

Cleaner Air Oregon— Risk Assessment Report (Revision 1)

JB Wood Recyclers, LLC
Monmouth, Oregon

Prepared for:

Oregon Department of Environmental Quality

Cleaner Air Oregon Permitting Program

June 24, 2025

Project No. M2305.01.005

Prepared by:

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Abbreviations

<	symbol identifying result as less than the value shown
CAO	Cleaner Air Oregon
DEQ	Oregon Department of Environmental Quality
ESP	electrostatic precipitator
existing permit	Simple Air Contaminant Discharge Permit No. 27-0042-ST-01
g/s	gram per second
the facility	firewood production facility located at 6620 South Pacific Highway West in Monmouth, Oregon 97361
JB Wood	JB Wood Recyclers, LLC
L3RA	Level 3 Risk Assessment
MFA	Maul Foster and Alongi, Inc.
OAR	Oregon Administrative Rule
project	JB Wood is proposing to construct a fourth firewood drying kiln, a hogged fuel boiler, a dry electrostatic precipitator, and associated material handling and storage process equipment.
RAL	risk action level
RBC	risk-based concentration
TAC	toxic air contaminant
TEU	toxic emissions unit
TLAER	toxics lowest achievable emission rate
ug/m ³	micrograms per cubic meter

1 Introduction

JB Wood Recyclers, LLC (JB Wood) owns and operates a firewood production facility located at 6620 South Pacific Highway West in Monmouth, Oregon 97361 (the facility). The facility current operates under Simple Air Contaminant Discharge Permit No. 27-0042-ST-01 (existing permit) issued by the Oregon Department of Environmental Quality (DEQ) on September 12, 2023. JB Wood is proposing to construct a fourth firewood drying kiln, a hogged fuel boiler, a dry electrostatic precipitator (ESP), and associated material handling and storage process equipment (the project).

Since JB Wood is proposing to construct a new emissions unit with the potential to generate toxic air contaminant (TAC) emissions at the facility, JB Wood must reassess risk and submit the applicable reporting materials to the DEQ for review and approval per Oregon Administrative Rule (OAR) 340-245-0100(3). This Cleaner Air Oregon (CAO) Risk Assessment Report is meant to satisfy this regulation, and this revision addresses initial comments from the CAO permitting program to incorporate potential emissions from startup and shutdown of the proposed hogged fuel boiler.

JB Wood retained Maul Foster and Alongi, Inc. (MFA) to assist with air quality permitting for the project. MFA performed a Level 3 Risk Assessment (L3RA) to estimate the potential cancer and noncancer risk impacts from the facility, after completion of the project, for comparison to the applicable risk action levels (RAL) shown in OAR 340-245-8010 Table 1. Table 1-1 presents the results of the L3RA for significant toxic emissions units (TEUs) as defined under OAR 340-245-0020(52). As shown in Table 1-1, the maximum predicted excess cancer risk is above the community engagement RAL, but below the Toxics Lowest Achievable Emission Rate (TLAER) RAL for new sources. The maximum predicted chronic noncancer hazard index is below the source permit RAL and the maximum predicted acute hazard index does not exceed the community engagement RAL.

Table 1-1. L3RA Result Summary for Significant TEUs

Exposure Assessment	Facility Risk/Hazard Index	New Source RAL Analysis
Cancer Risk (chances-in-one-million)		
Residential	7	Above Community Engagement (5), but below TLAER Level (10)
Nonresidential Child	<0.1	Below Aggregate TEU Level (0.5)
Nonresidential Worker	5	Below TLAER Level (10)
Chronic Noncancer Hazard Index		
Residential	0.2	Below Source Permit Level (0.5)
Nonresidential Child	<0.1	Below Source Permit Level (0.5)
Nonresidential Worker	0.4	Below Source Permit Level (0.5)
Acute Noncancer Hazard Index	1	Equal to Community Engagement Level (1)
Note		
< = symbol identifying result as less than the value shown.		

The project will not cause any increases to previously assessed gas combustion TEUs at the facility. As a result, MFA did not re-evaluate risk from existing gas combustion TEUs. The remainder of this CAO Risk Assessment Report outlines the methodology used to complete the L3RA.

2 Facility Description

2.1 Facility Location

The facility is located just south of the city limits of Monmouth, Oregon, approximately 12 miles southwest of Salem. The area immediately surrounding the facility is characterized by minimal terrain features. To the south, west, and east of the facility are areas predominantly zoned as exclusive farm use. To the north of the facility is a combination of residential, commercial, and industrial land use zones. A site location map is presented in Figure 2-1, and the topography of the area immediately surrounding the facility is shown in Figure 2-2.

2.2 Process Description

A detailed process description for the existing facility and project is presented in Section 2 of the Permit Modification Application submitted in the Your DEQ Online reporting website on April 21, 2025. A process flow diagram depicting the future operation of the facility is presented in Figure 2-3.

3 Modeled Emission Units

Daily and annual TAC emission estimates for the process equipment and emissions control devices considered to be TEUs, as defined in OAR 340-245-0020(59), were prepared by MFA, in consultation with JB Wood, as shown in the tables attached to this report. The annual and daily TAC emission estimates, presented in Tables 3-1 and 3-3, were converted to units of grams per second (g/s) in Tables 3-2 and 3-4 for only those TACs with risk-based concentrations (RBCs) for purposes of conducting the L3RA. The emissions inventory, detailing data references and assumptions, is provided in Attachment A for additional information.

Each TEU was modeled using a unit emission rate, equivalent to 1 g/s for all modeled source types, and the modeled release parameters presented in Table 3-5. Additional details describing unit emission rate modeling are provided in Section 4.6. The following subsections provide details for each modeled significant TEU. Each modeled significant TEU is presented in Figure 3-1.

The modeled release parameters for the existing log bucking equipment and existing kiln nos. 1, 2, and 3 were previously reviewed and approved by the DEQ as detailed in the Review Report to the existing permit. There were no changes to the modeled release parameters for these existing emission units other than slight changes in location now that the equipment is constructed.

3.1 Existing Log Bucking Equipment

Green logs are cut and split into firewood-sized pieces using electric wood processors. Fugitive TAC emissions generated by using each existing wood processor were represented in the dispersion model as three distinct volume sources with the following unique model IDs: BUCK_1, BUCK_2, and BUCK_3.

3.2 Existing Firewood Kiln nos. 1-3

JB Wood currently uses three existing kilns to dry firewood at the facility. Existing kilns no. 1 and 2 each have two dedicated roof vents. Existing kiln no. 3 has three dedicated roof vents. Each existing kiln roof vent was represented in the dispersion model as a volume source with unique model ID (KILN1_V1, KILN1_V2, KILN2_V1, KILN2_V2, KILN3_V1, KILN3_V2, and KILN3_V3). DEQ-approved plume rise calculations for each existing kiln, used to determine the effective release height, initial vertical dimension and initial lateral dimension, are presented in Table 3-6 for quick cross reference.

3.3 Proposed Hogged Fuel Boiler

The proposed hogged fuel boiler will be used to provide steam to heat each existing kiln and the proposed fourth kiln. Emissions from the proposed boiler will be routed to a downstream dry ESP control device with an attached vertical stack. The modeled release height, stack diameter, exhaust flowrate, and exhaust temperature were provided by the manufacturer. The proposed boiler stack was represented in the dispersion model as an individual point source with a unique model ID BLR_ESP. Maximum daily TAC emission estimates for the proposed hogged fuel boiler assume a true cold start may require up to 4 hours per event. Annual TAC emission estimates assume there may be up to two weeks per year for startup/shutdown events, equivalent to a potential total of 14 planned events.

3.4 Proposed Firewood Kiln no. 4

Proposed kiln no. 4 will be indirectly heated by steam from the proposed boiler, and will not be equipped with a backup natural burner. Proposed kiln no. 4 will have three dedicated roof vents. Each roof vent was represented in the dispersion model as a distinct volume source with a unique model ID (KILN4_V1, KILN4_V2, and KILN4_V3). Proposed kiln no. 4 will be identical to existing kiln no. 3. The modeled release parameters for existing kiln no. 3 were previously reviewed and approved by the DEQ. The plume rise calculations and modeled extents approved by the DEQ for existing kiln no. 3 were used as the basis for the proposed kiln no. 4 roof vent volume source representations.

4 Air Dispersion Modeling Methodology

The following subsections detail the dispersion model methodology and setup, including input parameters and assumptions.

4.1 Model Selection

MFA executed each dispersion model using the model versions shown in Table 4-1 below. Lakes Environmental, a third-party overlay software, was used to execute each dispersion model.

Table 4-1. Model Selection

Model Component	Executable Version
AERMOD	24142
AERMET	24142
AERMAP	24142
AERSURFACE	24142
AERMAP	24142
BPIP	04274

4.2 Meteorological Data

Detailed descriptions of the meteorological dataset included in the L3RA is presented in Section 5 of the Short-Term National Ambient Air Quality Standard Modeling Report submitted in the Your DEQ Online reporting website on June 19, 2025.

4.3 Building Downwash

MFA executed each dispersion model using the most recent version of the EPA Building Profile Input Program for PRIME (BPIPPRM) as shown in Table 4-1. The locations of structures that influence downwash are presented in Figure 3-1. Table 4-2 presents the heights of each downwash structure.

4.4 Modeled Emission Unit Locations

The location of each modeled emissions unit at the facility are presented in Figure 3-1.

4.5 Modeled Receptor Locations and Terrain

MFA utilized the same modeled receptor grid from the previous DEQ-approved compliance demonstration detailed in the Review Report to the existing permit. The DEQ-approved receptor locations are shown in Table 4-3 below. Figure 4-1 presents the modeled receptor spacing and locations within the modeling domain. Figure 4-2 presents the modeled receptor locations in the area immediately surrounding the facility.

Table 4-3. Modeled Receptor Locations

Receptor Spacing (meters)	Receptor Distance (meters)
25	Along the property boundary and out to at least 200 meters from the property boundary
50	200 to 1,000
100	1,000 to 2,000
200	2,000 to 5,000
500	5,000 to 10,000

Terrain elevations for modeled receptor and significant TEU, and downwash structures base elevations were derived from the US Geological Survey National Elevation Dataset data at a resolution of 1/3 arc seconds (a horizontal resolution of roughly 10 meters) and processed using the current version of AERMAP.

4.6 Unit Emission Rates

Each TEU included in the dispersion model was modeled using a unit emission rate equivalent to 1 g/s for all modeled source types to predict dispersion factors for each TEU in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) per g/s. Results of the unit emission rate modeling for each TEU were used to derive the predicted concentration for each TAC emitted from a given TEU. Multiplying the dispersion factor (in $\mu\text{g}/\text{m}^3$ per g/s) by the TAC emission rate for the modeled TEU (in g/s) results in the predicted model concentration of the TAC (in $\mu\text{g}/\text{m}^3$). MFA executed the dispersion model using unit emission rates for each TEU for both the annual and daily (e.g., 24-hour) averaging periods. The resulting dispersion factors, in combination with the TAC emission rates for each TEU in g/s and the RBCs in $\mu\text{g}/\text{m}^3$ set forth under OAR 340-245-8010 Table 2, were used to conduct the L3RA.

5 Risk Assessment Methodology

5.1 Land Use Zoning Classification—Exposure Types

MFA utilized the same land use zoning datasets and exposure classifications that were included in the initial DEQ-approved CAO compliance demonstration for the facility. MFA reviewed available land use zoning datasets and aerial imagery for any updates to previously assessed locations. JB Wood also reviewed the area immediately surrounding the facility to determine if any new construction had occurred since the initial demonstration. MFA determined there are no updates that would result in revisions to the previously assessed land use zoning and exposure locations.

The Oregon statewide zoning classifications provided the basis for the initial categorization of exposure classifications (e.g., residential, nonresidential worker, nonresidential child, or acute), as shown in Table 5-1. For additional clarification, Table 5-2 shows each receptor location where the land use and exposure location classifications differ from the statewide zoning information.

Figure 5-1 presents the existing land-use zoning within 1 kilometer of the facility property boundary. Figure 5-2 presents the corresponding exposure location categorization within the same 1-kilometer area.

5.2 Exposure Pathways

Predicted cancer and noncancer risk from facility TEUs do not have additional exposure pathways (e.g., ingestion or dermal uptake) other than those already accounted for in each published RBC.

5.3 Risk-Based Concentrations

Excess cancer risk and chronic and acute noncancer risk were assessed using the established RBCs set forth in OAR 340-245-8010 Table 2. The RBCs used for the L3RA are presented in Table 5-3.

5.4 Risk Estimates

As mentioned in Section 4.6, MFA executed the dispersion model using unit emission rates (equivalent to 1 g/s) for each TEU, for the annual and daily (i.e., 24-hours) averaging periods. The unit emission rate model produces the dispersion factor, with units of ug/m³ per g/s, at each exposure location for each modeled TEU and averaging period. Risk estimates were calculated for each modeled TEU by multiplying the dispersion factor at a given location by the individual TAC emission rate in units of g/s, then dividing by the appropriate RBC. The resulting risk estimate for each TAC was summed for each modeled TEU. The total predicted risk at each TEU was then summed at each exposure location to calculate the cumulative predicted excess cancer risk, chronic noncancer hazard index, and acute noncancer hazard index for the facility and proposed expansion.

5.4.1 Example Calculation—Level 3 Risk Assessment

Example calculations for estimating excess cancer risk and noncancer hazard index (chronic and acute) for a single exposure location are presented in Equations 1 through 3 to satisfy the requirements set forth under OAR 340-245-0210(2)(c).

Equation 1.

$$\text{Excess cancer risk (chances-in-a-million)} = \Sigma \frac{(\text{TAC annual emission rate [g/s]} \times (\text{TEU dispersion factor } [\frac{\text{ug/m}^3}{\text{g/s}}]))}{(\text{applicable RBC at exposure location [ug/m}^3])}$$

Equation 2.

$$\text{Chronic noncancer hazard index} = \Sigma \frac{(\text{TAC annual emission rate [g/s]} \times (\text{TEU dispersion factor } [\frac{\text{ug/m}^3}{\text{g/s}}]))}{(\text{applicable RBC at exposure location [ug/m}^3])}$$

Equation 3.

$$\text{Acute noncancer hazard index} = \Sigma \frac{(\text{TAC daily emission rate [g/s]} \times (\text{TEU dispersion factor } [\frac{\text{ug/m}^3}{\text{g/s}}]))}{(\text{applicable RBC at exposure location [ug/m}^3])}$$

The cumulative facility excess cancer risk and chronic and acute noncancer hazard index was derived by summing each individual TAC risk contribution at each exposure location for each applicable TEU.

6 Risk Assessment Result Summary

MFA determined the total predicted excess cancer risk and chronic and acute noncancer risk (expressed numerically as the chronic and acute noncancer hazard index) at each modeled exposure location following the applicable requirements set forth in OAR 340-245-0050(2) for the L3RA. Excess cancer risk, and chronic and acute noncancer hazard index calculation methodologies are discussed in detail in Section 5.

The modeled dispersion factors at the locations of maximum predicted risk for each modeled TEU and exposure scenario are presented in Table 6-1. A summary of the L3RA results are presented in Table 6-2 below, which references the supporting calculation tables presenting TAC emission rates, modeled dispersion factors, and applicable RBCs for each risk or hazard index estimate. Table 6-2 presents the results of the L3RAs rounded to the required number of significant figures per OAR 340-245-0200(4).

Table 6-2. L3RA Result Summary

Exposure Assessment	Exposure Scenario	Maximum Predicted Result	Calculation Table Reference
Excess Cancer Risk	Residential	7	Table 6-3
Chronic Noncancer Hazard Index	Worker	0.4	Table 6-4
Acute Noncancer Hazard Index	Acute	1	Table 6-4
Note			
< = symbol identifying result as less than the value shown.			

The L3RA was performed consistent with the CAO rules in effect on the date of issuance of this report.

6.1 Predicted Excess Cancer Risk

The maximum predicted excess cancer risk for significant TEUs is 7 additional chances of developing cancer in a population of 1,000,000 people (chances-in-one-million) as shown in Table 6-3. The maximum predicted excess cancer risk for significant TEUs is above the community engagement RAL of 5, but below the TLAER RAL set to 10. This represents the highest applicable RAL from the L3RA. Therefore, the facility will comply with the applicable community engagement requirements set forth under OAR 340-245-0120.

6.2 Predicted Chronic Noncancer Hazard Index

The maximum predicted chronic noncancer hazard index for significant TEUs is 0.4 as shown in Table 6-4. The highest predicted RAL resulting from the L3RA is not driven by the chronic noncancer hazard index. See Section 6.1 for a discussion of the applicable RAL for compliance purposes.

6.3 Predicted Acute Noncancer Hazard Index

The maximum predicted acute noncancer hazard index for significant TEUs is equal to 1 (rounded up from 0.6) as shown in Table 6-4. The highest predicted RAL resulting from the L3RA is not driven by the acute noncancer hazard index. See Section 6.1 for a discussion of the applicable RAL for compliance purposes.

6.4 Uncertainty Analysis

Although the L3RA was conducted using the most accurate and current information, there are various levels of uncertainty associated with the risk assessment. Per OAR 340-245-0210(2)(d), known quantitative and qualitative uncertainties with the Level 3 Risk Assessment include, but may not be limited to, the following:

6.4.1 Acute Assessments

To assess acute noncancer risk (i.e., acute hazard index), the full 24-hour exposure duration was assumed. Acute exposure can occur anywhere from one to 24 hours. Although this risk assessment assumed 24 hours of exposure, it is very unlikely that any individual would be exposed for a full 24 hours outside of a residential location. However, if the toxicity reference value is based on data collected for a lower exposure duration than the 24-hour exposure duration, the estimated risk may differ. **Hence, for TACs with RBCs that were developed using toxicity reference values based on longer exposure durations, the L3RA may overestimate acute noncancer risk due to the 24-hour exposure duration assumption.**

The L3RA was conducted assuming each TEU at the facility, except for the proposed hogged fuel boiler that reflected potential startup emissions, is operating at maximum design capacity for 24 hours simultaneously during normal operation. It is highly unlikely that all TEUs at the facility will simultaneously operate at their maximum capacity for a 24-hour period. **Therefore, the L3RA likely overestimates acute noncancer risk due to unrealistic operating conditions.**

The L3RA includes met conditions which may only occur a few days or less in a one-year period that can result in worst-case dispersion characteristics. It is unlikely that these infrequent met conditions would occur at the same time that the facility will be operating all TEUs at maximum capacity. **Therefore, the L3RA likely overestimates acute noncancer risk because of the improbability of maximum capacity operation of the facility aligning with worst-case met conditions.**

Dispersion modeling was used to determine the daily (i.e., 24-hour) dispersion factors per exposure location for use in risk estimate calculations. This method determines, for each TEU, a single day within the one-year period of hourly met data, during which the highest predicted concentration occurs at each exposure location. It is highly unlikely that the maximum predicted concentration at a given exposure location occurs on the same day for each individual TEU at the facility. For example, the highest predicted concentration for the kilns may occur at exposure location "X" on March 1 while, due to differences in location, release characteristics (i.e., stack height, velocity, etc.), and met variation, the highest predicted concentration for the baghouse may occur at exposure location "X" on December 1. Thus, the maximum predicted concentrations are not paired-in-time such that maximum predicted concentrations per TEU may occur on different days within the met dataset. **Therefore, the L3RA likely overestimates acute noncancer risk because it is unlikely that the highest predicted concentration from each TEU occurs at every exposure location on the same day.**

6.4.2 Cancer and Chronic Noncancer Assessments

The RBCs developed by the DEQ for excess cancer risk and chronic noncancer risk assume a 70-year exposure duration for 24 hours per day. It is unlikely that a person would remain at the same residence or in areas potentially impacted by emissions covered by the CAO program for 70 consecutive years for 24 hours per day. The risk assessments also assume a person will be exposed to the local facility maximum emission rate for the entire exposure duration (i.e., 70 years). **Therefore, the L3RA will overestimate cancer and chronic noncancer risk due to the unrealistic exposure duration assumption.**

6.4.3 All Assessments

Only TACs that have applicable RBCs published by the DEQ were assessed. Table 6-5 presents a list of the TACs that could be emitted from the facility TEUs following completion of the proposed expansion that do not have RBCs published by the DEQ. **As a result, the L3RA may not accurately assess cancer and/or noncancer risk associated with those TACs that do not have an associated RBC.** MFA understands the development of RBCs incorporates a level of conservatism that may overestimate cancer and/or noncancer risk from TACs with known RBCs.

7 Conclusion

MFA looks forward to working with the DEQ throughout the permitting process for the facility. If there are any questions or comments about this report, please contact Brian Snuffer Zukas, PE, senior air quality consultant with MFA at (971) 254-8077.

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figures



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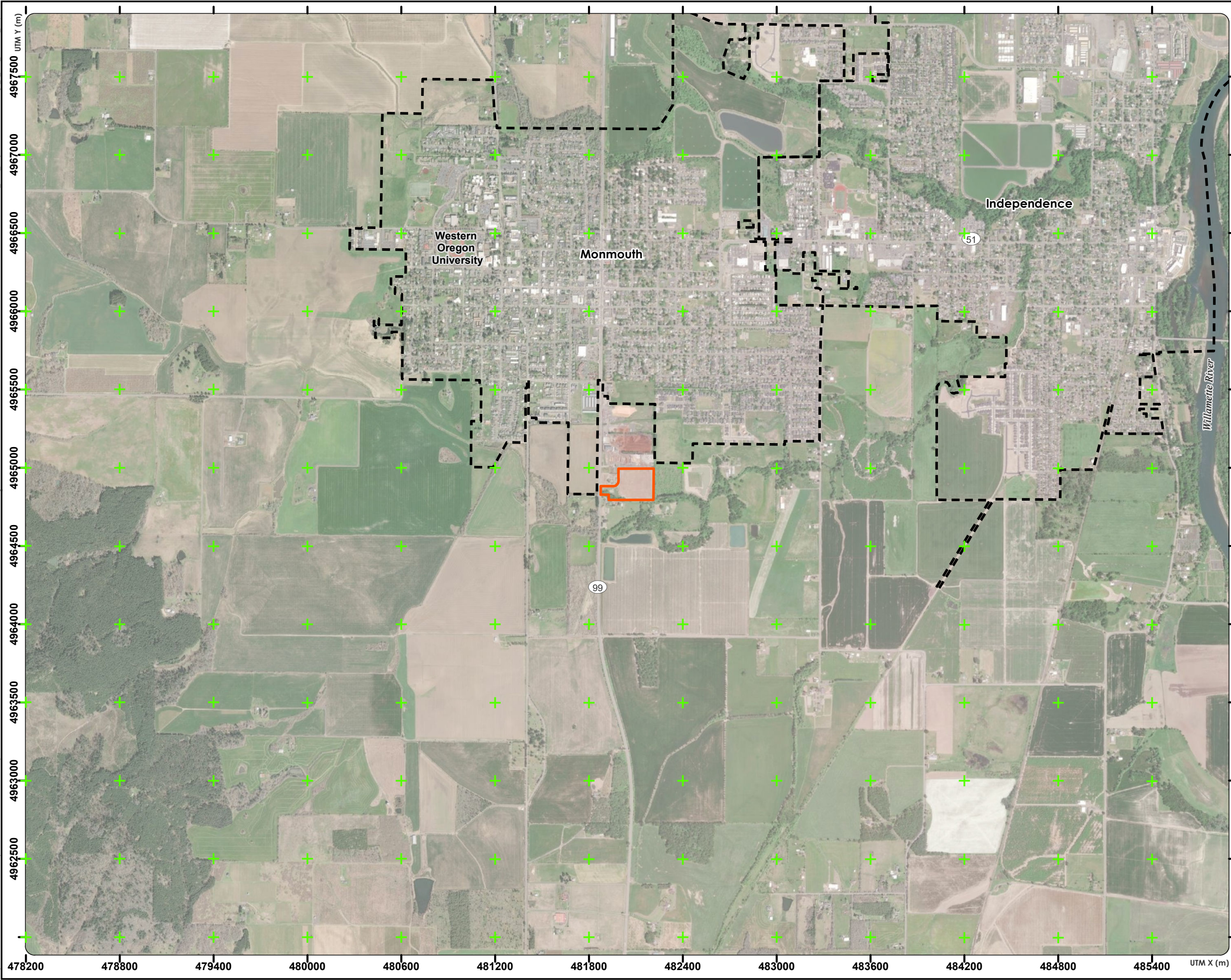


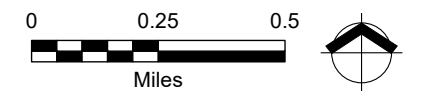
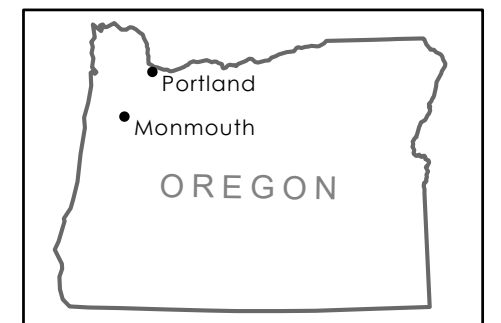
Figure 2-1 Site Location Map

JB Wood Recyclers, LLC
6620 S Pacific Hwy W
Monmouth, OR

Legend

-  Property Boundary
-  City Limits
-  UTM Grid Guideline

KEY MAP



Data Source:
Aerial photograph obtained from Esri.

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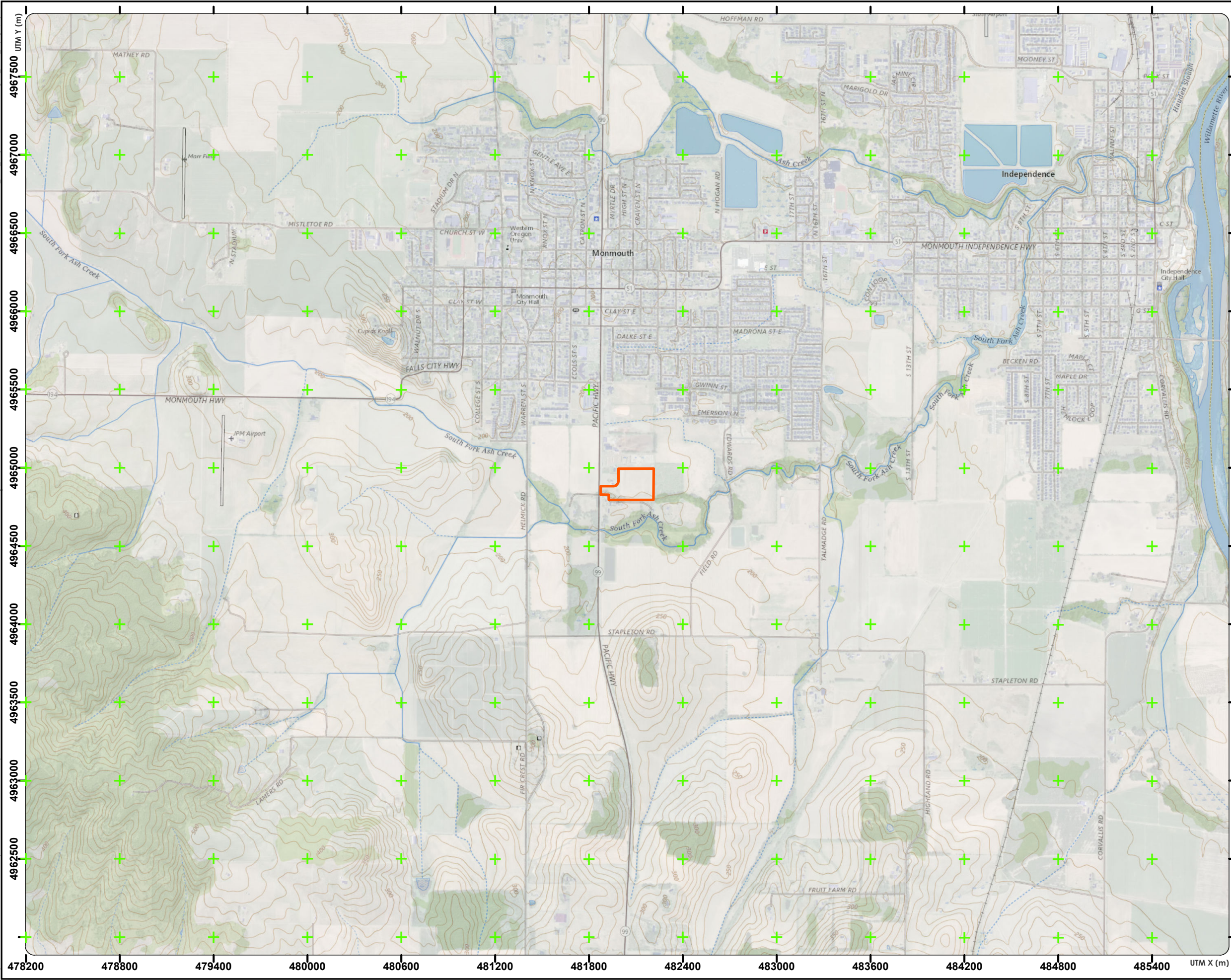
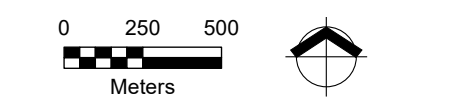


Figure 2-2
Local Topography
JB Wood Recyclers, LLC
6620 S Pacific Hwy W
Monmouth, OR

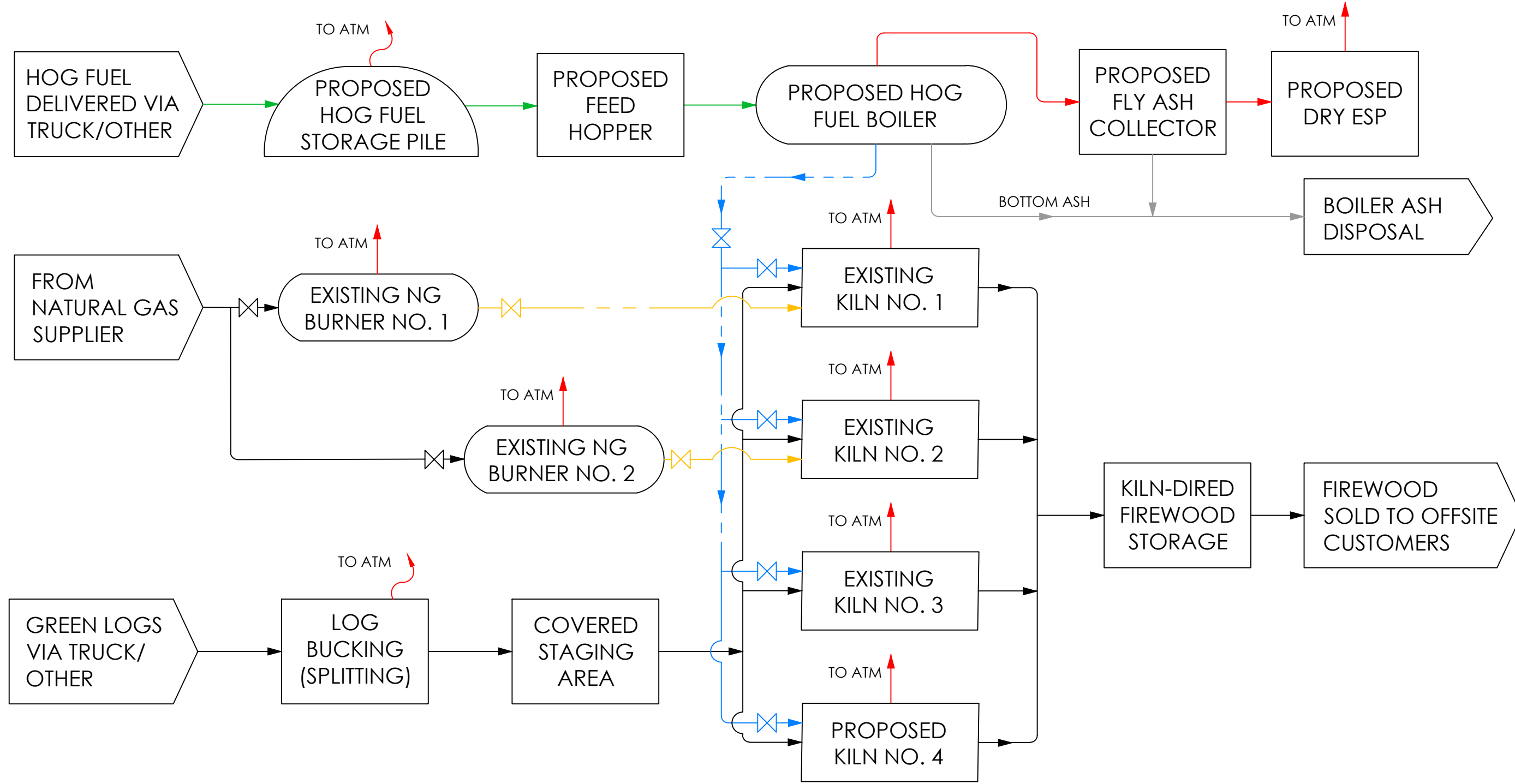
- Legend**
- Property Boundary
 - UTM Grid Guideline



Data Source:
Topographic map obtained from United States
Geologic Survey.



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Path: X:\0_MFL_Projects\M2305\01_005\Pro\M2305_01_005_Air_Group.aprx\Fig 3-1 Modeled Downwash Structures and Toxic Emissions Units Onsite
Project: M2305.01.001
Produced By: stumer
Reviewed By: bsufferakes
Print Date: 4/18/2025



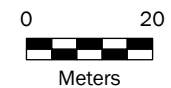
Figure 3-1
Modeled Downwash
Structures and Toxic
Emissions Units Onsite

JB Wood Recyclers, LLC
6620 S Pacific Hwy W
Monmouth, OR

Legend

- Point Source
- Volume Source
- Area Source
- Downwash Structure
- Property Boundary
- UTM Grid Guideline

Key Map



Data Sources
Aerial photograph obtained from the U.S. Department of
Agriculture Farm Service Agency.

