

**MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION**

DECEMBER 16, 2020

PERMIT TO INSTALL
76-20

ISSUED TO
TILDEN MINING CO., L.C.

LOCATED AT
1 TILDEN MINE ROAD
ISHPEMING, MICHIGAN 49849

IN THE COUNTY OF
MARQUETTE

STATE REGISTRATION NUMBER
B4885

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: June 24, 2020	
DATE PERMIT TO INSTALL APPROVED: December 16, 2020	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO _{2e}	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
PM _{2.5}	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU-CONV14-15-16	Transfer points from Conveyor 14 to 15 to 16, concentrator building, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV15.8-15.9	Transfer point from Conveyor 15.8 to 15.9, pellet plant, with wet scrubber. (PTI No. 731-80)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV15.9-16.1	Transfer point from Conveyor 15.9 to 16.1, pellet plant, with wet scrubber. (PTI No. 347-76)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV16.1-17.1	Transfer point from Conveyor 16.1 to 17.1, concentrator building, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV17.1-17.2	Transfer point from Conveyor 17.1 to 17.2, pellet plant, with wet scrubber. (PTI No. 485-80)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV19 & 19A-17	Transfer points from Conveyors 19 & 19A to 17 and screen, concentrator building, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV13-17.1	Transfer point from Conveyor 13 to 17.1, concentrator building, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONV15-15.1	Transfer point from Conveyor 15 to 15.1, concentrator building, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONVEYOR1	Ore handling, transfer point from Conveyor 1 to 2, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONVEYOR12A-13	Transfer point from Conveyor 12A to 13, concentrator building, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONVEYOR12B-13	Transfer point from Conveyor 12B to 13, concentrator building, with wet scrubber. (PTI No. 485-80)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONVEYOR4A-4A1	Transfer point from Conveyor 4A to 4A1, secondary crusher, with wet scrubber. (PTI No. 279-86)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONVEYOR4B-4C	Transfer points from Conveyors 4B & 4B1 to 4C, at secondary crusher, with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-CONVEYOR4C-4D	Transfer points from Conveyors 4C to 4D, secondary crusher, with wet scrubber. (PTI No. 278-86)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-FEEDMIXER1	Bentonite feeders and blender mixers for Tilden 1 (lines 1 to 7), pellet plant, with wet scrubber. (PTI No. 354-75)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-FEEDMIXER2	Bentonite feeders and blender mixers for Tilden 2, (lines 8 to 14), pellet plant, with wet scrubber. (PTI No. 354-75)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-PRIMARYCRUSHER	Primary Ore Crusher, with wet scrubber. (PTI No. 275-72)	1975	FGDUSTCOLLECTORS FGTACONITEMACT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU-SCREENSRECLAIM	Transfer points from Conveyor 19 to 19A to 19B & screen, concentrator building with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-COOLER1	Tilden 1 Cooler Discharge Hopper and Finished Product Conveyors with wet scrubber. (PTI No. 354-75)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-COOLER2	Tilden 2 Cooler Discharge Hopper and Finished Product Conveyor with wet scrubber. (PTI No. 354-75)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-TRANSFERTOWER1	Tilden 1 Pellet Loadout with wet scrubber. (PTI No. 616-82)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-TRANSFERTOWER2	Tilden 2 Pellet Loadout with wet scrubber (PTI No. 616-82)	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-UNIT1LHF	Tilden 1 Low Head Feeder with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-UNIT2LHF	Tilden 2 Low Head Feeder with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EU-PROD CONV2	Transfer points for finished product conveyors 31.4, 31.5, 31.6, and 31.7 with wet scrubber	1975	FGDUSTCOLLECTORS FGTACONITEMACT
EUOREDRIYER1	Ore Concentrate Dryer 1 is rated at 400 tons per hour throughput and 70 MMBTU/hr heat input. This dryer is fired with natural gas and used oil. The used oil is supplied only from the 1.5 million gallon storage tank which may contain used oil and virgin fuel oil. All oil burned from this tank is considered used oil. Concentrate Dryer 1 is controlled with a cyclone precleaner and a wet scrubber. (PTI Nos. 511-87C and 148-12A)	1974 / 1996	FGTACONITEMACT
EUOREDRIYER2	Ore Concentrate Dryer 2 is rated at 800 tons per hour throughput and 125 MMBTU/hr heat input. This dryer is fired with natural gas and used oil. The used oil is supplied only from the 1.5 million gallon storage tank which may contain used oil and virgin fuel oil. All oil burned from this tank is considered used oil. Concentrate Dryer 2 is controlled with two cyclone precleaners and two wet scrubbers. (PTI No. 511-87C)	1978 / 1996	FGTACONITEMACT

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUKILN1	Unit 1 Grate Kiln Indurating Furnace dries and preheats pellets on a traveling grate and then heats the pellets in a rotary kiln for final induration. Unit 1 main burners are rated at 590 MMBTU/hr heat input. The Tilden facility produces hematite pellets and magnetite pellets. Unit 1 is fired with coal, natural gas, or used oil supplied from the 1.5 million gallon storage tank which may contain used oil and virgin fuel oil. All oil burned from this tank is considered used oil. The unit is controlled with dry electrostatic precipitators. (PTI Nos. 511-87C, 70-02 and 148-12A)	1974 / 1996 / 2002	FGTACONITEMACT
EUKILN2	Unit 2 Grate Kiln Indurating Furnace dries and preheats pellets on a traveling grate and then heats the pellets in a rotary kiln for final induration. Unit 2 main burners are rated at 590 MMBTU/hr heat input. The Tilden facility produces hematite pellets and magnetite pellets. Unit 2 is fired with coal, natural gas, or used oil supplied from the 1.5 million gallon storage tank which may contain used oil and virgin fuel oil. All oil burned from this tank is considered used oil. The unit is controlled with dry electrostatic precipitators. (PTI Nos. 511-87C, and 70-02)	1978 / 1996 / 2002	FGTACONITEMACT

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGTACONITEMACT	The affected source is an existing taconite iron ore processing plant, that is (or is part of) a major source of hazardous air pollutant (HAP) emissions. An existing affected source is a source that commenced construction or reconstruction before December 18, 2002. The regulations cover emissions from ore crushing and handling emission units, ore dryer stacks, indurating furnace stacks, finished pellet handling emission units, and fugitive dust emissions.	EUOREDRYER1 EUOREDRYER2 EUKILN1 EUKILN2 FGDUSTCOLLECTORS
FGDUSTCOLLECTORS	Various ore, concentrate, and finished pellet handling processes throughout the facility, including primary and secondary ore crushing, conveyor transfer points, bentonite feeders and mixer blenders, pellet cooler discharge hoppers, low head feeders, transfer towers, etc. The various emission units are controlled with wet scrubbers.	EU-CONV14-15-16 EU-CONV15.8-15.9 EU-CONV15.9-16.1 EU-CONV16.1-17.1 EU-CONV17.1-17.2 EU-CONV19 & 19A-17 EU-CONV13-17.1 EU-CONV15-15.1 EU-CONVEYOR1 EU-CONVEYOR12A-13 EU-CONVEYOR12B-13 EU-CONVEYOR4A-4A1 EU-CONVEYOR4B-4C EU-CONVEYOR4C-4D EU-FEEDMIXER1 EU-FEEDMIXER2 EU-PRIMARYCRUSHER EU-SCREENSRECLAIM EU-COOLER1 EU-COOLER2 EU-TRANSFERTOWER1 EU-TRANSFERTOWER2 EU-UNIT1LHF EU-UNIT2LHF EU-PROD CONV2

**FGDUSTCOLLECTORS
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Various ore, concentrate, and finished pellet handling processes throughout the facility, including primary and secondary ore crushing, conveyor transfer points, bentonite feeders and mixer blenders, pellet cooler discharge hoppers, low head feeders, transfer towers, etc. The various emission units are controlled with wet scrubbers.

Emission Unit: EU-CONV14-15-16, EU-CONV15.8-15.9, EU-CONV15.9-16.1, EU-CONV16.1-17.1, EU-CONV17.1-17.2, EU-CONV19&19A-17, EU-CONV13-17.1, EU-CONV15-15.1, EU-CONVEYOR1, EU-CONVEYOR12A-13, EU-CONVEYOR12B-13, EU-CONVEYOR4A-4A1, EU-CONVEYOR4B-4C, EU-CONVEYOR4C-4D, EU-FEEDMIXER1, EU-FEEDMIXER2, EU-PRIMARYCRUSHER, EU-SCREENSRECLAIM, EU-COOLER1, EU-COOLER2, EU-TRANSFERTOWER1, EU-TRANSFERTOWER2, EU-UNIT1LHF, EU-UNIT2LHF, EU-PROD CONV2

Related Flexible Group ID: FGTACONITEMACT

POLLUTION CONTROL EQUIPMENT

Wet Scrubbers

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. PM	0.10 lb./1000 lbs. of exhaust gases, calculated on a dry gas basis	Hourly	FGDUSTCOLLECTORS	See FG TACONITEMACT SC V.1	R 336.1331

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip each wet scrubber with at least one of the following: **(R 336.1910)**
 - a) Operable water pressure gauge
 - b) Operable water flow meter
 - c) Viewport with pivoted cover or quick-release hatch
 - d) Scrubber drain with readily visible sump to verify scrubber water flow

V. TESTING/SAMPLING

See FGTACONITEMACT

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1201(3))

NA

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
2 - 145 sly impinjet scrubbers (731-80)	26 ¹	85 ¹	R 336.1901
140 sly impinjet scrubber (485-80)	20 ¹	45 ¹	R 336.1901
150 sly impinjet scrubber (485-80)	25 ¹	35 ¹	R 336.1901
160 sly impinjet scrubber (485-80)	30 ¹	35 ¹	R 336.1901

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGTACONITEMACT FLEXIBLE GROUP CONDITIONS

DESCRIPTION

The affected source is an existing taconite iron ore processing plant, that is (or is part of) a major source of hazardous air pollutant (HAP) emissions. An existing affected source is a source that commenced construction or reconstruction before December 18, 2002. The regulations cover emissions from ore crushing and handling emission units, ore dryer stacks, indurating furnace stacks, finished pellet handling emission units, and fugitive dust emissions.

