance with the applicable emission standards in Condition 5.4 by purchasing a compression ignition internal combustion engine for the blower that is certified according to 40 C.F.R. part 1039, as applicable; [40 C.F.R. 60.4201(a) and 40 C.F.R. 60.4204(b)]
- b. The permittee must install and configure the Blower Engine according to the manufacturer's emission-related specifications; [40 C.F.R. 60.4211(c)]

- c. The permittee must operate and maintain the Blower Engine according to the manufacturer's emission-related written instructions and only change those emission-related settings that are allowed by the manufacturer; [40 C.F.R. 60.4204, 40 C.F.R. 60.4201(a) and 40 C.F.R. 60.4211(a)(1)]
- d. The permittee must operate and maintain the Blower Engine so that it achieves the emission standards as required in Condition 5.4.b over the entire life of the engine; and [40 C.F.R. 60.4206]
- e. If the Blower Engine is equipped with a diesel particulate filter to comply with the emission standards in Condition 5.4.b, the permittee must install the diesel particulate filter with a backpressure monitor that notifies the permittee when the high backpressure limit of the engine is approached. [40 C.F.R. 60.4209(b)]

## 7.0 PLANT SITE EMISSION LIMITS

### 7.1. Plant Site Emission Limits (PSEL)

The permittee must not cause or allow plant site emissions to exceed the following: [LRAPA 42-0040]

Pollutant	Limit	Units
PM	24	tons per year
PM <sub>10</sub>	14	
PM <sub>2.5</sub>	9	
SO <sub>2</sub>	39	
NO <sub>x</sub>	39	
CO	99	
VOC	39	
GHGs (CO <sub>2</sub> e)	74,000	

### 7.2. Annual Period

The annual plant site emissions limits apply to any 12-consecutive calendar month period. [LRAPA 42-0035(4)]

### 7.3. Daily Period

The daily plant site emissions limits apply to any 24-hour period beginning at 12:00 a.m. midnight. [LRAPA 12-005, definition of "day"]

## 8.0 SOURCE RISK LIMITS

### 8.1. Operating Location Limit

The permittee must maintain the minimum distance to the closest exposure location in the table below, depending on the maximum hourly throughput of the ACI. An exposure location is a location where people may spend two (2) hours in one day, or a dwelling, group of dwellings, or commercial or institutional establishment, or other occupied structure not located on the property on which the burning is conducted. [OAR 340-245-0110]

ACI Size Category	Maximum Capacity (tons/hour)	Daily Capacity (tons/day)	Minimum Distance to Closest Exposure Location (meters)
Micro	$\leq 1$	12	90
Small	$>1$ but $\leq 5$	60	375
Medium	$>5$ but $\leq 10$	120	700
Large	$>10$ but $\leq 13$	156	1,000
$<35$ ton/day limit	NA	$<35$	225

## 9.0 SPECIAL CONDITIONS

### 9.1. Operating Limits and Location Requirements

The permittee must comply with the most stringent operating limits in Conditions 8.1, 9.2, 9.3, or 9.4, depending on the location and the distance to the nearest exposure location. [LRAPA 32-009 and LRAPA 42-0020]

### 9.2. PM<sub>2.5</sub> Synthetic Minor Limit

The permittee must not exceed the annual throughput limit of 16,000 dry tons for each 12-consecutive calendar month period for the ACI for all locations combined. [LRAPA 32-009 and LRAPA 42-0020]

### 9.3. Prevention of Significant Deterioration Class I Areas

While operating within 10 kilometers of any Class I Area defined in LRAPA 29-0050(1), the permittee must maintain the minimum distance to the closest boundary of the Class I area in the table below, depending on the maximum hourly throughput of the ACI. The distance limits in this paragraph are additional limits that do not supersede the applicable limits in Condition 8.1. The limits in this paragraph are to ensure that the operations would have an impact on a Class I Area of less than  $1 \mu\text{g}/\text{m}^3$  (24-hour average) for the regulated pollutants listed in the definition of “Significant Emission Rate”, Table 2 rows (b) through (v) in LRAPA 12-005. [LRAPA 12-005, definition of “Significant Emission Rate”, Item B]

ACI Size Category	Maximum Capacity (tons/hour)	Daily Capacity (tons/day)	Minimum Distance to Class I Area (meters)
Micro	$\leq 1$	12	600
Small	$>1$ but $\leq 5$	60	4,000
Medium	$>5$ but $\leq 10$	120	9,000
Large	$>10$ but $\leq 13$	156	10,000
$<35$ ton/day limited	NA	$<35$	2,000

### 9.4. OSWI Throughput Limit

While operating the ACI as an OSWI unit at a location other than an institutional facility and burning authorized materials collected from the general public and from residential, commercial, institutional, and industrial sources, the permittee must not exceed the daily throughput limit of less than 35 tons per day. [40 C.F.R. 60.2888(b)]

### 9.5. Title V Operating Permit

The permittee must apply for a Title V Operating Permit not later than 12 months after the date the ACI commences operation as a new source. [40 C.F.R. 60.2242, 40 C.F.R. 60.2974 and OAR 340-218-0040(1)(a)(B)]

## 10.0 COMPLIANCE DEMONSTRATION

### 10.1. 40 C.F.R. Part 60 Subparts CCCC (CISWI) and EEEE (OSWI) Opacity Limits Monitoring Requirements

The permittee must demonstrate compliance with ACI opacity limits as specified in 40 C.F.R. 60.8:

- a. While operating the ACI as a CISWI using EPA Method 9 to determine compliance with the opacity limitations in Condition 5.1.a.i as determined by the average of three 1-hour blocks consisting of ten 6-minute average opacity values during normal operation; [40 C.F.R. 60.2250 and 40 C.F.R. 60.2255]
- b. While operating the ACI as a CISWI using EPA Method 9 to determine compliance with the opacity limitations in Condition 5.1.a.ii as determined by the average of five 6-minute average opacity values during startup periods that are within the first 30 minutes of operation; [40 C.F.R. 60.2250 and 40 C.F.R. 60.2255]
- c. While operating the ACI as an OSWI using EPA Method 9 to determine compliance with the opacity limitation in Condition 5.2.a.i as determined by a 6-minute average opacity value during normal operation; [40 C.F.R. 60.2971 and 40 C.F.R. 60.2972]
- d. While operating the ACI as an OSWI using EPA Method 9 to determine compliance with the opacity limitation in Condition 5.2.a.ii as determined by a 6-minute average opacity value during startup periods that are within the first 30 minutes of operation; [40 C.F.R. 60.2971 and 40 C.F.R. 60.2972]
- e. Using the monitoring results from Conditions 10.1.a through 10.1.d to determine compliance with the opacity limit in Condition 4.1.a for any 3-minute aggregate period; [LRAPA 32-010(2)]
- f. Conducting an initial test for opacity within 60 days after achieving the maximum production rate at which the ACI will be operated, but not later than 180 days after initial startup and at such other times as may be required by LRAPA. The permittee must conduct the opacity performance tests during both a startup period that is within the first 30 minutes of operation and normal operation and furnish LRAPA a written report of the results of such performance test(s); [40 C.F.R. 60.2250 and 40 C.F.R. 60.2971]
- g. After the initial tests for opacity, the permittee must conduct quarterly tests during each operating calendar quarter, at least one month apart, during both a startup period that is within the first 30 minutes of operation and during normal operation except as allowed by Condition 10.1.h; [LRAPA 35-0120]
- h. The permittee is not required to monitor opacity if the ACI is shut down for the entire quarterly monitoring period; [LRAPA 32-007]
- i. The permittee must provide LRAPA at least 7 days prior notice of any performance test to afford LRAPA the opportunity to have an observer present. If after 7-day notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting the scheduled performance test, the permittee must notify LRAPA as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test,



or by arranging a rescheduled date with LRAPA by mutual agreement; [LRAPA 35-0120 and 40 C.F.R. 60.8(d)]

- j. If the ACI has been out of operation for more than 12 months following the date of the previous test, then the permittee must conduct a test for opacity upon startup of the unit during both startup and normal operations. [40 C.F.R. 60.2972]

#### 10.2. PSEL Compliance Monitoring using Emission Factors

The permittee must calculate the emissions for each 12-consecutive calendar month period, by the end of the 15th day of the following month, based on the following calculation for each pollutant, except GHGs: [LRAPA 42-0080]

$$E = \Sigma(EF \times P) \times 1 \text{ ton}/2000 \text{ pounds}$$

where:

- E = pollutant emissions (tons/year);
- $\Sigma$  = symbol representing summation of;
- EF = pollutant emission factor (see Condition 16.0);
- P = process production (see Conditions 11.5.a.ix, 11.5.a.xi, and 11.5.c)

#### 10.3. Emission Factors

The permittee must use the default emission factors provided in Condition 16.0 for calculating pollutant emissions unless alternative emission factors are approved in writing by LRAPA. The permittee may request or LRAPA may require using alternative emission factors provided they are based on actual test data or other documentation (e.g., AP-42 compilation of emission factors) that has been reviewed and approved by LRAPA. [LRAPA 42-0080]

#### 10.4. Greenhouse Gas Emissions

The permittee must calculate greenhouse gas emissions in metric tons and short tons for each 12-consecutive calendar month period to determine compliance with the GHG PSEL by using the DEQ Fuel Combustion Greenhouse Gas Calculator:

<https://www.oregon.gov/deq/FilterDocs/ghgCalculatorFuelCombust.xlsx>. [OAR 340-215-0040]

#### 10.5. PSEL Compliance Monitoring

The permittee must demonstrate compliance with the PSEL by totaling the emissions from all point sources calculated under Condition 10.2, and, if applicable, Condition 10.4. [LRAPA 42-0080]

### 11.0 RECORDKEEPING REQUIREMENTS

- 11.1. Prior to commencing construction of the ACI, the permittee must submit the information listed below: [40 C.F.R.60.2260 and 40 C.F.R. 60.2973]
  - a. The planned initial startup date; and
  - b. Types of materials the permittee plans to burn in the ACI.
- 11.2. To demonstrate compliance with Conditions 4.1, 5.1, and 5.2, the permittee must keep records of all EPA Method 9 and Modified EPA Method 9 opacity readings at the permittee's office and make the records available to LRAPA within 24 hours upon request. Operating conditions during the opacity readings must be documented and include the following; [LRAPA 34-015]
  - a. The amount and type of materials being burned;
  - b. The amount of materials added during the EPA Method 9 and Modified EPA Method

- 9 opacity readings;
  - c. The type and amount of accelerant used to start the fire;
  - d. The blower setting, if applicable; and
  - e. All other records required by the EPA Method 9 Visible Emission Observation Form.
- 11.3. To demonstrate compliance with Condition 4.2, the permittee must keep records of the EPA Method 22 surveys and any corrective action taken. [LRAPA 34-016]
- 11.4. To demonstrate compliance with Conditions 5.4 and 6.3, the permittee must keep records of the following information for the Blower Engine: [LRAPA 34-016 and 32-007]
- a. Engine certification: Documentation from the manufacturer that the engine is certified to meet the emission standards in Condition 5.4.b and information as required in 40 C.F.R. parts 89 and 1039, as applicable, and the applicable requirements for 2015 or later model year non-emergency engines.
  - b. The following notifications and all documentation supporting any notification:
    - i. Notification of the date construction is commenced, postmarked no later than 30 days after such date;
    - ii. Notification of the actual date of initial startup, postmarked within 15 days after such date; and
    - iii. Notification of any physical or operational change which may increase the emission rate of any air pollutant, postmarked no later than 60 days before the change is commenced and must include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change;
  - c. Records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the engine;
  - d. Records of maintenance performed on the engine over the entire life of the engine;
  - e. If the engine is equipped with a DPF, records of any notifications that the high backpressure limit of the engine is approached; and
  - f. Fuel requirements:  
Monitoring the diesel sulfur content and cetane index or aromatic content by:
    - i. Keeping records of fuel purchases from gasoline dispensing facilities;
    - ii. Obtaining a billing statement or purchase receipt to indicate that the diesel burned meets the requirements of Condition 5.4.d from each vendor for each shipment of fuel received;
    - iii. Obtaining a fuel content certificate from each vendor for each shipment of diesel received; or
    - iv. Analyzing or having analyzed by a contract laboratory a representative sample taken by the permittee from each shipment of diesel received; and
  - g. Records to demonstrate compliance with Conditions 5.4 and 6.3 must be kept at the permittee's office and be made available within 24 hours to LRAPA upon request.
- 11.5. To demonstrate compliance with Condition 6.1, the permittee must, at a minimum, meet the following requirements: [LRAPA 34-016]
- a. A written record or log of the ACI operation and maintenance must be maintained at the current operating site and made available upon request. This record or log must be organized such that compliance can be readily determined and must include the

following:

