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File Code: 2580-2

Date: March 5, 2008

Mr. David Thornton  
Assistant Commissioner  
Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155

Dear Mr. Thornton:

On February 7, 2008, the State of Minnesota submitted a draft implementation plan describing your proposal to improve air quality regional haze impacts at mandatory Class I areas across your region. We appreciate the opportunity to work closely with the State through the initial evaluation, development, and subsequent review of this plan. Cooperative efforts such as these ensure that together we will continue to make progress toward the Clean Air Act's goal of natural visibility conditions at our Class I wilderness areas and parks.

This letter acknowledges that the USDA - Forest Service has received and conducted a substantive review of your proposed Regional Haze Rule implementation plan. Please note, however, that only the U.S. Environmental Protection Agency (EPA) can make a final determination about the document's completeness. Therefore, only the EPA has the ability to approve the document. Participation by the Forest Service in the State of Minnesota's administrative process does not waive any legal defenses or sovereignty rights it may have under the laws of the United States, including the Clean Air Act and its implementing regulations.

As outlined in a letter to the State dated September 29, 2006, our review focused on eight basic content areas which reflect priorities for the Federal Land Manager agencies; we have enclosed comments to this letter associated with these priorities. We look forward to your response required by 40 CFR 51.308(i)(3). For further information, please contact Trent Wickman at (218) 626-4372.

Again, we appreciate the opportunity to work closely with the State of Minnesota. The Forest Service compliments you on your hard work and dedication to significant improvement in our nation's air quality values and visibility

Sincerely,

/s/ James W. Sanders  
JAMES W. SANDERS  
Forest Supervisor



cc: Bruce Polkowsky  
Chris Holbeck  
Tim Allen  
Matt Rau

## Technical Comments on Minnesota Regional Haze State Implementation Plan

We would like to begin by commending Minnesota on the quality and depth of their Regional Haze State Implementation Plan (SIP). We believe that it will serve as an excellent roadmap to improve visibility in the Minnesota Class I Areas and hopefully also serve as a model for other states to follow that have yet to submit their plans.

We have some comments on the plan that are included below.

### *Baseline Visibility Conditions*

We support the inclusion of the high-deciview, incomplete, sample days in the baseline because it is a reasonable way to include valuable information that falls outside the standard EPA criteria.

### *Best Available Control Technology (BART) - Taconite*

We conveyed our comments on the BART determinations for the taconite facilities in a letter to Mary Jean Fenske, dated April 10, 2007. We have attached that letter to this one and would like to incorporate those comments by reference.

With respect to the United Taconite facility, we feel the information included in the SIP shows that the installation of a new recirculating scrubber to control sulfur dioxide at this facility is BART. We feel the BART determination for this facility for sulfur dioxide should be made with this SIP and not delayed. We hope that United Taconite's delays in sending requested information does not delay MPCA's BART determination for their facility. We note that United Taconite uses a very high sulfur fuel and its current sulfur dioxide emissions are far above the rest of the industry.

| <i>Plant</i>                | <i>2002 ton SO<sub>2</sub>/MMLT</i> |
|-----------------------------|-------------------------------------|
| US Steel, Keewatin Taconite | 131                                 |
| Hibbing Taconite            | 77                                  |
| US Steel, Minntac           | 133                                 |
| United Taconite             | 749                                 |
| Mittal Steel                | 59                                  |
| Northshore Mining Co.       | 16                                  |

Another possible alternative is to look at the other taconite lines and set a sulfur dioxide standard for United based on the level of performance in the industry.

We believe that an argument can be made that one or more post-combustion control options for nitrogen oxides are BART for the taconite industry. In spite of this, we are willing to delay the determination of proper nitrogen oxides controls to allow the industry to trial nitrogen oxides control options through 2011 under the long term strategy as long as there is a firm deadline in the SIP for the industry to complete the studies. We also believe the content of the control studies should be more clearly specified. For example we'd expect these studies to include on-site, slip-stream and other pilot-scale studies. In

addition, we would prefer that interim deadlines also be included in the SIP to ensure that the studies stay on track.

Besides studying nitrogen oxide controls, as stated in our earlier BART letter, under the long term strategy we feel it is worth having the taconite industry also investigate whether any physical improvements can be made to the existing particulate scrubbers to improve the transfer of sulfur from the gas phase to the liquid phase by modifying or redesigning the internal components of the scrubbers. A number of these options are mentioned in the US EPA BART guidelines. Many relate to improving the water distribution within the scrubber using trays, rings, or improved spray headers/nozzles. This is in line with the general BART determination for sulfur dioxide made on page 62, that the existing particulate scrubbers be “optimized” for sulfur dioxide removal.

