

Summary of Public Comments and DNR Responses

Industrial Sand Mining Strategic Analysis

June 2017

The Department received public comments on the draft strategic analysis from July 5 to August 22, 2016. The Department also held a hearing on July 26, 2016. Sixty people attended the hearing and 22 individuals spoke on the record. The Department also received 50 comments by email and by letter. All of the public comments are available on our website:

<http://dnr.wi.gov/topic/EIA/ISMSA.html>

This document provides detailed responses to major topics that were raised by the public comments, including: Socio-economics (see p. 2); Air (see responses at pp. 2-18); Groundwater (p. 18); and Reclamation (pp. 19-20). The Department also received many technical comments or questions on the draft strategic analysis, and based on those comments several changes were made throughout the final document. See pages 22 to 27 for details on how certain comments were addressed.

Finally, we received many comments from the public simply stating their opinions on the industry and the analysis. We welcome those comments and appreciate the active public involvement in this process.

MAJOR TOPICS raised by public comments

Socioeconomics

Comment: Questions about sources of information in the economics section.

Response: Sections 3.4 and 3.5 of the report have been revised substantially.

Air

Comment: Concern about how the WDNR regulates PM 2.5 for the industrial sand mining industry.

Response: The following 15 pages address specific elements of public comments related to air quality matters:

DNR Bureau of Air Management Strategy for Regulating Fine Particles (PM2.5)

The Wisconsin Department of Natural Resources (WDNR) under the authority of the Wisconsin State Statutes (Statutes) and the Wisconsin Administrative Code (Code), issues air pollution control permits to direct stationary sources of air pollution. Before a permit can be issued, WDNR must determine that the source will meet all applicable regulatory requirements and that the air pollution emissions from the source do not cause or exacerbate a violation of an ambient air quality standard. The only regulatory requirements for PM_{2.5} are the National Ambient Air Quality Standards (NAAQS). There are no other technology standards or emission limits for direct PM_{2.5} emissions from stationary sources in state or federal regulations.

NAAQS were established by the United States Environmental Protection Agency (EPA) for particulate matter with aerodynamic diameter of 2.5 micrometers or less (PM_{2.5}) in 1997 and were revised in 2006 and again in 2012. Initially, federal guidance supported a surrogate approach for determining when a source will not cause or exacerbate violation of the PM_{2.5} standards. Under the surrogate approach, if it was determined that emissions of particulate matter with aerodynamic diameter of 10 micrometers or less (PM₁₀) did not cause or exacerbate violation of the PM₁₀ standards, then compliance with PM_{2.5} standards could be assumed. This policy was deemed necessary considering the difficulty of measuring PM_{2.5} emission rates and the lack of information available to make accurate emission estimates.

After the surrogate approach was eliminated in 2011 by EPA; WDNR turned to air quality dispersion modeling to determine whether direct emissions of PM_{2.5} meet the criteria for permit approval. In order to perform dispersion modeling, estimates of PM_{2.5} emission rates are needed as modeling inputs. Simply assuming that PM_{2.5} emission rates are equal to particulate

matter or PM10 is one way to estimate emission rates and is the method that was encouraged by the surrogate approach. However, this unrealistic, worst-case approach to estimating emissions results in unrealistically high modeled concentrations, necessitating more accurate emission estimates of direct PM2.5 emissions.

To attempt to obtain more accurate emission data, WDNR reviewed EPA publications on PM2.5 and other studies on PM2.5 formation and control (see studies cited in Appendix B of Wisconsin Air Dispersion Modeling Guidelines, Feb. 2016 available at <http://dnr.wi.gov/files/PDF/pubs/am/AM528.pdf>). In reviewing these publications and studies, WDNR determined that direct emissions of PM2.5 from industrial sources do not correspond to the PM2.5 that is captured and recorded by ambient air monitors. The scientific data presented, as well as data from ambient air monitors, demonstrates that PM2.5 behaves as a regional pollutant, is formed in the atmosphere from precursor pollutants and is carried long distances, similar to ozone. This is supported by data analysis provided by Lake Michigan Air Directors Consortium (LADCO) of PM2.5 sampling conducted in Wisconsin for the national chemical speciation network. This analysis shows that the vast majority of PM2.5 emissions collected by ambient monitors is created by chemical reactions of substances emitted by a wide variety of sources including mobile sources. Wisconsin's monitor data as well as regional data (WI, IL, OH, IN) and the studies and publications reviewed indicate that the directly emitted PM2.5 from stationary sources is much lower than what EPA's proposed methodology would predict and these emissions have little to no effect on ambient air concentrations measured by the ambient air monitors.

WDNR utilizes PM2.5 monitors located in Eau Claire and La Crosse to address concerns related to industrial sand mines and to demonstrate the regional patterns of fine particles. These monitors are located in regions where sand mining operations are common. These monitors show similar trends as other WDNR monitors which indicates there is no significant regional impact on PM2.5 concentrations from sand mining operations.

The practice of surrogacy and equating PM10 and PM2.5 emissions used from 1997 to 2011 was based on the limited data and knowledge available at the time. WDNR has a responsibility to base regulatory decisions on accurate, current data and the available science. To that end, WDNR made a technical finding and presented it as part of the February 22, 2016, PM2.5 strategy documents. These documents, taken together, demonstrate that mechanical and low temperature stationary sources, such as those associated with industrial sand mining operations, are not emitting significant amounts of PM2.5 and are not causing violations of the NAAQS for this pollutant.

Clarification of EPA Position on Wisconsin's PM2.5 Strategy

EPA provided comments to the WDNR on the draft PM2.5 strategy documents in an August 26, 2015 letter. Their main comments were:

- Permit decisions should be made on a case by case basis and WDNR's statements on PM2.5 emissions from low temperature and mechanical sources are overly broad.
- Fugitive emissions must be quantified for Part 70 permits

WDNR responded to these and other comments on the strategy received during the 30 day comment period. The WDNR's response along with the actual comments can be found in the Air Program's guidance module available at <http://dnr.wi.gov/cias/Guidance/GuidanceExternal/TOC.aspx>. Search for Guidance numbers GID: 2414 and GID: 2418.

WDNR agreed with EPA that permit decisions are case by case. Permit applications received are reviewed individually to determine applicability of state and federal regulations following procedures established under the Clean Air Act. Accurate estimates of PM2.5 emissions as well as all other regulated pollutants are essential to making appropriate regulatory decisions. For pollutants lacking reliable or accurate emission factors, emissions are estimated based on data available at the time and engineering judgment.

WDNR also concurs with EPA that fugitive emissions estimates are to be included in applications for Part 70 permits. Part 70 refers to the federal operation permit program that major sources are subject to.

It is important to note that the Clean Air Act requires permit applications for Part 70 sources to include estimates of all regulated pollutants. The permitting authority is obligated to require additional information related to the emissions of air pollutants sufficient to verify which requirements are applicable to the source. Because there are no federal emission limitations for PM2.5, estimates of PM2.5 need only be accurate enough to determine whether or not the source is major (i.e., greater than 100 tons per year).

