CLIFFS

Tilden Mining Company Fugitive Dust Control Plan

This document has been assembled to meet the requirements laid out in 40 Code of Federal Regulations (CFR) Part 63 Subpart RRRRR, which is commonly referred to as the Taconite MACT.

April 2021

Fugitive Dust Control Plan

Table of Contents

1. Introduction

Cleveland Cliffs Inc.'s Tilden Mining Company L.C. (Tilden) is the owner operator of a taconite ore mine and processing facility located in Marquette County, Michigan operating under Renewable Operating Permit (ROP) number MI-ROP-B4885-2017a which requires that Tilden prepare, and at all times operate according to, a fugitive emission control plan that describes in detail the measures in place to control fugitive dust emissions. Additionally, Tilden is subject to the requirements of 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. The Taconite MACT requires the development of a written Fugitive Dust Emissions Control Plan (40 CFR 63.9591) that describes in detail the measures in place to control fugitive dust emissions. Considering both regulatory requirements, the scope of this plan encompasses the following sources:

- Stockpiles (includes, but is not limited to, stockpiles of uncrushed ore, crushed ore, or finished pellets)
- Pellet loading areas
- Material transfer points
- Plant roadways and yard areas
- Tailings basin
- Mining areas (includes, but is not limited to, areas in which drilling, blasting, digging and hauling, and dumping is conducted)

This plan fulfills the requirements set forth in the ROP, as well as the Taconite MACT. A current copy of the plan is maintained on site and available for inspection upon request.

2. Plan Objectives

The Fugitive Dust Control Plan identifies the control measures and practices to minimize and control avoidable fugitive dust as required by the ROP and the Taconite MACT. The plan describes the procedures Tilden personnel will follow to:

(1) control avoidable fugitive emissions,

(2) conduct inspections to assess when preventive and/or corrective actions should be implemented,

(3) assess the effectiveness of preventive and/or corrective actions, and

(4) maintain records to verify conformance to this plan.

To meet these objectives, the Fugitive Dust Control Plan:

- identifies the fugitive emission sources addressed by this plan (Section 4),
- identifies the control measures and operating practices designed to control and minimize avoidable fugitive emissions (Section 5),
- identifies fugitive dust control recordkeeping and reporting requirements,
- identifies fugitive dust control notification requirements, and
- describes fugitive dust control training elements.

In addition, Section 6 describes the requirements for maintaining and updating the fugitive dust control plan.

3. Training

Training is periodically conducted to ensure understanding of responsibilities for actions and recordkeeping related to the management of fugitive dust. Job-specific training is given to all applicable employee whose duties involve triggering or implementing potential controls to mitigate fugitive dust. Annual awareness training on fugitive dust control is given to all employees as part of general environmental refresher training.

Records are kept of all training conducted under this Plan.

4. Fugitive Dust Sources Covered by this Plan

The fugitive emission sources covered by this plan are listed below. The operating practices and control measures that will be implemented and recorded for the fugitive dust sources identified in this section are described in detail in Section 5.0.

- Stockpiles (ore, concentrate and pellets)
- Pellet loading areas
- Material transfer points
- Plant roadways and yard areas
- Tailings basin
- Mining areas (includes, but is not limited to, areas in which drilling, blasting, digging and hauling and dumping is conducted)

5. Operating Practices and Control Measures

Operating practices and potential control measures that may be implemented as dictated by conditions throughout the facility and recorded for the fugitive dust sources identified in Section 4 are described below. Each of the following subsections contains a list of potential options for controlling fugitive emissions and include both preventative and active ongoing measures. The operating practices and control measures may be implemented simultaneously or independently depending on the conditions surrounding any event as determined by Tilden personnel.

5.1 Stockpiles

Potential Controls:

- As a baseline engineering control, and inherent to the layout of the Tilden facility, stockpiles of concentrate and pellets are placed reasonably distant and at least 0.95 miles from property boundaries which reduces the likelihood of residential impact in the event of dust liftoff. The height and size of outdoor stockpiles is managed by maximizing indoor storage.

