Standard air contaminant discharge permit

review report

Department of environmental Quality

Eastern Region

**Source Information:**

|  |  |
| --- | --- |
| SIC | 2421, 4961 |
| NAICS | 321113, 221330 |

|  |  |
| --- | --- |
| Source Categories (Table 1 Part, code) | Part B, 13 and 71 |
| Public Notice Category | II |

**Compliance and Emissions Monitoring Requirements:**

|  |  |
| --- | --- |
| FCE | X |
| Compliance schedule |  |
| Unassigned emissions |  |
| Emission credits |  |
| Special Conditions |  |

|  |  |
| --- | --- |
| Source test [date(s)] |  |
| COMS |  |
| CEMS |  |
| PEMS |  |
| Ambient monitoring |  |

**Reporting Requirements**

|  |  |
| --- | --- |
| Annual report (due date) | February 15 |
| Quarterly report (due dates) |  |
| Monthly report (due dates) |  |
| Excess emissions report |  |
| GHG Annual Report | February 15 |
| Other (specify): |  |

**Air Programs**

|  |  |
| --- | --- |
| Synthetic Minor (SM) |  |
| SM -80 | X |
| NSPS (list subparts) |  |
| NESHAP (list subparts) | Subpart JJJJJJ |
| Part 68 Risk Management |  |
| CFC |  |
| NSR |  |
| PSD |  |
| RACT |  |
| TACT |  |
| Other (specify) |  |

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PERMITTING

PERMITTEE IDENTIFICATION

# Prairie Wood Products operates a sawmill and planing mill complex with a backup hogged fuel boiler at 457 Front Street in Prairie City, OR.

PERMITTING ACTION

# This permit is a of an existing Air Contaminant Discharge Permit (ACDP) which was issued on May 8, 2007 and was originally scheduled to expire on January 1, 2012. The current permit remains in effect until the permit renewal is issued because the permittee submitted a timely and complete application for renewal of the permit.

OTHER PERMITS

# Other permits issued or required by the Department of Environmental Quality for this source include a Water Pollution Control Facilities Permit (WPCF), a National Pollutant Discharge Elimination System Permit (NPDES) 1200Z Permit, and an NPDES 400J Permit.

ATTAINMENT STATUS

# The source not located within 10 kilometers of a Class I Area.

source description

overview

# Mill #1 is not operating and has not operated for many years. Mill #2 is a modern, computerized stud mill that produces predominantly 2” x 4” x 8’ studs. The facility includes seven lumber dry kiln bays. Steam heat for the kilns is provided by the adjacent Co-Gen Plant operating under Title V Operating Permit No. 12-0001-TV-01. A standby 16,000 lb/hr Wellons hogged fuel boiler is used when the Co-Gen boiler is out of service for maintenance or repairs. The boiler was installed in 1981 but has not operated since 2002.

# The facility has been in Temporary Closure status since November 10, 2010.

process and control devices

# Existing air contaminant sources at the facility consist of the following:

## One 16,000 lb/hr *(68.9 MMBtu/hr heat input)* Wellons fuel cell hogged fuel boiler with multiclone emissions controls is used as a backup steam source, installed in 1981.

## Four (4) cyclones, three of which exhaust directly to the atmosphere, and one which is currently not in use.

## One (1) target box is used to handle wood chips.

## Fugitives from onsite vehicle traffic, process and equipment leaks, and wood waste handling operations.

compliance

# The facility was not inspected during the previous permit term. However, as stated above, the boiler has not operated since 2002. Other operations at the plant have been sporadic.

# During the prior permit period there were no complaints recorded for this facility.

# No enforcement actions have been taken against this source since the last permit renewal.

emissions

# Proposed PSEL information:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Pollutant** | **Baseline Emission Rate (tons/yr)** | **Netting Basis** | | **Plant Site Emission Limits (PSEL)** | | |
| **Previous (tons/yr)** | **Proposed (tons/yr)** | **Previous PSEL (tons/yr)** | **Proposed PSEL (tons/yr)** | **PSEL Increase (tons/yr)** |
| PM | 0.5 | 0.5 | 0.5 | 24 | 24 | 0 |
| PM10 | 0.3 | 0.3 | 0.3 | 14 | 14 | 0 |
| PM2.5 | NA | NA | 4.0 | NA | 13 | NA |
| SO2 | 0 | 0 | 0 | 39 | 39 | 0 |
| NOx | 0 | 0 | 0 | 39 | 39 | 0 |
| CO | 0 | 0 | 0 | 99 | 99 | 0 |
| VOC | 6.2 | 90 | 90 | 99 | 99 | 0 |
| Single HAP | 0 | 0 | 0 | 0 | 9 | 9 |
| Combined HAPS | 0 | 0 | 0 | 0 | 24 | 24 |

## The proposed PSELs for all pollutants, except VOC and PM2.5, are equal to the Generic PSEL in accordance with OAR 340-222-0041(1).