WDNR considers EPA to be a regulatory partner and continues to work with EPA to find appropriate ways to characterize fine particulate matter emissions in permits while assuring timely and accurate permit reviews for sand mines and other sources in the state.

Finally Dr. Crispin Pierce notes in his comments that:

“It is especially important for the draft DNR document to carefully evaluate PM2.5 emissions given the unfortunate recent history of EPA denial of the Wisconsin DNR submission for PM2.5 management (§ 52.2592 Review of new sources and modifications. Disapproval).”

The “disapproval” to which Dr. Pierce refers involves minor differences between state and federal major source air permitting rules. EPA found that Wisconsin's state permitting rules did not explicitly name oxides of nitrogen as a precursor to ozone. WDNR worked with EPA to resolve the discrepancies through rulemaking. It should be noted that this issue concerns

secondary formation in the atmosphere from precursor pollutants and the regional nature of PM2.5 and ozone. This narrow disapproval did not affect air permitting of sand mines in any way but does illustrate EPA's emphasis on the importance of secondary formation in PM2.5 and ozone regulations. EPA published a proposed approval of WDNR's most recent SIP submittal of its major source permitting rule on September 30, 2016, resolving previous disapprovals.

Comment: Concern about whether ch. NR 415 adequately restricts particulate matter emissions from industrial sand mining operations.

Response: Chapter NR 415 Wis. Adm. Code, in conjunction with the NAAQS, assures protection of air quality. Chapter NR 415 was originally promulgated in 1986 to regulate Total Suspended Particulate (TSP). It has been updated several times, most recently in 2003. Ch. NR 415 is essential in giving the WDNR authority to regulate fugitive dust. State Statute gives WDNR further authority to set any additional limitations needed to assure protection of the NAAQS. The chapter lays out general limits for point sources of particulate matter, contains requirements for specific industry types and, sets out requirements to prevent fugitive dust. The regulation sets a threshold by which a source must monitor for particulate matter or request a waiver from ambient air monitoring. The applicable thresholds in NR 415.075(2) and NR 415.075(4) apply to industrial sand mines that have a "production of more than 2,000 tons per month on a rolling 12 month average." Wisconsin Adm. Code section NR 415.076 is specific to emissions from sand and gravel plants. Portable plants are exempt from this section if they have a capacity of less than 150 tons per hour, and fixed plants are exempt if capacity is less than 25 tons per hour. The rule states that all industrial sand mines must take "precautions to prevent particulate matter from becoming airborne." Notably, the chapter has general requirements that all subject industrial sources must take precautions to prevent fugitive dust as well as fugitive dust control requirements specific to industrial sand mining operations and from sand and gravel plants.

Independent Research and Citizen Monitoring

Independent and citizen research often utilizes real-time, low cost monitoring sensor technology. Considerations should be made when attempting to make comparisons between WDNR air monitoring data which meet EPA Federal Reference Method or Federal Equivalent Methods as compared to data that does not meet these strict methods. Air quality sensors can provide real time data on localized air quality. However, instantaneous data is not directly comparable to established health standards and cannot be directly compared without appropriate averaging. Sensor technology does not meet the rigorous quality assurance and performance criteria for regulatory or compliance monitoring therefore, comparability to regulatory methods is greatly variable.

In the draft strategic analysis report, WDNR commented specifically on certain monitoring efforts in which it has been an active participant. WDNR cannot speak to the scientific integrity of certain studies and therefore remained silent in cases where involvement was limited. Monitoring efforts for which WDNR did provide comment include the industrial monitoring that WDNR oversees and the EOG study conducted by Richards and Brozell. The more generalized comments on independent and citizen monitoring were based on the relatively low participation, typically limited to providing advice and technical expertise or receiving reports in various draft or final states and at times providing limited feedback.

WDNR listed in the draft strategic analysis report, the organizations that have produced some of the more prominent work which included final reports. WDNR did not comment on anecdotal information or preliminary data, nor did WDNR name any study in particular to avoid implying support or dismissal. A study appearing in a peer reviewed journal does not guarantee scientific soundness nor does it guarantee that the results and conclusions are presented in a clear and truthful fashion.

WDNR would also point out that the term independent refers to independent of WDNR direct oversight. Independent does not mean that the work presented is necessarily academic or unbiased in its approach and presentation. There were a number of independent studies addressed in the response to comments by both MEA and Dr. Pierce.

Comment: Commenters specifically requested the WDNR respond to a list of citations including ambient air monitoring studies, handbooks, guidelines and other miscellaneous publications.

Response: Below we provide an evaluation on the methodology and conclusions of the six ambient air monitoring studies in detail and provide general responses to the other citations.

Ambient Air Monitoring Studies: WDNR reviewed the following six cited studies based on provided study plan documentation, preliminary results and finalized reports that were available. Studies with well documented plans and finalized reports were able to be more thoroughly evaluated than studies that did not provide information on sampling and analysis methodology or final conclusions.

Pierce Study 1: Pierce et al. measurements of PM_{2.5} levels around frac sand plants in Wisconsin and Minnesota: (J Environ Health Nov 2015: 8–12 (2015) PM_{2.5} Airborne Particulates near Frac Sand Operations; Pierce, Crispin H., Kristin Walters, Jeron Jacobson, and Zachary Kroening).

Study Plan/Final Report: Published Report
Methodology FRM/FEM/Other: Other
Sample Collection/Schedule: Infrequent, not EPA Schedule
Quality Control: Some indicated, but not available for evaluation
Conclusions: Inappropriate comparisons to NAAQS

WDNR review of this published study noted issues with the work done and the conclusions of the publication. The sampling methodology used has many technical problems and because of sampling methodology utilized the comparisons shown to standards in effect in Wisconsin are inappropriate and misleading.

1. Sample Collection

- a. Sampler used is SKC DPS PM2.5 sampler
 - i. This sampler is not a Federal Reference Method (FRM)/Federal Equivalent Method (FEM) type sampler
 - ii. Considered to be “sensor technology” of unknown accuracy and comparability to FRM/FEM methodology
 - iii. These samplers are known to be highly variable in their accuracy and precision
 - iv. Standard deviation calculation indicates significant variability in the pre and post weights of filters, which indicates the accuracy/precision of the measurements may be suspect
 - v. Primarily useful for qualitative measurements and hotspot analysis, not NAAQS determinations
 - vi. Article discusses that various models of instruments are being tested against a Dichotomous sampler but does not share any information of the comparability seen
- b. Six total samples at four sites over 13 months
 - i. For comparison, over a 13-month period, an FRM operating on a once every six day national schedule would collect approximately 65 samples
- c. Sample Duration
 - i. Most samples were not midnight to midnight, which is the time period required for FRM operation to enable comparison to the NAAQS
 - ii. Sample lengths ranged from 5 hours 47minutes to 25 hours 35 minutes
 - iii. Highest sample concentration had shortest duration/sample volume (greatest potential for error)
- d. Sample siting is variable and unknown if it meets various federally-required siting criteria