- Operators and supervision monitor active ore mining/dumping sites in the mining area on a daily basis for visible dust emissions. When excessive dust is observed, or conditions are favorable for dust generation, dust suppression activities occur above and beyond baseline engineering controls. Primary dust suppression consists of the application of water to the ground with water trucks. If further reduction activities are necessary, traffic speeds and/or the amount of activity in the area is reduced until conditions are improved.[1]

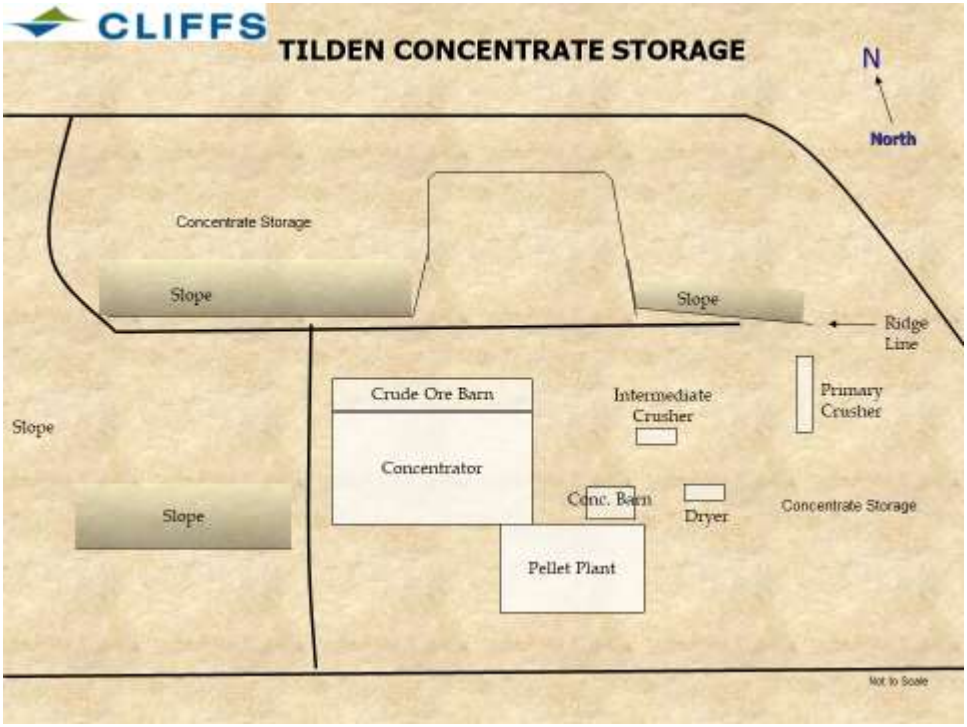
- Ore fed to plant passes through a covered crude ore storage barn.

- Maximized use of the concentrate storage barn. Concentrate has a nominal moisture content of 11.5%, which minimizes dust generation during periods when the storage barn is at capacity, and concentrate is required to be stored in outdoor stockpiles. The concentrate stockpile area located to the northwest of the plant is bounded on two sides by rock walls.

[1] The observation of excessive dust for purposes of this Plan is not indicative of the state of compliance of Tilden with any applicable requirements but is being used as a basis to trigger the use of appropriate controls.

- Pellets are primarily treated with water at the cooler dump point to reduce potential for fugitive dust. Water can be added to subsequent loadout conveyors for additional control when excessive dust is observed. During freezing conditions, a foam dust control system is used. The water system is returned to service when freezing weather conditions are no longer a concern. The specific timing varies from year to year.

Plant Stockpile and Indoor Storage Map



Recordkeeping:

- Materials management system and vendor usage records of dust suppressant application quantities.
- Stockpile maps
- Process historian and dispatch records of material movement.

