



Attachment # 3

Air Permit Application for Cedar Island Forest Products Ltd

**Air Permit Application
for
Cedar Island Forest Products, Ltd.**

Located at:
320 Ewen Avenue
New Westminster, BC V3M 5B1

Greater Vancouver Regional District
Air Quality Management Bylaw No. 1082, 2008

LIST OF FORMS

MVAQ-A1	Business Information and Purpose of Application
MVAQ-B1	Process Description and Schematic Flow Diagram
MVAQ-C1	Site Plan
MVAQ-D1	Emission Source Summary
MVAQ-D2	Emission Information for Point Sources
MVAQ-D3	Emission Information for Fugitive Sources
MVAQ-D4	Air Quality Dispersion Modelling
MVAQ-D5	Supplemental Information
MVAQ-E1	Notice of Application for an Air Quality Permit
MVAQ-E2	Notice of Application for an Air Quality Permit Amendment
MVAQ-E3	Notice of Application for an Air Quality Permit (Current Permit Expiring)
MVAQ-F1	Declaration
MV-QP	Qualified Professional Declaration of Competency
MV-QPCOI	Qualified Professional Conflict of Interest Disclosure Statement

[APPLICATION COMPLETENESS CHECKLIST](#)

Appendix A	SDS Sheets
Appendix B	Fugitive Dust Management Plan
Appendix C	Ownership Records
Appendix D	Emissions Calculations
Appendix E	Air Pollution Control Technology Fact Sheet (EPA-452/F-03-005)

MVAQ-A1: BUSINESS INFORMATION AND PURPOSE OF APPLICATION

A1. Applicant Information <i>(Name of company seeking authorization, NOT the Agent)</i>		
*Company Legal Name <i>(as registered with the BC Registrar of Companies)</i> Cedar Island Forest Products Ltd.		
Company Doing Business As (DBA) Name <i>(if applicable)</i>		
*Incorporation Number <i>(as registered with the BC Registrar of Companies)</i> [REDACTED]		
*Legal Address <i>(as registered with BC Registrar of Companies - street address, city, province, postal code)</i> 320 Ewen Ave., New Westminster BC V3M 5B1		
Mailing Address <i>(if different from above)</i>		
Billing Address <i>(if different from above)</i>		
Contact Numbers	604-525-7441	604-525-7449
<i>*Phone (xxx-xxx-xxxx)</i>	<i>Mobile (xxx-xxx-xxxx)</i>	<i>Fax (xxx-xxx-xxxx)</i>
*Email Address jaswinder.johal@cedarislandreman.com		
*Results of Corporate Registry Search attached? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		
A2. *Purpose <i>(e.g. to authorize the discharge of air contaminants from an anaerobic digester, to amend GVRD permit number GVA####)</i>		
<p>Cedar Island Forest Products, Limited (CIFP) is a remanufacturing facility that provides cut lumber and produces fence panels. Debarked, pre-cut lumber arrives at the site for remanufacturing; kiln drying does not occur at the facility. CIFP has been in operation in the lower mainland since 1994. With increased encroachment of residential housing in the area, MVAQ deemed the need for an air pollution permit and for CIFP to update the existing dust management plan (attached). The facility in New Westminster has two active product cyclones which both collect sawdust for resale. Both cyclones exhaust particulate emissions to ambient air.</p> <p>This application addresses these two stationary emission points as well as fugitive emissions and discusses a compliant and updated Dust Management Plan. CIFP believes the current process flow is conducive to both Good Engineering Practice (GEP) and Best Available Control Technology.</p>		
Website for project information: http://cedarislandforestproductsltd.com/		
*Authorization requested by date <i>(YYYY-MMM-DD)</i>	2022-AUG-01	
*Authorization requested term <i>(in years)</i>	10	

MVAQ-A1: BUSINESS INFORMATION AND PURPOSE OF APPLICATION

***Rationale for requested term**
CIFP anticipates the business will operate for at least 10 more years at this site.

***A3. Authorization Type (check all appropriate boxes)**

Permit <input checked="" type="checkbox"/>	Approval <input type="checkbox"/>	Amendment <input type="checkbox"/>
--	-----------------------------------	------------------------------------

Existing Permit or Approval number and expiry date (if applicable)
There is no existing air permit for the site stationary sources. The original Dust Management Plan (DMP) was published in 2016 and was updated in the summer of 2021. The updated DMP is attached as part of the permit application process.

A4. Authorized Agent Information (complete only if you are an authorized agent for the applicant)

Agent's First Name, Last Name, and Title
 [REDACTED]

Agent's Company Name
 [REDACTED]

Agent's Doing Business As (DBA) Company Name (if applicable)
 [REDACTED]

Address (street address, city, province, postal code)
 [REDACTED]

Contact Numbers
 [REDACTED]

Phone (xxx-xxx-xxxx) Mobile (xxx-xxx-xxxx) Fax (xxx-xxx-xxxx)

Agent's Email Address
 [REDACTED]

A5. Applicant's Authorization for Agent (to be signed by an officer of the company)

I/we (applicant) hereby authorize Mark Nuyens to deal with Metro Vancouver on all aspects of this application.

Applicant's Name	Jaswinder Johal <i>Angus Johal</i>
Applicant's Title	President, Owner <i>OFFICE MANAGER</i>

Personal Information

Signature of Applicant (not Agent or Representative) Date (YYYY-MMM-DD)
 [REDACTED] *2022 07-20*

MVAQ-A1: BUSINESS INFORMATION AND PURPOSE OF APPLICATION

(Sign this only if you are authorizing an agent or representative to act on your behalf.)

A6. Technical Contact for this Application <i>(Name of person to contact for this application, NOT the agent)</i>		
*Contact's First Name, Last Name, Title [REDACTED]		
*Contact's Company if different from Applicant		
Contact Numbers	Personal Information	[REDACTED]
*Phone (xxx-xxx-xxxx)	Mobile (xxx-xxx-xxxx)	Fax (xxx-xxx-xxxx)
*Email Address [REDACTED]		
Qualified Professional Declaration of Competency attached?	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Qualified Professional Conflict of Interest Disclosure attached?	YES <input type="checkbox"/>	NO <input type="checkbox"/>

A7. Facility Location and Information		
*Facility type and description <i>(describe the primary type of business activity or operation at the facility)</i> Re-manufacturing of wood and lumber products		
*NAICS Code and description	333243 Circular saws, woodworking-type, manufacturing	
*Facility Latitude 49° 11.490'	N	*Facility Longitude 122° 55.694' W
*Legal Land Description (Lot/Block/Plan) OR PID/PIN/Crown File No. LOT 2 DISTRICT LOT 757 GROUP 1, PLAN 59350		
*Facility Address (civic address e.g., 4321 Kingsway, Burnaby BC V5J 4G8) 320 Ewen Avenue, New Westminster, BC V3M 5B1		
*Facility Operator/Site Contact First Name, Last Name and Title Jaswinder Johal - President, Owner		
Facility Operator/Site Contact Numbers	(604) 525-7441 (604) 525-7449	
*Phone (xxx-xxx-xxxx)	Mobile (xxx-xxx-xxxx)	Fax (xxx-xxx-xxxx)
*Facility Operator/Site Contact Email Address Jaswinder Johal (jaswinder.johal@cedarislandreman.com)		

MVAQ-A1: BUSINESS INFORMATION AND PURPOSE OF APPLICATION

A8. How near are sensitive receptors?			
	Name or address:	Distance from legal facility property line:	
*Nearest business/residence	Camata Street residences	~10	metres
*Nearest sensitive receptor	Port Royal Park	400	metres
*Nearest major roads	Ewan Avenue	~5	metres

(If available, attach a Google or Bing map showing location of sensitive receptors)

MVAQ-A1: BUSINESS INFORMATION AND PURPOSE OF APPLICATION

A9. Other Requirements		
* Is the Applicant the Legal Land Owner? ¹	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
*If the Applicant is not the Legal Land Owner, is the Legal Land Owner aware of the proposed discharge?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
* Land Title documentation is required if the application is for a new permit or approval or if the application is for an amendment where sales or acquisitions of property have taken place since the last land title documentation was provided. Is land title documentation attached?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<i>If NO, indicate why</i>		
*Are the changes to your facility classified as a “prescribed reviewable project” pursuant to the Environmental Assessment Act Reviewable Projects Regulation ?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

*A10. Signature	
<h1>Personal Information</h1>	<h2>2022-JUL-20</h2>

Signature of Applicant (or Agent if applicable)

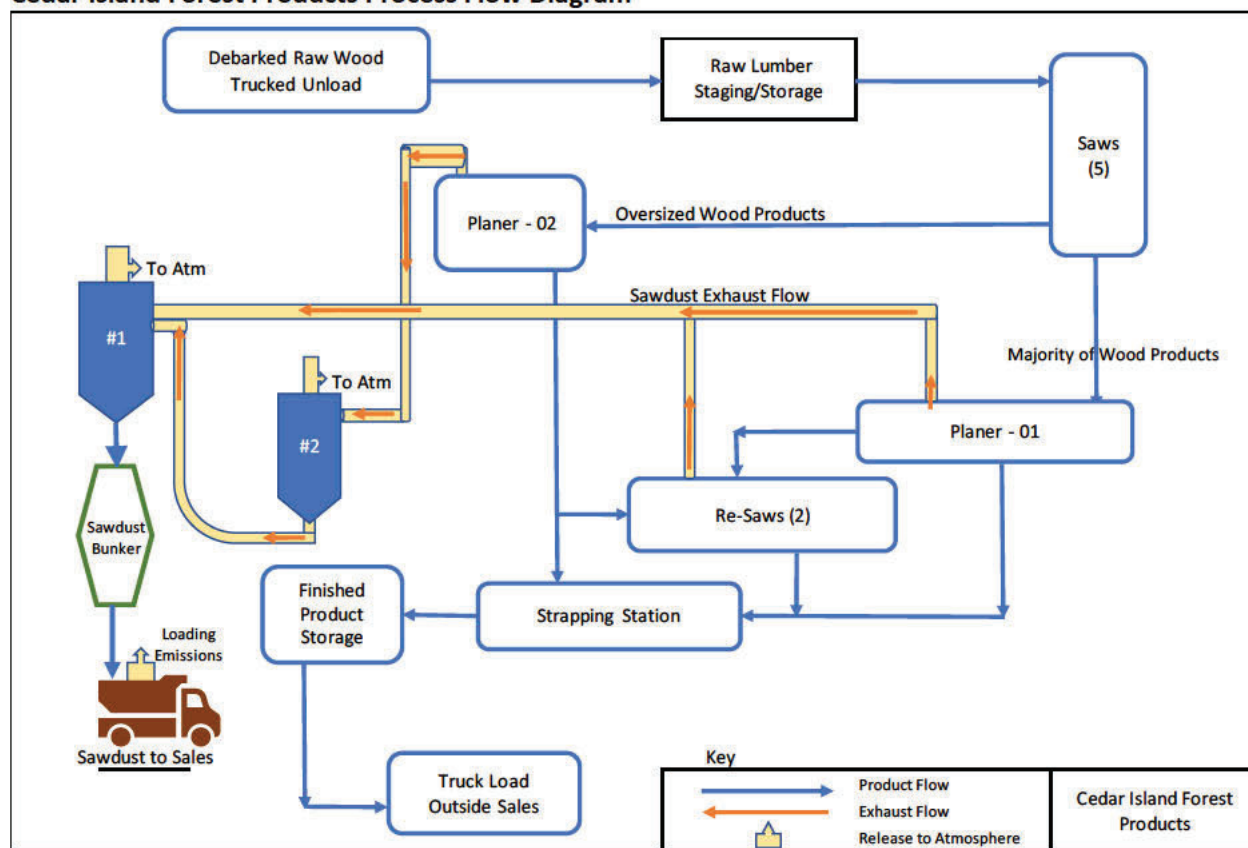
Date (YYYY-MMM-DD)

¹ The land is owned by Cedar Island Re-manufacturing, Ltd. The mill and associated equipment are owned and operated by Cedar Island Forest Products, Ltd.

MVAQ-B1: PROCESS DESCRIPTION & SCHEMATIC FLOW DIAGRAM

The facility can operate up to 6 days per week, 15 hours per day, for 52 weeks per year resulting in 4,680 hours per year of operation. Debarked and cut lumber is processed indoors at this re-manufacturer facility with saws, planers, notchers and re-saws. Negative pressure exhaust ducts are present at all points of sawdust generation, with sawdust-laden air delivered to (~30,800 cfm) Cyclone #1 (14 ft diameter). Larger/oversized lumber is surfaced at Planer #2 and its air collection system routes sawdust-laden air to (~27,500 cfm) Cyclone #2. Periodically, two electric driven blowers (17,000 cfm) transport the collected solids (approximately 2.9 tonnes per hour max) from Cyclone #2 hopper to the inlet of Cyclone #1. Sawdust from Cyclone #2 joins sawdust from Cyclone #1 in a 15,000 kilogram (kg) enclosed Sawdust Bunker which resides directly below Cyclone #1. The two cyclones are not intended to operate simultaneously.

Cedar Island Forest Products Process Flow Diagram

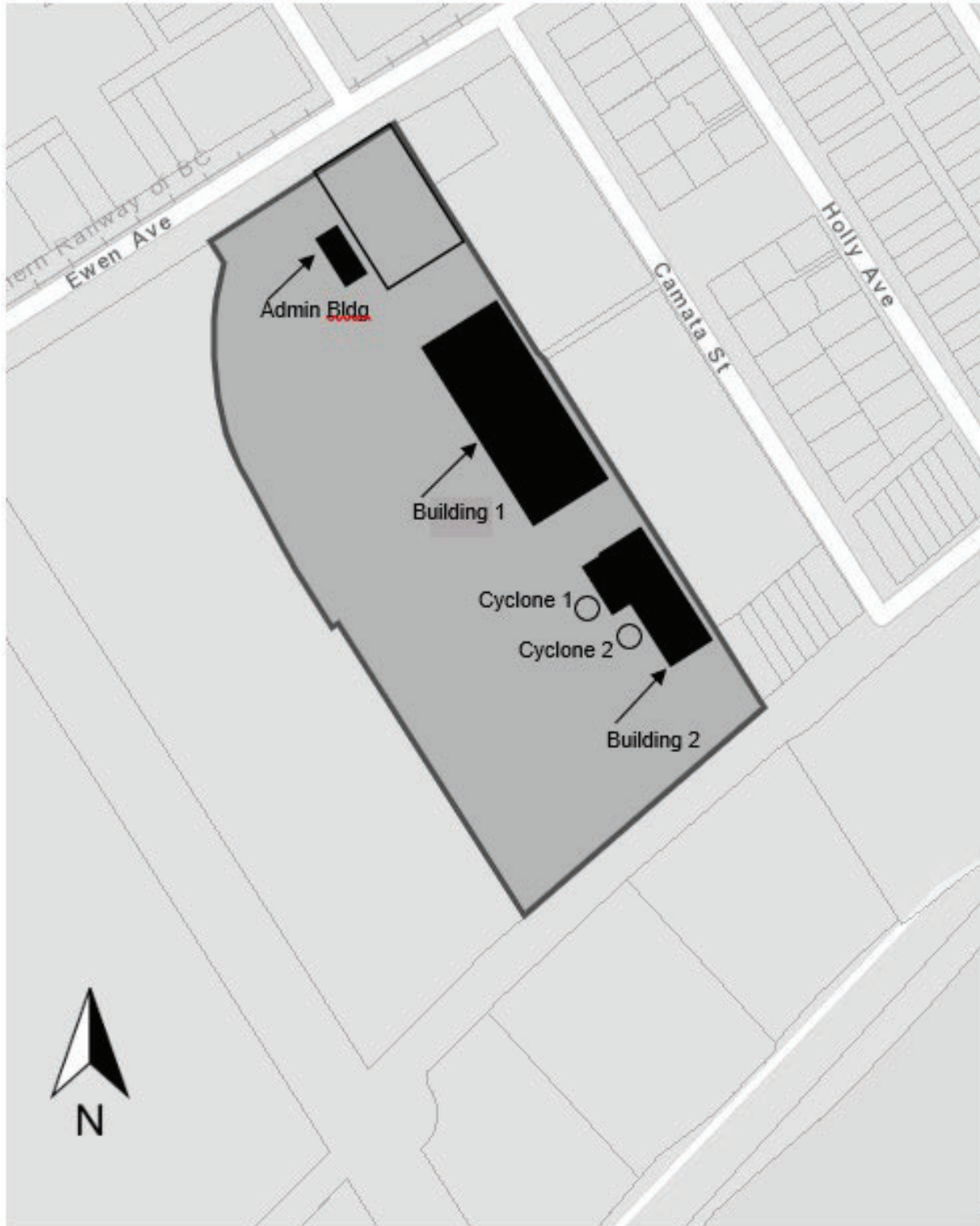


Sealed delivery tubes from the enclosed buildings to the cyclones and sawdust bunker prevent significant dust emissions to the atmosphere. Periodically, emptying of collected sawdust occurs below the sawdust bunker.