2. Sample Analysis

- a. No filter conditioning used – FRM/FEM methods require significant conditioning controls
 - i. For comparison, to ensure accuracy, FRM sampling requires 24 hour conditioning periods at tightly controlled humidity and temperature conditions before pre and post weights are measured

3. Quality Control

- a. Calibration
 - i. The instrument’s flowrate was calibrated using a field rotometer, which is not a certified standard, and not as accurate as a required NIST traceable flow standard
 - ii. Errors in flow rate will bias cut size of particulate, sample volume, and sample concentration, potentially resulting in biased results

- b. Filter blanks (a requirement of FRM operation – one filter in every ten) were collected but no data provided to allow for evaluation of sampling/analytical performance
4. Conclusions
- a. Use of single samples to compare against Annual Average or Daily Max standards is inappropriate and misleading, especially when the majority of samples were not collected over a day (or a year), or in accordance with applicable requirements
 - b. There is no consideration for background concentrations during individual sample days
 - i. Background concentrations greatly impact the variability of sample concentrations over time
 - ii. Without background data, it is difficult to make the case for source versus regional contributions to ambient conditions

Pierce Study 2: Pierce et al. measurements of PM_{2.5} and PM₁₀ levels in Bloomer/Cook's Valley, WI from Oct. 2014 – July 2016. Reports sent to WDNR staff Gail Good and Jason Treutel on 18 December 2014, 4 March 2015, 8 June 2015, 29 December 2015, 19 February 2016 and 20 July 2016.

Study Plan/Final Report: Draft Reports, no analysis
 Methodology FRM/FEM/Other: PM₁₀ is FRM, PM_{2.5} is Other
 Sample Collection/Schedule: Evolves to follow EPA 1/6 day schedule during the study, many data gaps but data collected for more than a year
 Quality Control: Some indicated, but inconsistent or not available for evaluation
 Conclusions: Inappropriate comparisons to NAAQS

WDNR review of this unpublished data suggests that the work done evolves over time to become more in line with federal reference practices as the study progresses. However, the data reports raise many questions as to the accuracy of the data being produced due to inadequate reporting of sample analysis methods. The sample analysis reports indicate a continuing use of inappropriate and misleading comparisons to NAAQS.

1. Sample Collection
- a. Sampler used is an Andersen dichotomous sampler
 - i. Includes PM₁₀, PM_{2.5} and PM_{2.5} silica measurements
 - ii. Has FRM designation for PM₁₀
 - iii. Incorrectly characterized as an FRM for PM_{2.5} and crystalline silica
 - b. Sample collection roughly follows EPA 1/6 day schedule and improves over time with some periods of missing data and completeness issues, but generally suggests a more robust data set compared to previous studies.
 - i. Samples are collected in a single location over a long timeframe
 - ii. Sample collection time base is typically 24 hours
 - iii. Samples begin to be run from midnight to midnight midway through study

- iv. Sample frequency improves to generally follow EPA 1/6 day national schedule which can allow for better comparisons to other sampling done in the state
 - c. Siting is reported to meet EPA siting criteria, but supporting evidence not provided in reports
- 2. Sample Analysis
 - a. Reports indicate sample analysis is split between in-house analysis and a professional lab (RJ Lee Group); it is unclear what lab is responsible for each analysis, but suspected that gravimetric work related to particulate concentrations are done in house and crystalline silica analysis is done by the RJ Lee Group
 - i. If gravimetric results are being produced by a non-regulated laboratory, there are significant concerns proper filter conditioning and climate control are not in place which can cause significant biases to PM_{2.5} and PM₁₀ gravimetric results. WDNR cannot comment on the extent of these biases without additional information on how the samples were conditioned and measured.
 - b. Only the first report includes crystalline silica results, but all reports indicate RJ Lee Group involvement; this results in unclear distinction as to the degree of professional analysis being performed
 - c. No information provided on sample conditioning methodology - FRM/FEM methods require significant conditioning controls
 - i. FRM sampling requires 24 hour conditioning periods at tightly controlled humidity and temperature conditions before pre and post weights are measured to ensure accuracy
 - d. Results include some confusing ½ MDL substitution for particulate concentrations that indicate the balance being used may not have the appropriate sensitivity for the particulate analysis being performed
 - i. Balance is upgraded mid project to a microbalance which may have appropriate sensitivity but cannot be confirmed based on information provided
 - ii. Comparisons between the two balances show radically different results which bring into question the accuracy of all previous data obtained from the original balance, including the previously published study
- 3. Quality Control
 - a. Calibration
 - i. Sampler flow rate calibrated with a standard that can be NIST traceable
 - ii. Errors in flow rate will bias cut size of particulate, sample volume, and sample concentration potentially resulting in biased results
 - iii. QC of the sampler flow rates is not provided which prevent any evaluation of the method precision
 - b. Filter blanks are not mentioned in these reports
 - c. Collocated monitors are mentioned, but no clear information on the results are provided which would help evaluate sampling/analytical performance
- 4. Conclusions
 - a. WDNR has had many communications regarding the misleading comparisons of annual average standards against individual measurements in the work of Pierce

et al. This technical expertise has been repeatedly ignored and the data continues to be presented in an inappropriate, misleading fashion.

- i. Report inappropriately compares daily measured PM_{2.5} values to the annual average standards of 12 ug/m³; should use the max daily standard of 35 ug/m³. The results do not indicate exceedances of this standard. Maximum value measured is 24.8 ug/m³.
 - ii. Report uses a California/World Health Organization standard for PM₁₀ that is more stringent than the National Ambient Air Standards that are applied in Wisconsin and the rest of the United States.
 - iii. Report inappropriately compares daily measured PM₁₀ values to the annual average standards of 20 ug/m³ (CA/WHO); in this case the more appropriate max daily standard of 150 ug/m³ (in effect in CA as well as the NAAQS). This standard is provided in the report but is not clearly identified as the appropriate standard for comparison. The results do not indicate exceedances of this standard.
 - iv. No comparisons of the average results of measurements are made to the annual average standards. Average of all reported values is 7.0 ug/m³.
- b. Data from the WDNR BAM monitor located in Eau Claire are provided but no evaluation is provided.
 - c. Crystalline Silica results are not provided beyond the first few samples in these reports. It is never explained in the reports why this information has been omitted, even though crystalline silica work and the involvement of the RJ Lee group continues to be indicated.

Pierce Study 3: Pierce et al. measurements of PM_{2.5} and PM₁₀ levels in Bloomer, New Auburn and Hixton, WI

Study Plan/Final Report: Draft data results only

Methodology FRM/FEM/Other: Uncertain, two models indicated with different status

Sample Collection/Schedule: Appears to follow EPA 1/6 day schedule, but has many gaps

Quality Control: Unknown

Conclusions: Inappropriate comparisons to NAAQS

WDNR received a partial data set as a part of comment from Crispin Pierce. Based on the information provided, this study is very similar to Pierce Study 2 listed above and likely has the same advancements and shortcoming commented on above. WDNR review of this unpublished, partial data set cannot be very detailed at this time due to lack of information and is limited to the preliminary PM_{2.5} data provided.