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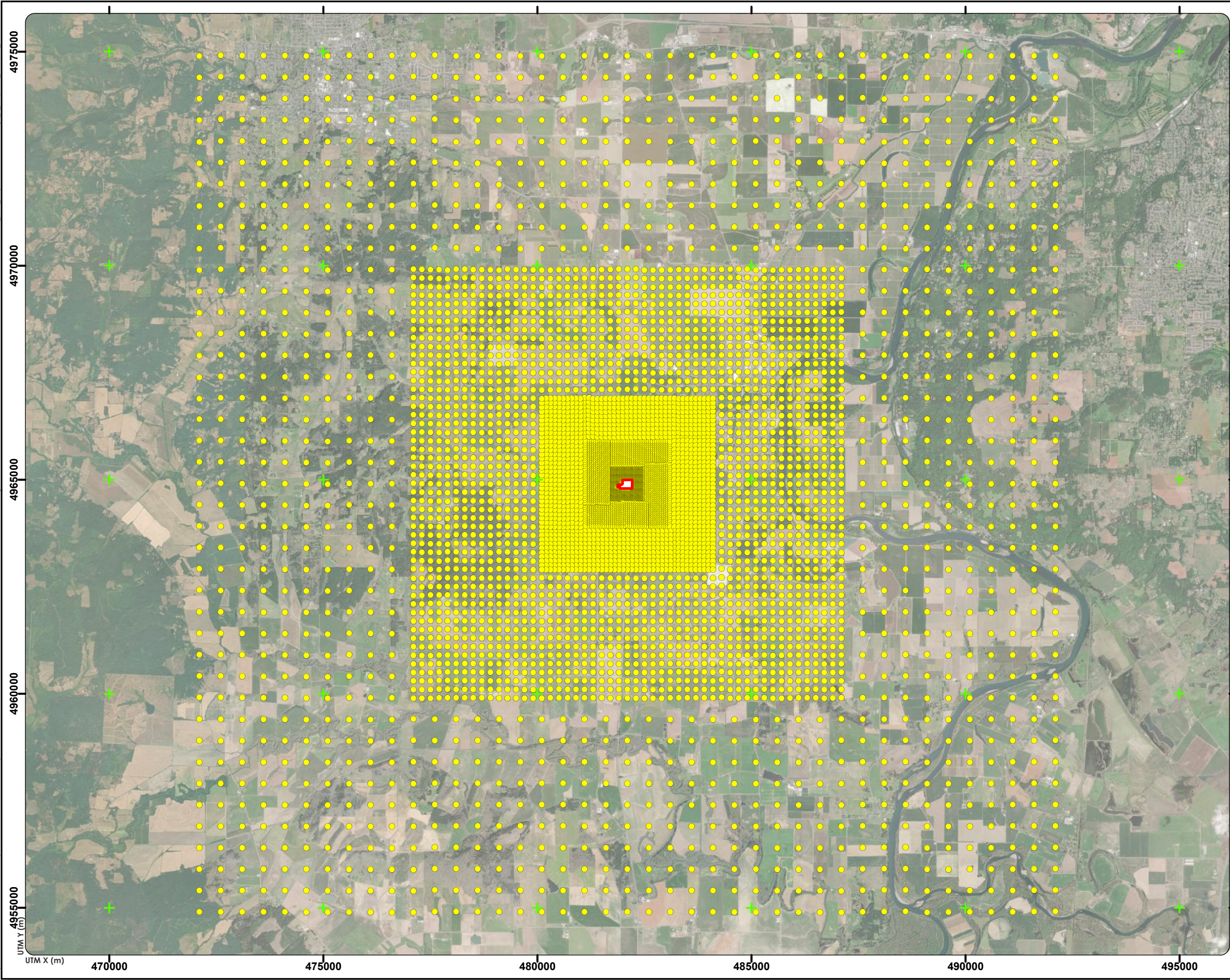
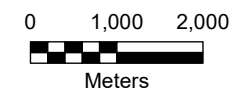
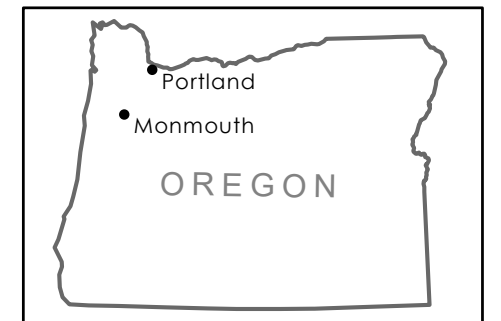


Figure 4-1
Modeled
Receptor Locations
JB Wood Recyclers, LLC
6620 S Pacific Highway W
Monmouth, OR

- Legend**
- Receptor Location
 - Property Boundary
 - + UTM Grid Guideline

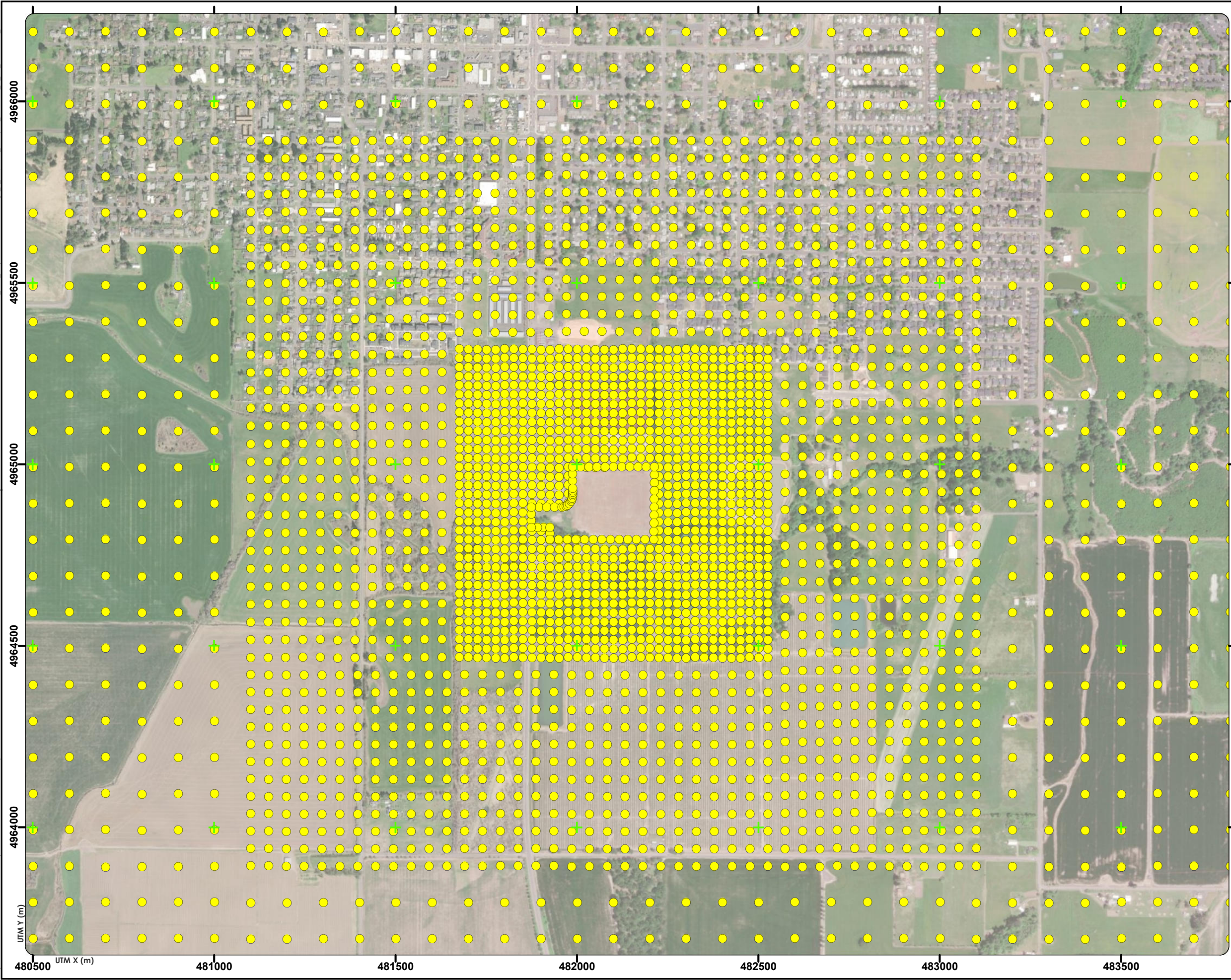
KEY MAP



Data Source:
Aerial photograph obtained from Esri.



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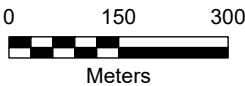
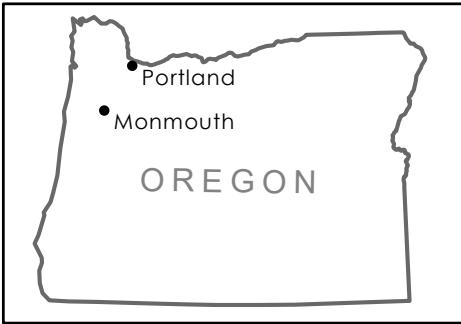
**Figure 4-2
Modeled Receptor
Locations in the
Immediate Area**

JB Wood Recyclers, LLC
6620 S Pacific Highway W
Monmouth, OR

Legend

- Modeled Receptor Location
- + UTM Grid Guideline

KEY MAP



Data Source:
Aerial photograph obtained from Esri.

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Path: X:\0_MFA_Projects\M230501001\Fig5_1_Existing_Land_Use_Zoning_Classifications.mxd
Print Date: 9/14/2022
Reviewed by: benruff zukas
Produced By: slumer
Project: M230501001
UTM X (m)
UTM Y (m)

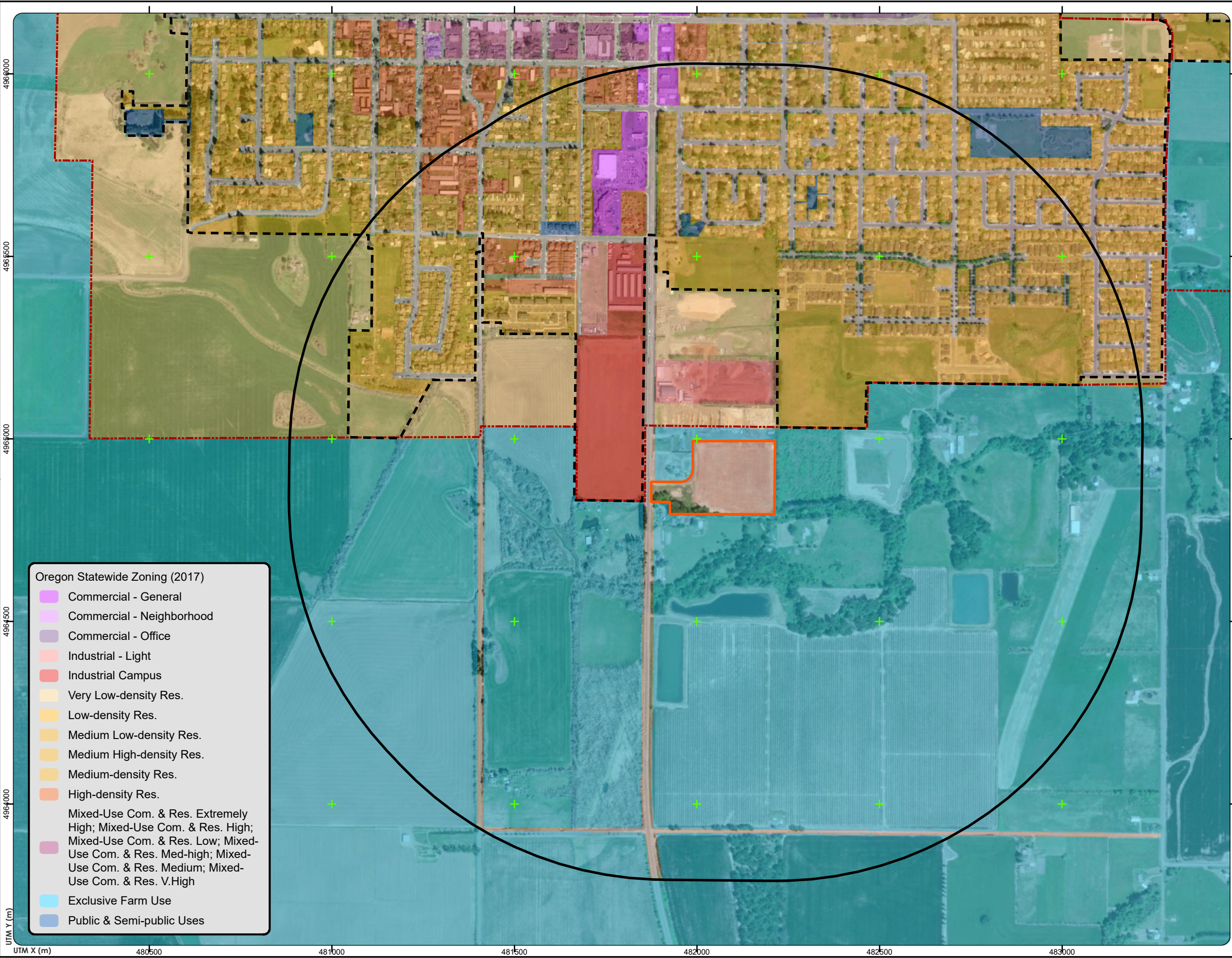


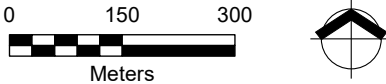
Figure 5-1
Existing Land-Use Zoning
Classifications

JB Wood Recyclers, LLC
6620 S Pacific Highway W
Monmouth, OR

Legend

- Area-of-Interest
- Property Boundary
- City Limits (2021)
- Urban Growth Boundary (2021)
- UTM Grid Guideline

- Oregon Statewide Zoning (2017)
- Commercial - General
 - Commercial - Neighborhood
 - Commercial - Office
 - Industrial - Light
 - Industrial Campus
 - Very Low-density Res.
 - Low-density Res.
 - Medium Low-density Res.
 - Medium High-density Res.
 - Medium-density Res.
 - High-density Res.
 - Mixed-Use Com. & Res. Extremely High; Mixed-Use Com. & Res. High; Mixed-Use Com. & Res. Low; Mixed-Use Com. & Res. Med-high; Mixed-Use Com. & Res. Medium; Mixed-Use Com. & Res. V.High
 - Exclusive Farm Use
 - Public & Semi-public Uses



Data Sources:
Aerial photograph obtained from Esri; zoning
obtained from the Oregon Dept. of Land
Conservation and Development.

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Print Date: 10/4/2022
Reviewed by: bsnyder, zukas
Produced By: sturner
Project: M2305.01.001

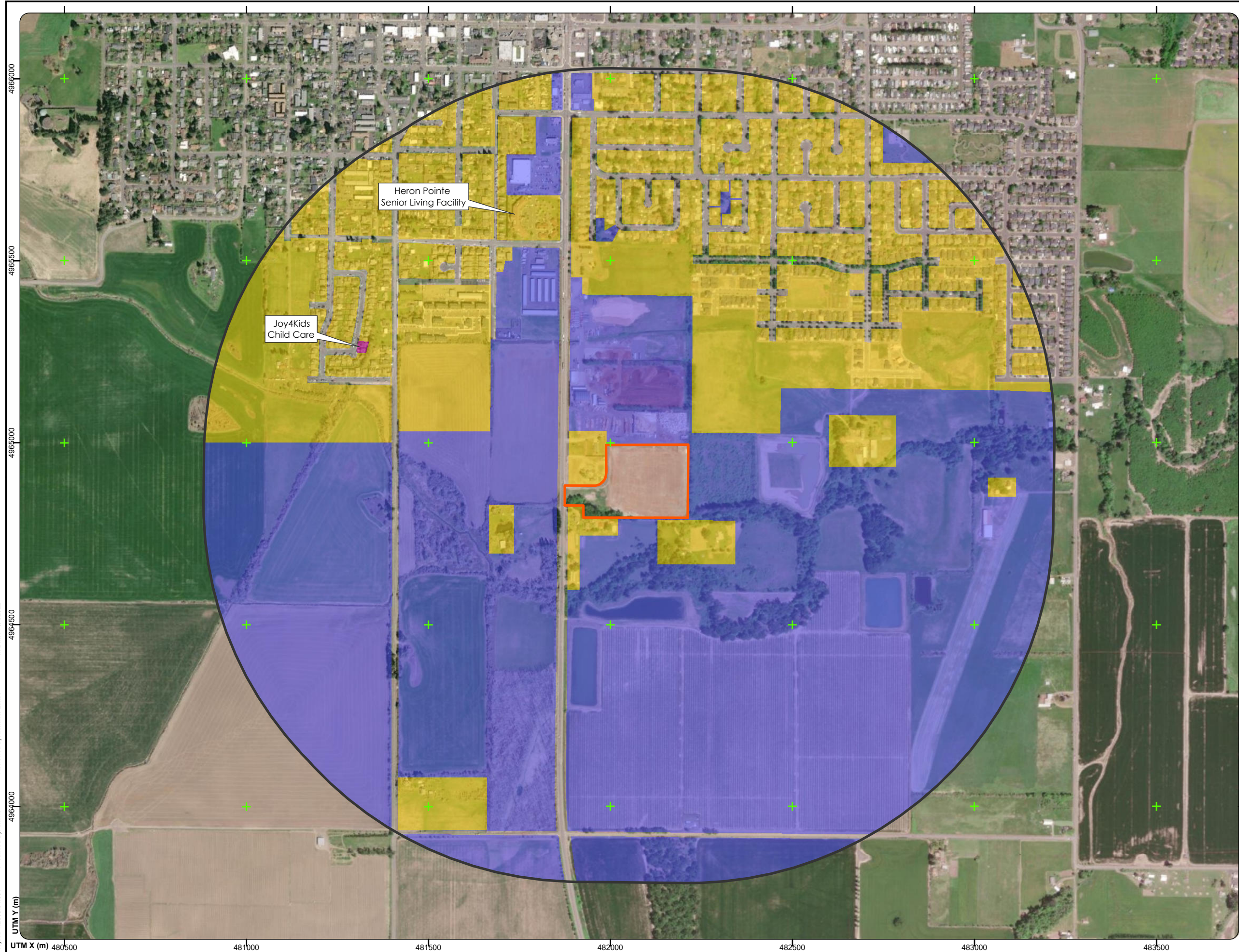


Figure 5-2
Exposure Categorization

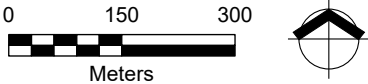
JB Wood Recyclers, LLC
6620 S Pacific Highway W
Monmouth, OR

- Legend**
- Area-of-Interest
 - Property Boundary
 - Land Use Zoning
 - RBC Classification
 - Residential
 - Child
 - Worker
 - Acute-only
 - UTM Grid Guideline

Notes:

1. Zoning data obtained from the Oregon Dept. of Land Conservation and Development. Existing land use classifications revised to reflect one of the four risk-based concentration categories presented in Oregon Administrative Rule (OAR) 340-245-8010 Table 2.
2. Non-taxlot land use areas (e.g., interstate right-of-way) will not be assessed for cancer or noncancer risk.

RBC = risk-based concentration.



Data Sources:
Aerial photograph obtained from Esri; zoning obtained from the Oregon Dept. of Land Conservation and Development.

Tables



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Table 3-1
Annual TAC Emission Rates—All TACs (lb/yr)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Annual Emissions Estimate (lb/yr)																			
					Boiler ESP Stack			Existing Firewood Drying Kilns - Indirect Heating									Proposed Kiln 4				Log Bucking Fugitives			
		Total	Controlled—Normal	Uncontrolled—SU/SD	Total	Existing Kiln 1		Existing Kiln 2		Existing Kiln 3			Total	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)					Total	Palax Processor No. 1 ^(a)	Palax Processor No. 2 ^(a)	Palax Processor No. 3 ^(a)
						Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)												
Model Source ID					BLR_ESP	--	--	--	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	--	KILN4_V1	KILN4_V2	KILN4_V3	--	BUCK_1	BUCK_2	BUCK_3	--
Apportioning Fraction ⁽¹⁾					--	--	--	--	0.120	0.120	0.180	0.180	0.133	0.133	0.133	--	0.333	0.333	0.333	--	0.333	0.333	0.333	--
SPECIATED ORGANIC/INORGANIC COMPOUNDS																								
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	Yes	12.0	12.0	0.080	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12.0
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	Yes	3.50	3.48	0.023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.50
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	Yes	0.042	0.041	2.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.042
2,4-Dinitrophenol	51-28-5	Yes	Yes	No	0.038	0.037	2.5E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.038
2,4-Dinitrotoluene	121-14-2	Yes	Yes	Yes	0.20	0.20	1.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.20
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	Yes	1.45	1.44	9.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.45
2-Chlorophenol	95-57-8	Yes	No	No	4.9E-03	4.9E-03	3.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.9E-03
4,6-Dinitro-o-cresol (and salts)	534-52-1	Yes	Yes	No	0.44	0.43	2.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.44
4-nitrophenol	100-02-7	Yes	Yes	No	0.024	0.024	1.6E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.024
Acetaldehyde	75-07-0	Yes	Yes	Yes	59.0	58.6	0.39	3,622	435	435	652	652	483	483	483	1,449	483	483	483	47.3	15.8	15.8	15.8	5,177
Acetone	67-64-1	Yes	No	Yes	110	110	0.73	--	--	--	--	--	--	--	--	--	--	--	--	97.6	32.5	32.5	32.5	208
Acetophenone	98-86-2	Yes	Yes	No	0.38	0.38	2.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.38
Acrolein	107-02-8	Yes	Yes	Yes	54.2	53.8	0.36	58.1	6.97	6.97	10.5	10.5	7.74	7.74	7.74	23.2	7.74	7.74	7.74	--	--	--	--	135
Benzene	71-43-2	Yes	Yes	Yes	204	203	1.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	204
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	Yes	9.7E-03	9.6E-03	6.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.7E-03
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	Yes	2.36	2.34	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.36
Butyl benzyl phthalate	85-68-7	Yes	No	No	5.59	5.55	0.037	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.59
Carbon tetrachloride	56-23-5	Yes	Yes	Yes	2.06	2.04	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.06
Chlorine	7782-50-5	Yes	Yes	Yes	165	164	1.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	165
Chlorobenzene	108-90-7	Yes	Yes	Yes	3.46	3.44	0.023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.46
Chloroform	67-66-3	Yes	Yes	Yes	4.19	4.16	0.028	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.19
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	Yes	9.07	9.01	0.060	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.07
Crotonaldehyde	4170-30-3	Yes	No	No	9.34	9.28	0.062	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.34
Cyanide, hydrogen	74-90-8	Yes	Yes	Yes	4.27	4.24	0.028	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.27
Dibutyl phthalate	84-74-2	Yes	Yes	No	6.94	6.90	0.046	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.94
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	Yes	83.0	82.4	0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	83.0
Diethylphthalate	84-66-2	Yes	No	No	9.09	9.03	0.060	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.09
di-n-octylphthalate	518	Yes	No	No	0.023	0.023	1.5E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.023
Ethylbenzene	100-41-4	Yes	Yes	Yes	2.54	2.53	0.017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.54
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	Yes	6.09	6.05	0.040	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.09
Formaldehyde	50-00-0	Yes	Yes	Yes	219	217	1.45	76.5	9.18	9.18	13.8	13.8	10.2	10.2	10.2	30.6	10.2	10.2	10.2	15.4	5.14	5.14	5.14	341
Hexane	110-54-3	Yes	Yes	Yes	60.0	59.6	0.40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	60.0
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	4,586	4,555	30.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4,586
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	18.9	18.7	0.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.9
Isopropyl alcohol	67-63-0	Yes	No	Yes	942	936	6.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	942
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	Yes	3.69	3.66	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.69
Methanol	67-56-1	Yes	Yes	Yes	153	152	1.01	3,715	446	446	669	669	495	495	495	1,486	495	495	495	616	205	205	205	5,971
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	Yes	92.8	92.1	0.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	92.8
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	Yes	58.2	57.8	0.39	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	58.2
Pentachlorophenol	87-86-5	Yes	Yes	Yes	0.045	0.044	3.0E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.045
Phenol	108-95-2	Yes	Yes	Yes	33.4	33.1	0.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33.4

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Table 3-1
Annual TAC Emission Rates—All TACs (lb/yr)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Annual Emissions Estimate (lb/yr)																				
					Boiler ESP Stack			Existing Firewood Drying Kilns - Indirect Heating									Proposed Kiln 4				Log Bucking Fugitives				Total Facility
		Total	Controlled—Normal	Uncontrolled—SU/SD	Total	Existing Kiln 1		Existing Kiln 2		Existing Kiln 3			Total	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)					Total	Palax Processor No. 1 ^(a)	Palax Processor No. 2 ^(a)	Palax Processor No. 3 ^(a)	
						Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)													
Model Source ID					BLR_ESP	--	--	--	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	--	KILN4_V1	KILN4_V2	KILN4_V3	--	BUCK_1	BUCK_2	BUCK_3	--	
Apportioning Fraction ⁽¹⁾					--	--	--	--	0.120	0.120	0.180	0.180	0.133	0.133	0.133	--	0.333	0.333	0.333	--	0.333	0.333	0.333	--	
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	Yes	1.6E-03	1.6E-03	1.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.6E-03	
Propionaldehyde	123-38-6	Yes	Yes	Yes	64.8	64.4	0.43	40.5	4.85	4.85	7.28	7.28	5.39	5.39	5.39	16.2	5.39	5.39	5.39	--	--	--	--	121	
Styrene	100-42-5	Yes	Yes	Yes	97.8	97.1	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	97.8	
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	Yes	5.13	5.09	0.034	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.13	
Toluene	108-88-3	Yes	Yes	Yes	2.38	2.36	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.38	
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	Yes	4.15	4.12	0.028	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.15	
Trichlorofluoromethane (Freon 11)	75-69-4	Yes	No	No	2.90	2.88	0.019	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.90	
Vinyl Chloride	75-01-4	Yes	Yes	Yes	3.84	3.81	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.84	
Xylene (mixed isomers)	1330-20-7	Yes	Yes	Yes	1.09	1.08	7.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.09	
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)																									
1-Methylphenanthrene	832-69-9	Yes	No	No	0.054	0.054	3.6E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.054	
2-Methyl naphthalene	91-57-6	Yes	Yes	No	0.29	0.29	1.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.29	
3-Methylcholanthrene	56-49-5	Yes	Yes	No	1.8E-03	1.8E-03	1.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-03	
7,12-Dimethylbenz[a]anthracene	57-97-6	Yes	Yes	No	9.5E-04	9.5E-04	6.3E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.5E-04	
Acenaphthene	83-32-9	Yes	Yes	No	0.18	0.18	1.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.18	
Acenaphthylene	208-96-8	Yes	Yes	No	0.98	0.97	6.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.98	
Anthracene	120-12-7	Yes	Yes	No	0.56	0.55	3.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.56	
Benz[a]anthracene	56-55-3	Yes	Yes	Yes	0.017	0.017	1.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017	
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	0.46	0.46	3.1E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.46	
Benzo[b]fluoranthene	205-99-2	Yes	Yes	Yes	0.030	0.029	2.0E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.030	
Benzo[e]pyrene	192-97-2	Yes	Yes	No	0.044	0.044	2.9E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.044	
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	Yes	0.031	0.031	2.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.031	
Benzo[j]fluoranthene	205-82-3	Yes	Yes	Yes	0.033	0.032	2.2E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.033	
Benzo[k]fluoranthene	207-08-9	Yes	Yes	Yes	0.011	0.011	7.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.011	
Chrysene	218-01-9	Yes	Yes	Yes	0.016	0.016	1.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.016	
Fluoranthene	206-44-0	Yes	Yes	Yes	0.35	0.35	2.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.35	
Fluorene	86-73-7	Yes	Yes	No	0.63	0.62	4.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.63	
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	Yes	0.021	0.021	1.4E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.021	
Naphthalene	91-20-3	Yes	Yes	Yes	20.8	20.6	0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20.8	
Perylene	198-55-0	Yes	Yes	No	6.7E-03	6.6E-03	4.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.7E-03	
Phenanthrene	85-01-8	Yes	Yes	No	1.35	1.34	9.0E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.35	
Pyrene	129-00-0	Yes	Yes	No	0.74	0.73	4.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.74	
DIOXINS AND FURANS																									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	Yes	2.0E-07	2.0E-07	1.3E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0E-07	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	Yes	2.8E-07	2.8E-07	1.8E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8E-07	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	Yes	1.8E-07	1.8E-07	1.2E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-07	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	Yes	4.4E-07	4.3E-07	2.9E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.4E-07	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	Yes	4.6E-07	4.6E-07	3.1E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.6E-07	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	Yes	2.0E-06	2.0E-06	1.4E-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0E-06	
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	Yes	5.1E-06	5.1E-06	3.4E-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.1E-06	
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	Yes	1.7E-06	1.7E-06	1.1E-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.7E-06	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	Yes	8.3E-07	8.3E-07	5.5E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.3E-07	

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Table 3-1
Annual TAC Emission Rates—All TACs (lb/yr)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Annual Emissions Estimate (lb/yr)																			
					Boiler ESP Stack			Existing Firewood Drying Kilns - Indirect Heating									Proposed Kiln 4				Log Bucking Fugitives			
		Total	Controlled—Normal	Uncontrolled—SU/SD	Total	Existing Kiln 1		Existing Kiln 2		Existing Kiln 3			Total	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)					Total	Palax Processor No. 1 ^(a)	Palax Processor No. 2 ^(a)	Palax Processor No. 3 ^(a)
						Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)												
Model Source ID					BLR_ESP	--	--	--	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	--	KILN4_V1	KILN4_V2	KILN4_V3	--	BUCK_1	BUCK_2	BUCK_3	--
Apportioning Fraction ⁽¹⁾					--	--	--	--	0.120	0.120	0.180	0.180	0.133	0.133	0.133	--	0.333	0.333	0.333	--	0.333	0.333	0.333	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	Yes	1.3E-06	1.3E-06	8.4E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-06
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	Yes	7.4E-07	7.4E-07	4.9E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.4E-07
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	Yes	6.6E-07	6.5E-07	4.4E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.6E-07
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	Yes	1.4E-07	1.4E-07	9.2E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4E-07
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	Yes	5.5E-07	5.5E-07	3.7E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.5E-07
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	Yes	1.2E-06	1.2E-06	7.9E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-06
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	Yes	1.7E-07	1.7E-07	1.1E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.7E-07
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	Yes	1.0E-06	1.0E-06	6.9E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0E-06
TRACE METALS																								
Antimony and compounds	7440-36-0	Yes	Yes	Yes	0.068	0.063	4.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.068
Arsenic and compounds	7440-38-2	Yes	Yes	Yes	0.40	0.39	0.012	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.40
Barium and compounds	7440-39-3	Yes	No	No	50.0	43.3	6.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	50.0
Beryllium and compounds	7440-41-7	Yes	Yes	Yes	6.1E-03	5.9E-03	1.9E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.1E-03
Cadmium and compounds	7440-43-9	Yes	Yes	Yes	0.074	0.067	6.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.074
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	Yes	0.066	0.056	9.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.066
Cobalt and compounds	7440-48-4	Yes	Yes	Yes	0.11	0.10	2.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.11
Copper and compounds	7440-50-8	Yes	No	Yes	0.90	0.78	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.90
Lead and compounds	7439-92-1	Yes	Yes	Yes	1.12	1.08	0.043	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.12
Manganese and compounds	7439-96-5	Yes	Yes	Yes	22.4	19.8	2.56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22.4
Mercury and compounds	7439-97-6	Yes	Yes	Yes	0.22	0.22	2.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.22
Molybdenum trioxide	1313-27-5	Yes	No	No	0.65	0.64	4.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.65
Nickel and compounds	365	Yes	Yes	Yes	0.60	0.58	0.018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.60
Phosphorus and compounds	504	Yes	Yes	No	71.7	64.2	7.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	71.7
Selenium and compounds	7782-49-2	Yes	Yes	Yes	0.34	0.34	1.0E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.34
Silver and compounds	7440-22-4	Yes	No	No	1.50	0.20	1.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.50
Thallium and compounds	7440-28-0	Yes	No	No	0.39	0.38	2.6E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.39
Vanadium (fume or dust)	7440-62-2	Yes	No	Yes	0.12	0.12	1.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.12
Zinc and compounds	7440-66-6	Yes	No	No	12.7	11.9	0.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12.7
Total TAC Emission Estimates					7,297	7,230	66.5	7,512	901	901	1,352	1,352	1,002	1,002	1,002	3,005	1,002	1,002	1,002	777	259	259	259	18,591
Total HAP Emissions Estimate					6,150	6,099	50.5	7,512	901	901	1,352	1,352	1,002	1,002	1,002	3,005	1,002	1,002	1,002	679	226	226	226	17,346
Total RBC Emission Estimates					7,120	7,070	49.9	7,512	901	901	1,352	1,352	1,002	1,002	1,002	3,005	1,002	1,002	1,002	777	259	259	259	18,414
Total non-RBC Emission Estimates					177	160	16.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	177

Notes
HAP = hazardous air pollutant; RBC = risk-based concentration; TAC = toxic air contaminant; TEU = toxics emissions unit.
(a) Individual TEU emissions estimate (lb/yr) = (total TEU emissions estimate [lb/yr]) x (apportioning fraction)

References
(1) Emission estimates equally apportioned among TEU release points.

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Table 3-2
Annual TAC Emission Rates—RBC Only (g/s)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Annual Emissions Estimate (g/s) ^(a)													
					Boiler ESP Stack	Existing Firewood Drying Kilns - Indirect Heating						Proposed Kiln 4			Log Bucking Fugitives			
		Existing Kiln 1		Existing Kiln 2		Existing Kiln 3												
		TAC	HAP	RBC		Vent 1	Vent 2	Vent 1	Vent 2	Vent 1	Vent 2	Vent 3	Vent 1	Vent 2	Vent 3	Palax Processor No. 1	Palax Processor No. 2	Palax Processor No. 3
Model Source ID					BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3
SPECIATED ORGANIC/INORGANIC COMPOUNDS																		
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	Yes	1.7E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	Yes	5.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	Yes	6.0E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	121-14-2	Yes	Yes	Yes	2.8E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	Yes	2.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetaldehyde	75-07-0	Yes	Yes	Yes	8.5E-04	6.3E-03	6.3E-03	9.4E-03	9.4E-03	6.9E-03	6.9E-03	6.9E-03	6.9E-03	6.9E-03	6.9E-03	2.3E-04	2.3E-04	2.3E-04
Acetone	67-64-1	Yes	No	Yes	1.6E-03	--	--	--	--	--	--	--	--	--	--	4.7E-04	4.7E-04	4.7E-04
Acrolein	107-02-8	Yes	Yes	Yes	7.8E-04	1.0E-04	1.0E-04	1.5E-04	1.5E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	1.1E-04	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	2.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	Yes	1.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	Yes	3.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	56-23-5	Yes	Yes	Yes	3.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorine	7782-50-5	Yes	Yes	Yes	2.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	108-90-7	Yes	Yes	Yes	5.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	67-66-3	Yes	Yes	Yes	6.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	Yes	1.3E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, hydrogen	74-90-8	Yes	Yes	Yes	6.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	Yes	1.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	3.7E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	Yes	8.8E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	3.1E-03	1.3E-04	1.3E-04	2.0E-04	2.0E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	7.4E-05	7.4E-05	7.4E-05
Hexane	110-54-3	Yes	Yes	Yes	8.6E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.066	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	2.7E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyl alcohol	67-63-0	Yes	No	Yes	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	Yes	5.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Methanol	67-56-1	Yes	Yes	Yes	2.2E-03	6.4E-03	6.4E-03	9.6E-03	9.6E-03	7.1E-03	7.1E-03	7.1E-03	7.1E-03	7.1E-03	7.1E-03	3.0E-03	3.0E-03	3.0E-03
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	Yes	1.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	Yes	8.4E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	87-86-5	Yes	Yes	Yes	6.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenol	108-95-2	Yes	Yes	Yes	4.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	Yes	2.4E-08	--	--	--	--	--	--	--	--	--	--	--	--	--
Propionaldehyde	123-38-6	Yes	Yes	Yes	9.3E-04	7.0E-05	7.0E-05	1.0E-04	1.0E-04	7.8E-05	7.8E-05	7.8E-05	7.8E-05	7.8E-05	7.8E-05	--	--	--
Styrene	100-42-5	Yes	Yes	Yes	1.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	Yes	7.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table 3-2
Annual TAC Emission Rates—RBC Only (g/s)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Annual Emissions Estimate (g/s) ^(a)													
					Boiler ESP Stack	Existing Firewood Drying Kilns - Indirect Heating						Proposed Kiln 4			Log Bucking Fugitives			
		Existing Kiln 1		Existing Kiln 2		Existing Kiln 3												
		TAC	HAP	RBC		Vent 1	Vent 2	Vent 1	Vent 2	Vent 1	Vent 2	Vent 3	Vent 1	Vent 2	Vent 3	Palax Processor No. 1	Palax Processor No. 2	Palax Processor No. 3
Model Source ID					BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3
Toluene	108-88-3	Yes	Yes	Yes	3.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	Yes	6.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	75-01-4	Yes	Yes	Yes	5.5E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene (mixed isomers)	1330-20-7	Yes	Yes	Yes	1.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)																		
Benz[a]anthracene	56-55-3	Yes	Yes	Yes	2.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	6.7E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	205-99-2	Yes	Yes	Yes	4.3E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	Yes	4.5E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[j]fluoranthene	205-82-3	Yes	Yes	Yes	4.7E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	207-08-9	Yes	Yes	Yes	1.6E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	218-01-9	Yes	Yes	Yes	2.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	206-44-0	Yes	Yes	Yes	5.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	Yes	3.1E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	3.0E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
DIOXINS AND FURANS																		
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	Yes	2.9E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	Yes	4.0E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	Yes	2.6E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	Yes	6.3E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	Yes	6.6E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	Yes	2.9E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	Yes	7.4E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	Yes	2.4E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	Yes	1.2E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	Yes	1.8E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	Yes	1.1E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	Yes	9.5E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	Yes	2.0E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	Yes	8.0E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	Yes	1.7E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	Yes	2.4E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	Yes	1.5E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
TRACE METALS																		
Antimony and compounds	7440-36-0	Yes	Yes	Yes	9.7E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic and compounds	7440-38-2	Yes	Yes	Yes	5.8E-06	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table 3-2
Annual TAC Emission Rates—RBC Only (g/s)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Annual Emissions Estimate (g/s) ^(a)													
					Boiler ESP Stack	Existing Firewood Drying Kilns - Indirect Heating						Proposed Kiln 4			Log Bucking Fugitives			
						Existing Kiln 1		Existing Kiln 2		Existing Kiln 3								
		TAC	HAP	RBC		Vent 1	Vent 2	Vent 1	Vent 2	Vent 1	Vent 2	Vent 3	Vent 1	Vent 2	Vent 3	Palax Processor No. 1	Palax Processor No. 2	Palax Processor No. 3
Model Source ID					BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3
Beryllium and compounds	7440-41-7	Yes	Yes	Yes	8.8E-08	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium and compounds	7440-43-9	Yes	Yes	Yes	1.1E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	Yes	9.5E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt and compounds	7440-48-4	Yes	Yes	Yes	1.5E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper and compounds	7440-50-8	Yes	No	Yes	1.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead and compounds	7439-92-1	Yes	Yes	Yes	1.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese and compounds	7439-96-5	Yes	Yes	Yes	3.2E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury and compounds	7439-97-6	Yes	Yes	Yes	3.2E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel and compounds	365	Yes	Yes	Yes	8.6E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium and compounds	7782-49-2	Yes	Yes	Yes	4.8E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium (fume or dust)	7440-62-2	Yes	No	Yes	1.8E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Total TAC Emission Estimates					0.10	0.013	0.013	0.019	0.019	0.014	0.014	0.014	0.014	0.014	0.014	3.7E-03	3.7E-03	3.7E-03
Total HAP Emissions Estimate					0.087	0.013	0.013	0.019	0.019	0.014	0.014	0.014	0.014	0.014	0.014	3.3E-03	3.3E-03	3.3E-03

Notes

HAP = hazardous air pollutant; RBC = risk-based concentration; TAC = toxic air contaminant; TEU = toxics emissions unit.
(a) Annual emissions estimate (g/s) = (annual emissions estimate [lb/yr]) x (453.592 g/lb) / (8,760 hr/yr) / (3,600 s/hr); See reference (1).

References

(1) See Table 3-1, Annual TAC Emission Rates—All TACs (lb/yr).