Emission Unit: EUOREDRYER1, EUOREDRYER2, EUKILN1, EUKILN2, FGDUSTCOLLECTORS

POLLUTION CONTROL EQUIPMENT

Cyclone pre-cleaners, wet scrubbers and dry electrostatic precipitators

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. PM	0.008 gr/dscf	Test Protocol/Flow weighted mean concentration	All affected source Ore Crushing and Handling Emission Units: EU-CONV14-15-16 EU-CONV15.8-15.9 EU-CONV15.9-16.1 EU-CONV16.1-17.1 EU-CONV17.1-17.2 EU-CONV19 & 19A-17 EU-CONV13-17.1 EU-CONV15-15.1 EU-CONVEYOR1 EU-CONVEYOR12A-13 EU-CONVEYOR12B-13 EU-CONVEYOR4A-4A1 EU-CONVEYOR4B-4C EU-CONVEYOR4C-4D EU-FEEDMIXER1 EU-FEEDMIXER2 EU-PRIMARYCRUSHER EU-SCREENSRECLAIM	SC V.1	40 CFR 63.9590(a), 63.9621(a), (b), 40 CFR Part 63, Subpart RRRRR, Table 1(1)
2. PM	0.008 gr/dscf	Test Protocol/Flow weighted mean concentration	All affected Finished Pellet Handling emission units: EU-COOLER1 EU-COOLER2 EU-TRANSFERTOWER1 EU-TRANSFERTOWER2 EU-UNIT1LHF EU-UNIT2LHF EU-PROD CONV2	SC V.2	40 CFR 63.9590(a) 40 CFR Part 63, Subpart RRRRR, Table 1(5)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
3. PM	0.052 gr/dscf	Test Protocol	Each individual ore dryer: EUOREDRYER1 EUOREDRYER2	SC V.3	40 CFR 63.9590(a), 63.9621(a),(c), 40 CFR Part 63, Subpart RRRRR, Table 1(6)
4. PM	0.01 gr/dscf	Test Protocol/When processing magnetite	Each individual indurating furnace: EUKILN1 EUKILN2	SC V.4	40 CFR 63.9590(a), 63.9621(a), (c), 40 CFR Part 63, Subpart RRRRR, Table 1(3)
5. PM	0.03 gr/dscf	Test Protocol/When processing hematite	Each individual indurating furnace: EUKILN1 EUKILN2	SC V.5	40 CFR 63.9590(a), 63.9621(a), (c), 40 CFR Part 63, Subpart RRRRR, Table 1(4)
* Test protocol shall specify averaging time					

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Except as provided in paragraph (2) of this section, for each wet scrubber applied to meet any particulate matter emission limit in Section I, the permittee must maintain the daily average pressure drop and daily average scrubber water flow rate at or above the minimum levels established during an initial or subsequent performance test. If the daily average pressure drop or water flow rate is below the established operating limits, the permittee must follow the corrective action procedures specified in Condition 4 of this Section. **(40 CFR 63.9590(b)(1), 40 CFR 63.9622(a), 40 CFR 63.9622(f), 40 CFR 63.9634(e), and 40 CFR 63.9636)**
2. For each dynamic wet scrubber applied to meet any particulate matter emission limit in Section I, the permittee must maintain the daily average scrubber water flow rate and either the daily average fan amperage (a surrogate for fan speed as revolutions per minute) or the daily average pressure drop at or above the minimum levels established during an initial or subsequent performance test. If the daily average pressure drop or water flow rate is below the established operating limits, the permittee must follow the corrective action procedures specified in Condition 4 of this Section. **(40 CFR 63.9590(b)(2), 40 CFR 63.9622(a), 40 CFR 63.9622(f), 40 CFR 63.9634(f) and 40 CFR 63.9636)**
3. For each dry electrostatic precipitator applied to meet any particulate matter emission limit in Section I, the permittee must maintain either (1) the 6-minute average opacity of emissions exiting the control device stack; or (2) the daily average secondary voltage and daily average secondary current for each field, at or below the levels established during an initial or subsequent performance test. If demonstrating compliance using opacity, if the daily average opacity is above the operating limits established for the corresponding emission unit, the permittee must follow the corrective action procedures specified in Condition 4 of this section. If demonstrating compliance using daily average secondary voltage and secondary current, if the daily average is below the operating limit established for the corresponding emission unit, the permittee must follow the

corrective action procedures specified in Condition 5 of this section. **(40 CFR 63.9590(b)(3), 40 CFR 63.6922(c), 40 CFR 63.6922(f), 40 CFR 63.9634(g) and 40 CFR 63.9636)**

4. If the daily average operating parameter value for an emission unit or group of similar emission units does not meet the corresponding established operating limit, the permittee must follow the procedures in paragraphs (a) through (d) of this section.
 - a) You must initiate and complete initial corrective action within 10 calendar days and demonstrate that the initial corrective action was successful. During any period of corrective action, you must continue to monitor and record all required operating parameters for equipment that remains in operation. After 10 calendar days, measure and record the daily average operating parameter value for the emission unit or group of similar emission units on which corrective action was taken. After the initial corrective action, if the daily average operating parameter value for the emission unit or group of similar emission units meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the emission unit or group of similar emission units is in compliance with the established operating limits. **(40 CFR 63.9634(j)(1))**
 - b) If the initial corrective action required in paragraph (a) of this section was not successful, then you must complete additional corrective action within 10 calendar days and demonstrate that the subsequent corrective action was successful. During any period of corrective action, you must continue to monitor and record all required operating parameters for equipment that remains in operation. After the second set of 10 calendar days allowed to implement corrective action, you must again measure and record the daily average operating parameter value for the emission unit or group of similar emission units. If the daily average operating parameter value for the emission unit or group of similar emission units meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the emission unit or group of similar emission units is in compliance with the established operating limits. **(40 CFR 63.9634(j)(2))**
 - c) (3) If the second attempt at corrective action required in paragraph (b) of this section was not successful, then you must repeat the procedures of paragraph (j)(2) of this section until the corrective action is successful. If the third attempt at corrective action is unsuccessful, you must conduct another performance test in accordance with the procedures in 40 CFR 63.9622(f) and report to the Administrator as a deviation the third unsuccessful attempt at corrective action. **(40 CFR 63.9634(j)(3))**
 - d) (4) After the third unsuccessful attempt at corrective action, you must submit to the Administrator the written report required in paragraph (c) of this section within 5 calendar days after the third unsuccessful attempt at corrective action. This report must notify the Administrator that a deviation has occurred and document the types of corrective measures taken to address the problem that resulted in the deviation of established operating parameters and the resulting operating limits. **(40 CFR 63.9634(j)(4))**
5. As required by 40 CFR 63.6(e)(1)(i), the permittee must always operate and maintain the affected source, including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by Section I. **(40 CFR 63.9600(a))**
6. The permittee shall operate FGTA CONITEMACT consistent with the Operation and Maintenance Plan (O&M Plan) as described in Appendix A of the EPA Consent Decree dated May 9, 2019, for operation of the wet scrubbers and electrostatic precipitators (ESPs) in compliance with the Taconite MACT (40 CFR Part 63 Subpart RRRRR), is implemented and maintained. **(R 336.1331, R 336.1910, R 336.1911, EPA Consent Decree, Civil Action No. 2:19-cv-095, Act 451 324.5503(b))**

