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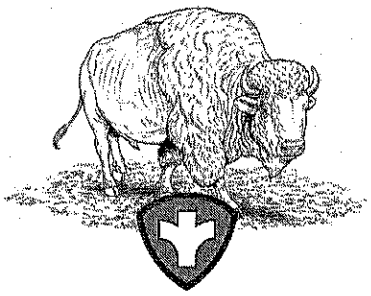

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Buffalo County Health Department

Prevent. Promote. Protect.

Public Health Response and Recommendations—Non-Metallic Mining Resolution

Overall Summary Statement

As part of the moratorium, public health was tasked with studying the potential health effects of silica "frac" sand mining, especially as it related to air and ground water quality. Studying health effects of an environmental substance is a long-term process. In the time allowed by the moratorium, the public health team searched for and read credible sources of information (articles, websites, etc) and spoke with many experts. Below you will find our current recommendations, which are the result of the studies conducted thus far. This topic is very new and we expect that new research and data will be coming in the next months to years that will help us better understand the potential health effects, thereby allowing us to develop better ways to protect the health and safety of the public.

Recommendations

1. Incorporate into the Conditional Use Permit (CUP) a requirement for a site-specific ambient air quality monitoring plan similar to Scott County, MN (Exhibit II-b), or built off of Wisconsin Department of Natural Resources (WDNR) recommendations for air quality monitoring plus WDNR or National Institute for Occupational Safety and Health (NIOSH) fugutive dust control recommendations. This requirement should also include the following:

    a. Monitoring for 1 month prior to onset of operations to obtain baseline data.

    b. Monitors that capture PM 2.5.

2. Incorporate into the CUP a requirement for a "review committee" to periodically review the CUP, allowing for information gained through studies such as those to be conducted in Chippewa and/or LaCrosse County or the release of new standards such as those from the EPA to be considered for incorporation into the existing CUP for the purpose of adequately protecting health and safety (Exhibit II-a and II-c).

3. Maintain the requirement for baseline and continuous water monitoring on residential wells that currently exists as a condition in the CUP.

4. Extend moratorium as more time is needed to:

    a. Incorporate new Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) into air quality monitoring plans (AQMP) (final rule Dec 2012)

    b. Allow more time to collect baseline, pre-operational air quality monitoring data and set best practices and protocols for air quality monitoring

c. Incorporate findings from or participate in other studies concerning health impacts of silica "frac" sand mining in Western Wisconsin (potentially Chippewa County and La Crosse County) or measuring of PM4 (Chippewa County).

d. Coordinate getting community, industry, government and academia together

Exhibit Index (Supporting Documents)

Exhibit I — Moratorium Study Summary (attached)

Exhibit II — Scott County, State of Minnesota, Interim Use Permit (IUP) for Great Plains Sand, LLC Mining and Processing Facility (Located online at: http://www.co.scott.mn.us/ParksLibraryEnv/Environment/EnvReview/Pages/Great-Plains-Sands-Mining-Interim-Permit.aspx)

a. IUP General Conditions (I): Permit Review (B) and Great Plains Sand Mining Review Committee (C)

b. IUP Exhibit I: PM10 Ambient Air Monitoring Plan

c. IUP Exhibit Q: Developer's Agreement

Exhibit 1—Moratorium Study Summary

A. Buffalo County Moratorium Overview

1. On March 20, 2012, County Board adopted amendment to the county zoning ordinance.
2. Prohibits the following between March 29, 2012, and October 31, 2012:
   - Expansion of any existing nonmetallic mining operation.
   - Processing of applications for new permits of nonmetallic mining operation.
   - Issuing new permits of nonmetallic mining operation.
3. Does not affect applicants who filed on or before March 29, 2012, except regarding expansion.
4. Allows County (zoning, highway, UW-Extension, DHHS) to study possible impact of nonmetallic mining on health, safety and welfare of residents; recommendations due within 150 days of ordinance. (Buffalo County Ordinance #12-03-03)

B. # of operating mines (as of 8/8/12)

	Buffalo Co[1]	WI[2]
CUP in process	2 Larson/Johnson/Stanton 7 Sands	@40
Permit approved	6	
Permit denied	2	
Operating	0	@60

(1) Email, Del Twidt to Jen Rombalski, 8/8/12.
(2) Planning & zoning for frac sand mining, Center for Land Use Education, UW-Stevens Point, April 2012

C. What is Known?

Q1 Are there negative health and safety aspects, as related to ground water and particle matter, of sand mining?

A1 – Yes. During our brief study, we found repeated articles and documents noting health risks linked to the particle pollution associated with sand mining. Specific chemicals of most concern are silica (frac sand is 90% silica) and diesel exhaust. Beyond focusing on specific chemicals, it's also important to consider total suspended particles (TSP, also known as total particulate matter or TMP), size of the particles, and whether methods exist to measure levels and standards have been formed to assess those levels.

In regards to this point, a good summary comes from the Minnesota Pollution Control Agency (http://www.pca.state.mn.us/index.php/air/air-quality-and-pollutants/air-pollutants/frac-sand-mining.html) : "The potential air pollutants of most concern from frac sand mining are airborne particles, including:

- particles less than 10 microns in size (PM10),
- particles less than 2.5 microns in size (typically called "fine particles" or PM2.5), and

- crystalline silica, which ranges across both size categories."