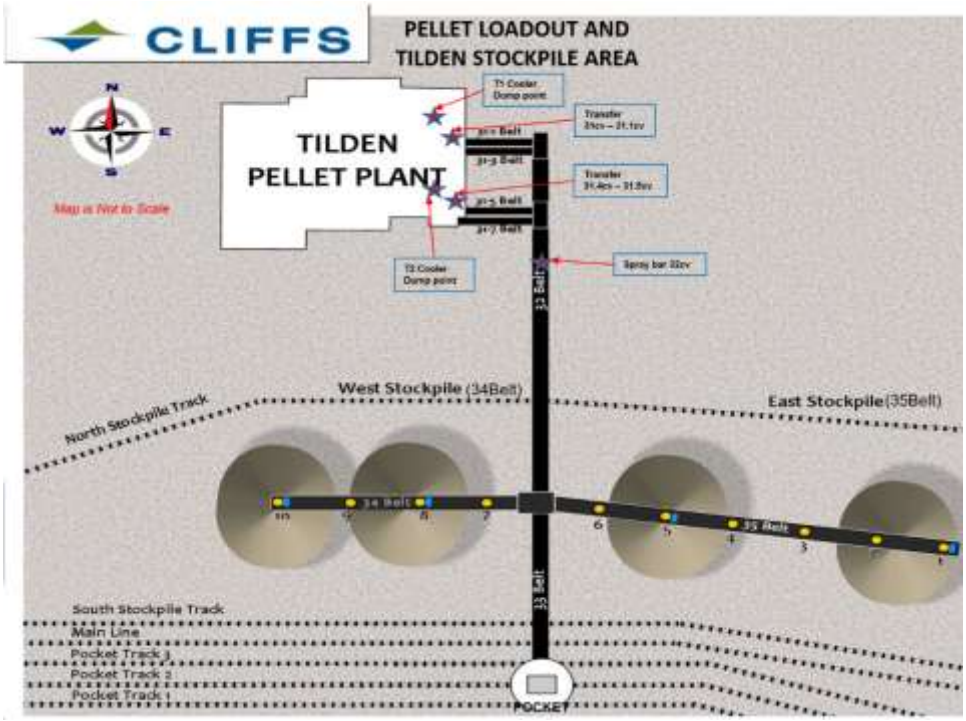
5.2 Pellet loading areas

Potential Controls:

- Pellets are primarily treated with water at the cooler dump point to reduce potential for fugitive dust. Water can be added to subsequent loadout conveyors for additional control when excessive dust is observed. During freezing conditions, a foam dust control system is used. The water system is returned to service when freezing weather conditions are no longer a concern. The specific timing varies from year to year.

- Limiting material drop distances. Pellet ladders are used to limit the height from which pellets are deposited onto pellet stockpiles. Trippers are used to move along the pile once pellets have reached the top of the ladder to minimize drop distance and dust generation. These actions are taken out of both an interest to preserve pellet quality by limiting pellet breakage due to long drops, and to limit fugitive dust potential.

Pellet Loadout and Stockpile Area Map



Recordkeeping:

- Materials management system and vendor usage records of dust suppressant application quantities.
- Process historian of train watering water flows.
- Process historian of tripper location.

5.3 Material Transfer Points

Potential Controls:

- As a baseline engineering control, the majority of the Tilden Plant's conveyor transfer points are inside the plant or are contained in transfer towers, which are buildings to house the drop points. This minimizes the potential for fugitive dust.

- Pellets are primarily treated with water at all times except for freezing conditions at the cooler dump point to reduce potential for fugitive dust. Water can be added to

subsequent loadout conveyors for additional control when excessive dust is observed. During freezing conditions, a foam dust control system is used. The water system is returned to service when freezing weather conditions are no longer a concern. The specific timing varies from year to year.

- Limiting material drop distances. Pellet ladders are used to limit the height from which pellets are deposited onto pellet stockpiles. Trippers are used to move along the pile once pellets have reached the top of the ladder to minimize drop distance and dust generation. These actions are taken out of both an interest to preserve pellet quality by limiting pellet breakage due to long drops, but also to limit fugitive dust potential.

Recordkeeping

- Materials management system and vendor usage records of dust suppressant application quantities.

5.4 Plant roadways and yard areas

Potential Controls:

- Unpaved roads and yard areas around the plant are monitored daily for conditions favorable for dust generation. When such conditions are observed dust suppressants are dispatched for application on that day delivering water or chemical suppressants to the segments identified.

- Unpaved road maintenance is performed as needed to maintain road conditions to operational standards. Timing and frequency of road maintenance varies based on a number of factors such as amount of usage/traffic, season, precipitation, and the road construction materials. Road maintenance activities can include grading/rolling the road surface, spreading/covering the surface with crushed rock (gravel), re-establishing required crown/slope, filling washouts and potholes, repairing undulations, and other such activities. Preserving roads in good operating condition maintains a smooth operating surface which results in smoother operations on the roadway and reduces excessive buildup of fines on the road surface, both of which reduce the potential for dust generation from traffic.

- Secondary/service roads and yard (i.e. excluding roads that do not carry mining production traffic addressed in the section on Mining Areas below) are treated annually with an approved dust suppression chemical, such as magnesium chloride. Dust suppressant application is typically in late spring or in early fall. The specific roads treated can vary, depending on expected use and previous experience. Application of water is an alternative measure that may be used at the operator's discretion to control dust on secondary roads.