The sawdust loading procedure first involves a sawdust truck pulling up underneath the bunker. The bunker is opened and sawdust shavings fall (top-filled) into the truck. This unloading frequency is dependent on production/processing of wood products and can occur as often as three times per week. A small amount of fugitive dust is emitted during the loading of sawdust into the shavings trucks (see Emission Source Summary: ES-03). CIFP uses a pendant push-button system that allows drivers to closely regulate the speed in which sawdust is delivered into the shavings trucks. Slowing down the rate of delivery into the trucks is an effective way of producing less airborne dust.

MVAQ-B1: PROCESS DESCRIPTION & SCHEMATIC FLOW DIAGRAM

Site Plan



MVAQ-B1: PROCESS DESCRIPTION & SCHEMATIC FLOW DIAGRAM

The property measures approximately 3.0 Hectares with a perimeter of 775 meters. There are three main buildings located on site. Two large buildings are used for processing the lumber with the third building being an Administrative building. The open yard areas (see diagram below) are used for staging, storage, transport, and packaging. Site access is via Ewen Ave.

CIFP borders new residential developments comprised of multi-family homes to the northeast and northwest, with established industrial sites located to the southwest and southeast. The Fraser River is located less than 0.3 kilometers to the south. The nearest residential property borders the northeast property line, with multi-family home backyards abutting the CIFP property line. The next nearest residential properties are 30 meters to the northwest across Ewen Avenue. The main processing buildings border the northeast boundary.

Cedar Island Forest Products Property Line and Cyclone Location



MVAQ-C1: SITE PLAN

The northeast corner of the property near the Administration Building is leased to a car storage facility.

Cedar Island Forest Products Northeast Corner



Dimensions and approximate flowrates through the two cyclones are summarized in the table below.

Cyclone Parameters

Cyclone	Flow Rate (cfm)	Flow Rate (m ³ /min)	Outlet ID (ø) inches	Outlet Area (in ²)	Outlet Area (m ²)	Exit Velocity (m/s)
Cyclone #1	25,669	726.9	30	706.9	0.46	26.6
Cyclone #2	30,834	873.1	33	855.3	0.55	26.4

Conversion: 1 m² = 1550 in²

Material safety data sheets (SDS) for all raw materials and products that are relevant to potential air emissions (i.e. gases, liquids with volatile components, and solids that could result in dust) are included on the following page. In the case of CIPF, the pollutant of concern is particulate matter in the form of untreated wood dust.

MVAQ-D1: EMISSION SOURCE SUMMARY

CIFP is comprised of four sources of emissions: Cyclone #1 (ES-01), Cyclone #2 (ES-02), Sawdust Bunker (ES-03), and facility-wide fugitive emissions (ES-04). There are no combustion sources at the site, and annual emissions are calculated for particulate matter only. An annual emissions summary is summarized in the table below. Annual emissions are based on a wood-product throughput and a schedule of 6 days per week, 15 hours per day, 52 weeks per year = 4,680 hrs/yr.

EMISSION SOURCE NUMBER	EMISSION SOURCE DESCRIPTION	Nitrogen Oxides (NO _x) t/y	Sulphur Dioxide (SO ₂) t/y	Volatile Organic Compounds (VOC) t/y	Particulate Matter			New, Existing, Modified, or Obsolete
					Total Particulate Matter (TPM) t/y	PM ₁₀ t/y	PM _{2.5} t/y	
ES-01	Cyclone #1 collects particulate from Building #1 (which houses 5 saws, 1 planer, 2 resaws and notchers). Cyclone #2 (ES-01) sawdust bottoms are also transported to the inlet of the ES-01 where they drop into the sawdust bunker (ES-03). Dust-free air exhausts the top (roughly 29 meters) of the cyclone through a 90° weather elbow which points inwards onto the CIFP property and away from residential neighbours. ES-02 blows its sawdust bottoms up to the inlet of ES-01 where it drops into the same sawdust bunker (ES-03).	0.0	0.0	0.0	4.96	0.79	0.38	Existing
ES-02	Cyclone #2 (ES-02) collects particulate from Building #2 (which houses Planer #2). Dust-free air exhausts the top (roughly 15 meters) of the cyclone through a 60° weather elbow which is pointed inwards onto the CIFP property and away from residential neighbours. ES-02 blows its sawdust <u>bottoms</u> up to the inlet of ES-01 where it drops into the same sawdust bunker (ES-03).	0.0	0.0	0.0	4.38	2.02	0.96	Existing
ES-03	Transport of sawdust from ES-01 and ES-02 to Sawdust Bunker and unloading of sawdust from the bunker to haul trucks.	0.0	0.0	0.0	0.16	0.00	0.00	Existing
ES-04	General facility particulate fugitives.				0.141	0.029	0.007	Existing
FACILITY TOTAL REQUESTED AUTHORIZED EMISSION QUANTITY					9.64	2.84	1.35	

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

*D2-1a EMISSION SOURCE (ES) NUMBER	ES-01	*D2-1b DESCRIPTION	Cyclone collection system and Process Cyclone #1 – for Millworks Building
*D2-1c EMISSION POINT TYPE			Stack <input type="checkbox"/> Vent <input checked="" type="checkbox"/> Transfer Point <input type="checkbox"/> Other <input type="checkbox"/>
			New <input type="checkbox"/> Modified <input type="checkbox"/>

EMISSION SOURCE CHARACTERISTICS

*D2-1d Stack height (m from ground level)	*D2-1d Stack inside diameter at stack top (m)	*D2-1d Stack Design (check all that apply)	Non-circular <input type="checkbox"/>	If non-circular, provide effective diameter (m)		
			Horizontal <input checked="" type="checkbox"/>	Vertical Up <input type="checkbox"/>	Vertical Down <input type="checkbox"/>	
			At angle <input checked="" type="checkbox"/>	If at angle, provide degrees from horizontal		90
			Raincap?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
~29	0.762					

*D2-1e Minimum exhaust gas temp (°C)	*D2-1e Normal exhaust gas temp (°C)	*D2-1e Maximum exhaust gas flowrate (Sm ³ /min) ²	*D2-1e Exit velocity at actual conditions (m/s)	*D2-1e Maximum opacity (%)	*D2-1f Maximum operating hours per year
Ambient	Ambient	726.9	26.6	20	4,680

*D2-1g(i) Are you requesting a restriction to specific days of the week or hours of the day that you operate? <i>If yes please explain under D2-1i Comments</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
---	------------------------------	--

D2-1g(ii) If requested maximum operating hours less than 8760 h/y, how will facility track hours?	Computer program tracks saws and planers hours of operation. Exhaust system and cyclone does not operate if saws and planers are off.
---	--

*D2-1h Is there potential for odour beyond the facility property line from this source?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Odour management plan attached?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
*D2-1h Is there potential for dust beyond the facility property line from this source?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Dust management plan attached?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

D2-1i Comments



Re-saws

² Standard conditions are: 101.325 kPa, 20°C, zero percent moisture and 3% oxygen for gaseous or liquid fuels or 8% oxygen for wood fuel.

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

EMISSION SOURCE CHARACTERISTICS



Cyclone #1 (ES-01)

All emissions are shavings and sawdust generated from milling wood products.

Continued on next page.....

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

.....Continued from previous page

D2-1a EMISSION SOURCE NUMBER (ES)

ES-01

EMISSIONS COLLECTION AND CONTROLS			
*D2-2a Description of how emissions are collected and directed to control works		*D2-2a Collection Efficiency (%)	
Negative pressure exhaust intakes near cutting or planer area (industrial dust collection system or IDCS) collects wood dust and delivers it to Cyclone #1.		98%	
*D2-2b Description of control works (equipment or procedures)			
Process Cyclone - this separator works as a centrifuge with a continuous feed of wood dust-laden air. In the cyclone, wood dust-laden air is fed into a cylindrical, spiral chamber (14' diameter = 4.27 m). The inside of the chamber creates a spiral vortex. This spiral formation allows the lighter components of this air stream that have less inertia travel up and to ambient air. Larger components of particulate matter (sawdust) have more inertia and fall into a collection hopper and then down into a sawdust bunker.			
*D2-2c Manufacturer and Model Name and/or Number		*D2-2c Control Efficiency (%)	
Unknown		TPM = 80% PM10 = 60% PM2.5 = 20%	
*D2-2d Best Available Control Technology?	Most effective or advanced control technology currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
	Most effective or advanced management practice currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
	Older control technology or management practice?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
	Separate document attached providing rationale for emission controls selected and alternatives considered	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D2-2e Comments			
<p>Wood dust (particulate matter) is the only pollutant the cyclone controls (no combustion products, solvents, or toxics). All PM generating equipment is powered by electricity. Wood dust is typically large aerodynamic particulates. PM10 and PM2.5 are produced in smaller quantities.</p> <p>The exhaust of the cyclone is pointed inwards towards the CIFP property to minimize any potential emissions to nearby neighbours.</p> <p>Maximum operating hours are 6 days per week, 15 hours per day, 52 weeks per year = 4,680 hrs/yr.</p>			

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

PROCESS(ES) OR EQUIPMENT GENERATING THE EMISSIONS	
*D2-3a Process or equipment description	
<p>Five (5) Chop Saws: 16-inch, custom made on-site Two (2) Re-Saws: #1 = 54-inch; #2 = 54-inch One (1) Planer: 6 x 10 inch</p>	
*D2-3b Manufacturer and Model name and/or Number	
<p>Chop Saws: On-Site Millwright Re-Saws: #1 = Gates; Re-Saw #2 = McDonough (SSN# 54-1142, Model# R54-146-L) Planer-01: Stetson Ross (SSN# 120-160-200-240. Model #120-10MA-1)</p>	
*D2-3c Maximum throughput or process capacity for non-combustion processes (include units)	<p>With 10-hr workdays, throughput of raw material for ES-01 = 8,000 tonnes (8,000,000 bfm).</p> <p>When considering 15-hr workdays, this throughput scales up to 12,000 tonnes (12,000,000 bfm).</p>

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

		*D2-1a EMISSION SOURCE NUMBER (ES)				ES-01
*D2-3d Combustion sources (if)	*D2-3d Fuel type	*D2-3d Max input firing rate (GJ/h)	*D2-3d Primary or standby fuel?	*D2-3d Source if waste based	*D2-3d % Sulphur content	*D2-3d Max firing hours per year
	Electric	N/A	Primary	N/A	N/A	

D2-3e Comments

Industrial dust collection system (IDCS) uses source capture and subsequent cleaning of sawdust from the Planer #1 and (5) chop saws. Ductwork transports material-laden air to cyclone for sawdust collection and then exhausts to ambient air.

IDCS uses source capture from re-saws of wood board products and transports material-laden air through ductwork to cyclone for sawdust collection and then exhausts to ambient air.

AIR CONTAMINANTS TO BE DISCHARGED

*D2-4a Air Contaminant Common Name (other than products of natural gas combustion – see guidance)	D2-4a CAS (see guidance)	*D2-4b Requested outlet concentration limit under standard conditions (mg/Sm ³)	*D2-4c Requested emission quantity limit (provide sample calculations) (t/y)
TPM	None	24.30	4.96
PM10	None	3.87	0.78
PM2.5	None	1.84	0.38

D2-4d Comments


See attachment in Appendix A for calculations.

A = WHS/1000; from NPRI Wood Products Operation and NCASI. Raw materials are not ODT (oven dry tonnage).

D2-4b calculation example: $0.86 \text{ T/yr} \times 1000 \text{ kg/T} / 4680 \text{ hrs/yr} / 726.9 \text{ m}^3/\text{min} / 60 \text{ min/hr} \times 1000 \text{ g/kg} \times 1000 \text{ mg/g} = 4.21 \text{ mg/m}^3$

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

*D2-1a EMISSION SOURCE (ES) NUMBER	ES-02	*D2-1b DESCRIPTION	Cyclone collection system for Cyclone #2 – for large planer; pneumatically delivering all sawdust to the inlet of Cyclone #1 (ES-01) and then the collection bunker.
*D2-1c EMISSION POINT TYPE			Stack <input type="checkbox"/> Vent <input checked="" type="checkbox"/> Transfer Point <input type="checkbox"/> Other <input type="checkbox"/>
			New <input type="checkbox"/> Modified <input type="checkbox"/>

EMISSION SOURCE CHARACTERISTICS						
*D2-1d Stack height (m from ground level)	*D2-1d Stack inside diameter at stack top (m)	*D2-1d Stack Design (check all that apply)	Non-circular <input type="checkbox"/> If non-circular, provide effective diameter (m)			
			Horizontal <input checked="" type="checkbox"/> Vertical Up <input type="checkbox"/> Vertical Down <input type="checkbox"/>			
			At angle <input checked="" type="checkbox"/> If at angle, provide degrees from horizontal		90	
			Raincap? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
*D2-1e Minimum exhaust gas temp (°C)	*D2-1e Normal exhaust gas temp (°C)	*D2-1e Maximum exhaust gas flowrate (Sm ³ /min) ³	*D2-1e Exit velocity at actual conditions (m/s)	*D2-1e Maximum opacity (%)	*D2-1f Maximum operating hours per year	
Ambient	Ambient	873.1	26.4	20	4,680	
*D2-1g(i) Are you requesting a restriction to specific days of the week or hours of the day that you operate? <i>If yes please explain under D2-1i Comments</i>					YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D2-1g(ii) If requested maximum operating hours less than 8760 h/y, how will facility track hours?			A computer program tracks the saw and planer hours of operation. The cyclone is operational when the saw and planer are on.			
*D2-1h Is there potential for odour beyond the facility property line from this source?					YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Odour management plan attached?					YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
*D2-1h Is there potential for dust beyond the facility property line from this source?					YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
Dust management plan attached?					YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D2-1i Comments						
						
Planer #2 Larger Unit						

³ Standard conditions are: 101.325 kPa, 20°C, zero percent moisture and 3% oxygen for gaseous or liquid fuels or 8% oxygen for wood fuel.

