

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

A088464912

FACILITY: Billerud Escanaba LLC		SRN / ID: A0884
LOCATION: 7100 COUNTY 426 M.5 ROAD, ESCANABA		DISTRICT: Marquette
CITY: ESCANABA		COUNTY: DELTA
CONTACT: Adam Becker , Environmental Engineer		ACTIVITY DATE: 09/16/2022
STAFF: Michael Conklin	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Part 2 targeted inspection for FY 22.		
RESOLVED COMPLAINTS:		

Inspection Part 2

An on-site inspection was performed on 9/16/2022 to verify compliance with MI-ROP-B7192-2021a. AQD staff (Michael Conklin) arrived on-site and met with Adam Becker, Environmental Engineer. The inspection began by Mr. Becker providing process data for the emission units being inspected. Next, an on-site review of the targeted emission units for the inspection occurred. Emission units evaluated for compliance as part of this inspection include the following: FG11BFA – Boiler 11 System, FGPAPER – Paper Machine Systems, FGCOATER – Paper Machine Coaters, FGSTARCH – Starch Handling and Make Down, FGBBKRAFT – Kraft Mill Subpart BB System, FGLVHC – LVHC System, FGHVLC – HVLC System, FGTO33 – Thermal Oxidizer System, FGB25 Bleaching System, FGSIRICE – SI RICE Units, FGCIRICE – CI RICE Units, FGBMACTB09B11 – Boiler 9 and Boiler 11, and FGBMACTB07B08 – Boiler 7 and Boiler 8.

FG11BFA – Boiler 11 System

The Boiler 11 system flexible group (FG11BFA) has eight emission units that are part of Boiler 11 (EU11B68) and the Boiler 11 Fuel and Ash Handling systems (multiple emission units). Boiler 11 was installed 1981 and modified 1986. It is an ABB Combustion Engineering combination fuel boiler rated for 750,000 pounds of steam per hour (approximately 1040 million BTU per hour heat input) that provides steam for mill processes and steam turbine-generators for producing electricity. The Boiler 11 burns natural gas and solid fuels, which include pulverized coal, wood residue, wastewater treatment plant residuals, TDF, and NHSM pellets. The Boiler 11 Fuel and Ash Handling System includes the following emission units: Coal Handling (EUCH68), Fuel Handling including wood residue, wastewater treatment plant residuals, pellet fuel, and TDF (EUFH68), #1 Coal Silo (EU1S68), #2 Coal Silo (EU2S68), #3 Coal Silo (EU3S68), #1 Ash Silo (EU1AS68), and #2 Ash Silo (EU2AS68). Boiler 11 is equipped with an over-fired air system (OFA), multiclone, and ESP. Individual baghouses are used on the three coal silos, baghouse on the #2 ash silo, and pugmills for wetting ash from #1 and #2 ash silos prior to loading into trucks for disposal.

Emissions Limits

Boiler 11 has emission limits for CO, NO_x, PM, SO₂, mercury, and opacity. Compliance with these limits is demonstrated through stack testing, CEMS, and COMS. PM and opacity limits are also established for the fuel and ash handling equipment. Compliance with these limits is demonstrated through visible emission checks along with proper operation and maintenance.

Material Limits

Boiler 11 contains material limits on the coal sulfur content, TDF amounts, engineered non-waste pellets amount, engineered non-waste pellets chlorine content, and amount of wood in percent weight of total solid fuels. Compliance is demonstrated through recordkeeping and fuel analysis.

Process/ Operational Restrictions

At 10:15 AM, during the inspection, Boiler 11 was in operation. The steam load was at 362 kpph, the five wood auger motors were set at 5 rpm, and the natural gas flow rate was 239 kcfh. The boiler was firing both wood and natural gas. The primary fuel fired in Boiler 11 is wood waste from pulp production. Boiler 11 also fires sludge and TDF with typical fuel consumption rates of 27 tons/day sludge and 80 tons/day TDF. The instantaneous opacity from the COMS was reading 0% with the last recorded 6-minute average was at 0%. The ESP and multiclone were in operation and appeared to be operating properly with no opacity detected. The NOx CEMS was reporting 0.243 lb/MMBtu as the last logged 30-day rolling average. The three coal silos were observed with baghouses installed. At the time of the inspection, coal was not being fired in Boiler 11. The ash silo for Boiler 11 and the ESP were observed with no visible emissions detected.