We are concerned with the level of the sulfur dioxide limits proposed for the taconite facilities that burn low sulfur fuels. For example, for Hibbing Taconite the proposed limit is about 20 percent above the highest value ever recorded. The difference is similar for the non-coal burning lines at Minntac. This seems to be a large cushion considering that the facilities were not likely focused on optimizing for sulfur dioxide control at the time the tests were done. We would hope the BART limits would encourage the facilities to operate their scrubbers at the best possible performance level – again, in line with the BART determination to optimize these units for sulfur dioxide removal.

#### *Continuous Emissions Monitors (CEMs) at the Taconite Plants*

On page 62 of chapter nine a statement is made that CEMs “... would apply to NO<sub>x</sub> emissions at the facilities burning natural gas and to SO<sub>2</sub> emissions at facilities burning high sulfur fuels.” We don’t understand why the NO<sub>x</sub> CEMs are only being required at natural gas fired furnaces. Those furnaces burning fuels other than natural gas will also investigate nitrogen oxide control strategies and therefore will need the CEMs.

We understand from page 62 of the SIP that it is Minnesota’s intent to require the installation of continuous emission monitoring systems (CEMs) at the taconite plants by November 30, 2008. We are aware of only two taconite plants to date that have agreed to install them and are concerned that the time frame in the SIP may not be met. We would also like to see a deadline associated with the requirement on page 62 for the taconite plants to “...provide the MPCA with data from these new emission methods.” Similarly we believe a deadline should be associated with the MPCA’s intent to establish the BART limits and include those in each facility’s Title V operating permit to clarify when these tasks will be completed.

We would like to see more specifics as to what specific requirements a “comparable alternative emission measurement method” would have to meet. For example, will you use the criteria in the Federal New Source Performance Standards?

#### *Best Available Control Technology – Electrical Generating Units*

Since Minnesota Power has petitioned EPA to remove Minnesota from the Clean Air Interstate Rule (CAIR) we believe that all BART electrical generating units should have

unit-specific BART limits determined with this SIP so that there is no delay in implementing BART should a determination to remove Minnesota from CAIR come at a later date. One facility for which this is a particular concern is Northshore's Power Boiler #2. No BART-like nitrogen oxides or sulfur dioxide unit-specific limits were identified in the SIP. We believe it is reasonable that the permit limits on its neighbor, Taconite Harbor, be considered as one potential source of BART emission limits.

#### *New Sources*

We applaud the State for including some of the new Iron Range facilities recently permitted, or in the permitting process, in their 2018 modeling. As you know, a number of additional sources are now in the planning stage. All of these new facilities will put pressure on the Northeastern Minnesota emissions targets and likely require further emission reductions from existing industrial sources in the area.

#### *Reasonable Progress*

To help clarify when the following will take place, we would like to see deadlines associated with the following tasks and intermediate deadlines also added, as appropriate:

From Chapter 10, Page 84:

- "MPCA will conduct a BART-like review of the taconite facilities' reports on control strategies and pollution prevention options investigated by the taconite facilities. If it appears that other (non-taconite) facilities will need to implement control strategies in order for the emission reduction target to be met, the MPCA will do a preliminary cost analysis of feasible pollution prevention and control options to evaluate whether any further analysis by those facilities is warranted."
- "If, after all voluntary EGU reductions and reductions at the taconite plants have occurred, additional emission reductions are needed to meet the target, the MPCA would set limits for other sources with reasonable control strategies available. Minnesota would implement this requirement for additional emission reduction measures through a "state retrofit" requirement that would ultimately apply an emission limit to each facility where additional controls have been found to be reasonable. This limit could be set through a state rule or through amendments to each facility's Title V air emission permit, which would be submitted in the Five Year SIP Assessment."

From reviewing Table 11.1 it would appear that the tasks noted above, and those in the table, either are needed to be completed to feed into subsequent tasks for the Five Year report, or themselves are required to be in the Five Year report. To aid in understanding when these tasks will be completed and how they interrelate, please add a column to this table with deadlines and also break down some of the larger tasks into intermediate tasks, also with associated deadlines. We note that the five year report will be expected by December 17, 2012.