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

EMISSION SOURCE CHARACTERISTICS



Cyclone #2 (ES-02, lower cyclone)

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

.....Continued from previous page

*D2-1a EMISSION SOURCE NUMBER (ES)	ES-02
------------------------------------	-------

EMISSIONS COLLECTION AND CONTROLS			
*D2-2a Description of how emissions are collected and directed to control works		*D2-2a Collection Efficiency (%)	
<p>Exhaust intakes at the Planer #2 area collects wood dust using negative pressure (industrial dust collection system or IDCS) which is transported to Cyclone #2. Cyclone #2 separates out the heavier particulate (sawdust) and exhausts the remainder to ambient air.</p> <p>Periodically, sawdust bottoms are blown up near the inlet of Cyclone #1 where it immediately drops into a sawdust bunker (ES-03).</p>		98%	
*D2-2b Description of control works (equipment or procedures)			
<p>Process Cyclone - this separator works as a centrifuge with a continuous feed of wood-dust laden air. In the cyclone, wood-dust laden air is fed into a cylindrical, spiral chamber. The inside of the chamber creates a spiral vortex. This spiral formation allows the lighter components of this air stream that have less inertia travel up and to ambient air. Larger components of particulate matter (sawdust) have more inertia and spiral downwards. The sawdust is transported to the inlet of Cyclone #1 where it immediately drops to the bottom of the cyclone, filling a sawdust bunker.</p>			
*D2-2c Manufacturer and Model Name and/or Number		*D2-2c Control Efficiency (%)	
Unknown		TPM = 80% PM10 = 60% PM2.5 = 20%	
*D2-2d Best Available Control Technology?	Most effective or advanced control technology currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
	Most effective or advanced management practice currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
	Older control technology or management practice?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
	Separate document attached providing rationale for emission controls selected and alternatives considered	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D2-2e Comments			
<p>Wood dust particulate matter (PM) is the only pollutant these existing cyclones control (no combustion products, solvent, or toxics). All PM-generating equipment is powered by electricity. Wood dust is typically large aerodynamic particulates, thus insignificant particulate sized less than 2.5 microns (PM2.5) is generated.</p> <p>The exhaust of the cyclone is pointed inwards towards the CFP property to minimize any potential emissions to nearby neighbours.</p> <p>Maximum operational hours are 6 days per week, 10 hours per day, 52 weeks per year = 4,680 hrs/yr.</p>			

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

PROCESS(ES) OR EQUIPMENT GENERATING THE EMISSIONS	
*D2-3a Process or equipment description	
<p>Planer #2: 6 x 12 inch Chop Saw: 16-inch</p>	
*D2-3b Manufacturer and Model name and/or Number	
<p>Planer #2 – Stetson Ross Model 6-12MA-1 Custom-made Chop Saw</p>	
*D2-3c Maximum throughput or process capacity for non-combustion processes (include units)	<p>With 10-hr workdays, throughput of raw material for ES-02 = 2,000 tonnes (2,000,000 bfm).</p> <p>With 15-hr workdays, this throughput scales up to 3,000 tonnes (3,000,000 bfm).</p>

MVAQ-D2: EMISSION INFORMATION FOR POINT SOURCES

		*D2-1a EMISSION SOURCE NUMBER (ES)				ES-02
*D2-3d Combustion sources (if)	*D2-3d Fuel type	*D2-3d Max input firing rate (GJ/h)	*D2-3d Primary or standby fuel?	*D2-3d Source if waste based	*D2-3d % Sulphur content	*D2-3d Max firing hours per year
	Electric	N/A				
<p><i>D2-3e Comments</i></p> <p>Sawdust created by the Planer is routed to ES-02.</p> <p>IDCS uses source capture and subsequent cleaning of dust from Planer #1. Ductwork transports material-laden air to ES-02 for sawdust collection and then exhausts to ambient air.</p> <p>Unloading: Cyclone to hopper to cylinder tubes up to ES-01 (Cyclone #1) and subsequently down to Sawdust Bunker Loading (ES-03).</p>						

AIR CONTAMINANTS TO BE DISCHARGED			
*D2-4a Air Contaminant Common Name (other than products of natural gas combustion – see guidance)	D2-4a CAS (see guidance)	*D2-4b Requested outlet concentration limit under standard conditions (mg/Sm ³)	*D2-4c Requested emission quantity limit (provide sample calculations) (t/y)
TPM	None	17.86	4.38
PM10	None	8.22	2.02
PM2.5	None	3.91	0.96
<p><i>D2-4d Comments</i></p> <p>See attachment in Appendix A for calculations.</p> <p>D2-4b calculation example: 1.684 T/yr x 1000 kg/T / 4680 hrs/yr / 873.1 m³/min / 60 min/hr * 1000 g/kg * 1000 mg/g = 6.87 mg/m³</p>			

MVAQ-D3: EMISSION INFORMATION FOR FUGITIVE SOURCES

*D3-1a EMISSION SOURCE (ES) NUMBER	ES-03	*D3-1b DESCRIPTION	Bunker Unloading to shavings trucks classified under "Miscellaneous Wood Handling"
*D3-1c EMISSION SOURCE TYPE		Vent <input type="checkbox"/> Transfer Point <input type="checkbox"/> Stockpile <input type="checkbox"/> Loading Point <input checked="" type="checkbox"/> Other <input type="checkbox"/>	
*D3-1d EMISSION SOURCE STATUS		New <input type="checkbox"/> Modified <input type="checkbox"/> Existing <input checked="" type="checkbox"/>	

EMISSION SOURCE CHARACTERISTICS			
*D3-1e Dimensions of source	15,000 kg sawdust bunker	*D3-1f Max operating hours/year	20
*D3-1g Characterization of emission source	Typical unloading of the hopper to the 15,000 kg sawdust bunker occurs at a maximum of three times a week depending on the products (Cedar, Douglas Fir and Hemlock lumber handling). Duration of each dump into the shavings trucks is less than 10 minutes.	Requested opacity limit (%)	20
*D3-1h Are you requesting a restriction to specific days of the week or hours of the day that you operate? <i>If yes please explain under comments</i>		YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D3-1i If max operating hours less than 8760 h/y, how will facility track hours?	The facility keeps records of trucks being loaded.		
*D3-1j Is there potential for odour beyond the facility property line from this source? Odour management plan attached?		YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
*D3-1k Is there potential for dust beyond the facility property line from this source? Dust management plan attached?		YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

D3-1l Comments



Trucks back into the semi-enclosed, covered location below the sawdust bunker. Sawdust is top-filled into trucks.

CIFP uses a pendant push-button system that allows drivers to closely regulate the speed in which sawdust is delivered into the shavings trucks. By slowing down the rate of delivery into the trucks, less airborne dust is created.

Continued on next page.....

MVAQ-D3: EMISSION INFORMATION FOR FUGITIVE SOURCES

.....Continued from previous page

D3-1a EMISSION SOURCE NUMBER (ES)

ES-03

EMISSIONS CONTROLS			
*D3-2a Description of how emissions are collected and directed to control works			*D3-2a Collection Efficiency (%)
Employees are instructed to sweep up and dispose of any accumulated sawdust piles. Furthermore, water applications are to take place on pavement on dry and/or windy days.			80%
*D3-2b Description of control works (equipment or procedure)			
Unloading sawdust occurs in a tightly enclosed outdoor area below the sawdust bunker and away from the wind. Sweeping sawdust up and/or adding water for sawdust that may have accumulated on paved surfaces.			
*D3-2c Manufacturer and Model Name and/or Number			*D3-2c Control Efficiency (%)
N/A			99%
*D3-2d Best Available Control Technology or Best Management Practice?	Most effective or advanced control technology currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
	Most effective or advanced management practice currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
	Older control technology or management practice?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<i>D3-2e Comments</i>			
<p>BMPs are the most logical and effective methods to control the facilities fugitive dust potential in the yard and surrounding of the millworks. BMPs include:</p> <ul style="list-style-type: none"> • Minimizing drop distance into trucks and procedures described in the Dust Management Plan: Location/Zone 3 (Bunker) sheet (see Section 2.4) • A pendant push-button system that allows drivers to closely regulate the speed in which sawdust is delivered into the shavings trucks. By slowing down the rate of delivery into the trucks, less airborne dust is created. • Having water sprays available during unloading when dry conditions exist. 			
*D3-3a Process or activity description			
Unloading of the 15,000 kg sawdust bunker occurs roughly 3 times per week depending on the type(s) of wood products being processed at the site. Once situated, unloading of the bunker to a truck takes approximately 5 to 10 minutes.			
*D3-3b Daily or hourly activity limit requested (including units)		90 minutes per week (6 days x 15 minutes per load). This ensures there is sufficient time to unload one truck per day in a 6-day work week.	
D3-3c Annual activity limit requested (including units)		78 hours per year (90 minutes x 52 weeks per year)	
<i>D3-3d Comments</i>			

MVAQ-D3: EMISSION INFORMATION FOR FUGITIVE SOURCES

Continued on next page.....

.....Continued from previous page

***D3-1a EMISSION SOURCE NUMBER (ES)**

ES-03

AIR CONTAMINANTS TO BE DISCHARGED			
*D3-4a Air Contaminant Common Name	D3-4b CAS	*D3-4c Requested daily emission quantity limit (kg/d) - fugitive	D3-4d Requested annual emission quantity limit (t/yr) - fugitive
TPM	None	0.10	0.04
PM-10	None	N/A	0.00
PM-2.5	None	N/A	0.00

D3-4e Provide sample calculations of requested emission quantity limits and references here or in an attachment

See attachment for calculations.

D3-4c calculation example: $0.038 \text{ T/yr} \times 1000 \text{ kg/T} \times \text{yr}/365 \text{ days} = 0.10 \text{ kg/day}$.

PM10 and PM2.5 are assumed to be captured by the cyclones resulting in only heavier TPM at ES-03.

MVAQ-D3: EMISSION INFORMATION FOR FUGITIVE SOURCES

*D3-1a EMISSION SOURCE (ES) NUMBER	ES-04	*D3-1b DESCRIPTION	General yard and lumber handling, pursuant to “wood-products_operation-spreadsheet_21-04_2015.xls, NPRI, classified as “Miscellaneous Wood Handling”
*D3-1c EMISSION SOURCE TYPE		Vent <input type="checkbox"/> Transfer Point <input type="checkbox"/> Stockpile <input type="checkbox"/> Loading Point <input type="checkbox"/> Other <input checked="" type="checkbox"/>	
*D3-1d EMISSION SOURCE STATUS		New <input type="checkbox"/> Modified <input type="checkbox"/> Existing <input checked="" type="checkbox"/>	

EMISSION SOURCE CHARACTERISTICS				
*D3-1e Dimensions of source	Maximum 125 m x 285 m		*D3-1f Max operating hours/year	8,760
*D3-1g Characterization of emission source	Cedar, Hemlock and SPF sawdust from lumber handling with forklifts, trucks and support equipment.		Requested opacity limit (%)	20
*D3-1h Are you requesting a restriction to specific days of the week or hours of the day that you operate? <i>If yes please explain under comments</i>			YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
D3-1i If max operating hours less than 8760 h/y, how will facility track hours?	The facility keeps records of trucks being loaded.			
*D3-1j Is there potential for odour beyond the facility property line from this source?			YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Odour management plan attached?			YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
*D3-1k Is there potential for dust beyond the facility property line from this source?			YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Dust management plan attached?			YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
D3-1l Comments				
<p>A general yard fugitive emission value accounts for this type of operation. It accounts for both passive and active fugitive dust generation in the existing property. The use of paved surfaces with a preventative maintenance program addresses the build-up of sawdust sources. Best Management Practices (BMPs) are in place for both (1) minimization of dust emissions and (2) fire prevention.</p> <p>Paved area is <3.0 hectares and is used for shipping, storage, and staging of raw and finished lumber products. Cedar, Douglas Fir and Hemlock sawdust from lumber handling with forklifts, trucks and support equipment can drop on parts of the paved area.</p>				

MVAQ-D3: EMISSION INFORMATION FOR FUGITIVE SOURCES

.....Continued from previous page		*D3-1a EMISSION SOURCE NUMBER (ES)		ES-04
EMISSIONS CONTROLS				
*D3-2a Description of how emissions are collected and directed to control works			*D3-2a Collection Efficiency (%)	
Employees are instructed to sweep up and dispose of any accumulated sawdust piles. Furthermore, water applications are to take place on pavement on dry and windy days.			80%	
*D3-2b Description of control works (equipment or procedure)				
Sweeping and the addition of moisture (water) for sawdust that has accumulated on paved surfaces				
*D3-2c Manufacturer and Model Name and/or Number			*D3-2c Control Efficiency (%)	
N/A			99%	
*D3-2d Best Available Control Technology or Best Management Practice?	Most effective or advanced control technology currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	Most effective or advanced management practice currently successfully in use elsewhere?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	Older control technology or management practice?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
D3-2e Comments				
BMPs are the most logical and effective methods to control the fugitive dust potential in the facility.				
Adherence to the 2021 Fugitive Dust Management Plan (attached) will ensure the accumulation of dust is minimized.				
*D3-3a Process or activity description				
Wood dust (TPM) emissions from various activities on the property.				
*D3-3b Daily or hourly activity limit requested (including units)		No limit requested.		
D3-3c Annual activity limit requested (including units)		No limit requested.		
D3-3d Comments				
Adherence to the 2021 Fugitive Dust Management Plan (attached) will ensure the accumulation of dust is minimized.				

MVAQ-D3: EMISSION INFORMATION FOR FUGITIVE SOURCES

.....Continued from previous page

D3-1a EMISSION SOURCE NUMBER (ES)

ES-04

AIR CONTAMINANTS TO BE DISCHARGED			
*D3-4a Air Contaminant Common Name	D3-4b CAS	*D3-4c Requested daily emission quantity limit (kg/d) - fugitive	D3-4d Requested annual emission quantity limit (t/yr) - fugitive
TPM	None	0.12	0.043
PM-10	None	0.025	0.009
PM-2.5	None	0.006	0.002

D3-4e Provide sample calculations of requested emission quantity limits and references here or in an attachment

See attachment for calculations.

D3-4c calculation example: $0.043 \text{ T/yr} \times 1000 \text{ kg/T} \times \text{yr}/365 \text{ days} = 0.12 \text{ kg/day}$.

MVAQ-D4: AIR QUALITY DISPERSION MODELLING

Metro Vancouver will likely request air quality dispersion modelling if

- an application requires public notification,
- if the change in the annual emission fee based on requested emissions is greater than \$1,000,
- if we've received recent complaints about the facility, or
- if the discharge is near sensitive receptors (residences, schools, hospitals, health care facilities, homes for the elderly, etc.).

There may be other instances when MV or local health authorities (Vancouver Coastal Health or Fraser Health) request dispersion modelling.

A dispersion model plan should be submitted for approval prior to running any model.

If you are conducting air quality dispersion modelling, please review [Guidance for Air Permit Applications](#) for more information. Contact Metro Vancouver for additional guidance, if required.

You must conduct modelling according to the [Guidelines for Air Quality Dispersion Modelling](#) in British Columbia published by the BC Ministry of Environment except as indicated in the [Metro Vancouver dispersion model template](#) or a model plan approved by Metro Vancouver.

MVAQ-D4: AIR QUALITY DISPERSION MODELLING

This page intentionally blank

MVAQ-D5: SUPPLEMENTAL TECHNICAL AND OTHER INFORMATION

Provide an itemized list of attached reports and documents (e.g., emission calculations, SDS or manufacturer documentation) that support the application.

REPORT NAME AND AUTHOR (WHERE APPLICABLE)	DATE
Safety Data Sheet (SDS): Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust	27-08-2018
Fugitive Dust Management Plan for Cedar Island Forest Products Ltd.	28-06-2021
State of Title Certificate #STSR3412981 (Title Number BR240410)	03-11-2021
Title Search Print (Title Number BR240410)	03-11-2021
Emissions Calculations (Excel spreadsheet)	2021
Air Pollution Control Technology Fact Sheet (EPA-452/F-03-005)	

**MVAQ-E1: NOTICE OF APPLICATION FOR A PERMIT UNDER
GREATER VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT BYLAW**

This summary of the Application is filed with the DISTRICT DIRECTOR, METRO VANCOUVER. Any person who may be adversely affected by the discharge of air contaminants as described below may, within 30 days from the date of posting, publication, service or display, write to the DISTRICT DIRECTOR, METRO VANCOUVER, ENVIRONMENTAL REGULATION AND ENFORCEMENT DIVISION, 4730 KINGSWAY, BURNABY, BC, V5H 0C6, or email regulationenforcement@metrovancover.org stating how they are affected. When making a decision on the permit or approval application, the District Director will consider the application, comments submitted and any responses provided by the applicant. Information collected during the comment period and the time following until a decision on the permit application has been made is collected under the authority of the Freedom of Information and Protection of Privacy Act. Your personal information and comment will be forwarded to the permit applicant for response to the District Director. By submitting a public comment, you consent to such disclosure.

1. In accordance with the provincial Environmental Management Act Public Notification Regulation,

Cedar Island Forest Products Ltd.