See Appendix A

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall demonstrate compliance with the particulate matter emission limit specified in SC I.1 for the Ore Crushing and Handling emission units (EU-CONV14-15-16, EU-CONV15.8-15.9, EU-CONV15.9-16.1, EU-CONV16.1-17.1, EU-CONV17.1-17.2, EU-CONV19 &19A-17,EU-CONV13-17.1, EU-CONV15-15.1, EU-CONVEYOR1, EU-CONVEYOR12A-13, EU-CONVEYOR12B-13, EU-CONVEYOR4A-4A1, EU-CONVEYOR4B-4C, EU-CONVEYOR4C-4D, EU-FEEDMIXER1, EU-FEEDMIXER2, EU-PRIMARYCRUSHER, EU-SCREENSRECLAIM) by testing at owner's expense, in accordance the requirements in 40 CFR 63.9621(b). The permittee may elect to test a representative unit in accordance with 40 CFR 63.9260(e – g) in lieu of testing each and every Ore Crushing and Handling emission unit. Testing will be conducted at least once during the five-year permit term and once every five years thereafter. **(R 336.1205, R 336.2001(3) & (4), 40 CFR 63.9621(b), 40 CFR 63.9630(a) & 40 CFR 63.9640)**
2. The permittee shall demonstrate compliance with the particulate matter emission limit in SC I.2 for the Finished Pellet Handling emission units (EU-COOLER1, EU-COOLER2, EU-TRANSFERTOWER1, EU-TRANSFERTOWER2, EU-UNIT1LHF, EU-UNIT2LHF, EU-PRODCONV2) by testing at owner's expense, in accordance with the requirements in 40 CFR 63.9621(b). The permittee may elect to test a representative unit in accordance with 40 CFR 63.9620(e)-(g) in lieu of testing each and every Finished Pellet Handling emission unit. Testing will be conducted at least once during the five-year permit term and once every five years thereafter. **(40 CFR 63.9620(e), 40 CFR 63.9621(b), 40 CFR 63.9630(c), 40 CFR 63.9640)**
3. The permittee shall demonstrate compliance with the particulate matter emission limit in SC I.3 for EUOREDRIYER1 and EUOREDRIYER2 by testing at owner's expense, in accordance with the requirements in 40 CFR 63.9621(c). Testing will be conducted at least once during the five-year permit term and once every five years thereafter. **(40 CFR 63.9621(c), 40 CFR 63.9630(d), 40 CFR 63.9640)**
4. The permittee shall demonstrate compliance with the particulate matter emission limit, when processing magnetite, specified in SC I.4 for EUKILN1 and EUKILN2 by testing at owner's expense, in accordance with the requirements in 40 CFR 63.9621(a). Testing will be conducted at least twice during the five-year permit term and twice every five year term thereafter. If magnetite is not processed during the five year permit term, testing will not be required. **(40 CFR 63.9621(a), 40 CFR 63.9630(a), 40 CFR 63.9630(b), 40 CFR 63.9640)**
5. The permittee shall demonstrate compliance with the particulate matter emission limit, when processing magnetite, specified in SC I.4 for EUKILN1 and EUKILN2 by testing at owner's expense, in accordance with the requirements in 40 CFR 63.9621(a). Testing will be conducted at least twice during the five-year permit term and twice every five year term thereafter. If magnetite is not processed during the five year permit term, testing will not be required. **(40 CFR 63.9621(a), 40 CFR 63.9630(a), 40 CFR 63.9630(b), 40 CFR 63.9640)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Except as provided in paragraph (2) of this section, for each wet scrubber subject to the operating limits for pressure drop and scrubber water flow rate in 40 CFR 63.9590(b)(1), the permittee must install, operate, and maintain a CPMS according to the requirements in 40 CFR 63.9632(b) through (e) and monitor the daily average pressure drop and daily average scrubber water flow rate according to the requirements in 40 CFR 63.9633. The permittee shall record all information needed to document conformance with these requirements. **(40 CFR 63.9631(b), 40 CFR 63.9632(b)-(e), 40 CFR 63.9633, and 40 CFR 63.9634(e) (2),(3))**
2. For each dynamic wet scrubber subject to the scrubber water flow rate and either the fan amperage or pressure drop operating limits in 40 CFR 63.9590(b)(2), the permittee must install, operate, and maintain a CPMS according to the requirements in 40 CFR 63.9632(b) through (e) and monitor the daily average scrubber water flow rate and either the daily average fan amperage or the daily average pressure drop according to the requirements in 40 CFR 63.9633. The permittee shall record all information needed to

document conformance with these requirements. **(40 CFR 63.9631(c), 40 CFR 63.9632(b)-(e), 40 CFR 63.9633, and 40 CFR 63.9634(f)(2)-(3))**

3. For each dry electrostatic precipitator subject to the operating limits in 40 CFR 63.9590(b)(3), the permittee must follow the monitoring requirements in paragraph (a) or (b). **(40 CFR 63.9631(d))**
 - a) If the operating limit the permittee chooses to monitor is the 6-minute average opacity of emissions in accordance with 40 CFR 63.9590(b)(3)(i), the permittee must install, operate, and maintain a COMS according to the requirements in 40 CFR 63.9632(f) and monitor the 6-minute average opacity of emissions exiting each control device stack according to the requirements in 40 CFR 63.9633.
 - b) If the operating limit the permittee chooses to monitor is average secondary voltage and average secondary current for each dry electrostatic precipitator field in accordance with 40 CFR 63.9590(b)(3)(ii), the permittee must install, operate, and maintain a CPMS according to the requirements in 40 CFR 63.9632(b) through (e) and monitor the daily average secondary voltage and daily average secondary current according to the requirements in 40 CFR 63.9633.

The permittee shall record all information needed to document conformance with these requirements. **(40 CFR 63.9631(b), 40 CFR 63.9632(b)-(e), 40 CFR 63.9633, 40 CFR 63.9634(g)(2))**

4. The permittee must keep the following records:
 - a) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any initial notification or notification of compliance status that you submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv).
 - b) The records in 40 CFR 63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction.
 - c) Records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(viii). **(40 CFR 63.9642(a))**
5. For each COMS, the permittee must keep the following records:
 - a) Records described in 40 CFR 63.10(b)(2)(vi) through (xi).
 - b) Monitoring data for COMS during a performance evaluation as required in 40 CFR 63.6(h)(7)(i) and (ii).
 - c) Previous (that is, superseded) versions of the performance evaluation plan as required in 40 CFR 63.8(d)(3).
 - d) Records of the date and time that each deviation started and stopped and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period. **(40 CFR 63.9642(b))**
6. The permittee must keep the records required in 40 CFR 63.9634 through 63.9636 to show continuous compliance with each emission limitation, work practice standard, and operation and maintenance requirement that applies to you. **(40 CFR 63.9642(c))**
7. Your records must be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1). **(40 CFR 63.9643(a))**
8. As specified in 40 CFR 63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. **(40 CFR 63.9643(b))**
9. You must keep each record on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record according to 40 CFR 63.10(b)(1). You can keep the records offsite for the remaining 3 years. **(40 CFR 63.9643(c))**
10. If the permittee uses any air pollution control device other than a baghouse, wet scrubber, dry electrostatic precipitator, or wet electrostatic precipitator, the permittee must submit a site-specific monitoring plan that includes the information in paragraphs (a) through (d). The monitoring plan is subject to approval by the Administrator. The permittee must maintain a current copy of the monitoring plan onsite, and it must be available for inspection upon request, and kept for the life of the affected source or until the affected source is no longer subject to the requirements of this subpart. **(40 CFR 63.9631(f), 40 CFR 63.9634(i))**
 - a) A description of the device.

- b) Test results collected in accordance with 40 CFR 63.9621 verifying the performance of the device for reducing emissions of particulate matter to the atmosphere to the levels required by this subpart.
 - c) A copy of the operation and maintenance plan required in 40 CFR 63.9600(b).
 - d) Appropriate operating parameters that will be monitored to maintain continuous compliance with the applicable emission limitation(s).
11. For each CPMS required in 40 CFR 63.9631, the permittee must develop and make available for inspection upon request by the permitting authority a site-specific monitoring plan that addresses the requirements in paragraphs (a) through (g) of this section. **(40 CFR 63.9632(b))**
- a) Installation of the CPMS sampling probe or other interface at a measurement location relative to each affected emission unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device).
 - b) Performance and equipment specifications for the sample interface, the parametric signal analyzer, and the data collection and reduction system.
 - c) Performance evaluation procedures and acceptance criteria (e.g., calibrations).
 - d) Ongoing operation and maintenance procedures in accordance with the general requirements of 40 CFR 63.8(c)(1), (3), (4)(ii), (7), and (8).
 - e) Ongoing data quality assurance procedures in accordance with the general requirements of 40 CFR 63.8(d).
 - f) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of 40 CFR 63.10(c), (e)(1), and (e)(2)(i).
 - g) Corrective action procedures that you will follow in the event an air pollution control device, except for a baghouse, exceeds an established operating limit as required in 40 CFR 63.9600(b)(3).
12. Unless otherwise specified, each CPMS must meet the requirements in paragraphs (a) and (b). **(40 CFR 63.9632(c))**
- a) Each CPMS must complete a minimum of one cycle of operation for each successive 15-minute period and must have valid data for at least 95 percent of every daily averaging period.
 - b) Each CPMS must determine and record the daily average of all recorded readings.
13. The permittee must conduct a performance evaluation of each CPMS in accordance with the site-specific monitoring plan. **(40 CFR 63.9632(d))**
14. The permittee must operate and maintain the CPMS in continuous operation according to the site-specific monitoring plan. **(40 CFR 63.9632(e))**
15. For each dry electrostatic precipitator subject to the opacity operating limit in 40 CFR 63.9590(b)(3)(i), the permittee must install, operate, and maintain each COMS according to the requirements in paragraphs (a) through (d) of this section. **(40 CFR 63.9632(f))**
- a) The permittee must install each COMS and conduct a performance evaluation of each COMS according to 40 CFR 63.8 and Performance Specification 1 in appendix B to 40 CFR Part 60.
 - b) The permittee must develop and implement a quality control program for operating and maintaining each COMS according to 40 CFR 63.8. At a minimum, the quality control program must include a daily calibration drift assessment, quarterly performance audit, and annual zero alignment of each COMS.
 - c) The permittee must operate and maintain each COMS according to 40 CFR 63.8(e) and the quality control program. The permittee must also identify periods the COMS is out of control, including any periods that the COMS fails to pass a daily calibration drift assessment, quarterly performance audit, or annual zero alignment audit.
 - d) The permittee must determine and record the 6-minute average opacity for periods during which the COMS is not out of control.
16. Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), the permittee must monitor continuously (or collect data at all required intervals) at all times an affected source is operating. **(40 CFR 63.9633(a))**