1. The Bloomer graph indicates results that would be in compliance with the NAAQS for PM_{2.5} daily max and annual averages
2. The New Auburn graph indicates results that, with the exception of three samples, would be in compliance with the NAAQS

- a. The three samples that show levels of concern 12/26/15, 1/1/16 and 1/7/16 are dramatically higher and may indicate a major impact from a localized source or potentially an analytical error.
 - i. The corroborating PM10 results are missing from this data set which could provide context
 - ii. Based on the concerns from the previous Pierce et al studies, laboratory protocols and related QC data would help to assess the expected accuracy of the data

Grant Study/Thesis: University of Iowa Ryan Grant Master's Thesis measuring PM2.5 around frac sand plants (University of Iowa, <http://ir.uiowa.edu/etd/1846>), Community based air quality monitoring near proppant sand facilities, Ryan James Grant).

Study Plan/Final Report: Thesis Paper describing methodology and results

Methodology FRM/FEM/Other: Other

Sample Collection/Schedule: Daily, 7-30 days per location

Quality Control: Unknown

Conclusions: Regarding NAAQS, limited data/discussion to evaluate

WDNR reviewed the final thesis paper. The sampling methodology has several limitations from a regulatory methodology perspective; most notably the use of non-FRM or FEM samplers. The paper properly presents these limitations and the conclusions presented are appropriate for the study parameters.

1. Sample Collection

- a. Sampler used is a PM2.5 and PM10 Grimm EDM164 – optical particle counter
 - i. This sampler is not an FRM or FEM; unknown comparability, though a different version of the Grimm EDM has obtained FEM status
 - ii. Paper refers to an evaluation that indicates the instrument reads higher than FRM and FEM instruments used for comparison to the NAAQS, but not significantly different
 - iii. The instrument provides near instantaneous concentration data, used often for hot-spot monitoring (not NAAQS determinations)
- b. Sampling conducted at 6 locations for periods of 1 to 4 weeks
- c. Additional observations collected during the study included
 - i. Met
 - ii. Camera for visuals
 - iii. Microphone for sound

2. Conclusions

- a. Measurements did not show violations of the NAAQS (substantially lower)
- b. Statistical analysis indicates facilities may have short term (20-second) impacts on particulate concentrations (PM_{2.5} and PM_{10-2.5}) from various sources such as mining, processing, truck traffic and rail traffic.
- c. Study leaves open the question of crystalline silica as it did not analyze specifically for this pollutant and measurements suggest an increase in particulate from sand mining activities

- d. Study does a good job in making appropriate comparisons to standards and does not overstate the accuracy of the equipment utilized

Madungwe and Mukonzvi Study: Madungwe and Mukonzvi found levels of 14.23–69.01 mg/m³ PM_{2.5} around a stone quarry (Atmospheric and Climate Sciences, 2012, 2, 52-59 Assessment of Distribution and Composition of Quarry Mine Dust: Case of Pomona Stone Quarries, Harare. Emaculate Madungwe and Tinashe Mukonzvi).

Study Plan/Final Report: Published Paper describing methodology and results
Methodology FRM/FEM/Other: Other
Sample Collection/Schedule: Unknown, limited
Quality Control: Unknown
Conclusions: No conclusions regarding NAAQS

After review of this published study WDNR had concerns with some of the methodology and presentation of the results. This study occurred in Zimbabwe and the magnitude of unknown variables makes it very difficult to evaluate the relatability to ambient conditions and industrial procedures used in the United States.

1. Sample Collection
 - a. Sampler used is a Casella dust sampler
 - i. This sampler is not a Federal Reference Method (FRM)/Federal Equivalent Method (FEM) type sampler
 - ii. Considered to be “sensor technology” of unknown accuracy and comparability to FRM/FEM methodology
 - iii. WDNR has no direct experience with this type of sampler
 - b. Samples collected during 3 different time periods (January, April, August)
 - c. Duration of sampling events is not provided, suspect they were for minutes during a specific day during each collection period
 - d. Measurements and standards in the report appear to be in mg/m³ when they should be measured in ug/m³. This is either incorrectly documented, or concentrations evaluated are ~1000 times worse than typical concentrations in US
2. Sample Analysis
 - a. None indicated.
3. Quality Control
 - a. None indicated.
4. Conclusions
 - a. Study indicates decreasing levels of PM₁₀ & PM_{2.5} the further removed from an active crusher.
 - b. Study indicates measurements that exceed the indicated standards (roughly 1000x the NAAQS or near if unit issue is confirmed) when mining operations are active
 - c. Study recommends control technologies be implemented (none are stated to be in place) to control fugitive dust including:
 - i. Enclosing processes
 - ii. Dust suppression water spray
 - iii. Planting vegetation to act as wind breaks
 - iv. Having an integrated plan

- d. It should be noted that the recommended fugitive dust controls stated here are very similar to what is in place in Wisconsin through required permits and fugitive dust plans as well as common industrial practices in the United States.
- e. Though the data quality is unknown, it indicates significant issues with an operation in Zimbabwe. It is uncertain how this data would correlate to sand mining in Wisconsin where fugitive dust practices are part of permits and technology may be significantly different.

Minnesota Pollution Control Agency (MPCA) ongoing monitoring: The Minnesota Pollution Control Agency (MPCA) has collected both PM₄ and PM₄ crystalline silica values in Winona, MN and published PM₁₀ levels submitted by industry for frac sand facilities in their state (<https://www.pca.state.mn.us/air/air-monitoring-minnesota-silica-sand-facilities>).

Study Plan/Final Report: Website draft data and reports

Methodology FRM/FEM/Other: Multiple monitors, details mostly unknown, one site report indicated – PM_{2.5} FEM; TSP/PM₁₀ Unknown; Crystalline Silica/PM₄ Other

Sample Collection/Schedule: Follows EPA 1/6 day schedule for most or all samplers

Quality Control: Unknown

Conclusions: Properly evaluated against NAAQS and MPCA regulations

WDNR reviewed the available preliminary data and reports on this website. The website does not go into detail on the methodology utilized, but since utilizing methods to meet federal requirements is general practice for MPCA, the study is suspected to have utilized FRM/FEM sampling equipment and methodology appropriate for regulatory agencies where available. Crystalline silica has no established FRM/FEM for ambient air monitoring so no assumptions can be made regarding the methodology utilized. Comparisons to established standards are clearly discussed and appropriate for the study parameters.