(Full name. If a company, British Columbia registered name)

of: 300, 15127 – 100th Avenue, Surrey, BC V3R 0N9

(Company address and postal code)

hereby apply for a Permit to discharge contaminants into the air from a(n):

Lumber re-manufacturing plant

(Type of business or operation)

located at: 320 Ewen Avenue, New Westminster, BC V3M 5B1

(Facility civic address and postal code)

The legal description of the land upon which the facility is located is:

Lot 2, Plan NWP59350, District Lot 757, Group 1, New Westminster Land District

(Legal Land Description (Lot/Block/Plan) OR PID/PIN/Crown File No.)

2. The purpose of this Application is to request authorization to discharge air contaminants from:

Two process cyclones (ES-01 and ES-02) controlling wood dust from various saws and planers.
Two fugitive operations (ES-03, bunker unloading) and plant-wide fugitive emissions (ES-04).
Website for more information: http://cedarislandreman.com/

3. A summary of the emission characteristics is as follows:

- (a) Maximum total number of sources: 4
- (b) Maximum duration of discharge of air contaminants in hours per year: 4,680
- (c) Requested expiry date (YYYY-MMM-DD): 01-August-2032
- (d) Emission characteristics:

Total Emissions from All Sources Based on Requested Limits

Air Contaminant (name)	Requested Authorized Emissions (tonnes/year)
Particulate Matter (Coarse)	12.47
Particulate Matter (Fine)	1.34
Total	13.81

(e) Combustion processes: Primary fuel N/A Secondary fuel N/A

(f) Maximum Opacity: 20 per cent

July 20, 2022
(Date)

Personal Information

(Print name of applicant or agent)

Personal Information

(Signature of applicant or agent)

**MVAQ-E1: NOTICE OF APPLICATION FOR A PERMIT UNDER
GREATER VANCOUVER REGIONAL DISTRICT AIR QUALITY MANAGEMENT BYLAW**

This page intentionally blank

MVAQ-F1: DECLARATION

I understand that any information provided by Metro Vancouver Regional District ("Metro Vancouver") staff during the review process is intended only to aid the applicant in producing a complete and accurate application package.

I understand that no part of the Metro Vancouver application review process suggests a final outcome of a decision by the District Director with respect to the authorization of air emissions to the atmosphere.

I understand that all information submitted as part of this application is determined solely by me, the applicant regardless of the origin of the information, including information obtained from Metro Vancouver staff.

I declare that the information given in this application is true, complete and accurate and that the submission of insufficient information may result in the application review process being delayed.

By submitting this application, I **authorize Metro Vancouver to publish on the Metro Vancouver website and to disclose inside and outside of Canada the entirety of the application information and all information submitted with the application, except for portions of the application information and/or submitted information that I/the applicant has explicitly and clearly indicated on the face of the document as "confidential" pursuant to section 21(1) of the BC Freedom of Information and Protection of Privacy Act (FOIPPA). In respect of such designated "confidential" information, I have provided to Metro Vancouver in writing with the application the applicant's rationale as to why the disclosure of such confidential business information would reasonably be expected to cause the applicant harm, or how other reasons for non-disclosure listed in section 21(1) of FOIPPA are applicable, should the designated confidential information be subject to a request under section 5 of FOIPPA.** I understand that if I have any questions about the collection, use or disclosure of personal information, I may contact foippra@metrovancover.org.

In consideration of Metro Vancouver's Environmental Regulation and Enforcement Division receiving this application, **the Applicant agrees that it will indemnify and save harmless** Metro Vancouver, Greater Vancouver Sewerage and Drainage District, and their respective officers, directors, employees and agents (the "Indemnified Parties") from any claim for infringement of copyright or other intellectual property rights that the Indemnified Parties may sustain, incur, suffer or be put to at any time that arise from the publication of the application and/or other information submitted with the application.

Personal Information

Name (please print)

Personal Information

Signature

OFFICE MANAGER

Title

2022-07-20

Date (YYYY-MMM-DD)

MVAQ-F1: DECLARATION

This page intentionally blank



Qualified Professional Declaration of Competency

Metro Vancouver Regional District’s Environmental Regulation and Enforcement Division relies on the work of Qualified Professionals¹. With this comes an assumption that professionals who undertake work in relation to Metro Vancouver permits, licences, and bylaws have the knowledge, experience and objectivity necessary to fulfill this role.

1. Name of Qualified Professional _____

Title _____

2. Are you a registered member of a professional association in B.C.? Yes No

Name of Association: _____ Registration # _____

3. Brief description of specific professional services that will be provided:

This declaration of competency is collected under section 26(c) of the *BC Freedom of Information and Protection of Privacy Act* for the purpose of ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure inside or outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact foippa@metrovancover.org.

Declaration

I am a Qualified Professional with the knowledge, skills and experience to provide expert information, advice and/or recommendations in relation to the specific work described above.

Signature:

Witnessed by:

Print Name:

Print Name:

Date signed:

¹ *Qualified Professional, in relation to a duty or function under MVRD and GVS&DD bylaws, means an individual who*

- a) *is registered in British Columbia with a professional association, is acting under that organization’s code of ethics, and is subject to disciplinary action by that association, and*
- b) *through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.*

This page intentionally blank



Qualified Professional Conflict of Interest Disclosure Statement

A Qualified Professional ¹ providing services to a regulated person for the purpose of that person obtaining a permit, licence or an authorization from Metro Vancouver Regional District, or pursuant to a requirement imposed under the Environmental Management Act or a Bylaw, has a real or perceived conflict of interest when the Qualified Professional, or their relatives, close associates or personal friends have a financial or other interest in the outcome of the work being performed.

A real or perceived conflict of interest occurs when a Qualified Professional has:

- a) an ownership interest in the regulated person’s business;
- b) an opportunity to influence a decision that leads to financial benefits from the regulated person or their business other than a standard fee for service (e.g., bonuses, stock options, other profit sharing arrangements);
- c) a personal or professional interest in a specific outcome;
- d) the promise of a long term or ongoing business relationship with the regulated person, that is contingent upon a specific outcome of work;
- e) a spouse or other family member who will benefit from a specific outcome; or
- f) any other interest that could be perceived as a threat to the independence or objectivity of the Qualified Professional in performing a duty or function.

Qualified Professionals who work under EMA and its regulations, including MVRD and GVS&DD Bylaws, must take care in the conduct of their work that potential conflicts of interest within their control are avoided or mitigated. Precise rules in conflict of interest are not possible and professionals must rely on guidance of their professional associations, their common sense, conscience and sense of personal integrity.

Declaration

Brief description of specific professional services that will be provided:

I _____, as a member of _____
(Print first name and last name) (Name of Professional Organization)

Declare

(over)

¹ *Qualified Professional, in relation to a duty or function under MVRD and GVS&DD bylaws, means an individual who*

- a) *is registered in British Columbia with a professional association, is acting under that organization’s code of ethics, and is subject to disciplinary action by that association, and*
- b) *through suitable education, experience, accreditation and knowledge, may reasonably be relied on to provide advice within his or her area of expertise, which area of expertise is applicable to the duty or function.*

Select one of the following:

Absence from conflict of interest

Other than the standard fee I will receive for my professional services described above, I have no financial or other interest in the outcome of this _____.
(application, project, work, etc.)

I further declare that should a conflict of interest arise in the future during the course of this work, I will fully disclose the circumstances in writing and without delay to Metro Vancouver Regional District, Environmental Regulation and Enforcement Division, erring on the side of caution.

Real or perceived conflict of interest

Description and nature of conflict(s):

I will maintain my objectivity, conducting my work in accordance with my Code of Ethics and standards of practice.

In addition, I will take the following steps to mitigate the real or perceived conflict(s) I have disclosed, to ensure the public interest remains paramount:

Further, I acknowledge that this disclosure may be interpreted as a threat to my independence and will be considered by the statutory decision maker accordingly.

This conflict of interest disclosure statement is collected under section 26(c) of the *Freedom of Information and Protection of Privacy Act* for the purpose of supporting transparency of government decision-making and ensuring professional ethics and accountability. By signing and submitting this statement you consent to its publication and its disclosure inside and outside of Canada. This consent is valid from the date submitted and cannot be revoked. If you have any questions about the collection, use or disclosure of your personal information please contact foippa@metrovancover.org.

Signature:

X

Print Name:

Date signed:

Witnessed by:

X

Print Name:

APPLICATION COMPLETENESS CHECKLIST

	✓ or N/A
SECTION A: Business Information and Purpose of Application	
All fields marked with an asterisk filled in	✓
Corporate registry documents attached	✓
Signed Qualified Professional Declaration of Competency attached	
Signed Qualified Professional Conflict of Interest Disclosure Statement attached	
Map showing location of sensitive receptors attached	✓
Land title documents attached, if required	✓
Section A signed by Applicant or Agent	
SECTION B: Process Description & Schematic Flow Diagram	
Descriptive process narrative attached	✓
Simplified process block diagram highlighting all emission sources attached	✓
Safety Data Sheets for all relevant materials attached	✓
Emission control equipment schematics and specifications attached	✓
SECTION C: Site Plan	
Legible, simplified 8.5 x 11" black and white site plan with adjacent geographic references (major streets, water bodies, etc.), and emission sources clearly labelled	✓
SECTION D: Technical Assessment	
D1 Emission Source Summary table attached	✓
D1a Existing Emission Source Comparison attached when application is for an amendment or expiring permit	N/A
D2 Emission Information for Point Sources attached for each new or modified source, and all fields marked with an asterisk filled in or deviations explained	✓
D3 Emission information for Fugitive Sources attached for each new or modified source, and all fields marked with an asterisk filled in or deviations explained	✓
D4 Metro Vancouver Air Quality Dispersion Modelling Plan attached	N/A
D4 Air Quality Dispersion Modelling Report attached only if Metro Vancouver Dispersion Modelling Plan approved (see guidance)	N/A
D5 Includes supplemental technical and other information table and attachments, such as but not limited to,	
Environmental Management System documents such as relevant Standard Operating Procedures	N/A
Dust Management Plan	✓
Odour Management Plan	N/A

APPLICATION COMPLETENESS CHECKLIST

	✓ or N/A
Calculations and references to support requested emissions	✓
Environmental or human health impact assessments	N/A
Emissions monitoring reports or emissions inventory reports	N/A
SECTION E: Notice of Application attached (identify relevant NOA)	
E1 First - time permits	✓
E2 - Permit amendments, or	
E3 - Permits with expiry dates	
SECTION F: Declaration and Application Fees	
FINAL application only – signed declaration	
FINAL application only – payment for invoiced application fees	

APPENDIX A SDS SHEETS

Safety Data Sheet (SDS)



Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust

1. Identification



TRADE NAME(S):	Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust NOTE: For wood products containing chemical treatments or resins/additives, see specific SDS and label for those products
SYNONYMS and/or GRADES:	None
PRODUCT USES:	Building materials, wood pulp raw material, fuel, landscaping material
CHEMICAL NAME/CLASS:	Wood Products
MANUFACTURER'S NAME:	Weyerhaeuser
ADDRESS:	220 Occidental Ave S., Seattle, WA 98104
EMERGENCY PHONE (DOT):	(844) 523-4081 (3E Company)
BUSINESS PHONE:	(206) 539-3910
INTERNET ACCESS:	See Section 16
REVISED DATE:	August 27, 2018

2. Hazard(s) Identification

Signal Word: DANGER

NOTE: Wood dust may become hazardous while being transported or handled by downstream users. Products not containing wood dust are not hazardous as shipped but may become hazardous as the result of downstream activities (e.g. cutting, sanding) which creates small particles. Potential hazards are described below.

2. Hazard(s) Identification (cont'd.)

Classification	Hazard Statement(s)	Pictogram(s)
<p>HEALTH</p> <p>Carcinogen- Category 1 (for non-lumber products If crystalline silica present) (H350) *</p> <p>Carcinogen- Category 1A (H350) *</p>	<p>Crystalline silica may cause cancer of the lung</p> <p>Wood dust may cause nasopharyngeal cancer and/or cancer of the nasal cavities and paranasal sinuses by inhalation</p>	
<p>Skin Irritation Category 2 (H315)</p> <p>Specific Target Organ Toxicity- Single Exposure (STOT) Category 3 (H335)</p>	<p>Causes skin irritation</p> <p>May cause respiratory irritation</p>	
<p>Eye Irritation Category 2B (H320)</p>	<p>Causes eye irritation</p>	<p>None</p>
<p>Combustible Dust (OSHA Defined Hazard)</p>	<p>If product contains or is converted to small particles during further processing, handling, or by other means, may form combustible dust concentrations in air</p>	<p>None</p>

*Hazard codes (GHS)

HMIS Rating (Scale 0-4): **Health = 2*** **Fire = 1** **Physical Hazard = 0**
NFPA Rating (Scale 0-4): **Health = 1** **Fire = 1** **Reactivity = 0**

Precautionary Statement(s):

Prevention Statements:

- P202: Do not handle until all safety precautions have been read and understood.
- P210: Keep away from sparks, flame or other heat sources.
- P243: Take precautionary measures against static discharge.
- P261+284: Avoid breathing dust. In case of inadequate ventilation wear an approved respirator suitable for conditions of use.
- P271: Use outdoors or in a well-ventilated area.
- P280: Wear appropriate protective equipment for eye and skin exposure.

2. Hazard(s) Identification (cont'd.)

Response Statements:

P304+P340+P313: If inhaled and breathing becomes difficult, remove person to fresh air and keep comfortable for breathing. If symptoms persist, call a doctor or other qualified medical professional.

P333+P313: If skin irritation or rash occurs get medical advice/attention.

P352+P264: If on skin wash with plenty of soap and water.

P362+P364: Take off contaminated clothing and wash before reuse.

P305+P351+P338: If in eyes, rinse cautiously for several minutes. Remove contact lenses if present and easy to do so.

Disposal:

P501: Dispose of in accordance with federal, state and local regulations.

Ingredients of Unknown Acute Toxicity (>1%): NAP

3. Composition/Information on Ingredients

Ingredient(s)	CAS#	Wt.%
Wood (wood dust, softwood or hardwood, logs, wood chips)	None	85-100

Common names: Untreated lumber, untreated wood, sawdust, sander dust, raw logs, wood chips.

NOTE: Some wood products such as logs, chips and sawdust may include additional material such as soil and rock fragments which may contain particles of crystalline silica.

4. First Aid Measures

Inhalation: Remove to fresh air if respiratory symptoms are experienced. Seek medical help if persistent irritation, severe coughing, breathing difficulty or other serious symptoms occur.

Eye Contact: Treat dust in eye as a foreign object. Flush with water to remove dust particles. Remove contact lenses if present and easy to do so. Avoid touching or rubbing eyes to avoid further irritation or injury. Seek medical help if irritation persists.

Skin Contact: Wood dust may elicit contact dermatitis. Seek medical help if rash, irritation or dermatitis persists.

Skin Absorption: Not known to be absorbed through the skin.

Ingestion: Not applicable under normal use.

Symptoms or Effects:

Acute Symptoms/Effects – Dust may cause mechanical irritation of the eyes and respiratory system. Dust can cause physical obstructions in the nasal passages, resulting in dryness of nose, dry cough, and sneezing.

Delayed Symptoms/Effects – Unique delayed effects are not anticipated after exposure. See Section 11 for additional information on chronic effects.

5. Fire-fighting Measures

Extinguishing Media and Restrictions: Water, carbon dioxide and sand.

Specific Hazards, Anticipated Combustion Products: Thermal decomposition (i.e. smoldering, burning) products include carbon monoxide, carbon dioxide, aliphatic aldehydes, terpenes, and polycyclic aromatic hydrocarbons.

Autoignition Temperature: Variable [typically 400°-500°F (204°-260°C)]

Special Firefighting Equipment/Procedures: No special equipment anticipated. Beware of potential combustible dust explosion hazard.