17. The permittee may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels, or to fulfill a minimum data availability requirement. The permittee must use all the data collected during all other periods in assessing compliance. **(40 CFR 63.9633(b))**
18. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not considered malfunctions. **(40 CFR 63.9633(c))**

VII. REPORTING

1. The permittee must report each instance in which you did not meet an emission limitation in 40 CFR Part 63, Subpart RRRRR, including during periods of startup, shutdown or malfunction, and each instance in which you did not meet a work practice standard in 40 CFR 63.9591 or an operation and maintenance requirement in 40 CFR 63.9600. Deviations occurring during a period of startup, shutdown, or malfunction are not violations if you demonstrate to the Department's satisfaction that you were operating in accordance with 40 CFR 63.6(e)(1). Deviations shall be reporting semiannually. **(40 CFR 63.9637, 40 CFR 63.9641(a), 40 CFR 63.9641(b), 40 CFR 63.9641(d), 40 CFR 63.9650, 40 CFR 63.6(e), 40 CFR 63.10(d)(5)(i))**
2. If the permittee had a startup, shutdown, or malfunction during the semiannual reporting period that was not consistent with your Malfunction Abatement Plan, you must submit an immediate Malfunction Abatement report according to the requirements in 40 CFR 63.10(d)(5)(ii). **(40 CFR 63.9641(c))**
3. If the permittee had three unsuccessful attempts of applying corrective action as described in 40 CFR 63.9634(j), then you must submit an immediate corrective action report. Within 5 calendar days after the third unsuccessful attempt at corrective action, you must submit to the District Supervisor a written report in accordance with 40 CFR 63.9634(j)(3) and (4). This report must notify that a deviation has occurred and document the types of corrective measures taken to address the problem that resulted in the deviation of established operating parameters and the resulting operating limits. **(40 CFR 63.9641(e))**
4. The permittee shall submit two complete test protocols to the AQD, one to the Technical Programs Unit Supervisor and one to the District Supervisor for approval at least 60 days prior to the anticipated test date. The protocol shall describe the test method(s) and the maximum routine operating conditions, including targets for key operational parameters associated with air pollution control equipment to be monitored and recorded during testing. **(R 336.12001(3))**
5. The permittee shall notify the AQD Technical Programs Unit Supervisor and the District Supervisor no less than 7 days prior to the anticipated test date. **(R 336.2001(4))**
6. The permittee shall submit two complete test reports of the test results to the AQD, one to the Technical Programs Unit Supervisor and one to the District Supervisor, within 60 days following the last date of the test. **(R 336.2001(5))**
7. Every six months after the Effective Date (to be submitted on September 15 and March 15) Defendant shall submit a report that includes each instance, or related group of instances, except for an isolated instance that is the only 6-minute block average exceeding 20% but not exceeding 27% occurring within an hour, in which the 6-minute block average reading of the COM data for each ESP exceeds 20% opacity. For each instance or related group of instances, Defendant shall: **(EPA Consent Decree No. 2:19-cv-095, Paragraph 15, Act 451 324.5503(b))**
 - a) Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity;
 - b) When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records;

- c) Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, and attach relevant documents produced to address the cause of the high reading(s), if any; and
- d) Describe preventative actions taken, if any, and actions to be taken, if any, by Defendant to eliminate such instances of 6-minute block average readings that exceed 20% opacity in the future, along with a proposed schedule for taking such corrective action, or, alternatively, a justification for taking no additional action to address such instances.

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable requirements of the National Emission Standards for Hazardous Air Pollutants: Taconite Iron Ore Processing as specified in 40 CFR Part 63, Subparts A and RRRRR. **(40 CFR Part 63, Subparts A and RRRRR)**
2. The permittee must prepare, and at all times operate according to, a fugitive dust emissions control plan that describes in detail the measures that will be put in place to control fugitive dust emissions from the locations listed in paragraphs (a) through (f) below. **(40 CFR 63.9591(a)(1-6), (b) and 40 CFR 63.9635)**
 - a) Stockpiles (includes, but is not limited to, stockpiles of uncrushed ore, crushed ore, or finished pellets);
 - b) Material transfer points;
 - c) Plant roadways;
 - d) Tailings basin;
 - e) Pellet loading areas; and
 - f) Yard areas.
3. The permittee must maintain a current copy of the fugitive dust emissions control plan onsite for the life of the affected source or until the source is no longer subject to the requirements of 40 CFR Part 63, Subpart RRRRR. The permittee must make the plan available for inspection upon request. **(40 CFR 63.9591(d))**
4. As required by 40 CFR 63.6(e)(1)(i), the permittee must always operate and maintain the affected source, including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by Section I. **(40 CFR 63.9600(a))**
5. The permittee must prepare, and at all times operate according to, a written operation and maintenance plan for each control device applied to meet any particulate matter emission limit in Section I and to meet the requirement of each indurating furnace subject to good combustion practices (GCP). The plan must explain why the chosen practices (i.e., quantified objectives) are effective in performing corrective actions or GCP in minimizing the formation of formaldehyde (and other products of incomplete combustion). The permittee must maintain a current copy of the operation and maintenance plan onsite and make it available for inspection upon request. Each operation and maintenance plan must address the elements in paragraphs (a) through (c). **(40 CFR 63.9600(b), 40 CFR 63.9636)**
 - a) Preventative maintenance for each control device, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance. **(40 CFR 63.9600(b)(1))**
 - b) Corrective action procedures for continuous parameter monitoring systems (CPMS) for all air pollution control devices except for baghouses. In the event the permittee exceeds an established operating limit for an air pollution control device except for a baghouse, the permittee must initiate corrective action to determine the cause of the operating limit exceedance and complete the corrective action within 10 calendar days. The corrective action procedures the permittee takes must be consistent with the installation, operation, and maintenance procedures listed in your site-specific CPMS monitoring plan in accordance with 40 CFR 63.9632(b). **(40 CFR 63.9600(b)(3), 40 CFR 63.9634(j))**
 - c) The permittee must identify and implement a set of site-specific Good Combustion Practices (GCP) for each type of indurating furnace at the plant. These GCP should correspond to the permittee's standard

operating procedures for maintaining the proper and efficient combustion within each indurating furnace. Good combustion practices include, but are not limited to, the elements listed in paragraphs (i) through (v). **(40 CFR 63.9600(b)(4))**

- i) Proper operating conditions for each indurating furnace (e.g., minimum combustion temperature, maximum carbon monoxide concentration in the furnace exhaust gases, burner alignment, or proper fuel-air distribution/mixing).
 - ii) Routine inspection and preventative maintenance and corresponding schedules of each indurating furnace.
 - iii) Performance analyses of each indurating furnace.
 - iv) Keeping applicable operator logs.
 - v) Keeping applicable records to document compliance with each element.
6. The permittee must develop a written startup, shutdown, and malfunction plan according to the provisions in 40 CFR 63.6(e)(3). **(40 CFR 63.9610(c), 40 CFR 63.9650, 40 CFR 63.6(e)(3))**

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

APPENDIX 1

Definitions associated with the Consent Decree

The following phrases and terms are specifically defined in relation to those special conditions associated with “U.S. v Tilden Mine Company, L.C., Civil Action No. 2:19-cv-095, 2019”

- “Act” or “CAA” shall mean the Clean Air Act, 42 U.S.C. §§ 7401 et seq.
- “Complaint” shall mean the complaint filed by the United States in this action.
- “Consent Decree” or “Decree” shall mean this Decree and all appendices attached hereto (listed in Section XXV).
- “Continuous Opacity Monitor” or “COM” shall mean the automated monitor of opacity readings from an ESP stack designed to control emissions from an indurating furnace at the Tilden Mine.
- “Day” shall mean a calendar day unless expressly stated to be a business day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next business day.
- “Defendant” or “Tilden” shall mean Tilden Mining Company, L.C.
- “EPA” shall mean the United States Environmental Protection Agency.
- “Effective Date” shall have the definition provided in Section XVI.
- “Electrostatic Precipitator” or “ESP” shall mean the primary particulate emissions control equipment for the indurating furnaces at the Tilden Mine.
- “MDEQ” shall mean the Michigan Department of Environmental Quality.
- “O&M Plan” shall mean the Operations & Maintenance Plan, attached hereto as Appendix A, that sets forth operating parameters and maintenance procedures for key and auxiliary pollution control equipment at the Tilden Mine.
- “Paragraph” shall mean a portion of this Decree identified by an Arabic numeral.
- “Parties” shall mean the United States and the Defendant.
- “Section” shall mean a portion of this Decree identified by a roman numeral.
- “Tilden Mine” shall mean Tilden’s taconite mine and processing plant located in Ishpeming, Marquette County, Michigan.
- “United States” shall mean the United States of America, acting on behalf of EPA.