Testing/Sampling

A satisfactory compliance test on Boiler 11 for CO and PM last occurred on August 21, 2019. The average PM emission rate was 0.005 lb/MMBtu and the average CO emission rate was 111 ppm @ 3% O₂.

Verification of the supplier certificate of analysis for the engineered non-waste fuel pellets was not requested. Engineered non-waste fuel pellets are no longer burned in Boiler 11.

Monitoring/Recordkeeping

Billerud monitors and records the opacity and oxygen content from Boiler 11 on a continuous basis with COMS. During the inspection, the COMS was reporting 0% opacity. NOx emissions are monitored and recorded with CEMS. The CEMS was reporting the last logged 30-day rolling average emission rate to be 0.243 lb/MMBtu.

The facility keeps records of the amount of natural gas and solid fuels burned in Boiler 11. Fuel use records were provided for the period 1/1/2020 through 12/31/2021. The records note the type, amount, heat input, and 10-day average weight percent of wood and sludge of total solid fuel used for each day Boiler 11 operated. For example, on 4/19/2021, the total heat input was

17,796 MMBtu of which 960 MMBtu was TDF, 5,302 MMBtu was bark, and 11,535 MMBtu was gas. The total TDF amount fired was 32 tons and the total amount of wood fired was 589 tons. No coal, pellets, or sludge was fired in Boiler 11 on 4/19/2021. The facility stays below the 90 tons/day limit of TDF. A review of the daily records shows the 10-day average weight percent of wood and sludge of total solid fuel used is above the minimum 45% requirement.

The facility tracks the date received, source, shipper, and tons received of TDF and coal. Laboratory analysis of the fuels were provided for samples submitted on 2/27/2020 and 2/25/2021. The analysis provides the ash, sulfur, and BTU content for coal and TDF, along with arsenic, cadmium, total chromium, lead, manganese, mercury, nickel, zinc for TDF. Both analyses show the coal samples having a sulfur content of less than 1.0% by weight. For 2020 and 2021, no engineered fuel pellets were burned in Boiler 11.

Boiler 11 is CAM subject with the ESP being a CAM subject control device and opacity as an indicator of performance using COMS. The facility provides CAM Excursion/Exceedance and Monitor Downtime reports on a semiannual basis. During the inspection, the COMS appeared to be operating properly and no visible emissions were detected. A review of the semiannual CAM reports shows the facility is complying with the operating, recordkeeping, and reporting requirements of CAM for Boiler 11.

FGPAPER – Paper Machine Systems

Paper Machine Systems (FGPAPER) includes the #1 Paper Machine (EU1PM32) and associated stock preparation equipment, the #3 Paper Machine (EU3PM07) and associated stock preparation equipment and the #4 Paper Machine (EU4PM64) and associated preparation equipment. Emissions are vented through vertical stacks uncontrolled.

Emission Limits

The Paper Machine Systems contain VOC emission limits based on a 12-month rolling time period for #3 Paper Machine and #4 Paper Machine. Compliance is demonstrated through emission calculations and recordkeeping.

Material Limits

The #4 Paper Machine contains a paper production limit of 286,650 tpy based on a 12-month rolling time period. Compliance is demonstrated through record keeping.

Process/Operational Restrictions

The facility only uses mill supply water, non-direct contact condensates, well water, or white water as sources for #3 Paper Machine.

Monitoring/Recordkeeping

Billerud tracks the monthly and 12-month rolling VOC emissions from the #3 and #4 Paper Machines using an emission factor of 0.20 lbs VOC per ton of paper produced. The facility also tracks the monthly and 12-month rolling paper production for the #4 Paper Machine. Monthly and 12-month rolling records were provided for the period January 2020 through December 2021. A review of these records show the 12-month rolling VOC emission rate to remain below the 27.51 tpy limit for #3 Paper Machine and below the 26.9 tpy limit for the #4 Paper Machine. The 12-month rolling paper production for #4 Paper Machine remains below the 286,650 tpy limit. The facility maintains the SDS for each material and chemical additive used in the #3 and #4 Paper Machines.