5. Fire-fighting Measures (cont'd.)

Unusual Fire and Explosion Hazards: Depending on moisture content, particle diameter and concentration, wood dust may pose a flash fire or deflagration hazard. If suspended in air in an enclosure or container and ignited, an explosion may occur due to the development of internal pressure causing rupture. An airborne concentration of 40 grams (40,000 mg) of dust per cubic meter of air is often used as the Minimum Explosible Concentration (MEC) for wood dusts. Conduct regular housekeeping inspections and cleaning to prevent excessive dust accumulations. Design and maintain control equipment to minimize fugitive combustible dust emissions. Ensure that ventilation systems are operating properly to capture, transport and contain combustible dust while controlling ignition sources. Reference NFPA 652 "Standard on the Fundamentals of Combustible Dust".

6. Accidental Release Measures

Steps to be taken in case Material Is Released or Spilled: Sweep or vacuum up for recovery and disposal. Avoid creating dusty conditions whenever feasible. Maintain good housekeeping to avoid accumulation of wood dust on exposed surfaces. Use approved filtering facepiece respirator ("dust mask") or higher levels of respiratory protection as indicated and goggles where ventilation is not possible and exposure limits may be exceeded or for additional worker comfort.

7. Handling and Storage

Precautions to be taken in Handling and Storage: Dried wood dust may pose a combustible dust hazard. Keep away from ignition sources. Avoid eye contact. Avoid prolonged or repeated contact with skin. Avoid prolonged or repeated breathing of wood dust. Store in well-ventilated, cool, dry place away from open flame.

8. Exposure Control Measures/Personal Protection

Exposure Limits/Guidelines:

Ingredient(s)	Agency	Exposure Limit(s)	Comments
Wood (wood dust, softwood or hardwood, logs, wood chips)	OSHA	PEL-TWA 15 mg/m ³ (see footnote ^A below)	Total Dust (PNOR)
	OSHA	PEL-TWA 5 mg/m ³ (see footnote ^A below)	Respirable dust fraction (PNOR)
	ACGIH	TLV-TWA 1 mg/m ³	Inhalable fraction

^A In *AFL-CIO v OSHA*, 965 F. 2d 962 (11th Cir. 1992), the Court overturned OSHA's 1989 Air Contaminants Rule, including the specific PEL's for wood dust that OSHA had established at that time. The 1989 vacated PEL's were: 5 mg/m³ PEL-TWA and 10 mg/m³ STEL (15 min), all softwood and hardwood except Western Red Cedar. Wood dust is now regulated by OSHA as "Particulates Not Otherwise Regulated" (PNOR), which is also referred to as "nuisance dust". However, some states have regulated wood dust PEL's in their state plans. Additionally, OSHA indicated that it may cite employers under the OSH Act general duty clause in appropriate circumstances.

Ventilation:

LOCAL EXHAUST – Provide local exhaust as needed so that exposure limits are met. Ventilation to control dust should be considered where potential explosive concentrations and ignition sources are present. The design and operation of any exhaust system should consider the possibility of explosive concentrations of wood dust within the system. See "SPECIAL" section below. Use of tool mounted exhaust systems should also be considered, especially when working in enclosed areas.

8. Exposure Control Measures/Personal Protection (cont'd.)

MECHANICAL (GENERAL) – Provide general ventilation in processing and storage areas so that exposure limits are met.

SPECIAL – Ensure that exhaust ventilation and material transport systems involved in handling this product contain explosion relief vents or suppression systems designed and operated in accordance with applicable standards if the operating conditions justify their use.

OTHER ENGINEERING CONTROLS – Cutting and machining of product should preferably be done outdoors or with adequate ventilation and containment.

Personal Protective Equipment:

RESPIRATORY PROTECTION – Use filtering facepiece respirator (“dust mask”) tested and approved under appropriate government standards such as NIOSH (US), CSA (Canada), CEN (EU), or JIS (Japan) where exposure limits may be exceeded or for additional worker comfort or symptom relief. Use respiratory protection in accordance with jurisdictional regulatory requirements similar to the OSHA respiratory protection standard 29CFR 1910.134 following a determination of risk from potential exposures which includes consideration of potential respirable crystalline silica exposures.

EYE PROTECTION – Approved goggles or tight fitting safety glasses are recommended when excessive exposures to dust may occur (e.g. during clean up) and when eye irritation may occur.

PROTECTIVE GLOVES – Cloth, canvas, or leather gloves are recommended to prevent direct contact and to minimize potential slivers and mechanical irritation from handling product.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT – Outer garments which cover the arms may be desirable in extremely dusty areas.

WORK/HYGIENE PRACTICES – Follow good hygienic and housekeeping practices. Clean up areas where wood dust settles to avoid excessive accumulation of this combustible material. Minimize compressed air blowdown or other practices that generate high airborne-dust concentrations.

9. Physical/Chemical Properties

Appearance: Light to dark colored, granular solid, saw dust, wood chips, logs and untreated lumber (all species and grades). Color and odor are dependent on the wood species and time since any wood dust was generated.

Odor/Odor Threshold(s):	NAV
pH:	NAP
Melting/Freezing Point:	NAP
Boiling Point (@ 760 mm Hg) and Range:	NAP
Flash Point:	NAP
Evaporation Rate:	NAP
Flammability:	NAV
Lower/Upper Explosive Limits:	40,000 mg of dust per cubic meter of air is often used as the LEL for wood dusts.
Vapor Pressure (mm Hg):	NAP
Vapor Density (air = 1; 1 atm):	NAP
Relative Density:	NAP
Solubility:	<0.1
Partition Coefficient (n-octanol/water):	NAP
Autoignition Temperature:	Variable [typically 400°-500°F (204°-260°C)]
Decomposition Temperature:	NAV
Viscosity:	NAP
Other Properties:	NAP

10. Stability and Reactivity

Reactivity: NAP

Hazardous Polymerization: May occur Will not occur

Stability: Unstable Stable

Conditions to Avoid: Avoid all sources of ignition.

Incompatibility (Materials to Avoid): Avoid contact with oxidizing agents and drying oils.

Hazardous Decomposition or By-Products: Natural decomposition of organic materials such as wood may produce toxic gases and an oxygen deficient atmosphere in enclosed or poorly ventilated areas. Spontaneous and rapid hazardous decomposition will not occur.

Sensitivity to Static Discharge: Airborne wood dust may be ignited by a static discharge depending on airborne concentrations, particle size and moisture content.

11. Toxicological Information

Likely Route(s) of Exposure:

- Ingestion:
- Skin: Dust
- Inhalation: Dust
- Eye: Dust

Signs and Symptoms of Exposure: See section 4

Wood Dust - NTP: According to its Report on Carcinogens, Fourteenth Edition, NTP states, "Wood dust is known to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in humans". An association between wood dust exposure and cancer of the nasal cavity has been observed in case reports, cohort studies, and case-control studies that specifically addressed nasal cancer. Associations with cancer of the nasal cavities and paranasal sinuses were observed both in studies of people whose occupations are associated with wood dust exposure and in studies that directly estimated wood dust exposure. This classification is based primarily on increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. The evaluation did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust. There is inadequate evidence for the carcinogenicity of wood dust from studies in experimental animals according to NTP.

Silica - NTP: According to its Report on Carcinogens, Fourteenth Edition, NTP classifies "Silica, Crystalline (respirable size)" as Known to be a human carcinogen.

Wood Dust: IARC – Group 1: Carcinogenic to humans; sufficient evidence of carcinogenicity. This classification is primarily based on studies showing an association between occupational exposure to wood dust and adenocarcinoma to the nasal cavities and paranasal sinuses. IARC did not find sufficient evidence of an association between occupational exposure to wood dust and cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum.

Silica: IARC – Group 1: Carcinogenic to humans; sufficient evidence of carcinogenicity. IARC concluded that "crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)".

Carcinogenicity Listing(s):

- NTP: Wood dust, Known Human Carcinogen.
- IARC Monographs: Wood dust, Group 1 - Carcinogenic to Humans.
- OSHA Regulated: Crystalline Silica - 29 CFR 1910.1053

11. Toxicological Information (cont'd.)

Toxicity Data:

Wood dust (softwood or hardwood)

Dusts generated from sawing, sanding or machining the product may cause respiratory irritation, nasal dryness and irritation, coughing and sinusitis. NTP and IARC (Group 1) classify wood dust as a human carcinogen. See Section 2 above.

Target Organs: Eyes, skin, and respiratory system.

Note: Weyerhaeuser evaluated the studies referenced in the ACGIH® TLV® Documentation for Wood Dust and others which included potential allergenic references for wood species which may cause skin or respiratory sensitization. There are a limited number of studies of highly variable consistency which reference sensitization from some species of wood. When the total weight of evidence is considered this product is considered to be an eye, skin and respiratory irritant and not a respiratory or skin sensitizer according to health hazard classification criteria.

12. Ecological Information

Ecotoxicity: NAV for finished product.

Biopersistence and Degradability: Wood in this product would be expected to be biodegradable.

Bioaccumulation: Not expected to bioaccumulate.

Soil Mobility: NAV

Other Adverse Effects: NAP

13. Disposal Considerations

Waste Disposal Method: Dry land disposal or incineration is acceptable in most areas. It is, however, the user's responsibility to determine at the time of disposal whether your waste meets any jurisdictional criteria. Note that wood dust may pose a combustible dust hazard.

14. Transport Information

Mode: (air, land, water) Not regulated as a hazardous material by the U.S. Department of Transportation. Not listed as a hazardous material in Canadian Transportation of Dangerous Goods (TDG) regulations. Not regulated as a hazardous material by IMDG or IATA regulations concerning the transport of hazardous materials.

UN Proper Shipping Name:	NAP
UN/NA ID Number:	NAP
Hazard Class:	NAP
Packing Group:	NAP
Environmental Hazards (Marine Pollutant):	NAP
Special Precautions	NAP

15. Regulatory Information

TSCA: NAP

CERCLA: NAP


DSL: NAP

OSHA: Wood products are not hazardous under the criteria of the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, wood dust generated by sawing, sanding or machining activities is considered hazardous.

15. Regulatory Information (cont'd.)

STATE RIGHT-TO-KNOW:

California Proposition 65 –

 **WARNING:** This product can expose you to chemicals including wood dust which are known to the State of California to cause cancer, and methanol, which are known to the State of California to cause birth defects or other reproductive harm. Drilling, sawing, sanding or machining wood products can expose you to wood dust. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information go to www.P65Warnings.ca.gov and www.P65Warnings.ca.gov/wood. This product may also release silica, crystalline (airborne particles of respirable size), a chemical known to the state of California to cause cancer.

Pennsylvania – Wood dust and crystalline silica appear on Pennsylvania's Appendix A, Hazardous Substance List.

New Jersey – Wood dust and crystalline silica appear on New Jersey's Environmental Hazardous Substance List.

SARA 313 Information: This material does not contain any chemical ingredient (s) that exceed the de minimis reporting levels established by SARA Title III, section 313 and 40 CFR section 372.

SARA 311/312 Hazard Category: This material has been reviewed according to the EPA "Hazard Categories" promulgated under SARA Title III Sections 311 and 312 and is considered, under applicable definitions, to meet the following categories:

An immediate (acute) health hazard	Yes
A delayed (chronic) health hazard	Yes
A corrosive hazard	No
A fire hazard	No
A reactivity hazard	No
A sudden release hazard	No

FDA: Not intended for use as a food additive or indirect food contact item.

WHMIS Classification: Wood and products made from wood are exempt from WHMIS per the Hazardous Products Act (HPA). However, wood dust released during the use or modifications of wood products may be hazardous. See Section 2 for health and combustible dust hazard information.

16. Other Information

Date Prepared: 11/05/2010

Date Revised: 08/27/2018

Prepared By: Weyerhaeuser Company Health and Safety.

Weyerhaeuser SDS available on:

<http://www.wy.com/sustainability/environment/product-stewardship/safety-data-sheets/>

User's Responsibility: The information contained in this Safety Data Sheet is based on the experience of occupational health and safety professionals and comes from sources believed to be accurate or otherwise technically correct. It is the user's responsibility to determine if the product is suitable for its proposed application(s) and to follow necessary safety precautions. The user has the responsibility to ensure that the most current SDS is used.

Definition of Common Terms:

ACGIH®	=	American Conference of Governmental Industrial Hygienists
C	=	Ceiling Limit
CAS#	=	Chemical Abstracts System Number
DOT	=	U. S. Department of Transportation

16. Other Information (cont'd.)

DSL	=	Domestic Substance List
EC#	=	Identifying Number Assigned to Chemicals Contained in the European Inventory of Existing Chemical Substances (EINECS)
EC ₅₀	=	Effective Concentration That Inhibits the Endpoint to 50% of Control Population
EPA	=	U.S. Environmental Protection Agency
GHS	=	Globally Harmonized System of Classification and Labelling of Chemicals
HMIS	=	(Canada) Hazardous Materials Identification System
HNOC	=	Hazards Not Otherwise Classified
IARC	=	International Agency for Research on Cancer
IATA	=	International Air Transport Association
IMDG	=	International Maritime Dangerous Goods
LC ₅₀	=	Concentration in Air Resulting in Death To 50% of Experimental Animals
LCLo	=	Lowest Concentration in Air Resulting in Death
LD ₅₀	=	Administered Dose Resulting in Death to 50% of Experimental Animals
LDLo	=	Lowest Dose Resulting in Death
LEL	=	Lower Explosive Limit
LFL	=	Lower Flammable Limit
MSHA	=	Mine Safety and Health Administration
NAP	=	Not Applicable
NAV	=	Not Available
NIOSH	=	National Institute for Occupational Safety and Health
NFPA	=	National Fire Protection Association
NPRI	=	(Canada) National Pollution Release Inventory
NTP	=	National Toxicology Program
OSHA	=	Occupational Safety and Health Administration
PEL	=	Permissible Exposure Limit
PNOR	=	Particulate Not Otherwise Regulated
PNOS	=	Particulate Not Otherwise Specified
RCRA	=	Resource Conservation and Recovery Act
STEL	=	Short-Term Exposure Limit (15 minutes)
STP	=	Standard Temperature and Pressure
TCLo	=	Lowest Concentration in Air Resulting in a Toxic Effect
TDG	=	(Canada) Transportation of Dangerous Goods
TDLo	=	Lowest Dose Resulting In a Toxic Effect
TLV	=	Threshold Limit Value
TSCA	=	Toxic Substance Control Act
TWA	=	Time-Weighted Average (8 hours)
UFL	=	Upper Flammable Limit
WHMIS	=	(Canada) Workplace Hazardous Materials Information System

Wood and Wood Dust (without chemical treatments or resins/additives), including Untreated Lumber (all species and grades), Logs, Chips, and Sawdust



Danger

Wood dust may cause nasopharyngeal cancer and/or cancer of the nasal cavities and paranasal sinuses by inhalation. May cause respiratory, skin and eye irritation.

May form combustible dust concentrations in air if small particles become airborne or are formed during processing or handling

Precautions: Do not handle until all safety precautions have been read and understood. Use outdoors or in a well-ventilated area. Avoid breathing dust and wear appropriate protective equipment for respiratory, skin or eye exposures. Prevent dust release and accumulations to minimize hazards. Take off contaminated clothing and wash before reuse. Keep dust away from ignition sources such as heat, sparks, and flame.

First Aid:

If in eyes, rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Contact a qualified medical professional if symptoms persist.

If on skin, wash with soap and water. If skin irritation or rash occurs, get medical advice/attention.

Inhalation, if experiencing respiratory symptoms, remove to fresh air. Contact a qualified medical professional for serious or persistent respiratory symptoms.

