UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
NORTHERN DIVISION

UNITED STATES OF AMERICA Plaintiff, v. TILDEN MINING COMPANY L.C., Defendant.	)	Civil Action No.: 2:19-cv-095

APPENDIX A

Wet Scrubber and ESP Monitoring and Response Plan

Tilden Mining Company L.C.

November 2018

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.

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;

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.

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;
- 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-PRODCONV2	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-OREDRYER1 - Dynamic Scrubber	Ore Concentrate Dryer #1
SVP0082851	EU-OREDRYER2 - Dynamic Scrubber	Ore Concentrate Dryer # 2 North Stack
SVP0082861	EU-OREDRYER2 - Dynamic Scrubber	Ore Concentrate Dryer # 2 South Stack

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

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.
    - 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.

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.

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.

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.

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; and
- 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.
- 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**
1st Semiannual Period	January 1 – June 30	September 15
2nd 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 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;

(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;
    - Reasons for not following the SSM Plan;
    - Description of all excess emissions and/or CPMS monitoring exceedances which are believed to have occurred; and
    - 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.

- 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.

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.

CLIFFS	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^{O}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.

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 ℉.

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.

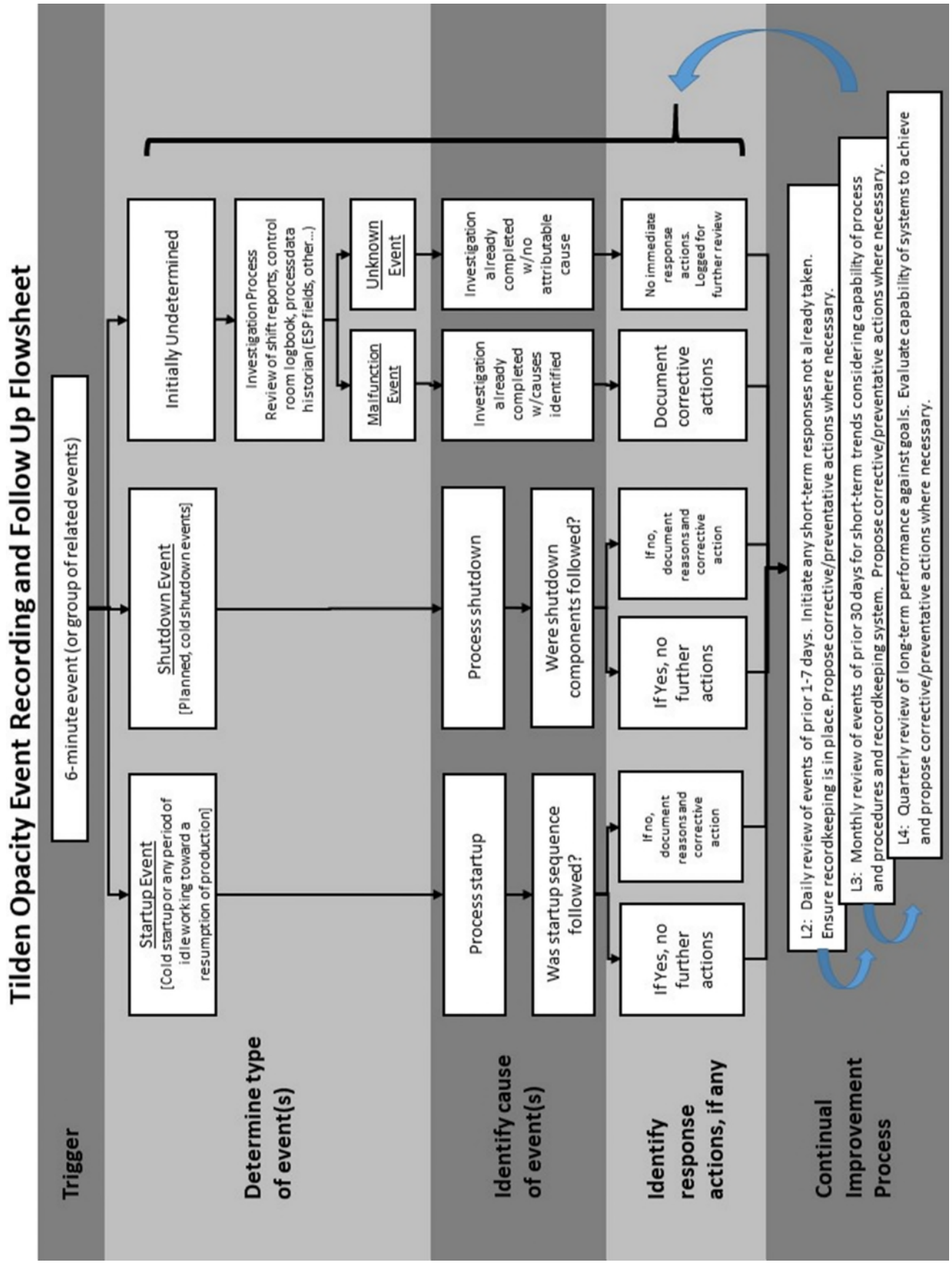
Annual Review and Update Process

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



Appendix C
Environmental Signal or Corrective Action Report

Tilden Mining Company

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

2. INVESTIGATION & INTIAL 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 _____

Tilden Mining Company

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 ☐ Partial
Extension Needed? ☐ No ☐ Yes
CAR Status ☐ Closed ☐ Open

Signature: _____ Date: _____

Title _____