"The crystalline silica particle size of most concern is smaller than 4 microns; no generally accepted ambient monitoring method exists for this size. There are known health risks associated with airborne crystalline silica. However, the available information on health effects comes almost exclusively from occupational settings, where exposures are more concentrated. There are no federal or state standards for silica in ambient air. There also are health risks associated with other airborne particles, especially PM 2.5. There are state (MN) standards for airborne particles (called Total Suspended Particles or TSP), and state (MN) and federal air quality standards for PM10 and for PM2.5. However, no information is currently available that would help regulators assess if air concentrations of TSP, PM10 or PM2.5 near frac mining facilities are above state or federal standards."

For comparison to PM10 and PM2.5, the width of a human hair is 70 microns.

In Wisconsin, the Department of Natural Resources is only required to set up a monitoring system. They have dropped using standards for TSP in place of PM 10 and PM 2.5 standards. Jeff Johnson of the WDNR, said several companies monitor for PM10, on-site at the plant (not at the mine itself), and measurements are well below standards. Because they aren't seeing an impact with coarse particles, the WDNR is proposing to monitor for fine particles (PM 2.5). Several PM 2.5 monitors do run continuously around the state as part of the Environmental Protection Agency network (and are not specifically measuring pollutants from mines), including one monitor in Eau Claire.

If a monitored site reports a high PM reading, according to Johnson, a WDNR compliance engineer will call the facility to follow-up, but this step is not required. They will look for what else was happening that day (i.e., weather event, tilling). Fine particles carry farther distances, so that "look" will also extend farther (regional versus local). The cause of high reading might not be from the plant.

Johnson said California is moving toward developing methods to measure and monitor PM4 and silica, and that EOG, Mathey & Fairmont have hired the California researcher to repeat this study in Wisconsin. He guessed data would not be available for months, as the Wisconsin study is just beginning.

Much information exists concerning health risks (air quality as well as other safety factors) of sand mining in an occupational setting, but in a community setting (ambient air); air-monitoring data comes from equipment placed on-site, not in the community, and frequently begins after mining begins (so there can be no comparison to air quality before mining); without monitoring and health risk data, it's difficult to create an effective air quality monitoring plan for a mining project.

Two articles we've read have at least described specific technology and methods at a sand and gravel mine for measuring particulate matter, documenting plume height, and understanding the source of downwind exposure - an important point in identifying whether particulates are coming from a specific mine or another source.

Besides reading articles and documents and contacting researchers, physicians, government staff and others involved with frac sand minng, we've tried to learn lessons from the history of other environmental substances (lead, mercury, radon, tobacco, etc). Similar to frac sand mining, people questioned the health impact of these substances early in their histories, but data and protective actions weren't taken until decades later. We are beginning to ask our sources what we

could learn about how to assess and monitor this new environmental substance based on what we learned from the other substances. This is not an easy question, and it will take time and many referrals before we get an answer.

Before describing health effects of particle pollution and air quality standards, it helps to understand why frac sand mining has received so much health-risk scrutiny, particularly in comparison to other types of mining: it's new; many mines could open in a short period of time; frac sand mines move more material than traditional sand and gravel mines (millions of tons of sand annually versus hundreds of tons annually); and because it's new, municipalities don't have adequate zoning ordinances or other regulations in place to protect public health and safety.

Respirable particles can penetrate into the deepest parts of the lung, where gas-exchange occurs and where the most critical toxic effects for crystalline silica (silicosis and cancer) are thought to occur. PM 2.5 can also pass into the blood stream similar to an oxygen molecule.

The EPA (via Clean Air Act) has two types of air quality standards for air pollutants: primary (to protect public health) and secondary (to protect public welfare and the environment).

Within the primary category are three national ambient air quality standards (NAAQS) for particle pollution (m^3=cubic meter):

- Annual PM 2.5 – 15mcg/m3 (arithmetic annual mean concentration)
- 24-hour PM 2.5 – 35 mcg/m3 (98%ile average concentration)
- 24-hour PM 10 – 150 mcg/m3 (maximum concentration)

The annual and 24-hour standards work together to protect public health from harmful health effects from both long-term and short-term fine particle exposures.

As part of a regularly scheduled five-year review process, the EPA is proposing to strengthen NAAQS for particle pollution standards to improve public health and visibility, based on thousands of studies, many completed since 2006. **The 24-hour standards for fine and coarse particles would not change; the annual PM 2.5 standard would drop to 12-13mcg/m^3 from 15mcg/m^3, but the EPA is also seeking comment on 11mcg/ m^3 as an alternative level.** The estimated health benefits - \$2.3-\$5.9 billion for 12mcg/ m^3, and \$88-\$220 million for 13mcg/m^3 (return of \$30-\$86 for every dollar invested in pollution control). Estimated implementation cost - \$69 million for 12mcg/ m^3, \$2.9 million for 13mcg/m^3. The proposal would not increase size of national PM 2.5 monitoring network, but would relocate 52 of 900 monitors to meet near-roadway requirement. Final standards are due by December 14, 2012. If approved, states would have until 2020 to meet new standards. American Public Health Association endorses the proposal stating, "overwhelming evidence now shows that there are negative health impacts at lower levels of pollution than previously thought."

Q2 If yes, what are appropriate recommendations for ordinances to protect public health and safety?
A2 See our recommendations in the executive summary.