APPENDIX A

Wet Scrubber and ESP Monitoring and Response Plan



Tilden Mining Company L.C.

November 2018

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Wet Scrubber and ESP Monitoring and Response Plan

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1. Purpose

Certain emissions units at Tilden Mining Company L.C. facility are subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Taconite Iron Ore Processing [40 Code of Federal Regulations (CFR) Part 63 Subpart RRRRR]. This regulation is commonly referred to as the Taconite MACT and requires development and implementation of a Startup, Shutdown, and Malfunction (SSM) Plan.

The SSM Plan is applicable to air pollution control equipment that is used to demonstrate compliance with the Taconite MACT. This includes pollution control equipment used to control particulate emissions from the following sources:

- Ore Crushing and Handling Emission Units;
- Ore Drying;
- Indurating Furnaces; and
- Finished Pellet Handling Emission Units.

The sections of this document addressing roles and responsibilities, recordkeeping, reporting, and revisions are not required by the Taconite MACT and therefore deviations from these elements of the Plan are not necessarily deviations from the Taconite MACT or from the Title V permit unless expressly included in the permit.

In addition, sections of this document address control device operation, monitoring and response procedures associated with Tilden's obligations under the Michigan rule requirements incorporated into the Tilden Renewable Operating Permit, which establish a 20% opacity limit applicable to the dry electrostatic precipitators on-site. The Michigan obligations are distinct from those required by the Taconite MACT even though similar parametric monitoring instrumentation is required.

The primary purpose of the Plan is:

- To ensure that the equipment is operated in a manner consistent with safety and good air pollution control practices for minimizing emissions during periods of startup, shutdown, and malfunction; and
- To correct malfunctions which could result in particulate emissions exceedances as soon as practicable after their occurrence, consistent with safety and good air pollution control practices.

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2. Responsibilities

The following is a summary of the responsibilities for each position involved in the implementation of this plan.

2.1 Operators

- 2.1.1 Operating the scrubbers and dry ESPs according to the Plan;
- 2.1.2 Assisting in the development and updating of SSM procedures and the Plan; and
- 2.1.3 Notifying the shift supervisor of problems with the monitoring systems for the scrubbers and dry ESPs.

2.2 Shift Supervisors

- 2.2.1 Ensuring that the operators are completing their responsibilities;
- 2.2.2 Following the Plan, as required;
- 2.2.3 Assisting with the identification of the steps to prevent a reoccurrence; and
- 2.2.4 Following the Plan procedures and assisting the Section Managers in the completion of the forms required by this plan.

2.3 Section Managers

- 2.3.1 Ensuring that the operators and shift supervisors are completing their responsibilities;
- 2.3.2 Following the Plan procedures and completing the forms required by this plan; and
- 2.3.3 Submitting the completed forms required by this plan to the Environmental Department.
- 2.3.4 Section Managers shall notify the Environmental Department as soon as practicable with enough time to ensure that any incident is reported to the state within 2 working days where: this Plan is not followed AND the source experiences a deviation of an applicable emission limitation;

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- 2.3.5 If actions to prevent a reoccurrence are identified for implementation, ensure they are completed in a timely manner;
- 2.3.6 Assisting in the development and updating of the SSM procedures and the Plan; and
- 2.3.7 Coordinating initial training and refresher training of all affected operators and coordinators.

2.4 Training Department

- 2.4.1 Maintaining records for all training
- 2.4.2 Identifying individuals requiring training; and
- 2.4.3 Ensuring all training is completed

2.5 Environmental Engineers

- 2.5.1 Developing and updating the SSM procedures and Plan;
- 2.5.2 Creating reports to satisfy reporting obligations. Obtaining responsible official approval (sign-off) and submitting reports as required by the regulation; and
- 2.5.3 Facilitating resolution of inquiries and clarification of Taconite MACT rule requirements as requested to assist personnel described herein in the completion of their responsibilities.

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3. Definitions

Administrator means the regulatory agency that is responsible for the administration of the Taconite MACT regulation; this could be EPA, or MDEQ.

CFR means Code of Federal Regulations.

Dynamic Wet Scrubber means an air emissions control device which utilizes a mechanically powered fan to cause contact between the process exhaust gas stream and the scrubbing liquid which are introduced concurrently into the fan inlet.

EPA means United States Environmental Protection Agency.

ESP means dry electrostatic precipitator.

Finished Pellet Handling means the transfer of fired taconite pellets from the indurating furnace to the finished pellet stockpiles at the plant. Finished pellet handling includes, but is not limited to:

- Furnace discharge or grate discharge;
- Finished pellet screening;
- Finished pellet transfer; and
- Finished pellet storage.

The atmospheric pellet cooler vent stack and gravity conveyor gallery vents designed to remove heat and water vapor from the structure are not included as part of the finished pellet handling affected source.

Indurating means the process whereby unfired taconite pellets, called green balls, are hardened at high temperature in an indurating furnace.

MACT means Maximum Achievable Control Technology.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

MDEQ means the Michigan Department of Environmental Quality.

Ore Crushing and Handling Emission Units means the process whereby dry taconite ore is crushed and screened. Ore crushing and handling includes, but is not limited to:

- Dry crushing operations (e.g. primary, secondary, and tertiary crushing);
- Dry ore conveyance and transfer points;
- Dry ore classification and screening;
- Dry ore storage and stockpiling;
- Dry milling;

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- Dry cobbing (i.e. dry magnetic separation); and
- Grate feed.

Ore crushing and handling specifically excludes any operations where the dry crushed ore is saturated with water, such as wet milling and wet magnetic separation.

O&M Plan means Operation and Maintenance Plan.

Shutdown means the cessation of operation of an affected source or portion of an affected source for any purpose.

SSM Plan means Startup, Shutdown, and Malfunction Plan.

Startup means the setting in operation of an affected source or portion of an affected source for any purpose.

4. Equipment Covered by this Plan

4.1 Wet Scrubbers

The following is a list of wet scrubbers as particulate matter control equipment covered by this plan.

Table 4.1 – Wet Scrubbers

Air Permit Stack ID Number	Control Equipment Description	Process Description
SVA0007880	EU-CONVEYOR4B-4C	Conveyors 4B & 4B1 to 4C
SVA0013480	EU-CONVEYOR4A-4A1	Conveyor 4A to 4A-1
SVA0007910	EU-CONVEYOR4C-4D	Conveyor 4C to 4D
SVA0011570	EU-PRIMARYCRUSHER	Primary Ore Crusher
SVA0010460	EU-CONVEYOR1	Conveyor 1 to 2
SVC0005037	EU-CONVEYOR12A-13	Conveyor 12A to 13
SVC0005042	EU-CONVEYOR12B-13	Conveyor 12B to 13
SVC0005047	EU-CONV13-17.1	Conveyor 13 to 17.1
SVC0005057	EU-CONV15-15.1	Conveyor 15 to 15.1
SVP0033820	EU-CONV15.8-15.9	Conveyor 15.8 to 15.9
SVP0033940	EU-CONV15.9-16.1	Conveyor 15.9 to 16.1
SVC0005062	EU-CONV16.1-17.1	Conveyor 16.1 to 17.1
SVP0016830	EU-CONV17.1-17.2	Conveyor 17.1 to 17.2
SVC0005052	EU-CONV14-15-16	Conveyor 14 to 15 to 16
SVC0005067	EU-CONV19&19A-17	Conveyor 19 & 19A to 17 & screen
SVC0005072	EU-SCREENSRECLAIM	Conveyor 19 to 19A to 19B & screen
SVP0016100	EU-FEEDMIXER1	T1 Bentonite feeders and blender
SVP0014430	EU-COOLER1	T1 Cooler Discharge & Conveyor
SVP0014160	EU-UNIT1LHF	T1 Low Head Feeder
SVP0016230	EU-FEEDMIXER2	T2 Bentonite feeders and blender
SVP0014490	EU-COOLER2	T2 Cooler Discharge & Conveyor
SVP0014290	EU-UNIT2LHF	T2 Low Head Feeder
SVE3100694	EU-PROD CONV2	Conveyors 31.4, 31.5, 31.6, & 31.7
SVP0016620	EU-TRANSFERTOWER1	Tilden Unit 1 Pellet Loadout
SVP0016690	EU-TRANSFERTOWER2	Tilden Unit 2 Pellet Loadout

4.2 Ore Concentrate Dryers with Dynamic Wet Scrubbers

The following table is a list of the ore concentrate dryers with dynamic wet scrubbers as particulate matter control equipment covered by this plan.

Table 4.2 – Ore Concentrate Dryers with Dynamic Wet Scrubbers

Air Permit ID Number	Control Equipment Description	Process Description
SVP0082951	EU-OREDRIYER1 - Dynamic Scrubber	Ore Concentrate Dryer #1
SVP0082851	EU-OREDRIYER2 - Dynamic Scrubber	Ore Concentrate Dryer # 2 North Stack
SVP0082861	EU-OREDRIYER2 - Dynamic Scrubber	Ore Concentrate Dryer # 2 South Stack

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4.3 Indurating Furnaces with Dry ESPs

The following table lists the indurating furnace stacks and the associated air pollution control equipment covered by this plan.

