Malfunction Abatement Plan

PotlatchDeltic – Gwinn Lumber

June, 2019

Introduction

This malfunction abatement plan (MAP) has been prepared as required by the PotlatchDeltic - Gwinn Lumber Renewable Operating Permit (ROP) Number MI-ROP-N5940-20XX. Source-wide Condition B IX. 1 of the ROP states

> *"The permittee shall implement and maintain a facility-wide Malfunction Abatement Plan (MAP) approved by the District Supervisor. If the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall revise the MAP within 45 days after such an event occurs. The revised plan shall include procedures for operating and maintaining the process equipment and add-on air pollution control device during similar malfunction events, and a program for corrective action for such events. (R 336.1910, R 336.1911)".*

PotlatchDeltic - Gwinn Lumber is responsible for preparing and maintaining a preventive maintenance program for the pollution control devices installed on the mill's process equipment. Preventive maintenance schedules and procedures have been established for the process and pollution control equipment based on manufacturer's recommendations, ROP requirements, emissions testing and mill operational experience. Equipment operation, inspections, preventive maintenance and repairs are performed by qualified and properly trained personnel. All equipment used for the control of air emissions is operated and maintained to the extent possible to prevent malfunctions or failures that would result in emissions exceeding applicable emission limits. Standard operating procedures are also in place to detect and respond to malfunctions in the event they do occur to minimize potential impacts. The PotlatchDeltic - Gwinn Lumber MAP is consistently aligned with the required elements specified in paragraph 2 of R 336.1911 (Rule 911).

Source Description

Green logs are rough cut into lumber in an automated saw mill and dried in one of four dry kilns, three are indirect heated steam kilns and one is direct-fired natural gas kiln. Kiln dried lumber production at the Gwinn Facility is capped by permit condition at 220 million board feet per year (MMBf/yr). The mill processes jack pine, red pine, balsam, spruce and insignificant amounts of white pine and tamarack. Wood chips, sawdust, and wood waste are sold or burned in the wood fired boilers. The emission sources covered under the ROP, the associated air pollution control equipment and affected emissions are described by emissions unit below.

- **EU-WOODBOILER1 and EU-WOODBOILER2** are identical wood fired boilers rated at 28.7 MMBTU per hour each. These emission units have been combined into a flexible group (**FG-WOODBOILERS**) in the ROP and are subject to the New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units promulgated in 40 CFR 60, Subparts A and Dc. These sources are also subject to the Maximum Achievable Control Technology (MACT) Standards under the National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, 40 CFR 63, Subparts

A and JJJJJJ. Each boiler is equipped with a primary and secondary multiclone for control of particulate matter. These emission units do not have pre-control device emissions of particulate matter greater than the major source threshold level and are therefore are not subject to the federal Compliance Assurance Monitoring (CAM) rule under 40 CFR 64.

- **EU-PLANER, EU-ENDTRIMMER1, EU-ENDTRIMMER2, EU-ENDTRIMMER3 and EU-TRAILERS** is a combination of process equipment (planer, board end trimmers and semi-trailers used to store shavings) that has been combined into a flexible group (**FG-PLANERSYSTEM**) in the ROP. The Planer has a baghouse control device. The planer has pre-control device emissions of particulate matter greater than the major source threshold level and are therefore subject to the federal CAM rule.

- **EU-PNEUMATICLINE** is a pneumatic chip/air separator that conveys wood chips to pile storage, rail car load-out or a truck bin. Chips blown to the truck bin are separated from the air stream and collected by a cyclone prior to entering the bin. The cyclone functions as a collector for the pneumatically conveyed chips and is considered inherent process equipment. As such, it is not subject to the federal CAM rule. However, the cyclone is managed as a control device in this plan.

- **EU-GASBOILER** is a natural gas fired boiler rated at 800 horsepower with a heat input capacity of 48.8 MMBTU per hour. This emissions unit is subject to the NSPS for Small Industrial-Commercial-Institutional Steam Generating Units promulgated in 40 CFR 60, Subparts A and Dc. There are no air emission control devices on the gas fired boiler.

- **EU-GENERATOR** is a 200 kilowatt diesel-fueled emergency generator. This emission unit is subject to the NSPS for Compression Ignition Internal Combustion Engines promulgated in 40 CFR 60, Subparts A and IIII. There are no air emission control devices on the diesel emergency generator.

- **EU-DRYKILN1, EU-DRYKILN2, EU-DRYKILN3** are three indirect steam heated kilns and **EU-DRYKILN4** is a direct-fired natural gas kiln. All four kilns are used for drying rough cut softwood lumber. These emission units have been combined into a flexible group in the ROP (**FG-DRYKILNS**). There are no air emission control devices on the kilns.