## The PSEL for VOC (99 ton/yr) is derived from the netting basis (90 tons/yr) plus nine (9) tons requested by the permittee. This level is one ton less that the major source threshold for requiring a Title V permit.

## Although the Generic PSEL for PM2.5 is 9 tons/year, a netting basis of up to 5 tons/year may be added to the PM2.5 Generic PSELin order to prevent PM2.5 emissions from initially exceeding SER *(OAR 340-200-0020).*

## CO2 is not currently regulated as a greenhouse gas (GHG) emission from the combustion of biomass. The greenhouse gases CH4 and N2O emissions are emitted at diminimis levels (< 2,750 tons/year) for the baseline and current emissions. Therefore, neither a baseline nor a PSEL are being established in this permit action. The basis for this may be found in the emission detail sheets at the end of this review report.

## The Baseline Emission Rates and netting basis were established in previous permitting actions.

## Actual emissions are expected to be less than the PSELs as shown in the Detail Sheet provided at the end of this Review Report.

## The PSEL is a federally enforceable limit on the potential to emit.

significant emission rate analysis

# For each pollutant, the proposed Plant Site Emission Limit is less than the Netting Basis plus the significant emission rate, thus no further air quality analysis is required.

major source applicability

criteria pollutants

# A major source ia a facility that has the potential to emit more that 100 tons/yr of any criteria pollutant. Although the source has the capacity to emit above the Title V major source threshold levels for VOC emissions (173 tons/yr), the permittee has elected not to obtain an Oregon Title V Operating Permit by requesting a PSEL below the VOC major source threshold levels (99 tons/yr). Therefore, the source is not subject to Title V. In addition, actual VOC emissions are well below the PSEL. The PSEL is a federally enforceable limit on PTE.

Hazardous air pollutants

# A major source is a facility that has the potential to emit more than 10 tons/year of any single HAP or 25 tons/year of combined HAPs. Although the source has the capacity to emit above the Title V major source threshold levels for Methanol emissions (12.6 tons/yr), the permittee has elected not to obtain an Oregon Title V Operating Permit by requesting a PSEL below the Methanol major source threshold levels (9 tons/yr). The new Methanol PSEL was derived by reducing the amount of kiln-dried lumber from 135 MM bd.ft./yr to 100 MM bd.ft./yr. Therefore, the source is not subject to Title V. The basis for this can be found in the Detail Sheets attached to this review report.

additional requirements

nsps applicability

# There are no sources at this facility for which NSPS standards have been promulgated. The wood-fired boiler was manufactured prior to June 9, 1989 so it is not subject to 40 CFR Part 60, Subpart Dc.

neshaps/mact applicability

# The NESHAPS/MACT Standard for Industrial, Commercial and Institutional Boilers, *Boiler Area Source MACT (40 CFR Part 63 Subpart JJJJJJ),* applies to this source because the boiler combusts biomass. The permittee is required to perform biennial tune-ups beginning in March 2012 and a one-time energy assessment by March 2014.

RACT applicability

# The RACT rules are not applicable to this source because it is not in the Portland AQMA, Medford AQMA, or Salem SKATS.

source testing

# The steam supplied to the source is generally from an adjacent and separately permitted co-generation plant. The source uses a 16,000 lb/hr Wellons hogged fuel boiler as a backup whenever the co-generation plant is shut down. Since the backup boiler provides less than ten percent (10%) of the steam necessary to run the operation, source testing has not been required in the past and will not be required in this 2012 permit renewal action.

public notice

# This permit was placed on public notice from **April 6, 2012** to **May 7, 2012**. No comments were received in response to the public notice and no changes have been made to the permit. Pursuant to OAR 340-216-0066(4)(a)(A), issuance of Standard Air Contaminant Discharge Permits require public notice in accordance with OAR 340-209-0030(3)(c), which requires that the Department provide notice of the proposed permit action and a minimum of 35 days for interested persons to submit written comments. The Department would hold a public hearing if requested by 10 or more individuals or one person representing a group of 10 or more individuals. After the comment period and hearing, if requested, the Department would review the comments an modify the permit as may be appropriate.