FGCOATER – Paper Machine Coaters

The Paper Machine Coaters (FGCOATER) includes 3 emission units: the #1 Coater (EU1C36), the #3 Coater (EU3C27), and the #4 Coater (EU4C65). These coaters are subject to 40 CFR Part 63, Subpart JJJJ.

Emission Limits

The #1 Coater contains VOC emission limits of 7.8 pph and 0.00037 lb/lb of coating solids applied based on a monthly average. The #3 Coater contains VOC emission limits of 28.0 tpy based on a 12-month rolling time period and 0.00027 lb/lb of coating solids applied based on a monthly average. The #4 coater contains VOC emission limits of 31.5 tpy based on a 12-month rolling time period and 0.00021 lb/lb of coating solids applied based on a monthly average. Compliance is demonstrated through recordkeeping and emission calculations. All three coaters are also subject to the MACT JJJJ limit of no more than 20% organic HAP of the mass of coating solids applied based on a monthly average (40 CFR 63.3370). Compliance is demonstrated through following the requirements of 40 CFR 63.3320(b)(3). Billerud has chosen to demonstrate compliance with the limitation of no more than 0.20 kg organic HAP per kg of coating solids, as applied, as a monthly average for all coating materials applied, using VOC as a surrogate for the organic HAP content of coatings. Since the state limits for lb of VOC per lb of coating solids applied is less than 20% based on a monthly average, compliance with these limits demonstrates compliance with the MACT JJJJ limit.

Monitoring/Recordkeeping

The facility maintains monthly records of all coating usage amounts, VOC contents, and hours of operation for the #1 Coater. Records were provided for 2020 and 2021 that note the month, VOC

content, dry coat weight applied, coater operating hours, average coat application rate in dry lb/hr, lb VOC per dry lb coating applied, and VOC emission rate in lb VOC per coater operation hour. For 2020, the highest monthly average VOC emission rate was 5.57 lb/hr and the highest VOC content was 0.000314 lb VOC/ lb of coating solids applied. For 2021, the highest monthly average VOC emission rate was 3.80 lb/hr and the highest VOC content was 0.000208 lb VOC/ lb of coating solids applied.

Billerud tracks the raw material usage rate and VOC content of each raw material used in the #3 Coater and #4 Coater, along with the monthly and 12-month rolling VOC emissions. The facility also tracks the monthly average VOC content in lb VOC / lb of coating solids applied. For 2020 on the #3 Coater, the highest monthly average VOC content was 0.00011 lb VOC/ lb of coating solids applied and the total VOC emissions was 3.261 tpy. For 2021 on the #3 Coater, the highest monthly average VOC content was 0.00010 lb VOC/ lb of coating solids applied and the total VOC emissions was 3.060 tpy. For 2020 on the #4 Coater, the highest monthly average VOC content was 0.00007 lb VOC/ lb of coating solids applied and the total VOC emissions was 2.737 tpy. For 2021 on the #4 Coater, the highest monthly average VOC content was 0.00009 lb VOC/ lb of coating solids applied and the total VOC emissions was 4.176 tpy.

The facility keeps a copy of each SDS for all raw materials used in the three coaters. Billerud is in compliance with the 0.20 lb organic HAP per lb of coating solids as applied based on the records reviewed. No visible emissions were detected from the coating applicators and the associated dryers.

FGSTARCH – Starch handling and Make Down

Equipment for the handling and make-down of starch for the paper machines and coaters: The #1 Coater Dry Starch System equipment (EUSS43) includes #1 and #2 Starch Silo, #1 and #2 Starch Day Bins, and #1 and #2 Starch Wet Out Tanks. The #3 Paper Machine Dry Starch System equipment includes #1 Starch Silo (EU1SS08) and the #1 Starch Make down Tank (EU1M08). The #3 Coater Dry Starch System includes the #2 Starch Silo (EU2SS08), #3 Starch Silo (EU3SS08), and #2 Starch Make down Tank (EU2M08). The #4 Coater System includes Starch Storage (EUSS66) consisting of #1 and #2 Starch Silos.