1. Sample Collection

- a. Samplers used vary between sites and include a variety of samplers including but not limited to:
 - i. MetOne BAM-1020 PM_{2.5} FEM sampler
 - ii. Modified PQ100 for PM₄/crystalline silica - not an FRM or FEM but utilizes an established PM_{2.5} FRM method with modifications that are not explained in detail
 - iii. TSP and PM₁₀ methodology not clearly specified in the available literature but assumed to follow regulatory guidelines
- b. Sampling collected at 4 general areas with some areas including multiple sampling locations
- c. Sample schedule follows regulatory EPA 1/6 day schedule for most or all samplers

2. Sample Analysis

- a. Details not provided, but assumed to follow regulatory guidelines for TSP, PM₁₀ and PM_{2.5}
- b. Crystalline Silica measured, but methodology is only specified in the Winona paper, based on MDLs, some sites may have been using different methods that are less sensitive than the Richards study

3. Quality Control
 - a. Details not provided, but assumed to follow regulatory guidelines for TSP, PM10 and PM2.5
4. Conclusions
 - a. Data show one exceedance of the NAAQS (not a 98th percentile violation) for PM2.5. Analysis shows this to be a regional event not exclusive to the site monitoring near the mining operation
 - b. Data shows no exceedances of the NAAQS for PM10.
 - c. One site had exceedances of the Minnesota TSP standard (not in effect nationally or in WI).
 - d. Crystalline silica tends to be under MDL with one site showing a few exceedances of the Minnesota health based value (3 ug/m³ over a lifetime), the average of the results are well below the health based value with most measurements below the detection limit
 - e. Presentation of the data is very good and makes appropriate comparison to standards and health based values in effect in Minnesota
 - f. Sampling plan and/or final report should be made available to provide additional detail on methodology used and supporting QC data & assessments

Additional Citations: WDNR reviewed the additional citations included in the comments and found them to have limited applicability to the Strategic Analysis. WDNR has addressed and characterized these citations below.

1. Mine Safety and Health Administration measurements of respirable (PM4) crystalline silica levels to which Wisconsin mine and processing plant workers are exposed (<http://www.msha.gov/drs/drshome.htm>).
 - a. Industrial hygiene monitoring inside the fenceline is not representative of concentrations found outside the fenceline. Samples may be collected in areas where worker exposure may be uncharacteristic of ambient conditions (inside processing buildings or equipment) where workers may be required to wear breathing protection and where air may be processed before being released back into the atmosphere. Additionally WDNR does not have the authority to set, monitor or enforce these standards.
2. National Institute for Occupational Safety and Health measurements of PM4 crystalline silica levels to which hydraulic fracturing workers are exposed around the country (J Occup Environ Hyg. 2013;10(7):347-56. Occupational exposures to respirable crystalline silica during hydraulic fracturing. Esswein EJ1, Breitenstein M, Snawder J, Kiefer M, Sieber WK).
 - a. Industrial hygiene monitoring inside the fenceline is not representative of concentrations found outside the fenceline. Samples may be collected in areas where worker exposure may be uncharacteristic of ambient conditions (inside processing buildings or equipment) where workers may be required to wear breathing protection and where air may be processed before being released back into the atmosphere. Additionally WDNR does not have the authority to set, monitor or enforce these standards.

3. The US Environmental Protection Agency recognizes the following “top sources” of PM_{2.5} in their consideration of criteria and hazardous air pollutants (http://www.epa.gov/ttn/chief/net/2008neiv3/2008_neiv3_tsd_draft.pdf, table 4):
 - a. The referenced document has been in draft form since 2008 and was never finalized.

4. The US EPA has established PM_{2.5} emission factors for mechanical processes associated with coal mining (AP-42 section 11.9). Processes identified that generate PM_{2.5} include blasting, truck loading, bulldozing, dragline, vehicle traffic, grading, active storage pile (table 11.9-1) and drilling, topsoil removal by scraper, overburden replacement, truck loading by power shovel, train loading, bottom dump truck unloading, end dump truck unloading, scraper unloading and wind erosion of exposed areas (table 11.9-4). They further state “All operations that involve movement of soil or coal, or exposure of erodible surfaces, generate some amount of fugitive dust.” (<http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s09.pdf>).
 - a. WDNR has not reviewed information on coal mining (AP-42 section 11.9) and can’t offer a critique of the methods used to develop the PM_{2.5} emission factors. The physical properties of coal as well as the soils it is deposited in are very different from the physical properties of the round silica sand and its deposits being mined in Wisconsin. Thus, no comparison can be made between the two sets of emission factors.

5. The Western Regional Air Particulates Fugitive Dust Handbook identifies the following sources of PM_{2.5} and PM₁₀ fugitive dust emissions (http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf):
 - a. WDNR has reviewed studies used in developing information for USEPA’s emission factor document AP-42 regarding paved and unpaved roads. WDNR disagrees that these studies adequately demonstrated that PM_{2.5} emissions are generated in measurable quantities from these activities. More recent studies have indicated that PM_{2.5} associated with paved and unpaved roads is from tailpipe emissions. Due to high temperature combustion tailpipe emissions are subject to a different group of regulations and not and are not regulated by stationary source permit programs.

6. Jeffrey Johnson, an environmental engineering supervisor at the WDNR ... said there are "a couple of [frac sand plants] that would exceed the [federal] PM_{2.5} standards." (Source: Inside Climate News, 5 Nov. 2013)
 - a. This quotation is taken out of context. Originally referred to a consideration of an extremely conservative approach of considering data from PM₁₀ samplers against PM_{2.5} standards by assuming a worst case scenario that 100% of the measured PM₁₀ was PM_{2.5}. In reality the percentage of PM₁₀ that is also PM_{2.5} is much less than 100%, especially when PM_{2.5} particulate concentrations are not being driven by combustion sources and secondary formation.

Comment: Concern that only 10%, or as another stated, 17%, of ISM operations in Wisconsin are required to monitor for the larger PM10 and wondered if this is representative of the whole industry.

Response: Chapter NR 415 Wis. Adm. Code, requires ambient air monitoring at industrial sand mines that exceed a given threshold level of production. The regulations also provide for granting a variance from the requirement to monitor if “the applicant demonstrates that the general public will not be exposed to significant levels of particulate matter from the source, and that the source’s emissions units and processes are controlled to a level which meets all applicable requirements.” The statutory criteria for permit issuance represent a significantly higher bar than the criteria in NR 415 for obtaining a variance from monitoring. Section 285.63 requires WDNR to make a finding that health based air quality standards are not violated before a permit can be issued. WDNR concluded that sources able to meet the criteria for permit issuance, could, therefore, generally qualify for a variance.

Data collected from these industrial monitors indicates that as long as industrial sand mining and processing facilities follow their air pollution control permits, they are not causing violations of the PM10 standard. This confirms WDNR’s practice of granting monitoring variances for sources that comply with their air pollution control permits.