Weyerhaeuser
220 Occidental Ave S.
Seattle, WA 98104
1-800-525-5440



Weyerhaeuser

APPENDIX B FUGITIVE DUST MANAGEMENT PLAN

Fugitive Dust Management Plan

for:



In accordance

with:

Metro Vancouver Air Quality

and

Ministry of Environment and Climate Change Strategy

Original Plan: December 12, 2016

Updated Plan: June 28, 2021

Contents

1.0	Introduction	1
1.1	DMP History	1
1.2	DMP Description	1
1.3	Regulatory Background	2
1.4	Emissions	2
1.5	Reason for Control	2
2.0	Site Description	3
2.1	Surroundings and Receptors	3
2.2	Processing	3
2.3	Zones	3
2.4	Zone Procedure Plans.....	4
3.0	Dust Control	14
3.1	Dust Suppression Management	14
3.2	Dust Suppression.....	14
3.2.1	Stationary Sources.....	14
3.2.2	Mobile Sources.....	15
4.0	Monitoring	15
4.1	Visual Assessment	15
4.2.	High Wind Events	15
4.2.	Wood Processing Operations.....	16
4.3	Responsible Official	16
4.4	Public Complaints.....	16

1.0 Introduction

A Fugitive Dust Management Plan (DMP) is required where activities associated with a project have the potential to generate dust which may impact environmental and/or public receptors. The DMP identifies project and site-specific strategies to avoid and mitigate dust impacts that may result from the operations.

1.1 DMP History

This is the updated 2021 Dust Management Plan for the Cedar Island Forest Products Re-Manufacturing (CIR) facility located in New Westminster, British Columbia. Operated by Cedar Island Forest Products, Ltd., CIR processes debarked rough cut wood into a range of measured wood building products (building lumber). The Metro Vancouver Air Quality (MVAQ) department is the lead regulatory agency for industry in the New Westminster area; this agency helps ensure industrial operators meet the legislative requirements and operate to the high environmental standards.

The DMP is a living document subject to on-going review dependant of effectiveness, changes in operations, regulatory compliance and legitimate public complaints. The original CIR DMP document was produced in 2016 and was titled:

“Mitigation Plan for: Assessment of Combustible Dust in Hazardous Locations

Prepared for: Cedar Island Forest Products LTD.

Prepared by: Jeff Johal/President

Date Prepared: December 12, 2016”

Reported within this plan, McGladdery Electrical undertook the task of identifying and correcting issues that could potentially impact dust generation at the site. These issues were identified as:

- Repaired liquid tight on North Planer (Zone 3) motor
- Install 6” cable tray for tack cables laying on the ground
- Mounted strut and strapped cables at disconnects under south tilt-hoist (Zone 2 Planer)
- Replaced 3 position selectors on North Planer infeed push button station (Zone 3)
- Replace 6” cable tray with 12” cable tray
- Built proper stands out of uni-strut to replace 4x4 stands.

At the time of this most recent (2021) DMP update, all the maintenance and operational issues reported in the 2016 document have been corrected. Recent public inquires have prompted MVAQ to request an air permit and updated DMP for this site.

1.2 DMP Description

Fugitive dust is defined as incidental, or unintended emissions of dust that is not emitted from a definable point source. In general, sources of fugitive dust can include roads, storage piles, waste piles, transportation, track-out, loading/unloading, conveyor transfer, land disturbance, unpaved roads and equipment leaks.

Fugitive dust (particulate matter) arising from wood processing operations, can be a cause of concern for the public, workers, regulators and CIR’s operations. CIR’s operators should be aware of the potential of their activities to cause complaints and the effect that dust can have on equipment, nearby lands, businesses, and neighbours.

Dust is small particulate matter between 1 and 75 microns and is produced by the processing of wood material by the action of planed, cutting and re-sawing. The amount of dust generated is a factor of the nature of the

material, the method of processing and the volume of material being handled. Mechanical handling of wood creates dust in proportion to the size of the machinery used, the volume of material moved and the type of processing action. Haulage creates dust in lesser proportion based on the vehicle's size, speed and distance traveled. Wood dust (i.e. sawdust) is relatively benign in toxicity, but is classified as an air pollutant irritant.

1.3 Regulatory Background

A Fugitive Dust Management Plan (DMP) meets the requirements of the B.C. Ministry of Environment and Climate Change Strategy regulatory requirements¹. A DMP is required where activities associated with a project or operation have the potential to generate dust which may impact environmental and/or public receptors. Sawmills, wood pellet facilities, pulp & paper and sand & gravel operations are included in industrial projects and operations.

In addition, in the fall of 2001, BC Research Inc. (BC Research) was contracted by the Greater Vancouver Regional District (GVRD) to assist in the development of an environmental management strategy for the region's wood manufacturing industries. MVAQ adoption of these strategies means the wood products industry needs to be compliant with these documented recommendations about wood dust and associated emissions.

1.4 Emissions

Dust emissions is the process by which the dust becomes airborne. The most significant cause of dust emissions is unprotected (i.e. outdoors) sources in conjunction with ambient wind events. Once dust is created and becomes airborne, air currents disperse it. Fine dust particles can be deposited over a wide area. In general, the largest amount of airborne sawdust, which is large in aerodynamic diameter, is deposited between 100-500 metres from the point of emissions.

With all equipment powered by electrical motors at CIR, fugitive emissions such as solvents, paints, and resins are not present. Sawdust emissions and/or particulate from CIR is considered an irritant as opposed to a toxic pollutant.

1.5 Reason for Control

The production of dust impedes production. In addition to being an irritant for workers, dust results in a loss of product and additional cost arising from plant breakdown, repair, and maintenance. It is in the facility's interest to control and reduce dust to a minimum. The control of dust is based on the effective implementation of best management practices (BMPs). This DMP identifies the causes of dust and describes the management methods of dust control. It is CIR's objective to reduce or eliminate the dust being produced (source control) and emitted (transmission mitigation) beyond the boundaries of the site.

¹ GUI-TEC-03.1

2.0 Site Description

The CIR facility lies in the flat riparian area of the Fraser River, which is a mixture of light industrial, industrial, residential, and commercial office buildings. The CIRs re-manufactures wood products, which includes loading/unloading, storage, cutting, surfacing, notching, planning and staging shipments. CIR operates under NAICS code 321113- sawmills.

The property measures approximately 3.0 hectares with a perimeter of 775 metres. There are three main buildings located on site. Two large buildings are used for processing the lumber and the third is administrative. The open yard areas (see Facility Map) are used for staging, storage, transport, and packaging. Site access is via Ewen Road.

2.1 Surroundings and Receptors

CIR borders new residential developments comprised of multi-family homes to the northeast and northwest, with established industrial sites located to the southwest and southeast. The Fraser River is located less than 0.3 kilometers to the south. The nearest residential property borders the northeast property line, with multi-family home backyards abutting the CIR property line. The next nearest residential properties are 30 meters to the northwest across Ewen Avenue. The northeast boundary of the property is of concern because of the nearby residential housing. The main processing buildings border the northeast boundary.

2.2 Processing

CIR wood manufacturing involves sawing, planering and re-sawing to meet various technical product specifications. Sawdust is generated during the process and most of the sawdust is collected at the point of generation in an active exhaust duct system. Sawdust is transported to the two on-site cyclones, where the heavier and larger sawdust particulates are collected in a hopper and delivered into an enclosed bunker via delivery tubes.

2.3 Zones

The site is divided into four 'Zones' that are defined by the different operations that take place in a specific area. The zones are shown in the Facility Map. CIR's process flow is described by:

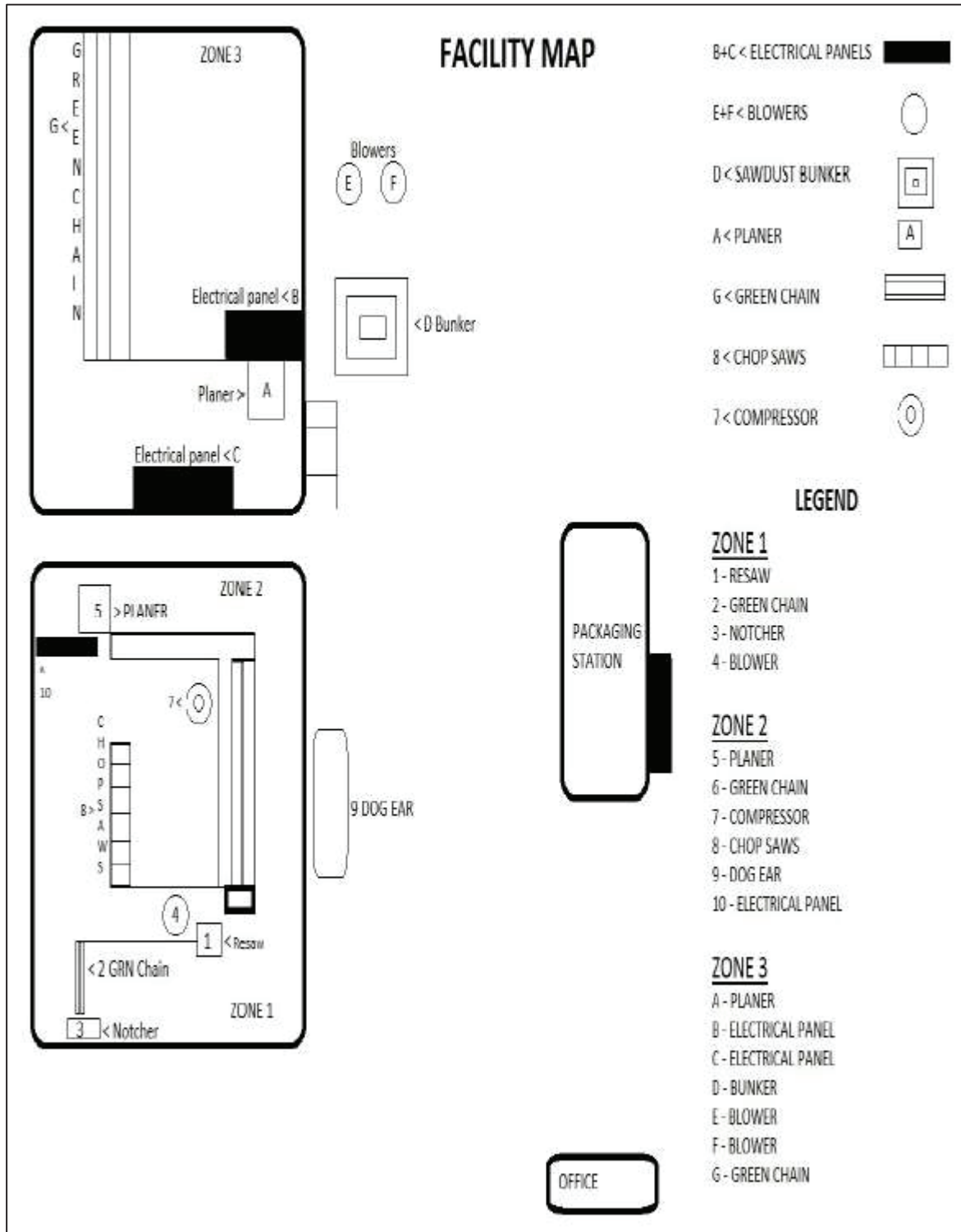
- Debarked wood enters the main entrance outside millworks area.
- Sawing and resawing all take place in Building #1
- Two planers (North and South) are located in Building #1 and Building #2, respectively
- Collection of sawdust from the two cyclones occurs near Building #2
- Storage, strapping, and finished product shipping occur outside in open yard areas.

Sawdust transfer occurs outside of Building #2, located on the southeast of the property at the bottom of Cyclone #1. Activities and their associated dust emission potential is described below, and in the following 'Location/Zone' sheets.

- | | |
|--|--------------------------|
| • Loading and transferring wood material | Minor |
| • Cutting and planer operation | Minor |
| • Exhaust from cyclone collection system | Significant |
| • Dust from on-site support vehicles | Minor |
| • Unloading sawdust from bunker | Episodic and Significant |
| • Stockpiling and Storage | Not likely |

2.4 Zone Procedure Plans

The zones (as defined in the initial 2016 DMP) and are shown in the following pages. These Location/Zone sheets not only describe the processes (and where dust may be generated), they also describe maintenance, monitoring and mitigative measures conducted.





Facility Map: Location of Zones

The following are excerpts from CIR's 2016 Mitigation Plan for specific 'Location/Zone' area plans.

Location	Zone 1 (Notcher)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Hemlock
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 1 – Resaw 1 – Blower 1 - Notcher
Condition of equipment	Notcher/resaw/lights/blower; All good working condition – sealed & no dust build up
Dust mitigation procedures	<p>The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed:</p> <p>WEEKLY</p> <ul style="list-style-type: none"> - All dust in zones is swept - Housekeeping kept in order <p>MONTHLY</p> <ul style="list-style-type: none"> - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. <p>ANUALLY</p> <ul style="list-style-type: none"> - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

Location	Zone 1 (Re-Saw)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Western Red Cedar & Hemlock
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 1 – Resaw 1 – Blower 1 - Notcher
Condition of equipment	Notcher/resaw/lights/blower; All good working condition – sealed & no dust build up
Dust mitigation procedures	The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed: WEEKLY - All dust in zones is swept - Housekeeping kept in order MONTHLY - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. ANUALLY - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

Location	Zone 2 (Planer)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Western Red Cedar & Hemlock
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 6 – Chop Saws 1 – Electrical Panel 1 – Compressor 1 – Dog Ear machine
Condition of equipment	Planer/chop saws/lights/Electrical panel/Dog ear/compressor; All good working condition – sealed & no dust build up
Dust mitigation procedures	The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed: WEEKLY - All dust in zones is swept - Housekeeping kept in order MONTHLY - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. ANUALLY - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

Location	Zone 2 (Chop Saws)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Western Red Cedar
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 6 – Chop Saws 1 – Electrical Panel 1 – Compressor 1 – Dog Ear machine
Condition of equipment	Planer/chop saws/lights/Electrical panel/Dog ear/compressor; All good working condition – sealed & no dust build up
Dust mitigation procedures	The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed: WEEKLY - All dust in zones is swept - Housekeeping kept in order MONTHLY - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. ANUALLY - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

Location	Zone 2 (Dog Ear)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Western Red Cedar
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 6 – Chop Saws 1 – Electrical Panel 1 – Compressor 1 – Dog Ear machine
Condition of equipment	Planer/chop saws/lights/Electrical panel/Dog ear/compressor; All good working condition – sealed & no dust build up
Dust mitigation procedures	The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed: WEEKLY - All dust in zones is swept - Housekeeping kept in order MONTHLY - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. ANUALLY - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

Location	Zone 3 (Planer)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Western Red Cedar & Hemlock
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 1 – Bunker 2 – Blower 1 – Planer 2 – Electrical Panels
Condition of equipment	Planer/Bunker/lights/Electrical panels/; All good working condition – sealed & no dust build up
Dust mitigation procedures	The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed: WEEKLY - All dust in zones is swept - Housekeeping kept in order MONTHLY - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. ANUALLY - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

Location	Zone 3 (Bunker)
Hours of operation	Monday – Friday (7am – 3:30 pm) Note:
Classification – NFPA-499	Class II Div. 2
Dust Type	Coarse
Dust Size	No visible dust cloud accum. < 3.0mm
Source	Western Red Cedar & Hemlock
Ignition source in the area	Motors – Electric Lights – Metal Halide & Fluorescent
Friction source in the area	Yes – belts, cleaned & blown down frequently
Dust clouds present?	No – open air environment
Equipment	1 – green chain 1 – waste conveyor 1 – infeed transfer chain 1 – Bunker 2 – Blower 1 – Planer 2 – Electrical Panels
Condition of equipment	Planer/Bunker/lights/Electrical panels/; All good working condition – sealed & no dust build up
Dust mitigation procedures	The majority of the dust is removed by the sawdust collection system Below are other ways the dust is removed: WEEKLY - All dust in zones is swept - Housekeeping kept in order MONTHLY - Work stations inspected - Light fixtures and rafters inspected for evidence of dust - Electrical panels inspected for dust - Motors and drives inspected for dust collection. ANUALLY - All panels and switches cleaned - All lights fixtures and ceilings cleaned - All equipment ie. Motors & Drives cleaned.

3.0 Dust Control

The management of dust within the CIR property is undertaken by (i) avoidance, (ii) containment, and (iii) positioning. Avoidance management eliminates the source. Containment suppresses the generation of emissions. Positioning is a tertiary management technique that involves any operations in areas that could provide better shelter from wind, avoid track-out or removal of dust from heavy traffic areas. All these management techniques can significantly reduce dust emissions.