For the #1 Coater Dry Starch System, individual baghouse dust collectors are utilized on the #1 and #2 Starch Silos, a common baghouse is used for the #1 and #2 Starch Day Bins, and a common baghouse is used for the #1 and #2 Starch Wet Out Tanks. For the #3 Paper Machine, baghouse dust collectors serve the #1 Starch Silo and #1 Starch Make down Tank. For the #3 Coater Dry Starch System, baghouse dust collectors serve the #2 Starch Silo, #3 Starch Silo, and #2 Starch Make down Tank. For the #4 Coater System, individual baghouse dust collectors serve the #1 and #2 Starch Silos.

Emission Limits

The Starch Handling and Make Down equipment contains a PM emission limit of 0.10 lb / 1000 lbs of exhaust gas calculated on a dry gas basis for each baghouse of FGSTARCH. Compliance is demonstrated through performing visible emission checks on a weekly basis.

Process/Operational Restrictions

Billrud operates the Starch Handling equipment with the required baghouses.

Monitoring/Recordkeeping

Example records were provided for the dates 01/28/2020, 2/11/2020, 7/27/2020, 4/19/2021, 8/18/2021, and 8/19/2021. The records note the equipment name, purpose of inspection, date/time, operator ID, and inspection result. From the records reviewed, the facility is conducting visible emission observations of the baghouses during operation.

FGBBKRAFT – Kraft Mill Subpart BB System

Kraft Pulp Mill Subpart BB Systems (FGBBKRAFT) include the following: The Digester System (EUBB22) consists of batch digesters, blow tanks, and a blowheat condensing system. The Brownstock System (EUBB23) processes brown pulp from the digester blow tanks and includes the knotters, brownstock washers, and associated vacuum pumps and filtrate tanks. The Brownstock System is used for final treatment of Kraft pulping process condensates. The Steam Stripping System (EUBB33) consists of a steam stripper column and reflux condenser used to strip total reduced sulfur (TRS) compounds from condensate streams from various processes in the Kraft pulp mill. The Steam Stripping System is also used to pre-treat kraft pulping process condensates. The Evaporator System (EUBB05) consists of a multiple-effect evaporator and associated condensers and hotwell used to concentrate the spent cooking liquid that is separated from the pulp (black liquor).

Gases from the EUBB22 Digester System, the EUBB33 Steam Stripping System, and the EUBB05 Evaporator System are routed to the EULVHC closed vent gas collection system and burned in the Thermal Oxidizer (EUOC33) or the Lime Kiln (EULK15) as a backup. Gases from the EUBB23 Brownstock System and the EUBB22 Digester System digester domes and capping valves are routed to the EUHVLC closed vent gas collection system and burned in Chemical Recovery Furnace (EURF15).

Emission Limit

The closed vent gas collection system is subject to a TRS limit of 5 ppm by volume on a dry gas basis, corrected to 10% oxygen based on a 12-hour average unless the gases are combusted in either the Recovery Furnace or the Thermal Oxidizer and Lime Kiln with a minimum temperature of 1200 F for at least 0.5 seconds.

Process/Operational Restrictions

During the inspection, the thermal oxidizer was in operation and combusting gases from EUBB22, EUBB33, and EUBB05 Systems. Gases from the Brownstock System and the Digester System are collected and combusted in the Recovery Furnace.

FGLVHC – LVHC System

The LVHC System (FGLVHC) consists of a collection of equipment regulated by 40 CFR Part 63, Subpart S including the digesters, turpentine recovery, evaporator, steam stripping system, and associated equipment which vent to the LVHC gas collection system. Emission Units include: Evaporator NSPS Devices (EUBB05), Digester Other Devices (EUOT22), Digester NSPS Devices (EUBB22), and Miscellaneous Turpentine Handling Devices (EUMT22), Steam Stripping NSPS Devices (EUBB33) and Miscellaneous Condensate Stripping System Devices (EUMC33).

LVHC gases from FGLVHC are collected in a closed vent collection system and incinerated in the Thermal Oxidizer (EUOC33) or the Lime Kiln (EULK15) as a backup incineration device.

Process/Operational Restrictions

During the inspection, the thermal oxidizer was in operation and combusting LVHC gases. The LVHC gases are vented through a closed-vent system to the thermal oxidizer or the lime kiln as a backup device.