D. What is Unknown? (gaps in data and contacts)

Many things are unknown, one being whether particle pollution increases in the community after mining begins (due to lack of data specific to frac sand mining, pre-and-post-mining data).

E. What still needs to be looked at?

1. Groundwater. After sand is extracted from the earth, it needs to be transported to a plant for processing and grading. Wisconsin companies process and in two ways – a wet process and a dry process. In the wet process, sand is washed through a series of screens to separate or grade the different sized sand particles. ("Planning and zone for frac sand mining, Center for Land Use Education, UW-Stevens Point)

2. Diesel emissions (how it relates to sand mining, brief description of public health risk, including recent IARC designation of diesel exhaust as human carcinogen).

3. List of articles/documents to read:

    - "Adverse effects of crystalline silica exposure," American Thoracic Society, American Journal of Respiratory Critical Care Medicine, vol 155, pp 761-765, 1997.

    - "Ambient particulate air pollution, environmental tobacco smoking, and childhood asthma: interactions and biological mechanisms," American Journal of Respiratory Critical Care Medicine, vol 184, pp 1325-1327, 2011.

4. List of contacts yet to be made (some were in process on Friday):

    - Midwest Environmental Advocates (http://midwestadvocates.org) – Julie Swanson

    - *James Schauer,* professor, Civil & Environmental Engineering, UW-Madison – Tracey Holloway

    - Wisconsin League of Conservation Voters (http://www.conservationvoters.org) – Julie Swanson

    - Crispin Pierce, Associate Professor of Environmental Public Health, UW-Eau Claire

F. Legislation

2 bills drafted by State Senator Kathleen Vinehout

1. Increase public notice required when local governments act on sand mine applications
2. Prohibit mines from being placed in areas zoned as residential, and require mines to secure conditional use permits in other zonings.

(Public comments tab, 12/21/11 letter from K Vinehout)

G. Studies

WI DNR silica study report (August 2011)

- Makes no specific recommendations.
- States that crystalline silica (quartz) meets all requirements to be listed as carcinogenic; data not lacking about health implications but "to what extent and at what level for regulatory concerns" (emphasis by Jeff Falk, 11/9/11 email)
- Amorphous silica (non-solid or non-crystalline) does not currently meet definition of known carcinogenic hazardous air pollutant (because it's been delisted by the American Conference of Governmental Industrial Hygienists (p1).
- "WDNR has no crystalline silica monitoring data. Additional financial and staff resources would be needed to conduct crystalline silica monitoring. Monitoring to specifically analyze for crystalline silica is difficult, there are no federal standards and there is no standard reference method for monitoring crystalline silica in ambient air." (p2)
- "...very little conclusive information exists regarding sources, controls or levels of silica present in ambient air. This lack of data means it is not currently possible to determine conclusively whether or to what extent the quantity, duration or types of silica emissions in the state may be a public health concern. It would take significant additional efforts to fill in these data gaps. That said, Wisconsin has regulated PM for 40 years. The controls for PM are the same controls for crystalline silica. This means that for those crystalline silica sources where PM is controlled, crystalline silica emissions are also reduced." (p2)

WI DNR study re: Chippewa Falls plant (2009) BEFORE start-up

- Plant would substantially increase airborne PM concentration but at levels below NAAQS and PSD standards.
- Did not account for most fugitive dust emissions (ie from road or surge pile, likely sources of crystalline silica)

("Potential health risks from the proposed sand processing plant in Chippewa Falls, Feb 2009 (Pierce UWEC tab).

WI DOT traffic safety impact assessment

Of State Highway 88, April to ?, 2012 (moratorium study group tab, D Brevick email 5/2/12)

2-day "snapshot" sampling upwind & downwind of EOG sand plant (Chippewa Falls) BEFORE start-up (Crispin Pierce, UW-Eau Claire research)

1. Conducted July 30-31, 2011, from 11am-7pm; 2 samples per day per site.
2. Upwind south/southwest of plant, downwind north/northeast of plant; had landowner permission.
3. Airborne crystalline silica levels were below detection limit of 12 micrograms/cubic meter.
4. 5-minute DustTrak particulate mass samples found respirable particulates up-and-downwind were about the same both days and below relevant EPA standard (24-hour PM 2.5).
5. 8-hour Dylos particulate count samples showed a four-fold higher level of particulates downwind (on the second day) compared to upwind (the first day).
6. Particle measurement range from the DustTrak (15-27 micrograms/cubic meter) was similar to that from the Dylos instrument (6.5-25 micrograms/cubic meter). Both ranges lower than the relevant EPA standard of 35 micrograms/cubic meter (24-hour PM 2.5).
7. Post-operation sampling planned for November 2011.

Chippewa Falls EOG site monitoring analysis - POST start-up (Jeff Falk, Concerned Citizens of Chippewa Falls, Save the Hills Alliance; May 28, 2012)

- Conducted January 6, 2012 – March 31, 2012; wind conditions and humidity appropriate on 57 days of study period.
- 2 Dylos 1100 air quality monitors (inexpensive) - one site upwind of plant, the other downwind of plant.
- Results focused on particles 0.5-2.5 microns (small particle count), most likely to have adverse health effect and most likely to be wind effected.
- Concluded EOG site was producing off-site (community) particulate pollution at a level hazardous to health:
  - 3.5% days show possible exceedances of the EPA PM 2.5 standard over 24 hours
  - 37% show possible exceedances of EPA PM 2.5 standard on average hourly basis
  - 51% have at least one hour which possibly exceeds the EPA PM 2.5 standard
  - Each exceedance would also, assuming 10% silica content, exceed various state benchmarks for silicosis.