- i. For portable ACIs:
  - A. Location(s) and closest exposure location on a map or plot plan showing any operating location is more than the distance specified in Condition 8.1 from any exposure location;
  - B. Location(s) and distance to Class I Area on a map or plot plan showing any operating location is more than the distance specified in Condition 9.3 from any exposure location;
  - C. A copy of the acknowledgement of receipt demonstrating notification to LRAPA, and maps or plot plans showing distance limits are met; and
  - D. Pictures of signage posted at all ACI locations with the address or GPS coordinates;
- ii. Records of operator training;
- iii. Records of the date and reason for any instances when the ACI could not be operated because of atmospheric conditions, unless the ACI is not operating for an extended period of time (e.g., at least one whole calendar quarter);
- iv. Identification of the ACI;
- v. Initials of the individual recording the operations;
- vi. Date and daily hours of operation, including start and stop times of the ACI;
- vii. Date and daily hours of operation, including start and stop times of the Blower Engine;
- viii. Daily quantity and type of fire starter;
- ix. Daily and annual quantity, as estimated by University of Washington's [Piled Fuels Biomass and Emissions Calculator](https://depts.washington.edu/nwfire/piles/) (<https://depts.washington.edu/nwfire/piles/>), or other LRAPA-approved method, in Condition 6.1.h.vi, and type of material burned in the ACI for each ACI operating location;
- x. The source of material burned (e.g., residential, commercial/retail, institutional, or industrial sources) in the ACI for each ACI operating location;
- xi. Daily and annual quantity and type of fuel burned by the Blower Engine;
- xii. Monthly and rolling 12-month totals of the amount of material, fire starter, and fuel burned;
- xiii. Any maintenance and repairs on the ACI and the Blower Engine;
- xiv. Records of the occurrence and duration of all upsets, breakdowns and malfunctions which result in excess emissions;
- xv. Routine follow-up evaluation of upsets, breakdowns and malfunctions to identify the cause of the problem and changes needed to prevent a recurrence;
- xvi. Any instances of spontaneous combustion and what the permittee did to minimize emissions; and
- xvii. The results of any on-site inspections that identified any unauthorized materials and the disposal method of the unauthorized materials;
- b. Records of results of all initial and annual opacity tests in either paper copy or computer-readable format that can be printed upon request, unless LRAPA approves another format; [40 C.F.R. 60.2260 and 40 C.F.R. 60.2973]
- c. Records of the daily and annual quantity of ash/biochar utilization or disposal;
- d. Records of any EPA Method 22 surveys as a result of ash/biochar becoming airborne;
- e. A copy of any operating instructions must be kept at the ACI location, followed by the operator, and made available upon request;

- f. A copy of all operator training certificates from the manufacturer of the ACI or the records of operator training conducted by the operators previously trained by the manufacturer (e.g., date, persons, etc.);
- g. Records must be maintained for a minimum of five years as follows, unless otherwise specified: [40 C.F.R. 60.2260 and 40 C.F.R. 60.2973]
  - i. For permanent facilities, on site for a minimum two-year rolling period and must be available at all times for inspection by LRAPA. The permittee may keep the records off site for the remaining three-year rolling period;
  - ii. For portable facilities, once relocated to a new site, at a central location for a five-year rolling period.

#### 11.6. **Excess Emissions**

- a. The permittee must maintain the records of excess emissions listed below and as defined in LRAPA title 36, recorded on occurrence. Typically, excess emissions are caused by process upsets, startups, shutdowns, or scheduled maintenance.
  - i. The date and time of the beginning of the excess emissions event and the duration or best estimate of the time until return to normal operation;
  - ii. The date and time the permittee notified LRAPA of the event;
  - iii. The equipment involved;
  - iv. Whether the event occurred during planned startup, planned shutdown, scheduled maintenance, or as a result of a breakdown, malfunction, or emergency;
  - v. Steps taken to mitigate emissions and corrective action taken, including whether the approved procedures for a planned startup, shutdown, or maintenance activity were followed;
  - vi. The magnitude and duration of each occurrence of excess emissions during the course of an event and the increase over normal rates or concentrations as determined by continuous monitoring or best estimate (supported by operating data and calculations); and
  - vii. The final resolution of the cause of the excess emissions;
- b. If there is an ongoing excess emission caused by an upset or breakdown, the permittee must immediately take action to minimize emissions by reducing or ceasing operation of the equipment or facility, unless doing so could result in physical damage to the equipment or facility, or cause injury to employees. No additional material may be added to the ACI until the unit can be returned to normal operation. [LRAPA 36-020]
- c. In the event of any excess emissions which are of a nature that could endanger public health and occur during non-business hours, weekends, or holidays, the permittee must immediately notify LRAPA by calling the Oregon Emergency Response System (OERS). The current number is 1-800-452-0311.
- d. If startups or shutdowns may result in excess emissions, the permittee must submit startup/shutdown procedures used to minimize excess emissions to LRAPA for prior authorization, as required in LRAPA 36-010(2). New or modified procedures must be received by LRAPA in writing at least 72 hours prior to the first occurrence of the excess emission event. The permittee must abide by the approved procedures and have a copy available at all times.
- e. The permittee must maintain a log of all excess emissions in accordance with LRAPA 36-025(3).

### **11.7. Complaint Log**

To demonstrate compliance with Condition 4.6, the permittee must maintain a log with all the information included in Condition 4.6 for all complaints received by the permittee. [LRAPA 34-016]

### **11.8. Retention of Records**

Unless otherwise specified, the permittee must retain all records for a period of at least five (5) years from the date of the monitoring sample, measurement, report, or application and make them available to LRAPA upon request. The permittee must maintain the two (2) most recent years of records onsite for permanent facilities. The permittee must maintain records at the home office location for a five-year rolling period for portable facilities. [LRAPA 34-016]

## **12.0 REPORTING REQUIREMENTS**

### **12.1. NSPS Opacity Reporting for Air Curtain Incinerators**

The permittee must submit the following to LRAPA for the ACI:

- a. While operating the ACI as a CISWI, the results of the initial opacity tests no later than 60 days following the initial test to LRAPA. The permittee must submit quarterly opacity test results within 60 days following the previous report. [LRAPA 35-0120 and 40 C.F.R. 60.2260(d)]
- b. While operating the ACI as an OSWI, the results of the initial opacity tests no later than 60 days following the initial test. The permittee must submit quarterly opacity test results within 60 days following the previous report. [LRAPA 35-0120 and 40 C.F.R. 60.2973(d)]

### **12.2. Excess Emissions**

- a. The permittee must notify LRAPA of excess emissions events if the excess emission is of a nature that could endanger public health. Initial notice must be provided as soon as possible, but never more than one hour after becoming aware of the problem. Notice must be made to LRAPA by email, telephone, facsimile, or in person.
- b. The permittee must also submit follow-up reports summarizing records of excess emissions as required in Condition 11.6 within 15 days of the date of the event. Notice must be made to LRAPA by email, telephone, facsimile, or in person.

### **12.3. Semi-Annual and Annual Report**

- a. Each year this permit is in effect, the permittee must submit to LRAPA and to EPA, by **February 15** one (1) paper copy, unless otherwise required by LRAPA in writing, and one (1) electronic copy of the following information for the previous calendar year: [LRAPA 37-0060(1)(b)(C)]
  - i. Operating parameters:
    - A. Location(s) for portable ACIs, including closest exposure location for each location of operation;
    - B. Daily hours of operation, including start and stop times for each ACI operating location;
    - C. Daily quantity and type of fire starter for each ACI operating location;
    - D. Daily and annual quantity and type of material burned in the ACI for each ACI operating location;

- E. The source of material burned (e.g., residential, commercial/retail, institutional, or industrial sources) in the ACI for each ACI operating location;
- F. Daily and annual quantity and type of fuel burned by the Blower Engine for each ACI operating location;
- G. Monthly and rolling 12-month totals of the amount of material, fire starter, and fuel burned;
- H. Daily and annual quantity of ash/biochar utilization or disposal; and
- I. Results of all EPA Method 9 and Modified EPA Method 9 opacity tests for each ACI operating location;
- ii. Calculations of annual pollutant emissions determined for each 12-consecutive calendar month period in accordance with Condition 10.2;
- iii. A brief summary listing the date, time, and the affected device/process for each excess emission that occurred during the reporting period;
- iv. Summary of complaints relating to air pollution, odor, or nuisance concerns received by permittee during the year in accordance with Condition 11.7;
- v. Summary of the EPA Method 22 surveys and any corrective actions taken;
- vi. List permanent changes made in facility process, production levels, and pollution control equipment which affected air contaminant emissions; and
- vii. List major maintenance performed on equipment.

#### **12.4. Greenhouse Gas Registration and Reporting**

- a. If the calendar year greenhouse gas emissions (CO<sub>2</sub>e) are ever greater than or equal to 2,756 tons (2,500 metric tons), the permittee must annually register and report its greenhouse gas emissions with LRAPA in accordance with OAR 340 division 215, except as allowed under Condition 12.4.b; and
- b. If the calendar year greenhouse gas emissions (CO<sub>2</sub>e) are less than 2,756 tons (2,500 metric tons) for three consecutive years, the permittee may stop reporting greenhouse gas emissions but must retain all records used to calculate greenhouse gas emissions for the five years following the last year that they were required to report. The permittee must resume reporting its greenhouse gas emissions if a calendar year greenhouse gas emissions (CO<sub>2</sub>e) are greater than or equal to 2,756 tons (2,500 metric tons) in any subsequent calendar year.

#### **12.5. Initial Startup Notice**

The permittee must notify LRAPA in writing of the date a newly permitted ACI is first brought into normal operation. The notification must be submitted no later than seven (7) days after the initial startup. [LRAPA 34-015]

#### **12.6. Relocation Notice for Portable ACIs**

- a. The permittee must not install or operate the facility or any portion of the facility at any new site that is more than one mile away from the current site, without first providing written notice to LRAPA at the address listed in Condition 14.1, except as allowed by Condition 12.6.c. The written notice must be submitted no later than fourteen (14) days in advance of the relocation and include the date of the proposed move, approximate dates of operation, a detailed map showing access to the new site with GPS coordinates, and a description of the air pollution controls and procedures to be installed, operated, and practiced at the new site if different from previous sites; and [LRAPA 34-015]

- b. The permittee must submit a LRAPA Relocation Notice for Air Curtain Incinerators form. The form must be completed accurately, and all the required information must be submitted with the form
- c. On federal or state lands, the permittee must restrict operation of the ACI to areas of operation requested in the permit application. If the permittee moves the operation to a new area that was not previously disclosed, the permittee will submit a notice of relocation prior to moving to the new location.

#### **12.7. Notice of Change of Ownership or Company Name**

The permittee must notify LRAPA in writing using an LRAPA “Transfer Application Form” within 60 days after the following: [LRAPA 37-0030]

- a. Legal change of the name of the company as registered with the Corporation Division of the State of Oregon; or
- b. Sale or exchange of the activity or facility.

#### **12.8. Construction or Modification Notices**

The permittee must notify LRAPA in writing using a LRAPA “Notice of Intent to Construct Form,” or other permit application form and obtain approval in accordance with LRAPA 34-034 through 34-038 before:

- a. Constructing, installing, or establishing a new stationary or portable source that will cause an increase in any regulated pollutant emissions;
- b. Making any physical change or change in operation of an existing stationary or portable source that will cause an increase, on an hourly basis at full production, in any regulated pollutant emissions;
- c. Replacement of any new stationary or portable source; or
- d. Constructing or modifying any air pollution control equipment.