We believe the 2018 target for Northeastern Minnesota should continue past 2018 unless it is modified by the next 10 year SIP done in 2018. We believe this point should be clarified in the SIP.

We agree that under the NE Minnesota Plan any additional emission reductions necessary to meet the target would be specified in the Five Year report (which is due on December 17, 2012). We also believe that if at any time between now and 2012 the target appeared to be threatened, it would be prudent for the MPCA to begin the work of assessing control strategies so that a final determination of applicable controls can be included in the Five Year report.

We would like to clarify that our understanding of the paragraph on the bottom of page 84, starting, "If either target..." applies only to the situation where the target in 2018 is projected not to be met. On the contrary, if the 2012 target is not going to be met we'd expect that the Five Year report would include the controls which had already been identified by the MPCA.

We are confused by the following on page 97 – "MPCA will then undertake a BART-like review of these reports and control strategies and evaluate them based on the statutory factors and the status of progress towards the emission target. The five year SIP report will *likely* include the results of the analysis, a determination of any control strategies or pollution prevention projects that are reasonable at each of the taconite facilities, and enforceable mechanisms for requiring application of these measures." The inclusion of the word "likely" makes the timing of these tasks unclear. A table with deadlines for the following would be helpful:

- the final report from the taconite plants on additional control technologies investigated for sulfur dioxide and nitrogen oxides
- the MPCA's BART-like review of the report, and
- the installation and operation of control technologies deemed to be reasonable

Since, according to page 84 of the SIP, the investigation of control technologies will happen from 2008 – 2011, we feel the final report should be required to be submitted by the end of 2011 and the MPCA could then have its BART-like review and enforceable mechanisms done in time for the 2012 Five Year report which is due at the end of 2012. It is important that the BART-like review be completed by the Five Year report so that the assessment of the likelihood of attainment of the 2018 targets can be made with full knowledge of the potential for additional controls in the taconite industry (see discussion on page 84). We suggest that those controls identified as reasonable would then be required to be installed and operational within two years or by the end of 2014. We assume this whole process would be open and the MPCA would share relevant documents with the FLMs and the public and also accept and consider their comments.

#### *Smoke Management*

We are concerned with the level of detail on the Smoke Management Plan (SMP) in the SIP. The SMP is meant to be a living document that can be easily changed as conditions dictate. We are concerned that the level of detail on the SMP in the SIP creates an

unnecessary administrative hurdle to making future changes to improve the SMP. We have identified, via phone, the language that we feel is unnecessary for the purposes of the SIP on pages 87, 89 and 90.

*Interstate Consultation*

We hope EPA will facilitate future discussions between Minnesota and its neighboring states. We have submitted comments on Missouri's and Iowa's SIPs that are substantially in line with Minnesota, especially with regard to the issue of the existence of cost effective controls in those states and the "fair share" responsibilities those states have as contributors to visibility impairment in the BWCAW.



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File Code: 2580

Date: April 10, 2007

Mary Jean Fenske  
Staff Engineer  
Minnesota Pollution Control Agency  
520 Lafayette Road N  
St. Paul, MN 55155

Dear Ms. Fenske:

We are providing comment on the Best Available Retrofit Technology (BART) determinations submitted by the taconite plants located in Minnesota. This industry is somewhat unique in that all of the facilities in the United States are in the two states of Michigan and Minnesota. Therefore, these two states carry the entire responsibility of fairly administering the BART regulations to the industry.

As you know, application of BART is one of the components of the Regional Haze Rule. The purpose of the Regional Haze Rule is to require states to assure reasonable progress toward meeting the national goal of preventing any future, and remedying any existing, impairment of visibility in mandatory Class I areas. As the Federal Land Manager for the Boundary Waters Canoe Area Wilderness (BWCAW) Class I area we have an affirmative responsibility to protect the air quality related values of this area. One of the key air quality related values of the BWCAW is visibility.

The determination of BART must consider the "best system of continuous emissions control technology" taking into account "the technology available, the costs of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment in use at the source, the remaining useful life of the source, and the degree of improvement in visibility," 40 CFR Section 51.308(e)(1)(ii)(A).

We find the BART determinations submitted by the taconite plants to be deficient in the following ways:

- Available control technologies were not fully evaluated
- Technical difficulties were overstated
- The costs of controls were overstated

More detailed technical comments on these points are enclosed.