Comment: Concerns about the industry self-monitoring

Response: Comments expressed concern with industrial sources self-monitoring. Sources utilize Federal Reference Method equipment that is the same or equivalent to the federally approved equipment used by WDNR to monitor ambient air. The sampling and quality assurance techniques utilized by sources are detailed in ambient air monitoring plans that are reviewed and approved by WDNR. These techniques are similar to the techniques utilized by WDNR. Finally, sources utilize independent laboratories for the analysis of samples collected. Monitoring reports are received and reviewed on a monthly basis and instrumentation and methodology are evaluated and audited on an annual basis or more frequently by WDNR. Unlike many independent studies, air samples are held to the same stringent standards outlined in 40 CFR Part 58 directed by EPA and practiced by WDNR. Additionally, WDNR performs annual site and sampling method audits of industrial monitors utilizing independent NIST traceable standards.

In general, the Clean Air Act was designed to require regulated sources to bear the majority of the costs and burdens of emitting air pollution. All industrial sources regulated by the Act and Wisconsin air pollution regulations are required to track, keep records, report emissions and exceedances, pay fees and certify their own compliance. In this respect, industrial sand mines are not treated any differently than any other regulated industry.

Appropriateness of NIOSH method 7500

NIOSH method 7500 is a federally approved method for monitoring silica in the workplace and is used for environmental monitoring (see Richards and Bronzell paper cited in draft document). This is an industrial hygiene method that is acceptable for that purpose. NIOSH method 7500 does not have detection limits sufficient to measure crystalline silica at the health based levels some states have adopted. The analytical portion of this method has been utilized in some studies for ambient air samples, but the sampling portion of the method must be significantly modified to obtain sample volumes sufficient to reach detection limits needed for ambient air analysis. These modifications may be based on sound science, but are not inherent in NIOSH method 7500 nor have they been published in any federally approved method. In the studies that have been reviewed that have utilized alternative sampling, the majority of samples analyzed have still been below the detection limits.

Comment: Concern about why the WDNR only requires monitoring of PM10?

Response: The WDNR recommends PM10 monitoring at industrial sand mining operations under ch. NR 415.075, Wis. Adm. Code. There is no longer a total suspended particulate (TSP) standard. If TSP were monitored, results could not be compared to a standard nor be used to assess a facility's compliance status. State and Federal ambient air quality standards for PM10 are in place and monitoring data can be compared to a standard and used to demonstrate whether mining operations are causing violations of the NAAQS.

The WDNR does not recommend monitoring of PM2.5 at sand mining sites because the types of activities occurring at industrial sand mines do not cause emissions of PM2.5 in quantities that might cause or exacerbate violation of the PM2.5 NAAQS. Please refer to WDNR's PM2.5 strategy documents for more information on PM2.5 emissions, their causes and how they are regulated by the state and federal Air Programs.

Comment: Concerns about whether the industrial sand mining, processing and loading operations are following appropriate fugitive dust control requirements at all times.

Response: The WDNR established a best management practice template to guide industrial sand mine industries and ledge rock quarries in developing comprehensive fugitive dust control plans (FDCP). Each facility is required to develop a FDCP specific to conditions at the site. The template outlining best management practices can be found at on the WDNR external guidance see GID: 2019.v1.

http://dnr.wi.gov/cias/guidance/guidanceexternal/GuidanceItem.aspx?item_seq_no=2091

The WDNR has revised this section of the Strategic Analysis to provide examples of measures a facility may take to mitigate fugitive dust and include a link to the guidance document.

Industrial sand mines, processing plants and load-outs are idle for periods throughout the year due to many reasons including market demand and weather. Regardless of the operating status or time of year, industrial sand mines, processing plants, and loading facilities are required to maintain compliance with all requirements in their air pollution control permits and fugitive dust control plans.

The standard for quantification of fugitive dust is opacity (a measure of the lack of transparency of a plume) made by visual observation. Visual observations are made by trained personnel certified to read the pollution plume and record necessary information. Valid observations must follow EPA reference methods which spell out the frequency and level for recording observations.

WDNR recognizes activities at industrial mines, such as blasting, may produce momentary plumes of dust. These plumes typically dissipate quickly. Trained WDNR field staff have not witnessed blasting activities which have exceeded the opacity standard. Industrial sand mines are required to follow safe mining practices regulated under the Department of Safety and Professional Services and federal Mining and Safety association (MSHA) in addition to local ordinances along with mitigating fugitive dust according to requirements in ch. NR 415.04 & NR 415.075, Wis. Adm. Code, and their fugitive dust control plans.

The WDNR made changes to section 2.1.3 Air Regulations, Control of Particulate Matter, Fugitive Dust Control to better explain the fugitive dust requirements in the air pollution regulations as well as the methods used to control and measure fugitive dust.

Groundwater

Comment: The analysis should provide more information about proposal to study groundwater quality for ISM operations.

Response: Details of the study will be provided as they become available. Please refer to the DNR Industrial Sand Mine website, for more details.

Comment: Why is the proposed groundwater quality study not looking at other NMM operations?

Response: The rapid growth in the IS mining industry with the combination of high volume mining and processing operations has raised more concerns about the potential for groundwater impacts associated with the IS industry as compared to the mining of other types of aggregate.

Depending on the results of the study, it could be applied to other non-metallic mining operations.

Comment: The analysis should provide an explanation on how new ISM general permit will protect water resources from heavy metal pollution.

Response: The DNR does not currently have conclusive evidence that industrial sand mining is impacting groundwater. The reason for the study is to determine if industrial sand mines could impact the groundwater.

Section 5 of the ISM general permit contains monitoring requirements for wastewater discharges to surface waters. For a recurring discharge of wastewater [a discharge of wastewater that occurs at a regular and repeated frequency (e.g., continuously, daily, weekly, monthly, quarterly)], the permittee is required to either monitor for several parameters that include metals or perform Whole Effluent Toxicity, or WET, testing of the discharge. For a nonrecurring discharge of wastewater [a discharge of wastewater that may occur only occasionally or irregularly], the permittee is required to perform WET testing prior to discharge. The permittee is required to submit monitoring and WET testing results to the DNR. The DNR will use this information to assess the potential for the discharge of metals and possible toxicity to aquatic life.

Comment: The analysis states it is “unlikely” for polyacrylamides to be found in groundwater. Why?

Response: Section 2.3.8 has been edited to help clarify polyacrylamide use for industrial sand mining.

Reclamation

Comment: Concern that there is a “bonding loophole” for the financial assurance a mining operation must provide, and that tax-payers will be on the hook for the reclamation of the mine site, if the operation were to go bankrupt.

Response: Chapter NR 135, Wis. Adm. Code contains safeguards to ensure that financial responsibility for reclamation does not fall on the local unit of government in the case of bankruptcy or any other instance of non-compliance by the operator. Once financial assurance is in place, the financial assurance cannot be unilaterally cancelled or withdrawn by a permittee. The procedures by which financial assurance can be cancelled under NR 135 include requirements that a replacement financial assurance instrument be provided before cancellation as detailed below.