The main principles for preventing dust emissions at CIR are by good housekeeping (avoidance) and containment of sawdust at accumulation sites. Smoking and open flames are not allowed on site.

3.1 Dust Suppression Management

CIR's Safety Committee is responsible for implementation of and reduction of dust and dust emissions. The safety committee meets monthly to discuss ways to mitigate the generation of dust emissions.

All employees have been advised on the importance of dust control. Employees have been advised to be aware of any accumulation of sawdust that might be present and to bring it to the attention of their supervisor.

3.2 Dust Suppression

Both stationary and mobile operations can generate particulate emissions. The wood products arriving on site - or products being removed from the site - are either strapped together or fully wrapped in protective covers. In addition to the techniques described in the 'Location/Zone' plans (see Section 2.4), containers or finished products of substantial height are assembled near the property line (positioning) to keep dust migration off property. Finished materials leaving the site are typically enclosed in plastic sheathing, in shipping containers and/or semi-tractor trucks. Track-out of dust from transport trucks has not occurred.

3.2.1 Stationary Sources

There are limited suppression techniques for processing for stationary sources. The stationary emission units inside the buildings are all equipped with exhaust ducts that deliver generated sawdust to the cyclones, and ultimately to the collection hopper below Cyclone #1. Sawdust that accumulates inside the buildings at these EUs which is not captured by the exhaust ducts is controlled through good housekeeping procedures.

The two cyclones are *also* stationary EUs. Minimizing particulate emissions from these units involves Best Management Practices which involves (1) Operation in accordance with manufacturer's instructions, and (2) preventative maintenance (PM). PM includes good housekeeping, regular maintenance, and routine inspections. The goal is to operate the cyclones with little to no visible sawdust exiting the exhaust ports. Additionally, leaks are to be minimized or eliminated to ensure all sawdust reaches the cyclones and does not leak out of joints or cracks in the pipes.

3.2.1.1 Unloading

Unloading of debarked lumber is unlikely to generate or be a source of sawdust. Good housekeeping will be maintained. Unloading of sawdust is described in Section 2.2 and Zone 3 Location/Zone sheets.

3.2.1.2 Stockpiles

Stockpiles of sawdust do not exist at the site. Stockpiles consist entirely of bundles of wood planks. These bundles are either awaiting processing or export to sales. Stockpiles of wood products (pre- and post-processing) are unlikely to be a source of dust emissions.

3.2.1.3 Storage Areas

Wood products (pre- and post- processing) do not pose a significant potential to be a source or generate sawdust. All lumber stacks are regularly monitored, recorded, and assessed as part of the site manager's weekly inspections.

Storage of collected sawdust occurs in Zone 3 (Cyclone #1). Sawdust from Building #1 is delivered and separated in Cyclone #1. Sawdust from Building #2 is delivered and separated in Cyclone #2. Periodically, collected sawdust from Cyclone #2 is delivered up to Cyclone #1. This sawdust immediately drops to the sawdust hopper - and then the 15,000 kilogram (kg) Sawdust Bunker - below Cyclone #1. The sealed delivery tubes from the buildings to the cyclones and bunker prevents significant dust emissions. Zone 3 housekeeping procedures mitigates potential for dust build up at these areas.

3.2.2 Mobile Sources

Dust from the movement of machinery and vehicles on site will be reduced or controlled by:

- Paving yard roads and open yard areas
- Regular sweeping of roads and operational open yard areas
- Minimizing drop distances when loading or unloading of materials
- Immediately cleaning spillages on surfaces
- Reducing vehicle speeds to 15 km/hr during high wind events
- Avoiding track-out from on-site vehicles onto public roads.

Unloading of the cyclone-collected sawdust in the bunker occurs beneath the Cyclone #1 hopper and bunker. A shavings/sawdust truck first pulls up underneath the bunker. The bunker is then opened and the shavings fall (top-filled) into the truck. This unloading procedure is dependant on production/processing of wood products but can occur as often as three times per week. Procedures to minimize dust emissions include:

- 1) Minimizing drop distance into truck and procedures described in 'Location/Zone 3 (Bunker) sheet (see Section 2.4).
- 2) No unloading of bunker during very high wind events (e.g. 50 km/hr)
- 3) Having water sprays available during unloading when dry conditions exist.

4.0 Monitoring

CIR's safety committee is responsible for dust issues. The safety committee meets monthly to discuss ways to mitigate the generation of dust emissions. All employees have been advised that dust control is their responsibility both for the environment and safety. Employees have been advised to be aware of any accumulation of sawdust that might be present and to bring it to the attention of their supervisor.

4.1 Visual Assessment

During operational hours, dust accumulation and emissions will be monitored by visual assessment. To aid the on-going monitoring (wind speed and direction) a windsock is readily visible on site to provide an immediate indication of a change of wind direction to site operators working outside.

4.2 High Wind Events

If further management measures are taken to control dust because of dust or weather condition monitoring, the additional mitigation measures will be recorded. Log sheets are available at the end of this DMP to document mitigation measures during high wind/dust events. In certain adverse weather conditions visual monitoring will occur more often.

4.2. Wood Processing Operations

Wood processing operations do produce dust, but the dust will be limited by the nature of the operations and housekeeping measures. Effective site management to ensure the control of air-borne dust includes:

- Regular review of prevailing weather conditions and site operations
- Covering the sawdust loads on haul trucks immediately after vehicle loading
- Maintaining as much boundary vegetation as possible
- Regular maintenance of all equipment and machinery
- Keeping on-site equipment clean and dust to a minimum
- Limiting the speed of vehicles - especially in high wind events or extra dry conditions
- Postponing operations if significant high wind events are likely.

4.3 Responsible Official

The Operations Manager is responsible for the operation of the DMP. The Safety Committee ensures that all operators are trained to take necessary mitigation action regarding dust and dust emissions. In addition, any contractors working on site will be made aware of the provisions of the DMP and be required to comply with relevant provisions as appropriate to any work they are undertaking on site.

4.4 Public Complaints

Any complaints or incidents received from the public or workers will be fully investigated and recorded by the Manager and/or Safety Committee. This includes details of any mitigation or remedial actions taken as per the procedures in this DMP. The Manager will inform the MVAQ within 24 hours of complaints brought to the manager's attention (use provided log sheets on the following pages).

Public Complaints brought to CIR's attention by MVAQ will be investigated to the extent possible. Where specific operations or areas of concern are involved, a recording and photographs (photos) will be taken to show procedures have been implemented and remain in effect to mitigate emissions of fugitive dust. A record of the time, duration, type of dust generating operation, area of yard where emissions took place, mitigative measures and person in charge will be reported back to MVAQ within 7 working days. A log of all complaints will be kept in the OP's files.

Cedar Island Forest Products

Dust Management Plan Log for High Dust Events

Date: ___/___/___ Operations Manager in Charge: _____

Time Dust Started: _____ Time Dust Ended: _____

Wind Direction²: _____ Area/Section Where Dust Left Site³: _____

Who Observed the High Dust Event?

Citizen's Complaint: MVAQ: Employee: Other:

Date that MVAQ was Informed (if this was not a MVAQ Notice): _____

If **not** a Sawdust/Wood Dust event, describe what type of fugitives occurred:

Describe details of the fugitive dust event:

Describe the short-term measures taken to control the dust:

Describe the long-term measures taken to control the dust:

² Note that wind direction is the direction where the wind is **coming from**, not where it is going to. (E.g., a north wind is blowing from the north towards the south).

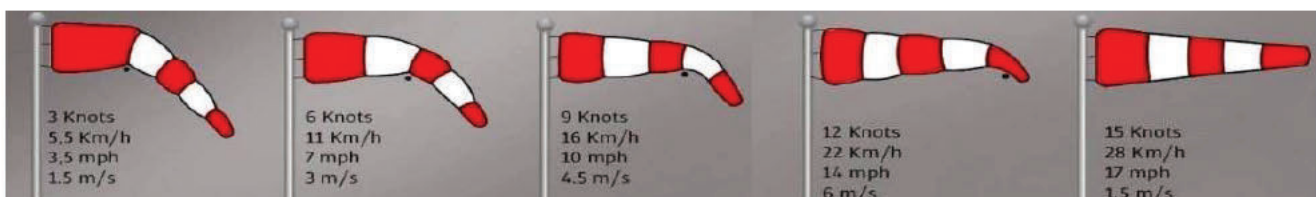
³ Indicate this area on the map, next page.



Instructions:

Draw a bold arrow on the map indicating wind direction. Draw a location on the map of the dust event. Save this drawing and file it with page 1 of the log.

Windsock speeds:



APPENDIX C OWNERSHIP RECORDS

TITLE SEARCH PRINT

2021-11-03, 16:04:36

File Reference:

Requestor: Mark Nuyens

Declared Value \$ 2950000

****CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN****

Land Title District

NEW WESTMINSTER

Land Title Office

NEW WESTMINSTER

Title Number

BR240410

From Title Number

AA3103E

Application Received

2001-09-14

Application Entered

2001-09-19

Registered Owner in Fee Simple

Registered Owner/Mailing Address:

CEDAR ISLAND REMANUFACTURING LTD., INC.NO. 626925
300 - 15127 - 100TH AVENUE
SURREY, BC
V3R 0N9

Taxation Authority

New Westminster, The Corporation of the City of

Description of Land

Parcel Identifier:

005-742-871

Legal Description:

LOT 2 DISTRICT LOT 757 GROUP 1 PLAN 59350

Legal Notations

NONE

Charges, Liens and Interests

Nature:

COVENANT

Registration Number:

S53017

Registration Date and Time:

1980-06-10 09:32

Registered Owner:

CITY OF NEW WESTMINSTER

Remarks:

INTER ALIA
LAND TITLE ACT SECTION 215

Nature:

STATUTORY RIGHT OF WAY

Registration Number:

T109080

Registration Date and Time:

1981-10-30 14:29

Registered Owner:

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

Remarks:

PLAN 63254
ASSIGNED TO AB200610

TITLE SEARCH PRINT

2021-11-03, 16:04:36
Requestor: Mark Nuyens

File Reference:

Declared Value \$ 2950000

Nature: RIGHT OF FIRST REFUSAL
Registration Number: T109082
Registration Date and Time: 1981-10-30 14:29
Registered Owner: COLUMBIA ESTATE COMPANY, LIMITED
Remarks: TO LEASE
ASSIGNED TO AB200684

Nature: COVENANT
Registration Number: X94955
Registration Date and Time: 1984-08-21 13:39
Registered Owner: CITY OF NEW WESTMINSTER
Remarks: SECTION 215 LTA

Nature: RIGHT OF FIRST REFUSAL
Registration Number: AA3104
Registration Date and Time: 1987-01-08 13:27
Registered Owner: COLUMBIA ESTATE COMPANY, LIMITED
Remarks: SEE AA3101
ASSIGNED TO AB200685

Nature: STATUTORY RIGHT OF WAY
Registration Number: AB200610
Registration Date and Time: 1988-09-30 09:18
Registered Owner: SOUTHERN RAILWAY OF BRITISH COLUMBIA LIMITED
INCORPORATION NO. 349002
Remarks: PLAN 63254
ASSIGNMENT OF T109080 RECEIVED 30.10.1981 @ 14:29
SEE AB200605

Nature: RIGHT OF FIRST REFUSAL
Registration Number: AB200684
Registration Date and Time: 1988-09-30 09:22
Registered Owner: SOUTHERN RAILWAY OF BRITISH COLUMBIA LIMITED
INCORPORATION NO. 349002
Remarks: TO LEASE
ASSIGNMENT OF T109082 RECEIVED 30.10.1981 @ 14:29
SEE AB200659

TITLE SEARCH PRINT

2021-11-03, 16:04:36
Requestor: Mark Nuyens

File Reference:

Declared Value \$ 2950000

Nature:	RIGHT OF FIRST REFUSAL
Registration Number:	AB200685
Registration Date and Time:	1988-09-30 09:22
Registered Owner:	SOUTHERN RAILWAY OF BRITISH COLUMBIA LIMITED INCORPORATION NO. 349002
Remarks:	SEE AA3101 ASSIGNMENT OF AA3104 RECEIVED 08.01.1987 @ 13:27 SEE AB200659 WAIVER AS TO TRANSFER BR240410 ONLY, SEE BR240409

Nature:	MORTGAGE
Registration Number:	BR240411
Registration Date and Time:	2001-09-14 12:37
Registered Owner:	CANADIAN WESTERN BANK
Remarks:	MODIFIED BY BA325773

Nature:	ASSIGNMENT OF RENTS
Registration Number:	BR240412
Registration Date and Time:	2001-09-14 12:37
Registered Owner:	CANADIAN WESTERN BANK

Nature:	COVENANT
Registration Number:	BT202363
Registration Date and Time:	2002-06-11 11:44
Registered Owner:	THE CORPORATION OF THE CITY OF NEW WESTMINSTER

Nature:	PRIORITY AGREEMENT
Registration Number:	BT202364
Registration Date and Time:	2002-06-11 11:44
Remarks:	GRANTING BT202363 PRIORITY OVER BR240411 AND BR240412

Nature:	MODIFICATION
Registration Number:	BA325773
Registration Date and Time:	2006-10-11 13:02
Remarks:	MODIFICATION OF BR240411

Duplicate Indefeasible Title NONE OUTSTANDING

Transfers NONE

Pending Applications NONE

APPENDIX D EMISSIONS CALCULATIONS

Cedar Island Forest Products

Annual Throughput ES-01: 12,000,000 bfm/year
 12,000 ODT/year
 Products: Cedar, Hemlock, SPF

Annual Throughput ES-02: 3,000,000 bfm/year
 3,000 ODT/year
 Products: Cedar, Hemlock, SPF

Wood Handling Source(s) Emissions			Total Particulate Matter			PM ≤ 10 microns (PM ₁₀)			PM ≤ 2.5 microns (PM _{2.5})			Plant-wide Fugitive Emissions (becomes pre-sweep ES-04)			
Equipment	Throughput - Oven Dry Tonne (ODT)	Emission Source	Bldg Sawdust Control Efficiency (%)	TPM Factor ²	TPM Uncontrolled (tonnes)	TPM Cyclone 80% Controlled Emissions (tonnes) ³	PM ₁₀ Factor ²	PM ₁₀ Uncontrolled (tonnes)	PM ₁₀ Cyclone 60% Controlled Emissions (tonnes) ³	PM _{2.5} Factor ²	PM _{2.5} Uncontrolled (tonnes)	PM _{2.5} Cyclone 20% Controlled (tonnes) ³	TPM (tonnes)	PM ₁₀ (tonnes)	PM _{2.5} (tonnes)
Bldg 1: Planer #1	12,975	ES-01	98%	0.651 kg/ODT	8,448	1,690	0.152 kg/ODT	1,973	0.789	0.0361 kg/ODT	0.468	0.375	0.172	0.040	0.010
Bldg #1: Saws (5)	86,500	ES-01	98%	0.0315 kg/ODT	13,626	2,725	---	0.000	0.000	---	0.000	0.000	0.056	0.000	0.000
Bldg 1: Re-Saws (2)	43,250	ES-01	98%	0.0315 kg/ODT	2,725	0.545	---	0.000	0.000	---	0.000	0.000	0.028	0.000	0.000
Bldg 2: Planer #2	33,150	ES-02	98%	0.651 kg/ODT	21,585	4,317	0.152 kg/ODT	5,040	2,016	0.0361 kg/ODT	1,197	0.958	0.441	0.103	0.024
Bldg 2: Chop Saw (1)	9,750	ES-02	98%	0.0315 kg/ODT	0.307	0.061	---	0.000	0.000	---	0.000	0.000	0.006	0.000	0.000
Cyclone Emissions Totals						9,338			2,805		1,332		0.703	0.143	0.034
Equipment			Sawdust Control Efficiency (%)	TPM Factor ²	TPM Uncontrolled (tonnes)	TPM Cyclone Controlled (tonnes)	PM ₁₀ Factor ²	PM ₁₀ Uncontrolled (tonnes)	PM ₁₀ Cyclone Controlled (tonnes)	PM _{2.5} Factor ²	PM _{2.5} Uncontrolled (tonnes)	PM _{2.5} Cyclone Controlled (tonnes)	TPM (tonnes)	PM ₁₀ (tonnes)	PM _{2.5} (tonnes)
Unloading Bunker: ES-03	13,280	ES-03	99%	0.0119 kg/MBF	0.158	0.156	---	0.000	0.000	---	0.000	0.000	0.000	0.000	0.000
Plant-wide Fugitives: ES-04		ES-04	80%		0.703	0.141		0.143	0.0286		0.034	0.0068	0.034	0.0068	0.0068
Fugitive Emissions Totals					0.861	0.297		0.143	0.0286		0.034	0.0068	0.034	0.0068	0.0068
GRAND TOTALS						9,6353			2,8335		1,3391		0.703	0.143	0.034

Conversions: 4.536E-4 tonne = 1 pound 2250 lbs/Mbftm (Cedar) 21 lbs/ft³ kg/ODT = kg of compound per oven dry metric tonne of wood material

- Global Wood: Timber Technology & Knowledge Center http://www.globalwood.org/tech/tech_wood_weights.htm
- References: NCAIS. From NPRI/Wood Products Worksheets for Planers and Saws
- Source: EPA-CICA-492/F-03-005 Air Pollution Control Technology Fact Sheet Cyclones. Conventional Cyclone Efficiencies = TPM ranges from 70 - 90%; PM₁₀ = 30 - 90%; and PM_{2.5} = 0 - 40%. TPM control chosen as halfway point (80%), PM₁₀ control chosen as halfway point (60%), PM_{2.5} control chosen as halfway point (20%).