Technical analyses by Midwest RPO and MPCA and the BART proposals themselves show that the taconite plants are important contributors to visibility impairment at the BWCAW. It is disappointing that in spite of their importance, the industry has proposed contributing very little toward reducing haze in the BWCAW.





The federal land managers have been meeting with the MPCA to discuss innovative ways to implement the regional haze rule so that new industrial sources in Northeastern Minnesota are addressed. This would happen under the long-term strategy portion of the Regional Haze Rule that lays out actions the state will take to achieve the 2018 visibility goal. Based on the information we present in this letter and enclosure, we believe the MPCA has the information it needs to make determinations under the BART portion of the Regional Haze Rule that require nitrogen oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) reductions at the taconite facilities. We are also willing to continue our dialogue with the MPCA, industry, and public to look at how a similar level of reductions can be implemented through the long-term strategy in Minnesota.

We look forward to working with your agency as you develop your own BART determinations for these facilities. If you have questions or comments, please contact Trent Wickman, Engineer (Air Resources), at (218) 626-4372.

Sincerely,

*/s/ James W. Sanders*  
JAMES W. SANDERS  
Forest Supervisor

Enclosure

cc: Don Shepherd  
Chris Holbeck  
David Pohlman  
Matt Rau  
Asad Khan

## Technical Comments

Due to their similarity, for the most part the BART determinations will be addressed as a group. We will focus our review on the indurating furnaces, due to the dominance of their impact over the other BART-eligible units at the taconite facilities.

The recently promulgated Taconite MACT standard represents a BART level of control for particulates from the furnaces; that leaves SO<sub>2</sub> and NO<sub>x</sub> as the remaining visibility impairing pollutants to be addressed from the furnaces. A summary of the BART proposals from each facility is summarized below.

| <b>Facility</b> | <b># and Type of Furnace</b> | <b>Fuels</b>                                       | <b>SO<sub>2</sub> Proposal</b> | <b>NO<sub>x</sub> Proposal</b>   |
|-----------------|------------------------------|--|--------------------------------|--|
| Keetac          | 1 grate-kiln                 | NG, FO, coal, coke                                 | Existing Controls              | Existing Controls  |
| Hibbing         | 3 straight grates            | NG, FO   | Existing Controls              | Energy efficiency projects completed in 2005-06 – effect on emissions unknown                      |
| Minntac         | 5 grate-kilns                | NG, FO, biomass, coal (coal only on lines 6 and 7) | Existing Controls              | Low NO <sub>x</sub> burners to preheat section of lines 4, 5, 7 and fuel blending - ~10% reduction |
| United Taconite | 2 grate-kilns                | NG, FO, coal, coke (coal and coke only on line 2)  | Existing Controls              | Heat recoup project on line 1 completed in 2005 - ~ 46% reduction                                  |
| Mittal          | 1 straight grate             | NG, FO   | Existing Controls              | Existing Controls  |
| Northshore      | 2 straight grates            | NG, FO   | Existing Controls              | Existing Controls  |

Projects that have already been implemented don't count as BART (see MPCA presentation <http://www.pca.state.mn.us/publications/presentations/haze-0107-fenske.pdf>, slide 6) so the table above becomes:

| Facility        | # and Type of Furnace | Fuels  | SO <sub>2</sub> Proposal | NO <sub>x</sub> Proposal   |
|-----------------|-----------------------|--|--------------------------|--|
| Keetac          | 1 grate-kiln          | NG, FO, coal, coke                                 | Existing Controls        | Existing Controls  |
| Hibbing         | 3 straight grates     | NG, FO   | Existing Controls        | Existing Controls  |
| Minntac         | 5 grate-kilns         | NG, FO, biomass, coal (coal only on lines 6 and 7) | Existing Controls        | Low NO <sub>x</sub> burners to preheat section of lines 4, 5, 7 and fuel blending - ~10% reduction |
| United Taconite | 2 grate-kilns         | NG, FO, coal, coke (coal and coke only on line 2)  | Existing Controls        | Existing Controls  |
| Mittal          | 1 straight grate      | NG, FO   | Existing Controls        | Existing Controls  |
| Northshore      | 2 straight grates     | NG, FO   | Existing Controls        | Existing Controls  |

Now that the individual proposals have been summarized, we would like to highlight some concerns we have with the BART determination process taken, which were generally common throughout all the facilities proposals.