- The paved access road condition is inspected daily, and sweeping and/or watering is performed as needed to avoid build-up of concentrate or dirt that might increase the potential for dust generated from access road traffic. In the limited circumstances

when production equipment needs to cross the access road, specific crossings are used and crossing conditions are monitored during and after use.

- There are posted speeds around the mine site to restrict speed to an appropriate level on unpaved roads for each segment (10-35 MPH) which contributes to minimizing fugitive emissions that employees are required to follow . Safe driving speeds are reviewed with employees at annual refresher safety training at a minimum.

Recordkeeping:

- Materials management system records of dust suppressant application quantities and locations
- Water truck operating hours.
- Dispatch records.
- Training records
- Posted speed limit designations.

5.5 Tailings basin

Tilden's tailings basin covers approximately 2500 acres with three types of surfaces; water pond, reclaimed areas and freshly deposited beaches. Discharge of tailings at approximately 10,000 gpm at 50-55% solids at the basin continuously generates new beach areas. The discharge location must be periodically moved to different basin perimeter points according to the engineering design plan.

Because the pond and reclaimed areas have limited potential for fugitives, the focus remains on the freshly deposited beaches. Crimped hay mulch remains the primary method for practical and effective dust minimization on the beach areas. Access to these areas can be challenging as they are initially too soft to safely utilize ground machinery and dewater at different rates depending on basin conditions. Temperature swings, pond level fluctuations, and other uncontrollable factors can add to these challenges. These conditions, which become more likely in the late fall or early spring, have the potential for areas within the basin to experience freeze-dry conditions and become susceptible to dust lift-off. Evaluations to prevent and minimize exposed beach areas, while maintaining employee safety, as a result of these conditions are performed on an ongoing basis.

As described herein, Tilden has developed and executes a mature, robust program to address fugitive dust at the tailings basin. The program includes both preventative and active controls and practices are routinely reviewed for effectiveness and improvement. Long term agreements are maintained with onsite contractors to assist with implementation of the potential controls described below.

Tailings Basin Map

Construction Activities

Construction of upstream dikes and water retention dams occurs each year between April-November weather permitting with a phased approach. Earth moving equipment is utilized to haul sand embankment from one of the borrow area sources and are placed around the tailings basin as designed. The haul roads used for travel are sprayed with water via water truck on dry roads. Water trucks are not needed during rain events and seasonal changes that add moisture on the haul roads. The contractor is required to provide dust control as part of their earth moving contract. Additionally, the main service road to our water clarifier is treated with magnesium chloride or similar agent at least annually for dust suppression.

Once the dikes and dams are constructed, the reclamation contractor seeds, fertilizes, & mulches the downstream slopes and benches which stabilizes these areas and provides long term dust mitigation. The upstream slope is not seeded as the dikes use filter fabric to cover this area. The dike constructed during the summer months becomes the active discharge area for that following fall/winter/spring. Once the discharge in these areas is complete, the reclamation contractor applies hay mulch on top of the beaches once the tailings are able to support low ground pressure equipment.

Operation Activities

Each shift, concentrator operators inspect our active tailings discharge point. If dust is observed, it is noted on their reports and the appropriate notifications are made.

Weekly meetings are held with the Tailings Basin Engineer and the reclamation contractor to discuss reclamation and dust control activities.

In the figure below the blue dots represent dump locations under normal operations.

Potential Controls:

- Water inundation of the tailings consistent with dam safety requirements
    - The basin is comprised of a north and south section with a north decant, south decant and the infrastructure to transfer water between sections allowing for management of a relatively steady water pond in one pond while withdrawing excess water for treatment and subsequent discharge out of the other.
- Manage tailings discharge point (DP)
    - Basin planning seeks to maintain tailings discharge at one DP going into the fall/winter which keeps a wetted area for a longer time and limits the creation of numerous separate beach areas. This practice also minimizes the need to

route tailings to a backup discharge location near the pump house area which similarly minimizes creation of numerous separate beach areas.

- Ground-based mulching of hay or straw on inactive areas, including placement of hay and straw over snow cover during winter to ensure adequate material dust suppressant coverage after snowmelt in the spring.

    - Tailings deposition patterns at the Gribben basin, and thus the elevation and shape of fresh beach areas, are constantly changing due to the inherent nature and fine grind of the hematite. Tailings at the discharge point stack up and may rapidly channel great distances to create additional beach area at varying intervals ranging from a day to several weeks. The rapid and variable channeling can result in beach areas without a constant wetted area. As beach areas become safely accessible, crimped hay mulch is applied to reduce potential for fugitive dust liftoff.