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Table 3-3
Maximum Daily TAC Emission Rates—All TACs (lb/day)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Maximum Daily Emissions Estimate (lb/day)																			
					Boiler ESP Stack			Existing Firewood Drying Kilns - Indirect Heating									Proposed Kiln 4				Log Bucking Fugitives			
		Total	Controlled —Normal	Uncontrolled —SU/SD	Total	Existing Kiln 1		Existing Kiln 2		Existing Kiln 3			Total	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)					Total	Palax Processor No. 1 ^(a)	Palax Processor No. 2 ^(a)	Palax Processor No. 3 ^(a)
						Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)												
Model Source ID					BLR_ESP	--	--	--	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	--	KILN4_V1	KILN4_V2	KILN4_V3	--	BUCK_1	BUCK_2	BUCK_3	--
Apportioning Fraction ⁽¹⁾					--	--	--	--	0.120	0.120	0.180	0.180	0.133	0.133	0.133	--	0.333	0.333	0.333	--	0.333	0.333	0.333	--
SPECIATED ORGANIC/INORGANIC COMPOUNDS																								
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	Yes	0.034	0.029	5.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.034
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	Yes	1.0E-02	8.3E-03	1.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0E-02
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	Yes	1.2E-04	9.9E-05	2.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-04
2,4-Dinitrophenol	51-28-5	Yes	Yes	No	1.1E-04	8.9E-05	1.8E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.1E-04
2,4-Dinitrotoluene	121-14-2	Yes	Yes	Yes	5.6E-04	4.7E-04	9.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.6E-04
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	Yes	4.1E-03	3.4E-03	6.9E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.1E-03
2-Chlorophenol	95-57-8	Yes	No	No	1.4E-05	1.2E-05	2.3E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4E-05
4,6-Dinitro-o-cresol (and salts)	534-52-1	Yes	Yes	No	1.2E-03	1.0E-03	2.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-03
4-nitrophenol	100-02-7	Yes	Yes	No	6.8E-05	5.6E-05	1.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.8E-05
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.17	0.14	0.028	10.3	1.24	1.24	1.86	1.86	1.38	1.38	1.38	4.13	1.38	1.38	1.38	0.13	0.045	0.045	0.045	14.7
Acetone	67-64-1	Yes	No	Yes	0.31	0.26	0.052	--	--	--	--	--	--	--	--	--	--	--	--	0.28	0.093	0.093	0.093	0.59
Acetophenone	98-86-2	Yes	Yes	No	1.1E-03	9.1E-04	1.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.1E-03
Acrolein	107-02-8	Yes	Yes	Yes	0.15	0.13	0.026	0.17	0.020	0.020	0.030	0.030	0.022	0.022	0.022	0.066	0.022	0.022	0.022	--	--	--	--	0.39
Benzene	71-43-2	Yes	Yes	Yes	0.58	0.48	0.097	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.58
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	Yes	2.8E-05	2.3E-05	4.6E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8E-05
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	Yes	6.7E-03	5.6E-03	1.1E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.7E-03
Butyl benzyl phthalate	85-68-7	Yes	No	No	0.016	0.013	2.7E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.016
Carbon tetrachloride	56-23-5	Yes	Yes	Yes	5.9E-03	4.9E-03	9.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.9E-03
Chlorine	7782-50-5	Yes	Yes	Yes	0.47	0.39	0.078	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.47
Chlorobenzene	108-90-7	Yes	Yes	Yes	9.9E-03	8.2E-03	1.6E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.9E-03
Chloroform	67-66-3	Yes	Yes	Yes	0.012	9.9E-03	2.0E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	Yes	0.026	0.022	4.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.026
Crotonaldehyde	4170-30-3	Yes	No	No	0.027	0.022	4.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.027
Cyanide, hydrogen	74-90-8	Yes	Yes	Yes	0.012	0.010	2.0E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012
Dibutyl phthalate	84-74-2	Yes	Yes	No	0.020	0.016	3.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.020
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	Yes	0.24	0.20	0.039	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.24
Diethylphthalate	84-66-2	Yes	No	No	0.026	0.022	4.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.026
di-n-octylphthalate	518	Yes	No	No	6.5E-05	5.4E-05	1.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.5E-05
Ethylbenzene	100-41-4	Yes	Yes	Yes	7.2E-03	6.0E-03	1.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.2E-03
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	Yes	0.017	0.014	2.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017
Formaldehyde	50-00-0	Yes	Yes	Yes	0.62	0.52	0.10	0.22	0.026	0.026	0.039	0.039	0.029	0.029	0.029	0.087	0.029	0.029	0.029	0.044	0.015	0.015	0.015	0.97
Hexane	110-54-3	Yes	Yes	Yes	0.17	0.14	0.029	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.17
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	13.1	10.9	2.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13.1
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	0.054	0.045	9.0E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.054
Isopropyl alcohol	67-63-0	Yes	No	Yes	2.68	2.24	0.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.68
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	Yes	0.011	8.8E-03	1.8E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.011
Methanol	67-56-1	Yes	Yes	Yes	0.43	0.36	0.072	10.6	1.27	1.27	1.91	1.91	1.41	1.41	1.41	4.23	1.41	1.41	1.41	1.76	0.59	0.59	0.59	17.0
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	Yes	0.26	0.22	0.044	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.26
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	Yes	0.17	0.14	0.028	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.17
Pentachlorophenol	87-86-5	Yes	Yes	Yes	1.3E-04	1.1E-04	2.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-04
Phenol	108-95-2	Yes	Yes	Yes	0.095	0.079	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.095
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	Yes	4.7E-06	3.9E-06	7.8E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-06
Propionaldehyde	123-38-6	Yes	Yes	Yes	0.18	0.15	0.031	0.12	0.014	0.014	0.021	0.021	0.015	0.015	0.015	0.046	0.015	0.015	0.015	--	--	--	--	0.35
Styrene	100-42-5	Yes	Yes	Yes	0.28	0.23	0.046	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.28
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	Yes	0.015	0.012	2.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.015
Toluene	108-88-3	Yes	Yes	Yes	6.8E-03	5.6E-03	1.1E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.8E-03
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	Yes	0.012	9.8E-03	2.0E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.012

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Table 3-3
Maximum Daily TAC Emission Rates—All TACs (lb/day)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Maximum Daily Emissions Estimate (lb/day)																			
					Boiler ESP Stack			Existing Firewood Drying Kilns - Indirect Heating									Proposed Kiln 4				Log Bucking Fugitives			
		Total	Controlled —Normal	Uncontrolled —SU/SD	Total	Existing Kiln 1		Existing Kiln 2		Existing Kiln 3			Total	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)					Total	Palax Processor No. 1 ^(a)	Palax Processor No. 2 ^(a)	Palax Processor No. 3 ^(a)
						Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)												
Model Source ID					BLR_ESP	--	--	--	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	--	KILN4_V1	KILN4_V2	KILN4_V3	--	BUCK_1	BUCK_2	BUCK_3	--
Apportioning Fraction ⁽¹⁾					--	--	--	--	0.120	0.120	0.180	0.180	0.133	0.133	0.133	--	0.333	0.333	0.333	--	0.333	0.333	0.333	--
Trichlorofluoromethane (Freon 11)	75-69-4	Yes	No	No	8.3E-03	6.9E-03	1.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.3E-03
Vinyl Chloride	75-01-4	Yes	Yes	Yes	0.011	9.1E-03	1.8E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.011
Xylene (mixed isomers)	1330-20-7	Yes	Yes	Yes	3.1E-03	2.6E-03	5.2E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.1E-03
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)																								
1-Methylphenanthrene	832-69-9	Yes	No	No	1.5E-04	1.3E-04	2.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-04
2-Methyl naphthalene	91-57-6	Yes	Yes	No	8.3E-04	6.9E-04	1.4E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.3E-04
3-Methylcholanthrene	56-49-5	Yes	Yes	No	5.2E-06	4.3E-06	8.6E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.2E-06
7,12-Dimethylbenz[a]anthracene	57-97-6	Yes	Yes	No	2.7E-06	2.3E-06	4.5E-07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7E-06
Acenaphthene	83-32-9	Yes	Yes	No	5.1E-04	4.2E-04	8.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.1E-04
Acenaphthylene	208-96-8	Yes	Yes	No	2.8E-03	2.3E-03	4.6E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8E-03
Anthracene	120-12-7	Yes	Yes	No	1.6E-03	1.3E-03	2.7E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.6E-03
Benz[a]anthracene	56-55-3	Yes	Yes	Yes	4.8E-05	4.0E-05	8.0E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8E-05
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	1.3E-03	1.1E-03	2.2E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-03
Benzo[b]fluoranthene	205-99-2	Yes	Yes	Yes	8.4E-05	7.0E-05	1.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.4E-05
Benzo[e]pyrene	192-97-2	Yes	Yes	No	1.3E-04	1.0E-04	2.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-04
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	Yes	9.0E-05	7.5E-05	1.5E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.0E-05
Benzo[j]fluoranthene	205-82-3	Yes	Yes	Yes	9.3E-05	7.7E-05	1.5E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.3E-05
Benzo[k]fluoranthene	207-08-9	Yes	Yes	Yes	3.1E-05	2.6E-05	5.1E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.1E-05
Chrysene	218-01-9	Yes	Yes	Yes	4.7E-05	3.9E-05	7.8E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-05
Fluoranthene	206-44-0	Yes	Yes	Yes	9.9E-04	8.3E-04	1.7E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.9E-04
Fluorene	86-73-7	Yes	Yes	No	1.8E-03	1.5E-03	3.0E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-03
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	Yes	6.1E-05	5.0E-05	1.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.1E-05
Naphthalene	91-20-3	Yes	Yes	Yes	0.059	0.049	9.9E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.059
Perylene	198-55-0	Yes	Yes	No	1.9E-05	1.6E-05	3.2E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.9E-05
Phenanthrene	85-01-8	Yes	Yes	No	3.8E-03	3.2E-03	6.4E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.8E-03
Pyrene	129-00-0	Yes	Yes	No	2.1E-03	1.8E-03	3.5E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-03
DIOXINS AND FURANS																								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	Yes	5.7E-10	4.7E-10	9.4E-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.7E-10
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	Yes	7.9E-10	6.6E-10	1.3E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.9E-10
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	Yes	5.2E-10	4.3E-10	8.6E-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.2E-10
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	Yes	1.2E-09	1.0E-09	2.1E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2E-09
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	Yes	1.3E-09	1.1E-09	2.2E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3E-09
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	Yes	5.8E-09	4.8E-09	9.7E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.8E-09
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	Yes	1.5E-08	1.2E-08	2.4E-09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5E-08
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	Yes	4.8E-09	4.0E-09	8.0E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8E-09
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	Yes	2.4E-09	2.0E-09	3.9E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.4E-09
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	Yes	3.6E-09	3.0E-09	6.0E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.6E-09
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	Yes	2.1E-09	1.8E-09	3.5E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.1E-09
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	Yes	1.9E-09	1.6E-09	3.1E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.9E-09
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	Yes	4.0E-10	3.3E-10	6.6E-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.0E-10
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	Yes	1.6E-09	1.3E-09	2.6E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.6E-09
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	Yes	3.4E-09	2.8E-09	5.7E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.4E-09
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	Yes	4.7E-10	3.9E-10	7.9E-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.7E-10
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	Yes	3.0E-09	2.5E-09	4.9E-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.0E-09

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Table 3-3
Maximum Daily TAC Emission Rates—All TACs (lb/day)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Maximum Daily Emissions Estimate (lb/day)																			
					Boiler ESP Stack			Existing Firewood Drying Kilns - Indirect Heating							Proposed Kiln 4				Log Bucking Fugitives				Total Facility	
		Total	Controlled —Normal	Uncontrolled —SU/SD	Total	Existing Kiln 1		Existing Kiln 2		Existing Kiln 3			Total	Vent 1 ^(a)					Vent 2 ^(a)	Vent 3 ^(a)	Total	Palax Processor No. 1 ^(a)		Palax Processor No. 2 ^(a)
						Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 1 ^(a)	Vent 2 ^(a)	Vent 3 ^(a)												
Model Source ID					BLR_ESP	--	--	--	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	--	KILN4_V1	KILN4_V2	KILN4_V3	--	BUCK_1	BUCK_2	BUCK_3	--
Apportioning Fraction ⁽¹⁾					--	--	--	--	0.120	0.120	0.180	0.180	0.133	0.133	0.133	--	0.333	0.333	0.333	--	0.333	0.333	0.333	--
TRACE METALS																								
Antimony and compounds	7440-36-0	Yes	Yes	Yes	4.6E-04	1.5E-04	3.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.6E-04
Arsenic and compounds	7440-38-2	Yes	Yes	Yes	1.8E-03	9.4E-04	8.5E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-03
Barium and compounds	7440-39-3	Yes	No	No	0.58	0.10	0.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.58
Beryllium and compounds	7440-41-7	Yes	Yes	Yes	2.7E-05	1.4E-05	1.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7E-05
Cadmium and compounds	7440-43-9	Yes	Yes	Yes	6.5E-04	1.6E-04	4.9E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.5E-04
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	Yes	8.2E-04	1.3E-04	6.9E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.2E-04
Cobalt and compounds	7440-48-4	Yes	Yes	Yes	4.1E-04	2.5E-04	1.7E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.1E-04
Copper and compounds	7440-50-8	Yes	No	Yes	0.010	1.9E-03	8.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.010
Lead and compounds	7439-92-1	Yes	Yes	Yes	5.6E-03	2.6E-03	3.1E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.6E-03
Manganese and compounds	7439-96-5	Yes	Yes	Yes	0.23	0.047	0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.23
Mercury and compounds	7439-97-6	Yes	Yes	Yes	7.0E-04	5.2E-04	1.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.0E-04
Molybdenum trioxide	1313-27-5	Yes	No	No	1.8E-03	1.5E-03	3.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.8E-03
Nickel and compounds	365	Yes	Yes	Yes	2.7E-03	1.4E-03	1.3E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7E-03
Phosphorus and compounds	504	Yes	Yes	No	0.69	0.15	0.54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.69
Selenium and compounds	7782-49-2	Yes	Yes	Yes	8.7E-04	8.0E-04	7.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.7E-04
Silver and compounds	7440-22-4	Yes	No	No	0.093	4.9E-04	0.093	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.093
Thallium and compounds	7440-28-0	Yes	No	No	1.1E-03	9.2E-04	1.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.1E-03
Vanadium (fume or dust)	7440-62-2	Yes	No	Yes	3.9E-04	2.9E-04	9.7E-05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.9E-04
Zinc and compounds	7440-66-6	Yes	No	No	0.085	0.029	0.056	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.085
Total TAC Emission Estimates					22.0	17.3	4.75	21.4	2.57	2.57	3.85	3.85	2.85	2.85	2.85	8.56	2.85	2.85	2.85	2.21	0.74	0.74	0.74	54.2
Total HAP Emissions Estimate					18.2	14.6	3.60	21.4	2.57	2.57	3.85	3.85	2.85	2.85	2.85	8.56	2.85	2.85	2.85	1.93	0.64	0.64	0.64	50.1
Total RBC Emission Estimates					20.5	16.9	3.57	21.4	2.57	2.57	3.85	3.85	2.85	2.85	2.85	8.56	2.85	2.85	2.85	2.21	0.74	0.74	0.74	52.6
Total non-RBC Emission Estimates					1.57	0.38	1.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.57

Notes
HAP = hazardous air pollutant; RBC = risk-based concentration; TAC = toxic air contaminant; TEU = toxics emissions unit.
(a) Individual TEU emissions estimate (lb/yr) = (total TEU emissions estimate [lb/day]) x (apportioning fraction)

References
(1) Emission estimates equally apportioned among TEU release points.

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Table 3-4
Maximum Daily TAC Emission Rates—RBC Only (g/s)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Maximum Daily Emissions Estimate (g/s) ^(a)													
					Boiler ESP Stack	Existing Firewood Drying Kilns - Indirect Heating						Proposed Kiln 4			Log Bucking Fugitives			
		Existing Kiln 1		Existing Kiln 2		Existing Kiln 3		Palax Processor No. 1	Palax Processor No. 2	Palax Processor No. 3								
		Vent 1	Vent 2	Vent 1		Vent 2	Vent 1				Vent 2	Vent 3	Vent 1	Vent 2	Vent 3			
Model Source ID					BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3
SPECIATED ORGANIC/INORGANIC COMPOUNDS																		
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	Yes	1.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	Yes	5.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	Yes	6.2E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	121-14-2	Yes	Yes	Yes	2.9E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	Yes	2.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetaldehyde	75-07-0	Yes	Yes	Yes	8.8E-04	6.5E-03	6.5E-03	9.8E-03	9.8E-03	7.2E-03	7.2E-03	7.2E-03	7.2E-03	7.2E-03	7.2E-03	2.4E-04	2.4E-04	2.4E-04
Acetone	67-64-1	Yes	No	Yes	1.6E-03	--	--	--	--	--	--	--	--	--	--	4.9E-04	4.9E-04	4.9E-04
Acrolein	107-02-8	Yes	Yes	Yes	8.1E-04	1.0E-04	1.0E-04	1.6E-04	1.6E-04	1.2E-04	1.2E-04	1.2E-04	1.2E-04	1.2E-04	1.2E-04	--	--	--
Benzene	71-43-2	Yes	Yes	Yes	3.1E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	Yes	1.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	Yes	3.5E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	56-23-5	Yes	Yes	Yes	3.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorine	7782-50-5	Yes	Yes	Yes	2.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	108-90-7	Yes	Yes	Yes	5.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	67-66-3	Yes	Yes	Yes	6.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	Yes	1.4E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, hydrogen	74-90-8	Yes	Yes	Yes	6.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	Yes	1.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	100-41-4	Yes	Yes	Yes	3.8E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	Yes	9.1E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Formaldehyde	50-00-0	Yes	Yes	Yes	3.3E-03	1.4E-04	1.4E-04	2.1E-04	2.1E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	1.5E-04	7.7E-05	7.7E-05	7.7E-05
Hexane	110-54-3	Yes	Yes	Yes	9.0E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	0.069	--	--	--	--	--	--	--	--	--	--	--	--	--
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	2.8E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyl alcohol	67-63-0	Yes	No	Yes	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	Yes	5.5E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Methanol	67-56-1	Yes	Yes	Yes	2.3E-03	6.7E-03	6.7E-03	0.010	0.010	7.4E-03	7.4E-03	7.4E-03	7.4E-03	7.4E-03	7.4E-03	3.1E-03	3.1E-03	3.1E-03
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	Yes	1.4E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	Yes	8.7E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	87-86-5	Yes	Yes	Yes	6.7E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenol	108-95-2	Yes	Yes	Yes	5.0E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	Yes	2.4E-08	--	--	--	--	--	--	--	--	--	--	--	--	--
Propionaldehyde	123-38-6	Yes	Yes	Yes	9.7E-04	7.3E-05	7.3E-05	1.1E-04	1.1E-04	8.1E-05	8.1E-05	8.1E-05	8.1E-05	8.1E-05	8.1E-05	--	--	--
Styrene	100-42-5	Yes	Yes	Yes	1.5E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	Yes	7.7E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	Yes	Yes	Yes	3.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	Yes	6.2E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	75-01-4	Yes	Yes	Yes	5.7E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene (mixed isomers)	1330-20-7	Yes	Yes	Yes	1.6E-05	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table 3-4
Maximum Daily TAC Emission Rates—RBC Only (g/s)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Maximum Daily Emissions Estimate (g/s) ^(a)													
					Boiler ESP Stack	Existing Firewood Drying Kilns - Indirect Heating						Proposed Kiln 4			Log Bucking Fugitives			
		Existing Kiln 1		Existing Kiln 2		Existing Kiln 3												
		TAC	HAP	RBC		Vent 1	Vent 2	Vent 1	Vent 2	Vent 1	Vent 2	Vent 3	Vent 1	Vent 2	Vent 3	Palax Processor No. 1	Palax Processor No. 2	Palax Processor No. 3
Model Source ID					BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)																		
Benz[a]anthracene	56-55-3	Yes	Yes	Yes	2.5E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	6.9E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	205-99-2	Yes	Yes	Yes	4.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	Yes	4.7E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[j]fluoranthene	205-82-3	Yes	Yes	Yes	4.9E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	207-08-9	Yes	Yes	Yes	1.6E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	218-01-9	Yes	Yes	Yes	2.5E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	206-44-0	Yes	Yes	Yes	5.2E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	Yes	3.2E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	3.1E-04	--	--	--	--	--	--	--	--	--	--	--	--	--
DIOXINS AND FURANS																		
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	Yes	3.0E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	Yes	4.1E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	Yes	2.7E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	Yes	6.5E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	Yes	6.9E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	Yes	3.0E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	Yes	7.7E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	Yes	2.5E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	Yes	1.2E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	Yes	1.9E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	Yes	1.1E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	Yes	9.9E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	Yes	2.1E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	Yes	8.3E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	Yes	1.8E-11	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	Yes	2.5E-12	--	--	--	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	Yes	1.6E-11	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table 3-4
Maximum Daily TAC Emission Rates—RBC Only (g/s)
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Maximum Daily Emissions Estimate (g/s) ^(a)													
					Boiler ESP Stack	Existing Firewood Drying Kilns - Indirect Heating						Proposed Kiln 4			Log Bucking Fugitives			
		Existing Kiln 1		Existing Kiln 2		Existing Kiln 3												
		Vent 1	Vent 2	Vent 1		Vent 2	Vent 1	Vent 2	Vent 3	Vent 1	Vent 2	Vent 3	Palax Processor No. 1	Palax Processor No. 2	Palax Processor No. 3			
TAC	HAP	RBC	BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3		
Model Source ID					BLR_ESP	KILN1_V1	KILN1_V2	KILN2_V1	KILN2_V2	KILN3_V1	KILN3_V2	KILN3_V3	KILN4_V1	KILN4_V2	KILN4_V3	BUCK_1	BUCK_2	BUCK_3
TRACE METALS																		
Antimony and compounds	7440-36-0	Yes	Yes	Yes	2.4E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic and compounds	7440-38-2	Yes	Yes	Yes	9.4E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium and compounds	7440-41-7	Yes	Yes	Yes	1.4E-07	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium and compounds	7440-43-9	Yes	Yes	Yes	3.4E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	Yes	4.3E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt and compounds	7440-48-4	Yes	Yes	Yes	2.2E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper and compounds	7440-50-8	Yes	No	Yes	5.3E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead and compounds	7439-92-1	Yes	Yes	Yes	3.0E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese and compounds	7439-96-5	Yes	Yes	Yes	1.2E-03	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury and compounds	7439-97-6	Yes	Yes	Yes	3.7E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel and compounds	365	Yes	Yes	Yes	1.4E-05	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium and compounds	7782-49-2	Yes	Yes	Yes	4.6E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium (fume or dust)	7440-62-2	Yes	No	Yes	2.1E-06	--	--	--	--	--	--	--	--	--	--	--	--	--
Total TAC Emission Estimates					0.11	0.013	0.013	0.020	0.020	0.015	0.015	0.015	0.015	0.015	0.015	3.9E-03	3.9E-03	3.9E-03
Total HAP Emissions Estimate					0.092	0.013	0.013	0.020	0.020	0.015	0.015	0.015	0.015	0.015	0.015	3.4E-03	3.4E-03	3.4E-03

Notes

HAP = hazardous air pollutant; RBC = risk-based concentration; TAC = toxic air contaminant; TEU = toxics emissions unit.

(a) Maximum daily emissions estimate (g/s) = (maximum daily emissions estimate [lb/day]) x (453.592 g/lb) / (24 hr/day) / (3,600 s/hr); See reference (1).

References

(1) See Table 3-3, Maximum Daily TAC Emission Rates—All TACs (lb/day).

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Table 3-5
Modeled Source Parameters
JB Wood Recyclers, LLC—Monmouth, Oregon

Point Sources																
Model ID	Model Source Description	UTM Coordinates ⁽¹⁾		Discharge Orientation ⁽²⁾	Base Elevation ⁽³⁾		Release Height ⁽²⁾		Stack or Vent Diameter ⁽²⁾		Exit Velocity		Exit Flowrate		Exit Temperature	
		Easting	Northing		(ft)	(m)	(ft)	(m)	(ft)	(m)	(fpm)	(m/s)	(cfm)	(m³/s)	(°F)	(K)
BLR_ESP	Proposed Hogged Fuel Boiler ESP Stack	482,056	4,964,983	Vertical	194	59.2	55.0	16.8	2.67	0.81	2,321 ^(a)	11.79 ^(b)	12,966 ⁽²⁾	6.12 ^(c)	350 ⁽²⁾	450 ^(d)
Volume Sources																
Model ID	Model Source Description	UTM Coordinates ⁽¹⁾		On or Adjacent to Downwash Structure	Base Elevation ⁽³⁾		Building Height (If Applicable)		Release Height		Length of Side		Initial Lateral Dimension		Initial Vertical Dimension	
		Easting	Northing		(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)
KILN4_V1	Proposed Kiln no. 4 - Roof Vent 1	482,065	4,964,960	Yes ⁽⁴⁾	194	59.2	22.3 ⁽⁵⁾	6.81 ^(e)	19.6 ^(f)	5.97 ⁽⁵⁾	13.0 ⁽⁵⁾	3.96 ^(e)	3.02 ^(f)	0.92 ⁽⁵⁾	18.2 ^(f)	5.55 ⁽⁵⁾
KILN4_V2	Proposed Kiln no. 4 - Roof Vent 2	482,065	4,964,956	Yes ⁽⁴⁾	194	59.2	22.3 ⁽⁵⁾	6.81 ^(e)	19.6 ^(f)	5.97 ⁽⁵⁾	13.0 ⁽⁵⁾	3.96 ^(e)	3.02 ^(f)	0.92 ⁽⁵⁾	18.2 ^(f)	5.55 ⁽⁵⁾
KILN4_V3	Proposed Kiln no. 4 - Roof Vent 3	482,065	4,964,952	Yes ⁽⁴⁾	194	59.3	22.3 ⁽⁵⁾	6.81 ^(e)	19.6 ^(f)	5.97 ⁽⁵⁾	13.0 ⁽⁵⁾	3.96 ^(e)	3.02 ^(f)	0.92 ⁽⁵⁾	18.2 ^(f)	5.55 ⁽⁵⁾
KILN1_V1	Existing Kiln no. 1 - Roof Vent 1	482,079	4,964,958	Yes ⁽⁴⁾	194	59.2	17.3 ⁽⁶⁾	5.29 ^(e)	14.4 ^(f)	4.40 ⁽⁶⁾	20.0 ⁽⁶⁾	6.10 ^(e)	4.65 ^(f)	1.42 ⁽⁶⁾	13.4 ^(f)	4.09 ⁽⁶⁾
KILN1_V2	Existing Kiln no. 1 - Roof Vent 2	482,079	4,964,951	Yes ⁽⁴⁾	194	59.2	17.3 ⁽⁶⁾	5.29 ^(e)	14.4 ^(f)	4.40 ⁽⁶⁾	20.0 ⁽⁶⁾	6.10 ^(e)	4.65 ^(f)	1.42 ⁽⁶⁾	13.4 ^(f)	4.09 ⁽⁶⁾
KILN2_V1	Existing Kiln no. 2 - Roof Vent 1	482,079	4,964,945	Yes ⁽⁴⁾	194	59.2	17.3 ⁽⁶⁾	5.29 ^(e)	15.9 ^(f)	4.84 ⁽⁶⁾	20.0 ⁽⁶⁾	6.10 ^(e)	4.65 ^(f)	1.42 ⁽⁶⁾	14.8 ^(f)	4.50 ⁽⁶⁾
KILN2_V2	Existing Kiln no. 2 - Roof Vent 2	482,079	4,964,939	Yes ⁽⁴⁾	194	59.2	17.3 ⁽⁶⁾	5.29 ^(e)	15.9 ^(f)	4.84 ⁽⁶⁾	20.0 ⁽⁶⁾	6.10 ^(e)	4.65 ^(f)	1.42 ⁽⁶⁾	14.8 ^(f)	4.50 ⁽⁶⁾
KILN3_V1	Existing Kiln no. 3 - Roof Vent 1	482,065	4,964,947	Yes ⁽⁴⁾	194	59.3	22.3 ⁽⁶⁾	6.81 ^(e)	19.6 ^(f)	5.97 ⁽⁶⁾	13.0 ⁽⁶⁾	3.96 ^(e)	3.02 ^(f)	0.92 ⁽⁶⁾	18.2 ^(f)	5.55 ⁽⁶⁾
KILN3_V2	Existing Kiln no. 3 - Roof Vent 2	482,065	4,964,943	Yes ⁽⁴⁾	194	59.2	22.3 ⁽⁶⁾	6.81 ^(e)	19.6 ^(f)	5.97 ⁽⁶⁾	13.0 ⁽⁶⁾	3.96 ^(e)	3.02 ^(f)	0.92 ⁽⁶⁾	18.2 ^(f)	5.55 ⁽⁶⁾
KILN3_V3	Existing Kiln no. 3 - Roof Vent 3	482,065	4,964,939	Yes ⁽⁴⁾	194	59.2	22.3 ⁽⁶⁾	6.81 ^(e)	19.6 ^(f)	5.97 ⁽⁶⁾	13.0 ⁽⁶⁾	3.96 ^(e)	3.02 ^(f)	0.92 ⁽⁶⁾	18.2 ^(f)	5.55 ⁽⁶⁾
BUCK_1	Existing Log Bucking Unit no. 1	482,099	4,964,919	No ⁽⁷⁾	194	59.1	--	--	6.00 ^(f)	1.83 ⁽⁶⁾	10.0 ⁽⁶⁾	3.05 ^(e)	2.33 ^(f)	0.71 ⁽⁶⁾	1.40 ^(f)	0.43 ⁽⁶⁾
BUCK_2	Existing Log Bucking Unit no. 2	482,099	4,964,912	No ⁽⁷⁾	194	59.0	--	--	6.00 ^(f)	1.83 ⁽⁶⁾	10.0 ⁽⁶⁾	3.05 ^(e)	2.33 ^(f)	0.71 ⁽⁶⁾	1.40 ^(f)	0.43 ⁽⁶⁾
BUCK_3	Existing Log Bucking Unit no. 3	482,099	4,964,904	No ⁽⁷⁾	193	59.0	--	--	6.00 ^(f)	1.83 ⁽⁶⁾	10.0 ⁽⁶⁾	3.05 ^(e)	2.33 ^(f)	0.71 ⁽⁶⁾	1.40 ^(f)	0.43 ⁽⁶⁾

Notes

cfm = cubic feet per minute; fpm = feet per minute; m³/s = cubic meters per second; m/s meters per second; UTM = universal transverse mercator.

- (a) Exit velocity (fpm) = (exit flowrate [cfm]) / ([π/4] x [diameter {ft}]²)
- (b) Exit velocity (m/s) = (exit velocity [fpm]) / (3.2808 ft/m) / (60 s/min)
- (c) Exit flowrate (m³/s) = (π/4) x (stack diameter [m])² x (exit velocity [m/s])
- (d) Exit temperature (K) = (exit temperature [°F] - 32) x (5/9) + (273.15)
- (e) Parameter (m) = (parameter [ft]) / (3.2808 ft/m)
- (f) Parameter (ft) = (parameter [m]) x (3.2808 ft/m)

References

- (1) Coordinates and location information determined from proposed site layout aerial image provided by JB Wood Recyclers, LLC.
- (2) Information provided by equipment vendor.
- (3) Value derived from AERMAP terrain preprocessor.
- (4) Existing kilns no. 1 and 2 each have two dedicated roof vents. Existing kiln no. 3 has three dedicated roof vents. Proposed kiln no. 4 will be identical to existing kiln no. 3, meaning it will also have three roof vents. Conservatively assumes the volume source representation is evenly distributed across each kiln footprint. General extents are based on the kiln locations presented in the proposed site layout aerial image provided by JB Wood Recyclers, LLC.
- (5) Proposed kiln no. 4 will be identical in function and size to existing kiln no. 3.
- (6) DEQ reviewed and approved release parameter. See Attachments presented in the Review Report to Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 dated September 12, 2023.
- (7) Log bucking will take place under a roofed structure that will be open on three sides.

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Table 3-6
Plume Rise Calculations for Firewood Kiln Source Representations
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	EPA Memo Acronym	(Units)	Source Representation				
			DEQ-Approved ⁽¹⁾			Proposed	
			KILN1	KILN2	KILN3	KILN4	
PHYSICAL PARAMETERS							
Kiln Width ⁽²⁾	--	(ft)	24.0	24.0	24.0	24.0	
Kiln Length ⁽²⁾	--	(ft)	34.3	49.0	39.7	39.7	
Kiln Height ⁽²⁾	--	(ft)	17.3	17.3	22.3	22.3	
Flowrate ⁽³⁾	--	(acfm)	461	692	1,230	1,230	
Kiln Temperature ⁽²⁾	--	(°F)	200	200	200	200	
Ambient Temperature ⁽⁴⁾	--	(°F)	70.0	70.0	70.0	70.0	
Acceleration of Gravity Constant	g	(m/s ²)	9.81	9.81	9.81	9.81	
EFFECTIVE RELEASE HEIGHT DERIVATION							
Kiln Width ^(a)	w	(m)	7.32	7.32	7.32	7.32	
Kiln Length ^(a)	l	(m)	10.5	14.9	12.1	12.1	
Kiln Height ^(a)	--	(m)	5.29	5.29	6.81	6.81	
Kiln Flowrate ^(b)	Q	(m ³ /s)	0.22	0.33	0.58	0.58	
Kiln Temperature ^(c)	T _p	(K)	366	366	366	366	
Ambient Temperature ^(c)	T _a	(K)	294	294	294	294	
Effective Radius ^(d)	r _p	(m)	4.94	5.90	5.31	5.31	
Kiln Buoyancy Flux ^(e)	F _b	(m ⁴ /s ³)	0.13	0.20	0.36	0.36	
Initial Vertical Velocity ^(f)	w _p	(m/s)	2.8E-03	3.0E-03	6.6E-03	6.6E-03	
Froude Number ^(g)	F	--	6.5E-04	6.3E-04	1.4E-03	1.4E-03	
Velocity Ratio ^(h)	K	--	1,406	1,338	609	609	
Brunt Vasaila Frequency ⁽ⁱ⁾	N	--	0.052	0.052	0.052	0.052	
Stable Plume Rise ^(j)	Δ h	(m)	6.15	7.04	8.53	8.53	
Effective Release Height ^(k)	--	(m)	8.79	9.68	11.9	11.9	
DISPERSION MODEL INPUT							
Vertical Dimension ⁽⁴⁾	--	(m)	8.79	9.68	11.93	11.93	
Release Height ⁽⁴⁾	--	(m)	4.40	4.84	5.97	5.97	
Initial Vertical Dimension ⁽⁷⁾	--	(m)	4.09	4.50	5.55	5.55	

Notes

- (a) Parameter (m) = (parameter [ft]) / (3.2808 ft/m)
- (b) Kiln flowrate (m³/s) = (kiln flowrate [acfm]) / (60 s/min) / (35.3147 ft³/m³)
- (c) Temperature (K) = ([temperature {°F} - 32] x (5/9) + (273.15)
- (d) Effective radius (m) = ([kiln width {m}] x [kiln length {m}] / [π])^{1/2}
- (e) Kiln buoyancy flux (m⁴/s³) = (acceleration of gravity [m/s²]) x (kiln flowrate [m³/s]) x ([kiln temperature {K}] - [ambient temperature {K}]) / (π) / (kiln temperature [K]); See reference (5).
- (f) Initial vertical velocity (m/s) = (kiln buoyancy flux [m⁴/s³]) x (kiln temperature [K]) / (acceleration of gravity [m/s²]) / ([kiln temperature {K}] - [ambient temperature {K}]) / (effective radius [m])²; See reference (4).
- (g) Froude number = (initial vertical velocity [m/s]) / ([kiln temperature [K]] - [ambient temperature [K]]) / [kiln temperature {K}] x [2] x [effective radius {m}] x [acceleration of gravity {m/s²}]^(1/2); See reference (4).
- (h) Velocity ratio = (wind speed (m/s) / (initial vertical velocity [m/s])); See reference (4).
- Wind speed (m/s) = 4 (4)
- (i) Brunt vasaila frequency = ([acceleration of gravity {m/s²}] / [ambient temperature {K}] x [temperature gradient {K/m}])^{1/2}; See reference (4).
- Temperature gradient (K/m) = 0.08 (4)
- (j) Stable plume rise (m) = (2.1) x ([effective radius {m}] x [wind speed {m/s}]² / [velocity ratio]³ / [Froude number]² / [Brunt vasaila frequency]²)^(1/3); See reference(4).
- Wind speed (m/s) = 4 (4)
- (k) Effective release heighth (m) = (stable plume rise [m]) + (kiln height [m] / 2); See reference (6).

References

- (1) See Attachment B, Short Term NAAQS Memo presented in the Review Report to Simple Air Contaminant Discharge Permit no. 27-0042-SI-01. Kiln parameter previously approved by the DEQ as part of the initial permitting action for the facility.
- (2) Information provided by JB Wood Recyclers, LLC.
- (3) Information provided by JB Wood Recyclers, LLC. Conservatively assumes low flowrate estimate for batch kiln compared to EPA guidance. Per Appendix D2 of Appendix 1 in the EPA "Residual Risk Assessment for the Plywood and Composite Wood Products Source Category in Support of the 2019 Risk and Technology Review Proposed Rule" dated May, 2019, velocity measurement and total gas flow data indicate 12,500 acfm is representative of the total gas flow from batch kilns.
- (4) See Appendix 12, sub Appendix I, "Plume-Rise Methodology for Slag Pits Based Upon Work by John Irwin (EPA; 2003)," to the Residual Risk Assessment for the Plywood and Composite Wood Products Source Category in Support of the 2019 Risk and Technology Review Proposed Rule dated May, 2019.
- (5) See Appendix 12, sub Appendix I, "Plume-Rise Methodology for Slag Pits Based Upon Work by John Irwin (EPA; 2003)," to the Residual Risk Assessment for the Plywood and Composite Wood Products Source Category in Support of the 2019 Risk and Technology Review Proposed Rule dated May, 2019. Formula for initial vertical velocity rearranged to solve for buoyancy flux.
- (6) See section III of Appendix 12, "Development of Plume-Rise Adjustment Factors for Batch and Continuous Lumber Kilns," to the Residual Risk Assessment for the Plywood and Composite Wood Products Source Category in Support of the 2019 Risk and Technology Review Proposed Rule dated May, 2019.
- (7) See "User's Guide for the AMS/EPA Regulatory Model (AERMOD)" dated June 2022. See Table 3-2. The initial vertical dimension for elevated sources on or adjacent to a building is equal to the release height divided by 2.15.