ES-01 Particulate Emissions Summary (Post-cyclone + Fugitives)

Pollutant	ES-01 Emissions	ES-01 Emissions	ES-01 Emissions
TPM	4,980 tonnes/yr	1.08 kg/hr	24.30 mg/m ³
PM ₁₀	0,789 tonnes/yr	0.177 kg/hr	3.87 mg/m ³
PM _{2.5}	0,375 tonnes/yr	0.08 kg/hr	1.84 mg/m ³

Based on 4,680 work hours per year (6 days/wk, 52 wks/yr, 15 hrs/day).

Cyclone Parameters

Cyclone #	Flow Rate (m ³ /min)	Flow Rate (cfm)	Outlet Area (m ²)	Outlet Area (in ²)	Outlet ID (inches)	Exit Velocity (m/s)
Cyclone #1	25,669	726.9	706.9	30	30	26.6
Cyclone #2	30,834	873.1	856.3	33	33	26.4

Conversion: 1 m³ = 1350 in³

1 m³ = 35.315 ft³

APPENDIX E AIR POLLUTION CONTROL TECHNOLOGY FACT SHEET (EPA-452/F-03-005)



Air Pollution Control Technology Fact Sheet

Name of Technology: Cyclones

This type of technology is a part of the group of air pollution controls collectively referred to as “precleaners,” because they are oftentimes used to reduce the inlet loading of particulate matter (PM) to downstream collection devices by removing larger, abrasive particles. Cyclones are also referred to as cyclone collectors, cyclone separators, centrifugal separators, and inertial separators. In applications where many small cyclones are operating in parallel, the entire system is called a multiple tube cyclone, multicyclone, or multiclone.

Type of Technology: Removal of PM by centrifugal and inertial forces, induced by forcing particulate-laden gas to change direction.

Applicable Pollutants:

Cyclones are used to control PM, and primarily PM greater than 10 micrometers (μm) in aerodynamic diameter. However, there are high efficiency cyclones designed to be effective for PM less than or equal to 10 μm and less than or equal to 2.5 μm in aerodynamic diameter (PM_{10} and $\text{PM}_{2.5}$). Although cyclones may be used to collect particles larger than 200 μm , gravity settling chambers or simple momentum separators are usually satisfactory and less subject to abrasion (Wark, 1981; Perry, 1984).

Achievable Emission Limits/Reductions:

The collection efficiency of cyclones varies as a function of particle size and cyclone design. Cyclone efficiency generally increases with (1) particle size and/or density, (2) inlet duct velocity, (3) cyclone body length, (4) number of gas revolutions in the cyclone, (5) ratio of cyclone body diameter to gas exit diameter, (6) dust loading, and (7) smoothness of the cyclone inner wall. Cyclone efficiency will decrease with increases in (1) gas viscosity, (2) body diameter, (3) gas exit diameter, (4) gas inlet duct area, and (5) gas density. A common factor contributing to decreased control efficiencies in cyclones is leakage of air into the dust outlet (EPA, 1998).

Control efficiency ranges for single cyclones are often based on three classifications of cyclone, i.e., conventional, high-efficiency, and high-throughput. The control efficiency range for conventional single cyclones is estimated to be 70 to 90 percent for PM, 30 to 90 percent for PM_{10} , and 0 to 40 percent for $\text{PM}_{2.5}$.

High efficiency single cyclones are designed to achieve higher control of smaller particles than conventional cyclones. According to Cooper (1994), high efficiency single cyclones can remove 5 μm particles at up to 90 percent efficiency, with higher efficiencies achievable for larger particles. The control efficiency ranges for high efficiency single cyclones are 80 to 99 percent for PM, 60 to 95 percent for PM_{10} , and 20 to 70 percent for $\text{PM}_{2.5}$. Higher efficiency cyclones come with higher pressure drops, which require higher energy costs to move the waste gas through the cyclone. Cyclone design is generally driven by a specified pressure-drop limitation, rather than by meeting a specified control efficiency (Andriola, 1999; Perry, 1994).

According to Vataavuk (1990), high throughput cyclones are only guaranteed to remove particles greater than 20 μm , although collection of smaller particles does occur to some extent. The control efficiency ranges for high-throughput cyclones are 80 to 99 percent for PM, 10 to 40 percent for PM_{10} , and 0 to 10 percent for $\text{PM}_{2.5}$.

Multicyclones are reported to achieve from 80 to 95 percent collection efficiency for 5 μm particles (EPA, 1998).

Applicable Source Type: Point

Typical Industrial Applications:

Cyclones are designed for many applications. Cyclones themselves are generally not adequate to meet stringent air pollution regulations, but they serve an important purpose as precleaners for more expensive final control devices such as fabric filters or electrostatic precipitators (ESPs). In addition to use for pollution control work, cyclones are used in many process applications, for example, they are used for recovering and recycling food products and process materials such as catalysts (Cooper, 1994).

Cyclones are used extensively after spray drying operations in the food and chemical industries, and after crushing, grinding and calcining operations in the mineral and chemical industries to collect salable or useful material. In the ferrous and nonferrous metallurgical industries, cyclones are often used as a first stage in the control of PM emissions from sinter plants, roasters, kilns, and furnaces. PM from the fluid-cracking process are removed by cyclones to facilitate catalyst recycling. Fossil-fuel and wood-waste fired industrial and commercial fuel combustion units commonly use multiple cyclones (generally upstream of a wet scrubber, ESP, or fabric filter) which collect fine PM ($< 2.5 \mu\text{m}$) with greater efficiency than a single cyclone. In some cases, collected fly ash is reinjected into the combustion unit to improve PM control efficiency (AWMA, 1992; Avallone, 1996; STAPPA/ALAPCO, 1996; EPA, 1998).

Emission Stream Characteristics:

- a. **Air Flow:** Typical gas flow rates for a single cyclone unit are 0.5 to 12 standard cubic meters per second (sm^3/sec) (1,060 to 25,400 standard cubic feet per minute (scfm)). Flows at the high end of this range and higher (up to approximately $50 \text{ sm}^3/\text{sec}$ or 106,000 scfm) use multiple cyclones in parallel (Cooper, 1994). There are single cyclone units employed for specialized applications which have flow rates of up to approximately $30 \text{ sm}^3/\text{sec}$ (63,500 scfm) and as low as $0.0005 \text{ sm}^3/\text{sec}$ (1.1 scfm) (Wark, 1981; Andriola, 1999).
- b. **Temperature:** Inlet gas temperatures are only limited by the materials of construction of the cyclone, and have been operated at temperatures as high as 540°C (1000°F) (Wark, 1981; Perry, 1994).
- c. **Pollutant Loading:** Waste gas pollutant loadings typically range from 2.3 to 230 grams per standard cubic meter (g/sm^3) (1.0 to 100 grains per standard cubic foot (gr/scf)) (Wark, 1981). For specialized applications, loadings can be as high as $16,000 \text{ g}/\text{sm}^3$ (7,000 gr/scf), and as low as $1 \text{ g}/\text{sm}^3$ (0.44 gr/scf) (Avallone, 1996; Andriola, 1999).
- d. **Other Considerations:** Cyclones perform more efficiently with higher pollutant loadings, provided that the device does not become choked. Higher pollutant loadings are generally associated with higher flow designs (Andriola, 1999).

Emission Stream Pretreatment Requirements:

No pretreatment is necessary for cyclones.

Cost Information:

The following are cost ranges (expressed in 2002 dollars) for a single conventional cyclone under typical operating conditions, developed using an EPA cost-estimating spreadsheet (EPA, 1996), and referenced to the volumetric flow rate of the waste stream treated. Flow rates higher than approximately 10 sm³/sec (21,200 scfm) usually employ multiple cyclones operating in parallel. For purposes of calculating the example cost effectiveness, flow rates are assumed to be between 0.5 and 50 sm³/sec (1,060 and 106,000 scfm), the PM inlet loading is assumed to be approximately 2.3 and 230 g/sm³ (1.0 to 100 gr/scf) and the control efficiency is assumed to be 90 percent. The costs do not include costs for disposal or transport of collected material. Capital costs can be higher than in the ranges shown for applications which require expensive materials. As a rule, smaller units controlling a waste stream with a low PM concentration will be more expensive (per unit volumetric flow rate and per quantity of pollutant controlled) than a large unit controlling a waste stream with a high PM concentration.

- a. **Capital Cost:** \$4,600 to \$7,400 per sm³/sec (\$2.20 to \$3.50 per scfm)
- b. **O & M Cost:** \$1,500 to \$18,000 per sm³/sec (\$0.70 to \$8.50 per scfm), annually
- c. **Annualized Cost:** \$2,800 to \$29,000 per sm³/sec (\$1.30 to \$13.50 per scfm), annually
- d. **Cost Effectiveness:** \$0.47 to \$440 per metric ton (\$0.43 to \$400 per short ton), annualized cost per ton per year of pollutant controlled

Flow rates higher than approximately 10 sm³/sec (21,200 scfm), and up to approximately 50 sm³/sec (106,000 scfm), usually employ multiple cyclones operating in parallel. Assuming the same range of pollutant loading and an efficiency of 90 percent, the following cost ranges (expressed in third quarter 1995 dollars) were developed for multiple cyclones, using an EPA cost-estimating spreadsheet (EPA, 1996), and referenced to the volumetric flow rate of the waste stream treated.

Theory of Operation:

Cyclones use inertia to remove particles from the gas stream. The cyclone imparts centrifugal force on the gas stream, usually within a conical shaped chamber. Cyclones operate by creating a double vortex inside the cyclone body. The incoming gas is forced into circular motion down the cyclone near the inner surface of the cyclone tube. At the bottom of the cyclone, the gas turns and spirals up through the center of the tube and out of the top of the cyclone (AWMA, 1992).

Particles in the gas stream are forced toward the cyclone walls by the centrifugal force of the spinning gas but are opposed by the fluid drag force of the gas traveling through and out of the cyclone. For large particles, inertial momentum overcomes the fluid drag force so that the particles reach the cyclone walls and are collected. For small particles, the fluid drag force overwhelms the inertial momentum and causes these particles to leave the cyclone with the exiting gas. Gravity also causes the larger particles that reach the cyclone walls to travel down into a bottom hopper. While they rely on the same separation mechanism as momentum separators, cyclones are more effective because they have a more complex gas flow pattern (AWMA, 1992).

Cyclones are generally classified into four types, depending on how the gas stream is introduced into the device and how the collected dust is discharged. The four types include tangential inlet, axial discharge; axial inlet, axial discharge; tangential inlet, peripheral discharge; and axial inlet, peripheral discharge. The first two types are the most common (AWMA, 1992).

Pressure drop is an important parameter because it relates directly to operating costs and control efficiency. Higher control efficiencies for a given cyclone can be obtained by higher inlet velocities, but this also increases the pressure drop. In general, 18.3 meters per second (60 feet per second) is considered the best operating velocity. Common ranges of pressure drops for cyclones are 0.5 to 1 kilopascals (kPa) (2 to 4 in. H₂O) for low-efficiency units (high throughput), 1 to 1.5 kPa (4 to 6 in. H₂O) for medium-efficiency units (conventional), and 2 to 2.5 kPa (8 to 10 in. H₂O) for high-efficiency units (AWMA, 1992).

When high-efficiency (which requires small cyclone diameter) and large throughput are both desired, a number of cyclones can be operated in parallel. In a multiple tube cyclone, the housing contains a large number of tubes that have a common gas inlet and outlet in the chamber. The gas enters the tubes through axial inlet vanes which impart a circular motion (AWMA, 1992). Another high-efficiency unit, the wet cyclonic separator, uses a combination of centrifugal force and water spray to enhance control efficiency.

Advantages:

Advantages of cyclones include (AWMA, 1992; Cooper, 1994; and EPA, 1998):

1. Low capital cost;
2. No moving parts, therefore, few maintenance requirements and low operating costs;
3. Relatively low pressure drop (2 to 6 inches water column), compared to amount of PM removed;
4. Temperature and pressure limitations are only dependent on the materials of construction;
5. Dry collection and disposal; and
6. Relatively small space requirements.

Disadvantages:

Disadvantages of cyclones include (AWMA, 1992; Cooper, 1994; and EPA, 1998):

1. Relatively low PM collection efficiencies, particularly for PM less than 10 µm in size;
2. Unable to handle sticky or tacky materials; and
3. High efficiency units may experience high pressure drops.

Other Considerations:

Using multiple cyclones, either in parallel or in series, to treat a large volume of gas results in higher efficiencies, but at the cost of a significant increase in pressure drop. Higher pressure drops translate to higher energy usage and operating costs. Several designs should be considered to achieve the optimum combination of collection efficiency and pressure drop (Cooper, 1994).

References:

Andriola, 1999. T. Andriola, Fisher-Klosterman, Inc., (502) 572-4000, personal communication with Eric Albright, October 14, 1999.

Avallone, 1996. "Marks' Standard Handbook for Mechanical Engineers," edited by Eugene Avallone and Theodore Baumeister, McGraw-Hill, New York, NY, 1996.

AWMA, 1992. Air & Waste Management Association, Air Pollution Engineering Manual, Van Nostrand Reinhold, New York, NY, 1992.

Cooper, 1994. David Cooper and F. Alley, Air Pollution Control: A Design Approach, 2nd Edition, Waveland Press, Prospect Heights, IL, 1994.

EPA, 1996. U.S. EPA, Office of Air Quality Planning and Standards, "OAQPS Control Cost Manual," Fifth Edition, EPA 453/B-96-001, Research Triangle Park, NC February, 1996.

EPA, 1998. U.S. EPA, Office of Air Quality Planning and Standards, "Stationary Source Control Techniques Document for Fine Particulate Matter," EPA-452/R-97-001, Research Triangle Park, NC, October, 1998.

Perry, 1984. "Perry's Chemical Engineers' Handbook," edited by Robert Perry and Don Green, 6th Edition, McGraw-Hill, New York, NY, 1984.

STAPPA/ALAPCO, 1996. State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO), "Controlling Particulate Matter Under the Clean Air Act: A Menu of Options," STAPPA/ALAPCO, Washington, DC, July, 1996.

Vatavuk, 1990. W.M. Vatavuk, "Estimating Costs of Air Pollution Control," Lewis Publishers, Chelsea, MI, 1990.

Wark, 1981. Kenneth Wark and Cecil Warner, "Air Pollution: Its Origin and Control," Harper Collins, New York, NY, 1981.