Chippewa County air quality monitoring planning study proposal (Jean Durch, Chippewa County Public Health Officer, August 17, 2012 email)

- Chippewa County Board passed resolution supporting "planning" for air quality monitoring.
- Phase 1 – Target ambient crystalline silica monitoring program in Chippewa County. Aims to contribute scientifically sound data to increase understanding of current levels of exposure, if any, and help assure that industry and citizens can continue to safely coexist now and later.
- Phase 2 – Bring forward a resolution that recommends funding from county dollars for the implementation (plus industry dollars).

H. Articles

Toxicity testing (and extrapolating to human risks) and regulation (Environmental Health Perspectives, Oct 1993)

- What is the most accurate, efficient and cost-effective way to assess human risk?
- Science leads – is a substance toxic, what are the mechanisms of toxicity, how much exposure makes it toxic, what are the best methods for estimating risk?
- Using (whole) animal results to predict human health risks controversial but is widely used and fills a gap for industry to comply with regulations.
- Pros – many similarities between species (cell structure, energy metabolism, genetic information transmission); in many studies involving human safety evaluation interpretations for drugs, animal findings predicted human effects.
- Cons – studies support difference in neurotoxicity testing between rodents & primates, interspecies metabolic differences.
- Linear extrapolation used to estimate human risk at exposures to the chemical that are often thousands of times lower than the maximum tolerated dose (MTD, or highest does that won't shorten animals' lives but should cause them to gain 10% less weight than control animals) and give hypothetical, maximum risk to humans at various exposure levels as a basis for regulatory policy.
- Linear extrapolation criticism – high dosing may increase number of tumors, effects at low doses likely to be much less than linear model would predict.
- Linear extrapolation defense – complex and misunderstood, many other factors besides body weight define MTD, use as a guide & not an absolute, acknowledge accuracy concerns during preliminary risk assessments & include other data on chemical.

- 2 methods used to predict human risk since 1950s – safety factor approach (100-fold dose lower than animal toxicity threshold), and linear model (estimated from dose-response relationship in animals; becoming more common).
- Pros & cons to both approaches. "... since there is no direct way to measure the exact threshold for human risks (especially at the low doses often experienced by humans), agencies like EPA, FDA & OSHA have taken the cautious approach (using the more conservative linear models) to estimating levels of a substance that might be toxic to humans, until someone can prove differently."
- Other methods (molecular toxicology, computer modeling) were just emerging in 1993 and had potential for assessing human risk more accurately, as they deal better with multistage, multicausal and multimechanistic nature of carcinogenesis.
- Which approach (model) used can change the recommendation (ie, government-regulated safety exposure to dioxin levels varies greatly among countries; same data used, but difference caused by models selected to predict risk).
- Most important consideration in animal-to-human leap: does the approach help humans?

Carcinogenicity of diesel-engine & gasoline-engine exhausts and some nitroarenes (Lancet Oncology online, June 18, 2012; IARC (International Agency for Research on Cancer)/WHO press release, June 12, 2012.

- 24 experts from 2 countries met for one week in June 2012 at IARC in Lyon, France, to assess carcinogenicity of diesel & gasoline engine exhausts.
- Classified diesel engine exhaust as carcinogenic to humans (group 1, most serious designation), meaning there is sufficient evidence that exposure is associated with an increased risk for lung cancer.
- Diesel exhaust had been classified as probably carcinogenic to humans (group 2a, second most serious designation), in 1988. IARC advisory group had highly recommended re-evaluating status since 1998.
- "The main studies that led to this conclusion were in highly exposed workers. However, we have learned from other carcinogens, such as radon, that initial studies showing a risk in heavily exposed occupational groups were followed by positive findings for the general population. Therefore actions to reduce exposures should encompass workers and the general population." Dr. Kurt, Straif, head of the IARC Monographs Program.

I. Grants

Health Impact Project, Robert Wood Johnson Foundation & PEW Charitable Trusts. Deadline: Sept 28, 2012. Award budget: up to $75,000. Project period: 18 months.
www.healthimpactproject.org/project/opportunities

- La Crosse County considering applying for this grant to involve several counties in HIA; still in early planning stages (WRO sand mining teleconference, 7/30/12)

Research to Action: Assessing and Addressing Community Exposures to Environmental Contaminants, US DHHS, National Institutes of Health. Application period: May 5, 2012 to Sept 8, 2012. Award budget: up to $500,000/year. Project period: up to 5 years.
http://grants.nih.gov/grants/guide/pa-files/PA-12-153.html

J. Air Quality Overview & Summary

Particulate matter

PM10 – coarse particles with an aerodynamic diameter of ≤10 microns. Usually result from some type of mechanical actions, such as crushing or grinding, or from wind-blown dust. Typically not transported great distances by wind.

PM 2.5 – Fine particles with an aerodynamic diameter of ≤2.5 microns. Commonly created by reactions of other pollutants; common components are sulfur dioxide (SO2), nitrogen oxide (NOx), volatile organic compounds (VOC), and ammonia. Wind can carry fine particles hundreds of miles from their sources. Levels typically peak in winter but can be high in summer.

