

## **Appendix 9I**

**Tilden Mining Company BART Letter**



Barr Engineering Company  
450 South Wagner Road • Ann Arbor, MI 48103  
Phone: 734-922-4400 • Fax: 734-922-4401 • www.barr.com *An EEO Employer*

Minneapolis, MN • Hibbing, MN • Duluth, MN • Ann Arbor, MI • Jefferson City, MO • Bismarck, ND

## Technical Memorandum

**To:** Asad Khan  
**From:** Teresa Kinder, Barr Engineering  
**Subject:** Tilden Unit 1 BART Recommendation  
**Date:** February 19, 2010  
**Project:** 22/52-0080  
**c:** Brent Ketzenberger, Tom O'Brien, John Flegel, Dave Cartella – Cliffs Natural Resources, Inc.  
George Pruchnofski, Barr Engineering

### Summary

Michigan Department of Natural Resources and Environment – Air Quality Division (MDNRE) is requesting Cliffs Natural Resources, Inc. (Cliffs) to propose oxides of nitrogen (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) limits for Tilden Unit 1 grate/kiln to satisfy Best Available Retrofit Technology (BART) requirements.

As requested by MDNRE, Cliffs proposes the following as BART emission limits for Tilden Unit 1 grate/kiln:

- SO<sub>2</sub> – 28,800 lb SO<sub>2</sub> per calendar day, and
- NO<sub>x</sub> – Similar to the Minnesota Regional Haze State Implementation Plan, the new NO<sub>x</sub> limits will be set after testing to determine appropriate limits based on “good combustion practices.”

### Background

The State of Michigan is required to submit to U.S. EPA a Regional Haze State Implementation Plan (SIP) to make “reasonable progress” to reduce visibility impairment to federal Class I areas. Part of the initial SIP is to include BART determinations to establish emission limits for sources constructed within the time window of 1962 to 1977. BART is only one of many programs that states may rely upon in making “reasonable progress” towards regional haze improvement goals.

MDNRE determined that Tilden Unit 1 is considered BART-eligible. Once a unit is considered BART-eligible, Cliffs is then required to determine if the unit is subject to BART at pre-BART conditions.

Per U.S. EPA guidance, the baseline (or pre-BART conditions), represents the average emission rate in units of pounds per hour (lbs/hr) and reflects the maximum 24-hour actual emissions for each visibility impairing pollutant emitted from the indurating furnace, which in this case are particulate matter (PM), nitrous oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>). These emission rates are then modeled to evaluate the potential visibility impact to Class I areas. In order to evaluate the maximum rate for each pollutant as mandated by BART, it required the assumption of 100% natural gas usage for NO<sub>x</sub> emissions and 100% coal usage for SO<sub>2</sub> emissions. The modeling results show SO<sub>2</sub> emissions do not cause visibility impairment to the Class I areas. Therefore, the BART proposal will primarily focus on NO<sub>x</sub> emissions.

### **Proposed BART**

The visibility impairment pollutants from indurating furnaces are PM, NO<sub>x</sub> and SO<sub>2</sub>. BART allows application of other standards to regulate a pollutant, such as maximum achievable control technology (MACT). Since the Taconite MACT regulates PM as a surrogate to hazardous air pollutants and Tilden Unit 1 grate/kiln is subject to the Taconite MACT, BART applies the applicable PM limits in the Taconite MACT. The PM limit for magnetite is of 0.01 grains per dry standard cubic foot (gr/dscf) and 0.03 gr/dscf for hematite. Therefore, the Taconite PM emission limit is BART.

MDNRE has requested Cliffs to propose an appropriate SO<sub>2</sub> emission limit for the Tilden Unit 1 grate/kiln. As the modeling results from 100% coal usage scenario showed, the SO<sub>2</sub> emissions are not causing or contributing to visibility impairment. Therefore, the current Tilden's Title V permit limits for SO<sub>2</sub> emissions of 28,800 lbs per calendar day are sufficient. Cliffs proposes to continue to limit the SO<sub>2</sub> emissions for Tilden Unit 1 grate/kiln as established in the Tilden Title V permit.

MDNRE has also requested Cliffs to propose an emission limit for NO<sub>x</sub>. Due to the lack of sufficient emissions data representing good combustion practices and the range of operating conditions that influence emissions, Cliffs is unable at this time to propose an emission limit that corresponds to BART for Tilden Unit 1 grate/kiln. Cliffs proposes to develop a NO<sub>x</sub> emission factor in pounds of NO<sub>x</sub> per million BTU of heat input by collecting sufficient emissions data through stack testing to determine appropriate limits based on "good combustion practices." The establishment of the NO<sub>x</sub> emission factor through stack testing is similar to the requirements in the Minnesota Regional Haze State Implementation Plan for taconite facilities. The established NO<sub>x</sub> emission factor can then be incorporated into Tilden's Title V renewable operating permit, pursuant to 40 CFR Part 51 Appendix Y.