- **EU-FIREPUMP1 and EU-FIREPUMP2** are two 231 horsepower compression ignition emergency diesel fire pump engines. These emission units have been combined into a flexible group in the ROP (**FG-FIREPUMPS**) and are subject to the MACT Standards for Stationary Reciprocating Internal Combustion Engines Area Sources, 40 CFR 63, Subparts A and ZZZZ. There are no air emission control devices on the diesel fire pump engines.

Preventive Maintenance Program

Rule 911. (2) A malfunction abatement plan required by subrule (1) of this rule shall be in writing and shall, at a minimum, specify all of the following:
(a) A complete preventative maintenance program, including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.

The preventive maintenance program for the pollution control devices is based on the manufacturer's recommendations and previous plant experience. Program responsibilities have been defined, schedules have been established, and critical spare parts have been inventoried for all routine inspection and maintenance activities. Inspections, preventive maintenance and repairs are done by trained and qualified individuals.

- **Responsible Personnel**

  The responsible personnel for the preventive maintenance program at Gwinn Lumber are as follows:

Role/Position	Responsibility
Plant Manager	Overall facility operations and maintenance. ROP Responsible Official.
Production Supervisors	Operator training, record review, malfunction response and corrective action follow-up
Maintenance Planner/Scheduler	Preventive maintenance work order planning, scheduling and record generation
Boiler Operators	Malfunction detection, response, corrective action initiation, routine daily inspections and record generation
Pneumatic Line Operators	Malfunction detection, response, corrective action initiation, routine daily inspections and record generation
Millwrights/Electricians	Preventive maintenance inspections, repairs, corrective actions, routine inspections and record generation
Environmental Coordinator	ROP compliance, plan maintenance, documentation, reporting and recordkeeping

- **Equipment Inspections**

  The preventive maintenance program includes scheduled routine run-time and down-time equipment inspections. Run-time inspections typically occur on a daily or monthly basis and require that the process be in operation in order to assess the condition of the equipment. Down-time inspections are conducted less frequently and require the process to be shut down and de-energized so that internal components can be checked. The frequency and scope of these inspections is based on manufacturer recommendations and operational experience. A summary of equipment inspections is provided in Table 1 below.

Table 1

Pollution Control Device Inspection Summary			
Emission Unit	**Control Device**	**Items/Conditions Inspected**	**Frequency**
FG-WOODBOILERS	Multiclones	Leaks, hot spots, general condition (Record on Form #415A) Pressure drop (Record on Form #414C)	Daily
		Wear/erosion on outlet tubes, tube sheets, gasketing/connectors, collector boots and airlock tips	Annual
		Magnehelic gauge calibration/replacement	Annual
FG-PLANERSYSTEM	Baghouse	Operation, pressure drop, visible emissions, pulse pressure, compressor intake filter (Record on Form #412A)	Daily
		Wear/leaks, solenoid/diaphragm valve, door seals, rotary arm components, inlet/outlet ductwork (Record on "Planer Machine Equipment PM's"	Monthly
		Magnehelic gauge calibration/replacement	Semi-Annual
EU-PNEUMATICLINE	Truck Bin Cyclone	Visible Emissions, blow line leaks (Record on Form #412A)	Daily
		Wear, material build-up	Annual

- **Critical Spares**

  The on-site inventory of critical spare parts for the air pollution control devices is based the availability of replacement parts from off-site sources and the potential curtailment of a particular emission unit, or possibly the entire mill, until replacement parts can be obtained. A listing of critical spare parts maintained at the facility is provided in Appendix A.

Monitored Operating Variables

Rule 911. (2)
(b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.

The planer has pre-control device emissions of particulate matter greater than the major source threshold level. As such, these emission units are subject to the federal CAM rule. A CAM Plan has been developed and is maintained for these sources in a separate document. A summary of the monitoring requirements for the CAM subject sources is included in the Table 2 below along with monitoring conducted for the Truck Bin Cyclone and Multiclones.