In the case of bankruptcy, the operator of a nonmetallic mining site shall notify the regulatory authority by certified mail of the commencement of voluntary or involuntary proceeding under

the federal bankruptcy code, naming the operator as debtor, within 10 days of commencement of the proceeding. If, as part of the bankruptcy, the provider of the financial assurance desires to cancel the financial assurance, the bank or other financial institution must provide at least a 90 day notice to the county or local regulatory authority (under NR 135) The permittee then has 60 days, from the day the cancellation notice is issued, to obtain an alternative means of financial assurance. If the permittee fails to obtain an alternative financial assurance in that time frame, they must cease operations. If, after 60 days, the regulatory authority has not been provided with adequate alternative financial assurance, the regulatory authority can take action to obtain the existing (and not yet expired) financial assurance. Should the regulatory authority fail to act within the 30-day window, NR 135 and the reclamation ordinance provide additional enforcement authority and, as last resort, the regulatory authority maintains the ability to file suit against the operator.

Comment: The analysis does not include a discussion on inactive/idle mines

Response: The terms inactive, intermittent, and abandoned as related to nonmetallic mine sites are not defined in code or statute, and are therefore reliant on the intent of the code and historical applications. Areas affected by mining activities that are not reclaimed for a short period of time may be considered “inactive” (NR 135.39), whereas areas planned to be mined on occasion (such as town pits used for road construction and maintenance) may be considered “intermittent”. Under NR 135.19, intermittent mining activities need to be identified in the reclamation plan, and the length of time that a mine may be “inactive” without requiring the commencement of contemporaneous or final reclamation activities should be discussed and included in the reclamation plan as agreed upon between the permittee and the local regulatory authority (RA). A mine that has been “inactive” for an extended period of time may either be addressed through the zoning permit, which often requires periodic renewal, or enforced through the reclamation permit. Once that interval of time elapses, the RA may deem the site to be “abandoned” and order reclamation; failing compliance the RA may revoke the permit resulting in a forfeiture of the financial assurance by the permittee. If this happens, the RA will use the financial assurance to complete reclamation of the site.

Comment: Is contemporaneous reclamation required?

Response: Contemporaneous reclamation is required. Chapter NR 135.06 (2) establishes a general standard that “nonmetallic mining reclamation shall be conducted, to the extent practicable, to minimize the area disturbed by nonmetallic mining and to provide for nonmetallic mining reclamation of portions of the nonmetallic mining site while nonmetallic mining continues on other portions of the nonmetallic mining site.” In addition, ch. NR 135.03(3) defines "Contemporaneous reclamation" as “the sequential or progressive reclamation of portions of the nonmetallic mining site affected by mining operations that is performed in advance of final site reclamation, but which may or may not be final reclamation, performed to minimize the area exposed to erosion, at any one time, by nonmetallic mining activities.”

Performing contemporaneous reclamation minimizes the amount of open acreage and the potential for environmental impacts. It also reduces the acreage for which financial assurance must be furnished by the applicant/operator.

Comment: Impacts of inactive, and/or un-reclaimed sites

Response: Chapters NR 135 and NR 216 are in place to prevent impacts associated with inactive or idle mines. However, reclamation is not required at non-metallic mining sites that are no longer operational and pre-date the current Wisconsin laws. Chapter NR 135 does not apply to nonmetallic mining sites that ceased operation before August 1, 2001.

Comment: Is reclamation planning consistent and implementation consistently successful?

Ch. NR 135, Wis Adm. Code, and s. 295, Subch. 1, Wis. Stats., form the regulatory foundation for Wisconsin's nonmetallic mining Reclamation program. The primary objectives of the program are to ensure nonmetallic mines covered by the program are reclaimed and that the county and local nonmetallic mining reclamation programs are managed consistently such that there is common set of rules and guidance throughout the state creating a level playing field for all mine operators. To achieve this objective, DNR staff provide technical assistance to the RAs through group meetings and on-line program guidance such as reclamation plan content, financial assurance, mine reclamation success criteria, etc. DNR staff also provide other services such as review of draft county or local ordinances, conducting audits of RAs reclamation programs that identify where improvements are necessary, meeting with new RA staff to provide more focused training and meeting with RAs to discuss site specific concerns. To a large degree, the DNR believes we have been successful in working with RAs to achieve program goals and overall program consistency.

Technical Comments

Comment: Executive summary - Clarify that mine acreage is open pit acreage

Response: Edited pg. ii, Executive Summary

Comment: Section 1.2.3 - specifications are found in the Cambrian-age, Jordan, Wonewoc, and Mt. Simon formations

Response: Edited pg. 1-3, section 1.2.3

Comment: Section 1.2.3 - Brown County is listed as a county with dolomite quarries. We are not aware of any dolomite quarries in Brown, but there are dolomite quarries in Waupaca and Outagamie counties

Response: Edited pgs. 1-4, 1-5, section 1.2.3, section 1.2.4

Comment: Section 1.2.4 - There is a misrepresentation in the number of facilities reclaimed - e.g. Badger Mining St. Marie Sand Plant

Response: The number of facilities reclaimed identified was as of 12/05/2015, and may not reflect more recent reclamation activity.

Comment: Section 1.3.1 - Clarify that not all sand mines utilize blasting

Response: Edited pg. 1-9, section 1.3.1 Blasting

Comment: Section 1.3.1 - Clarify that not every facility utilizes settling ponds

Response: Edited pg. 1-11, section 1.3.1 Pumps and washing

Comment: Section 1.3.1 - Most transport is in covered hopper cars - if open topped it is wet product

Response: Edited pg. 1-17, section 1.3.1 Rail Systems

Comment: Section 1.3.1 - narrative is misleading, stockpiled sand is considered to be "wet". Sand is sent to the dryer because it has moisture content.

Response: Edited pg. 1-18, section 1.3.1 Conveyor Systems

Comment: Section 2.8.2 - Re-word forestry reclamation statement

Response: Edited pg. 2-80, section 2.8.2

Comment: Executive Summary - Include the date of current/active facilities

Response: Edited pg. ii, Executive Summary

Comment: Executive summary - Clarify regulatory programs - WDNR and ACOE

Response: See section 2.5.3 of the document for more detail on the two regulatory agencies

Comment: Section 1.1 - Implies products of ISM are only used in fracking

Response: Edited pg. 1-1, section 1.1

Comment: Fracking is spelled differently throughout the document

Response: Edits made throughout document, spelled as fracking.

Comment: Section 1.3.1 - "Stockpiling" section - "stockpiles containing fine-grained waste materials are prone to instability and runoff problems." This statement must be substantiated as well as clarified what is intended by use of the term "waste".

Response: Erosion of fine grained materials from run-off is based on long established principals. Soil Loss Equations are based on predictability and the Department has utilized the publication "Wischmeier, W.H. and Smith, D.D., Predicting Rainfall Erosion Losses – A Guide to

Conservation Planning, United States Department of Agriculture, Washington, D.C., 1978” among others when developing guidance and technical standards in erosion control.