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Table 4-2
Modeled Downwash Structure Heights
JB Wood Recyclers, LLC—Monmouth, Oregon

Downwash Structure Model ID	Description	Base Elevation ⁽¹⁾		Height ⁽²⁾	
		(ft)	(m)	(ft)	(m)
BLD_1	General Storage	193	58.7	32.0	9.75
BLD_2	Existing Kiln 3	194	59.2	22.3	6.81
BLD_3	Existing Kilns 1-2	194	59.2	17.3	5.28
BLD_4	Proposed Kiln 4	194	59.3	22.3	6.81
BLD_5	Packaging Building	194	59.1	32.0	9.75
BLD_6	Log Processing Building	193	58.9	32.0	9.75
BLD_7	Proposed Boiler Control Building	194	59.2	15.0	4.57

References

- (1) Value derived from AERMAP terrain preprocessor.
- (2) Information provided by JB Wood Recyclers, LLC.

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Table 5-1
Summary of Statewide Zoning And Exposure Type Categorization
JB Wood Recyclers, LLC—Monmouth, Oregon

Oregon Statewide Zoning Descriptions ⁽¹⁾	Corresponding Exposure Type Classification	Risk Assessments To Be Performed
Beaches and Dunes	Acute-only	Acute Noncancer
Coastal Estuarine	Acute-only	Acute Noncancer
Coastal Shorelands	Acute-only	Acute Noncancer
Combo equal emphasis	Acute-only	Acute Noncancer
Combo with priority emphasis	Acute-only	Acute Noncancer
Commercial - Central	Non-Residential Worker or Child (if applicable)	Cancer, Chronic and Acute Noncancer
Commercial - General	Non-Residential Worker or Child (if applicable)	Cancer, Chronic and Acute Noncancer
Commercial - Neighborhood	Non-Residential Worker or Child (if applicable)	Cancer, Chronic and Acute Noncancer
Commercial - Office	Non-Residential Worker or Child (if applicable)	Cancer, Chronic and Acute Noncancer
Exclusive Farm Use 160+	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Exclusive Farm Use 20+	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Exclusive Farm Use 40+	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Exclusive Farm Use 80	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Federal Forest	Acute-only	Acute Noncancer
Federal Range	Acute-only	Acute Noncancer
Forest	Acute-only	Acute Noncancer
Future Urban Development	Residential	Cancer, Chronic and Acute Noncancer
High-density Res.	Residential	Cancer, Chronic and Acute Noncancer
Indian reservation/Tribal trust	Residential	Cancer, Chronic and Acute Noncancer
Industrial - Heavy	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Industrial - Light	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Industrial Campus	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Industrial Office	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Low-density Res.	Residential	Cancer, Chronic and Acute Noncancer
Marginal Farm Land 10+	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Medium High-density Res.	Residential	Cancer, Chronic and Acute Noncancer
Medium Low-density Res.	Residential	Cancer, Chronic and Acute Noncancer
Medium-density Res.	Residential	Cancer, Chronic and Acute Noncancer
Mineral and Aggregate	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Mixed Farm-Forest 160+	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Mixed Farm-Forest 20	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Mixed Farm-Forest 40	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Mixed Farm-Forest 80	Residential for structure, Non-Residential Worker for property	Cancer, Chronic and Acute Noncancer
Mixed-Use Com. & Res. Extremely High	Residential	Cancer, Chronic and Acute Noncancer
Mixed-Use Com. & Res. High	Residential	Cancer, Chronic and Acute Noncancer
Mixed-Use Com. & Res. Low	Residential	Cancer, Chronic and Acute Noncancer
Mixed-Use Com. & Res. Med-high	Residential	Cancer, Chronic and Acute Noncancer
Mixed-Use Com. & Res. Medium	Residential	Cancer, Chronic and Acute Noncancer
Mixed-Use Com. & Res. V.High	Residential	Cancer, Chronic and Acute Noncancer
No Data	Acute-only	Acute Noncancer
Open Space/Conservation	Acute-only	Acute Noncancer
Other	Acute-only	Acute Noncancer
Parks & Open Space	Acute-only	Acute Noncancer
Prime Forest 80	Acute-only	Acute Noncancer
Public & semi-public Uses	Non-Residential Worker or Child (if applicable)	Cancer, Chronic and Acute Noncancer
Public Facilities	Non-Residential Worker or Child (if applicable)	Cancer, Chronic and Acute Noncancer
Rural Commercial	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Rural Industrial	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Rural Residential 1 acre	Residential	Cancer, Chronic and Acute Noncancer
Rural Residential 10 acres	Residential	Cancer, Chronic and Acute Noncancer
Rural Residential 2-4 acres	Residential	Cancer, Chronic and Acute Noncancer
Rural Residential 5 acres	Residential	Cancer, Chronic and Acute Noncancer
Secondary Forest 80	Acute-only	Acute Noncancer
UC Rural Commercial	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
UC Rural Industrial	Non-Residential Worker	Cancer, Chronic and Acute Noncancer
Very High-density Res.	Residential	Cancer, Chronic and Acute Noncancer
Very Low-density Res.	Residential	Cancer, Chronic and Acute Noncancer

References

(1) Oregon statewide zoning descriptions obtained from the Department of Land Conservation and Development statewide zoning dataset.

Table 5-2
Summary of Revisions to Statewide Zoning
JB Wood Recyclers, LLC—Monmouth, Oregon

[illegible]

Table 5-2
Summary of Revisions to Statewide Zoning
JB Wood Recyclers, LLC—Monmouth, Oregon

[illegible]

Table 5-2
Summary of Revisions to Statewide Zoning
JB Wood Recyclers, LLC—Monmouth, Oregon

[illegible]

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Table 5-2
Summary of Revisions to Statewide Zoning
JB Wood Recyclers, LLC—Monmouth, Oregon

UTM Coordinates (m)		Zoning Dataset Used for Exposure Classification	Exposure Type Classification	Reason for Exposure Type Classification Revision
Easting	Northing	Oregon Statewide		
481,340.78	4,965,304.50	Low-density Res.	Child	Joy4Kids Child Care (Daycare Center)
481,851.19	4,964,469.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,494.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,519.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,544.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,569.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,594.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,619.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,644.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,669.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,694.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,719.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,744.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,769.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,851.19	4,964,794.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,469.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,494.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,519.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,544.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,569.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,594.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,619.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,644.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,669.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,694.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,719.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,744.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,769.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,794.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,819.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,894.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,919.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,944.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,969.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,964,994.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,019.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,044.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,069.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,094.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,119.00	Industrial - Light	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,144.00	Industrial - Light	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,169.00	Industrial - Light	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,194.00	Industrial - Light	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,219.00	Industrial - Light	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,244.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,269.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,294.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,876.19	4,965,319.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,872.75	4,965,367.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,872.75	4,965,415.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,872.75	4,965,463.00	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,872.75	4,965,510.50	Very Low-density Res.	Risk Not Assessed	Receptor falls within road right-of-way.
481,887.41	4,963,894.00	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,874.58	4,964,827.51	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,874.54	4,964,882.32	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,874.57	4,964,845.78	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.
481,874.55	4,964,864.05	Exclusive Farm Use 80	Risk Not Assessed	Receptor falls within road right-of-way.

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Table 5-3
Applicable Risk-Based Concentrations
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Risk-Based Concentration ⁽¹⁾ (ug/m ³)						
					Residential Chronic		Nonresidential Chronic				Acute
		TAC	HAP	RBC	Cancer	Noncancer	Child Cancer	Child Noncancer	Worker Cancer	Worker Noncancer	
SPECIATED ORGANIC/INORGANIC COMPOUNDS											
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	Yes	--	5000	--	22000	--	22000	11000
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	Yes	--	4	--	18	--	18	230
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	Yes	0.05	--	1.3	--	0.6	--	--
2,4-Dinitrotoluene	121-14-2	Yes	Yes	Yes	0.011	--	0.29	--	0.13	--	--
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	Yes	--	5000	--	22000	--	22000	5000
Acetaldehyde	75-07-0	Yes	Yes	Yes	0.45	140	12	620	5.5	620	470
Acetone	67-64-1	Yes	No	Yes	--	31000	--	140000	--	140000	62000
Acrolein	107-02-8	Yes	Yes	Yes	--	0.35	--	1.5	--	1.5	6.9
Benzene	71-43-2	Yes	Yes	Yes	0.13	3	3.3	13	1.5	13	29
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	Yes	0.08	--	11	--	5	--	--
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	Yes	--	5	--	22	--	22	3900
Carbon tetrachloride	56-23-5	Yes	Yes	Yes	0.17	100	4.3	440	2	440	1900
Chlorine	7782-50-5	Yes	Yes	Yes	--	0.15	--	0.66	--	0.66	170
Chlorobenzene	108-90-7	Yes	Yes	Yes	--	50	--	220	--	220	--
Chloroform	67-66-3	Yes	Yes	Yes	--	300	--	1300	--	1300	490
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	Yes	--	90	--	400	--	400	1000
Cyanide, hydrogen	74-90-8	Yes	Yes	Yes	--	0.8	--	3.5	--	3.5	340
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	Yes	59	600	620	2600	1200	2600	2100
Ethylbenzene	100-41-4	Yes	Yes	Yes	0.4	260	10	1100	4.8	1100	22000
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	Yes	0.038	7	1	31	0.46	31	--
Formaldehyde	50-00-0	Yes	Yes	Yes	0.17	9	4.3	40	2	40	49
Hexane	110-54-3	Yes	Yes	Yes	--	700	--	3100	--	3100	--
Hydrochloric Acid	7647-01-0	Yes	Yes	Yes	--	20	--	88	--	88	2100
Hydrogen Fluoride	7664-39-3	Yes	Yes	Yes	--	2.1	--	19	--	19	16
Isopropyl alcohol	67-63-0	Yes	No	Yes	--	200	--	880	--	880	3200
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	Yes	--	400	--	1800	--	1800	--
Methanol	67-56-1	Yes	Yes	Yes	--	4000	--	18000	--	18000	28000
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	Yes	--	3000	--	13000	--	13000	--
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	Yes	0.091	60	2.4	260	1.1	260	12000
Pentachlorophenol	87-86-5	Yes	Yes	Yes	0.2	--	5.1	--	2.4	--	--
Phenol	108-95-2	Yes	Yes	Yes	--	200	--	880	--	880	5800
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	Yes	0.00053	--	0.02	--	0.0092	--	--
Propionaldehyde	123-38-6	Yes	Yes	Yes	--	8	--	35	--	35	--

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Table 5-3
Applicable Risk-Based Concentrations
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Risk-Based Concentration ⁽¹⁾ (ug/m ³)						
					Residential Chronic		Nonresidential Chronic				Acute
		TAC	HAP	RBC	Cancer	Noncancer	Child Cancer	Child Noncancer	Worker Cancer	Worker Noncancer	
Styrene	100-42-5	Yes	Yes	Yes	--	1000	--	4400	--	4400	21000
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	Yes	3.8	41	100	180	46	180	41
Toluene	108-88-3	Yes	Yes	Yes	--	5000	--	22000	--	22000	7500
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	Yes	0.2	2.1	3.5	9.2	2.9	9.2	2.1
Vinyl Chloride	75-01-4	Yes	Yes	Yes	0.11	100	0.22	440	2.7	440	1300
Xylene (mixed isomers)	1330-20-7	Yes	Yes	Yes	--	220	--	970	--	970	8700
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)											
Benz[a]anthracene	56-55-3	Yes	Yes	Yes	0.00021	--	0.0078	--	0.015	--	--
Benzo[a]pyrene	50-32-8	Yes	Yes	Yes	0.000043	0.002	0.0016	0.0088	0.003	0.0088	0.002
Benzo[b]fluoranthene	205-99-2	Yes	Yes	Yes	0.000053	--	0.002	--	0.0038	--	--
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	Yes	0.0047	--	0.17	--	0.34	--	--
Benzo[j]fluoranthene	205-82-3	Yes	Yes	Yes	0.00014	--	0.0052	--	0.01	--	--
Benzo[k]fluoranthene	207-08-9	Yes	Yes	Yes	0.0014	--	0.052	--	0.1	--	--
Chrysene	218-01-9	Yes	Yes	Yes	0.00043	--	0.016	--	0.03	--	--
Fluoranthene	206-44-0	Yes	Yes	Yes	0.00053	--	0.02	--	0.038	--	--
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	Yes	0.00061	--	0.022	--	0.043	--	--
Naphthalene	91-20-3	Yes	Yes	Yes	0.029	3.7	0.76	16	0.35	16	200
DIOXINS AND FURANS											
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	Yes	1.0E-09	1.3E-07	9.0E-08	2.6E-05	4.2E-08	2.6E-05	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	Yes	1.0E-09	1.3E-07	9.0E-08	2.6E-05	4.2E-08	2.6E-05	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	Yes	1.0E-07	1.3E-05	9.0E-06	2.6E-03	4.2E-06	2.6E-03	--
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	Yes	3.4E-06	4.2E-04	3.0E-04	8.5E-02	1.4E-04	8.5E-02	--
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	Yes	3.4E-08	4.2E-06	3.0E-06	8.5E-04	1.4E-06	8.5E-04	--
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	Yes	3.4E-09	4.2E-07	3.0E-07	8.5E-05	1.4E-07	8.5E-05	--
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	Yes	1.0E-08	1.3E-06	9.0E-07	2.6E-04	4.2E-07	2.6E-04	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	Yes	1.0E-07	1.3E-05	9.0E-06	2.6E-03	4.2E-06	2.6E-03	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	Yes	1.0E-07	1.3E-05	9.0E-06	2.6E-03	4.2E-06	2.6E-03	--

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Table 5-3
Applicable Risk-Based Concentrations
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category			Risk-Based Concentration ⁽¹⁾ (ug/m ³)						
					Residential Chronic		Nonresidential Chronic				Acute
		TAC	HAP	RBC	Cancer	Noncancer	Child Cancer	Child Noncancer	Worker Cancer	Worker Noncancer	
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	Yes	3.4E-06	4.2E-04	3.0E-04	8.5E-02	1.4E-04	8.5E-02	--
TRACE METALS											
Antimony and compounds	7440-36-0	Yes	Yes	Yes	--	0.30	--	1.3	--	1.3	1.0
Arsenic and compounds	7440-38-2	Yes	Yes	Yes	2.4E-05	1.7E-04	1.3E-03	2.4E-03	6.2E-04	2.4E-03	0.2
Beryllium and compounds	7440-41-7	Yes	Yes	Yes	4.2E-04	7.0E-03	0.011	0.031	5.0E-03	0.031	0.02
Cadmium and compounds	7440-43-9	Yes	Yes	Yes	5.6E-04	5.0E-03	0.014	0.037	6.7E-03	0.037	0.03
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	Yes	3.1E-05	0.083	5.2E-04	0.88	1.0E-03	0.88	0.3
Cobalt and compounds	7440-48-4	Yes	Yes	Yes	--	0.1	--	0.44	--	0.44	--
Copper and compounds	7440-50-8	Yes	No	Yes	--	--	--	--	--	--	100
Lead and compounds	7439-92-1	Yes	Yes	Yes	--	0.15	--	0.66	--	0.66	0.15
Manganese and compounds	7439-96-5	Yes	Yes	Yes	--	0.09	--	0.4	--	0.4	0.3
Mercury and compounds	7439-97-6	Yes	Yes	Yes	--	0.077	--	0.63	--	0.63	0.6
Nickel and compounds	365	Yes	Yes	Yes	3.8E-03	0.014	0.1	0.062	0.046	0.062	0.2
Selenium and compounds	7782-49-2	Yes	Yes	Yes	--	--	--	--	--	--	2
Vanadium (fume or dust)	7440-62-2	Yes	No	Yes	--	0.1	--	0.44	--	0.44	0.8

Notes
HAP = hazardous air pollutant; RBC = risk-based concentration; TAC = toxic air contaminant; ug/m³ = micrograms per cubic meter.

References
(1) Oregon Administrative Rule 340-245-8010 Table 2.

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Table 6-1
Maximum Predicted Risk Exposure Location per TEU
JB Wood Recyclers, LLC—Monmouth, Oregon

Model ID	Cancer						Chronic Noncancer						Acute Noncancer	
	Residential		Child		Worker		Residential		Child		Worker			
	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])	Exposure Location ⁽¹⁾ (Location of Maximum Risk)	Dispersion Factor ⁽²⁾ (ug/m ³ /[g/s])
BLR_ESP	616	0.83687	2,413	0.04835	538	0.00566	616	0.83687	2,414	0.04881	538	0.00566	538	0.48092
BUCK_1	616	68.12312	2,413	1.09694	538	279.32632	616	68.12312	2,414	1.08034	538	279.32632	538	1,704.47609
BUCK_2	616	74.12964	2,413	1.09493	538	245.31575	616	74.12964	2,414	1.07790	538	245.31575	538	1,464.27405
BUCK_3	616	80.88409	2,413	1.09248	538	216.87589	616	80.88409	2,414	1.07574	538	216.87589	538	1,258.58302
KILN1_V1	616	38.39118	2,413	1.14130	538	622.32990	616	38.39118	2,414	1.14140	538	622.32990	538	2,384.41360
KILN1_V2	616	40.15751	2,413	1.14155	538	521.48490	616	40.15751	2,414	1.14126	538	521.48490	538	2,009.12579
KILN2_V1	616	40.47395	2,413	1.13955	538	412.38107	616	40.47395	2,414	1.14042	538	412.38107	538	1,589.76948
KILN2_V2	616	42.29842	2,413	1.13980	538	358.00842	616	42.29842	2,414	1.14072	538	358.00842	538	1,386.96511
KILN3_V1	616	33.54532	2,413	1.04923	538	310.46508	616	33.54532	2,414	1.04641	538	310.46508	538	1,487.57005
KILN3_V2	616	34.30708	2,413	1.04947	538	289.82476	616	34.30708	2,414	1.04667	538	289.82476	538	1,368.83194
KILN3_V3	616	35.08763	2,413	1.04963	538	270.83703	616	35.08763	2,414	1.04693	538	270.83703	538	1,260.70027
KILN4_V1	616	31.29591	2,413	1.04581	538	388.38395	616	31.29591	2,414	1.04366	538	388.38395	538	1,941.83745
KILN4_V2	616	32.00298	2,413	1.04715	538	361.03908	616	32.00298	2,414	1.04469	538	361.03908	538	1,784.30860
KILN4_V3	616	32.72909	2,413	1.04839	538	335.74705	616	32.72909	2,414	1.04569	538	335.74705	538	1,634.99293

Notes

ug/m³/[g/s] = micrograms per cubic meter per grams per second.

References

(1) Exposure location represents the following receptor ID coordinates in the unit emission rate dispersion model with the highest predicted cancer or noncancer risk:

Receptor ID	UTM X (m)	UTM Y (m)
616	482,151.19	4,964,769.00
538	482,076.19	4,964,994.00
2,413	481,340.78	4,965,255.00
2,414	481,340.78	4,965,304.50

(2) Dispersion factor obtained from unit emission rate modeling representative of the facility and proposed expansion.

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
BLR_ESP											
Cumulative TEU Risk			--	--	0.45	--	--	6.9E-04	--	--	1.1E-04
Dispersion Factor (ug/m ³ /[g/s])			0.84			0.048			5.7E-03		
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	1.7E-04	1.5E-04	--	(4)	8.4E-06	--	(4)	9.8E-07	--	(4)
1,2-Dichloropropane (Propylene dichloride)	78-87-5	5.0E-05	4.2E-05	--	(4)	2.4E-06	--	(4)	2.9E-07	--	(4)
2,4,6-Trichlorophenol	88-06-2	6.0E-07	5.0E-07	0.050	1.0E-05	2.9E-08	1.30	2.2E-08	3.4E-09	0.60	5.7E-09
2,4-Dinitrotoluene	121-14-2	2.8E-06	2.4E-06	0.011	2.1E-04	1.4E-07	0.29	4.7E-07	1.6E-08	0.13	1.2E-07
2-Butanone (Methyl ethyl ketone)	78-93-3	2.1E-05	1.7E-05	--	(4)	1.0E-06	--	(4)	1.2E-07	--	(4)
Acetaldehyde	75-07-0	8.5E-04	7.1E-04	0.45	1.6E-03	4.1E-05	12.0	3.4E-06	4.8E-06	5.50	8.7E-07
Acetone	67-64-1	1.6E-03	1.3E-03	--	(4)	7.7E-05	--	(4)	9.0E-06	--	(4)
Acrolein	107-02-8	7.8E-04	6.5E-04	--	(4)	3.8E-05	--	(4)	4.4E-06	--	(4)
Benzene	71-43-2	2.9E-03	2.5E-03	0.13	0.019	1.4E-04	3.30	4.3E-05	1.7E-05	1.50	1.1E-05
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	1.4E-07	1.2E-07	0.080	1.5E-06	6.7E-09	11.0	6.1E-10	7.9E-10	5.00	1.6E-10
Bromomethane (Methyl bromide)	74-83-9	3.4E-05	2.8E-05	--	(4)	1.6E-06	--	(4)	1.9E-07	--	(4)
Carbon tetrachloride	56-23-5	3.0E-05	2.5E-05	0.17	1.5E-04	1.4E-06	4.30	3.3E-07	1.7E-07	2.00	8.4E-08
Chlorine	7782-50-5	2.4E-03	2.0E-03	--	(4)	1.1E-04	--	(4)	1.3E-05	--	(4)
Chlorobenzene	108-90-7	5.0E-05	4.2E-05	--	(4)	2.4E-06	--	(4)	2.8E-07	--	(4)
Chloroform	67-66-3	6.0E-05	5.0E-05	--	(4)	2.9E-06	--	(4)	3.4E-07	--	(4)
Chloromethane (Methyl chloride)	74-87-3	1.3E-04	1.1E-04	--	(4)	6.3E-06	--	(4)	7.4E-07	--	(4)
Cyanide, hydrogen	74-90-8	6.1E-05	5.1E-05	--	(4)	3.0E-06	--	(4)	3.5E-07	--	(4)
Dichloromethane (Methylene chloride)	75-09-2	1.2E-03	1.0E-03	59.0	1.7E-05	5.8E-05	620	9.3E-08	6.8E-06	1,200	5.6E-09
Ethylbenzene	100-41-4	3.7E-05	3.1E-05	0.40	7.7E-05	1.8E-06	10.0	1.8E-07	2.1E-07	4.80	4.3E-08
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	8.8E-05	7.3E-05	0.038	1.9E-03	4.2E-06	1.00	4.2E-06	5.0E-07	0.46	1.1E-06
Formaldehyde	50-00-0	3.1E-03	2.6E-03	0.17	0.015	1.5E-04	4.30	3.5E-05	1.8E-05	2.00	8.9E-06
Hexane	110-54-3	8.6E-04	7.2E-04	--	(4)	4.2E-05	--	(4)	4.9E-06	--	(4)
Hydrochloric Acid	7647-01-0	0.066	0.055	--	(4)	3.2E-03	--	(4)	3.7E-04	--	(4)
Hydrogen Fluoride	7664-39-3	2.7E-04	2.3E-04	--	(4)	1.3E-05	--	(4)	1.5E-06	--	(4)
Isopropyl alcohol	67-63-0	0.014	0.011	--	(4)	6.6E-04	--	(4)	7.7E-05	--	(4)
Isopropylbenzene (Cumene)	98-82-8	5.3E-05	4.4E-05	--	(4)	2.6E-06	--	(4)	3.0E-07	--	(4)
Methanol	67-56-1	2.2E-03	1.8E-03	--	(4)	1.1E-04	--	(4)	1.2E-05	--	(4)

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
BLR_ESP (Continued)											
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	1.3E-03	1.1E-03	--	(4)	6.5E-05	--	(4)	7.6E-06	--	(4)
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	8.4E-04	7.0E-04	0.091	7.7E-03	4.0E-05	2.40	1.7E-05	4.7E-06	1.10	4.3E-06
Pentachlorophenol	87-86-5	6.4E-07	5.4E-07	0.20	2.7E-06	3.1E-08	5.10	6.1E-09	3.6E-09	2.40	1.5E-09
Phenol	108-95-2	4.8E-04	4.0E-04	--	(4)	2.3E-05	--	(4)	2.7E-06	--	(4)
Polychlorinated biphenyls (PCBs)	1336-36-3	2.4E-08	2.0E-08	5.3E-04	3.7E-05	1.1E-09	0.020	5.7E-08	1.3E-10	9.2E-03	1.4E-08
Propionaldehyde	123-38-6	9.3E-04	7.8E-04	--	(4)	4.5E-05	--	(4)	5.3E-06	--	(4)
Styrene	100-42-5	1.4E-03	1.2E-03	--	(4)	6.8E-05	--	(4)	8.0E-06	--	(4)
Tetrachloroethene (perchloroethylene)	127-18-4	7.4E-05	6.2E-05	3.80	1.6E-05	3.6E-06	100.0	3.6E-08	4.2E-07	46.0	9.1E-09
Toluene	108-88-3	3.4E-05	2.9E-05	--	(4)	1.7E-06	--	(4)	1.9E-07	--	(4)
Trichloroethene (TCE, Trichloroethylene)	79-01-6	6.0E-05	5.0E-05	0.20	2.5E-04	2.9E-06	3.50	8.2E-07	3.4E-07	2.90	1.2E-07
Vinyl Chloride	75-01-4	5.5E-05	4.6E-05	0.11	4.2E-04	2.7E-06	0.22	1.2E-05	3.1E-07	2.70	1.2E-07
Xylene (mixed isomers)	1330-20-7	1.6E-05	1.3E-05	--	(4)	7.6E-07	--	(4)	8.9E-08	--	(4)
Benz[a]anthracene	56-55-3	2.4E-07	2.0E-07	2.1E-04	9.7E-04	1.2E-08	7.8E-03	1.5E-06	1.4E-09	0.015	9.2E-08
Benzo[a]pyrene	50-32-8	6.7E-06	5.6E-06	4.3E-05	0.13	3.2E-07	1.6E-03	2.0E-04	3.8E-08	3.0E-03	1.3E-05
Benzo[b]fluoranthene	205-99-2	4.3E-07	3.6E-07	5.3E-05	6.7E-03	2.1E-08	2.0E-03	1.0E-05	2.4E-09	3.8E-03	6.3E-07
Benzo[g,h,i]perylene	191-24-2	4.5E-07	3.8E-07	4.7E-03	8.1E-05	2.2E-08	0.17	1.3E-07	2.6E-09	0.34	7.5E-09
Benzo[j]fluoranthene	205-82-3	4.7E-07	3.9E-07	1.4E-04	2.8E-03	2.3E-08	5.2E-03	4.3E-06	2.6E-09	0.010	2.6E-07
Benzo[k]fluoranthene	207-08-9	1.6E-07	1.3E-07	1.4E-03	9.3E-05	7.5E-09	0.052	1.4E-07	8.8E-10	0.10	8.8E-09
Chrysene	218-01-9	2.4E-07	2.0E-07	4.3E-04	4.6E-04	1.1E-08	0.016	7.2E-07	1.3E-09	0.030	4.5E-08
Fluoranthene	206-44-0	5.0E-06	4.2E-06	5.3E-04	7.9E-03	2.4E-07	0.020	1.2E-05	2.8E-08	0.038	7.5E-07
Indeno[1,2,3-cd]pyrene	193-39-5	3.1E-07	2.6E-07	6.1E-04	4.2E-04	1.5E-08	0.022	6.7E-07	1.7E-09	0.043	4.0E-08
Naphthalene	91-20-3	3.0E-04	2.5E-04	0.029	8.6E-03	1.4E-05	0.76	1.9E-05	1.7E-06	0.35	4.8E-06
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	2.9E-12	2.4E-12	1.0E-09	2.4E-03	1.4E-13	9.0E-08	1.5E-06	1.6E-14	4.2E-08	3.9E-07
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	4.0E-12	3.3E-12	1.0E-09	3.3E-03	1.9E-13	9.0E-08	2.1E-06	2.3E-14	4.2E-08	5.4E-07
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	2.6E-12	2.2E-12	1.0E-08	2.2E-04	1.3E-13	9.0E-07	1.4E-07	1.5E-14	4.2E-07	3.5E-08
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	6.3E-12	5.2E-12	1.0E-08	5.2E-04	3.0E-13	9.0E-07	3.4E-07	3.5E-14	4.2E-07	8.4E-08
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	6.6E-12	5.5E-12	1.0E-08	5.5E-04	3.2E-13	9.0E-07	3.6E-07	3.8E-14	4.2E-07	8.9E-08
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	2.9E-11	2.4E-11	1.0E-07	2.4E-04	1.4E-12	9.0E-06	1.6E-07	1.7E-13	4.2E-06	3.9E-08
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	7.4E-11	6.2E-11	3.4E-06	1.8E-05	3.6E-12	3.0E-04	1.2E-08	4.2E-13	1.4E-04	3.0E-09

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
BLR_ESP (Continued)											
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	2.4E-11	2.0E-11	1.0E-08	2.0E-03	1.2E-12	9.0E-07	1.3E-06	1.4E-13	4.2E-07	3.2E-07
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	1.2E-11	1.0E-11	3.4E-08	2.9E-04	5.8E-13	3.0E-06	1.9E-07	6.8E-14	1.4E-06	4.8E-08
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	1.8E-11	1.5E-11	3.4E-09	4.5E-03	8.8E-13	3.0E-07	2.9E-06	1.0E-13	1.4E-07	7.4E-07
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	1.1E-11	8.9E-12	1.0E-08	8.9E-04	5.2E-13	9.0E-07	5.7E-07	6.0E-14	4.2E-07	1.4E-07
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	9.5E-12	7.9E-12	1.0E-08	7.9E-04	4.6E-13	9.0E-07	5.1E-07	5.4E-14	4.2E-07	1.3E-07
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	2.0E-12	1.7E-12	1.0E-08	1.7E-04	9.7E-14	9.0E-07	1.1E-07	1.1E-14	4.2E-07	2.7E-08
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	8.0E-12	6.7E-12	1.0E-08	6.7E-04	3.9E-13	9.0E-07	4.3E-07	4.5E-14	4.2E-07	1.1E-07
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	1.7E-11	1.4E-11	1.0E-07	1.4E-04	8.3E-13	9.0E-06	9.2E-08	9.7E-14	4.2E-06	2.3E-08
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	2.4E-12	2.0E-12	1.0E-07	2.0E-05	1.2E-13	9.0E-06	1.3E-08	1.4E-14	4.2E-06	3.2E-09
Octachlorodibenzofuran (OCDF)	39001-02-0	1.5E-11	1.3E-11	3.4E-06	3.7E-06	7.2E-13	3.0E-04	2.4E-09	8.5E-14	1.4E-04	6.1E-10
Antimony	7440-36-0	9.7E-07	8.1E-07	--	(4)	4.7E-08	--	(4)	5.5E-09	--	(4)
Arsenic	7440-38-2	5.8E-06	4.9E-06	2.4E-05	0.20	2.8E-07	1.3E-03	2.2E-04	3.3E-08	6.2E-04	5.3E-05
Beryllium	7440-41-7	8.8E-08	7.3E-08	4.2E-04	1.7E-04	4.2E-09	0.011	3.8E-07	5.0E-10	5.0E-03	9.9E-08
Cadmium	7440-43-9	1.1E-06	8.9E-07	5.6E-04	1.6E-03	5.1E-08	0.014	3.7E-06	6.0E-09	6.7E-03	9.0E-07
Chromium VI	18540-29-9	9.5E-07	7.9E-07	3.1E-05	0.026	4.6E-08	5.2E-04	8.8E-05	5.4E-09	1.0E-03	5.4E-06
Cobalt	7440-48-4	1.5E-06	1.3E-06	--	(4)	7.3E-08	--	(4)	8.6E-09	--	(4)
Copper	7440-50-8	1.3E-05	1.1E-05	--	(4)	6.3E-07	--	(4)	7.3E-08	--	(4)
Lead	7439-92-1	1.6E-05	1.4E-05	--	(4)	7.8E-07	--	(4)	9.1E-08	--	(4)
Manganese	7439-96-5	3.2E-04	2.7E-04	--	(4)	1.6E-05	--	(4)	1.8E-06	--	(4)
Mercury	7439-97-6	3.2E-06	2.7E-06	--	(4)	1.5E-07	--	(4)	1.8E-08	--	(4)
Nickel	365	8.6E-06	7.2E-06	3.8E-03	1.9E-03	4.2E-07	0.10	4.2E-06	4.9E-08	0.046	1.1E-06
Selenium	7782-49-2	4.8E-06	4.0E-06	--	(4)	2.3E-07	--	(4)	2.7E-08	--	(4)
Vanadium	7440-62-2	1.8E-06	1.5E-06	--	(4)	8.6E-08	--	(4)	1.0E-08	--	(4)

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
KILN1_V1											
Cumulative TEU Risk			--	--	0.56	--	--	6.3E-04	--	--	0.75
Dispersion Factor (ug/m ³ /[g/s])			38.4			1.14			622		
Acetaldehyde	75-07-0	6.3E-03	0.24	0.45	0.53	7.1E-03	12.0	5.9E-04	3.89	5.50	0.71
Acrolein	107-02-8	1.0E-04	3.8E-03	--	(4)	1.1E-04	--	(4)	0.062	--	(4)
Formaldehyde	50-00-0	1.3E-04	5.1E-03	0.17	0.030	1.5E-04	4.30	3.5E-05	0.082	2.00	0.041
Methanol	67-56-1	6.4E-03	0.25	--	(4)	7.3E-03	--	(4)	3.99	--	(4)
Propionaldehyde	123-38-6	7.0E-05	2.7E-03	--	(4)	8.0E-05	--	(4)	0.043	--	(4)
KILN1_V2											
Cumulative TEU Risk			--	--	0.59	--	--	6.3E-04	--	--	0.63
Dispersion Factor (ug/m ³ /[g/s])			40.2			1.14			521		
Acetaldehyde	75-07-0	6.3E-03	0.25	0.45	0.56	7.1E-03	12.0	5.9E-04	3.26	5.50	0.59
Acrolein	107-02-8	1.0E-04	4.0E-03	--	(4)	1.1E-04	--	(4)	0.052	--	(4)
Formaldehyde	50-00-0	1.3E-04	5.3E-03	0.17	0.031	1.5E-04	4.30	3.5E-05	0.069	2.00	0.034
Methanol	67-56-1	6.4E-03	0.26	--	(4)	7.3E-03	--	(4)	3.34	--	(4)
Propionaldehyde	123-38-6	7.0E-05	2.8E-03	--	(4)	8.0E-05	--	(4)	0.036	--	(4)
KILN2_V1											
Cumulative TEU Risk			--	--	0.89	--	--	9.4E-04	--	--	0.74
Dispersion Factor (ug/m ³ /[g/s])			40.5			1.14			412		
Acetaldehyde	75-07-0	9.4E-03	0.38	0.45	0.84	0.011	12.0	8.9E-04	3.87	5.50	0.70
Acrolein	107-02-8	1.5E-04	6.1E-03	--	(4)	1.7E-04	--	(4)	0.062	--	(4)
Formaldehyde	50-00-0	2.0E-04	8.0E-03	0.17	0.047	2.3E-04	4.30	5.2E-05	0.082	2.00	0.041
Methanol	67-56-1	9.6E-03	0.39	--	(4)	0.011	--	(4)	3.97	--	(4)
Propionaldehyde	123-38-6	1.0E-04	4.2E-03	--	(4)	1.2E-04	--	(4)	0.043	--	(4)

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
KILN2_V2											
Cumulative TEU Risk			--	--	0.93	--	--	9.4E-04	--	--	0.65
Dispersion Factor (ug/m ³ /[g/s])			42.3			1.14			358		
Acetaldehyde	75-07-0	9.4E-03	0.40	0.45	0.88	0.011	12.0	8.9E-04	3.36	5.50	0.61
Acrolein	107-02-8	1.5E-04	6.4E-03	--	(4)	1.7E-04	--	(4)	0.054	--	(4)
Formaldehyde	50-00-0	2.0E-04	8.4E-03	0.17	0.049	2.3E-04	4.30	5.3E-05	0.071	2.00	0.035
Methanol	67-56-1	9.6E-03	0.41	--	(4)	0.011	--	(4)	3.44	--	(4)
Propionaldehyde	123-38-6	1.0E-04	4.4E-03	--	(4)	1.2E-04	--	(4)	0.037	--	(4)
KILN3_V1											
Cumulative TEU Risk			--	--	0.55	--	--	6.4E-04	--	--	0.41
Dispersion Factor (ug/m ³ /[g/s])			33.5			1.05			310		
Acetaldehyde	75-07-0	6.9E-03	0.23	0.45	0.52	7.3E-03	12.0	6.1E-04	2.16	5.50	0.39
Acrolein	107-02-8	1.1E-04	3.7E-03	--	(4)	1.2E-04	--	(4)	0.035	--	(4)
Formaldehyde	50-00-0	1.5E-04	4.9E-03	0.17	0.029	1.5E-04	4.30	3.6E-05	0.046	2.00	0.023
Methanol	67-56-1	7.1E-03	0.24	--	(4)	7.5E-03	--	(4)	2.21	--	(4)
Propionaldehyde	123-38-6	7.8E-05	2.6E-03	--	(4)	8.1E-05	--	(4)	0.024	--	(4)
KILN3_V2											
Cumulative TEU Risk			--	--	0.56	--	--	6.4E-04	--	--	0.39
Dispersion Factor (ug/m ³ /[g/s])			34.3			1.05			290		
Acetaldehyde	75-07-0	6.9E-03	0.24	0.45	0.53	7.3E-03	12.0	6.1E-04	2.01	5.50	0.37
Acrolein	107-02-8	1.1E-04	3.8E-03	--	(4)	1.2E-04	--	(4)	0.032	--	(4)
Formaldehyde	50-00-0	1.5E-04	5.0E-03	0.17	0.030	1.5E-04	4.30	3.6E-05	0.043	2.00	0.021
Methanol	67-56-1	7.1E-03	0.24	--	(4)	7.5E-03	--	(4)	2.07	--	(4)
Propionaldehyde	123-38-6	7.8E-05	2.7E-03	--	(4)	8.1E-05	--	(4)	0.022	--	(4)