#### *Sulfur Dioxide Controls*

All facilities use some form of wet scrubber or wet ESP to control particulates. Until recently there has been no motivation for the facilities to optimize these units for SO<sub>2</sub> control. Most of these scrubbers are once-through systems versus the newer recirculating systems such as those at Keetac and Minntac line 3 which treat the scrubber water before reusing it. We believe actions could be taken to optimize the chemistry of the systems and/or optimize the gas to liquid contact to improve the SO<sub>2</sub> removal of these units. For example, just adjusting the pH at Keetac from 6.5 to 8 increased the SO<sub>2</sub> removal from 35% to 64% (H. Jiang, per. com.). The recent report by John Engesser, "Evaluation of Minnesota Taconite Wet Scrubbers..." addresses the chemistry issues in more detail. A few key excerpts from this paper include:

- Over the past 40-50 years of operation of these facilities the dissolved solids in the process and tailing water has increased
- Increased scrubber efficiency can result in increased sulfate concentration in taconite process water

- As the concentration of sulfate increases, the concentration of magnesium and calcium (hardness) also increases which can cause problems to the taconite production process and cause precipitation in pipes.
- A number of other items can contribute to the neutralizing capacity of the flue gas of a facility including, if flux is added to the pellets (i.e. the facility makes fluxed pellets) and if wood is used as a fuel.
- The efficiency of the scrubbing systems is dependant on: the pH and alkalinity of the scrubbing water, the make-up water flowrate, and inlet SO<sub>2</sub> concentration
- The lime recirculating scrubber at Keetac can limit the amount of sulfate and fluoride that enter the tailing water by adjusting the pH of the scrubber water so that they precipitate in the scrubbing water system
- The current removal efficiency of the scrubbers in the report are much higher (26-75%) than that reported by each facility in their BART report (15-30%).
- Keetac – the scrubber report says that the scrubber should be operated at a pH between 7 and 7.5 for optimum scrubbing performance. The BART report from this facility says it will operate at a pH of 6.5.
- United Taconite – the scrubber on line 2 could double its scrubbing efficiency by using either sodium hydroxide or sodium carbonate or adding a new recirculating lime scrubber

The option of modifying the existing scrubbers was dismissed in the BART report from every facility as not being available and therefore not being technically feasible. The reasons stated included corrosion of the process water handling system and the creation of solid wastes. Sulfur scrubbing technology has been in existence since the 1960's. The issues described above are not new, unique or insurmountable. In addition these issues are not technical feasibility issues but are economic feasibility issues. The BART proposals did not provide the cost data for this option, so how economically infeasible they may, or may not be, is unknown.

Beyond just adjusting the chemistry of and/or treating the process water, a number of options are available that would help improve the transfer of sulfur from the gas phase to the liquid phase by redesigning the internal components of the scrubber that would be worth investigating depending on the particulars of each scrubber. A number of these options are mentioned in the BART guidelines. Many relate to improving the water distribution within the scrubber using trays, rings, or improved spray headers/nozzles.

Control of SO<sub>2</sub> can also be achieved by either limiting the sulfur content of fuels or fuel switching, for those facilities that use high sulfur fuels. Switching fuels may or may not trade one visibility impairing pollutant (SO<sub>2</sub>) for another (NO<sub>x</sub>), as induction furnaces are thought to emit less NO<sub>x</sub> when burning solid fuels. It is not clear this is true for all furnace types. Even if it is true, the pollutant trading concern would not be applicable if wood was substituted for coal/coke or if lower sulfur content was specified for the same fuel type. It is also important to note that U.S. EPA's intent is for facilities to consider alternate fuels as an option, not to direct the fuel choice. To consider it as a control option means the economic feasibility should be determined. Fuel sulfur content limits was an option for which EPA determined the costs for oil-fired EGUs in the BART rule

itself. While most of the taconite industry in Minnesota primarily uses natural gas, there are examples of plants (e.g. United Taconite) that use higher sulfur fuels. The economic feasibility of fuel limits was not in any of the BART proposals and should be for those facilities that use higher sulfur fuels.

A couple of key quotes from the EPA BART guidelines are important to keep in mind - “a demonstration of technical infeasibility may involve a showing that there are unresolvable technical difficulties with applying the control to the source (e.g., size of the unit, location of the proposed site, operating problems related to specific circumstances of the source, space constraints, reliability, and adverse side effects on the rest of the facility). *Where the resolution of technical difficulties is merely a matter of increased cost, you should consider the technology to be technically feasible*, FR 7/6/05 pg 39165, emphasis added.