    - Forecasting hay needs is a standard part of the basin planning process. Amount of exposed areas, drying weather conditions, pond levels and seasonal weather patterns are all monitored to inform annual hay projections. A portion of necessary hay supply is secured and stockpiled onsite for use in dust suppression. This includes planning for the critical points in the shoulder seasons when the potential for freeze-dry conditions and dust lift-off are elevated. Long-term base contracts for hay procurement are maintained with an extensive network of local and regional suppliers. Monitoring of the conditions described above is ongoing and the contracted base supply is bolstered based on need.

    - Long-term arrangements are made in advance to have contractor personnel and equipment available which reduces time to mobilize mulching activities when conditions become conducive to application of crimped hay mulch.

- Application of fertilizer, seed, and mulch to establish vegetation on exposed areas

- Utilize repurposed scrap tire windbreaks (as permitted by EGLE)

- Compact snow, as available, to slow melting and extend the coverage afforded by the compacted cover into the warm season

- Supplementing ground-based mulch application with targeted aerial application of hay mulch for dust suppression on areas that may be most prone to freeze-drying and are otherwise not accessible by ground-based equipment.

- Capillary action of water on unsubmerged tailings beaches

- Speed at the tailings basin areas is limited to 15mph on unbermed roadways in the and 30mph for other roads. Safe driving speeds are reviewed with employees at annual refresher safety training at a minimum.

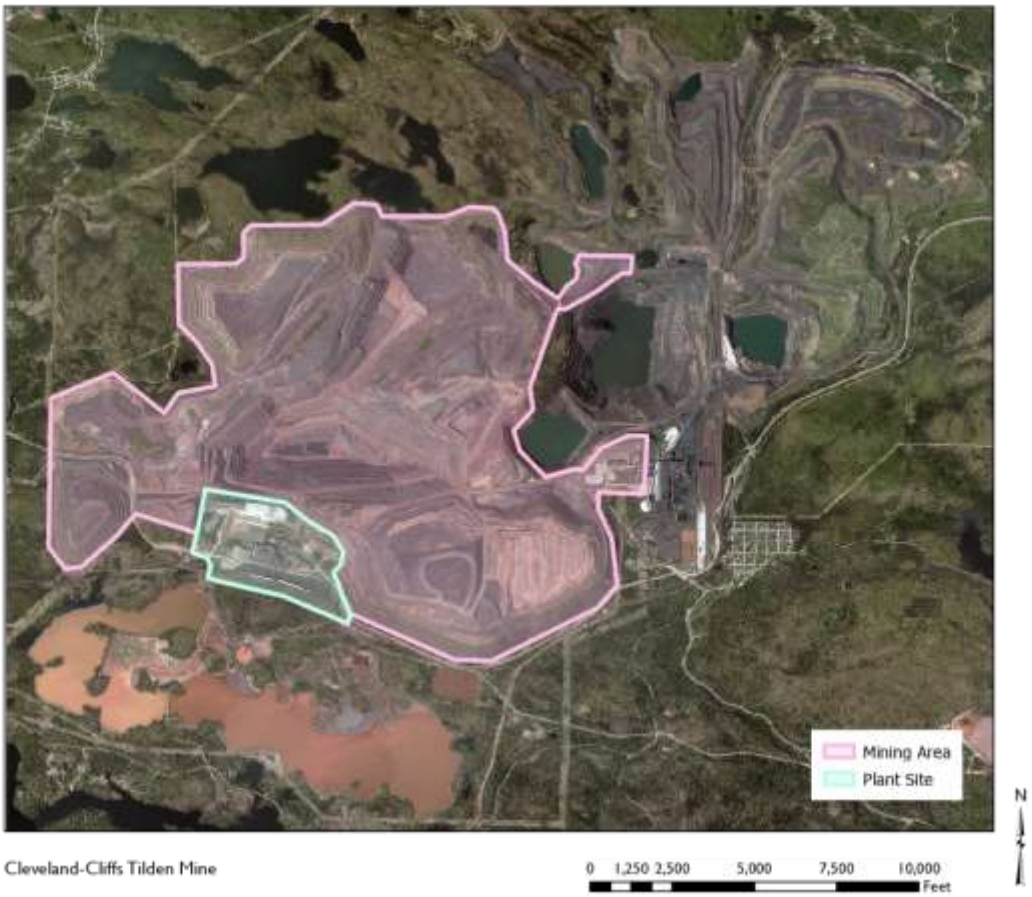
Recordkeeping:

- Materials management system records of dust suppressant application quantities and locations
- Documentation of seeding, fertilizing and mulching on areas of construction
- Documentation of mulching on tailings beaches
- Documentation of basin construction activities
- Documentation of basin discharge point activities
- Regular fugitive dust inspection observations as completed on the shift logs
- Dust event reports

5.6 Mining areas

(includes, but is not limited to, areas in which drilling, blasting, digging and hauling is conducted)

Plant and Mining Areas Map



Potential Controls:

- Operating methods that reduce potential for fugitive dust:
    - Use of modern blast design/practices that seek to minimize "venting" of blast holes (releasing energy and material fines into the air)
- Operating practices that reduce potential for fugitive dust:
    - Active production haul roads within the mining area are monitored daily for excessive dust. When road conditions warrant, road maintenance is performed to restore road conditions to operational standards. Timing and frequency of road maintenance varies based on a number of factors such as amount of usage/traffic, season, precipitation, and materials road is constructed from. Road maintenance activities can include grading/rolling the road surface, spreading/covering the surface with crushed rock (gravel), re-establishing required crown/slope, filling washouts and potholes, repairing undulations, and other such activities. Inactive haul roads are inspected and repaired before being returned to active status.
    - Haul roads and active mining/dumping sites in the mining area are monitored throughout each day for dust emissions, by operators and supervision. When emissions are observed, or conditions are favorable for dust generation, dust suppression activities occur. Primary dust suppression consists of the application of water to the ground with water trucks. If the application of water is not sufficient to control dust in an area, traffic speeds are reduced or the amount of traffic or mining activity is reduced or ceased until conditions are improved.
    - Secondary/service roads (i.e. roads that do not carry mining production traffic) are currently treated once or twice per year with an approved dust suppression chemical, such as magnesium chloride. Timing and frequency of the dust suppressant is based on actual conditions observed or expected, typically once in late spring and again in early fall. The specific roads treated can vary, depending on expected use and previous experience. Application of water is an alternative measure to control dust on secondary roads.
    - Use of large capacity loading and hauling equipment requires fewer shovel scoops and haul trips than prior generation equipment resulting in lower potential for fugitive dust generation and longer life to water and chemical dust suppressants applied to roadways and work areas.
    - Material segregation and barricading practices that rely on drill core and production drill cutting sampling and analysis to identify areas of naturally occurring amphibole or serpentine fibrous minerals (NOAM). The relative elevation of the areas currently identified as potential for containing NOAM is low compared to natural ground surface and surrounding rock stockpile elevations, which increases the likelihood of any residual windblown particulate to be retained within the pit complex.

- If identified, NOAM are delineated and segregated in a separate storage area and covered with clean fill to eliminate the potential for any long-term windblown exposure.

Recordkeeping:

- Materials management system records of dust suppressant application quantities and locations
- Water truck operating hour records.
- Dispatch records.

6. Record Retention

The records identified in each subsection of "Potential Controls" in this plan will be maintained for a period of five years in accordance with Taconite MACT requirements in 40 CFR § 63.9643. Records will be available on site at Tilden for a minimum of two years from date of issuance.

Records will be maintained in a form suitable and readily available for review.

7. Revisions of the Fugitive Dust Control Plan

Revisions of the Fugitive Dust Control Plan are the responsibility of the Environmental Department.

As described herein, Tilden has developed and executes a mature, robust program to address fugitive dust. The program includes both preventative and active controls and practices that are periodically reviewed for effectiveness and improvement.

Revisions Required by the Permitting Authority

As stated in 40 CFR 63.9591 and 40 CFR 63.9624(b), the facility must develop this plan and submit it for approval by the Administrator. If the permitting authority determines that any portion of the plan is not adequate, the facility will address the issues as agreed upon with the permitting authority.

Revisions Initiated by the Tilden Mine

The Tilden Mine may periodically revise this plan, as necessary, to satisfy the requirements of the regulation or to reflect changes in equipment or procedures at the affected source. Provided such changes are no less restrictive than the last version of the plan and the requirements of the rule, Tilden will make such changes and retain a current copy of the plan on file onsite. The copy will be available for inspection upon request.

Rev. No.	Date	Responsible Person	Description Of Change