- In Wisconsin, DNR monitors coarse & fine particles.
- Respirable particle sizes are those –
  - ≤4 micrometers, used by occupational health professionals to evaluate respiratory impacts of crystalline silica in the workplace (WI DNR silica study Aug 2011; UWEC particulate & silica health risk research)
  - ≤10 micrometers (OSHA-NIOSH Hazard Alert, "Worker Exposure to Silica during Hydraulic Fracturing," June 2012)
- Respirable-sized particles can penetrate into the deepest parts of the lung, where gas-exchange occurs and where the most critical toxic effects for crystalline silica (silicosis and cancer) are thought to occur. (WI DNR silica study Aug 2011)
- EPA (via Clean Air Act) has 2 types of air quality standards for air pollutants: primary (protect public health) and secondary (protect public welfare & the environment).
- EPA has 3 primary national ambient air quality standards (NAAQS) for particle pollution (m^3=cubic meter):
  - Annual PM 2.5 – 15mcg/m^3 (arithmetic annual mean concentration)
  - 24-hour PM 2.5 – 35 mcg/m^3 (98%ile average concentration)
  - 24-hour PM 10 – 150 mcg/m^3 (maximum concentration)
- Annual and 24-hour standards work together to protect public health from harmful health effects from both long-term and short-term fine particle exposures. (NAAQS summary of proposed improvements to air quality standards for particle pollution and updates to the air quality index, EPA)
- EPA now proposing to strengthen NAAQS for particle pollution standards to improve public health and visibility. 24-hour standards for fine and coarse particles would not change; annual PM 2.5 standard would drop to 12-13mcg/m^3 from 15mcg/m^3; EPA is also seeking comment on 11mcg/ m^3 as an alternative level. Proposal would update color-coded Air Quality Index (AQI) for particle pollution. Estimated health benefits - \$2.3-\$5.9 billion for 12mcg/ m^3, and \$88-\$220 million for 13mcg/m^3 (return of \$30-\$86 for every dollar invested in pollution control). Estimated implementation cost - \$69 million for 12mcg/ m^3, \$2.9 million for 13mcg/m^3. Would not increase size of national PM 2.5 monitoring network, but would relocate 52 of 900 monitors to meet near-roadway requirement. Comment period and 2 public hearings; final standards by Dec 14, 2012. If approved, states would have until 2020 to meet new standards. Reviewed thousands of studies to make proposals, including hundreds published since 2006. American Public Health Association endorses proposal; "overwhelming evidence now shows that there are negative health impacts at lower levels of pollution than previously thought." Proposed revision part of regularly scheduled 5-year review, as required by Clean Air Act. EPA was sued by American Lung Assn & National Parks Conservation Assn in Feb 2012 for not completing the review by Oct 2011 deadline; in June 2012, federal judge issued preliminary injunction ordering EPA to issue proposal by June 14, 2012. Current revisions also respond to court remand of 2006 revisions (ie, EPA had failed to adequately explain how primary annual standard was sufficient to protect the public health with an adequate margin of safety). (NAAQS overview of proposal to revise the air quality standards for particle pollution,

EPA; "American Public Health Association applauds EPA for proposing stronger protections against soot," APHA news release, 6/15/12)

- Counties that don't meet these standards receive a nonattainment designation that triggers increased pollution control requirements for businesses in the area and other efforts to reduce particle pollution levels.
- Wisconsin has yet to develop rules for stationary sources that directly address particle pollution.

(Particulate matter tab, "Particle pollution," WI DNR, http://dnr.wi.gov/topic/AirQuality/Particles.html, accessed 6/19/12)

Standards

1. National Ambient Air Quality Standards (NAAQS)
2. Prevention of Significant Deterioration (PSD) standards
   ("Potential health risks from the proposed sand processing plant in Chippewa Falls, Feb 2009 (Pierce UWEC tab)
3. US National Toxicology Program (NTP) & WHO International Agency for Research on Cancer (IARC) form Wisconsin's Air Toxics rule as the definitive sources of info for evaluating air pollutants for cancer risk. Both have identified crystalline silica as a known human carcinogen. (WI DNR silica sand study Aug 2011)
   3a. Quartz one of two crystalline silica polymorphs, classified as "carcinogen to humans" by International Agency for Research on Cancer (IARC) in 1997. ("Airborne respirable silica near a sand & gravel facility in central California," Shiraki, EST, 2002)
4. Occupational standards at drill sites – OSHA PEL (permissible exposure limit) and NIOSH REL (recommended exposure limt). While PEL is the legally enforceable regulatory limit, both agencies recommend keeping worker exposure below the REL, since many PELs are outdated/inaccurate. (OSHA/NIOSH Hazard Alert)

Sources of PM emissions in sand mining

1. Gas-fired dryers
2. Surge piles
3. Transferring sand (between trucks, conveyors & rail road cars; within facility)
4. Impact crusher
5. Scrubber
6. 140 mesh filtering
7. Sand drying
8. Final screening

("Potential health risks from the proposed sand processing plant in Chippewa Falls, Feb 2009 (Pierce UWEC tab)

Best practices

- Lower risk to mine workers by decreasing exposure to airborne silica dust and using personal protective equipment.
- OSHA regulates dust at mining sites
- Spray dust suppressants on sand as it is moved around on-site and transferred to trucks and rail cars on & off-site
- Cover on-site conveyor tracks and belts
- Cover truck and rail car loads of sand

(Other county info tab, "health questions about sand mining," author?)