TH/mf

Emissions Detail Sheets

# **\*Baseline Emissions (1978):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Emission Point** | **Annual Operation** | **Pollutant** | **Emission Factor** | **Reference** | **Estimated Emissions (tons/yr)** |
| Cyclones | 1,851 BDT/Yr | PM | 0.5 lb/BDT | DEQ | 0.5 |
| PM10 | 0.25 lb/BDT | 0.2 |
| Air Dried Lumber | 12.4 MM Bd ft/yr | PM10 | 0.02 lb/M bd ft | 0.1 |
| 4.1 MM Bd ft/yr | VOC (Pine) | 2.0 lb/M bd ft | 1996 NCASI | 4.1 |
| 8.3 MM Bd ft/yr | VOC (Fir) | 0.5 lb/M bd ft | 2.1 |
|  |  |  |  | PM | 0.5 |
|  |  |  |  | PM10 | 0.3 |
|  |  |  |  | VOC | 6.2 |

No boiler or kilns operated until after the 1978 baseline year.

**Current Emissions:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Emission Point** | **Annual Operation** | **\*Pollutant** | **Emission Factor** | **Reference** | **Estimated Emissions (tons/yr)** |
| Wellons HF Boiler | 35 MM lb/yr Steam | PM | 0.4 lb/Mlb steam | DEQ | 7.0 |
| PM10 / PM2.5 | 0.34 lb/M lb Steam | DEQ est.(85 % of PM) | 6.0 |
| SO2 | 0.014 lb/M lb Steam | DEQ | 0.2 |
| NOX | 0.31 lb/M lb steam | 5.4 |
| CO | 1.0 lb/M lb Steam | 18 |
| VOC | 0.02 lb/M lb Steam | 0.4 |
| Cyclones | 32,000 BDT/Yr | PM | 0.5 lb/M BDT | 8.0 |
| PM10 /PM2.5 | 0.25 lb/M BDT | 4.0 |
| Target Box | 42,600 BDT/yr | PM | 0.1 lb/BDT | 2.1 |
| PM10 / PM2.5 | 0.05 lb/BDT | DEQ Est. (50% of PM) | 1.1 |
| Kilns | 100 MM bd. ft./yr | PM/PM10/PM2.5 | 0.02 lb/Mbd. Ft. | 1996 NCASI Study | 1.4 |
| 30 MM bd ft/yr | VOC (pine) | 2.0 lb/M bd ft | 45 |
| 70 MM bd ft/yr | VOC (fir) | 0.5 lb/M bd ft | 23 |
|  |  |  |  | PM | 24 |
|  |  |  |  | PM10 | 13 |
|  |  |  |  | \*PM2.5 | 13 |
|  |  |  |  | SO2 | 0.2 |
|  |  |  |  | NOX | 5.4 |
|  |  |  |  | CO | 18 |
|  |  |  |  | VOC | 68 |

\*As we have no present means of differentiating PM10 from PM2.5, then all PM10 is considered to be PM2.5.

# **GHG Baseline Emissions**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Emission Unit** | **Annual Throughput** | **Pollutant** | **Emission Factor** | | **EF Units** | | **Reference** | | **Emissions (tons/yr)** |
| Boiler (Hogged Fuel) | 3,744 Mlb/yr Steam (2000) | GHG-CH4 | 0.30  (GWP=21) | | lb/M lbsteam | | **\*\***DEQ (GHG Calculator & Engineering Toolbox - HF at 40% mc) | | 0.56  CO2e=11.8 |
| GHG-CO2 | 889  (GWP=1) | | 1,664  CO2e=1,664 |
| GHG-N2O | 0.04  (GWP=310) | | 0.07  CO2e=23.2 |
| **Total HF Boiler** | | | | | | | **Total GHG-CO2e=1,699** |
|  |  |  | |  | |  | |  | **\*\*\*Total GHG-CO2e w/o CO2= 0.63** |

**\*** The hogged fuel boiler steaming rate for the 2000 production season was chosen for the GHG baseline production since the 2000 production season had the highest steaming rate during the 2000-2010 decade.