### **13.0 ADMINISTRATIVE REQUIREMENTS**

#### **13.1. Annual Compliance Fee**

The permittee must pay the annual fees specified in LRAPA 37-8020, Table 2, Parts 2 and 3 or in OAR 340-220-0030 by **December 1** of each year this permit is in effect. An invoice indicating the amount, as determined by LRAPA regulations will be mailed prior to the above date. Late fees in accordance with Part 5 of the table will be assessed as appropriate.

#### **13.2. Change of Ownership or Company Name Fee**

The permittee must pay the non-technical permit modification fee specified in LRAPA 37-8020, Table 2, Part 4 or the administrative amendment fee in OAR 340-220-0050 with an application for changing the ownership or the name of the company.

#### **13.3. Special Activity Fees**

The permittee must pay the applicable special activity fees specified in LRAPA 37-8020, Table 2, Part 4 upon invoicing by LRAPA.

### **14.0 LRAPA ADDRESS**

#### **14.1. LRAPA Addresses**

The permittee must submit all reports, notices, applications, and fees to LRAPA as follows:

Lane Regional Air Protection Agency  
1010 Main Street  
Springfield, Oregon 97477  
(541) 736-1056

#### **14.2. Web Site**

Information about air quality permits and LRAPA's regulations may be obtained from the LRAPA web page at <https://www.lrapa.org>.

### **15.0 GENERAL CONDITIONS AND DISCLAIMERS**

#### **15.1. Other Regulations**

In addition to the specific requirements listed in this permit, the permittee must comply with all other applicable legal requirements enforceable by LRAPA.

#### **15.2. Conflicting Conditions**

In any instance in which there is an apparent conflict relative to conditions in this permit, the most stringent conditions apply. [LRAPA 12-001 and OAR 340-200-0010(2) and (3)]

#### **15.3. Masking of Emissions**

The permittee must not cause or permit the installation of any device or use any means designed to mask the emissions of an air contaminant that causes or is likely to cause detriment to health, safety, or welfare of any person or otherwise violate any other regulation or requirement. [LRAPA 32-050] (LRAPA-only enforceable)

#### **15.4. LRAPA Access**

The permittee must allow LRAPA's representatives access to the plant site and pertinent records at all reasonable times for the purposes of performing inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emissions discharge records and conducting all necessary functions related to this permit in accordance with ORS 468.095.

#### **15.5. Permit Availability**

The permittee must have a copy of the permit available at the facility at all times. [LRAPA 37-0020(3)]

#### **15.6. Outdoor Burning**

The permittee may not conduct any outdoor burning except as allowed by LRAPA title 47.

#### **15.7. Asbestos [40 C.F.R. Part 61, Subpart M (not LRAPA-enforceable), LRAPA title 43 (LRAPA-only enforceable)]**

The permittee must comply with the asbestos abatement requirements in LRAPA title 43 for all activities involving asbestos-containing materials, including, but not limited to, demolition, renovation, repair, construction, and maintenance.

#### **15.8. Property Rights**

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.



### 15.9. Permit Termination, Revocation, or Modification

LRAPA may terminate, revoke, or modify this permit pursuant to LRAPA title 37. [LRAPA 37-0082]

## 16.0 EMISSION FACTORS

- a. The emission factors below are from the “[Air Curtain Incinerator Emissions Factor Determination](#)” written by the San Joaquin Valley Air Pollution Control District. Table 1 below summarizes the emission factors selected for an ACI burning woody biomass derived from forest vegetation.

Table 1: Emission Factors for Air Curtain Incinerator		
Pollutant	Emission Factor (lb/ton as burned)	Source
NO <sub>x</sub>	1.0	Derivation of NO <sub>x</sub> Emission Factor for Air Curtain Incineration of Woody Biomass
SO <sub>2</sub>	0.1	ARB Open Burn for Orchard and Vine Crops and Forest Biomass
PM <sub>2.5</sub>	1.1	USDA, Baker, Oregon Air Curtain Test
PM <sub>10</sub>	1.3	Average of USDA Baker, Oregon and USDA San Bernardino Air Curtain Tests
PM	1.7	DEQ estimate
CO	2.6	USDA, Baker, Oregon Air Curtain Test
VOC	0.9	Average of USDA Baker, Oregon and USDA San Bernardino Air Curtain Tests

- b. Table 2 below includes a wood ash handling emission factor, which is based on the combined activities of unloading from a dump truck and spreading coal fly ash at a landfill.

Table 2: Emission Factor for Wood Ash Handling		
Pollutant	Emission Factor (lb/ton of ash)	Source
PM	0.30	DEQ Estimate
PM <sub>10</sub>	0.23	Fugitive particulate emission factors for dry fly ash disposal, Journal of the Air & Waste Management Association, 63(&): 806-818, 2013
PM <sub>2.5</sub>	0.035	Fugitive particulate emission factors for dry fly ash disposal, Journal of the Air & Waste Management Association, 63(&): 806-818, 2013.

- c. Table 3 below includes blower engine diesel emission factors.

Table 3: Emission Factors for Blower Engine		
Pollutant	Emission Factor (lb/gal diesel)	Source
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0.0018	

<b>Table 3: Emission Factors for Blower Engine</b>		
<b>Pollutant</b>	<b>Emission Factor (lb/gal diesel)</b>	<b>Source</b>
CO	0.44	USEPA Tier 4 certified diesel engine emission standards as required by NSPS subpart IIII
NMHC (VOC)	0.017	
NO <sub>x</sub>	0.035	
SO <sub>2</sub>	0.0021 lb/hour	AP-42 Sec 3.3

## 17.0 ABBREVIATIONS, ACRONYMS, AND DEFINITIONS

ACDP	Air Contaminant Discharge Permit	NSPS	New Source Performance Standard
ACI	Air curtain incinerator	NSR	New Source Review
ARB	Air Resources Board	O <sub>2</sub>	oxygen
ASTM	American Society for Testing and Materials	OAR	Oregon Administrative Rules
AQMA	Air Quality Maintenance Area	ORS	Oregon Revised Statutes
calendar year	The 12-month period beginning January 1st and ending December 31 <sup>st</sup>	O&M	operation and maintenance
CAO	Cleaner Air Oregon	PAHs	polycyclic aromatic hydrocarbons
CAS	Chemical Abstracts Service	Pb	lead
C.F.R.	Code of Federal Regulations	PCD	pollution control device
CI ICE	Compression Ignition Internal Combustion Engine	PEMS	Predictive emission monitoring system
CO	carbon monoxide	PM	particulate matter
CO <sub>2e</sub>	carbon dioxide equivalent	PM <sub>10</sub>	particulate matter less than or equal to 10 microns in size
DEQ	Oregon Department of Environmental Quality	PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns in size
DPF	diesel particulate filter	ppm	part per million
dscf	dry standard cubic foot	PSD	Prevention of Significant Deterioration
EPA	US Environmental Protection Agency	PSEL	Plant Site Emission Limit
FCAA	Federal Clean Air Act	PTE	Potential to Emit
Gal	gallon(s)	QR	Quick response
GHG	greenhouse gas	RACT	Reasonably Available Control Technology
gr/dscf	grains per dry standard cubic foot	scf	standard cubic foot
HAP	Hazardous Air Pollutant as defined by OAR 340-244-0040	SER	Significant Emission Rate
I&M	inspection and maintenance	SIC	Standard Industrial Code
lb(s)	pound(s)	SIP	State Implementation Plan
LRAPA	Lane Regional Air Protection Agency	SO <sub>2</sub>	sulfur dioxide
Mgal	Thousand gallons	TACT	Typically Achievable Control Technology
MMBtu	million British thermal units	USDA	United States Department of Agriculture
NA	not applicable	VE	visible emissions
NESHAP	National Emissions Standards for Hazardous Air Pollutants	VOC	volatile organic compound
NO <sub>x</sub>	nitrogen oxides	year	A period consisting of any 12-consecutive calendar months

## 18.0 GENERAL PROVISIONS

Table 8 to Subpart IIII of Part 60—Applicability of General Provisions to Subpart IIII Part 60 Standards of Performance for New Stationary Sources Subpart A – General Provisions			
General Provisions citation	Subject of citation	Applies to subpart	Explanation
§60.1	General applicability of the General Provisions	Yes	
§60.2	Definitions	Yes	Additional terms defined in §60.4219.
§60.3	Units and abbreviations	Yes	
§60.4	Address	Yes	
§60.5	Determination of construction or modification	Yes	
§60.6	Review of plans	Yes	
§60.7	Notification and Recordkeeping	Yes	Except that §60.7 only applies as specified in §60.4214(a).
§60.8	Performance tests	Yes	Except that §60.8 only applies to stationary CI ICE with a displacement of $\geq 30$ liters per cylinder and engines that are not certified.
§60.9	Availability of information	Yes	
§60.10	State Authority	Yes	
§60.11	Compliance with standards and maintenance requirements	No	Requirements are specified in subpart IIII.
§60.12	Circumvention	Yes	
§60.13	Monitoring requirements	Yes	Except that §60.13 only applies to stationary CI ICE with a displacement of $\geq 30$ liters per cylinder.
§60.14	Modification	Yes	
§60.15	Reconstruction	Yes	
§60.16	Priority list	Yes	
§60.17	Incorporations by reference	Yes	
§60.18	General control device requirements	No	
§60.19	General notification and reporting requirements	Yes	

AQGP-031, air curtain incinerators  
MKH/JJW:RR 09/20/22

## GENERAL AIR CONTAMINANT DISCHARGE PERMIT ASSESSMENT REPORT

### AIR CURTAIN INCINERATORS

**Valley Environmental LLC**

Source No. 208670

25272 South Central Point Road

Canby, OR 97013

Website: <https://www.valleyenvironmental.net>

SIC	4953
NAICS	562213
EPA ICIS-Air ID	

Source Categories (Table 1 Part, code)	B.39
Public Notice Category	Category I

**Compliance and Emissions Monitoring Requirements:**

FCE	
Compliance schedule	
Unassigned emissions	
Emission credits	
Special Conditions	X

Source test	X
COMS	
CEMS	
PEMS	
Ambient monitoring	

**Reporting Requirements**

Annual report (due date)	X (February 15)
Quarterly report (due dates)	

Monthly report (due dates)	
Excess emissions report	
Other (specify)	

**Air Programs**

Synthetic Minor (SM)	X
SM-80	
NSPS (list subparts)	CCCC, EEEE, IIII
NESHAP (list subparts)	ZZZZ
CAO	X
NSR	

PSD	
GHG	X
RACT	
TACT	
Other (specify)	

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LIST OF ABBREVIATIONS USED IN THIS ASSESSMENT REPORT

ACDP	Air Contaminant Discharge Permit	NESHAP	National Emission Standard for Hazardous Air Pollutants
AQMA	Air Quality Management Area	NO <sub>x</sub>	oxides of nitrogen
ASTM	American Society of Testing and Materials	NSPS	New Source Performance Standard
BDT	bone dry ton	NSR	New Source Review
CAO	Cleaner Air Oregon	O <sub>2</sub>	oxygen
CEMS	continuous emissions monitoring system	OAR	Oregon Administrative Rules
C.F.R.	Code of Federal Regulations	ORS	Oregon Revised Statutes
CH <sub>4</sub>	methane (greenhouse gas)	O&M	operation and maintenance
CMS	continuous monitoring system	Pb	lead
CO	carbon monoxide	PCD	pollution control device
CO <sub>2e</sub>	carbon dioxide equivalent	PEMS	predictive emissions monitoring system
COMS	continuous opacity monitoring system	PM	particulate matter
DEQ	Oregon Department of Environmental Quality	PM <sub>10</sub>	particulate matter less than or equal to 10 microns in size
DPF	diesel particulate filter	PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns in size
dscf	dry standard cubic feet	PSD	Prevention of Significant Deterioration
EF	emission factor	PSEL	Plant Site Emission Limit
EPA	United State Environmental Protection Agency	SO <sub>2</sub>	sulfur dioxide
EU	emissions unit	ST	source test
FCAA	Federal Clean Air Act	TACT	Typically Achievable Control Technology
FCE	Full Compliance Evaluation	VE	visible emissions
GHG	greenhouse gas	VMT	vehicle mile traveled
gr/dscf	grains per dry standard cubic feet	VOC	volatile organic compound
HAP	hazardous air pollutant		
ID	identification code		
I&M	inspection and maintenance		
LRAPA	Lane Regional Air Protection Agency		
MB	material balance		
Mlb	1000 pounds		
MM	million		
N <sub>2</sub> O	nitrous oxide (greenhouse gas)		
NA	not applicable		

#### SOURCE DESCRIPTION AND QUALIFICATION

1. This General Permit is designed to regulate air contaminant emissions from a fire box burner type air curtain incinerator (ACI) with a certified Tier 4 engine or an electric motor, that produces biochar or ash. The ACI can be a stationary source or a portable source.
2. A facility assigned to this General Permit:
  - a. May not emit any other air pollution that requires regulation beyond that specified in this permit, except for other pollution emissions that also qualify for assignment, and are assigned, to other General Permits and categorically insignificant activities defined by LRAPA title 12; or
  - b. May not experience reoccurring or serious compliance problems, which would make that facility ineligible for assignment to this General Permit.
3. If this General Permit does not cover all requirements applicable to the facility, the other applicable requirements must be covered by assignment to one or more General Permit Attachments in accordance with LRAPA 37-0062, otherwise the facility must obtain a source specific Title V Operating Permit. A facility requesting to be assigned to a General Permit Attachment, in accordance with LRAPA 37-0062, for a source category in a higher annual fee class, must be reassigned to the General Permit for the source category in the higher annual fee class.