FGHVLC – HVLC System

The HVLC System (FGHVLC) consists of a collection of equipment regulated by 40 CFR Part 63, Subpart S including the following: knotters, brownstock washers, brownstock filtrate tanks, digester fugitive gases, and black liquor storage and processing tanks. Emission Units include: EUBB22 digester capping valves, Brownstock NSPS Devices (EUBB23) and Miscellaneous Evaporator System Devices (EUME05). HVLC gases from FGHVLC are collected in a closed vent system and destroyed in the Chemical Recovery Furnace (EURF15).

Process/Operational Restrictions

HVLC gases are routed through a closed-vent system to the Recovery Furnace to be combusted. The facility maintains records for all periods of excess emissions.

FGTO33 – Thermal Oxidizer System

The Thermal Oxidizer System (FGTO33) includes two emission units: The Thermal Oxidizer (EUOC33), which is a dedicated incineration device for gases from the FGLVHC System and the Soda Ash Storage Tank (EUSA33). Exhaust from the Thermal Oxidizer (EUOC33) is routed through a packed scrubber which utilizes a soda ash scrubbing solution to control sulfur dioxide emissions.

Emission Limits

The thermal oxidizer contains emission limits of SO₂, TRS, Total HAP measured as methanol, visible emissions. Compliance is demonstrated through proper operation of the scrubber and performance testing.

Process/Operational Restrictions

The thermal oxidizer is required to maintain a minimum temperature of 1200 F based upon a 5-minute averaging time measured at the point of incineration and minimum retention time of 0.5 seconds. During the inspection, the thermal oxidizer was in operation and the last logged 5-minute average combustion temperature was 1501 F.

Design/Equipment Parameters

The packed scrubber is equipped with a monitoring device for the liquid flow rate, pH of the scrubbing liquid, and the pressure drop across the scrubber. During the inspection, the last logged 3-hour average liquid flow rate for the first stage of the scrubber was 688.2 gpm and the second stage was 618.7 gpm. The first stage scrubber pH was 6.8 as the last logged 3-hour average and the second stage was 8.8 as the last logged 3-hour average. The pressure drop across the first stage of the scrubber was 3.1"WC and the second stage was 2.6"WC. The Thermal Oxidizer is equipped with a continuous temperature monitoring and recording system.

Testing/Sampling

The Thermal Oxidizer is required to be tested for total HAPs measured as methanol at least once every five years. Testing was last performed on 10/22/2020 and the average emission rate was 1.88 ppmvd at 10% O₂. The average emission rate from the test is in compliance with SC I.5. Testing is next required by 10/22/2025.

Monitoring/Recordkeeping

Pressure drop is continuously monitored and recorded at least every 15-minutes for a 3-hour average across each stage of the scrubber. The pressure drop across the first stage of the scrubber was 3.1"WC and the second stage was 2.6"WC during the inspection. The scrubber liquid feed rates to the first and second stage are continuously monitored and recorded at least every 15-minutes for a 3-hour average. The first stage is required to maintain a minimum flow rate of 536 gpm and the second stage a minimum of 122 gpm. During the inspection, the last logged 3-hour average liquid flow rate for the first stage of the scrubber was 688.2 gpm and the second stage was 618.7 gpm. The facility also continuously monitors and records the pH of the scrubber liquid in the first and second stage. The first stage is required to maintain a minimum of 6.3 and the second stage a minimum of 7.8 based on a 3-hour average. During the inspection, the first stage scrubber pH was 6.8 as the last logged 3-hour average and the second stage was 8.8 as the last logged 3-hour average.

The Thermal Oxidizer is a CAM subject emission unit with the packed scrubber being a CAM subject control device. Pressure drop, liquid flow rate, and pH are used as the indicators of performance. The facility provides CAM Excursion/Exceedance and Monitor Downtime reports on a semiannual basis. During the inspection, the packed scrubber appeared to be operating properly and no visible emissions were detected. A review of the semiannual CAM reports shows the facility is complying with the operating, recordkeeping, and reporting requirements of CAM for the Thermal Oxidizer.