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in- 10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
KILN3_V3											
Cumulative TEU Risk			--	--	0.57	--	--	6.4E-04	--	--	0.36
Dispersion Factor (ug/m ³ /[g/s])			35.1			1.05			271		
Acetaldehyde	75-07-0	6.9E-03	0.24	0.45	0.54	7.3E-03	12.0	6.1E-04	1.88	5.50	0.34
Acrolein	107-02-8	1.1E-04	3.9E-03	--	(4)	1.2E-04	--	(4)	0.030	--	(4)
Formaldehyde	50-00-0	1.5E-04	5.1E-03	0.17	0.030	1.5E-04	4.30	3.6E-05	0.040	2.00	0.020
Methanol	67-56-1	7.1E-03	0.25	--	(4)	7.5E-03	--	(4)	1.93	--	(4)
Propionaldehyde	123-38-6	7.8E-05	2.7E-03	--	(4)	8.1E-05	--	(4)	0.021	--	(4)
KILN4_V1											
Cumulative TEU Risk			--	--	0.51	--	--	6.4E-04	--	--	0.52
Dispersion Factor (ug/m ³ /[g/s])			31.3			1.05			388		
Acetaldehyde	75-07-0	6.9E-03	0.22	0.45	0.48	7.3E-03	12.0	6.1E-04	2.70	5.50	0.49
Acrolein	107-02-8	1.1E-04	3.5E-03	--	(4)	1.2E-04	--	(4)	0.043	--	(4)
Formaldehyde	50-00-0	1.5E-04	4.6E-03	0.17	0.027	1.5E-04	4.30	3.6E-05	0.057	2.00	0.028
Methanol	67-56-1	7.1E-03	0.22	--	(4)	7.5E-03	--	(4)	2.77	--	(4)
Propionaldehyde	123-38-6	7.8E-05	2.4E-03	--	(4)	8.1E-05	--	(4)	0.030	--	(4)
KILN4_V2											
Cumulative TEU Risk			--	--	0.52	--	--	6.4E-04	--	--	0.48
Dispersion Factor (ug/m ³ /[g/s])			32.0			1.05			361		
Acetaldehyde	75-07-0	6.9E-03	0.22	0.45	0.49	7.3E-03	12.0	6.1E-04	2.51	5.50	0.46
Acrolein	107-02-8	1.1E-04	3.6E-03	--	(4)	1.2E-04	--	(4)	0.040	--	(4)
Formaldehyde	50-00-0	1.5E-04	4.7E-03	0.17	0.028	1.5E-04	4.30	3.6E-05	0.053	2.00	0.026
Methanol	67-56-1	7.1E-03	0.23	--	(4)	7.5E-03	--	(4)	2.57	--	(4)
Propionaldehyde	123-38-6	7.8E-05	2.5E-03	--	(4)	8.1E-05	--	(4)	0.028	--	(4)

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
KILN4_V3											
Cumulative TEU Risk			--	--	0.53	--	--	6.4E-04	--	--	0.45
Dispersion Factor (ug/m ³ /[g/s])			32.7			1.05			336		
Acetaldehyde	75-07-0	6.9E-03	0.23	0.45	0.51	7.3E-03	12.0	6.1E-04	2.33	5.50	0.42
Acrolein	107-02-8	1.1E-04	3.6E-03	--	(4)	1.2E-04	--	(4)	0.037	--	(4)
Formaldehyde	50-00-0	1.5E-04	4.8E-03	0.17	0.028	1.5E-04	4.30	3.6E-05	0.049	2.00	0.025
Methanol	67-56-1	7.1E-03	0.23	--	(4)	7.5E-03	--	(4)	2.39	--	(4)
Propionaldehyde	123-38-6	7.8E-05	2.5E-03	--	(4)	8.1E-05	--	(4)	0.026	--	(4)
BUCK_1											
Cumulative TEU Risk			--	--	0.064	--	--	4.0E-05	--	--	0.022
Dispersion Factor (ug/m ³ /[g/s])			68.1			1.10			279		
Acetaldehyde	75-07-0	2.3E-04	0.015	0.45	0.034	2.5E-04	12.0	2.1E-05	0.063	5.50	0.012
Formaldehyde	50,000	7.4E-05	5.0E-03	0.17	0.030	8.1E-05	4.30	1.9E-05	0.021	2.00	0.010
Acetone	67-64-1	4.7E-04	0.032	--	(4)	5.1E-04	--	(4)	0.13	--	(4)
Methanol	67-56-1	3.0E-03	0.20	--	(4)	3.2E-03	--	(4)	0.83	--	(4)
BUCK_2											
Cumulative TEU Risk			--	--	0.070	--	--	3.9E-05	--	--	0.019
Dispersion Factor (ug/m ³ /[g/s])			74.1			1.09			245		
Acetaldehyde	75-07-0	2.3E-04	0.017	0.45	0.037	2.5E-04	12.0	2.1E-05	0.056	5.50	0.010
Formaldehyde	50-00-0	7.4E-05	5.5E-03	0.17	0.032	8.1E-05	4.30	1.9E-05	0.018	2.00	9.1E-03
Acetone	67-64-1	4.7E-04	0.035	--	(4)	5.1E-04	--	(4)	0.11	--	(4)
Methanol	67-56-1	3.0E-03	0.22	--	(4)	3.2E-03	--	(4)	0.73	--	(4)

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Table 6-3
L3RA Results for Significant TEUs—Cancer Assessment
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	TAC Emission Rate ⁽¹⁾ (g/s)	Predicted Cancer Risk								
			Residential			Nonresidential Child			Nonresidential Worker		
			Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽²⁾ (ug/m ³)	Predicted Risk ^(b) (chances-in-10 ⁶)
Exposure Location ⁽³⁾			616			2,413			538		
Cumulative Facility-Wide Risk			--	--	6.9	--	--	7.8E-03	--	--	5.4
BUCK_3											
Cumulative TEU Risk			--	--	0.076	--	--	3.9E-05	--	--	0.017
Dispersion Factor (ug/m ³ /[g/s])			80.9			1.09			217		
Acetaldehyde	75-07-0	2.3E-04	0.018	0.45	0.041	2.5E-04	12.0	2.1E-05	0.049	5.50	8.9E-03
Formaldehyde	50-00-0	7.4E-05	6.0E-03	0.17	0.035	8.1E-05	4.30	1.9E-05	0.016	2.00	8.0E-03
Acetone	67-64-1	4.7E-04	0.038	--	(4)	5.1E-04	--	(4)	0.10	--	(4)
Methanol	67-56-1	3.0E-03	0.24	--	(4)	3.2E-03	--	(4)	0.64	--	(4)

Notes

g/s = grams per second; RBC = risk-based concentration; TEU = toxic emission unit; TAC = toxic air contaminant; ug/m³/[g/s] = micrograms per cubic meter per grams per second.

(a) Calculated concentration (ug/m³) = (dispersion factor [ug/m³/[g/s]]) × (TAC emission rate per TEU [g/s])

(b) Predicted risk (chances-in-1,000,000) = (calculated concentration [ug/m³]) / (risk-based concentration [ug/m³])

References

(1) See Table 3-2, Annual TAC Emission Rates—RBC Only (g/s).

(2) Oregon Administrative Rule 340-245-8010, Table 2.

(3) See Table 6-1, Maximum Predicted Risk Exposure Location per TEU.

(4) TAC does not have an established RBC for this exposure category per Oregon Administrative Rule 340-245-8010, Table 2.

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Table 6-4
L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
BLR_ESP															
Cumulative TEU Risk				--	--	0.055	--	--	4.6E-04	--	--	5.4E-05	--	--	4.0E-03
Dispersion Factor (ug/m ³ /[g/s])				0.84			0.049			5.7E-03			0.48		
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	1.7E-04	1.8E-04	1.5E-04	5,000	2.9E-08	8.5E-06	22,000	3.8E-10	9.8E-07	22,000	4.5E-11	8.7E-05	11,000	7.9E-09
1,2-Dichloropropane (Propylene dichloride)	78-87-5	5.0E-05	5.2E-05	4.2E-05	4.00	1.1E-05	2.5E-06	18.0	1.4E-07	2.9E-07	18.0	1.6E-08	2.5E-05	230	1.1E-07
2,4,6-Trichlorophenol	88-06-2	6.0E-07	6.2E-07	5.0E-07	--	(5)	2.9E-08	--	(5)	3.4E-09	--	(5)	3.0E-07	--	(5)
2,4-Dinitrotoluene	121-14-2	2.8E-06	2.9E-06	2.4E-06	--	(5)	1.4E-07	--	(5)	1.6E-08	--	(5)	1.4E-06	--	(5)
2-Butanone (Methyl ethyl ketone)	78-93-3	2.1E-05	2.2E-05	1.7E-05	5,000	3.5E-09	1.0E-06	22,000	4.6E-11	1.2E-07	22,000	5.4E-12	1.0E-05	5,000	2.1E-09
Acetaldehyde	75-07-0	8.5E-04	8.8E-04	7.1E-04	140	5.1E-06	4.1E-05	620	6.7E-08	4.8E-06	620	7.7E-09	4.2E-04	470	9.0E-07
Acetone	67-64-1	1.6E-03	1.6E-03	1.3E-03	31,000	4.3E-08	7.7E-05	140,000	5.5E-10	9.0E-06	140,000	6.4E-11	7.9E-04	62,000	1.3E-08
Acrolein	107-02-8	7.8E-04	8.1E-04	6.5E-04	0.35	1.9E-03	3.8E-05	1.50	2.5E-05	4.4E-06	1.50	2.9E-06	3.9E-04	6.90	5.6E-05
Benzene	71-43-2	2.9E-03	3.1E-03	2.5E-03	3.00	8.2E-04	1.4E-04	13.0	1.1E-05	1.7E-05	13.0	1.3E-06	1.5E-03	29.0	5.1E-05
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	1.4E-07	1.4E-07	1.2E-07	--	(5)	6.8E-09	--	(5)	7.9E-10	--	(5)	7.0E-08	--	(5)
Bromomethane (Methyl bromide)	74-83-9	3.4E-05	3.5E-05	2.8E-05	5.00	5.7E-06	1.7E-06	22.0	7.5E-08	1.9E-07	22.0	8.7E-09	1.7E-05	3,900	4.3E-09
Carbon tetrachloride	56-23-5	3.0E-05	3.1E-05	2.5E-05	100.0	2.5E-07	1.4E-06	440	3.3E-09	1.7E-07	440	3.8E-10	1.5E-05	1,900	7.8E-09
Chlorine	7782-50-5	2.4E-03	2.5E-03	2.0E-03	0.15	0.013	1.2E-04	0.66	1.8E-04	1.3E-05	0.66	2.0E-05	1.2E-03	170	7.0E-06
Chlorobenzene	108-90-7	5.0E-05	5.2E-05	4.2E-05	50.0	8.3E-07	2.4E-06	220	1.1E-08	2.8E-07	220	1.3E-09	2.5E-05	--	(5)
Chloroform	67-66-3	6.0E-05	6.3E-05	5.0E-05	300	1.7E-07	2.9E-06	1,300	2.3E-09	3.4E-07	1,300	2.6E-10	3.0E-05	490	6.2E-08
Chloromethane (Methyl chloride)	74-87-3	1.3E-04	1.4E-04	1.1E-04	90.0	1.2E-06	6.4E-06	400	1.6E-08	7.4E-07	400	1.8E-09	6.5E-05	1,000	6.5E-08
Cyanide, hydrogen	74-90-8	6.1E-05	6.4E-05	5.1E-05	0.80	6.4E-05	3.0E-06	3.50	8.6E-07	3.5E-07	3.50	9.9E-08	3.1E-05	340	9.0E-08
Dichloromethane (Methylene chloride)	75-09-2	1.2E-03	1.2E-03	1.0E-03	600	1.7E-06	5.8E-05	2,600	2.2E-08	6.8E-06	2,600	2.6E-09	6.0E-04	2,100	2.8E-07
Ethylbenzene	100-41-4	3.7E-05	3.8E-05	3.1E-05	260	1.2E-07	1.8E-06	1,100	1.6E-09	2.1E-07	1,100	1.9E-10	1.8E-05	22,000	8.3E-10
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	8.8E-05	9.1E-05	7.3E-05	7.00	1.0E-05	4.3E-06	31.0	1.4E-07	5.0E-07	31.0	1.6E-08	4.4E-05	--	(5)
Formaldehyde	50-00-0	3.1E-03	3.3E-03	2.6E-03	9.00	2.9E-04	1.5E-04	40.0	3.8E-06	1.8E-05	40.0	4.5E-07	1.6E-03	49.0	3.2E-05
Hexane	110-54-3	8.6E-04	9.0E-04	7.2E-04	700	1.0E-06	4.2E-05	3,100	1.4E-08	4.9E-06	3,100	1.6E-09	4.3E-04	--	(5)
Hydrochloric Acid	7647-01-0	0.066	0.069	0.055	20.0	2.8E-03	3.2E-03	88.0	3.7E-05	3.7E-04	88.0	4.2E-06	0.033	2,100	1.6E-05
Hydrogen Fluoride	7664-39-3	2.7E-04	2.8E-04	2.3E-04	2.10	1.1E-04	1.3E-05	19.0	7.0E-07	1.5E-06	19.0	8.1E-08	1.4E-04	16.0	8.5E-06
Isopropyl alcohol	67-63-0	0.014	0.014	0.011	200	5.7E-05	6.6E-04	880	7.5E-07	7.7E-05	880	8.7E-08	6.8E-03	3,200	2.1E-06
Isopropylbenzene (Cumene)	98-82-8	5.3E-05	5.5E-05	4.4E-05	400	1.1E-07	2.6E-06	1,800	1.4E-09	3.0E-07	1,800	1.7E-10	2.7E-05	--	(5)
Methanol	67-56-1	2.2E-03	2.3E-03	1.8E-03	4,000	4.6E-07	1.1E-04	18,000	6.0E-09	1.2E-05	18,000	6.9E-10	1.1E-03	28,000	3.9E-08

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Table 6-4
L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
BLR_ESP (Continued)															
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	1.3E-03	1.4E-03	1.1E-03	3,000	3.7E-07	6.5E-05	13,000	5.0E-09	7.6E-06	13,000	5.8E-10	6.7E-04	--	(5)
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	8.4E-04	8.7E-04	7.0E-04	60.0	1.2E-05	4.1E-05	260	1.6E-07	4.7E-06	260	1.8E-08	4.2E-04	12,000	3.5E-08
Pentachlorophenol	87-86-5	6.4E-07	6.7E-07	5.4E-07	--	(5)	3.1E-08	--	(5)	3.6E-09	--	(5)	3.2E-07	--	(5)
Phenol	108-95-2	4.8E-04	5.0E-04	4.0E-04	200	2.0E-06	2.3E-05	880	2.7E-08	2.7E-06	880	3.1E-09	2.4E-04	5,800	4.1E-08
Polychlorinated biphenyls (PCBs)	1336-36-3	2.4E-08	2.4E-08	2.0E-08	--	(5)	1.1E-09	--	(5)	1.3E-10	--	(5)	1.2E-08	--	(5)
Propionaldehyde	123-38-6	9.3E-04	9.7E-04	7.8E-04	8.00	9.8E-05	4.6E-05	35.0	1.3E-06	5.3E-06	35.0	1.5E-07	4.7E-04	--	(5)
Styrene	100-42-5	1.4E-03	1.5E-03	1.2E-03	1,000	1.2E-06	6.9E-05	4,400	1.6E-08	8.0E-06	4,400	1.8E-09	7.0E-04	21,000	3.3E-08
Tetrachloroethene (perchloroethylene)	127-18-4	7.4E-05	7.7E-05	6.2E-05	41.0	1.5E-06	3.6E-06	180	2.0E-08	4.2E-07	180	2.3E-09	3.7E-05	41.0	9.0E-07
Toluene	108-88-3	3.4E-05	3.6E-05	2.9E-05	5,000	5.7E-09	1.7E-06	22,000	7.6E-11	1.9E-07	22,000	8.8E-12	1.7E-05	7,500	2.3E-09
Trichloroethene (TCE, Trichloroethylene)	79-01-6	6.0E-05	6.2E-05	5.0E-05	2.10	2.4E-05	2.9E-06	9.20	3.2E-07	3.4E-07	9.20	3.7E-08	3.0E-05	2.10	1.4E-05
Vinyl Chloride	75-01-4	5.5E-05	5.7E-05	4.6E-05	100.0	4.6E-07	2.7E-06	440	6.1E-09	3.1E-07	440	7.1E-10	2.8E-05	1,300	2.1E-08
Xylene (mixed isomers)	1330-20-7	1.6E-05	1.6E-05	1.3E-05	220	6.0E-08	7.6E-07	970	7.9E-10	8.9E-08	970	9.1E-11	7.8E-06	8,700	9.0E-10
Benz[a]anthracene	56-55-3	2.4E-07	2.5E-07	2.0E-07	--	(5)	1.2E-08	--	(5)	1.4E-09	--	(5)	1.2E-07	--	(5)
Benzo[a]pyrene	50-32-8	6.7E-06	6.9E-06	5.6E-06	2.0E-03	2.8E-03	3.2E-07	8.8E-03	3.7E-05	3.8E-08	8.8E-03	4.3E-06	3.3E-06	2.0E-03	1.7E-03
Benzo[b]fluoranthene	205-99-2	4.3E-07	4.4E-07	3.6E-07	--	(5)	2.1E-08	--	(5)	2.4E-09	--	(5)	2.1E-07	--	(5)
Benzo[g,h,i]perylene	191-24-2	4.5E-07	4.7E-07	3.8E-07	--	(5)	2.2E-08	--	(5)	2.6E-09	--	(5)	2.3E-07	--	(5)
Benzo[j]fluoranthene	205-82-3	4.7E-07	4.9E-07	3.9E-07	--	(5)	2.3E-08	--	(5)	2.6E-09	--	(5)	2.3E-07	--	(5)
Benzo[k]fluoranthene	207-08-9	1.6E-07	1.6E-07	1.3E-07	--	(5)	7.6E-09	--	(5)	8.8E-10	--	(5)	7.8E-08	--	(5)
Chrysene	218-01-9	2.4E-07	2.5E-07	2.0E-07	--	(5)	1.2E-08	--	(5)	1.3E-09	--	(5)	1.2E-07	--	(5)
Fluoranthene	206-44-0	5.0E-06	5.2E-06	4.2E-06	--	(5)	2.4E-07	--	(5)	2.8E-08	--	(5)	2.5E-06	--	(5)
Indeno[1,2,3-cd]pyrene	193-39-5	3.1E-07	3.2E-07	2.6E-07	--	(5)	1.5E-08	--	(5)	1.7E-09	--	(5)	1.5E-07	--	(5)
Naphthalene	91-20-3	3.0E-04	3.1E-04	2.5E-04	3.70	6.8E-05	1.5E-05	16.0	9.1E-07	1.7E-06	16.0	1.1E-07	1.5E-04	200	7.5E-07
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	2.9E-12	3.0E-12	2.4E-12	1.3E-07	1.8E-05	1.4E-13	2.6E-05	5.4E-09	1.6E-14	2.6E-05	6.2E-10	1.4E-12	--	(5)
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	4.0E-12	4.1E-12	3.3E-12	1.3E-07	2.6E-05	1.9E-13	2.6E-05	7.5E-09	2.3E-14	2.6E-05	8.7E-10	2.0E-12	--	(5)
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	2.6E-12	2.7E-12	2.2E-12	1.3E-06	1.7E-06	1.3E-13	2.6E-04	4.9E-10	1.5E-14	2.6E-04	5.7E-11	1.3E-12	--	(5)
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	6.3E-12	6.5E-12	5.2E-12	1.3E-06	4.0E-06	3.1E-13	2.6E-04	1.2E-09	3.5E-14	2.6E-04	1.4E-10	3.1E-12	--	(5)
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	6.6E-12	6.9E-12	5.5E-12	1.3E-06	4.3E-06	3.2E-13	2.6E-04	1.2E-09	3.8E-14	2.6E-04	1.4E-10	3.3E-12	--	(5)
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	2.9E-11	3.0E-11	2.4E-11	1.3E-05	1.9E-06	1.4E-12	2.6E-03	5.5E-10	1.7E-13	2.6E-03	6.4E-11	1.5E-11	--	(5)
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	7.4E-11	7.7E-11	6.2E-11	4.2E-04	1.5E-07	3.6E-12	0.085	4.2E-11	4.2E-13	0.085	4.9E-12	3.7E-11	--	(5)

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Table 6-4
L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
BLR_ESP (Continued)															
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	2.4E-11	2.5E-11	2.0E-11	1.3E-06	1.6E-05	1.2E-12	2.6E-04	4.5E-09	1.4E-13	2.6E-04	5.2E-10	1.2E-11	--	(5)
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	1.2E-11	1.2E-11	1.0E-11	4.2E-06	2.4E-06	5.8E-13	8.5E-04	6.9E-10	6.8E-14	8.5E-04	8.0E-11	6.0E-12	--	(5)
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	1.8E-11	1.9E-11	1.5E-11	4.2E-07	3.6E-05	8.9E-13	8.5E-05	1.0E-08	1.0E-13	8.5E-05	1.2E-09	9.1E-12	--	(5)
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	1.1E-11	1.1E-11	8.9E-12	1.3E-06	6.9E-06	5.2E-13	2.6E-04	2.0E-09	6.0E-14	2.6E-04	2.3E-10	5.3E-12	--	(5)
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	9.5E-12	9.9E-12	7.9E-12	1.3E-06	6.1E-06	4.6E-13	2.6E-04	1.8E-09	5.4E-14	2.6E-04	2.1E-10	4.7E-12	--	(5)
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	2.0E-12	2.1E-12	1.7E-12	1.3E-06	1.3E-06	9.8E-14	2.6E-04	3.8E-10	1.1E-14	2.6E-04	4.4E-11	1.0E-12	--	(5)
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	8.0E-12	8.3E-12	6.7E-12	1.3E-06	5.1E-06	3.9E-13	2.6E-04	1.5E-09	4.5E-14	2.6E-04	1.7E-10	4.0E-12	--	(5)
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	1.7E-11	1.8E-11	1.4E-11	1.3E-05	1.1E-06	8.4E-13	2.6E-03	3.2E-10	9.7E-14	2.6E-03	3.7E-11	8.6E-12	--	(5)
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	2.4E-12	2.5E-12	2.0E-12	1.3E-05	1.5E-07	1.2E-13	2.6E-03	4.5E-11	1.4E-14	2.6E-03	5.2E-12	1.2E-12	--	(5)
Octachlorodibenzofuran (OCDF)	39001-02-0	1.5E-11	1.6E-11	1.3E-11	4.2E-04	3.0E-08	7.3E-13	0.085	8.6E-12	8.5E-14	0.085	1.0E-12	7.5E-12	--	(5)
Antimony	7440-36-0	9.7E-07	2.4E-06	8.1E-07	0.30	2.7E-06	4.8E-08	1.30	3.7E-08	5.5E-09	1.30	4.2E-09	1.2E-06	1.00	1.2E-06
Arsenic	7440-38-2	5.8E-06	9.4E-06	4.9E-06	1.7E-04	0.029	2.8E-07	2.4E-03	1.2E-04	3.3E-08	2.4E-03	1.4E-05	4.5E-06	0.20	2.2E-05
Beryllium	7440-41-7	8.8E-08	1.4E-07	7.3E-08	7.0E-03	1.0E-05	4.3E-09	0.031	1.4E-07	5.0E-10	0.031	1.6E-08	6.9E-08	0.020	3.5E-06
Cadmium	7440-43-9	1.1E-06	3.4E-06	8.9E-07	5.0E-03	1.8E-04	5.2E-08	0.037	1.4E-06	6.0E-09	0.037	1.6E-07	1.7E-06	0.030	5.5E-05
Chromium VI	18540-29-9	9.5E-07	4.3E-06	7.9E-07	0.083	9.6E-06	4.6E-08	0.88	5.3E-08	5.4E-09	0.88	6.1E-09	2.1E-06	0.30	6.9E-06
Cobalt	7440-48-4	1.5E-06	2.2E-06	1.3E-06	0.10	1.3E-05	7.4E-08	0.44	1.7E-07	8.6E-09	0.44	1.9E-08	1.0E-06	--	(5)
Copper	7440-50-8	1.3E-05	5.3E-05	1.1E-05	--	(5)	6.3E-07	--	(5)	7.3E-08	--	(5)	2.5E-05	100.0	2.5E-07
Lead	7439-92-1	1.6E-05	3.0E-05	1.4E-05	0.15	9.0E-05	7.9E-07	0.66	1.2E-06	9.1E-08	0.66	1.4E-07	1.4E-05	0.15	9.5E-05
Manganese	7439-96-5	3.2E-04	1.2E-03	2.7E-04	0.090	3.0E-03	1.6E-05	0.40	3.9E-05	1.8E-06	0.40	4.6E-06	5.8E-04	0.30	1.9E-03
Mercury	7439-97-6	3.2E-06	3.7E-06	2.7E-06	0.077	3.5E-05	1.6E-07	0.63	2.5E-07	1.8E-08	0.63	2.9E-08	1.8E-06	0.60	2.9E-06
Nickel	365	8.6E-06	1.4E-05	7.2E-06	0.014	5.1E-04	4.2E-07	0.062	6.8E-06	4.9E-08	0.062	7.9E-07	6.8E-06	0.20	3.4E-05
Selenium	7782-49-2	4.8E-06	4.6E-06	4.0E-06	--	(5)	2.4E-07	--	(5)	2.7E-08	--	(5)	2.2E-06	2.00	1.1E-06
Vanadium	7440-62-2	1.8E-06	2.1E-06	1.5E-06	0.10	1.5E-05	8.7E-08	0.44	2.0E-07	1.0E-08	0.44	2.3E-08	9.9E-07	0.80	1.2E-06
KILN1_V1															
Cumulative TEU Risk				--	--	0.014	--	--	9.4E-05	--	--	0.051	--	--	0.076
Dispersion Factor (ug/m ³ /[g/s])				38.4			1.14			622			2,384		
Acetaldehyde	75-07-0	6.3E-03	6.5E-03	0.24	140	1.7E-03	7.1E-03	620	1.2E-05	3.89	620	6.3E-03	15.5	470	0.033
Acrolein	107-02-8	1.0E-04	1.0E-04	3.8E-03	0.35	0.011	1.1E-04	1.50	7.6E-05	0.062	1.50	0.042	0.25	6.90	0.036
Formaldehyde	50-00-0	1.3E-04	1.4E-04	5.1E-03	9.00	5.6E-04	1.5E-04	40.0	3.8E-06	0.082	40.0	2.1E-03	0.33	49.0	6.7E-03
Methanol	67-56-1	6.4E-03	6.7E-03	0.25	4,000	6.2E-05	7.3E-03	18,000	4.1E-07	3.99	18,000	2.2E-04	15.9	28,000	5.7E-04
Propionaldehyde	123-38-6	7.0E-05	7.3E-05	2.7E-03	8.00	3.4E-04	8.0E-05	35.0	2.3E-06	0.043	35.0	1.2E-03	0.17	--	(5)

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Table 6-4
L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
KILN1_V2															
Cumulative TEU Risk				--	--	0.014	--	--	9.4E-05	--	--	0.043	--	--	0.064
Dispersion Factor (ug/m ³ /[g/s])				40.2			1.14			521			2,009		
Acetaldehyde	75-07-0	6.3E-03	6.5E-03	0.25	140	1.8E-03	7.1E-03	620	1.2E-05	3.26	620	5.3E-03	13.1	470	0.028
Acrolein	107-02-8	1.0E-04	1.0E-04	4.0E-03	0.35	0.011	1.1E-04	1.50	7.6E-05	0.052	1.50	0.035	0.21	6.90	0.030
Formaldehyde	50-00-0	1.3E-04	1.4E-04	5.3E-03	9.00	5.9E-04	1.5E-04	40.0	3.8E-06	0.069	40.0	1.7E-03	0.28	49.0	5.6E-03
Methanol	67-56-1	6.4E-03	6.7E-03	0.26	4,000	6.4E-05	7.3E-03	18,000	4.1E-07	3.34	18,000	1.9E-04	13.4	28,000	4.8E-04
Propionaldehyde	123-38-6	7.0E-05	7.3E-05	2.8E-03	8.00	3.5E-04	8.0E-05	35.0	2.3E-06	0.036	35.0	1.0E-03	0.15	--	(5)
KILN2_V1															
Cumulative TEU Risk				--	--	0.022	--	--	1.4E-04	--	--	0.051	--	--	0.076
Dispersion Factor (ug/m ³ /[g/s])				40.5			1.14			412			1,590		
Acetaldehyde	75-07-0	9.4E-03	9.8E-03	0.38	140	2.7E-03	0.011	620	1.7E-05	3.87	620	6.2E-03	15.5	470	0.033
Acrolein	107-02-8	1.5E-04	1.6E-04	6.1E-03	0.35	0.017	1.7E-04	1.50	1.1E-04	0.062	1.50	0.041	0.25	6.90	0.036
Formaldehyde	50-00-0	2.0E-04	2.1E-04	8.0E-03	9.00	8.9E-04	2.3E-04	40.0	5.6E-06	0.082	40.0	2.0E-03	0.33	49.0	6.7E-03
Methanol	67-56-1	9.6E-03	0.010	0.39	4,000	9.7E-05	0.011	18,000	6.1E-07	3.97	18,000	2.2E-04	15.9	28,000	5.7E-04
Propionaldehyde	123-38-6	1.0E-04	1.1E-04	4.2E-03	8.00	5.3E-04	1.2E-04	35.0	3.4E-06	0.043	35.0	1.2E-03	0.17	--	(5)
KILN2_V2															
Cumulative TEU Risk				--	--	0.023	--	--	1.4E-04	--	--	0.044	--	--	0.067
Dispersion Factor (ug/m ³ /[g/s])				42.3			1.14			358			1,387		
Acetaldehyde	75-07-0	9.4E-03	9.8E-03	0.40	140	2.8E-03	0.011	620	1.7E-05	3.36	620	5.4E-03	13.5	470	0.029
Acrolein	107-02-8	1.5E-04	1.6E-04	6.4E-03	0.35	0.018	1.7E-04	1.50	1.1E-04	0.054	1.50	0.036	0.22	6.90	0.031
Formaldehyde	50-00-0	2.0E-04	2.1E-04	8.4E-03	9.00	9.3E-04	2.3E-04	40.0	5.6E-06	0.071	40.0	1.8E-03	0.29	49.0	5.8E-03
Methanol	67-56-1	9.6E-03	0.010	0.41	4,000	1.0E-04	0.011	18,000	6.1E-07	3.44	18,000	1.9E-04	13.9	28,000	5.0E-04
Propionaldehyde	123-38-6	1.0E-04	1.1E-04	4.4E-03	8.00	5.5E-04	1.2E-04	35.0	3.4E-06	0.037	35.0	1.1E-03	0.15	--	(5)
KILN3_V1															
Cumulative TEU Risk				--	--	0.013	--	--	9.6E-05	--	--	0.028	--	--	0.053
Dispersion Factor (ug/m ³ /[g/s])				33.5			1.05			310			1,488		
Acetaldehyde	75-07-0	6.9E-03	7.2E-03	0.23	140	1.7E-03	7.3E-03	620	1.2E-05	2.16	620	3.5E-03	10.7	470	0.023
Acrolein	107-02-8	1.1E-04	1.2E-04	3.7E-03	0.35	0.011	1.2E-04	1.50	7.8E-05	0.035	1.50	0.023	0.17	6.90	0.025
Formaldehyde	50-00-0	1.5E-04	1.5E-04	4.9E-03	9.00	5.5E-04	1.5E-04	40.0	3.8E-06	0.046	40.0	1.1E-03	0.23	49.0	4.6E-03
Methanol	67-56-1	7.1E-03	7.4E-03	0.24	4,000	6.0E-05	7.5E-03	18,000	4.1E-07	2.21	18,000	1.2E-04	11.0	28,000	3.9E-04
Propionaldehyde	123-38-6	7.8E-05	8.1E-05	2.6E-03	8.00	3.3E-04	8.1E-05	35.0	2.3E-06	0.024	35.0	6.9E-04	0.12	--	(5)

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Table 6-4
L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
KILN3_V2															
Cumulative TEU Risk				--	--	0.014	--	--	9.6E-05	--	--	0.027	--	--	0.049
Dispersion Factor (ug/m ³ /[g/s])				34.3			1.05			290			1,369		
Acetaldehyde	75-07-0	6.9E-03	7.2E-03	0.24	140	1.7E-03	7.3E-03	620	1.2E-05	2.01	620	3.2E-03	9.89	470	0.021
Acrolein	107-02-8	1.1E-04	1.2E-04	3.8E-03	0.35	0.011	1.2E-04	1.50	7.8E-05	0.032	1.50	0.022	0.16	6.90	0.023
Formaldehyde	50-00-0	1.5E-04	1.5E-04	5.0E-03	9.00	5.6E-04	1.5E-04	40.0	3.8E-06	0.043	40.0	1.1E-03	0.21	49.0	4.3E-03
Methanol	67-56-1	7.1E-03	7.4E-03	0.24	4,000	6.1E-05	7.5E-03	18,000	4.1E-07	2.07	18,000	1.1E-04	10.1	28,000	3.6E-04
Propionaldehyde	123-38-6	7.8E-05	8.1E-05	2.7E-03	8.00	3.3E-04	8.1E-05	35.0	2.3E-06	0.022	35.0	6.4E-04	0.11	--	(5)
KILN3_V3															
Cumulative TEU Risk				--	--	0.014	--	--	9.6E-05	--	--	0.025	--	--	0.045
Dispersion Factor (ug/m ³ /[g/s])				35.1			1.05			271			1,261		
Acetaldehyde	75-07-0	6.9E-03	7.2E-03	0.24	140	1.7E-03	7.3E-03	620	1.2E-05	1.88	620	3.0E-03	9.11	470	0.019
Acrolein	107-02-8	1.1E-04	1.2E-04	3.9E-03	0.35	0.011	1.2E-04	1.50	7.8E-05	0.030	1.50	0.020	0.15	6.90	0.021
Formaldehyde	50-00-0	1.5E-04	1.5E-04	5.1E-03	9.00	5.7E-04	1.5E-04	40.0	3.8E-06	0.040	40.0	9.9E-04	0.19	49.0	3.9E-03
Methanol	67-56-1	7.1E-03	7.4E-03	0.25	4,000	6.3E-05	7.5E-03	18,000	4.1E-07	1.93	18,000	1.1E-04	9.34	28,000	3.3E-04
Propionaldehyde	123-38-6	7.8E-05	8.1E-05	2.7E-03	8.00	3.4E-04	8.1E-05	35.0	2.3E-06	0.021	35.0	6.0E-04	0.10	--	(5)
KILN4_V1															
Cumulative TEU Risk				--	--	0.012	--	--	9.6E-05	--	--	0.036	--	--	0.069
Dispersion Factor (ug/m ³ /[g/s])				31.3			1.04			388			1,942		
Acetaldehyde	75-07-0	6.9E-03	7.2E-03	0.22	140	1.6E-03	7.2E-03	620	1.2E-05	2.70	620	4.4E-03	14.0	470	0.030
Acrolein	107-02-8	1.1E-04	1.2E-04	3.5E-03	0.35	1.0E-02	1.2E-04	1.50	7.7E-05	0.043	1.50	0.029	0.22	6.90	0.033
Formaldehyde	50-00-0	1.5E-04	1.5E-04	4.6E-03	9.00	5.1E-04	1.5E-04	40.0	3.8E-06	0.057	40.0	1.4E-03	0.30	49.0	6.0E-03
Methanol	67-56-1	7.1E-03	7.4E-03	0.22	4,000	5.6E-05	7.4E-03	18,000	4.1E-07	2.77	18,000	1.5E-04	14.4	28,000	5.1E-04
Propionaldehyde	123-38-6	7.8E-05	8.1E-05	2.4E-03	8.00	3.0E-04	8.1E-05	35.0	2.3E-06	0.030	35.0	8.6E-04	0.16	--	(5)
KILN4_V2															
Cumulative TEU Risk				--	--	0.013	--	--	9.6E-05	--	--	0.033	--	--	0.063
Dispersion Factor (ug/m ³ /[g/s])				32.0			1.04			361			1,784		
Acetaldehyde	75-07-0	6.9E-03	7.2E-03	0.22	140	1.6E-03	7.3E-03	620	1.2E-05	2.51	620	4.0E-03	12.9	470	0.027
Acrolein	107-02-8	1.1E-04	1.2E-04	3.6E-03	0.35	0.010	1.2E-04	1.50	7.8E-05	0.040	1.50	0.027	0.21	6.90	0.030
Formaldehyde	50-00-0	1.5E-04	1.5E-04	4.7E-03	9.00	5.2E-04	1.5E-04	40.0	3.8E-06	0.053	40.0	1.3E-03	0.27	49.0	5.6E-03
Methanol	67-56-1	7.1E-03	7.4E-03	0.23	4,000	5.7E-05	7.4E-03	18,000	4.1E-07	2.57	18,000	1.4E-04	13.2	28,000	4.7E-04
Propionaldehyde	123-38-6	7.8E-05	8.1E-05	2.5E-03	8.00	3.1E-04	8.1E-05	35.0	2.3E-06	0.028	35.0	8.0E-04	0.14	--	(5)