#### FACILITY IDENTIFICATION

4. The permittee is Valley Environmental LLC, 25272 South Central Point Road, Canby, OR 97013. The site contact person and responsible official is Ryan Ramage, Owner who can be reached at (503) 799-9728 or rramage@valleyenvironmental.net.
5. Valley Environmental LLC ("Valley Environmental", "the facility", "the permittee", "the source") proposes to initially operate an ACI in the vicinity of 29689 Awbrey Lane, Eugene, OR, including tax lots 16-04-33-00-01100, 16-04-33-00-00201, and 16-04-32-00-00200. The ACI will be used initially to convert poplar waste into biochar. The permittee indicates that other potential sources of cellulosic biomass for creation of biochar include forestry cleanup, fire remediation, urban forestry, agriculture vegetation, and invasive/noxious species removal. The ACI will be manufactured by Air Burners, Inc. This ACI is considered a portable source and the permit authorizes the permittee to operate this ACI at various locations within Lane County. However, the facility must submit relocation notices to LRAPA in accordance with Condition 6.1.c and must maintain minimum distances to closest exposure locations in accordance with Condition 8.1.
6. Process and control devices
  - a. The proposed ACI will be a BurnBoss T24 with a 12 foot x 4 foot x 4 foot firebox. The blower engine is a diesel-fired 12.5 hp Kubota engine certified as US EPA Tier 4 compliant.



- b. An ACI is a stationary or portable incinerator that operates by forcefully projecting a curtain of air across an open chamber or pit in which combustion occurs. This air curtain is projected across the firebox at an angle which generates a cyclonic flow within the firebox. This accelerates the combustion process and promotes uniform combustion throughout the firebox. Incinerators of this type can be constructed above or below ground and with or without refractory walls and floor but below ground ACIs are not allowed under this permit. ACIs are different from conventional combustion devices which typically have enclosed fireboxes and controlled air technology such as mass burn, modular, and fluidized bed combustors.
- c. Only wood waste, clean lumber, and yard waste may be burned in the ACI. Wood waste is dropped through the air curtain into the aboveground refractory-lined firebox, using a front-end loader, a grappling hook, or other device.
- d. The blower generates an air curtain over the top of the ACI, which is forced through a row of small nozzles along the full length of the manifold to generate the high velocity "air curtain." The very hot combustion gas leaves the ACI from the top front side of the air curtain opposite the manifold that generated the air curtain across the top of the ACI. The blower is powered by a Tier 4 USEPA certified diesel engine that uses ultra-low sulfur diesel fuel.
- e. The air curtain leaves the manifold at near ambient temperature. As the sheet of air moves across, it absorbs heat from the combustion of wood waste. When the air curtain hits the front inside refractory wall of the ACI, the air curtain is deflected downward toward the bottom of the ACI. This provides excess air to support the combustion process. From the bottom of the ACI, the combustion gases are reflected into the underside of the air curtain.
- f. As this recirculated combustion process continues, the non-combustible part of wood waste is reduced to a clean ash or biochar that accumulates in the bottom of the furnace. For ACIs that produce ash, the ash is removed daily. For ACIs that produce biochar, there is a screen at the lower portion of the firebox and augers below the screen. After the biochar chunks fall through the screen openings, the turning augers will move the biochar out of the bottom of the box through the side wall to a conveyor where the biochar is quenched with water and transported by truck to storage.
- g. Fugitive emissions are generated from moving the materials to be burned. The permittee will be required to develop a fugitive emission control plan upon request by LRAPA if the precautions listed in the permit to prevent fugitive emissions from leaving the property boundary are not adequate. The plan must be approved by LRAPA and implemented by the operator whenever fugitive emissions leave the property for more than 18 seconds in a six-minute period.
- h. The following table lists the emissions units:

Device / Process ID	Device/Process Description	Manufacturer	Model Number	Construction / Install Date
ACI	Air curtain incinerator	Air Burners, Inc.	BurnBoss	04/2023

Device / Process ID	Device/Process Description	Manufacturer	Model Number	Construction / Install Date
ENG	Blower diesel engine	Kubota	Z482-E3 or equivalent	--
HAN	Ash/Biochar handling	--	--	--
FUG	Fugitives from unpaved roads	--	--	--

7. The facility has been determined to be a new source for the purposes of Cleaner Air Oregon in accordance with OAR 340-245-0020 because the air quality permit application was not submitted and deemed complete, nor had construction commenced on this facility before November 16, 2018. As a new source, the permittee is required to perform a risk assessment in accordance with OAR 340-245-0050, and demonstrate compliance with the Risk Action Levels for a “New and Reconstructed Source” in OAR 340-245-8010, Table 1. The facility is not required to perform a risk assessment as described above, if the facility maintains continuous compliance with the Operating Location Limit requirements in Condition 8.1 of the permit.

#### COMPLIANCE HISTORY

8. The facility will be inspected by LRAPA personnel on a recurring basis to ensure compliance with the permit conditions.

#### OTHER PERMITS

9. No water quality permits have been issued or are required for this source. If the permittee complies with the Material Stockpiles conditions in the permit and the LRAPA-approved Ash/Biochar Removal and Disposal Plan, a Solid Waste permit is not required for stockpiled materials.

#### ATTAINMENT STATUS

10. Because the General Permit allows for portable ACIs, the source could be located in:
- An attainment area;
  - A maintenance area:
    - Carbon Monoxide Maintenance Area: Eugene-Springfield Maintenance Area;
    - PM<sub>10</sub> Maintenance Areas: Eugene-Springfield Maintenance Area; and Oakridge Maintenance Area;
    - PM<sub>2.5</sub> Maintenance Area: Oakridge Maintenance Area, or
  - A nonattainment Area: [Reserved]
11. The Wilderness Act of 1964 prohibits certain activities within Wilderness Areas so as to maintain the purpose for which these lands are set aside. The following paragraph describes activities which are prohibited:

#### **PROHIBITION OF CERTAIN USES**

(c) Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

Therefore, ACIs are not allowed in Class I areas, all of which are Wilderness Areas except for Crater Lake National Park:

- Mt. Hood Wilderness, as established by Public Law 88-577
- Eagle Cap Wilderness, as established by Public Law 88-577
- Hells Canyon Wilderness, as established by Public Law 94-199
- Mt. Jefferson Wilderness, as established by Public Law 90-548
- Mt. Washington Wilderness, as established by Public Law 88-577
- Three Sisters Wilderness, as established by Public Law 88-577
- Strawberry Mountain Wilderness, as established by Public Law 88-577
- Diamond Peak Wilderness, as established by Public Law 88-577
- Crater Lake National Park, as established by Public Law 32-202
- Kalmiopsis Wilderness, as established by Public Law 88-577
- Mountain Lakes Wilderness, as established by Public Law 88-577
- Gearhart Mountain Wilderness, as established by Public Law 88-577

The permit contains a condition that allows operation of an ACI within certain distances of Class I areas based on the size of the ACI. These distances are based on a modeling analysis that ensures that the operations would have an impact on such area less than  $1 \mu\text{g}/\text{m}^3$  (24-hour average) for the regulated pollutants listed in the definition of “Significant Emission Rate”, Table 2 rows (b) through (v) in LRAPA 12-005. [LRAPA 12-005, definition of “Significant Emission Rate”, Item B]

#### ASSESSMENT OF EMISSIONS

12. Facilities assigned to this General Permit are sources of PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, CO, NO<sub>x</sub>, VOC, GHG and toxic air contaminant emissions.
13. Potential nuisances originating from this type of operation could include fugitive dust associated with material handling and smoke. The permit includes requirements to minimize fugitive dust emissions and smoke.
14. LRAPA has assessed the level of emissions from these facilities and determined that facilities complying with the operational limits and monitoring requirements of this

permit will remain area sources<sup>1</sup> and compliant with applicable emissions limits. However, facilities assigned to this permit will be required to track and report various data elements to demonstrate compliance. If LRAPA determines that facilities assigned to this permit emit above permitted emissions limits, the permittee will be required to obtain a different permit.

#### FEDERAL STANDARDS APPLICABILITY

15. The types of facilities regulated by this General Permit are subject to the following federal standards:

- a. 40 C.F.R. Part 60 Subpart CCCC Standards of Performance for Commercial and Industrial Solid Waste Incineration while operating as a CISWI. This subpart is applicable to commercial and industrial sources because construction of the ACI commenced after June 4, 2010 and the ACI meets the definition in 40 C.F.R. 60.2245. If the ACI is burning materials generated from commercial or industrial operations, as defined by the federal regulation, then the ACI is classified as a CISWI.
- b. 40 C.F.R. Part 60 Subpart EEEE Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006 while operating as an OSWI. This subpart is applicable to other solid waste incineration sources because construction of the ACI commenced after December 9, 2004 and the ACI meets the definition in 40 C.F.R. 60.2888. If the ACI is burning materials generated from institutional operations, as defined by the federal regulation, then the ACI is classified as an OSWI. In addition, if the ACI is burning materials generated from other than an institutional facility, such as authorized materials collected from the general public and from residential, commercial, institutional, and industrial sources, the ACI is classified as an OSWI if it limits burning of these materials to less than 35 tons per day.
- c. If the ACI is equipped with a diesel-fired Blower Engine, the following subparts are applicable:
  - i. 40 C.F.R. Part 60 Subpart IIII— Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. This subpart is applicable to the source if the ACI is equipped with a diesel-fired Blower Engine because:
    1. Construction of the internal combustion engine commenced on or after July 11, 2005; and
    2. The stationary CI ICE is manufactured after April 1, 2006; and
    3. The stationary CI ICE is not a fire pump engines.To qualify for assignment to this General Permit, the permittee must use an electric engine or Tier 4 certified diesel engine for the blower, certified according to 40 C.F.R. parts 89 and 1039, as applicable.

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<sup>1</sup> Note that 'area source' in this case does not mean a Title V Operating Permit is not required.

- ii. 40 C.F.R. Part 63 Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This subpart is applicable to the source because the permittee may own or operate a new, non-emergency compression ignition RICE at an area source of HAP emissions, constructed on or after June 12, 2006. For stationary RICE subject to regulations under 40 C.F.R. Part 60 subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, no further requirements apply for such engines under Subpart ZZZZ. Since this source is subject to 40 C.F.R. part 60, Subpart IIII, compliance with 40 C.F.R. part 63 Subpart ZZZZ is met by complying with 40 C.F.R. part 60 Subpart IIII, per 40 C.F.R. part 63 subpart ZZZZ [63.6590(c)].