Table 4.3 – Indurating Furnaces with Dry ESPs

Air Permit ID Number	Control Equipment Description	Process Description
SVP0051981	EU-KILN1 - Dry ESP 2C-1	Grate-Kiln Pelletizing Unit 1 North Stack
SVP0051711	EU-KILN1 - Dry ESPs 2A-1 & 2B-1	Grate-Kiln Pelletizing Unit 1 South Stack
SVP0052431	EU-KILN2 - Dry ESP 2C-2	Grate-Kiln Pelletizing Unit 2 North Stack
SVP0052131	EU-KILN2 - Dry ESPs 2A-2 & 2B-2	Grate-Kiln Pelletizing Unit 2 South Stack

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5. Procedures for Responding to Monitoring Excursions

The general procedure for responding to monitoring excursions include:

- All startup and shutdown events must follow the procedures for minimizing emissions presented in Section 5.1, 5.2 and 5.3.
- If a startup, shutdown or malfunction event results in an exceedance of the Taconite MACT daily threshold (pressure drop and water flow for scrubbers, opacity for ESPs) for 10 consecutive days, the form in Appendix C will be utilized as appropriate to the event. A separate form will be completed for each 10-day consecutive period. See Section 6 for further detail.
- If a startup, shutdown or malfunction event or non SSM event results in an instance or related group of instances which exceeds the 6 minute 20% opacity threshold, the process in Appendix B and form in Appendix C will be utilized as appropriate to the event. See Section 6 for further detail.
- The recordkeeping for all startup, shutdown and malfunction events must be consistent with the requirements of section 7; and
- The reporting requirements for all startup and shutdown events must be consistent with the requirements of section 8.

5.1 Wet Scrubbers

The primary purpose of the wet scrubbers is to address housekeeping and industrial hygiene issues. For buildings under negative pressure, if the dust collector fan is not operating, the dust will be contained within the building. The general operating guidelines for the wet scrubbers is to ensure that the scrubber is operating at all times when the fan is operating.

One of the options for resolving a malfunction for a dust collector with a wet scrubber that is located in a building is to shut down the fan to stop the emissions. By shutting down the fan, the emissions will be contained within the building, and the problem can be resolved without causing excess emissions or an emissions exceedance. During this time, visual inspections or other process modifications may be implemented to ensure compliance.

The startup and shutdown definitions for the dust collectors with wet scrubbers are:

- Startup Definition:
 - Beginning of Startup: Startup begins when water is flowing through the scrubber and the fan is started.

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- End of Startup: Startup is complete when both of the following conditions occur for 60 consecutive minutes (1) the pressure drop is equal to or greater than the minimum operating requirement and (2) the scrubber water flow rate is equal to or greater than the minimum operating requirement.
- Shutdown Definition:
 - Beginning of Shutdown: Shutdown begins when the fan is shut down.
 - End of Shutdown: Shutdown is complete when the fan is shut down for ten minutes.
- The required recordkeeping for all monitoring excursions is outlined in Appendix C.

5.2 Ore Concentrate Dryers with Dynamic Wet Scrubbers

The primary purpose of the dynamic wet scrubbers is to remove particulate from the flue gas prior to being discharged into the atmosphere.

The general operating guidelines for the dynamic wet scrubbers for the ore concentrate dryers is to ensure that the particulate control equipment is operating at all times when the dryer is operating under normal conditions.

The startup and shutdown definitions for the ore concentrate dryers with dynamic wet scrubbers are:

- Startup Definition:
 - Beginning of Startup: Startup begins when water is flowing through the scrubber and the fan is started to move air through the dryer.
 - End of Startup: Startup is complete when both of the following two conditions occurs for 1 consecutive hour, (1) the fan amps or the pressure drop is equal to or greater than the minimum operating requirement and (2) the scrubber water flow rate is equal to or greater than the minimum operating requirement.
- Shutdown Definition:
 - Beginning of Shutdown: Shutdown begins when the fan is shut down.
 - End of Shutdown: Shutdown is complete when the fan is down for ten minutes.
- The required recordkeeping for all monitoring excursions is outlined in Appendix C.

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5.3 Indurating Furnaces with Dry ESPs

The primary purpose of the dry ESPs for the indurating furnace stacks is to remove particulate from the flue gas prior to being discharged into the atmosphere. The general operating guidelines for the dry ESPs for the indurating furnaces is to ensure that the particulate control equipment is operating at all times when the furnace is operating under normal conditions.

The stack cap is an integral part of the grate kiln furnace design, and operates as part of normal safe operation practices. The stack cap opens when necessary to release excess heat that would otherwise build up in the furnace when the grate stops and cause severe equipment damage and unsafe working conditions. Stack cap openings are necessary responses to startup and shutdown of the furnace grate, and are managed so that only the minimum amount of heat necessary to retain safe operations is released from the furnace. This limits the amount of fuel that must be combusted to bring the furnace back to temperature when the furnace begins accepting new feed. Federal regulations define "startup" as "the setting in operation of an affected source or portion of an affected source for any purpose" and "shutdown" as "the cessation of operation of an affected source or portion of an affected source for any purpose." 40 C.F.R § 63.2. At cold startup, natural gas is fired to bring the furnace up to temperature. The stack cap is opened during this process when necessary to regulate the temperature increase and prevent rapid heating of the furnace that could damage the equipment and control device. The shutdown sequence begins when the grate stops, preventing more feed from entering the furnace. The stack cap must be opened when the grate stops to prevent a buildup of heat that would melt the grate and create dangerous pressure changes in the furnace.

Startup:

Startup Definition:

- Beginning of Startup: Startup begins when a flame is established.
- End of Startup: Defined in the Appendix A procedure.

Steps for minimizing emissions during a startup are identified in Appendix A, Tilden Opacity Reduction Procedures During Startups document which shall be followed for each startup event.

Shutdown:

Shutdown Definition:

- Beginning of Shutdown: Shutdown begins when the grate stops.
- End of Shutdown: Shutdown is complete when the ESPs are shut down and the kiln process fans are shut down.

Steps for minimizing emissions during a shutdown event may include but are not limited to raising the stack cap, reducing primary burner firing rate, dampering fans back, halting feed of greenballs to the grate, running pellet load out of the kiln, reducing kiln and pellet cooler speed and continuing use of dust collection system on portion of total airstream. In addition, the DCS has been programmed to issue an automatic "stop" command to the coal stock feeder when both conditions are true: 1) coal stock feeder is running, and stack cap >30% to ensure a rapid fuel switch to 100% natural gas in the event of a kiln shutdown.

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Malfunctions:

Malfunction Definition:

Malfunctions are any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

The general procedures for responses to malfunctions include:

- Take steps to safely secure the operation of the ESP;
- Initiate steps to identify the cause of the malfunction;
- Take actions to resolve the malfunction as soon as practicable; and
- Follow all recordkeeping and reporting requirements as described in Sections 7 and 8 of this plan.

Other 6-Minute 20% Opacity Events:

If a 6-minute opacity average or related series of 6-minute opacity averages exceeds 20%, the flowsheet presented in Appendix B will be utilized to complete the Environmental Signal or Corrective Action Report presented in Appendix C of this document as appropriate.

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6. Corrective Action Requirements

Taconite MACT Daily Thresholds

If there is an excursion of a Taconite MACT daily threshold (pressure drop and water flow for scrubbers, opacity for ESPs) the form in Appendix C will be utilized as appropriate to the event. A separate form will be completed for each 10-day consecutive period if the daily average value does not return to acceptable levels. The process described here is consistent with in the requirements set forth in 40 CFR 63.9634(j).

After the third unsuccessful attempt at corrective action, submit to the Administrator a written report within 5 calendar days after the third unsuccessful attempt at corrective action. This report must notify the Administrator that a deviation has occurred and document the types of corrective measures taken to address the problem that resulted in the deviation of established operating parameters and the resulting operating limits. (40 CFR 63.9634(j)(4))

6 Minute 20% Opacity Thresholds for the ESPs

If a 6-minute opacity average or related series of 6-minute opacity averages exceeds 20%, refer to the flowsheet presented in Appendix B and complete the Environmental Signal or Corrective Action Report presented in Appendix C of this document as appropriate.

Review and Update Process

Procedures contained herein to minimize emissions will be reviewed and updated annually as appropriate. Prior 6-minute 20% opacity events will be reviewed along with documentation regarding equipment and reason descriptions for the events. Information obtained during this review will be used to identify any issues that may warrant further investigation, identify any operational or equipment changes that need to be made and update the procedures contained herein to continue to minimize emissions during startup events.

Operators will be retrained to this plan annually.

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7. Recordkeeping Requirements

The following is a summary of the recordkeeping required. The purpose of the recordkeeping program is to maintain records that demonstrate conformance with this Plan.

- All records will be maintained for a minimum of 5 years
- Records will be maintained in a manner that can be readily accessed
- Records can be maintained as a hard copy or a computer-readable form.