FGB25 – Bleaching System

The Bleaching System (FGB25) has four emission units: Bleaching Stage Equipment (EUS25) which includes the bleaching stage equipment where chlorine dioxide is applied and removed. the Chlorine Dioxide Plant (EUB25), Extraction Devices (EUED25), and Methanol Storage (EUM25). The Bleaching System is used to whiten Brownstock pulp for papermaking. Bleaching is accomplished through the use of chemicals, bleaching towers, extraction towers, and washers. Chlorine dioxide is used for bleaching, and is manufactured on site.

Gases from the pulp bleaching stages are routed in a closed vent collection system to the Bleach Plant Scrubber System which consists of two packed scrubbers in series. Off-gases from the chlorine dioxide generator and storage tanks are scrubbed with chilled water in a tail gas scrubber prior to being scrubbed in the Bleach Plant Scrubber system.

Emission Limits

The Bleaching System contains emission limits for chlorine, chlorine dioxide, and chlorinated HAPs. Compliance is demonstrated through proper operation of the scrubbers and performance testing.

Process/Operational Restrictions

At the time of the inspection, the Bleaching System and the combined scrubbers were operating. The scrubber flow on #1 was 384.1 gpm and the flowrate on #2 was 335 gpm. All gases are routed through a closed vent system to the two packed scrubbers. The exhaust gases from the chilled water gas scrubber are routed to the combined scrubbers.

Testing/Sampling

Performance testing on the Bleaching system last occurred on 10/21/2020.

Monitoring/Recordkeeping

The oxidation-reduction potential (ORP) is continuously monitored and recorded for the scrubbers in series. At the time of the inspection, the ORP for #1 was 273.3 and for #2 was 500.3.

FGSIRICE – SI RICE Units

The Spark Ignition Emergency Engine Group (FGSIRICE) consists of 2 spark ignition engines, The Lime Kiln Emergency Drive Motor (EULKSIRICE) and the EOC Back-up Generator (EUEOCSIRICE). The engines are used to provide mechanical work or power a generator in emergency situations. Both engines are 4 stroke lean burn less than 250 HP.

Both engines are equipped with non-resettable hour meters. The facility tracks the number of hours of operation, purpose, total running hours, and maintenance performed. Based on the records reviewed, the facility is operating and maintaining the emergency engines according to 40 CFR Part 63, Subpart ZZZZ.

FGCIRICE – CI RICE UNIT

The Compression Ignition Emergency Engine Group (FGCIRICE) consists of 4 compression ignition engines: the E1 Emergency Lift Pump (EUE1CIRICE), the Water Treatment Building Emergency Fire Water Pump (EUFW1CIRICE), the Administrative Building Emergency Fire Water Pump (EUFW2CIRICE), and the Turbine Turning Gear Back-up Generator (EUTTGCIRICE). The engines are used to provide mechanical work and to power pumps (e.g., fire water pump).in emergency situations. All engines are 4 stroke lean burn less than 250 HP.

All engines are equipped with non-resettable hour meters. The facility tracks the number of hours of operation, purpose, total running hours, and maintenance performed. Based on the records reviewed, the facility is operating and maintaining the emergency engines according to 40 CFR Part 63, Subpart ZZZZ.

FGBMACTB09B11 – Boiler 9 and Boiler 11

Hybrid suspension grate burners designed to burn wet biomass/bio-based solid fuel requirements for existing boilers and process heaters rated at 10 MMBTU/hr or greater at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These existing boilers or process heaters burn at least 10 percent biomass or bio-based solids on an annual heat input basis in combination with solid fossil fuels, liquid fuels, or gaseous fuels.

Boiler 11 is controlled by a multiclone and ESP. Boiler 9 is controlled by a multiclone and two wet scrubbers.

Emission Limits

MACT DDDDD contains emission limits for HCl, mercury, filterable PM, and CO. Compliance is demonstrated through performance testing, fuel analysis, and CEMS/COMS.

Process/Operational Restrictions

Billerud operates Boiler 9 and 11 within the emission limits, work practice standards, and operating limits of MACT DDDDD. The last five year tune-up on Boiler 9 occurred on 7/29/2020. Boiler 9 utilizes an O2 trim system with a setpoint established through performance testing. The last five-year tune-up on Boiler 11 occurred on 8/19/2020. Boiler 11 also utilizes an O2 trim system with a setpoint established through performance testing. Details on items inspected and corrective actions are provided in the Boiler MACT Tune-up Procedure and Documentation Form that is submitted semiannually.