16. The following Subparts are not applicable to the source:

- a. 40 C.F.R. Part 60 Subpart Cb—Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors That are Constructed on or Before September 20, 1994. This subpart is not applicable to the source because the ACI combustion capacity is not greater than 250 tons per day of municipal solid waste for which construction was commenced on or before September 20, 1994.
- b. 40 C.F.R. Part 60 Subpart Eb—Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994 or for Which Modification or Reconstruction is Commenced After June 19, 1996. This subpart is not applicable to the source because the ACI does not have a combustion capacity greater than 250 tons per day of municipal solid waste for which construction, modification, or reconstruction is commenced after September 20, 1994.
- c. 40 C.F.R. Part 60 Subpart AAAA—Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001. This subpart is not applicable to the source because LRAPA is limiting the ACI capacity to less than 35 tons per day, if the ACI is burning materials generated from other than an institutional facility, such as authorized materials collected from the general public and from residential, commercial, institutional, and industrial sources, so the capacity range of at least 35 tons per day but no more than 250 tons per day of municipal solid waste or refuse-derived fuel does not apply and the ACI does not burn 100 percent yard waste. If the ACI combusts 100 percent yard waste, the ACI must meet only the requirements under “Air Curtain Incinerators That Burn 100 Percent Yard Waste” (40 C.F.R. 60.1435 through 60.1455) and is not eligible for this General Permit.
- d. 40 C.F.R. Part 60 Subpart BBBB—Emission Guidelines and Compliance Times for Small Municipal Waste Combustion Units Constructed on or Before August 30, 1999. This subpart is not applicable to the source because construction did not commence before August 30, 1999.

- e. 40 C.F.R. Part 60 Subpart DDDD Emissions Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units. This subpart is not applicable to the source because construction did not commence on or before June 4, 2010, and reconstruction or modification did not commence on or after June 4, 2001, but no later than August 7, 2013.
- f. 40 C.F.R. Part 60 Subpart FFFF—Emission Guidelines and Compliance Times for Other Solid Waste Incineration Units That Commenced Construction On or Before December 9, 2004. This subpart is not applicable to the source because construction commenced after December 9, 2004.
- g. 40 C.F.R. Part 60 Subpart JJJJ—Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. This subpart is not applicable to the source because it does not operate a spark ignition internal combustion engine.

#### GREENHOUSE GAS REPORTING APPLICABILITY

- 17. OAR Chapter 340 division 215 is applicable to the source if emissions of greenhouse gases exceed 2,500 metric tons (2,756 short tons) of CO<sub>2</sub> equivalents per year. Most ACI permittees are expected to be subject to the reporting requirements of Division 215.

#### TYPICALLY ACHIEVABLE CONTROL TECHNOLOGY APPLICABILITY

- 18. ACIs are an alternative to traditional open burning and produce less harmful smoke and particulate matter. Therefore, LRAPA considers the ACI itself to be TACT. In addition, LRAPA is requiring that ACIs use either a Tier 4 certified diesel engine or an electric engine to power the blower for the air curtain. These requirements are considered Typically Achievable Control Technology (TACT) under LRAPA 32-008 Highest and Best Practicable Treatment and Control.

#### SPECIAL CONDITIONS

- 19. PM<sub>2.5</sub> Synthetic Minor Limit  
The permit contains synthetic minor limits for PM<sub>2.5</sub> so that ACIs do not trigger State Type A New Source Review. A limit of 16,000 dry tons per year, for the ACI for all operating locations across the state within a 12-month period combined, results in 9 tons/year of PM<sub>2.5</sub>. If ACIs were subject to State Type A New Source Review, they would be required to obtain a Standard Air Contaminant Discharge Permit. [LRAPA 34-037(1)(d)]
- 20. National Ambient Air Quality Standards, Prevention of Significant Deterioration Increment and Visibility Requirements  
The National Ambient Air Quality Standards, Prevention of Significant Deterioration Increment, and visibility requirements are applicable requirements for Title V sources (portable ACIs), regardless of whether they trigger New Source Review/Prevention of Significant Deterioration [LRAPA title 12, definition of “Applicable requirement”, Item Q.]:

Q. Any national ambient air quality standard or increment or visibility requirement under part C of Title I of the FCAA, but only as it would apply to temporary sources permitted under section 504(e) of the FCAA.

In order to assure compliance with these applicable requirements, DEQ performed screening level modeling using the worst-case emissions allowed by the permit. This modeling was used to establish siting requirements that assure compliance for any source that is subject to the General Permit.

The following requirements are included in the permit in order to assure compliance with the National Ambient Air Quality Standards and Prevention of Significant Deterioration Increment requirements:

a. National Ambient Air Quality Standards

Burning at equal to or greater than the distances to nearby exposure locations provided in Paragraph 29 will prevent concentrations of criteria pollutants from exceeding National Ambient Air Quality Standards. DEQ modeling indicates that the distances required to meet Cleaner Air Oregon thresholds also protect the National Ambient Air Quality Standards.

b. Prevention of Significant Deterioration Increment

The 24-hour maximum PSD Increment is  $2 \mu\text{g}/\text{m}^3$  for  $\text{PM}_{2.5}$  for Class I Areas [OAR 340-202-0210(1)(a)(ii)]. The daily ACI capacities in the table in Paragraph 25 (also contained in the permit) result in emissions that would result in a concentration of  $1 \mu\text{g}/\text{m}^3$ . Burning at distances equal to or greater than the distances to Class I Areas provided in Paragraph 25 will prevent significant deterioration of air quality in Class I Areas by limiting air impacts to less  $1 \mu\text{g}/\text{m}^3$  of  $\text{PM}_{2.5}$  and will thus be protective of the PSD Increment for Class I Areas. See Paragraph 25 for further discussion of Significant Emission Rates as defined in LRAPA title 12.

c. Visibility analysis

Sources of air pollution can cause visible plumes if emissions of particulates and nitrogen oxides are sufficiently large. A plume will be visible if its constituents scatter or absorb sufficient light so that the plume is brighter or darker than its viewing background (e.g., the sky or a terrain feature such as a mountain). Class I Areas, such as national parks and wilderness areas, are afforded special visibility protection designed to prevent such plume visual impacts to observers within a Class I Area. Because operation of an ACI could occur near a Class I Area, DEQ consulted with the Federal Land Manager of the U.S. Forest Service. The Columbia River Gorge is not a Class I area but is also an area of interest regarding visibility. ACIs would have less impact on visibility than prescribed burning but should still be evaluated. The screening model VISCREEN can be used to calculate the potential visual impact of a plume of specified emissions for specific transport and dispersion (meteorological) conditions. The U.S. Forest Service did not recommend using VISCREEN because it requires predefined locations of the viewer and the viewing angle in order to simulate plume color and contrast. Since operation of an ACI is situationally dependent, it would be impossible to define these parameters in a general permit for a portable source. Additionally, VISCREEN fails to screen out sources, and as such, would require moving to a more complex model (i.e., PLUVUE

II) which would require even more specific information including representative meteorology. Given the obvious advantage of ACI operation over open burning slash piles and the information on plume blight modeling, the U.S. Forest Service does not require any Class I area visibility impact for the ACI General Permit.

#### 21. OSWI Throughput Limit

ACIs regulated under Subpart EEEE are limited to burn less than 35 tons per day of authorized materials collected from the general public and from residential, commercial, institutional, and industrial sources if they are located at a place other than an institutional facility. The General Permit does not contain all the Subpart EEEE requirements for ACIs that burn greater than or equal to 35 tons per day as the permit establishes an upper limit of less than 35 tons per day. ACIs located at a place other than an institutional facility that burn greater than or equal to 35 tons per day are not allowed to operate under the ACI General Permit. ACIs located at institutional facilities are not limited to less than 35 tons per day.

#### 22. Title V Permit

Both of the following New Source Performance Standards require that owners or operators of ACIs obtain a Title V Operating Permit:

- Subpart CCCC Standards of Performance for Commercial and Industrial Solid Waste Incineration; and
- Subpart EEEE Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006

Therefore, the permittee is required to apply for a General Title V Operating Permit not later than 12 months after the date the ACI commences operation as a new source.

23. LRAPA determined that Title 30 – Incinerator Regulations do not apply to ACIs regulated under AQGP-031 because LRAPA has concluded they are not included in the title 30 definition of an Incinerator. Likewise, since LRAPA is authorized to implement DEQ's version of the State's incinerator regulations in division 230, LRAPA confirmed with DEQ that they determined the division 230 regulations do not apply to ACIs regulated under AQGP-031 due to the type of wastes being incinerated.

### EMISSIONS

#### 24. Proposed PSEL information:

Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis Proposed (tons/yr)	Plant Site Emission Limits (PSEL) Proposed PSEL (tons/yr)
PM	NA	0	24
PM <sub>10</sub>	NA	0	14



Pollutant	Baseline Emission Rate (tons/yr)	Netting Basis Proposed (tons/yr)	Plant Site Emission Limits (PSEL) Proposed PSEL (tons/yr)
PM <sub>2.5</sub>	NA	0	9
SO <sub>2</sub>	NA	0	39
NO <sub>x</sub>	NA	0	39
CO	NA	0	99
VOC	NA	0	39
GHG (CO <sub>2</sub> e)	NA	0	74,000

- Because this source will be constructed after the baseline periods listed in LRAPA 42-0048, they have no baseline emission rate.
- The netting basis is zero for portable sources in accordance with LRAPA 42-0046(2).
- Because the ACI General ACDP was issued prior to March 1, 2023, when DEQ removed the ability to establish PSELs at the Generic PSEL level, the current PSELs for all pollutants are equal to the Generic PSEL in accordance with LRAPA 37-0064(3)(b). When the ACI General ACDP is renewed after September 21, 2032, the PSELs will be re-established based on the potential to emit of the largest emitting source in that source category for all sources on that permit type in the state based on OAR 340-222-0041(1).
- The basis for the PSEL is included in the emission detail sheets in Attachment A of this Assessment Report.
- The PSEL is a federally enforceable limit on the potential to emit.

#### SIGNIFICANT EMISSION RATE ANALYSIS

25. Significant emission rates are defined in LRAPA title 12 as thresholds for New Source Review regulated pollutants but an exception provided in Item B of the definition of Significant emission rate that is lower than the listed thresholds would apply to ACIs because some ACIs are portable sources and may be located close to Class I areas: [LRAPA 12-005, definition of “Significant Emission Rate”, Item B]

“(w) Any new source or modification with an emissions increase less than the rates specified above and that is located within 10 kilometers of a Class I area, and would have an impact on such area equal to or greater than 1 µg/m<sup>3</sup> (24 hour average) is emitting at a SER. This subsection does not apply to greenhouse gas emissions.”

DEQ performed modeling to calculate the minimum distances an ACI must be from the boundary of a Class I area to ensure that the ambient impacts would be less than 1 µg/m<sup>3</sup> (24-hour average) for the regulated pollutants listed in the definition of “Significant Emission Rate”, Table 2 rows (b) through (v) in LRAPA 12-005.

ACI Size Category	Maximum Capacity (tons/hour)	Daily Capacity (tons/day)	Minimum Distance to Class I Area (meters)
Micro	$\leq 1$	12	600
Small	$>1$ but $\leq 5$	60	4,000
Medium	$>5$ but $\leq 10$	120	9,000
Large	$>10$ but $\leq 13$	156	10,000
$<35$ ton/day limited	NA	$<35$	2,000

In addition, all of the maximum capacities for the different sizes of ACIs listed in the table above would result in emissions less than the defined SER thresholds so ACIs are not subject to New Source Review.

#### TITLE V MAJOR SOURCE APPLICABILITY

26. The following statements describe ACIs and Title V major source applicability:
- A source that has the potential to emit less than major source thresholds is called a true minor. For Title V Major source applicability, ACIs are non-major sources.
  - A source that has the potential to emit less than major source thresholds but is required by rule to obtain a Title V permit is called a Title V minor source. Because ACIs are required to obtain Title V permits under 40 C.F.R. Part 60 Subpart CCCC and 40 C.F.R. Part 60 Subpart EEEE, ACIs are Title V minor sources.

#### CRITERIA POLLUTANTS

27. This source is a minor source for Title V and a synthetic minor source for New Source Review. The basis for the PSEL is included in the emission detail sheets in Attachment A of this Assessment Report.