Ch. NR 135.03(15), Wis. Adm. Code: “Nonmetallic mining refuse” means *waste* soil, rock and mineral, as well as other natural site material resulting from nonmetallic mining. Nonmetallic mining refuse does not include marketable by-products resulting directly from or displaced by the nonmetallic mining.

Comment: Section 1.3.2 - Clarify that some materials are mined from the watertable - underwater is confusing

Response: Please see the following sentence, pg. 1-12, section 1.3.2

Comment: Section 2.1.2 - Additional information related to mobile vs. fixed sources of diesel particulate emissions must be discussed to clarify how emissions from these two different types of sources are regulated.

Response: Edited pg. 2-24, 2-25, Section 2.1.2

Comment: Executive summary and Section 2.1.1 - “Crystalline silica is a component of particulate matter.” Crystalline silica can be a component of particulate matter, but is not a component of all particulate (i.e. such as particulates from combustion sources, pollen...) matter. This should be clarified.”

Response: Edited pg. ii, Executive Summary; pg. 2-21, Section 2.1 and 2.1.1; and 2-25, Section 2.1.3

Comment: Section 2.1.2 - Clarify the regulatory position for particulate material emitted from transfer points such as conveyors, elevators, loading spouts and chutes. Clarification is needed for stakeholders to understand if the use of this type of equipment results in point source or fugitive emissions.

Response: Edited pgs. 2-24, 2-25, Section 2.1.2

Comment: Section 2.1.3 - The New Source Performance Standards section needs to include the potential use of wet scrubbers as emission controls for such processes as drying, screening, and use of storage bins.

Response: Edited pgs. 2-28, 2-29, Section 2.1.3

Comment: Section 2.1.3 Please update text to identify the size of stationary engines that are subject to NSPS and NESHAP requirements.

Response: This comment was considered and determined the level of technical detail is outside the scope of this document.

Comment: Section 2.4.1 - Much of the text appears to be speculative and draws an uninformed reader to the conclusion that industrial sand mining will result in appreciable cumulative impacts. If impacts such as those outlined in this text is evident from existing ISM facilities, then make an appropriate reference. If not, then strike this text.

Response: This section provides background on why the laws and regulations are in place.

Comment: Section 2.6.1 - Consider inserting a map into this section to assist the reviewer understanding where the “Driftless area” is located as well as a definition of the “Driftless area” in this section.

Response: Edited, pg. 2-67, section 2.6.1

Comment: Section 2.8.4 - Re-word "and no mining would not be allowed" --> mining would not be allowed.

Response: Edited pg. 2-81, section 2.8.4

Comment: Section 2.10.3 - Instead of "contemporaneously" - use "during the same time period"

Response: Contemporaneously is used throughout the document, and is the word used in Ch. NR 135, Wis. Adm. Code.

Comment: Section 3.1.5 - states “a continuing low level threat also continues with rail banked trails being reestablished as rail service for the commodity shipments.” It would appear that the term “threat” is incorrectly used because rail development is part of economic development with a positive effect.

Response: Edited pg. 3-92, section 3.1.5

Comment: Section 3.2.3 - Substantiate "drivers are experiencing delays"

Response: Edited pg. 3-97, section 3.2.3

Comment: Section 4.1.9 - "other means a local unit of government may use to exert some conditions" - dangerous statement, implies a NEED for additional conditions

Edited pg. 4-118, section 4.1.9

Comment: Section 4.2.2 - Verify that the state Department of Safety and Professional Services has jurisdiction over fuel storage tanks

Response: Gas Systems are regulated under SPS 340:

https://docs.legis.wisconsin.gov/code/admin_code/sps/safety_and_buildings_and_environment/26_360/340.pdf

Additional information about the DSPS Gas Program:

<http://dsps.wi.gov/Default.aspx?Page=cd2ed829-8ef6-4d44-b8cc-17bc93d34f38>

Comment: Section 5.2.1 - Revise the paragraph earmarked for Fairmount Santrol

Response: Edited pg. 5-130, section 5.2.1

Comment: Section 2.1.1 - The discussion about the appropriateness of only PM10 monitoring has no references or evidence

Response: See section 2.1.3

Comment: Table 2-6 - Latin names should be italicized and common buckthorn is listed twice.

Response: Edited pg. 2-85, section 2.9.3

Comment: Wisconsin Conservation Congress voted for a moratorium

Response: The Wisconsin Conservation Congress (WCC) passed a moratorium recommendation and forwarded as part of its advisory recommendations to the Wisconsin Natural Resources Board.

Comment: Executive summary - "...not currently a federal standard... for crystalline silica" should be stated as "non-occupational exposures to" crystalline silica.

Response: Edited pgs. ii, iii, Executive Summary

Comment: Section 2.1.3 - Under "Blasting" "Allowable fugitive dust emissions from blasting are covered by the facility's air management permit issued by the DNR and are limited to 10% opacity." Under NR 431, the opacity standard is 20%.

Response: This comment was considered and determined the level of technical detail is outside the scope of this document.

Comment: Section 2.1.3 - Under "Crushers" on page 2-27, the draft states: "The standard limits particulate concentrations in the air to 15% opacity." EPA's NSPS limit opacity from crushers to 15% if constructed before April 22, 2008, and to 12% if constructed after April 22, 2008. The applicable standard discussion in the analysis should be updated to reflect the two standards.

Response: This comment was considered and determined the level of technical detail is outside the scope of this document.

Comment: The DNR should not comment on topics outside their regulatory authority or expertise; aesthetics, light/noise, socioeconomics, etc.

Response: Ch. NR 150.10(3)(a) Purpose. The purpose of the analysis is to inform decision-makers and the public of alternative courses of action and the anticipated effects of those alternatives on the quality of the human environment. "Human environment" means the natural or physical environment, including the components, structures, and functioning of ecosystems, and the relationship of people with that environment, including aesthetic, historic, cultural, economic, social, and human health-related components.

Comment: Other industries should also be spotlighted, and described, besides hydraulic fracturing, in the analysis.

Response: The other uses for industrial sand are discussed in Section 1.1 and 1.2.1 of the analysis. The discussion on hydraulic fracturing is included, because it correlates with the rise in industrial sand mines in the state, as well as, to clarify that hydraulic fracturing for oil and gas does not occur in Wisconsin.

Comment: The document fails to address permitting and reclamation planning and the related costs to local governments.

Response: It is up to the local unit of government to determine the related costs to regulating a non-metallic mining operation, and attempt to recuperate those costs through appropriate permit fees. The Department has guidance documents to assist local governments in this process:

- Reclamation Financial Assurance Guidance:
<http://dnr.wi.gov/topic/mines/documents/nonmetfinassure.pdf>
- Reclamation Fee Guidance:
<http://dnr.wi.gov/files/PDF/pubs/wa/WA832.pdf>

Comment: The document does not discuss the need for the DNR to be sponsoring workshops and providing information/training to local units of government

Response: The Department's reclamation program provides roundtable meetings at least twice a year, to assist municipalities with implementing ch. NR 135 Wis. Adm. Code.