The following records will be maintained:

- Completed Environmental Signal or Corrective Action Reports; The Environmental Signal or Corrective Action Report form is provided in Appendix C. These completed forms will be managed through the site's Environmental Management System (EMS).
- Associated monitoring data from the plant historian. Operating data relevant to the Plan obligations from the plant historian is preserved in the historian for at least 5 years; and
- Superseded revisions of the SSM plan will be maintained by the environmental department.

8. Reporting Requirements

The following is a summary of the reports required per the Taconite MACT regulations. All report preparation and submittal to outside agencies is the responsibility of the Environmental Department.

8.1 Semiannual Reports

The MACT regulations require submittal of semiannual reports. The reporting requirements are detailed in 40 CFR 63.9641. It is important to note that one semiannual report is submitted for compliance with all of the Taconite MACT requirements.

The site's Renewable Operating Permit (ROP) also requires submittal of semiannual reports. The 6 minute 20% opacity excursion are described in this report.

[Placeholder to add in any consent decree required reporting upon finalization of document]

The reporting due dates are:

Reporting Period	Dates	Report Due Date
1 st Semiannual Period	January 1 – June 30	September 15
2 nd Semiannual Period	June 30 – December 31	March 15

The report must include:

1. Company name and address;
2. Statement by responsible official, with the official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.
3. Dates of report and beginning and ending dates of the reporting period.
4. If there was an opacity event during a Startup, Shutdown, or Malfunction during the reporting period and actions were consistent with the SSM Plan, the compliance report will include the date(s), duration, and description of each event, as required by 40 CFR 63(10)(d)(5)(i).
5. If there were no deviations from the continuous compliance requirements in 40 CFR 63.9634 through 63.9636, then a statement will be provided that states that there were no deviations from the emission limitations, work practice standards, or operation and maintenance requirements during the operating period.
6. If there were no periods during which a continuous monitoring system (CPMS or COMS) was out-of-control as specified in 40 CFR 63.8(c)(7), then a statement will

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be provided that states that there were no periods during which a continuous monitoring system was out-of-control during the reporting period.

7. For each deviation from a MACT emission limitation using a continuous monitoring system (including CPMS or COMS) to comply with an emission limitation for the Taconite MACT, the compliance report must contain the following information (including for periods of startup, shutdown, and malfunction):
 - (i) The date and time that each malfunction started and stopped;
 - (ii) The date and time that each CPMS and/or COMS was inoperative, except for zero (low-level) and high-level checks;
 - (iii) The date, time and duration that each CPMS and/or COMS was out-of-control, including the information in 40 CFR 63.8(c)(8);
 - (iv) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period;
 - (v) A summary of the total duration of the deviations during the reporting period and the total duration as a percent of the total source operating time during the reporting period;
 - (vi) A breakdown of the total duration of the deviations during the reporting period, including those due to startup, shutdown, control equipment problems, process problems, other known causes, and unknown causes;
 - (vii) A summary of the total duration of continuous monitoring system downtime during the reporting period and the total duration of continuous monitoring system downtime as a percent of the total source operating time during the reporting period;
 - (viii) A brief description of the process units;
 - (ix) A brief description of the continuous monitoring system;

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- (x) The date of the latest continuous monitoring system certification or audit; and
- (xi) A description of any changes in continuous monitoring systems, processes, or controls since the last reporting system.

Reports required by other regulations, can be submitted in place of or as part of the semiannual report.

This facility will comply with the reporting requirements as follows:

- The Taconite MACT Report will be submitted in combination with the Title V (Renewable Operating Permit) Certification Report.

8.2 Immediate Corrective Action Reports

As outlined in section 6 of this plan, after three unsuccessful attempts at applying corrective actions to an emission unit or emission groups, an immediate corrective action report must be submitted as required by 40 CFR 63.6934(j):

- The report must be submitted to the Administrator within 5 calendar days of the third unsuccessful attempt at corrective action;
- This written report must state that a deviation has occurred and must document the types of corrective measures that have been taken to address the problem.

8.3 Reports for Actions Not Consistent with SSM Plan

If a source experiences a deviation from an applicable emissions limitation during an SSM event and the action taken in response was not consistent with the procedures specified in the SSM plan, submit an immediate notification and a written report, as required by 40 CFR 63.6(e)(3)(iv) and 63.10(d)(5)(ii):

- An immediate notification, which consists of a phone call or a fax, to the Administrator within 2 working days after commencing action that is inconsistent with the SSM Plan.
- A written report to the Administrator within 7 working days after the end of the event.

The report shall include:

- Certification of truth, accuracy, and completeness of report by a responsible official; (including name and title)
- Explanation of circumstances of the event;

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- Reasons for not following the SSM Plan;
- Description of all excess emissions and/or CPMS monitoring exceedances which are believed to have occurred.
- Actions taken to minimize emissions in conformance with §63.6(e)(1)(i).

8.4 Reports for Opacity Events Lasting Longer than 2 hours

If an opacity event occurred during any abnormal condition, startup, shutdown or malfunction lasts for greater than 2 hours above 20%, a notice to the MDEQ is required within 2 business days after the event. (MI R. 336.1912 (3)). Reporting shall consist of:

- An immediate notification, which consists of a phone call or a fax, to the Administrator within 2 working days after the event.
- A written report to the MDEQ within 10 days after startup or shutdown occurred, within 10 days after the abnormal conditions or malfunction was corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The report shall include:
 - Time, date and probable causes or reasons for, and the duration of the abnormal conditions, startup, shutdown or malfunction.
 - An identification of the source, process, or process equipment that experienced abnormal conditions, was started up or shut down, or which malfunctioned and all other affected process or process equipment that have emissions in excess of an applicable requirement, including a description of the type and, where known or where it is reasonably possible to estimate, the quantity or magnitude of emissions in excess of applicable requirements.
 - Information describing the measures taken and air pollution control practices followed to minimize emissions.
 - For abnormal conditions and malfunctions, the report shall also include a summary of the actions taken to correct and to prevent a reoccurrence of the abnormal conditions or malfunction and the time taken to correct the malfunction.

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- Actions taken to correct and prevent a reoccurrence of an abnormal condition or a malfunction shall become a part of any preventative maintenance and malfunction abatement plan required by R 336.1911.

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9. Revisions of the SSM Plan

9.1 Revisions Required by the Administrator

As stated in 40 CFR 63.6(e)(3)(vii), the Administrator may require changes to the SSM plan if the Administrator believes that the SSM Plan:

- Does not address a startup, shutdown, and malfunction event that has occurred;
- Fails to provide for the operation of the source (including associated air pollution control and monitoring equipment) during an SSM event in a manner consistent with the general duty to minimize emissions;
- Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or
- Includes an event that does not meet the definition of startup, shutdown, and malfunction.

9.2 Revisions Initiated by the Tilden Mine

As stated in 40 CFR 63.6(e)(3)(viii), the Tilden Mine may periodically revise the SSM Plan, as necessary, to satisfy the requirements of this part or to reflect changes in equipment or procedures at the affected source.

Unless the MDEQ provides otherwise, the Tilden Mine may make such revisions to the SSM Plan without prior approval by the Administrator.

9.3 Revisions to Correct Procedures

As stated in 40 CFR 63.6(e)(3)(viii), if the SSM Plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the SSM Plan, the plans must be revised within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program for corrective action for similar malfunctions of process or air pollution control and monitoring equipment. The revisions to correct procedures shall meet the requirements described in sections 9.2 and 9.4.

9.4 Revisions Which Change Scope of SSM Events

As stated in 40 CFR 63.6(e)(3)(viii), in the event that a revision to the SSM Plan alters the scope of activities which are deemed to be a startup, shutdown, or malfunction, or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in a standard established under this part, the revised plan shall not take effect until after the facility provides a written notice describing the revision to the MDEQ.

Appendix A
Opacity Reduction Procedure During Startup

Tilden Mining Co. L.C.

	Environmental Management System Document	
	Title:	Opacity Reduction Procedures During Startups
	Date/Rev:	October 19, 2018

Objective

The objective of this document is to capture procedures for minimizing opacity during startup.

These procedures are developed based on knowledge gained over time and reflects the current best understanding of startup sequences best situated to minimize opacity excursions during startup. It is anticipated to continue to evolve with increased understanding of the startup sequence and its effects on opacity.

It is important to recognize that startup of the kiln and all associated components like the ESPs is a dynamic process that depends upon numerous variables. The procedure in this document is a critical operational instruction for the operators, but relies on the technical expertise of the operators to manage the startup in the safest, most efficient way possible.

Definitions

- **Cold Startup:** a unit start-up sequence including both a heat up and production start which is initiated when kiln off-gas temperatures are less than 200°F. Neither the process fans nor the ESPs are in operation at the commencement of a cold startup.
- **Hot Idle Startup:** a unit start where production has stopped, but the kiln off-gas is held at temperatures that minimize the energy required to resume production. The process fans and ESPs remain in operation during a hot idle startup.