#### HAZARDOUS AIR POLLUTANTS

28. This source is not a major source of hazardous air pollutants. The basis for this determination can be found in the emission detail sheets in Attachment A of this Assessment Report.

#### CLEANER AIR OREGON

29. DEQ performed a Level 2 Risk Assessment for the operation of an ACI as required by the Cleaner Air Oregon (CAO) program. This assessment included Toxic Air Contaminant (TAC) emissions from the combustion of wood material inside the ACI and emissions from the diesel engine used to power the air curtain.
- For ACIs on public lands, impacts were modeled at receptors where the public can access. To restrict access to public lands where there are not clear property boundaries, DEQ has included a requirement that ACI operators must post signage on the roadway at the entrance of each site for the entire time the ACI is operating at that site. On private lands, receptors would be placed at the property boundary. DEQ assumed that there were residences at the 'fence line' and set those distances based on residential cancer risk or acute risk, which are the most protective for the pollutants

- released from ACIs, as opposed to noncancer chronic impacts or impacts to workers or children.
- b. In the NAAQS analysis, DEQ modeled NO<sub>2</sub> concentrations at those same distances that operations would be allowed under CAO. Additional restrictions for NAAQS were not necessary because the CAO distances were also protective of the NAAQS. The CAO and NAAQS modeling were independent analyses that came to the same conclusion.
  - c. DEQ established minimum distances to the closest exposure location in the table below, depending on the maximum hourly throughput of the ACI. An exposure location is a location where people may spend two (2) hours in one day, or a dwelling, group of dwellings, or commercial or institutional establishment, or other occupied structure not located on the property on which the burning is conducted.

ACI Size Category	Maximum Capacity (tons/hour)	Daily Capacity (tons/day)	Minimum Distance to Closest Exposure Location (meters)
Micro	≤ 1	12	90
Small	>1 but ≤5	60	375
Medium	>5 but ≤10	120	700
Large	>10 but ≤13	156	1,000
<35 ton/day limited	NA	<35	225

- d. These minimum distances were set based on the risk remaining below the Toxic Lowest Achievable Emissions Rate (TLAER) source risk limit for new facilities as specified in [OAR 340-245-8010 Table 1](#). However community engagement is required for these facilities because the proposed risk is above the community engagement risk action level. LRAPA developed a website for ACIs that meets the requirements for community engagement: <https://www.lrapa.org/304/Air-Curtain-Incinerators-in-Lane-County>
- e. The permittee will also be required to demonstrate compliance with the risk assessment results by reporting the following:
  - Location(s) for portable ACIs and closest exposure location;
  - Daily hours of operation, including start and stop times for each ACI operating location;
  - Daily and annual quantity and type of material burned in the ACI for each ACI operating location; and
  - Daily and annual quantity and type of fuel burned by the Blower Engine for each ACI operating location.
- f. Uncertainty Discussion: There is limited information regarding the emissions of Toxic Air Contaminants from ACIs. DEQ used the best available information at the time of the risk assessment. While DEQ expects emissions to be lower than those estimated, further source testing would confirm that assumption. For that reason, risk

may be overestimated or underestimated. DEQ also used residential risk values when calculating cancer and noncancer chronic risk values, which may overestimate risk if the ACI is located near a nonresidential location such as a workplace or school where people do not live.

#### TOXICS RELEASE INVENTORY

30. The Toxics Release Inventory (TRI) is federal program that tracks the management of certain toxic chemicals that may pose a threat to human health and the environment, over which LRAPA has no regulatory authority. It is a resource for learning about toxic chemical releases and pollution prevention activities reported by certain industrial facilities. Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) created the TRI Program. In general, chemicals covered by the TRI Program are those that cause:

- Cancer or other chronic human health effects;
- Significant adverse acute human health effects; or
- Significant adverse environmental effects.
- There are currently over 650 chemicals covered by the TRI Program. Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual TRI reports on each chemical.

ACIs are not covered by the TRI program because:

- a. They are not one of the specific industry sectors required to report under the TRI program; and
- b. They do not manufacture, process or use TRI-listed chemicals in quantities above threshold levels in a given year.

#### COMPLIANCE ASSURANCE

31. Permittees are required to maintain records associated with throughput, fuel use, operation and maintenance, operating parameters, complaints, and excess emissions. These items are reported to LRAPA semi-annually for Title V source and annually for all sources.

32. LRAPA staff members review annual report submittals and perform site inspections of the permitted facilities on a routine basis; inspections may be performed more frequently if complaints are received.

33. Multiple opacity limits are included in the ACI General Permit. The limits are:

- a. LRAPA 32-0101(3)
  - 20% opacity for a period or periods aggregating more than three minutes in any one hour.
- b. 40 C.F.R. Part 60 Subpart CCCC Opacity Limits for Commercial and Industrial Air Curtain Incinerators (CISWI)
  - 10% opacity during normal operation, except during startup; and
  - 35% opacity during the startup period that is within the first 30 minutes of operation.

- c. 40 C.F.R. Part 60 Subpart EEEE Opacity Limits for Other Solid Waste Air Curtain Incinerators (OSWI)
- 10% opacity during normal operation, except during startup and malfunctions; and
  - 35% opacity during the startup period that is within the first 30 minutes of operation except during malfunctions.

Because of the different averaging periods and because the ACI may be operated as a CISWI or an OSWI, it is difficult to determine which opacity is the most stringent. The permittee will be required to determine compliance with all applicable opacity limits.

#### REVOCATION OF ASSIGNMENT

34. Any facility that fails to demonstrate compliance, generates complaints, or fails to conform to the requirements and limitations contained in the permit may have its assignment to the General Permit revoked. The facility would then be subject to a more stringent level of permitting.

#### PUBLIC NOTICE

35. General Air Contaminant Discharge Permits are authorized by LRAPA Rules & Regulations and are part of the State Implementation Plan. As part of the General ACDP issuance process under LRAPA title 31, a new General ACDP requires public notice as a Category III permit action LRAPA 37-0060(1)(c).
36. The New Source Performance Standards (Subpart CCCC and Subpart EEEE) require that owners or operators of ACIs obtain a Title V Operating Permit. Therefore, the permittee is required to apply for a Title V Operating Permit not later than 12 months after the date the ACI commences operation as a new source.
37. Pursuant to LRAPA 37-0060(1)(c), issuance of a General Air Contaminant Discharge Permit requires public notice in accordance with LRAPA 31-0030(3)(c), which requires LRAPA to provide notice of the proposed permit action and a minimum of 35 days for interested persons to submit written comments. The public was provided the period of July 15 to August 19, 2022 to submit written comments on the draft General Permit and the opportunity to request a public hearing.
38. LRAPA did not receive written requests for a hearing from ten persons or from an organization representing at least ten persons, within the public comment period. Therefore, no hearing was scheduled. During the public comment period, LRAPA received a set of comments from one commenter. Please see the public record for Permit No. AQGP-031 for LRAPA's response to these comments.
39. The final General Permit was issued after approval by the LRAPA Director on September 21, 2022.
40. Calculation of the PSEL and toxic air contaminant emissions are attached.

JJW/rr: 05/02/2023

EMISSION DETAILS**Attachment A - ACI General Permit Emission Detail Sheets****Plant Site Emission Limits**

Emission point	Operating parameter	Annual Units	Pollutant	Emission Factor	EF units	EF reference	PTE Emissions (tons/year)
ACI	16,000	tons wood	PM	1.7	lb/ton wood	DEQ Estimate	13.6
			PM10	1.3		Average of USDA Baker, Oregon and USDA San Bernardino Air Curtain Tests, Table 1	10.4
			PM2.5	1.1		USDA, Baker, Oregon Air Curtain Test	8.8
			SO2	0.1		ARB Open Burn for Orchard and Vine Crops and Forest Biomass, Table 2	0.8
			NOx	1.0		SJV Estimation Using/Averaging Data from Multiple Studies, Attachment B	8.0
			CO	2.6		USDA, Baker, Oregon Air Curtain Test, Table 1	20.8
			VOC	0.9		Average of USDA Baker, Oregon and USDA San Bernardino Air Curtain Tests, Table 1	7.2
			GHG	3663	lb/ton	DEQ GHG Calculator	29304

[The emission factors are from the "Air Curtain Incinerator Emissions Factor Determination"](#)

written by the San Joaquin Valley Air Pollution Control District.

Ash Handling	167	tons ash	PM	0.30	lb/ton ash	DEQ Estimate	0.03
			PM10	0.23			0.02
			PM2.5	0.035			0.003
Blower Engine	1,666	hours/yr	PM	1.040	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	0.01
	5.5	gal/hr	PM10	1.040	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	0.01
	44	gal/day	PM2.5	1.040	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	0.01
	16,060	gal/yr	SO2	0.210	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	0.002
			NOx	20.80	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	0.2
			CO	256.6	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	2.1
			VOC	9.708	lb/Mgal	NSPS IIII (75 ≤ hp < 175)	0.08
			GHG	22.5	lb/gal	DEQ GHG calculator	181

	Operating parameter	Annual Units	Pollutant	Emission factor	EF units	EF reference	Emissions (tons/year)
Blower Engine	1,666	hours/yr	PM	0.015	g/hp-Hr	NSPS IIII (75 ≤ hp < 175)	4.77E-03
	5.5	gal/hr	PM10	0.015	g/hp-Hr	NSPS IIII (75 ≤ hp < 175)	4.77E-03
	44	gal/day	PM2.5	0.015	g/hp-Hr	NSPS IIII (75 ≤ hp < 175)	4.77E-03
	9166	gal diesel	SO2	15	ppmw S	NSPS IIII (75 ≤ hp < 175)	9.62E-04
			NOx	0.3	g/hp-Hr	NSPS IIII (75 ≤ hp < 175)	9.53E-02
			CO	3.7	g/hp-Hr	NSPS IIII (75 ≤ hp < 175)	1.18E+00
			VOC	0.14	g/hp-Hr	NSPS IIII (75 ≤ hp < 175)	4.45E-02

**Plant Site Emission Limits****PSEL Total**

Pollutant	Emissions (tons/year)
PM	13.6
PM10	10.4
PM2.5	8.8
SO <sub>2</sub>	0.8
NO <sub>x</sub>	8.2
CO	22.9
VOC	7.3
GHG	29485

Misra MK, Ragland KW, Baker AJ (1993). "Wood Ash Composition as a Function of Furnace Temperature" (PDF).  
Biomass and Bioenergy. 4 (2): 103–116.