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Table 6-4
L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
KILN4_V3															
Cumulative TEU Risk				--	--	0.013	--	--	9.6E-05	--	--	0.031	--	--	0.058
Dispersion Factor (ug/m ³ /[g/s])				32.7			1.05			336			1,635		
Acetaldehyde	75-07-0	6.9E-03	7.2E-03	0.23	140	1.6E-03	7.3E-03	620	1.2E-05	2.33	620	3.8E-03	11.8	470	0.025
Acrolein	107-02-8	1.1E-04	1.2E-04	3.6E-03	0.35	0.010	1.2E-04	1.50	7.8E-05	0.037	1.50	0.025	0.19	6.90	0.027
Formaldehyde	50-00-0	1.5E-04	1.5E-04	4.8E-03	9.00	5.3E-04	1.5E-04	40.0	3.8E-06	0.049	40.0	1.2E-03	0.25	49.0	5.1E-03
Methanol	67-56-1	7.1E-03	7.4E-03	0.23	4,000	5.8E-05	7.5E-03	18,000	4.1E-07	2.39	18,000	1.3E-04	12.1	28,000	4.3E-04
Propionaldehyde	123-38-6	7.8E-05	8.1E-05	2.5E-03	8.00	3.2E-04	8.1E-05	35.0	2.3E-06	0.026	35.0	7.4E-04	0.13	--	(5)
BUCK_1															
Cumulative TEU Risk				--	--	7.2E-04	--	--	2.6E-06	--	--	6.6E-04	--	--	3.7E-03
Dispersion Factor (ug/m ³ /[g/s])				68.1			1.08			279			1,704		
Acetaldehyde	75-07-0	2.3E-04	2.4E-04	0.015	140	1.1E-04	2.4E-04	620	3.9E-07	0.063	620	1.0E-04	0.40	470	8.5E-04
Formaldehyde	50-00-0	7.4E-05	7.7E-05	5.0E-03	9.00	5.6E-04	8.0E-05	40.0	2.0E-06	0.021	40.0	5.2E-04	0.13	49.0	2.7E-03
Acetone	67-64-1	4.7E-04	4.9E-04	0.032	31,000	1.0E-06	5.1E-04	140,000	3.6E-09	0.13	140,000	9.3E-07	0.83	62,000	1.3E-05
Methanol	67-56-1	3.0E-03	3.1E-03	0.20	4,000	5.0E-05	3.2E-03	18,000	1.8E-07	0.83	18,000	4.6E-05	5.24	28,000	1.9E-04
BUCK_2															
Cumulative TEU Risk				--	--	7.8E-04	--	--	2.6E-06	--	--	5.8E-04	--	--	3.2E-03
Dispersion Factor (ug/m ³ /[g/s])				74.1			1.08			245			1,464		
Acetaldehyde	75-07-0	2.3E-04	2.4E-04	0.017	140	1.2E-04	2.4E-04	620	3.9E-07	0.056	620	9.0E-05	0.35	470	7.3E-04
Formaldehyde	50-00-0	7.4E-05	7.7E-05	5.5E-03	9.00	6.1E-04	8.0E-05	40.0	2.0E-06	0.018	40.0	4.5E-04	0.11	49.0	2.3E-03
Acetone	67-64-1	4.7E-04	4.9E-04	0.035	31,000	1.1E-06	5.0E-04	140,000	3.6E-09	0.11	140,000	8.2E-07	0.71	62,000	1.1E-05
Methanol	67-56-1	3.0E-03	3.1E-03	0.22	4,000	5.5E-05	3.2E-03	18,000	1.8E-07	0.73	18,000	4.0E-05	4.50	28,000	1.6E-04

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L3RA Results for Significant TEUs—Chronic and Acute Noncancer Assessments
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Annual TAC Emission Rate ⁽¹⁾ (g/s)	Daily TAC Emission Rate ⁽²⁾ (g/s)	Chronic Noncancer									Acute Noncancer		
				Residential			Nonresidential Child			Nonresidential Worker					
				Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(a) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)	Calculated Conc. ^(c) (ug/m ³)	RBC ⁽³⁾ (ug/m ³)	Predicted Hazard Index ^(b)
Exposure Location ⁽⁴⁾				616			2,414			538			538		
Cumulative Facility-Wide Hazard Index				--	--	0.2	--	--	1.5E-03	--	--	0.4	--	--	0.6
BUCK_3															
Cumulative TEU Risk				--	--	8.6E-04	--	--	2.6E-06	--	--	5.2E-04	--	--	2.8E-03
Dispersion Factor (ug/m ³ /[g/s])				80.9			1.08			217			1,259		
Acetaldehyde	75-07-0	2.3E-04	2.4E-04	0.018	140	1.3E-04	2.4E-04	620	3.9E-07	0.049	620	7.9E-05	0.30	470	6.3E-04
Formaldehyde	50-00-0	7.4E-05	7.7E-05	6.0E-03	9.00	6.6E-04	7.9E-05	40.0	2.0E-06	0.016	40.0	4.0E-04	0.097	49.0	2.0E-03
Acetone	67-64-1	4.7E-04	4.9E-04	0.038	31,000	1.2E-06	5.0E-04	140,000	3.6E-09	0.10	140,000	7.2E-07	0.61	62,000	9.9E-06
Methanol	67-56-1	3.0E-03	3.1E-03	0.24	4,000	6.0E-05	3.2E-03	18,000	1.8E-07	0.64	18,000	3.6E-05	3.87	28,000	1.4E-04

Notes

g/s = grams per second; RBC = risk-based concentration; TEU = toxic emission unit; TAC = toxic air contaminant; ug/m³/[g/s] = micrograms per cubic meter per grams per second.

(a) Calculated concentration (ug/m³) = (dispersion factor [ug/m³/{g/s}]) x (annual TAC emission rate per TEU [g/s])

(b) Predicted hazard index = (calculated concentration [ug/m³]) / (risk-based concentration [ug/m³])

(c) Calculated concentration (ug/m³) = (dispersion factor [ug/m³/{g/s}]) x (daily TAC emission rate per TEU [g/s])

- References**
- (1) See Table 3-2, Annual TAC Emission Rates—RBC Only (g/s).
- (2) See Table 3-4, Maximum Daily TAC Emission Rates—RBC Only (g/s).
- (3) Oregon Administrative Rule 340-245-8010, Table 2.
- (4) See Table 6-1, Maximum Predicted Risk Exposure Location per TEU.
- (5) TAC does not have an established RBC for this exposure category per Oregon Administrative Rule 340-245-8010, Table 2.

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Table 6-5
List of TACs with No Published Risk-Based Concentrations
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category		
		TAC	HAP	RBC
SPECIATED ORGANIC/INORGANIC COMPOUNDS				
2,4-Dinitrophenol	51-28-5	Yes	Yes	No
2-Chlorophenol	95-57-8	Yes	No	No
4,6-Dinitro-o-cresol (and salts)	534-52-1	Yes	Yes	No
4-nitrophenol	100-02-7	Yes	Yes	No
Acetophenone	98-86-2	Yes	Yes	No
Butyl benzyl phthalate	85-68-7	Yes	No	No
Crotonaldehyde	4170-30-3	Yes	No	No
Diethylphthalate	84-66-2	Yes	No	No
Dibutyl phthalate	84-74-2	Yes	Yes	No
di-n-octylphthalate	518	Yes	No	No
Trichlorofluoromethane (Freon 11)	75-69-4	Yes	No	No
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)				
Acenaphthene	83-32-9	Yes	Yes	No
Acenaphthylene	208-96-8	Yes	Yes	No
Anthracene	120-12-7	Yes	Yes	No
Benzo[e]pyrene	192-97-2	Yes	Yes	No
7,12-Dimethylbenz[a]anthracene	57-97-6	Yes	Yes	No
Fluorene	86-73-7	Yes	Yes	No
3-Methylcholanthrene	56-49-5	Yes	Yes	No
2-Methylnaphthalene	91-57-6	Yes	Yes	No
1-Methylphenanthrene	832-69-9	Yes	No	No
Perylene	198-55-0	Yes	Yes	No
Phenanthrene	85-01-8	Yes	Yes	No
Pyrene	129-00-0	Yes	Yes	No
TRACE METALS				
Barium	7440-39-3	Yes	No	No
Molybdenum Trioxide	1313-27-5	Yes	No	No
Phosphorus and compounds	504	Yes	Yes	No
Silver	7440-22-4	Yes	No	No
Thallium	7440-28-0	Yes	No	No
Zinc	7440-66-6	Yes	No	No

Notes

HAP = hazardous air pollutant; RBC = risk-based concentration; TAC = toxic air contaminant.

Attachment A

Emissions Inventory



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Table 1
Input Process Rates and Parameters
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Proposed or Current EU ID	Production or Process Rate (Units)						Control Efficiency (%)	Species Mix (%)			
		Hourly		Daily		Annual						
FACILITY-WIDE												
Hours of Operation	--	--		24.0	(hrs/day)	(1)	8,424	(hrs/yr)	(a)	--	--	
PROPOSED WOOD-FIRED HURST BOILER												
NORMAL OPERATION												
Maximum Heat Input Capacity	BLR1	24.7	(MMBtu/hr)	(3)	594	(MMBtu/day)	(b)	208,443	(MMBtu/yr)	(c)	--	--
Maximum Hogged Fuel Usage		1.46	(BDT/hr)	(3)	35.0	(BDT/day)	(b)	12,299	(BDT/yr)	(c)	--	--
Proposed ESP Control Efficiency		--			--			--			95.0	(4)
STARTUP/SHUTDOWN (SU/SD)—FOR CAO PURPOSES ONLY												
Estimated SU/SD Hours of Operation	--	--		4.00	(hrs/day)	(3)	56.0	(hrs/yr)	(2)	--	--	
SU/SD Maximum Heat Input Capacity	--	--		99.0	(MMBtu/day)	(b)	1,386	(MMBtu/yr)	(c)	--	--	
Maximum Heat Input Capacity Balance	--	--		495	(MMBtu/day)	(5)	207,058	(MMBtu/yr)	(5)	--	--	
FIREWOOD KILNS												
Existing Kiln no. 1—Maximum Basket Capacity	DK-01	--		36.0	(baskets/charge)	(6)	--				--	--
Existing Kiln no. 2—Maximum Basket Capacity	DK-02	--		54.0	(baskets/charge)	(6)	--				--	--
Existing Kiln no. 3—Maximum Basket Capacity	DK-03	--		60.0	(baskets/charge)	(6)	--				--	--
Proposed Kiln no. 4—Maximum Basket Capacity	DK-04	--		60.0	(baskets/charge)	(7)	--				--	--
Total Number of Baskets per Kiln Charge	--	--		210	(baskets/charge)	(8)	--				--	--
Total Basket Throughput	--	4.38	(baskets/hr)	(d)	105	(baskets/day)	(b)	36,855	(baskets/yr)	(c)	--	--
Total Cord Throughput	--	2.41	(cords/hr)	(e)	57.8	(cords/day)	(b)	20,270	(cords/yr)	(c)	--	--
Total Green Firewood Throughput	--	2.29	(Mbdft/hr)	(f)	54.9	(Mbdft/day)	(b)	19,265	(Mbdft/yr)	(c)	--	--
Douglas Fir Throughput (Softwood)	--	0.91	(Mbdft/hr)	(h)	22.0	(Mbdft/day)	(b)	7,706	(Mbdft/yr)	(c)	--	40.0
Oak Throughput (Hardwood)	--	0.11	(Mbdft/hr)	(h)	2.74	(Mbdft/day)	(b)	963	(Mbdft/yr)	(c)	--	5.00
Maple Throughput (Hardwood)	--	0.11	(Mbdft/hr)	(h)	2.74	(Mbdft/day)	(b)	963	(Mbdft/yr)	(c)	--	5.00
Alder Throughput (Hardwood)	--	1.14	(Mbdft/hr)	(h)	27.4	(Mbdft/day)	(b)	9,632	(Mbdft/yr)	(c)	--	50.0
BACKUP NATURAL GAS BURNERS												
Existing Kiln no. 1—Burner Heat Input	NGB-02	3.50	(MMBtu/hr)	(10)	84.0	(MMBtu/day)	(b)	29,484	(MMBtu/yr)	(c)	--	--
Existing Kiln no. 1—Burner Natural Gas Usage		3.4E-03	(MMscf/hr)	(i)	0.082	(MMscf/day)	(b)	28.7	(MMscf/yr)	(c)	--	--
Existing Kiln no. 2—Burner Heat Input		3.50	(MMBtu/hr)	(10)	84.0	(MMBtu/day)	(b)	29,484	(MMBtu/yr)	(c)	--	--
Existing Kiln no. 2—Burner Natural Gas Usage		3.4E-03	(MMscf/hr)	(i)	0.082	(MMscf/day)	(b)	28.7	(MMscf/yr)	(c)	--	--
Total Combined Burner Heat Input	--	7.00	(MMBtu/hr)	(8)	168	(MMBtu/day)	(8)	58,968	(MMBtu/yr)	(8)	--	--
Total Combined Natural Gas Usage	--	6.8E-03	(MMscf/hr)	(8)	0.16	(MMscf/day)	(8)	57.5	(MMscf/yr)	(8)	--	--
GREEN MATERIAL HANDLING												
Log Bucking Green Wood Throughput	LB	2.29	(Mbdft/hr)	(14)	54.9	(Mbdft/day)	(14)	19,265	(Mbdft/yr)	(14)	--	--
Proposed Haul Truck Hogged Fuel Delivery Drop	--	25.0	(wet tons/hr)	(15)	100.0	(wet tons/day)	(2)	35,100	(wet tons/yr)	(i)	--	--
Proposed Loader Drop to Boiler Feed Hopper	--	1.46	(BDT/hr)	(16)	35.0	(BDT/day)	(16)	12,299	(BDT/yr)	(16)	--	--
Proposed Hogged Fuel Storage Pile Extent	--	3,600	(square feet)	(2)	--		--				--	--

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Table 1
Input Process Rates and Parameters
JB Wood Recyclers, LLC—Monmouth, Oregon

Notes and references found on the following page.

Notes

BDT = bone dry ton; EU = emission units; Mbdft = thousand board feet; MMBtu = million British thermal units; MMscf = million standard cubic feet.

- (a) Annual hours of operation (hrs/yr) = (daily hours of operation [hrs/day]) x (annual days of operation [days/yr])
Annual days of operation (days/yr) = 351 (2)
- (b) Daily production or process rate ("unit"/day) = (maximum hourly production or process rate ["unit"/hr]) x (daily hours of operation [hrs/day])
- (c) Annual production or process rate ("unit"/yr) = (maximum hourly production or process rate ["unit"/hr]) x (annual hours of operation [hrs/yr])
- (d) Maximum hourly basket throughput (baskets/hr) = (maximum number of baskets per charge [baskets/charge]) / (kiln charge duration [hrs/charge])
Kiln charge duration (hrs/charge) = 48.0 (9)
- (e) Maximum hourly cord throughput (cords/hr) = (maximum hourly basket throughput [baskets/hr]) x (number of cords per basket [cords/basket])
Number of cords per basket (cords/basket) = 0.55 (10)
- (f) Maximum hourly kiln wood throughput (Mbdft/hr) = (maximum hourly cord throughput [cords/hr]) x (board feet per cord estimate [bdft/cord]) x (Mbdft/1,000 bdft)
Board feet per cord estimate (bdft/cord) = 950 (g)
- (g) Board feet per cord estimate (bdft/cord) = (average volume of wood in a cord [ft³/cord]) / (cubic feet per standard board footage [ft³/bdft])
Average volume of wood in a cord (ft³/cord) = 79.2 (11)
Cubic feet per standard board foot (ft³/bdft) = 0.083 (12)
- (h) Green firewood throughput (Mbdft/period) = (total green firewood throughput [Mbdft/period]) x (wood species percentage of total green firewood throughput [%] / 100)
- (i) Maximum hourly natural gas usage (MMscf/hr) = (maximum hourly burner heat input [MMBtu/hr]) / (default natural gas high heat content [MMBtu/scf]) / (1,000,000 scf/MMscf)
Default natural gas high heat content (MMBtu/scf) = 1.026E-03 (13)
- (j) Annual production or process rate ("unit"/yr) = (maximum daily production or process rate ["unit"/day]) x (annual days of operation [days/yr])

References

- (1) Assumes continuous daily operation.
- (2) Information provided by JB Wood Recyclers, LLC. Assumes the facility may be shutdown for two weeks per year.
- (3) Information provided by manufacturer. Assumes a cold start may require up to four hours for the boiler to get up to optimal operating temperature. In reality, if the boiler is only shutdown for a brief one or two day period, then the boiler will achieve optimal temperature in less than one hour.
- (4) EPA Air Pollution Control Technology Fact Sheet (EPA-452/F-03-028) for Dry Electrostatic Precipitators. Assumes the average control efficiency for older existing equipment.
- (5) Value represents the difference between the maximum heat input capacity during normal operation minus the heat input capacity during SU/SD. This is being provided to satisfy a request from the Cleaner Air Oregon air toxics permitting program only.
- (6) Information provided by JB Wood Recyclers, LLC. Value represents the maximum number of baskets capable of being loaded into the existing kilns.
- (7) Information provided by JB Wood Recyclers, LLC. The proposed kiln no. 4 will be identical in design and size to existing kiln no. 3.
- (8) Represents the sum total of baskets for each kiln or the backup burner natural gas heat input/usage.
- (9) Information provided by JB Wood Recyclers, LLC. A typical kiln charge lasts for up to 48 hours.
- (10) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See Attachment A, Emission Detail Sheets.
- (11) Chapter 3 of the "Forest Products Measurements and Conversion Factors" published by the Rural Technology Initiative. Value represents the USFS average conversion factor.
- (12) A standard board foot represents a volume 1-foot by 1-foot by 1-inches thick (1-ft x 1-ft x [1/12]-ft).
- (13) Title 40 Code of Federal Regulations Part 98, Table C-1.
- (14) Assumes log bucking will equal the total kiln production.
- (15) Information provided by JB Wood Recyclers, LLC. Assumes a standard haul truck will contain up to 25 wet tons of hogged fuel, and up to four truck deliveries in a single day.
- (16) Assumes the front end loader supply will be equal to the boiler hogged fuel usage rate.

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Table 2
Criteria Pollutant Emissions Estimate Summary
JB Wood Recyclers, LLC—Monmouth, Oregon

Emission Unit	Emission Unit ID	Annual Emission Estimates (tons/yr)							
		PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOC	CO	GHG (CO ₂ e)
Proposed Hogged Fuel Boiler—Normal Operation	BLR1	5.32	5.32	5.32	2.61	22.9	1.77	60.4	21,822
Existing Kilns no. 1-3 (Firewood Drying)	DK-01/02/03	0.26	0.26	0.26	--	--	8.97	--	--
Proposed Kiln no. 4 (Firewood Drying)	DK-04	0.10	0.10	0.10	--	--	3.59	--	--
Log Bucking Equipment	LB	0.42	0.21	0.10	--	--	2.21	--	--
Proposed Hogged Fuel Material Handling	AI	2.0E-03	9.3E-04	1.4E-04	--	--	--	--	--
Proposed Hogged Fuel Storage Pile		3.1E-03	1.6E-03	7.9E-04	--	--	--	--	--
Total Facility Emission Estimates ⁽¹⁾	--	6.11	5.89	5.79	2.61	22.9	16.5	60.4	21,822
REGULATORY APPLICABILITY									
Current PSEL	--	5.4	4.7	4.6	9.1	12	30	14	13,300
Baseline Emission Rate	--	0	0	N/A	0	0	0	0	0
Netting Basis	--	0	0	0	0	0	0	0	0
Significant Emission Rate	--	25	15	10	40	40	40	100	75,000
Proposed PSEL	--	6	6	6	3	23	17	61	21,900
Proposed PSEL Exceeds Current PSEL? (Yes or No)	--	Yes	Yes	Yes	no	Yes	no	Yes	Yes
Proposed PSEL Exceeds SER? (Yes or No)	--	no	no	no	no	no	no	no	no

Notes

N/A = not applicable; PSEL = Plant Site Emission Limit; SER = significant emission rate.

References

- (1) There will be two distinct operating scenarios at the facility. The primary operating scenario will be to combust hogged fuel in the proposed boiler to generate steam to heat each existing and proposed firewood drying kiln. During boiler service interruptions, the backup natural gas burners attached to existing kiln nos. 1-2 will be used as the backup heat source. As a result, kiln nos. 1 and 2 have the capability to run during boiler downtimes. However, kiln nos. 3 and 4 will be inoperable. The maximum (e.g., worst-case) emissions scenario between the primary and backup operating scenarios is being used for permitting purposes.

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Table 3
HAP/TAC Emissions Estimate Summary
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category		Emission Estimates													
				Proposed Hogged Fuel Boiler (Normal Operation Only)		Proposed Firewood Dry Kilns				Existing Firewood Dry Kilns				Log Bucking		Total Facility ⁽¹⁾	
		Softwood				Hardwood		Softwood		Hardwood							
		TAC	HAP	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)
SPECIATED ORGANIC/INORGANIC COMPOUNDS																	
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	0.034	6.0E-03	--	--	--	--	--	--	--	--	--	--	0.034	6.0E-03
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	1.0E-02	1.8E-03	--	--	--	--	--	--	--	--	--	--	1.0E-02	1.8E-03
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	1.2E-04	2.1E-05	--	--	--	--	--	--	--	--	--	--	1.2E-04	2.1E-05
2,4-Dinitrophenol	51-28-5	Yes	Yes	1.1E-04	1.9E-05	--	--	--	--	--	--	--	--	--	--	1.1E-04	1.9E-05
2,4-Dinitrotoluene	121-14-2	Yes	Yes	5.6E-04	9.8E-05	--	--	--	--	--	--	--	--	--	--	5.6E-04	9.8E-05
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	4.1E-03	7.3E-04	--	--	--	--	--	--	--	--	--	--	4.1E-03	7.3E-04
2-Chlorophenol	95-57-8	Yes	No	1.4E-05	2.4E-06	--	--	--	--	--	--	--	--	--	--	1.4E-05	2.4E-06
4,6-Dinitro-o-cresol (and salts)	534-52-1	Yes	Yes	1.2E-03	2.2E-04	--	--	--	--	--	--	--	--	--	--	1.2E-03	2.2E-04
4-nitrophenol	100-02-7	Yes	Yes	6.8E-05	1.2E-05	--	--	--	--	--	--	--	--	--	--	6.8E-05	1.2E-05
Acetaldehyde	75-07-0	Yes	Yes	0.17	0.029	0.27	0.047	3.86	0.68	0.67	0.12	9.64	1.69	0.13	0.024	14.7	2.59
Acetone	67-64-1	Yes	No	0.31	0.055	--	--	--	--	--	--	--	--	0.28	0.049	0.59	0.10
Acetophenone	98-86-2	Yes	Yes	1.1E-03	1.9E-04	--	--	--	--	--	--	--	--	--	--	1.1E-03	1.9E-04
Acrolein	107-02-8	Yes	Yes	0.15	0.027	5.0E-03	8.8E-04	0.061	0.011	0.013	2.2E-03	0.15	0.027	--	--	0.39	0.068
Benzene	71-43-2	Yes	Yes	0.58	0.10	--	--	--	--	--	--	--	--	--	--	0.58	0.10
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	2.8E-05	4.8E-06	--	--	--	--	--	--	--	--	--	--	2.8E-05	4.8E-06
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	6.7E-03	1.2E-03	--	--	--	--	--	--	--	--	--	--	6.7E-03	1.2E-03
Butyl benzyl phthalate	85-68-7	Yes	No	0.016	2.8E-03	--	--	--	--	--	--	--	--	--	--	0.016	2.8E-03
Carbon tetrachloride	56-23-5	Yes	Yes	5.9E-03	1.0E-03	--	--	--	--	--	--	--	--	--	--	5.9E-03	1.0E-03
Chlorine	7782-50-5	Yes	Yes	0.47	0.082	--	--	--	--	--	--	--	--	--	--	0.47	0.082
Chlorobenzene	108-90-7	Yes	Yes	9.9E-03	1.7E-03	--	--	--	--	--	--	--	--	--	--	9.9E-03	1.7E-03
Chloroform	67-66-3	Yes	Yes	0.012	2.1E-03	--	--	--	--	--	--	--	--	--	--	0.012	2.1E-03
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	0.026	4.5E-03	--	--	--	--	--	--	--	--	--	--	0.026	4.5E-03
Crotonaldehyde	4170-30-3	Yes	No	0.027	4.7E-03	--	--	--	--	--	--	--	--	--	--	0.027	4.7E-03
Cyanide, hydrogen	74-90-8	Yes	Yes	0.012	2.1E-03	--	--	--	--	--	--	--	--	--	--	0.012	2.1E-03
Dibutyl phthalate	84-74-2	Yes	Yes	0.020	3.5E-03	--	--	--	--	--	--	--	--	--	--	0.020	3.5E-03
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	0.24	0.041	--	--	--	--	--	--	--	--	--	--	0.24	0.041
Diethylphthalate	84-66-2	Yes	No	0.026	4.5E-03	--	--	--	--	--	--	--	--	--	--	0.026	4.5E-03
di-n-octylphthalate	518	Yes	No	6.5E-05	1.1E-05	--	--	--	--	--	--	--	--	--	--	6.5E-05	1.1E-05
Ethylbenzene	100-41-4	Yes	Yes	7.2E-03	1.3E-03	--	--	--	--	--	--	--	--	--	--	7.2E-03	1.3E-03
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	0.017	3.0E-03	--	--	--	--	--	--	--	--	--	--	0.017	3.0E-03
Formaldehyde	50-00-0	Yes	Yes	0.62	0.11	0.016	2.8E-03	0.072	0.013	0.039	6.9E-03	0.18	0.031	0.044	7.7E-03	0.97	0.17
Hexane	110-54-3	Yes	Yes	0.17	0.030	--	--	--	--	--	--	--	--	--	--	0.17	0.030
Hydrochloric Acid	7647-01-0	Yes	Yes	13.1	2.29	--	--	--	--	--	--	--	--	--	--	13.1	2.29
Hydrogen Fluoride	7664-39-3	Yes	Yes	0.054	9.4E-03	--	--	--	--	--	--	--	--	--	--	0.054	9.4E-03
Isopropyl alcohol	67-63-0	Yes	No	2.68	0.47	--	--	--	--	--	--	--	--	--	--	2.68	0.47
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	0.011	1.8E-03	--	--	--	--	--	--	--	--	--	--	0.011	1.8E-03
Methanol	67-56-1	Yes	Yes	0.43	0.076	0.47	0.083	3.76	0.66	1.18	0.21	9.41	1.65	1.76	0.31	17.0	2.99
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	0.26	0.046	--	--	--	--	--	--	--	--	--	--	0.26	0.046
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	0.17	0.029	--	--	--	--	--	--	--	--	--	--	0.17	0.029

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Table 3
HAP/TAC Emissions Estimate Summary
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category		Emission Estimates													
				Proposed Hoggged Fuel Boiler (Normal Operation Only)		Proposed Firewood Dry Kilns				Existing Firewood Dry Kilns				Log Bucking		Total Facility ⁽¹⁾	
						Softwood		Hardwood		Softwood		Hardwood					
		TAC	HAP	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)
SPECIATED ORGANIC/INORGANIC COMPOUNDS (CONTINUED)																	
Pentachlorophenol	87-86-5	Yes	Yes	1.3E-04	2.2E-05	--	--	--	--	--	--	--	--	--	--	1.3E-04	2.2E-05
Phenol	108-95-2	Yes	Yes	0.095	0.017	--	--	--	--	--	--	--	--	--	--	0.095	0.017
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	4.7E-06	8.2E-07	--	--	--	--	--	--	--	--	--	--	4.7E-06	8.2E-07
Propionaldehyde	123-38-6	Yes	Yes	0.18	0.032	5.6E-03	9.9E-04	0.040	7.1E-03	0.014	2.5E-03	0.10	0.018	--	--	0.35	0.061
Styrene	100-42-5	Yes	Yes	0.28	0.049	--	--	--	--	--	--	--	--	--	--	0.28	0.049
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	0.015	2.6E-03	--	--	--	--	--	--	--	--	--	--	0.015	2.6E-03
Toluene	108-88-3	Yes	Yes	6.8E-03	1.2E-03	--	--	--	--	--	--	--	--	--	--	6.8E-03	1.2E-03
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	0.012	2.1E-03	--	--	--	--	--	--	--	--	--	--	0.012	2.1E-03
Trichlorofluoromethane (Freon 11)	75-69-4	Yes	No	8.3E-03	1.4E-03	--	--	--	--	--	--	--	--	--	--	8.3E-03	1.4E-03
Vinyl Chloride	75-01-4	Yes	Yes	0.011	1.9E-03	--	--	--	--	--	--	--	--	--	--	0.011	1.9E-03
Xylene (mixed isomers)	1330-20-7	Yes	Yes	3.1E-03	5.4E-04	--	--	--	--	--	--	--	--	--	--	3.1E-03	5.4E-04
POLYCYCLIC AROMATIC HYDROCARBONS																	
1-Methylphenanthrene	832-69-9	Yes	No	1.5E-04	2.7E-05	--	--	--	--	--	--	--	--	--	--	1.5E-04	2.7E-05
2-Methyl naphthalene	91-57-6	Yes	Yes	8.3E-04	1.5E-04	--	--	--	--	--	--	--	--	--	--	8.3E-04	1.5E-04
3-Methylcholanthrene	56-49-5	Yes	Yes	5.2E-06	9.0E-07	--	--	--	--	--	--	--	--	--	--	5.2E-06	9.0E-07
7,12-Dimethylbenz[a]anthracene	57-97-6	Yes	Yes	2.7E-06	4.8E-07	--	--	--	--	--	--	--	--	--	--	2.7E-06	4.8E-07
Acenaphthene	83-32-9	Yes	Yes	5.1E-04	8.9E-05	--	--	--	--	--	--	--	--	--	--	5.1E-04	8.9E-05
Acenaphthylene	208-96-8	Yes	Yes	2.8E-03	4.9E-04	--	--	--	--	--	--	--	--	--	--	2.8E-03	4.9E-04
Anthracene	120-12-7	Yes	Yes	1.6E-03	2.8E-04	--	--	--	--	--	--	--	--	--	--	1.6E-03	2.8E-04
Benz[a]anthracene	56-55-3	Yes	Yes	4.8E-05	8.5E-06	--	--	--	--	--	--	--	--	--	--	4.8E-05	8.5E-06
Benzo[a]pyrene	50-32-8	Yes	Yes	1.3E-03	2.3E-04	--	--	--	--	--	--	--	--	--	--	1.3E-03	2.3E-04
Benzo[b]fluoranthene	205-99-2	Yes	Yes	8.4E-05	1.5E-05	--	--	--	--	--	--	--	--	--	--	8.4E-05	1.5E-05
Benzo[e]pyrene	192-97-2	Yes	Yes	1.3E-04	2.2E-05	--	--	--	--	--	--	--	--	--	--	1.3E-04	2.2E-05
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	9.0E-05	1.6E-05	--	--	--	--	--	--	--	--	--	--	9.0E-05	1.6E-05
Benzo[j]fluoranthene	205-82-3	Yes	Yes	9.3E-05	1.6E-05	--	--	--	--	--	--	--	--	--	--	9.3E-05	1.6E-05
Benzo[k]fluoranthene	207-08-9	Yes	Yes	3.1E-05	5.4E-06	--	--	--	--	--	--	--	--	--	--	3.1E-05	5.4E-06
Chrysene	218-01-9	Yes	Yes	4.7E-05	8.2E-06	--	--	--	--	--	--	--	--	--	--	4.7E-05	8.2E-06
Fluoranthene	206-44-0	Yes	Yes	9.9E-04	1.7E-04	--	--	--	--	--	--	--	--	--	--	9.9E-04	1.7E-04
Fluorene	86-73-7	Yes	Yes	1.8E-03	3.1E-04	--	--	--	--	--	--	--	--	--	--	1.8E-03	3.1E-04
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	6.1E-05	1.1E-05	--	--	--	--	--	--	--	--	--	--	6.1E-05	1.1E-05
Naphthalene	91-20-3	Yes	Yes	0.059	0.010	--	--	--	--	--	--	--	--	--	--	0.059	0.010
Perylene	198-55-0	Yes	Yes	1.9E-05	3.3E-06	--	--	--	--	--	--	--	--	--	--	1.9E-05	3.3E-06
Phenanthrene	85-01-8	Yes	Yes	3.8E-03	6.7E-04	--	--	--	--	--	--	--	--	--	--	3.8E-03	6.7E-04
Pyrene	129-00-0	Yes	Yes	2.1E-03	3.7E-04	--	--	--	--	--	--	--	--	--	--	2.1E-03	3.7E-04

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Table 3
HAP/TAC Emissions Estimate Summary
JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category		Emission Estimates													
				Proposed Hogged Fuel Boiler (Normal Operation Only)		Proposed Firewood Dry Kilns				Existing Firewood Dry Kilns				Log Bucking		Total Facility ⁽¹⁾	
						Softwood		Hardwood		Softwood		Hardwood					
		TAC	HAP	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)
DIOXINS AND FURANS																	
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	5.7E-10	9.9E-11	--	--	--	--	--	--	--	--	--	--	5.7E-10	9.9E-11
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	7.9E-10	1.4E-10	--	--	--	--	--	--	--	--	--	--	7.9E-10	1.4E-10
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	5.2E-10	9.1E-11	--	--	--	--	--	--	--	--	--	--	5.2E-10	9.1E-11
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	1.2E-09	2.2E-10	--	--	--	--	--	--	--	--	--	--	1.2E-09	2.2E-10
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	1.3E-09	2.3E-10	--	--	--	--	--	--	--	--	--	--	1.3E-09	2.3E-10
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	5.8E-09	1.0E-09	--	--	--	--	--	--	--	--	--	--	5.8E-09	1.0E-09
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	1.5E-08	2.6E-09	--	--	--	--	--	--	--	--	--	--	1.5E-08	2.6E-09
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	4.8E-09	8.4E-10	--	--	--	--	--	--	--	--	--	--	4.8E-09	8.4E-10
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	2.4E-09	4.2E-10	--	--	--	--	--	--	--	--	--	--	2.4E-09	4.2E-10
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	3.6E-09	6.3E-10	--	--	--	--	--	--	--	--	--	--	3.6E-09	6.3E-10
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	2.1E-09	3.7E-10	--	--	--	--	--	--	--	--	--	--	2.1E-09	3.7E-10
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	1.9E-09	3.3E-10	--	--	--	--	--	--	--	--	--	--	1.9E-09	3.3E-10
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	4.0E-10	7.0E-11	--	--	--	--	--	--	--	--	--	--	4.0E-10	7.0E-11
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	1.6E-09	2.8E-10	--	--	--	--	--	--	--	--	--	--	1.6E-09	2.8E-10
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	3.4E-09	6.0E-10	--	--	--	--	--	--	--	--	--	--	3.4E-09	6.0E-10
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	4.7E-10	8.3E-11	--	--	--	--	--	--	--	--	--	--	4.7E-10	8.3E-11
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	3.0E-09	5.2E-10	--	--	--	--	--	--	--	--	--	--	3.0E-09	5.2E-10

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Table 3
 HAP/TAC Emissions Estimate Summary
 JB Wood Recyclers, LLC—Monmouth, Oregon

Pollutant	CAS	Regulatory Category		Emission Estimates													
				Proposed Hogged Fuel Boiler (Normal Operation Only)		Proposed Firewood Dry Kilns				Existing Firewood Dry Kilns				Log Bucking		Total Facility ⁽¹⁾	
						Softwood		Hardwood		Softwood		Hardwood					
		TAC	HAP	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)	Daily (lb/day)	Annual (tons/yr)
TRACE METALS																	
Antimony and compounds	7440-36-0	Yes	Yes	1.8E-04	3.2E-05	--	--	--	--	--	--	--	--	--	--	1.8E-04	3.2E-05
Arsenic and compounds	7440-38-2	Yes	Yes	1.1E-03	2.0E-04	--	--	--	--	--	--	--	--	--	--	1.1E-03	2.0E-04
Barium and compounds	7440-39-3	Yes	No	0.12	0.022	--	--	--	--	--	--	--	--	--	--	0.12	0.022
Beryllium and compounds	7440-41-7	Yes	Yes	1.7E-05	3.0E-06	--	--	--	--	--	--	--	--	--	--	1.7E-05	3.0E-06
Cadmium and compounds	7440-43-9	Yes	Yes	1.9E-04	3.4E-05	--	--	--	--	--	--	--	--	--	--	1.9E-04	3.4E-05
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	1.6E-04	2.8E-05	--	--	--	--	--	--	--	--	--	--	1.6E-04	2.8E-05
Cobalt and compounds	7440-48-4	Yes	Yes	3.0E-04	5.2E-05	--	--	--	--	--	--	--	--	--	--	3.0E-04	5.2E-05
Copper and compounds	7440-50-8	Yes	No	2.3E-03	4.0E-04	--	--	--	--	--	--	--	--	--	--	2.3E-03	4.0E-04
Lead and compounds	7439-92-1	Yes	Yes	3.1E-03	5.4E-04	--	--	--	--	--	--	--	--	--	--	3.1E-03	5.4E-04
Manganese and compounds	7439-96-5	Yes	Yes	0.057	1.0E-02	--	--	--	--	--	--	--	--	--	--	0.057	1.0E-02
Mercury and compounds	7439-97-6	Yes	Yes	6.3E-04	1.1E-04	--	--	--	--	--	--	--	--	--	--	6.3E-04	1.1E-04
Molybdenum trioxide	1313-27-5	Yes	No	1.8E-03	3.2E-04	--	--	--	--	--	--	--	--	--	--	1.8E-03	3.2E-04
Nickel and compounds	365	Yes	Yes	1.7E-03	2.9E-04	--	--	--	--	--	--	--	--	--	--	1.7E-03	2.9E-04
Phosphorus and compounds	504	Yes	Yes	0.18	0.032	--	--	--	--	--	--	--	--	--	--	0.18	0.032
Selenium and compounds	7782-49-2	Yes	Yes	9.6E-04	1.7E-04	--	--	--	--	--	--	--	--	--	--	9.6E-04	1.7E-04
Silver and compounds	7440-22-4	Yes	No	5.8E-04	1.0E-04	--	--	--	--	--	--	--	--	--	--	5.8E-04	1.0E-04
Thallium and compounds	7440-28-0	Yes	No	1.1E-03	1.9E-04	--	--	--	--	--	--	--	--	--	--	1.1E-03	1.9E-04
Vanadium (fume or dust)	7440-62-2	Yes	No	3.5E-04	6.2E-05	--	--	--	--	--	--	--	--	--	--	3.5E-04	6.2E-05
Zinc and compounds	7440-66-6	Yes	No	0.034	6.0E-03	--	--	--	--	--	--	--	--	--	--	0.034	6.0E-03
Total TAC Emission Estimates				20.7	3.64	0.77	0.13	7.79	1.37	1.92	0.34	19.5	3.42	2.21	0.39	52.9	9.29
Total HAP Emissions Estimate				17.5	3.07	0.77	0.13	7.79	1.37	1.92	0.34	19.5	3.42	1.93	0.34	49.4	8.67
Single Highest HAP (Methanol)				--	--	--	--	--	--	--	--	--	--	--	--	--	2.99

References
 (1) The backup natural gas burners will only be used when the proposed hogged fuel boiler is down for maintenance or service. Therefore, in order to avoid double counting emission estimates, only the proposed hogged fuel boiler emission estimates are included for permitting purposes since it represents the worst-case emissions operating scenario.