Design/Equipment Parameters

Both Boiler 9 and 11 are equipped with an oxygen trim system. The oxygen trim setpoint is no lower than the lowest hourly average oxygen concentration measured during the most recent CO performance test. Boiler 9 was last tested for CO on 7/25/2019 and passed the CO limit with a minimum O2 trim of 1.1%. Boiler 11 was last tested for CO on 8/21/2019 and passed the CO limit with a minimum O2 trim of 2%.

Boiler 11 is equipped with COMS. At the time of the inspection, the last logged 6-minute average was 0%. Boiler 9 is equipped with a scrubber flow meter and differential pressure transducer on both the north and south scrubbers.

Testing/Sampling

Boiler 9 was last tested for CO and PM during 7/23-25/2019 and the average emission rates were less than 75% of the limits. Boiler 11 was last tested for CO and PM on 8/21/2019 and the average emission rates were less than 75% of the limits. Boiler 9 uses fuel analysis to comply with the HCl and mercury emission limits. Boiler 11 did fail HCl when tested for on 8/21/2019. Both mercury and HCl were tested for again on 8/17/2021 from Boiler 11 and the emission rates passed. A review of the first semiannual boiler MACT report shows the monthly fuel analysis for mercury and HCl to be below the weighted lb/MMBtu limits.

Monitoring/Recordkeeping

The facility has a site specific monitoring plan for each CMS system. The Boiler MACT Site-Specific Monitoring Plan (Rev. July 2020) includes all the requirements of SC VI.1. Billerud operates all CMS and control monitoring devices during all times the boilers are operating. A review of the first semiannual report for 2022 shows 3 startup/shutdown events for Boiler 9 and none for Boiler 11. During the startup/shutdown events for Boiler 9, the boiler was firing natural gas. The facility keeps all notifications, reports, performance tests, fuel analysis and other compliance demonstration records. The semiannual Boiler MACT reports submitted contain all the information required in SC VI.8, SC VII.4, SC VII.5, and SC VII.6

FGBMACTB07B08 – Boiler 7 and Boiler 8

Requirements for existing boilers and process heaters that are designed to burn gas 1 subcategory fuel with a heat input capacity of 10 MMBTU/hr or greater at major sources of HAP emissions per 40 CFR Part 63, Subpart DDDDD (Boiler MACT). Units designed to burn gas 1 subcategory fuels include boilers or process heaters that burn only natural gas, refinery gas, and/or Other Gas 1 fuels. Units that burn liquid fuel for testing or maintenance purposes for less than a total of 48-hours per year, or that burn liquid fuel during periods of curtailment or supply interruptions are included in this definition.

Process/Operational Restrictions

Boiler 7 last had a tune-up on June 3, 2016. Currently, boiler 7 is not in operation and will be required to have a tune-up performed within 30 days of start-up. Boiler 8 last had a tune-up performed on June 3, 2020, along with a burner and oxygen trim system inspection. The facility

appears to be operating Boiler 8 in a manner consistent with good air pollution control practices for minimizing emissions.

Monitoring/Recordkeeping

Notifications and reports for compliance with MACT DDDDD are kept on file. Boiler 8 only burns natural gas and does not burn any solid fuels. Boiler 7 only burns natural gas but is not currently in operation. A copy of the 2020 boiler tune-up report was provided that notes the burner inspection with the concentrations of CO in the effluent stream in parts per million volume and the oxygen in volume percent. No changes were made to the burner air-to-fuel ratio control system at the time of the burner tune-up. Boiler 8 burned natural gas during the previous 12-months to the boiler tune-up. The semiannual Boiler MACT reports submitted contain all the information required in SC VII.4, SC VII.5, and SC VII.6.

Compliance

Based on the inspection performed and records reviewed, Billerud Escanaba appears to be in compliance with MI-ROP-A0884-2021a and all other applicable state and federal air quality regulations.

NAME *Michael Kaplan*

DATE 9/30/2022

SUPERVISOR *Michael Kaplan*