<http://www.fpl.fs.fed.us/documents/pdf1993/misra93a.pdf>

Table 1. Low temperature ash content of different wood species

**Wood Species Ash, dry basis (%)**

Aspen	0.43
Yellow poplar	0.45
White oak	0.87
White oak bark	1.64
Douglas-fir bark	1.82
Average	1.04



**Hazardous Air Pollutants (HAPs)**

Cas No.	Pollutant	ACI EF (lbs/ton)	ACI HAP PTE (tons)	Blower Engine EF (lb/Mgal)	Blower Engine HAP PTE (tons)	Total HAP PTE (tons)
108-05-4	Vinyl acetate	1.49E-01	1.19E+00			1.19E+00
7723-14-0	Phosphorus and compounds	9.27E-02	7.41E-01			7.41E-01
106-99-0	1,3-Butadiene	8.33E-02	6.67E-01	0.2174	0.0017	6.68E-01
7647-01-0	Hydrochloric acid	7.41E-02	5.93E-01	0.1863	0.0015	5.94E-01
75-05-8	Acetonitrile	4.82E-02	3.86E-01			3.86E-01
7439-96-5	Manganese and compounds	4.69E-02	3.75E-01	0.0031	0.0000	3.75E-01
1330-20-7	Xylene (mixture), including m-xylene, o-xylene, p-xylene	3.80E-02	3.04E-01	0.0424	0.0003	3.04E-01
50-00-0	Formaldehyde	1.73E-02	1.39E-01	1.7261	0.0139	1.53E-01
71-43-2	Benzene	1.67E-02	1.33E-01	0.1863	0.0015	1.35E-01
107-13-1	Acrylonitrile	1.40E-02	1.12E-01			1.12E-01
7782-50-5	Chlorine	1.34E-02	1.07E-01			1.07E-01
67-56-1	Methanol	1.24E-02	9.96E-02			9.96E-02
75-09-2	Dichloromethane (Methylene chloride)	9.30E-03	7.44E-02			7.44E-02
100-42-5	Styrene	8.11E-03	6.49E-02			6.49E-02
100-41-4	Ethyl benzene	6.72E-03	5.37E-02	0.0109	0.0001	5.38E-02
75-07-0	Acetaldehyde	4.81E-03	3.85E-02	0.7833	0.0063	4.48E-02
110-54-3	Hexane	4.90E-03	3.92E-02	0.0269	0.0002	3.94E-02
107-02-8	Acrolein	4.42E-03	3.54E-02	0.0339	0.0003	3.56E-02
123-38-6	Propionaldehyde	4.28E-03	3.43E-02			3.43E-02
7664-39-3	Hydrogen fluoride	4.00E-03	3.20E-02			3.20E-02
79-01-6	Trichloroethene (TCE, Trichloroethylene)	3.94E-03	3.15E-02			3.15E-02
75-15-0	Carbon disulfide	3.29E-03	2.64E-02			2.64E-02
98-82-8	Isopropylbenzene (Cumene)	2.84E-03	2.28E-02			2.28E-02
108-95-2	Phenol	2.72E-03	2.18E-02			2.18E-02
80-62-6	Methyl methacrylate	1.89E-03	1.51E-02			1.51E-02
91-20-3	Naphthalene	1.69E-03	1.35E-02	0.0197	0.0002	1.37E-02
71-55-6	1,1,1-Trichloroethane (Methyl chloroform)	9.83E-04	7.86E-03			7.86E-03
74-87-3	Chloromethane (Methyl chloride)	6.43E-04	5.14E-03			5.14E-03
84-74-2	Dibutyl phthalate	5.66E-04	4.53E-03			4.53E-03
1634-04-4	Methyl tert-butyl ether	5.49E-04	4.39E-03			4.39E-03
75-00-3	Chloroethane (Ethyl chloride)	5.49E-04	4.39E-03			4.39E-03
75-01-4	Vinyl chloride	5.49E-04	4.39E-03			4.39E-03
7439-92-1	Lead and compounds	5.29E-04	4.23E-03			4.23E-03
106-93-4	Ethylene dibromide (EDB, 1,2-Dibromoethane)	5.26E-04	4.20E-03			4.20E-03
107-06-2	Ethylene dichloride (EDC, 1,2-Dichloroethane)	5.26E-04	4.20E-03			4.20E-03
120-82-1	1,2,4-Trichlorobenzene	5.26E-04	4.20E-03			4.20E-03
123-91-1	1,4-Dioxane	5.26E-04	4.20E-03			4.20E-03
542-75-6	1,3-Dichloropropene	5.26E-04	4.20E-03			4.20E-03
75-34-3	1,1-Dichloroethane (Ethylidene dichloride)	5.26E-04	4.20E-03			4.20E-03
79-00-5	1,1,2-Trichloroethane (Vinyl trichloride)	5.26E-04	4.20E-03			4.20E-03
75-25-2	Bromoform	4.82E-04	3.86E-03			3.86E-03
79-34-5	1,1,2,2-Tetrachloroethane	4.82E-04	3.86E-03			3.86E-03
106-46-7	p-Dichlorobenzene (1,4-Dichlorobenzene)	4.61E-04	3.69E-03			3.69E-03

**Hazardous Air Pollutants (HAPs)**

Cas No.	Pollutant	ACI EF (lbs/ton)	ACI HAP PTE (tons)	Blower Engine EF (lb/Mgal)	Blower Engine HAP PTE (tons)	Total HAP PTE (tons)
127-18-4	Tetrachloroethene (Perchloroethylene)	4.61E-04	3.69E-03			3.69E-03
87-68-3	Hexachlorobutadiene	4.61E-04	3.69E-03			3.69E-03
108-88-3	Toluene	3.59E-04	2.87E-03	0.1054	0.0008	3.72E-03
100-44-7	Benzyl chloride	3.51E-04	2.81E-03			2.81E-03
56-23-5	Carbon tetrachloride	3.42E-04	2.73E-03			2.73E-03
67-66-3	Chloroform	3.42E-04	2.73E-03			2.73E-03
96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	3.29E-04	2.64E-03			2.64E-03
78-87-5	1,2-Dichloropropane (Propylene dichloride)	2.86E-04	2.28E-03			2.28E-03
108-90-7	Chlorobenzene	2.82E-04	2.26E-03			2.26E-03
7440-02-0	Nickel and compounds	2.24E-04	1.80E-03	0.0039	0.0000	1.83E-03
74-83-9	Bromomethane (Methyl bromide)	1.94E-04	1.55E-03			1.55E-03
7440-38-2	Arsenic and compounds	1.22E-04	9.79E-04	0.0016	0.0000	9.92E-04
18540-29-9	Chromium VI, chromate, and dichromate particulate	1.18E-04	9.48E-04	0.0001	0.0000	9.49E-04
7440-43-9	Cadmium and compounds	8.48E-05	6.79E-04	0.0015	0.0000	6.91E-04
7782-49-2	Selenium and compounds	5.53E-05	4.42E-04	0.0022	0.0000	4.60E-04
7440-36-0	Antimony and compounds	5.29E-05	4.23E-04			4.23E-04
98-86-2	Acetophenone	3.13E-05	2.50E-04			2.50E-04
7439-97-6	Mercury and compounds	3.01E-05	2.41E-04	0.002	0.0000	2.57E-04
7440-48-4	Cobalt and compounds	2.84E-05	2.27E-04			2.27E-04
	Polycyclic Organic Matter			0.0362	0.0003	2.91E-04
7440-41-7	Beryllium and compounds	2.28E-06	1.82E-05			1.82E-05
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.08E-11	8.61E-11			8.61E-11
					<b>Total HAP:</b>	<b>5.49E+00</b>

## Toxic Air Contaminants (TACs)

		Annual Tonnage	16000	ton/yr			
		Annual Fuel	9166	gal/yr			
TEU	Cas No	Chemical	EF		Annual (lbs/yr)	HAP	Annual Tons/yr
ACI	100-41-4	Ethyl benzene	6.7E-03	lbs/ton	1.1E+02	Y	5.4E-02
ACI	100-42-5	Styrene	8.1E-03	lbs/ton	1.3E+02	Y	6.5E-02
ACI	100-44-7	Benzyl chloride	3.5E-04	lbs/ton	5.6E+00	Y	2.8E-03
ACI	106-46-7	p-Dichlorobenzene (1,4-Dichlorobenzene)	4.6E-04	lbs/ton	7.4E+00	Y	3.7E-03
ACI	106-93-4	Ethylene dibromide (EDB, 1,2-Dibromoethane)	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	106-99-0	1,3-Butadiene	8.3E-02	lbs/ton	1.3E+03	Y	6.7E-01
ACI	107-02-8	Acrolein	4.4E-03	lbs/ton	7.1E+01	Y	3.5E-02
ACI	107-06-2	Ethylene dichloride (EDC, 1,2-Dichloroethane)	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	107-13-1	Acrylonitrile	1.4E-02	lbs/ton	2.2E+02	Y	1.1E-01
ACI	108-05-4	Vinyl acetate	1.5E-01	lbs/ton	2.4E+03	Y	1.2E+00
ACI	108-67-8	1,3,5-Trimethylbenzene	2.1E-03	lbs/ton	3.4E+01		1.7E-02
ACI	108-88-3	Toluene	3.6E-04	lbs/ton	5.7E+00	Y	2.9E-03
ACI	108-90-7	Chlorobenzene	2.8E-04	lbs/ton	4.5E+00	Y	2.3E-03
ACI	110-54-3	Hexane	4.9E-03	lbs/ton	7.8E+01	Y	3.9E-02
ACI	110-82-7	Cyclohexane	9.6E-03	lbs/ton	1.5E+02		7.7E-02
ACI	120-12-7	Anthracene	4.6E-05	lbs/ton	7.3E-01	Y	3.6E-04
ACI	120-82-1	1,2,4-Trichlorobenzene	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	123-91-1	1,4-Dioxane	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	124-48-1	Dibromochloromethane	5.3E-04	lbs/ton	8.4E+00		4.2E-03
ACI	127-18-4	Tetrachloroethene (Perchloroethylene)	4.6E-04	lbs/ton	7.4E+00	Y	3.7E-03
ACI	129-00-0	Pyrene	6.0E-05	lbs/ton	9.6E-01	Y	4.8E-04
ACI	1330-20-7	Xylene (mixture), including m-xylene, o-xylene, p-xylene	3.8E-02	lbs/ton	6.1E+02	Y	3.0E-01
ACI	156-60-5	trans-1,2-dichloroethene	6.1E-04	lbs/ton	9.8E+00		4.9E-03
ACI	1634-04-4	Methyl tert-butyl ether	5.5E-04	lbs/ton	8.8E+00	Y	4.4E-03
ACI	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1.1E-11	lbs/ton	1.7E-07	Y	8.6E-11
ACI	191-24-2	Benzo[g,h,i]perylene	2.6E-06	lbs/ton	4.1E-02	Y	2.1E-05
ACI	193-39-5	Indeno[1,2,3-cd]pyrene	1.7E-06	lbs/ton	2.8E-02	Y	1.4E-05
ACI	19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	3.9E-11	lbs/ton	6.2E-07		3.1E-10
ACI	205-99-2	Benzo[b]fluoranthene	2.4E-06	lbs/ton	3.9E-02	Y	1.9E-05
ACI	206-44-0	Fluoranthene	2.8E-05	lbs/ton	4.5E-01	Y	2.3E-04
ACI	207-08-9	Benzo[k]fluoranthene	8.8E-07	lbs/ton	1.4E-02	Y	7.0E-06
ACI	208-96-8	Acenaphthylene	8.0E-05	lbs/ton	1.3E+00	Y	6.4E-04
ACI	218-01-9	Chrysene	1.3E-06	lbs/ton	2.1E-02	Y	1.1E-05
ACI	3268-87-9	Octachlorodibenzo-p-dioxin (OCDD)	4.3E-10	lbs/ton	6.8E-06		3.4E-09
ACI	35822-46-5	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1.7E-10	lbs/ton	2.7E-06		1.3E-09
ACI	39001-02-0	Octachlorodibenzofuran (OCDF)	8.8E-11	lbs/ton	1.4E-06	Y	7.0E-10
ACI	39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	1.6E-11	lbs/ton	2.5E-07		1.3E-10
ACI	40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	2.3E-11	lbs/ton	3.8E-07		1.9E-10
ACI	50-32-8	Benzo[a]pyrene	4.6E-05	lbs/ton	7.4E-01	Y	3.7E-04
ACI	51207-31-5	2,3,7,8-Tetrachlorodibenzofuran (TcDF)	1.4E-10	lbs/ton	2.3E-06	Y	1.1E-09
ACI	53-70-3	Dibenz[a,h]anthracene	1.6E-07	lbs/ton	2.6E-03	Y	1.3E-06
ACI	541-73-1	1,3-Dichlorobenzene	4.8E-04	lbs/ton	7.7E+00		3.9E-03
ACI	542-75-6	1,3-Dichloropropene	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	1.6E-11	lbs/ton	2.5E-07	Y	1.3E-10
ACI	56-23-5	Carbon tetrachloride	3.4E-04	lbs/ton	5.5E+00	Y	2.7E-03
ACI	56-55-3	Benz[a]anthracene	1.4E-06	lbs/ton	2.2E-02	Y	1.1E-05
ACI	57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	9.6E-11	lbs/ton	1.5E-06	Y	7.7E-10
ACI	57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	7.0E-11	lbs/ton	1.1E-06	Y	5.6E-10
ACI	57117-44-5	1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	5.4E-11	lbs/ton	8.6E-07	Y	4.3E-10
ACI	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	3.7E-11	lbs/ton	6.0E-07		3.0E-10