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Table 4
Proposed Hogged Fuel Boiler Criteria Pollutant and GHG Emission Estimates—Normal Operation
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	(Units)	Process Rate ⁽¹⁾		
		Maximum Hourly	Maximum Daily	Annual
Hogged Fuel Heat Input	MMBtu	24.7	594	208,443

Pollutant	Emission Factor (lb/MMBtu)	Emission Estimates		
		Maximum Hourly ^(a) (lb/hr)	Maximum Daily ^(b) (lb/day)	Annual ^(c) (tons/yr)
PM	0.051 ⁽²⁾	1.26	30.3	5.32
PM ₁₀	0.051 ⁽³⁾	1.26	30.3	5.32
PM _{2.5}	0.051 ⁽³⁾	1.26	30.3	5.32
NO _x	0.22 ⁽⁴⁾	5.44	131	22.9
CO	0.58 ⁽⁵⁾	14.4	344	60.4
SO ₂	0.025 ⁽⁴⁾	0.62	14.8	2.61
VOC	0.017 ⁽⁶⁾	0.42	10.1	1.77
CO ₂	207 ⁽⁷⁾	5,118	122,827	21,556
CH ₄	0.016 ⁽⁸⁾	0.39	9.43	1.65
N ₂ O	7.9E-03 ⁽⁸⁾	0.20	4.71	0.83
GHG (CO ₂ e)	209 ^(d)	5,181	124,340	21,822

Notes

MMBtu = million British thermal units.

- (a) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/MMBtu]) x (maximum hourly hogged fuel heat input [MMBtu/hr])
- (b) Maximum daily emissions estimate (lb/day) = (emission factor [lb/MMBtu]) x (maximum daily hogged fuel heat input [MMBtu/day])
- (c) Annual emissions estimate (tons/yr) = (emission factor [lb/MMBtu]) x (annual hogged fuel heat input [MMBtu/yr]) / (2,000 lb/ton)
- (d) CO₂e emissions = (CO₂ emission factor [lb/MMBtu]) + (CH₄ emission factor [lb/MMBtu]) x (CH₄ global warming potential) + (N₂O emission factor [lb/MMBtu]) x (N₂O global warming potential)
- CH₄ global warming potential = 28.0 ⁽⁹⁾
- N₂O global warming potential = 265 ⁽⁹⁾

References

- (1) See Table 1, Input Process Rates and Parameters.
- (2) 40 CFR Part 60 Subpart Dc § 60.43c(e)(2)(i).
- (3) Assumes 100% of PM is PM_{2.5}.
- (4) AP-42 Chapter 1.6 (April 2022). See Table 1.6-2.
- (5) Emission factor provided by equipment manufacturer.
- (6) AP-42 Chapter 1.6 (April 2022). See Table 1.6-3.
- (7) 40 CFR Part 98 Subpart C, Table C-1. Value converted from kilograms by multiplying by 2.205 pounds.
- (8) 40 CFR Part 98 Subpart C, Table C-2. Value converted from kilograms by multiplying by 2.205 pounds.
- (9) 40 CFR Part 98 Subpart A, Table A-1, "Global Warming Potentials."

Table 5
Proposed Hogged Fuel Boiler TAC/HAP Emission Estimates—Potential to Emit Scenario
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Regulatory Category		Emission Factor (lb/MMBtu)	Emission Estimates—Normal Operation		
		TAC	HAP		Maximum Hourly ^(a) (lb/hr)	Maximum Daily ^(a) (lb/day)	Annual ^(b) (tons/yr)
SPECIATED ORGANIC/INORGANIC COMPOUNDS							
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	5.8E-05 ⁽¹⁾	1.4E-03	0.034	6.0E-03
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	1.7E-05 ⁽¹⁾	4.2E-04	1.0E-02	1.8E-03
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	2.0E-07 ⁽¹⁾	4.9E-06	1.2E-04	2.1E-05
2,4-Dinitrophenol	51-28-5	Yes	Yes	1.8E-07 ⁽¹⁾	4.5E-06	1.1E-04	1.9E-05
2,4-Dinitrotoluene	121-14-2	Yes	Yes	9.4E-07 ⁽¹⁾	2.3E-05	5.6E-04	9.8E-05
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	7.0E-06 ⁽¹⁾	1.7E-04	4.1E-03	7.3E-04
2-Chlorophenol	95-57-8	Yes	No	2.4E-08 ⁽¹⁾	5.8E-07	1.4E-05	2.4E-06
4,6-Dinitro-o-cresol (and salts)	534-52-1	Yes	Yes	2.1E-06 ⁽¹⁾	5.2E-05	1.2E-03	2.2E-04
4-nitrophenol	100-02-7	Yes	Yes	1.1E-07 ⁽¹⁾	2.8E-06	6.8E-05	1.2E-05
Acetaldehyde	75-07-0	Yes	Yes	2.8E-04 ⁽¹⁾	7.0E-03	0.17	0.029
Acetone	67-64-1	Yes	No	5.3E-04 ⁽¹⁾	0.013	0.31	0.055
Acetophenone	98-86-2	Yes	Yes	1.8E-06 ⁽¹⁾	4.6E-05	1.1E-03	1.9E-04
Acrolein	107-02-8	Yes	Yes	2.6E-04 ⁽¹⁾	6.4E-03	0.15	0.027
Benzene	71-43-2	Yes	Yes	9.8E-04 ⁽¹⁾	0.024	0.58	0.10
Bis(2-ethylhexyl) phthalate (DEHP)	117-81-7	Yes	Yes	4.7E-08 ⁽¹⁾	1.2E-06	2.8E-05	4.8E-06
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	1.1E-05 ⁽¹⁾	2.8E-04	6.7E-03	1.2E-03
Butyl benzyl phthalate	85-68-7	Yes	No	2.7E-05 ⁽¹⁾	6.6E-04	0.016	2.8E-03
Carbon tetrachloride	56-23-5	Yes	Yes	9.9E-06 ⁽¹⁾	2.4E-04	5.9E-03	1.0E-03
Chlorine	7782-50-5	Yes	Yes	7.9E-04 ⁽¹⁾	0.020	0.47	0.082
Chlorobenzene	108-90-7	Yes	Yes	1.7E-05 ⁽¹⁾	4.1E-04	9.9E-03	1.7E-03
Chloroform	67-66-3	Yes	Yes	2.0E-05 ⁽¹⁾	5.0E-04	0.012	2.1E-03
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	4.4E-05 ⁽¹⁾	1.1E-03	0.026	4.5E-03
Crotonaldehyde	4170-30-3	Yes	No	4.5E-05 ⁽¹⁾	1.1E-03	0.027	4.7E-03
Cyanide, hydrogen	74-90-8	Yes	Yes	2.1E-05 ⁽¹⁾	5.1E-04	0.012	2.1E-03
Dibutyl phthalate	84-74-2	Yes	Yes	3.3E-05 ⁽¹⁾	8.2E-04	0.020	3.5E-03
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	4.0E-04 ⁽¹⁾	9.8E-03	0.24	0.041
Diethylphthalate	84-66-2	Yes	No	4.4E-05 ⁽¹⁾	1.1E-03	0.026	4.5E-03
di-n-octylphthalate	518	Yes	No	1.1E-07 ⁽¹⁾	2.7E-06	6.5E-05	1.1E-05
Ethylbenzene	100-41-4	Yes	Yes	1.2E-05 ⁽¹⁾	3.0E-04	7.2E-03	1.3E-03
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	2.9E-05 ⁽¹⁾	7.2E-04	0.017	3.0E-03
Formaldehyde	50-00-0	Yes	Yes	1.1E-03 ⁽¹⁾	0.026	0.62	0.11
Hexane	110-54-3	Yes	Yes	2.9E-04 ⁽¹⁾	7.1E-03	0.17	0.030
Hydrochloric Acid	7647-01-0	Yes	Yes	0.022 ⁽²⁾	0.54	13.1	2.29
Hydrogen Fluoride	7664-39-3	Yes	Yes	9.1E-05 ⁽¹⁾	2.2E-03	0.054	9.4E-03
Isopropyl alcohol	67-63-0	Yes	No	4.5E-03 ⁽¹⁾	0.11	2.68	0.47
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	1.8E-05 ⁽¹⁾	4.4E-04	0.011	1.8E-03
Methanol	67-56-1	Yes	Yes	7.3E-04 ⁽¹⁾	0.018	0.43	0.076
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	4.5E-04 ⁽¹⁾	0.011	0.26	0.046
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	2.8E-04 ⁽¹⁾	6.9E-03	0.17	0.029
Pentachlorophenol	87-86-5	Yes	Yes	2.1E-07 ⁽¹⁾	5.3E-06	1.3E-04	2.2E-05
Phenol	108-95-2	Yes	Yes	1.6E-04 ⁽¹⁾	4.0E-03	0.095	0.017
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	7.9E-09 ⁽¹⁾	1.9E-07	4.7E-06	8.2E-07
Propionaldehyde	123-38-6	Yes	Yes	3.1E-04 ⁽¹⁾	7.7E-03	0.18	0.032
Styrene	100-42-5	Yes	Yes	4.7E-04 ⁽¹⁾	0.012	0.28	0.049
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	2.5E-05 ⁽¹⁾	6.1E-04	0.015	2.6E-03
Toluene	108-88-3	Yes	Yes	1.1E-05 ⁽¹⁾	2.8E-04	6.8E-03	1.2E-03
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	2.0E-05 ⁽¹⁾	4.9E-04	0.012	2.1E-03
Trichlorofluoromethane (Freon 11)	75-69-4	Yes	No	1.4E-05 ⁽¹⁾	3.4E-04	8.3E-03	1.4E-03
Vinyl Chloride	75-01-4	Yes	Yes	1.8E-05 ⁽¹⁾	4.6E-04	0.011	1.9E-03
Xylene (mixed isomers)	1330-20-7	Yes	Yes	5.2E-06 ⁽¹⁾	1.3E-04	3.1E-03	5.4E-04
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)							
1-Methylphenanthrene	832-69-9	Yes	No	2.6E-07 ⁽¹⁾	6.4E-06	1.5E-04	2.7E-05
2-Methyl naphthalene	91-57-6	Yes	Yes	1.4E-06 ⁽¹⁾	3.5E-05	8.3E-04	1.5E-04
3-Methylcholanthrene	56-49-5	Yes	Yes	8.7E-09 ⁽¹⁾	2.1E-07	5.2E-06	9.0E-07
7,12-Dimethylbenz[a]anthracene	57-97-6	Yes	Yes	4.6E-09 ⁽¹⁾	1.1E-07	2.7E-06	4.8E-07
Acenaphthene	83-32-9	Yes	Yes	8.5E-07 ⁽¹⁾	2.1E-05	5.1E-04	8.9E-05
Acenaphthylene	208-96-8	Yes	Yes	4.7E-06 ⁽¹⁾	1.2E-04	2.8E-03	4.9E-04
Anthracene	120-12-7	Yes	Yes	2.7E-06 ⁽¹⁾	6.6E-05	1.6E-03	2.8E-04
Benz[a]anthracene	56-55-3	Yes	Yes	8.1E-08 ⁽¹⁾	2.0E-06	4.8E-05	8.5E-06
Benzo[a]pyrene	50-32-8	Yes	Yes	2.2E-06 ⁽¹⁾	5.5E-05	1.3E-03	2.3E-04
Benzo[b]fluoranthene	205-99-2	Yes	Yes	1.4E-07 ⁽¹⁾	3.5E-06	8.4E-05	1.5E-05
Benzo[e]pyrene	192-97-2	Yes	Yes	2.1E-07 ⁽¹⁾	5.2E-06	1.3E-04	2.2E-05
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	1.5E-07 ⁽¹⁾	3.7E-06	9.0E-05	1.6E-05
Benzo[j]fluoranthene	205-82-3	Yes	Yes	1.6E-07 ⁽¹⁾	3.9E-06	9.3E-05	1.6E-05
Benzo[k]fluoranthene	207-08-9	Yes	Yes	5.2E-08 ⁽¹⁾	1.3E-06	3.1E-05	5.4E-06
Chrysene	218-01-9	Yes	Yes	7.9E-08 ⁽¹⁾	2.0E-06	4.7E-05	8.2E-06
Fluoranthene	206-44-0	Yes	Yes	1.7E-06 ⁽¹⁾	4.1E-05	9.9E-04	1.7E-04
Fluorene	86-73-7	Yes	Yes	3.0E-06 ⁽¹⁾	7.4E-05	1.8E-03	3.1E-04
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	1.0E-07 ⁽¹⁾	2.5E-06	6.1E-05	1.1E-05
Naphthalene	91-20-3	Yes	Yes	1.0E-04 ⁽¹⁾	2.5E-03	0.059	0.010
Perylene	198-55-0	Yes	Yes	3.2E-08 ⁽¹⁾	7.9E-07	1.9E-05	3.3E-06
Phenanthrene	85-01-8	Yes	Yes	6.5E-06 ⁽¹⁾	1.6E-04	3.8E-03	6.7E-04
Pyrene	129-00-0	Yes	Yes	3.5E-06 ⁽¹⁾	8.8E-05	2.1E-03	3.7E-04

Table 5
Proposed Hogged Fuel Boiler TAC/HAP Emission Estimates—Potential to Emit Scenario
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Regulatory Category		Emission Factor (lb/MMBtu)	Emission Estimates—Normal Operation			
		TAC	HAP		Maximum Hourly ^(a) (lb/hr)	Maximum Daily ^(a) (lb/day)	Annual ^(b) (tons/yr)	
DIOXINS AND FURANS								
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	9.5E-13 ⁽¹⁾	2.4E-11	5.7E-10	9.9E-11	
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	1.3E-12 ⁽¹⁾	3.3E-11	7.9E-10	1.4E-10	
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	8.7E-13 ⁽¹⁾	2.2E-11	5.2E-10	9.1E-11	
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	2.1E-12 ⁽¹⁾	5.2E-11	1.2E-09	2.2E-10	
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	2.2E-12 ⁽¹⁾	5.5E-11	1.3E-09	2.3E-10	
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	9.8E-12 ⁽¹⁾	2.4E-10	5.8E-09	1.0E-09	
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	2.5E-11 ⁽¹⁾	6.1E-10	1.5E-08	2.6E-09	
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	8.0E-12 ⁽¹⁾	2.0E-10	4.8E-09	8.4E-10	
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	4.0E-12 ⁽¹⁾	9.9E-11	2.4E-09	4.2E-10	
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	6.1E-12 ⁽¹⁾	1.5E-10	3.6E-09	6.3E-10	
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	3.6E-12 ⁽¹⁾	8.8E-11	2.1E-09	3.7E-10	
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	3.2E-12 ⁽¹⁾	7.8E-11	1.9E-09	3.3E-10	
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	6.7E-13 ⁽¹⁾	1.7E-11	4.0E-10	7.0E-11	
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	2.7E-12 ⁽¹⁾	6.6E-11	1.6E-09	2.8E-10	
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	5.7E-12 ⁽¹⁾	1.4E-10	3.4E-09	6.0E-10	
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	8.0E-13 ⁽¹⁾	2.0E-11	4.7E-10	8.3E-11	
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	5.0E-12 ⁽¹⁾	1.2E-10	3.0E-09	5.2E-10	
TRACE METALS								
Antimony and compounds	7440-36-0	Yes	Yes	3.1E-07 ⁽¹⁾	7.6E-06	1.8E-04	3.2E-05	
Arsenic and compounds	7440-38-2	Yes	Yes	1.9E-06 ⁽¹⁾	4.7E-05	1.1E-03	2.0E-04	
Barium and compounds	7440-39-3	Yes	No	2.1E-04 ⁽¹⁾	5.2E-03	0.12	0.022	
Beryllium and compounds	7440-41-7	Yes	Yes	2.9E-08 ⁽¹⁾	7.1E-07	1.7E-05	3.0E-06	
Cadmium and compounds	7440-43-9	Yes	Yes	3.2E-07 ⁽¹⁾	8.0E-06	1.9E-04	3.4E-05	
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	2.7E-07 ⁽¹⁾	6.7E-06	1.6E-04	2.8E-05	
Cobalt and compounds	7440-48-4	Yes	Yes	5.0E-07 ⁽¹⁾	1.2E-05	3.0E-04	5.2E-05	
Copper and compounds	7440-50-8	Yes	No	3.8E-06 ⁽¹⁾	9.4E-05	2.3E-03	4.0E-04	
Lead and compounds	7439-92-1	Yes	Yes	5.2E-06 ⁽¹⁾	1.3E-04	3.1E-03	5.4E-04	
Manganese and compounds	7439-96-5	Yes	Yes	9.6E-05 ⁽¹⁾	2.4E-03	0.057	1.0E-02	
Mercury and compounds	7439-97-6	Yes	Yes	1.1E-06 ⁽¹⁾	2.6E-05	6.3E-04	1.1E-04	
Molybdenum trioxide	1313-27-5	Yes	No	3.1E-06 ⁽¹⁾	7.7E-05	1.8E-03	3.2E-04	
Nickel and compounds	365	Yes	Yes	2.8E-06 ⁽¹⁾	6.9E-05	1.7E-03	2.9E-04	
Phosphorus and compounds	504	Yes	Yes	3.1E-04 ⁽¹⁾	7.7E-03	0.18	0.032	
Selenium and compounds	7782-49-2	Yes	Yes	1.6E-06 ⁽¹⁾	4.0E-05	9.6E-04	1.7E-04	
Silver and compounds	7440-22-4	Yes	No	9.9E-07 ⁽¹⁾	2.4E-05	5.8E-04	1.0E-04	
Thallium and compounds	7440-28-0	Yes	No	1.9E-06 ⁽¹⁾	4.6E-05	1.1E-03	1.9E-04	
Vanadium (fume or dust)	7440-62-2	Yes	No	5.9E-07 ⁽¹⁾	1.5E-05	3.5E-04	6.2E-05	
Zinc and compounds	7440-66-6	Yes	No	5.8E-05 ⁽¹⁾	1.4E-03	0.034	6.0E-03	
Total TAC Emissions Estimate					0.86	20.7	3.64	
Total HAP Emissions Estimate					0.73	17.5	3.07	

Notes

HAP = hazardous air pollutants; MMBtu = million British thermal units; TAC = toxic air contaminants.

(a) Maximum hourly or daily emissions estimate (lb/hr or lb/day) = (emission factor [lb/MMBtu]) x (maximum hourly or daily hogged fuel usage [MMBtu/hr or MMBtu/day])

Maximum hourly hogged fuel usage (MMBtu/hr) = 24.7 (3)

Maximum daily hogged fuel usage (MMBtu/day) = 594 (3)

(b) Annual emissions estimate (tons/yr) = (emission factor [lb/MMBtu]) x (annual sawdust fuel usage [MMBtu/yr]) / (2,000 lb/ton)

Annual sawdust fuel usage (MMBtu/yr) = 208,443 (3)

References

(1) See DEQ-approved list of TAC emission factors for hogged fuel boilers. Emission factors referenced from AP-42 Chapter 1.6 or NCASI TB1050. Representative of ESP control.

(2) Information provided by equipment vendor.

(3) See Table 1, Input Process Rates and Parameters.

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Table 6
Proposed Hogged Fuel Boiler TAC/HAP Emission Estimates—Cleaner Air Oregon Scenario Only
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Regulatory Category		Emission Factor		Emission Estimates			
		TAC	HAP	Uncontrolled (lb/MMBtu)	Controlled (lb/MMBtu)	Uncontrolled—SU/SD		Controlled—Normal	
						Max. Daily ^(a) (lb/day)	Annual ^(b) (tons/yr)	Max. Daily ^(a) (lb/day)	Annual ^(b) (tons/yr)
SPECIATED ORGANIC/INORGANIC COMPOUNDS									
1,1,1-Trichloroethane (Methyl chloroform)	71-55-6	Yes	Yes	5.8E-05 ⁽¹⁾	5.8E-05 ⁽¹⁾	5.7E-03	4.0E-05	0.029	6.0E-03
1,2-Dichloropropane (Propylene dichloride)	78-87-5	Yes	Yes	1.7E-05 ⁽¹⁾	1.7E-05 ⁽¹⁾	1.7E-03	1.2E-05	8.3E-03	1.7E-03
2,4,6-Trichlorophenol	88-06-2	Yes	Yes	2.0E-07 ⁽¹⁾	2.0E-07 ⁽¹⁾	2.0E-05	1.4E-07	9.9E-05	2.1E-05
2,4-Dinitrophenol	51-28-5	Yes	Yes	1.8E-07 ⁽¹⁾	1.8E-07 ⁽¹⁾	1.8E-05	1.2E-07	8.9E-05	1.9E-05
2,4-Dinitrotoluene	121-14-2	Yes	Yes	9.4E-07 ⁽¹⁾	9.4E-07 ⁽¹⁾	9.3E-05	6.5E-07	4.7E-04	9.8E-05
2-Butanone (Methyl ethyl ketone)	78-93-3	Yes	No	7.0E-06 ⁽¹⁾	7.0E-06 ⁽¹⁾	6.9E-04	4.8E-06	3.4E-03	7.2E-04
2-Chlorophenol	95-57-8	Yes	No	2.4E-08 ⁽¹⁾	2.4E-08 ⁽¹⁾	2.3E-06	1.6E-08	1.2E-05	2.4E-06
4,6-Dinitro-o-cresol (and salts)	534-52-1	Yes	Yes	2.1E-06 ⁽¹⁾	2.1E-06 ⁽¹⁾	2.1E-04	1.5E-06	1.0E-03	2.2E-04
4-nitrophenol	100-02-7	Yes	Yes	1.1E-07 ⁽¹⁾	1.1E-07 ⁽¹⁾	1.1E-05	7.9E-08	5.6E-05	1.2E-05
Acetaldehyde	75-07-0	Yes	Yes	2.8E-04 ⁽¹⁾	2.8E-04 ⁽¹⁾	0.028	2.0E-04	0.14	0.029
Acetone	67-64-1	Yes	No	5.3E-04 ⁽¹⁾	5.3E-04 ⁽¹⁾	0.052	3.7E-04	0.26	0.055
Acetophenone	98-86-2	Yes	Yes	1.8E-06 ⁽¹⁾	1.8E-06 ⁽¹⁾	1.8E-04	1.3E-06	9.1E-04	1.9E-04
Acrolein	107-02-8	Yes	Yes	2.6E-04 ⁽¹⁾	2.6E-04 ⁽¹⁾	0.026	1.8E-04	0.13	0.027
Benzene	71-43-2	Yes	Yes	9.8E-04 ⁽¹⁾	9.8E-04 ⁽¹⁾	0.097	6.8E-04	0.48	0.10
Bis[2-ethylhexyl] phthalate (DEHP)	117-81-7	Yes	Yes	4.7E-08 ⁽¹⁾	4.7E-08 ⁽¹⁾	4.6E-06	3.2E-08	2.3E-05	4.8E-06
Bromomethane (Methyl bromide)	74-83-9	Yes	Yes	1.1E-05 ⁽¹⁾	1.1E-05 ⁽¹⁾	1.1E-03	7.8E-06	5.6E-03	1.2E-03
Butyl benzyl phthalate	85-68-7	Yes	No	2.7E-05 ⁽¹⁾	2.7E-05 ⁽¹⁾	2.7E-03	1.9E-05	0.013	2.8E-03
Carbon tetrachloride	56-23-5	Yes	Yes	9.9E-06 ⁽¹⁾	9.9E-06 ⁽¹⁾	9.8E-04	6.8E-06	4.9E-03	1.0E-03
Chlorine	7782-50-5	Yes	Yes	7.9E-04 ⁽¹⁾	7.9E-04 ⁽¹⁾	0.078	5.5E-04	0.39	0.082
Chlorobenzene	108-90-7	Yes	Yes	1.7E-05 ⁽¹⁾	1.7E-05 ⁽¹⁾	1.6E-03	1.2E-05	8.2E-03	1.7E-03
Chloroform	67-66-3	Yes	Yes	2.0E-05 ⁽¹⁾	2.0E-05 ⁽¹⁾	2.0E-03	1.4E-05	9.9E-03	2.1E-03
Chloromethane (Methyl chloride)	74-87-3	Yes	Yes	4.4E-05 ⁽¹⁾	4.4E-05 ⁽¹⁾	4.3E-03	3.0E-05	0.022	4.5E-03
Crotonaldehyde	4170-30-3	Yes	No	4.5E-05 ⁽¹⁾	4.5E-05 ⁽¹⁾	4.4E-03	3.1E-05	0.022	4.6E-03
Cyanide, hydrogen	74-90-8	Yes	Yes	2.1E-05 ⁽¹⁾	2.1E-05 ⁽¹⁾	2.0E-03	1.4E-05	0.010	2.1E-03
Dibutyl phthalate	84-74-2	Yes	Yes	3.3E-05 ⁽¹⁾	3.3E-05 ⁽¹⁾	3.3E-03	2.3E-05	0.016	3.4E-03
Dichloromethane (Methylene chloride)	75-09-2	Yes	Yes	4.0E-04 ⁽¹⁾	4.0E-04 ⁽¹⁾	0.039	2.8E-04	0.20	0.041
Diethylphthalate	84-66-2	Yes	No	4.4E-05 ⁽¹⁾	4.4E-05 ⁽¹⁾	4.3E-03	3.0E-05	0.022	4.5E-03
di-n-octylphthalate	518	Yes	No	1.1E-07 ⁽¹⁾	1.1E-07 ⁽¹⁾	1.1E-05	7.6E-08	5.4E-05	1.1E-05
Ethylbenzene	100-41-4	Yes	Yes	1.2E-05 ⁽¹⁾	1.2E-05 ⁽¹⁾	1.2E-03	8.5E-06	6.0E-03	1.3E-03
Ethylene dichloride (EDC, 1,2-dichloroethane)	107-06-2	Yes	Yes	2.9E-05 ⁽¹⁾	2.9E-05 ⁽¹⁾	2.9E-03	2.0E-05	0.014	3.0E-03
Formaldehyde	50-00-0	Yes	Yes	1.1E-03 ⁽¹⁾	1.1E-03 ⁽¹⁾	0.10	7.3E-04	0.52	0.11
Hexane	110-54-3	Yes	Yes	2.9E-04 ⁽¹⁾	2.9E-04 ⁽¹⁾	0.029	2.0E-04	0.14	0.030
Hydrochloric Acid	7647-01-0	Yes	Yes	0.022 ⁽²⁾	0.022 ⁽²⁾	2.18	0.015	10.9	2.28
Hydrogen Fluoride	7664-39-3	Yes	Yes	9.1E-05 ⁽¹⁾	9.1E-05 ⁽¹⁾	9.0E-03	6.3E-05	0.045	9.4E-03
Isopropyl alcohol	67-63-0	Yes	No	4.5E-03 ⁽¹⁾	4.5E-03 ⁽¹⁾	0.45	3.1E-03	2.24	0.47
Isopropylbenzene (Cumene)	98-82-8	Yes	Yes	1.8E-05 ⁽¹⁾	1.8E-05 ⁽¹⁾	1.8E-03	1.2E-05	8.8E-03	1.8E-03
Methanol	67-56-1	Yes	Yes	7.3E-04 ⁽¹⁾	7.3E-04 ⁽¹⁾	0.072	5.1E-04	0.36	0.076
Methyl isobutyl ketone (MIBK, Hexone)	108-10-1	Yes	Yes	4.5E-04 ⁽¹⁾	4.5E-04 ⁽¹⁾	0.044	3.1E-04	0.22	0.046
p-Dichlorobenzene (1,4-Dichlorobenzene)	106-46-7	Yes	Yes	2.8E-04 ⁽¹⁾	2.8E-04 ⁽¹⁾	0.028	1.9E-04	0.14	0.029
Pentachlorophenol	87-86-5	Yes	Yes	2.1E-07 ⁽¹⁾	2.1E-07 ⁽¹⁾	2.1E-05	1.5E-07	1.1E-04	2.2E-05
Phenol	108-95-2	Yes	Yes	1.6E-04 ⁽¹⁾	1.6E-04 ⁽¹⁾	0.016	1.1E-04	0.079	0.017
Polychlorinated biphenyls (PCBs)	1336-36-3	Yes	Yes	7.9E-09 ⁽¹⁾	7.9E-09 ⁽¹⁾	7.8E-07	5.4E-09	3.9E-06	8.1E-07
Propionaldehyde	123-38-6	Yes	Yes	3.1E-04 ⁽¹⁾	3.1E-04 ⁽¹⁾	0.031	2.2E-04	0.15	0.032
Styrene	100-42-5	Yes	Yes	4.7E-04 ⁽¹⁾	4.7E-04 ⁽¹⁾	0.046	3.2E-04	0.23	0.049
Tetrachloroethene (perchloroethylene)	127-18-4	Yes	Yes	2.5E-05 ⁽¹⁾	2.5E-05 ⁽¹⁾	2.4E-03	1.7E-05	0.012	2.5E-03
Toluene	108-88-3	Yes	Yes	1.1E-05 ⁽¹⁾	1.1E-05 ⁽¹⁾	1.1E-03	7.9E-06	5.6E-03	1.2E-03
Trichloroethene (TCE, Trichloroethylene)	79-01-6	Yes	Yes	2.0E-05 ⁽¹⁾	2.0E-05 ⁽¹⁾	2.0E-03	1.4E-05	9.8E-03	2.1E-03
Trichlorofluoromethane (Freon 11)	75-69-4	Yes	No	1.4E-05 ⁽¹⁾	1.4E-05 ⁽¹⁾	1.4E-03	9.6E-06	6.9E-03	1.4E-03
Vinyl Chloride	75-01-4	Yes	Yes	1.8E-05 ⁽¹⁾	1.8E-05 ⁽¹⁾	1.8E-03	1.3E-05	9.1E-03	1.9E-03
Xylene (mixed isomers)	1330-20-7	Yes	Yes	5.2E-06 ⁽¹⁾	5.2E-06 ⁽¹⁾	5.2E-04	3.6E-06	2.6E-03	5.4E-04
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)									
1-Methylphenanthrene	832-69-9	Yes	No	2.6E-07 ⁽¹⁾	2.6E-07 ⁽¹⁾	2.6E-05	1.8E-07	1.3E-04	2.7E-05
2-Methyl naphthalene	91-57-6	Yes	Yes	1.4E-06 ⁽¹⁾	1.4E-06 ⁽¹⁾	1.4E-04	9.7E-07	6.9E-04	1.4E-04
3-Methylcholanthrene	56-49-5	Yes	Yes	8.7E-09 ⁽¹⁾	8.7E-09 ⁽¹⁾	8.6E-07	6.0E-09	4.3E-06	9.0E-07
7,12-Dimethylbenz[a]anthracene	57-97-6	Yes	Yes	4.6E-09 ⁽¹⁾	4.6E-09 ⁽¹⁾	4.5E-07	3.2E-09	2.3E-06	4.7E-07
Acenaphthene	83-32-9	Yes	Yes	8.5E-07 ⁽¹⁾	8.5E-07 ⁽¹⁾	8.4E-05	5.9E-07	4.2E-04	8.8E-05
Acenaphthylene	208-96-8	Yes	Yes	4.7E-06 ⁽¹⁾	4.7E-06 ⁽¹⁾	4.6E-04	3.2E-06	2.3E-03	4.9E-04
Anthracene	120-12-7	Yes	Yes	2.7E-06 ⁽¹⁾	2.7E-06 ⁽¹⁾	2.7E-04	1.9E-06	1.3E-03	2.8E-04
Benz[a]anthracene	56-55-3	Yes	Yes	8.1E-08 ⁽¹⁾	8.1E-08 ⁽¹⁾	8.0E-06	5.6E-08	4.0E-05	8.4E-06
Benzo[a]pyrene	50-32-8	Yes	Yes	2.2E-06 ⁽¹⁾	2.2E-06 ⁽¹⁾	2.2E-04	1.5E-06	1.1E-03	2.3E-04
Benzo[b]fluoranthene	205-99-2	Yes	Yes	1.4E-07 ⁽¹⁾	1.4E-07 ⁽¹⁾	1.4E-05	9.8E-08	7.0E-05	1.5E-05
Benzo[e]pyrene	192-97-2	Yes	Yes	2.1E-07 ⁽¹⁾	2.1E-07 ⁽¹⁾	2.1E-05	1.5E-07	1.0E-04	2.2E-05
Benzo[g,h,i]perylene	191-24-2	Yes	Yes	1.5E-07 ⁽¹⁾	1.5E-07 ⁽¹⁾	1.5E-05	1.0E-07	7.5E-05	1.6E-05
Benzo[j]fluoranthene	205-82-3	Yes	Yes	1.6E-07 ⁽¹⁾	1.6E-07 ⁽¹⁾	1.5E-05	1.1E-07	7.7E-05	1.6E-05
Benzo[k]fluoranthene	207-08-9	Yes	Yes	5.2E-08 ⁽¹⁾	5.2E-08 ⁽¹⁾	5.1E-06	3.6E-08	2.6E-05	5.4E-06
Chrysene	218-01-9	Yes	Yes	7.9E-08 ⁽¹⁾	7.9E-08 ⁽¹⁾	7.8E-06	5.5E-08	3.9E-05	8.2E-06
Fluoranthene	206-44-0	Yes	Yes	1.7E-06 ⁽¹⁾	1.7E-06 ⁽¹⁾	1.7E-04	1.2E-06	8.3E-04	1.7E-04
Fluorene	86-73-7	Yes	Yes	3.0E-06 ⁽¹⁾	3.0E-06 ⁽¹⁾	3.0E-04	2.1E-06	1.5E-03	3.1E-04
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	Yes	1.0E-07 ⁽¹⁾	1.0E-07 ⁽¹⁾	1.0E-05	7.1E-08	5.0E-05	1.1E-05
Naphthalene	91-20-3	Yes	Yes	1.0E-04 ⁽¹⁾	1.0E-04 ⁽¹⁾	9.9E-03	6.9E-05	0.049	0.010
Perylene	198-55-0	Yes	Yes	3.2E-08 ⁽¹⁾	3.2E-08 ⁽¹⁾	3.2E-06	2.2E-08	1.6E-05	3.3E-06
Phenanthrene	85-01-8	Yes	Yes	6.5E-06 ⁽¹⁾	6.5E-06 ⁽¹⁾	6.4E-04	4.5E-06	3.2E-03	6.7E-04
Pyrene	129-00-0	Yes	Yes	3.5E-06 ⁽¹⁾	3.5E-06 ⁽¹⁾	3.5E-04	2.5E-06	1.8E-03	3.7E-04