**\*\*** The hogged fuel boiler emission factors for the baseline and current emissions were derived from the DEQ GHG calculator emission factors *(lb GHG/MM Btu)* combined with conversion factors from [www.engineeringtoolbox.com](http://www.engineeringtoolbox.com)

**\*\*\*** CO2 emissions derived from hogged fuel boilers have been deferred until a later date. Therefore for the purpose of the GHG PSEL and GHG baseline emissions, only the emissions from CH4 + N2O will be included in this 2012 permit renewal action.

# **GHG Current Emissions**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Emission Unit** | **Annual Throughput** | **Pollutant** | **Emission Factor** | | **EF Units** | | **Reference** | | **Emissions (tons/yr)** |
| Boiler (Hogged Fuel) | 35,000 Mlb/yr Steam | GHG-CH4 | 0.30  (GWP=21) | | lb/Mlbsteam | | **\*\***DEQ (GHG Calculator & Engineering Toolbox - HF at 40% mc) | | 5.25  CO2e=110.3 |
| GHG-CO2 | 889  (GWP=1) | | 15,558  CO2e = 15,558 |
| GHG-N2O | 0.04  (GWP=310) | | 0.7  CO2e = 217 |
| **Total HF Boiler** | | | | | | | **Total GHG-CO2e =15,885** |
|  |  |  | |  | |  | |  | **\*\*\*Total GHG-CO2e w/o CO2 = 5.95** |

**HAPS (Hogged Fuel Boiler)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pollutant** | **Production Parameter** | **Emission Factor lb/MMlb Steam(1)** | **Reference** | **Annual Emissions (Tons/yr)** |
| **Phenol** | 35,000 Mlbs/yr Steam | 0.056 | AP-42; 9/03 | Negligible |
| **Acrolein** | 4.40 | AP-42; 9/03 | 0.08 |
| **Formaldehyde** | 1.43 | NCASI TB 858; 2/03 | 0.03 |
| **Acetaldehyde** | 0.91 | AP-42; 9/03 | 0.02 |
| **Benzene** | 3.63 | NCASI TB 858; 2/03 | 0.06 |
| **Naphthalene** | 0.107 | AP-42; 9/03 | Negligible |
| **Chromium** | 0.00066 | NCASI TB 858; 2/03 | Negligible |
| **Chlorine** | 0.869 | AP-42; 9/03 | 0.02 |
| **Cobalt** | 0.000209 | NCASI TB 858 | Negligible |
| **Arsenic** | 0.0011 | NCASI TB 858; 2/03 | Negligible |
| **Cadmium** | 0.00451 | AP-42; 9/03 | Negligible |
| **Manganese** | 0.165 | NCASI TB 858; 2/03 | Negligible |
| **Mercury** | 0.00109 | NCASI TB 858; 2/03 | Negligible |
| **Nickel** | 0.0363 | AP-42; 9/03 | Negligible |
| **Selenium** | 0.0033 | NCASI TB 858; 2/03 | Negligible |
| **Hydrogen Chloride** | 0.737 | NCASI TB 858; 2/03 | 0.01 |
| **Styrene** | 2.09 | AP-42; 9/03 | 0.04 |
| **Toluene** | 1.01 | AP-42; 9/03 | 0.02 |
| **Xylenes (total)** | 0.0275 | AP-42; 9/03 | Negligible |
| **Methanol** | 0.91 | NCASI TB 858; 2/03 | 0.02 |
| **Lead compounds** | 0.0064 | NCASI TB 858; 2/03 | Negligible |
| **Total HAPS** | | | | **0.3** |

**HAPS (Drying Kilns)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pollutant** | **Production** | **EF**  **(lb/MM bd. ft.)** | **Reference** | **HAP Emissions (Tons/Yr)** |
| Methanol | 100 MM bd. ft/year | 183 | OSU/NCASI 2007 Drying Kiln Study | 9.2 |
| Formadehyde | 2.8 | 0.14 |
| Acetaldehyde | 113 | 5.6 |
| Propionaldehyde | 1.0 | 0.05 |
| Acrolein | 1.6 | 0.08 |
|  |  |  | **Total HAPs** | **15.1** |

The permittee processes only fir and pine species. White fir at >200oF was chosen since the most conservative emission factors were derived from this species and temperature.