WDNR phone calls

Jeff Johnson, 8/20/12

- DNR only required to set up a monitoring system. Typical f/u action for a high PM reading (but not required) is for compliance engineer to call the facility, usually something logical and correctable. Looking for what else was happening that day (weather, farmer tilling). With PM 2.5, spread more regional, need to look at what was happening in Twin Cities. The cause of high reading might not be from the plant.
- No TSP (aka TPM) standard anymore, d/c by EPA but WI retained in administrative code until last year. Dropped it, as they're using a more health-based standard (PM10 & PM2.5 EPA).
- Have several companies monitoring for PM10, on-site at the plant but not at the min. Not seeing any impact, so WDNR proposing to monitor sand plans at PM2.5.
- PM2.5 continuous monitor in Eau Claire and several around WI.
- PM4 of concern, no approved method to measure (unlike PM10 & PM2.5). Might use a modified method.
- California is moving toward PM4 and silica monitoring. EOG, Mathey & Fairmont have hired the researcher to repeat this study in WI. Just starting now, data will be available in a few months, Jeff said he'd share data (will need a reminder email).
- His recommendation for a good monitoring plan: at least 1 monitor downwind; another monitor upwind would be helpful.
- Why the concern about frac sand versus traditional sand & gravel mining operations? Volume – moving millions of tons of sand annually versus hundreds of tons.
- Sent link to WDNR air management program permit search site, to help quantify # of mines operating. Won't pick up the small operators who don't have permits.

Tom Woletz, senior manager, water division

8/20/12

- Just reviewed a summary of call between Lori Miller & Jeff Johnson, confirmed info.
- Stationery monitors aren't always effective, very weather dependent. Adding a weather tower to monitoring plan would be helpful.
- Familiar with LIDAR; WDNR used a mobile LIDAR unit from EPA for several years, measures lots of things, including fog.
- Silica ubiquitous, will always be in the background.
- If he were living next to a mine, he'd be more concerned about a good fugitive dust control plan and vegetative control; something similar to NIOSH "best practices for dust control in metal/nonmetal mining" 2010 document. Emailed copy of WDNR template fugitive dust control plan.
- Also sent link to article in Appleton-Post Crescent quantifying scale of frac sand operations (more than 50 million tons mined annually in Wisconsin once industry up & running). Agreed that permitting website won't capture all mines (not the couple of guys with a dump truck working for a few years; they're under the radar).

K. Water Quality Overview & Summary

WDNR phone calls

Kevin Masarik, Hydrologist, Central WI Groundwater Center, UW Stevens Point

- Groundwater is a low concern compared to other mining
- Sand as a material is inert and has no hazardous bi-products. Mining creates a large hole.
- De-watering process (where water is pumped out of a hole created by mining) may cause water table draw-down
- Mining may reduce the amount of filtration for the water as there is less soil/layers to be filtered out as it seeps down to the water table
- Bigger question is how would a chemical spill be addressed? Suggests not spreading manure/fertilizer in the pit and creating a berm to prevent run-off from getting to the pit where there is the possibility of less filtration
- If de-watering is a concern, ask for all wells within ½ mile to be tested both prior to the beginning of operations (baseline) and 1-2 years after the mine has been operating. If concerns are noted between these, plan for additional testing. Tests should include bacteria, nitrates, chloride (indicator of land-use impacts such as from septic systems, road salt, and fertilizers), and metals including arsenic

Tom Woletz, senior manager, water division

8/23/12

- Tom shared that he is aware Chippewa County has a condition requiring a mine to stay at least 5 feet away from the water table level, but that many mines operate at or below the water table level. He said he could not offer a specific recommendation as this would be a local decision. He did say it would be important to protect the mining pit from potential chemical contamination.
- De-watering is when a mine is operating at groundwater level and begins to dig into the water table thereby allowing water to pool on the surface. This water would collect and the mining facility would be conducting "wet-mining" (dredging) operations unless the water is averted such as by pumping.
- There are heavy metals in the soil and mining processes can change the pH of the soil, which can allow the metals to enter the water supply. Thus, water should be tested for bacteria, nitrates, turbidity, conductivity, AND all the heavy metals. Tom indicated ¾ of a mile is "a long way." He said the groundwater typically moves 15-20 feet per year.
- Informed that EOG/Fairmont mines are conducting a respirable crystalline silica monitoring study and there will be data when studies are completed. Chippewa is doing a 5-year groundwater study as well.
- He said people get fired up about high capacity wells, but the amount of water used by agriculture (ie-irrigation) far exceeds the amount used for frac sand mining. Also, 80% of the water used in frac sand mining is returned to the aquifer; this is much larger a percentage than that with agricultural use.