## Toxic Air Contaminants (TACs)

TEU	CasNo	Chemical	EF		Annual (lbs/yr)	HAP	Annual Tons/yr
ACI	60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	4.6E-11	lbs/ton	7.3E-07	Y	3.7E-10
ACI	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	9.9E-11	lbs/ton	1.6E-06	Y	7.9E-10
ACI	67-63-0	Isopropyl alcohol	6.2E-02	lbs/ton	9.9E+02		5.0E-01
ACI	67-64-1	Acetone	5.8E-02	lbs/ton	9.2E+02		4.6E-01
ACI	67-66-3	Chloroform	3.4E-04	lbs/ton	5.5E+00	Y	2.7E-03
ACI	70648-26-5	1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	6.2E-11	lbs/ton	9.9E-07	Y	5.0E-10
ACI	71-43-2	Benzene	1.7E-02	lbs/ton	2.7E+02	Y	1.3E-01
ACI	71-55-6	1,1,1-Trichloroethane (Methyl chloroform)	9.8E-04	lbs/ton	1.6E+01	Y	7.9E-03
ACI	72918-21-5	1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	1.1E-11	lbs/ton	1.8E-07	Y	9.0E-11
ACI	74-83-9	Bromomethane (Methyl bromide)	1.9E-04	lbs/ton	3.1E+00	Y	1.6E-03
ACI	74-87-3	Chloromethane (Methyl chloride)	6.4E-04	lbs/ton	1.0E+01	Y	5.1E-03
ACI	75-00-3	Chloroethane (Ethyl chloride)	5.5E-04	lbs/ton	8.8E+00	Y	4.4E-03
ACI	75-01-4	Vinyl chloride	5.5E-04	lbs/ton	8.8E+00	Y	4.4E-03
ACI	75-05-8	Acetonitrile	4.8E-02	lbs/ton	7.7E+02	Y	3.9E-01
ACI	75-09-2	Dichloromethane (Methylene chloride)	9.3E-03	lbs/ton	1.5E+02	Y	7.4E-02
ACI	75-15-0	Carbon disulfide	3.3E-03	lbs/ton	5.3E+01	Y	2.6E-02
ACI	75-25-2	Bromoform	4.8E-04	lbs/ton	7.7E+00	Y	3.9E-03
ACI	75-27-4	Bromodichloromethane	4.8E-04	lbs/ton	7.7E+00		3.9E-03
ACI	75-34-3	1,1-Dichloroethane (Ethylidene dichloride)	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	75-69-4	Trichlorofluoromethane (Freon 11)	5.5E-04	lbs/ton	8.8E+00		4.4E-03
ACI	78-87-5	1,2-Dichloropropane (Propylene dichloride)	2.9E-04	lbs/ton	4.6E+00	Y	2.3E-03
ACI	78-93-3	2-Butanone (Methyl ethyl ketone)	2.7E-04	lbs/ton	4.2E+00		2.1E-03
ACI	79-00-5	1,1,2-Trichloroethane (Vinyl trichloride)	5.3E-04	lbs/ton	8.4E+00	Y	4.2E-03
ACI	79-01-6	Trichloroethene (TCE, Trichloroethylene)	3.9E-03	lbs/ton	6.3E+01	Y	3.2E-02
ACI	79-34-5	1,1,2,2-Tetrachloroethane	4.8E-04	lbs/ton	7.7E+00	Y	3.9E-03
ACI	80-62-6	Methyl methacrylate	1.9E-03	lbs/ton	3.0E+01	Y	1.5E-02
ACI	83-32-9	Acenaphthene	1.5E-05	lbs/ton	2.3E-01	Y	1.2E-04
ACI	85-01-8	Phenanthrene	1.1E-04	lbs/ton	1.8E+00	Y	8.8E-04
ACI	86-73-7	Fluorene	5.1E-05	lbs/ton	8.2E-01	Y	4.1E-04
ACI	87-68-3	Hexachlorobutadiene	4.6E-04	lbs/ton	7.4E+00	Y	3.7E-03
ACI	91-20-3	Naphthalene	1.7E-03	lbs/ton	2.7E+01	Y	1.4E-02
ACI	95-47-6	o-Xylene	1.9E-04	lbs/ton	3.1E+00	Y	1.5E-03
ACI	95-50-1	1,2-Dichlorobenzene	4.8E-04	lbs/ton	7.7E+00		3.9E-03
ACI	95-63-6	1,2,4-Trimethylbenzene	7.5E-03	lbs/ton	1.2E+02		6.0E-02
ACI	96-12-8	1,2-Dibromo-3-chloropropane (DBCP)	3.3E-04	lbs/ton	5.3E+00	Y	2.6E-03
ACI	98-82-8	Isopropylbenzene (Cumene)	2.8E-03	lbs/ton	4.6E+01	Y	2.3E-02
ACI	75-07-0	Acetaldehyde	4.8E-03	lbs/ton	7.7E+01	Y	3.8E-02
ACI	98-86-2	Acetophenone	3.1E-05	lbs/ton	5.0E-01	Y	2.5E-04
ACI	7440-36-0	Antimony and compounds	5.3E-05	lbs/ton	8.5E-01	Y	4.2E-04
ACI	7440-38-2	Arsenic and compounds	1.2E-04	lbs/ton	2.0E+00	Y	9.8E-04
ACI	7440-39-3	Barium and compounds	8.2E-02	lbs/ton	1.3E+03		6.6E-01
ACI	7440-41-7	Beryllium and compounds	2.3E-06	lbs/ton	3.6E-02	Y	1.8E-05
ACI	7440-43-9	Cadmium and compounds	8.5E-05	lbs/ton	1.4E+00	Y	6.8E-04
ACI	7782-50-5	Chlorine	1.3E-02	lbs/ton	2.1E+02	Y	1.1E-01
ACI	18540-29-5	Chromium VI, chromate, and dichromate particulate	1.2E-04	lbs/ton	1.9E+00	Y	9.5E-04
ACI	7440-48-4	Cobalt and compounds	2.8E-05	lbs/ton	4.5E-01	Y	2.3E-04
ACI	7440-50-8	Copper and compounds	1.9E-03	lbs/ton	3.0E+01		1.5E-02
ACI	4170-30-3	Crotonaldehyde	7.6E-04	lbs/ton	1.2E+01		6.1E-03
ACI	84-66-2	Diethylphthalate	3.7E-04	lbs/ton	5.9E+00	Y	3.0E-03
ACI	84-74-2	Dibutyl phthalate	5.7E-04	lbs/ton	9.1E+00	Y	4.5E-03
ACI	50-00-0	Formaldehyde	1.7E-02	lbs/ton	2.8E+02	Y	1.4E-01
ACI	7647-01-0	Hydrochloric acid	7.4E-02	lbs/ton	1.2E+03	Y	5.9E-01
ACI	7664-39-3	Hydrogen fluoride	4.0E-03	lbs/ton	6.4E+01	Y	3.2E-02

**Toxic Air Contaminants (TACs)**

TEU	CasNo	Chemical	EF		Annual (lbs/yr)	HAP	Annual Tons/yr
ACI	7439-92-1	Lead and compounds	5.3E-04	lbs/ton	8.5E+00		4.2E-03
ACI	7439-96-5	Manganese and compounds	4.7E-02	lbs/ton	7.5E+02	Y	3.8E-01
ACI	7439-97-6	Mercury and compounds	3.0E-05	lbs/ton	4.8E-01	Y	2.4E-04
ACI	67-56-1	Methanol	1.2E-02	lbs/ton	2.0E+02	Y	1.0E-01
ACI	1313-27-5	Molybdenum trioxide	5.3E-05	lbs/ton	8.5E-01		4.3E-04
ACI	365	Nickel and compounds	2.2E-04	lbs/ton	3.6E+00	Y	1.8E-03
ACI	108-95-2	Phenol	2.7E-03	lbs/ton	4.4E+01	Y	2.2E-02
ACI	7723-14-0	Phosphorus and compounds	9.3E-02	lbs/ton	1.5E+03	Y	7.4E-01
ACI	123-38-6	Propionaldehyde	4.3E-03	lbs/ton	6.9E+01	Y	3.4E-02
ACI	7782-49-2	Selenium and compounds	5.5E-05	lbs/ton	8.8E-01	Y	4.4E-04
ACI	7440-22-4	Silver and compounds	1.6E-02	lbs/ton	2.5E+02		1.3E-01
ACI	7440-62-2	Vanadium (fume or dust)	1.0E-05	lbs/ton	1.6E-01		8.1E-05
ACI	108-38-3	m-Xylene	6.0E-05	lbs/ton	9.6E-01	Y	4.8E-04
ACI	106-42-3	p-Xylene	6.0E-05	lbs/ton	9.6E-01	Y	4.8E-04
ACI	7440-66-6	Zinc and compounds	2.2E-02	lbs/ton	3.5E+02		1.8E-01
ACI	192-97-2	Benzo[e]pyrene	3.6E-06	lbs/ton	5.7E-02	Y	2.9E-05
ACI	205-82-3	Benzo[j]fluoranthene	2.7E-06	lbs/ton	4.2E-02	Y	2.1E-05
ACI	91-57-6	2-Methyl naphthalene	2.4E-05	lbs/ton	3.8E-01	Y	1.9E-04
ACI	198-55-0	Perylene	5.4E-07	lbs/ton	8.7E-03	Y	4.4E-06
Blower	71-43-2	Benzene	1.9E-01	lbs/Mgal	1.7E+00	Y	8.5E-04
Blower	106-99-0	1,3-Butadiene	2.2E-01	lbs/Mgal	2.0E+00	Y	1.0E-03
Blower	7440-43-9	Cadmium and compounds	1.5E-03	lbs/Mgal	1.4E-02	Y	6.9E-06
Blower	50-00-0	Formaldehyde	1.7E+00	lbs/Mgal	1.6E+01	Y	7.9E-03
Blower	18540-29-5	Chromium VI, chromate, and dichromate particulate	1.0E-04	lbs/Mgal	9.2E-04	Y	4.6E-07
Blower	7440-38-2	Arsenic and compounds	1.6E-03	lbs/Mgal	1.5E-02	Y	7.3E-06
Blower	7439-92-1	Lead and compounds	8.3E-03	lbs/Mgal	7.6E-02		3.8E-05
Blower	365	Nickel and compounds	3.9E-03	lbs/Mgal	3.6E-02	Y	1.8E-05
Blower	91-20-3	Naphthalene	2.0E-02	lbs/Mgal	1.8E-01	Y	9.0E-05
Blower	401	PAHs (excluding Naphtalene	3.6E-02	lbs/Mgal	3.3E-01	Y	1.7E-04
Blower	50-32-8	Benzo[a]pyrene	3.6E-05	lbs/Mgal	3.3E-04	Y	1.6E-07
Blower	75-07-0	Acetaldehyde	7.8E-01	lbs/Mgal	7.2E+00	Y	3.6E-03
Blower	107-02-8	Acrolein	3.4E-02	lbs/Mgal	3.1E-01	Y	1.6E-04
Blower	7664-41-7	Ammonia	2.9E+00	lbs/Mgal	2.7E+01		1.3E-02
Blower	7440-50-8	Copper and compounds	4.1E-03	lbs/Mgal	3.8E-02		1.9E-05
Blower	100-41-4	Ethyl benzene	1.1E-02	lbs/Mgal	1.0E-01	Y	5.0E-05
Blower	110-54-3	Hexane	2.7E-02	lbs/Mgal	2.5E-01	Y	1.2E-04
Blower	7647-01-0	Hydrochloric acid	1.9E-01	lbs/Mgal	1.7E+00	Y	8.5E-04
Blower	7439-96-5	Manganese and compounds	3.1E-03	lbs/Mgal	2.8E-02	Y	1.4E-05
Blower	7439-97-6	Mercury and compounds	2.0E-03	lbs/Mgal	1.8E-02	Y	9.2E-06
Blower	7782-49-2	Selenium and compounds	2.2E-03	lbs/Mgal	2.0E-02	Y	1.0E-05
Blower	108-88-3	Toluene	1.1E-01	lbs/Mgal	9.7E-01	Y	4.8E-04
Blower	1330-20-7	Xylene (mixture), including m-xylene, o-xylene,	4.2E-02	lbs/Mgal	3.9E-01	Y	1.9E-04
Blower	200	Diesel Particulate Matter	5.2E-01	lbs/Mgal	4.8E+00		2.4E-03