Table 6
Proposed Hogged Fuel Boiler TAC/HAP Emission Estimates—Cleaner Air Oregon Scenario Only
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Regulatory Category		Emission Factor		Emission Estimates			
		TAC	HAP	Uncontrolled (lb/MMBtu)	Controlled (lb/MMBtu)	Uncontrolled—SU/SD		Controlled—Normal	
						Max. Daily (lb/day)	Annual (tons/yr)	Max. Daily (lb/day)	Annual (tons/yr)
DIOXINS AND FURANS									
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1746-01-6	Yes	Yes	9.5E-13 ⁽¹⁾	9.5E-13 ⁽¹⁾	9.4E-11	6.6E-13	4.7E-10	9.9E-11
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	40321-76-4	Yes	No	1.3E-12 ⁽¹⁾	1.3E-12 ⁽¹⁾	1.3E-10	9.2E-13	6.6E-10	1.4E-10
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	39227-28-6	Yes	No	8.7E-13 ⁽¹⁾	8.7E-13 ⁽¹⁾	8.6E-11	6.0E-13	4.3E-10	9.0E-11
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	57653-85-7	Yes	No	2.1E-12 ⁽¹⁾	2.1E-12 ⁽¹⁾	2.1E-10	1.4E-12	1.0E-09	2.2E-10
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	19408-74-3	Yes	No	2.2E-12 ⁽¹⁾	2.2E-12 ⁽¹⁾	2.2E-10	1.5E-12	1.1E-09	2.3E-10
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	35822-46-9	Yes	No	9.8E-12 ⁽¹⁾	9.8E-12 ⁽¹⁾	9.7E-10	6.8E-12	4.8E-09	1.0E-09
Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	Yes	No	2.5E-11 ⁽¹⁾	2.5E-11 ⁽¹⁾	2.4E-09	1.7E-11	1.2E-08	2.5E-09
2,3,7,8-Tetrachlorodibenzofuran (TcDF)	51207-31-9	Yes	No	8.0E-12 ⁽¹⁾	8.0E-12 ⁽¹⁾	8.0E-10	5.6E-12	4.0E-09	8.3E-10
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	57117-41-6	Yes	No	4.0E-12 ⁽¹⁾	4.0E-12 ⁽¹⁾	3.9E-10	2.8E-12	2.0E-09	4.1E-10
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	57117-31-4	Yes	No	6.1E-12 ⁽¹⁾	6.1E-12 ⁽¹⁾	6.0E-10	4.2E-12	3.0E-09	6.3E-10
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	70648-26-9	Yes	No	3.6E-12 ⁽¹⁾	3.6E-12 ⁽¹⁾	3.5E-10	2.5E-12	1.8E-09	3.7E-10
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	57117-44-9	Yes	No	3.2E-12 ⁽¹⁾	3.2E-12 ⁽¹⁾	3.1E-10	2.2E-12	1.6E-09	3.3E-10
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	72918-21-9	Yes	No	6.7E-13 ⁽¹⁾	6.7E-13 ⁽¹⁾	6.6E-11	4.6E-13	3.3E-10	6.9E-11
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	60851-34-5	Yes	No	2.7E-12 ⁽¹⁾	2.7E-12 ⁽¹⁾	2.6E-10	1.8E-12	1.3E-09	2.8E-10
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	67562-39-4	Yes	No	5.7E-12 ⁽¹⁾	5.7E-12 ⁽¹⁾	5.7E-10	4.0E-12	2.8E-09	5.9E-10
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	55673-89-7	Yes	No	8.0E-13 ⁽¹⁾	8.0E-13 ⁽¹⁾	7.9E-11	5.5E-13	3.9E-10	8.3E-11
Octachlorodibenzofuran (OCDF)	39001-02-0	Yes	No	5.0E-12 ⁽¹⁾	5.0E-12 ⁽¹⁾	4.9E-10	3.5E-12	2.5E-09	5.2E-10
TRACE METALS									
Antimony and compounds	7440-36-0	Yes	Yes	3.1E-06 ⁽¹⁾	3.1E-07 ⁽¹⁾	3.1E-04	2.2E-06	1.5E-04	3.2E-05
Arsenic and compounds	7440-38-2	Yes	Yes	8.6E-06 ⁽¹⁾	1.9E-06 ⁽¹⁾	8.5E-04	5.9E-06	9.4E-04	2.0E-04
Barium and compounds	7440-39-3	Yes	No	4.8E-03 ⁽¹⁾	2.1E-04 ⁽¹⁾	0.48	3.3E-03	0.10	0.022
Beryllium and compounds	7440-41-7	Yes	Yes	1.4E-07 ⁽¹⁾	2.9E-08 ⁽¹⁾	1.3E-05	9.4E-08	1.4E-05	3.0E-06
Cadmium and compounds	7440-43-9	Yes	Yes	5.0E-06 ⁽¹⁾	3.2E-07 ⁽¹⁾	4.9E-04	3.5E-06	1.6E-04	3.4E-05
Chromium VI (particulate-based)	18540-29-9	Yes	Yes	7.0E-06 ⁽¹⁾	2.7E-07 ⁽¹⁾	6.9E-04	4.8E-06	1.3E-04	2.8E-05
Cobalt and compounds	7440-48-4	Yes	Yes	1.7E-06 ⁽¹⁾	5.0E-07 ⁽¹⁾	1.7E-04	1.2E-06	2.5E-04	5.1E-05
Copper and compounds	7440-50-8	Yes	No	8.3E-05 ⁽¹⁾	3.8E-06 ⁽¹⁾	8.2E-03	5.7E-05	1.9E-03	3.9E-04
Lead and compounds	7439-92-1	Yes	Yes	3.1E-05 ⁽¹⁾	5.2E-06 ⁽¹⁾	3.1E-03	2.1E-05	2.6E-03	5.4E-04
Manganese and compounds	7439-96-5	Yes	Yes	1.9E-03 ⁽¹⁾	9.6E-05 ⁽¹⁾	0.18	1.3E-03	0.047	9.9E-03
Mercury and compounds	7439-97-6	Yes	Yes	1.8E-06 ⁽¹⁾	1.1E-06 ⁽¹⁾	1.8E-04	1.2E-06	5.2E-04	1.1E-04
Molybdenum trioxide	1313-27-5	Yes	No	3.2E-06 ⁽¹⁾	3.1E-06 ⁽¹⁾	3.1E-04	2.2E-06	1.5E-03	3.2E-04
Nickel and compounds	365	Yes	Yes	1.3E-05 ⁽¹⁾	2.8E-06 ⁽¹⁾	1.3E-03	9.1E-06	1.4E-03	2.9E-04
Phosphorus and compounds	504	Yes	Yes	5.5E-03 ⁽¹⁾	3.1E-04 ⁽¹⁾	0.54	3.8E-03	0.15	0.032
Selenium and compounds	7782-49-2	Yes	Yes	7.3E-07 ⁽¹⁾	1.6E-06 ⁽¹⁾	7.2E-05	5.0E-07	8.0E-04	1.7E-04
Silver and compounds	7440-22-4	Yes	No	9.4E-04 ⁽¹⁾	9.9E-07 ⁽¹⁾	0.093	6.5E-04	4.9E-04	1.0E-04
Thallium and compounds	7440-28-0	Yes	No	1.9E-06 ⁽¹⁾	1.9E-06 ⁽¹⁾	1.8E-04	1.3E-06	9.2E-04	1.9E-04
Vanadium (fume or dust)	7440-62-2	Yes	No	9.8E-07 ⁽¹⁾	5.9E-07 ⁽¹⁾	9.7E-05	6.8E-07	2.9E-04	6.1E-05
Zinc and compounds	7440-66-6	Yes	No	5.7E-04 ⁽¹⁾	5.8E-05 ⁽¹⁾	0.056	3.9E-04	0.029	6.0E-03
Total TAC Emissions Estimate						4.75	0.033	17.3	3.62
Total HAP Emissions Estimate						3.60	0.025	14.6	3.05

Notes

HAP = hazardous air pollutants; MMBtu = million British thermal units; TAC = toxic air contaminants.

(a) Maximum daily emissions estimate (lb/day) = (emission factor [lb/MMBtu]) x (maximum daily heat input capacity [MMBtu/day])

Maximum daily heat input capacity—SU/SD (MMBtu/day) = 99.0 (3)

Maximum daily heat input capacity—Balance (MMBtu/day) = 495 (3)

(b) Annual emissions estimate (tons/yr) = (emission factor [lb/MMBtu]) x (annual heat input capacity [MMBtu/yr]) / (2,000 lb/ton)

Annual heat input capacity—SU/SD (MMBtu/yr) = 1,386 (3)

Annual heat input capacity—Balance (MMBtu/yr) = 207,058 (3)

References

- (1) See DEQ-approved list of TAC emission factors for hogged fuel boilers. Emission factors referenced from AP-42 Chapter 1.6 or NCASI TB1050. Uncontrolled emission factors represent mechanical collector control, while controlled emission factors represent ESP/Fabric Filter control.
- (2) Information provided by equipment vendor.
- (3) See Table 1, Input Process Rates and Parameters.

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Table 7
Proposed Kiln no. 4—Criteria Pollutant Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Units	Production Rate		
		Maximum Hourly	Maximum Daily	Annual
Total Kiln—Softwood Throughput	(Mbdft)	0.91 ⁽¹⁾	22.0 ⁽¹⁾	7,706 ⁽¹⁾
Total Kiln—Hardwood Throughput	(Mbdft)	1.37 ⁽¹⁾	32.9 ⁽¹⁾	11,559 ⁽¹⁾
Proposed Kiln no. 4 Only—Softwood Throughput	(Mbdft)	0.26 ^(a)	6.27 ^(a)	2,202 ^(a)
Proposed Kiln no. 4 Only—Hardwood Throughput	(Mbdft)	0.39 ^(a)	9.41 ^(a)	3,303 ^(a)

Pollutant	Wood Species	Emission Factor ⁽²⁾ (lb/Mbdft)	Emission Estimates		
			Maximum Hourly ^(b) (lb/hr)	Maximum Daily ^(c) (lb/day)	Annual ^(d) (tons/yr)
PM	Softwood (Douglas Fir Only)	0.020	5.2E-03	0.13	0.022
PM ₁₀		0.020	5.2E-03	0.13	0.022
PM _{2.5}		0.020	5.2E-03	0.13	0.022
VOC		1.116	0.29	7.00	1.23
PM	Hardwood (Mixed Species)	0.050	0.020	0.47	0.083
PM ₁₀		0.050	0.020	0.47	0.083
PM _{2.5}		0.050	0.020	0.47	0.083
VOC		1.43	0.56	13.5	2.36
PM	Total	--	0.025	0.60	0.10
PM₁₀		--	0.025	0.60	0.10
PM_{2.5}		--	0.025	0.60	0.10
VOC		--	0.85	20.5	3.59

Notes

Mbdft = thousand board feet.

(a) Kiln throughput (Mbdft/"unit") = (combined kilns—total throughput [Mbdft/"unit"]) x (maximum basket capacity for proposed kiln [baskets/charge])
/ (maximum basket capacity for all kilns combined [baskets/charge])

Maximum basket capacity for proposed kiln (baskets/charge) = 60.0 ⁽¹⁾

Maximum basket capacity for all kilns (baskets/charge) = 210 ⁽¹⁾

(b) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/Mbdft]) x (maximum hourly throughput [Mbdft/hr])

(c) Maximum daily emissions estimate (lb/day) = (emission factor [lb/Mbdft]) x (maximum daily throughput [Mbdft/day])

(d) Annual emission estimate (tons/yr) = (emission factor [lb/Mbdft]) x (annual throughput [Mbdft/yr]) / (2,000 lb/ton)

References

(1) See Table 1, Input Process Rates and Parameters. Hardwood throughput represents the combined sum of each species.

(2) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See condition 15. Particulate emission factors from DEQ AQEF-02 and VOC emission factors from DEQ AQEF-09 assuming a maximum drying temperature of 200°F. Note softwood VOC emission factor corrected to match DEQ AQEF-09.

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Table 8
Proposed Kiln no. 4—HAP and TAC Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Units	Production Rate		
		Maximum Hourly	Maximum Daily	Annual
Total Kiln—Softwood Throughput	(Mbdft)	0.91 ⁽¹⁾	22.0 ⁽¹⁾	7,706 ⁽¹⁾
Total Kiln—Hardwood Throughput	(Mbdft)	1.37 ⁽¹⁾	32.9 ⁽¹⁾	11,559 ⁽¹⁾
Proposed Kiln no. 4 Only—Softwood Throughput	(Mbdft)	0.26 ^(a)	6.27 ^(a)	2,202 ^(a)
Proposed Kiln no. 4 Only—Hardwood Throughput	(Mbdft)	0.39 ^(a)	9.41 ^(a)	3,303 ^(a)

Toxic Air Contaminant	CAS	Regulatory Category		Wood Species	Emission Factor ⁽²⁾ (lb/Mbdft)	Emission Estimates		
		TAC	HAP			Maximum Hourly ^(b) (lb/hr)	Maximum Daily ^(c) (lb/day)	Annual ^(d) (tons/yr)
Acetaldehyde	75-07-0	Yes	Yes	Softwood (Douglas Fir Only)	0.043	0.011	0.27	0.047
Acrolein	107-02-8	Yes	Yes		8.0E-04	2.1E-04	5.0E-03	8.8E-04
Formaldehyde	50-00-0	Yes	Yes		2.5E-03	6.5E-04	0.016	2.8E-03
Methanol	67-56-1	Yes	Yes		0.075	0.020	0.47	0.083
Propionaldehyde	123-38-6	Yes	Yes		9.0E-04	2.4E-04	5.6E-03	9.9E-04
Acetaldehyde	75-07-0	Yes	Yes	Hardwood (Mixed Species)	0.41	0.16	3.86	0.68
Acrolein	107-02-8	Yes	Yes		6.5E-03	2.5E-03	0.061	0.011
Formaldehyde	50-00-0	Yes	Yes		7.6E-03	3.0E-03	0.072	0.013
Methanol	67-56-1	Yes	Yes		0.40	0.16	3.76	0.66
Propionaldehyde	123-38-6	Yes	Yes		4.3E-03	1.7E-03	0.040	7.1E-03
Acetaldehyde	75-07-0	Yes	Yes	Total	--	0.17	4.13	0.72
Acrolein	107-02-8	Yes	Yes		--	2.8E-03	0.066	0.012
Formaldehyde	50-00-0	Yes	Yes		--	3.6E-03	0.087	0.015
Methanol	67-56-1	Yes	Yes		--	0.18	4.23	0.74
Propionaldehyde	123-38-6	Yes	Yes		--	1.9E-03	0.046	8.1E-03
Total TAC Emission Estimates—Combined						0.36	8.56	1.50
Total HAP Emission Estimates—Combined						0.36	8.56	1.50

Notes

HAP = hazardous air pollutant; Mbdft = thousand board feet; TAC = toxic air contaminant.

(a) Kiln throughput (Mbdft/"unit") = (combined kilns—total throughput [Mbdft/"unit"]) x (maximum basket capacity for proposed kiln [baskets/charge])

/ (maximum basket capacity for all kilns combined [baskets/charge])

Maximum basket capacity for proposed kiln (baskets/charge) = 60.0 ⁽¹⁾

Maximum basket capacity for all kilns (baskets/charge) = 210 ⁽¹⁾

(b) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/Mbdft]) x (maximum hourly throughput [Mbdft/hr])

(c) Maximum daily emissions estimate (lb/day) = (emission factor [lb/Mbdft]) x (maximum daily throughput [Mbdft/day])

(d) Annual emission estimate (tons/yr) = (emission factor [lb/Mbdft]) x (annual throughput [Mbdft/yr]) / (2,000 lb/ton)

References

(1) See Table 1, Input Process Rates and Parameters.

(2) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See condition 15. Emission factors referenced from DEQ AQEF-09 assuming a maximum drying temperature of 200°F.

Table 9
Proposed Material Handling Drops Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Proposed Haul Truck Hogged Fuel Delivery Drop	Proposed Loader Drop to Boiler Feed Hopper
Modeling ID	D_TRU	D_FEL
Material Moisture Content (%)	34.0 (1)	34.0 (1)
Wind Speed (mph)	7.29 (2)	7.29 (2)
Hourly Material Throughput (wet tons/hr)	25.0 (3)	2.21 (a)
Daily Material Throughput (wet tons/day)	100.0 (3)	53.1 (a)
Annual Material Throughput (wet tons/yr)	35,100 (3)	18,635 (a)
Hourly Material Throughput (BDT/hr)	--	1.46 (3)
Daily Material Throughput (BDT/day)	--	35.0 (3)
Annual Material Throughput (BDT/yr)	--	12,299 (3)
PM Emission Factor (lb/wet ton)	7.3E-05 (b)	7.3E-05 (b)
PM10 Emission Factor (lb/wet ton)	3.5E-05 (b)	3.5E-05 (b)
PM2.5 Emission Factor (lb/wet ton)	5.2E-06 (b)	5.2E-06 (b)

Pollutant	Emissions Estimate								
	Proposed Haul Truck Hogged Fuel Delivery Drop			Proposed Loader Drop to Boiler Feed Hopper			Total		
	Maximum Hourly ^(c) (lb/hr)	Maximum Daily ^(d) (lb/day)	Annual ^(e) (tons/yr)	Maximum Hourly ^(c) (lb/hr)	Maximum Daily ^(d) (lb/day)	Annual ^(e) (tons/yr)	Maximum Hourly (lb/hr)	Maximum Daily (lb/day)	Annual (tons/yr)
PM	1.8E-03	7.3E-03	1.3E-03	1.6E-04	3.9E-03	6.8E-04	2.0E-03	0.011	2.0E-03
PM ₁₀	8.7E-04	3.5E-03	6.1E-04	7.7E-05	1.8E-03	3.2E-04	9.4E-04	5.3E-03	9.3E-04
PM _{2.5}	1.3E-04	5.2E-04	9.2E-05	1.2E-05	2.8E-04	4.9E-05	1.4E-04	8.0E-04	1.4E-04

Notes

BDT = bone dry tons; mph = miles per hour.

(a) Wet material throughput (wet tons/"unit") = (dry-basis material throughput [BDT/"unit"]) / (1 - [material moisture content { % } / 100])

(b) PM emission factor (lb/wet ton) = (PM, PM₁₀, or PM_{2.5} particle size multiplier) x (0.0032) x (mean wind speed [mph] / 5)^{1.3} / (material moisture content [%] / 2)^{1.4} (4)

PM particle size multiplier = 0.74 (4)

PM₁₀ particle size multiplier = 0.35 (4)

PM_{2.5} particle size multiplier = 0.053 (4)

(c) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/wet ton]) x (hourly material throughput [wet ton/hr])

(d) Maximum daily emissions estimate (lb/day) = (emission factor [lb/wet ton]) x (daily material throughput [wet ton/day])

(e) Annual emissions estimate (tons/yr) = (emission factor [lb/wet ton]) x (annual material throughput [wet ton/yr]) x (ton/2,000 lbs)

References

(1) Assumes moisture content of 34% for wet basis.

(2) Data were downloaded from the National Center for Environmental Information. The meteorological dataset is representative of the Salem McNary Regional Airport monitoring station (ID 24232) from 2019-2023.

(3) See Table 1, Input Process Rates and Parameters.

(4) U.S. EPA Region 10, Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country Memorandum (May 8, 2014).

Table 10
Proposed Hogged Fuel Stockpile Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Hogged Fuel Storage Pile
Hogged Fuel Storage Pile Extents (ft ²) ⁽¹⁾	3,600
Hogged Fuel Storage Pile Extents (acre) ^(a)	0.083
Control Efficiency (%) ⁽²⁾	90.0

Pollutant	Emission Factor (lb/acre-yr) ⁽³⁾	Emission Estimates		
		Hourly ^(b) (lb/hr)	Daily ^(c) (lb/day)	Annual ^(d) (tons/yr)
PM	760	7.2E-04	0.017	3.1E-03
PM ₁₀	380	3.6E-04	8.6E-03	1.6E-03
PM _{2.5}	190	1.8E-04	4.3E-03	7.9E-04

Notes

(a) Hogged fuel storage pile extents (acres) = (hogged fuel storage pile extents [ft²]) / (43,560 ft²/acre)

(b) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/acre-yr]) x (storage pile extents [acres]) / (annual hours of exposure [hrs/yr])
x (1 - [control efficiency { % } / 100])

Annual hours of exposure (hrs/yr) = 8,760 (4)

(c) Maximum daily emissions estimate (lb/day) = (emission factor [lb/acre-yr]) x (storage pile extents [acres]) / (annual days of exposure [days/yr])
x (1 - [control efficiency { % } / 100])

Annual days of exposure (day/yr) = 365 (4)

(d) Annual emissions estimate (tons/yr) = (emission factor [lb/acre-yr]) x (storage pile extents [acres]) x (ton/2,000 lb) x (1 - [control efficiency { % } / 100])

References

- (1) Assumes maximum stockpile size, information provided by JB Wood Recyclers, LLC.
- (2) Western Regional Air Partnership (WRAP) Fugitive Dust Handbook dated September 7, 2006. Assumes water will be applied during periods of high winds. The hogged fuel pile will also be a mixture of wet bark, sawdust, and chips meaning the potential for wind blown dust from the pile will be limited by the larger particle size diameter and weight of the material.
- (3) EPA Region 10, "Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country Memorandum" dated May 8, 2014. Emission factor converted from tons by multiplying by 2,000 pounds.
- (4) Assumes continuous daily and annual exposure to atmospheric conditions.

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Table 11
Existing Kilns no. 1-3—Criteria Pollutant Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Units	Production Rate		
		Maximum Hourly	Maximum Daily	Annual
Total Kiln—Softwood Throughput	(Mbdft)	0.91 ⁽¹⁾	22.0 ⁽¹⁾	7,706 ⁽¹⁾
Total Kiln—Hardwood Throughput	(Mbdft)	1.37 ⁽¹⁾	32.9 ⁽¹⁾	11,559 ⁽¹⁾
Existing Kiln nos. 1-3 Only—Softwood Throughput	(Mbdft)	0.65 ^(a)	15.7 ^(a)	5,504 ^(a)
Existing Kiln nos. 1-3 Only—Hardwood Throughput	(Mbdft)	0.98 ^(a)	23.5 ^(a)	8,256 ^(a)

Pollutant	Wood Species	Emission Factor ⁽²⁾ (lb/Mbdft)	Emission Estimates		
			Maximum Hourly ^(b) (lb/hr)	Maximum Daily ^(c) (lb/day)	Annual ^(d) (tons/yr)
PM	Softwoods (Douglas Fir Only)	0.020	0.013	0.31	0.055
PM ₁₀		0.020	0.013	0.31	0.055
PM _{2.5}		0.020	0.013	0.31	0.055
VOC		1.116	0.73	17.5	3.07
PM	Hardwoods (Mixed Species)	0.050	0.049	1.18	0.21
PM ₁₀		0.050	0.049	1.18	0.21
PM _{2.5}		0.050	0.049	1.18	0.21
VOC		1.43	1.40	33.6	5.90
PM	Total	--	0.062	1.49	0.26
PM₁₀		--	0.062	1.49	0.26
PM_{2.5}		--	0.062	1.49	0.26
VOC		--	2.13	51.1	8.97

Notes

Mbdft = thousand board feet.

(a) Kiln throughput (Mbdft/"unit") = (combined kilns—total throughput [Mbdft/"unit"]) x (maximum basket capacity for existing kilns [baskets/charge])
/ (maximum basket capacity for all kilns combined [baskets/charge])

Maximum basket capacity for existing kilns (baskets/charge) = 150 ⁽¹⁾

Maximum basket capacity for all kilns (baskets/charge) = 210 ⁽¹⁾

(b) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/Mbdft]) x (maximum hourly throughput [Mbdft/hr])

(c) Maximum daily emissions estimate (lb/day) = (emission factor [lb/Mbdft]) x (maximum daily throughput [Mbdft/day])

(d) Annual emission estimate (tons/yr) = (emission factor [lb/Mbdft]) x (annual throughput [Mbdft/yr]) / (2,000 lb/ton)

References

(1) See Table 1, Input Process Rates and Parameters.

(2) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See Attachment A, Emission Detail Sheets. Particulate emission factors from DEQ AQEF-02 and VOC emission factors from DEQ AQEF-09.

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Table 12
Existing Kilns no. 1-3—HAP and TAC Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	Units	Production Rate		
		Maximum Hourly	Maximum Daily	Annual
Total Kiln—Softwood Throughput	(Mbdft)	0.91 ⁽¹⁾	22.0 ⁽¹⁾	7,706 ⁽¹⁾
Total Kiln—Hardwood Throughput	(Mbdft)	1.37 ⁽¹⁾	32.9 ⁽¹⁾	11,559 ⁽¹⁾
Existing Kiln nos. 1-3 Only—Softwood Throughput	(Mbdft)	0.65 ^(a)	15.7 ^(a)	5,504 ^(a)
Existing Kiln nos. 1-3 Only—Hardwood Throughput	(Mbdft)	0.98 ^(a)	23.5 ^(a)	8,256 ^(a)

Toxic Air Contaminant	CAS	Regulatory Category		Wood Species	Emission Factor ⁽²⁾ (lb/Mbdft)	Emission Estimates		
		TAC	HAP			Maximum Hourly ^(b) (lb/hr)	Maximum Daily ^(c) (lb/day)	Annual ^(d) (tons/yr)
Acetaldehyde	75-07-0	Yes	Yes	Softwood (Douglas Fir Only)	0.043	0.028	0.67	0.12
Acrolein	107-02-8	Yes	Yes		8.0E-04	5.2E-04	0.013	2.2E-03
Formaldehyde	50-00-0	Yes	Yes		2.5E-03	1.6E-03	0.039	6.9E-03
Methanol	67-56-1	Yes	Yes		0.075	0.049	1.18	0.21
Propionaldehyde	123-38-6	Yes	Yes		9.0E-04	5.9E-04	0.014	2.5E-03
Acetaldehyde	75-07-0	Yes	Yes	Hardwood (Mixed Species)	0.41	0.40	9.64	1.69
Acrolein	107-02-8	Yes	Yes		6.5E-03	6.4E-03	0.15	0.027
Formaldehyde	50-00-0	Yes	Yes		7.6E-03	7.4E-03	0.18	0.031
Methanol	67-56-1	Yes	Yes		0.40	0.39	9.41	1.65
Propionaldehyde	123-38-6	Yes	Yes		4.3E-03	4.2E-03	0.10	0.018
Acetaldehyde	75-07-0	Yes	Yes	Total	--	0.43	10.3	1.81
Acrolein	107-02-8	Yes	Yes		--	6.9E-03	0.17	0.029
Formaldehyde	50-00-0	Yes	Yes		--	9.1E-03	0.22	0.038
Methanol	67-56-1	Yes	Yes		--	0.44	10.6	1.86
Propionaldehyde	123-38-6	Yes	Yes		--	4.8E-03	0.12	0.020
Total TAC Emission Estimates						0.89	21.4	3.76
Total HAP Emission Estimates						0.89	21.4	3.76

Notes

HAP = hazardous air pollutant; Mbdft = thousand board feet; TAC = toxic air contaminant.

(a) Kiln throughput (Mbdft/"unit") = (combined kilns—total throughput [Mbdft/"unit"]) x (maximum basket capacity for existing kilns [baskets/charge]) / (maximum basket capacity for all kilns combined [baskets/charge])

Maximum basket capacity for existing kilns (baskets/charge) = 150 (1)

Maximum basket capacity for all kilns (baskets/charge) = 210 (1)

(b) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/Mbdft]) x (maximum hourly throughput [Mbdft/hr])

(c) Maximum daily emissions estimate (lb/day) = (emission factor [lb/Mbdft]) x (maximum daily throughput [Mbdft/day])

(d) Annual emission estimate (tons/yr) = (emission factor [lb/Mbdft]) x (annual throughput [Mbdft/yr]) / (2,000 lb/ton)

References

(1) See Table 1, Input Process Rates and Parameters.

(2) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See Attachment A, Emission Detail Sheets. Emission factors from DEQ AQEF-09.

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Table 13
Existing Kiln Backup Burners no. 1-2—Criteria Pollutant and GHG Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	(Units)	Process Rate ⁽¹⁾		
		Maximum Hourly	Maximum Daily	Annual
Total Burner Natural Gas Usage	(MMscf)	6.8E-03	0.16	57.5

Pollutant	Emission Factor ⁽²⁾ (lb/MMscf)	Emission Estimates		
		Maximum Hourly ^(a) (lb/hr)	Maximum Daily ^(b) (lb/day)	Annual ^(c) (tons/yr)
PM	2.50	0.017	0.41	0.072
PM ₁₀	2.50	0.017	0.41	0.072
PM _{2.5}	2.50	0.017	0.41	0.072
SO ₂	1.70	0.012	0.28	0.049
NO _x	100	0.68	16.4	2.87
CO	84.0	0.57	13.8	2.41
VOC	5.50	0.038	0.90	0.16
GHG (CO ₂ e)	120,163	820	19,676	3,133

Notes

MMBtu = million British thermal units; MMscf = million standard cubic feet.

- (a) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/MMscf]) x (maximum hourly natural gas usage [MMscf/hr])
- (b) Maximum daily emissions estimate (lb/day) = (emission factor [lb/MMscf]) x (maximum daily natural gas usage [MMscf/day])
- (c) Annual emissions estimate (tons/yr) = (emission factor [lb/MMscf]) x (annual natural gas usage [MMscf/yr]) / (2,000 lb/ton)
- (d) Emission factor (lb-CO₂e/MMscf) = (default natural gas high heat content [MMBtu/scf]) x (1,000,000 scf/MMscf)
- x (2.205 lb/kg) x ([CO₂ emission factor {kg/MMBtu}] + [CH₄ emission factor {kg/MMBtu}] x [CH₄ global warming potential]
- + [N₂O emission factor {kg/MMBtu}] x [N₂O global warming potential])

Default natural gas high heat content (MMBtu/scf) =	1.0E-03	(2)
CO ₂ emission factor (kg/MMBtu) =	53.1	(2)
CH ₄ emission factor (kg/MMBtu) =	1.0E-03	(2)
CH ₄ global warming potential =	28.0	(2)
N ₂ O emission factor (kg/MMBtu) =	1.0E-04	(2)
N ₂ O global warming potential =	265	(2)

References

- (1) See Table 1, Input Process Rates and Parameters.
- (2) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See Attachment A, Emission Detail Sheets. Emission factors from DEQ AQEF-05 (criteria pollutants) and 40 CFR Part 98 (GHG only).

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Table 14
Existing Kiln Backup Burners no. 1-2—HAP and TAC Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Toxic Air Contaminant	CAS	Regulatory Category		Emission Factor (lb/MMscf)	Emission Estimates		
		TAC	HAP		Maximum Hourly ^(a) (lb/day)	Maximum Daily ^(b) (lb/day)	Annual ^(c) (tons/yr)
SPECIATED ORGANIC COMPOUNDS							
Acetaldehyde	75-07-0	Yes	Yes	4.3E-03 ⁽²⁾	2.9E-05	7.0E-04	1.2E-04
Acrolein	107-02-8	Yes	Yes	2.7E-03 ⁽²⁾	1.8E-05	4.4E-04	7.8E-05
Benzene	71-43-2	Yes	Yes	8.0E-03 ⁽²⁾	5.5E-05	1.3E-03	2.3E-04
Ethylbenzene	100-41-4	Yes	Yes	9.5E-03 ⁽²⁾	6.5E-05	1.6E-03	2.7E-04
Formaldehyde	50-00-0	Yes	Yes	0.017 ⁽²⁾	1.2E-04	2.8E-03	4.9E-04
Hexane	110-54-3	Yes	Yes	6.3E-03 ⁽²⁾	4.3E-05	1.0E-03	1.8E-04
Toluene	108-88-3	Yes	Yes	0.037 ⁽²⁾	2.5E-04	6.0E-03	1.1E-03
Xylenes (mixed isomers)	1330-20-7	Yes	Yes	0.027 ⁽²⁾	1.9E-04	4.5E-03	7.8E-04
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)							
Polycyclic aromatic hydrocarbons (PAHs)	401	Yes	Yes	1.0E-04 ⁽²⁾	6.8E-07	1.6E-05	2.9E-06
Naphthalene	91-20-3	Yes	Yes	3.0E-04 ⁽²⁾	2.0E-06	4.9E-05	8.6E-06
SPECIATED INORGANIC COMPOUNDS							
Ammonia	7664-41-7	Yes	No	3.20 ⁽²⁾	0.022	0.52	0.092
TRACE METALS							
Arsenic	7440-38-2	Yes	Yes	2.0E-04 ⁽²⁾	1.4E-06	3.3E-05	5.7E-06
Barium	7440-39-3	Yes	No	4.4E-03 ⁽²⁾	3.0E-05	7.2E-04	1.3E-04
Beryllium	7440-41-7	Yes	Yes	1.2E-05 ⁽²⁾	8.2E-08	2.0E-06	3.4E-07
Cadmium	7440-43-9	Yes	Yes	1.1E-03 ⁽²⁾	7.5E-06	1.8E-04	3.2E-05
Total Chromium	7440-47-3	No	Yes	1.4E-03 ^(d)	9.6E-06	2.3E-04	4.0E-05
Chromium VI	18540-29-9	Yes	Yes	5.6E-05 ⁽²⁾	3.8E-07	9.2E-06	1.6E-06
Cobalt	7440-48-4	Yes	Yes	8.4E-05 ⁽²⁾	5.7E-07	1.4E-05	2.4E-06
Copper	7440-50-8	Yes	No	8.5E-04 ⁽²⁾	5.8E-06	1.4E-04	2.4E-05
Lead	7439-92-1	Yes	Yes	5.0E-04 ⁽²⁾	3.4E-06	8.2E-05	1.4E-05
Manganese	7439-96-5	Yes	Yes	3.8E-04 ⁽²⁾	2.6E-06	6.2E-05	1.1E-05
Mercury	7439-97-6	Yes	Yes	2.6E-04 ⁽²⁾	1.8E-06	4.3E-05	7.5E-06
Molybdenum Trioxide	1313-27-5	Yes	No	1.7E-03 ⁽²⁾	1.1E-05	2.7E-04	4.7E-05
Nickel	365	Yes	Yes	2.1E-03 ⁽²⁾	1.4E-05	3.4E-04	6.0E-05
Selenium	7782-49-2	Yes	Yes	2.4E-05 ⁽²⁾	1.6E-07	3.9E-06	6.9E-07
Vanadium	7440-62-2	Yes	No	2.3E-03 ⁽²⁾	1.6E-05	3.8E-04	6.6E-05
Zinc	7440-66-6	Yes	No	0.029 ⁽²⁾	2.0E-04	4.7E-03	8.3E-04
Total TAC Emissions Estimate					0.023	0.55	0.096
Total HAP Emissions Estimate					8.1E-04	0.019	3.4E-03

Notes

HAP = hazardous air pollutant; MMscf = million standard cubic feet; TAC = toxic air contaminant.

- (a) Maximum hourly emissions estimate (lb/hr) = (emission factor [lb/MMscf]) x (maximum hourly natural gas fuel usage [MMscf/hr])
Maximum hourly natural gas fuel usage (MMscf/hr) = 6.8E-03 (1)
- (b) Maximum daily emissions estimate (lb/day) = (emission factor [lb/MMscf]) x (maximum daily natural gas fuel usage [MMscf/day])
Maximum daily natural gas fuel usage (MMscf/day) = 0.16 (1)
- (c) Annual emissions estimate (lb/yr) = (emission factor [lb/MMscf]) x (annual natural gas fuel usage [MMscf/yr]) / (2,000 lb/ton)
Annual natural gas fuel usage (MMscf/yr) = 57.5 (1)
- (d) Emission factor (lb/MMscf) = (total chromium emission factor [lb/MMscf]) x (percentage of chromium VI to total chromium [%] / 100)
Percentage of chromium VI to total chromium (%) = 4.00 (3)

References

- (1) See Table 1, Input Process Rates and Parameters.
- (2) SCAQMD AB2588 Quadrennial Air Toxics Emissions Inventory Reporting Procedures dated June 2020. See Table B-1. Emission factor representative of external combustion equipment with heat inputs less than 10 MMBtu/hr.
- (3) Information provided in the 2017 National Emissions Inventory background document. Assumes hexavalent chromium is equal to 4% of total chromium for natural gas combustion.

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Table 15
Existing Log Bucking Equipment Particulate Emission Estimates
JB Wood Recyclers, LLC—Monmouth, Oregon

Parameter	(Units)	Process Rate ⁽¹⁾		
		Maximum Hourly	Maximum Daily	Annual
Log Bucking Throughput	Mbdft	2.29	54.9	19,265

Pollutant	CAS	Regulatory Category		Emission Factor ⁽²⁾ (lb/Mbdft)	Emission Estimates		
		TAC	HAP		Maximum Hourly (lb/hr)	Maximum Daily (lb/day)	Annual (tons/yr)
PM	--	--	--	0.043	0.099	2.39	0.42
PM ₁₀	--	--	--	0.022	0.050	1.19	0.21
PM _{2.5}	--	--	--	0.011	0.025	0.60	0.10
VOC	--	--	--	0.23	0.52	12.6	2.21
Acetaldehyde	75-07-0	Yes	Yes	2.5E-03	5.6E-03	0.13	0.024
Acetone	67-64-1	Yes	No	5.1E-03	0.012	0.28	0.049
Formaldehyde	50-00-0	Yes	Yes	8.0E-04	1.8E-03	0.044	7.7E-03
Methanol	67-56-1	Yes	Yes	0.032	0.073	1.76	0.31
Total TAC Emission Estimates					0.092	2.21	0.39
Total HAP Emission Estimates					0.081	1.93	0.34

Notes

Mbdft = thousand board feet; Msf-3/8" = thousand square feet on a 3/8-inch basis

(a) Maximum hourly or daily emissions estimate (lb/"unit") = (emission factor [lb/Msf-3/8"]) x (maximum hourly or daily log bucking throughput [Mbdft/"unit"]) / (3/8")

(b) Annual emissions estimate (tons/yr) = (emission factor [lb/Msf-3/8"]) x (annual log bucking throughput [Mbdft/yr]) / (3/8") x (ton/2,000 lb)

References

(1) See Table 1, Input Process Rates and Parameters.

(2) Simple Air Contaminant Discharge Permit no. 27-0042-SI-01 issued September 12, 2023. See Attachment A, Emission Detail Sheets. Particulate emission factors derived from EPA Memorandum on Log Bucking and Particulate Matter PTE Emission Factors dated May 8, 2014. Volatile emission factors derived from AP-42 Table 10.5-7.