L. Comments

"... because with the prospect for sand mining activity to increase in Buffalo and neighboring counties comes the opportunity to partner with the DNR and the mining operators to begin to collect baseline and future data, even if this is only at the level of PM10. Once mining begins, the baseline for near neighbors is lost, and how much sand mining adds to particulate matter in the air is no longer obtainable. If the county can add requirements for money for road maintenance, it can surely add stipulations about air quality monitoring to be financed by the operators. It would seem that to work with the operators, DNR, and nearby neighbors to formulate a monitoring protocol would be conducive to good relations between all concerned and would be of regional benefit."
Jeff Falk email, 11/9/11 (public comments tab)

"It also seems to be the case that effective monitoring to establish problems is expensive and difficult to do right, which is why there is very little data on situations equivalent to ours and on fugitive dust in general.... My understanding is that they (DNR) have only ONE monitor capable of measuring PM2.5, and it is located in Milwaukee. The operators usually oppose even minimal monitoring, but some agree to a single onsite monitor for PM10. This is inadequate to address health concerns. What is really needed is a good before-operations monitoring system, so that a baseline can be established and then continued monitoring after the operation comes online. For the CFC area, this would most likely mean at least 3 or 4 monitors capable of giving data on PM2.5, PM10 and TPM, plus a weather station capable of giving wind speed and direction and other meterological data."
Jeff Falk email, 3/25/12 (public comments tab)

Video presentation at 7/24/12 BOA to hear CFC plant/rail spur application:

- Particulate pollution is an asthma trigger; asthma leading cause of school absences.
- German studies: higher incidence of asthma with increased nitrogen dioxide emissions
- 8 North American epidemiological studies: increased asthma risk with more diesel exhaust.
- 8-year prospective study: asthma onset & incidence linked to diesel exhaust (nitrogen dioxide) for those living close to roads.
- Can see serious effects at lower concentrations of PP.
- Small particles are easily inhaled, go deep into the lungs; very small particles (PM 2.5) passes into the blood. (Human hair is 70mcg)
- Hundreds of studies show that daily exposure to high particulate matter leads to lower lung function, increased medications, more school absences, more emergency room visits, premature death.
- EPA says diesel exhaust is a likely human carcinogen.
- Air quality index shown at www.epa.gov/airnow.
- Kids take in more air pound-for-pound than adults, immature lung function & immune system.
- Placing proposed plant & rail spur near a school puts kids in harm's way and is foolish and nearsighted; this project would involve 500 trucks passing the schools twice daily – at the same time, American Lung Assn is working on anti-idling for school buses.
- Need to understand public health risk of diesel, let alone silica.
- (During 8/17/12 phone call, recommended these articles: "Adverse effects of crystalline silica exposure," American Thoracic Society, American Journal of Respiratory Critical Care Medicine, vol 155, pp 761-765, 1997; and "Ambient particulate air pollution, environmental tobacco smoking, and childhood asthma: interactions and biological mechanisms," American Journal of Respiratory Critical Care Medicine, vol 184, pp 1325-1327, 2011.)

Todd Mahr, MD; pediatric allergist, Gundersen Lutheran; clinical professor of pediatrics, UW School of Medicine; chair, American Lung Association-Wisconsin Chapter

Commentary: Diesel particulates really do matter (Winona Daily News.com, July 15, 2012)

- Referenced IARC designation of diesel exhaust as a definite lung cancer carcinogen (group 1), announced June 12, 2012.
- Smoking, asbestos, ultraviolet light & alcohol also group 1 carcinogens.
- Diesel exhaust similar to same level of risk as secondhand cigarette smoke.
- In US, diesel emissions 95% lower than past decade due to lower sulfur biodiesel fuels and filters on newer vehicles, per Diesel Technology Forum, industry group.
- Exhaust still has diesel particulate matter (DPM, also known as diesel exhaust particles or DEP), most important contributor to diesel's deleterious health effects; includes diesel soot, aerosols such as ash particle, metallic abrasion particles, sulfates and silicates.
- 39 chemical components in diesel fumes whows 20 of them to be known carcinogens and six endocrine disruptors.
- Nanoparticles recently "appreciated" as components of diesel exhaust; nanotoxicology & study of their full health effect still in their infancy.
- EPA-New England web site: "Diesel exhaust contains significant levels of small particles, known as fine particulate matter. Several thoughs of them could fit on the period at the end of this sentence."
- Children's lungs don't full develop until adulthood. Study tracked 1,700 children ages 10-18 in Southern California, found average lung function was 20% less in those who grew up in more polluted area, similar to growing up in home with smokers.

Frank Bures, Winona dermatologist

"Currently, there is no data to suggest that communities around mines have an increased risk in general if best practices are followed."
(Other county info tab, "health questions about sand mining," author?)

"The potential air pollutants of most concern from frac sand mining are airborne particles, including particles less than 10 microns in size (PM10), particles less than 2.5 microns in size (typically called "fine particles" or PM2.5), and crystalline silica, which ranges across both size categories.

The crystalline silica particle size of most concern is smaller than 4 microns; **no generally accepted ambient monitoring method exists for this size.** There are known health risks associated with airborne crystalline silica. However, the **available information on health effects comes almost exclusively from occupational settings, where exposures are more concentrated.** There are no federal or state standards for silica in ambient air.