Physical modifications needed to resolve technical obstacles do not, in and of themselves, provide a justification for eliminating the control technique on the basis of technical infeasibility, FR 7/6/05 pg. 39165.

While we believe the best option to control SO<sub>2</sub> is to modify the existing scrubbers, we think it is important that the cost estimates performed for the secondary wet scrubber be accurate. We have concerns with the adjustments made to the EPA costing methodologies, especially the 60% of the total capital investment adjustment due to space considerations, and the site-specific estimate for site work, foundations, and structural steel. In spite of these adjustments that inflate the cost per ton figure, United Taconite shows costs that are within the range of economic feasibility for an additional scrubber on line 2 - \$3361/ton. Additionally, looking at the cost and performance of the recent recirculating scrubber installation at Keetac would be additional information to help accurately determine the cost of this type of device.

#### *Nitrogen Oxides Controls*

The issue of control of NO<sub>x</sub> from taconite furnaces has been approached in the past within the context of two Prevention of Significant Deterioration (PSD) permits: Minntac backwards PSD permit and the PSD permit for Minnesota Steel. Minntac is a grate-kiln furnace and Minnesota Steel is a straight grate furnace. This discussion initially focused on the application of selective catalytic reduction (SCR) and more recently has looked at low temperature oxidation (LoTOx).

- In the Minntac case, in a letter dated October 22, 2003, the MPCA determined that SCR was technically feasible but not economically feasible. This configuration assumed reheating of the waste gas. The cost per ton calculated was sensitive to the assumed cost of natural gas and was “at or above the upper range of economic feasibility,” and was rejected as best available control technology (BACT).

- In a letter dated August 18, 2006 the MPCA assessed the applicability of LoTOx at 90% control efficiency to Minntac and concluded that LoTOx was technically and economically feasible and therefore BACT.
- In their PSD permit application, Minnesota Steel proposed LoTOx on the waste gas stack at 90% control efficiency for their taconite furnace.

In summary LoTOx has been declared BACT for one type of taconite furnace and will soon be installed on the other. The technical feasibility issues brought up in the BART proposals for each facility have been addressed by the developer of the technology and in the analyses above. Most significantly, the installation in Texas on a number of fluid catalytic cracking units (FCCU) has been successful. These units have a similar airflow and the solid loading in the FCCU off-gas is much higher than the particulate loading in a taconite furnace waste gas stream.

Based on the discussion above it appears that LoTOx is technically and economically feasible for the entire industry. In addition, one form of SCR has been found technically feasible and borderline economically infeasible based in a BACT analysis from four years ago. Another form of SCR, Regenerative Selective Catalytic Reduction looks to have promise, but as a new technology would require trials.

#### *Summary*

The net result of the Minnesota taconite BART determinations is that only one facility is proposing doing anything to improve visibility in the BWCAW. This is particularly disheartening in light of the impact these facilities have on visibility. A count of days with a percent change in visibility greater than or equal to 0.5 deciviews at specified receptors within the BWCAW assessed over the 3-year period 2002-2004 due to the emissions from BART sources at the facilities is below

(<http://www.pca.state.mn.us/publications/aq-sip2-07.pdf> - page 5).

| <b>Facility</b> | <b># of days</b> |
|-----------------|------------------|
| Keetac          | 228              |
| Hibbing         | 247              |
| Minntac         | 530              |
| United Taconite | 442              |
| Mittal          | 228              |
| Northshore      | 169*             |

\*excludes power house unit #2

This data shows that these facilities caused or contributed to visibility impairment in the BWCAW anywhere from 15 to 48 percent of the period. The only other facilities in Minnesota with a comparable impact are the two largest utilities: Xcel Sherburne County (Sherco), Minnesota Power Boswell; and Minnesota Power Taconite Harbor (which is a smaller power plant, but very close to the BWCAW). When the Midwest RPO looked at the impact to visibility in the BWCAW of the largest industrial sources from across the entire upper Midwest, the taconite plants still claimed 4 spots in the top ten list (which

when added to the three Minnesota power plants mentioned previously, took 7 of the ten spots). The Minnesota Power facilities are pursuing emission reduction projects. Although reasonable progress toward the national visibility goal cannot, and should not, be achieved with reductions from the taconite plants alone, these facilities are clearly an important contributor to impairment and therefore should contribute their fair-share of emission reductions toward improving visibility in the BWCAW.