Table 2

Pollution Control Device Monitoring Summary				
Emission Unit	**Control Device**	**Monitored Operating Variable**	**Normal Operating Range**	**Monitoring Method**
FG-WOODBOILERS	Multiclones	Differential pressure across multiclones	-5.0" to +5.0" w.g.	Daily magnehelic gauge reading when in operation
FG-PLANERSYSTEM	Baghouse	Differential pressure across baghouse	+0.1" to +6.0" w.g.	Daily magnehelic gauge reading when in operation
		Visible emissions	No visible emissions	Daily inspection when in operation and monthly Method 22 Observations
EU-PNEUMATICLINE	Truck Bin Cyclone	Visible emissions	No visible emissions	Daily non-certified visible emissions observation when in operation

Corrective Action Procedures

Rule 911. (2)
(c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

In the event that a malfunction occurs on a pollution control device that causes the mill to potentially exceed a permitted emission limit, specific actions will be undertaken including process equipment

shutdown as necessary to minimize the duration and impact of the malfunction and restore compliance as quickly as possible. Whenever warranted and reasonable, overtime, off-shift labor, outside consultants or contractors will be used to correct the malfunction. These actions are detailed in the mill's standard operating procedures. A summary of the corrective action procedures are provided in Table 3 below.

Table 3

Pollution Control Device Corrective Action Summary			
Emission Unit	**Control Device**	**Malfunction**	**Corrective Action**
FG-WOODBOILERS	Multiclones	Pressure drop out of range	Isolate/shut down affected boiler, inspect for wear and/or plugging, repair as needed
		Visible leaks, hot spots	Isolate/shut down affected boiler, inspect for wear, repair as needed
FG-PLANERSYSTEM	Baghouse	Pressure drop low	Inspect for leaks or malfunction of magnehelic gauge. Shut down process and replace bags as needed.
		Pressure drop high	Initiate manual cleaning cycles, inspect magnehelic gauge for potential malfunctions. Shut down process and replace bags as necessary
		Visible emissions	Inspect internals for leaks/damage. Shut down process and repair/replace as needed
EU-PNEUMATICLINE	Truck Bin Cyclone	Visible fugitive emissions from cyclone or blow lines	Isolate/shut down affected blow line and repair as needed

Recordkeeping

All inspections, preventive maintenance and corrective actions described in the plan are documented on inspection checklists and completed work orders. Records are maintained by the Environmental Coordinator as required by the ROP.

Abnormal Condition/Malfunction Reporting

The Marquette AQD District Office will be notified of abnormal conditions or malfunctions which result in excess emissions of a Hazardous Air Pollutant lasting more than 1 hour, or emissions of any other air contaminant lasting more than 2 hours no later than 2 business days after discovery. Notification will be made by e-mail, telephone or direct communication. Written reports will be also be submitted to the AQD District Supervisor in the event the abnormal condition or malfunction lasts longer than 2 hours. The written report will be submitted within 10 days after the abnormal conditions or malfunction has been corrected, but no later than 30 days after discovery. The written reports shall include all of the information required in Rule 912(5) and will be certified by the mill's Responsible Official. Abnormal

conditions and malfunctions resulting in excess emission exceeding the limits established in the ROP are deviations and will also be reported in the semiannual deviation reports required by Rule 213(3)(c)(i).

Abnormal conditions or malfunctions which result in excess emissions less than the 1 and 2 hour durations described above do not require AQD notification. These events will, however, be reported in the semiannual deviation reports required by Rule 213(3)(c)(i).