Equipment Availability

1. Perform weekly start-up check on T1 air heater to ensure it is in working order
2. Perform weekly start-up check on T2 air heater to ensure it is in working order

Cold Startup Sequence

1. Kiln burner started on natural gas only
2. Kiln rotation started
3. All available ESP fields are energized when the associated fan is started.
 - a. 2A precips started when 2A fan is started
 - b. 2B precips started when 2B fan is started
 - c. 2C precips started when 2C fan is started
 - d. Alarm will sound if ESP does not energize when fan is running. If a field does not start during a cold start-up, enter a priority work order to troubleshoot and correct.
4. Grate bedding: Unfired pellets are loaded on grate prior to start of air heater.
5. Air Heater started up after the grate is bedded.
 - a. If air heater will not start, write a priority work order to troubleshoot and correct.
6. Place bed depth setpoint at 7.0" of pellets and adjust pellet feed as necessary.
7. Check 1B bypass damper. Set to 100% to route heated air into the ESPs.

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8. 2A damper: Run the fan damper in AUTO (to a pre-set pressure setpoint) or if in manual, do not exceed -1.0 inH₂O UDD furnace pressure (2A).

Startup is complete when the grate run condition is fulfilled; green ball bed depth > 3", grate speed >30"/min, the stack cap is closed; and AND the secondary air temperature reaches > 1850 kF.

Hot Idle Startup Sequence

1. Kiln burner running on natural gas only; ESPs already in operation.
2. Air Heater started up before the grate is started.
 - a. If air heater will not start, write a priority work order to troubleshoot and correct.
3. Place bed depth setpoint at 7.0" of pellets and adjust pellet feed as necessary.
4. Check 1B bypass damper. Set to 100% to route heated air into the ESPs.
5. 2A damper: Run the fan damper in AUTO (to a pre-set pressure setpoint) or if in manual, do not exceed -1.0 inH₂O UDD furnace pressure (2A).
6. The startup is typically completed when the primary cooler fan has achieved its pressure setpoint.

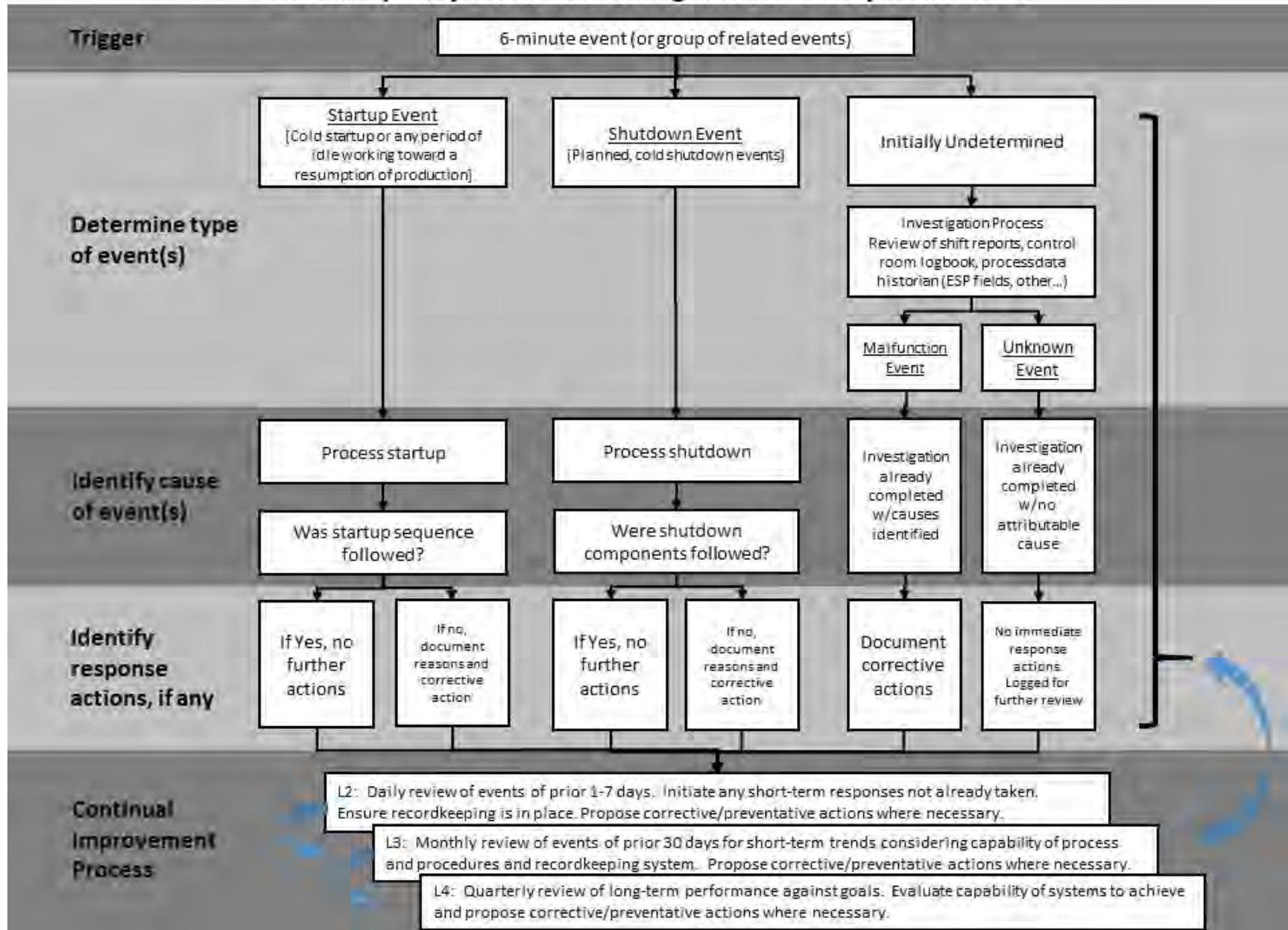
Annual Review and Update Process

Procedures contained herein to minimize emissions during startup activities will be reviewed and updated annually as appropriate. Startup and shutdown-related 6-minute opacity events that occurred during the previous year will be reviewed along with documentation regarding equipment and reason descriptions for the events. Information obtained during this review will be used to identify any issues that may warrant further investigation, identify any operational or equipment changes that need to be made and update the procedures contained herein to continue to minimize emissions during startup events. The revision date of this document will be used to demonstrate this review has been completed.

Operators will be retrained to the opacity reduction procedures after any updates are completed.

Appendix B
Opacity Event Recording and Follow Up Flowsheet

Tilden Opacity Event Recording and Follow Up Flowsheet



Appendix C
Environmental Signal or Corrective Action Report

Environmental Signal or Corrective Action Report

Due 30 days from date of event.

ESCAR # _____

1. DETERMINE TYPE OF EVENT - TO BE COMPLETED BY SUBMITTER

Event: _____

Submitted By: _____ Event Date: _____ Shift (if applicable): _____

TYPE OF EVENT

- | | | |
|--|---|---|
| Wet scrubber | <input type="checkbox"/> 24 hr dP excursion | <input type="checkbox"/> 24 hr Water Flow excursion |
| Wet scrubber | <input type="checkbox"/> 10 Day dP excursion | <input type="checkbox"/> 10 Day Water Flow excursion |
| Electrostatic Precipitator | <input type="checkbox"/> Startup Event | (Cold startup or any period of Idle working toward a resumption of production)
(Planned cold shutdown events)
Attach results of investigation process - review of shift reports, control room logbook, process data historian (ESP fields, other) |
| Electrostatic Precipitator | <input type="checkbox"/> Shutdown Event | |
| Electrostatic Precipitator | <input type="checkbox"/> Initially Undetermined | |
| | | |
| If marked "Initially Undetermined" and after completing investigation, event classification: | | |
| | <input type="checkbox"/> Malfunction Event | <input type="checkbox"/> Unknown Event |

2. INVESTIGATION & INITIAL CORRECTION (CONTAINMENT OF ISSUE) - TO BE COMPLETED BY TECHNICAL REPRESENTATIVE/INVESTIGATOR
(Attach any supporting documents)

Department/Area: _____

Cause:

Initial Action Taken:

Corrective Action:

Is corrective Action complete? Yes (sign below the table) No – complete step by step Corrective Action Plan below

Corrective Action Plan for ESCAR# _____

Expected Completion Date (required): _____

Action Step	Responsible	Target Date	Date Done	By

(Use tab key to add rows as needed)

Note: "Date Done" and "By" to be updated as work progresses

Signature: _____ Date: _____

Title: _____

Environmental Signal or Corrective Action Report

Due 30 days from date of event

ESCAR #

3. ACTION LEVEL DETERMINATION – TO BE COMPLETED BY DEPARTMENT MANAGER OR DESIGNEE (Check one)
 (Attach any supporting documents)

 Action Level ES: Process Adjustment – quick resolution completed CAR: Corrective Action – root causality determined

 Comments or
 Additional Info:

--

Signature: _____

Date: _____

Title _____

4. MANAGEMENT REPRESENTATIVE REVIEW

 Status: Close pending follow-up audit Close

 Comments or
 Additional Info:

--

If designated "CAR" and closed at this stage provide verification of corrective action effectiveness

Verification:

--

Signature: _____

Date: _____

Title _____

Environmental Manager

5. AUDIT RESULTS (VERIFICATION)
 Verification Audit Conducted
 Results and/or
 Comments:
 (continue below if
 needed)

--

Is Corrective Action Complete? Yes No PartialExtension Needed? No YesCAR Status Closed Open

Signature: _____

Date: _____

Title _____