Appendix A

Critical Spares Inventory

Boiler Multiclone and Ash System Critical Spares (FG-WOODBOILERS)			
Part #	**Description**	**Qty on Hand**	**Vendor/Vendor #**
# 700SS2502LA040	GAUGE,700SS2502LA040,COMPOUND,SS,0-60PSI,0-30VACUUM,2-1/2"FA	4	Applied Industries > 220044
HYDR-855-1	SIPHON/PIGTAIL FOR Gauge # 700SS2502LA040	4	Applied Industries > 220044
# 109000100	VLV,109000100,6X6 450,230,BOILER ROTARY AIRLOCK,HURST BOILER	1	Hurst Boiler > 17810
# 130000305	Multiclone Tube , Collect Tube 9" CI, Gray Iron	6	Hurst Boiler > 17810
# 63000215	KWOOL, STP 1" TK x 2" WD x 300"	800 ft	Hurst Boiler > 17810
# 705870	Ash Eductor	2	Cylde Bergmann Power Group > 301448
# 705154	Ash Eductor Liner	1	Cylde Bergmann Power Group > 301448
# 16159-3	2" Reducing Coupling w/Hi-Temp Gaskets	2	Cylde Bergmann Power Group > 301448
# 16124-3	2 " Reducing Coupling Gasket	4	Cylde Bergmann Power Group > 301448
# 16116-3	2 " Reducing Coupling Gasket	6	Cylde Bergmann Power Group > 301448
# 703955-3	2 " Long Style Coupling w/Hi-Temp Gaskets	1	Cylde Bergmann Power Group > 301448
# 161443- 3	2" Steel pipe Coupling w/Hi-Temp Gasket	2	Cylde Bergmann Power Group > 301448
# 705286	Check Valve for Spare Ash Blower Unit	1	Cylde Bergmann Power Group > 301448
# 706555	Relief Valve for Spare Ash Blower Unit	1	Cylde Bergmann Power Group > 301448
# 706556	Flex Connector for Spare Ash Blower Unit	2	Cylde Bergmann Power Group > 301448
# 706557	Discharge Silencer for Spare Ash Blower Unit	1	Cylde Bergmann Power Group > 301448
# 706558	Vent Fan for Spare Ash Blower Unit	1	Cylde Bergmann Power Group > 301448
# 705164	V-Belt, Drive for Spare Ash Blower Unit	1	Cylde Bergmann Power Group > 301448
# DBPPEA53BM,	3 BLK PE A53B S40 ER W SRL PIPE	6 lengths	Cylde Bergmann Power Group > 301448
# 15829A	Y-Pipe	1	Cylde Bergmann Power Group > 301448
# 15813	Elbow	1	Cylde Bergmann Power Group > 301448
# 706275	Motive Nozzle	1	Cylde Bergmann Power Group > 301448
PROD-705169	2 " DIAPHRAGM for East or West Bin Vents	1	Applied Industries > 220044
PROD-705170	2" DIAPHRAGM REBUILT KIT for East or West Bin Vents	1	Applied Industries > 220044
PROD-705172	SOLENOID REBUILD KIT for East or West Bin Vents	1	Applied Industries > 220044

Boiler Multiclone and Ash System Critical Spares (Con't) (FG-WOODBOILERS)			
Part #	**Description**	**Qty on Hand**	**Vendor/Vendor #**
B5405	Ash Funnel for Either # 1 or # 2 Boilers Ash System	1	UP Fabrication > 220013
# 703278	Filter Element	10	Cylde Bergmann Power Group > 301448
# 705167	Bin Vent Filer Bags For East or West Bin Vents	18	Cylde Bergmann Power Group > 301448
# 07-1-OSPS-2"	VLV,07-1-OSPS-2",CHECK,2"NPT,MAX SEAL TEMP 450°F,150PSI MAX,	2	Applied Industries > 220044
6510202L	BLOWER,ROTARY LOBE,6510202L,ROOTS MD 22U-RA1	1	Applied Industries > 220044
# 705168	FILTER BAG CAGES for either East or West Bin Vents	9	Cylde Bergmann Power Group > 301448
PRODU-400031	CAMCORP MAGNEHELIC GAUGE 0-15" for East or West Bin Vent	2	Applied Industries > 220044
RHEAPKG00602	BLOWER,ROOTS,RHEAPKG00602,EASY AIRX2 6553URI,SELF CONTAINED,	1	Cylde Bergmann Power Group > 301448

Planer Baghouse Critical Spares (FG-PLANERSYSTEM)			
Part #	**Description**	**Qty on Hand**	**Vendor/Vendor #**
30666-016-210	BAG,FLTR,PO 30666-016-210,144" L, Filter Bags for Bag House	525	Applied Industries > 220044
# 701	PANEL,CONT,701	1	Grecon Inc-Tigard > 17019
# 516522	NOZZLE,516522	1	Grecon Inc-Tigard > 17019
# 558141	BAT,558141,12 6.5BPV	1	Grecon Inc-Tigard > 17019
# 558541	CABLE,558541,SENSOR,8'	3	Grecon Inc-Tigard > 17019
# 561504	SWITCH,FLOW,561504 WP-1(POTTER)	1	Grecon Inc-Tigard > 17019
# 581540	SENSOR,581540	3	Grecon Inc-Tigard > 17019
# 581580	BOX,581580,TERMINAL	1	Grecon Inc-Tigard > 17019
# 5614592	PLUG,ELEC,5614592,COIL	1	Grecon Inc-Tigard > 17019
# 8495311	VLV,56146172,DIAPHRAM EXTINGUISHING	1	Grecon Inc-Tigard > 17019
# 484308/05	STRAINER,484308/05,X	1	Grecon Inc-Tigard > 17019
# Charkes-Mag	MAGNET,9009-00001,ABORT GATE DC,CLARKES SHEET METAL INC.	2	Clarkes Sheet Metal, Eugene > 13493
# 561459	COIL,ELEC,561459,SOL,12V	3	Grecon Inc-Tigard > 17019
# 541707	CAGE,541707,FILTER	525	Applied Industries > 220044