There **also are health risks associated with other airborne particles, especially PM2.5.** There are state (MN) standards for airborne particles (called Total Suspended Particles or TSP), and state (MN) and federal air quality standards for PM10 and for PM2.5. However, **no information is currently available that would help regulators assess if air concentrations of TSP, PM10 or PM2.5 near frac mining facilities are above state or federal standards."**
(Frac sand mining, Minnesota Pollution Control Agency, http://www.pca.state.mn.us/index.php/air/air-quality-and-pollutants/air-pollutants/frac-sand-mining.html)

"The DNR is legally required to enforce EPA standards for ambient air quality at <PM10 and <PM2.5, but it will not have any data upon which to enforce these standards unless the townships force mining companies through developer agreements to install multiple

air quality monitors both on and off the site, including detailed mapping of the downwind plume of fine crystalline silica. The DNR will not be involved in installing monitors. It seems they are charged with enforcing the standards but not measuring them.

Air quality monitoring at sand mining sites is left in a strange sort of regulatory purgatory. By law it must be discussed, but there is no clear standard that monitoring of fugitive dust is required to meet, so the point of the exercise quickly becomes very unclear. University of Wisconsin academics familiar with these concerns will be meeting with the chair of the DNR board shortly to express these concerns and to encourage the DNR to exercise its authority to regulate all forms of particle emissions (including fugitive dust) more consistently and with greater attention to and concern for the impact of such defacto deregulation on the public health of Wisconsin citizens."
(Hay River Frac Watch, https://sites.google.com/site/hayriverfrac/our-stuff/decisions)

M. Glossary

Flocculants – In sand mining, used to help with sedimentation in the processing water. Helps particles clump/coagulate and settle to bottom of pond/container. Flocculation and sedimentation are widely employed in the purification of drinking water as well as sewage treatment, stormwater treatment and treatment of other industrial wastewater streams. Chemical manufacturers claim that food-grade flocculants are non-toxic, ie do not harm animals, humans, fish.

Frac sand – A rounded grain of sand. In high demand because of a process for natural gas extraction known as hydraulic fracturing. Sand is mixed with water and chemicals and then blasted deep within the earth's surface into shale rock formations; helps hold fractures in the rock open, allowing more natural gas to be collected. ("Are frac sand restrictions at Winona Port legal?", Winona Post, 7/11/12) Contains up to 99% silica. (OSHA/NIOSH Hazard Alert)

Particulate matter – Also known as dust, fugitive dust, or particle pollution. Solid particles or liquid droplets suspended in the air.

Permissible exposure limit (PEL) – OSHA PEL is the legally enforceable regulatory limit. (OSHA/NIOSH Hazard Alert)

Proppant - Sized particles mixed with fracturing fluid to hold fractures open after a hydraulic fracturing treatment. In addition to naturally occurring sand grains, man-made or specially engineered proppants, such as resin-coated sand or high-strength ceramic materials like sintered bauxite, may also be used. Proppant materials are carefully sorted for size and sphericity to provide an efficient conduit for production of fluid from the reservoir to the wellbore. (Schlumberger, http://www.glossary.oilfield.slb.com/Display.cfm?Term=proppant, access 7/20/12)

Recommended exposure limit (REL) – NIOSH standard; a non-mandatory occupational exposure limit. Because OSHA recognizes that many of its PELs are outdated and inadequate measures of worker safety, both OSHA and NIOSH recommend that employers keep worker exposures below the NIOSH REL. (OSHA/NIOSH Hazard Alert)

Scrubber

Silicosis - a respiratory disease caused by breathing in (inhaling) silica dust. Three types of silicosis ocur:

- Simple chronic silicosis -- results from long-term exposure (10-20 years) to low-to-moderate amounts of silica dust. The silica dust causes swelling in the lungs and chest lymph nodes. Chest xray needed to confirm lung damage. May cause people to have trouble breathing. This is the most common form of silicosis.
- Accelerated silicosis -- occurs after exposure to larger amounts of silica over a shorter time period (5-10 years). Swelling in the lungs and symptoms occur faster than in simple silicosis.
- Acute silicosis -- results from short-term exposure (months to 2 years) to very large amounts of silica. The lungs become very inflamed and can fill with fluid, causing severe shortness of breath and low blood oxygen levels. (Medline Plus) Nearly always leads to disability and death. (OSHA/NIOSH Hazard Alert)

(Medline Plus, http://www.nlm.nih.gov/medlineplus/ency/article/000134.htm, accessed June 24, 2012)

Surge pile

N. Timeline

Date	Event
Aug 2011	WI DNR releases "Report to the Natural Resources Board: Silica Study" AM-407 2011.
Nov 16, 2011	Eau Claire County Board of Supervisors passed moratorium on the expansion & creation of new non-metallic mining operations within Eau Claire County. 4 depts (planning & development, highway, groundwater advisory, health) direct to study and analyze the impact of silica sand mining and make final recommendations to their respective government committees, land conservation commission, and county board of supervisors.
March 2, 2012	4 mines in Buffalo Co have permits but are not operational; R&J Rolling Acres up for second review and final permitting by BOA on March 8.
March 3	Trempealeau County – Dike embankment collapsed, as a result of heavy rains, at Preferred Sands of Minnesota Min. Resulting river of mud flowed more than 2,100 feet onto surrounding privately owned land, damaging a barn and other property.
March 8	Meeting of Buffalo County Board of Adjustments. Visited 2 sites -- R&J Rolling Acres site, Town of Gilmanton, and Hannon site. When meeting recessed, R&J application denied, Hannon site application tabled for 60 days.
March 15	Meeting of Buffalo County Zoning Committee with public comment. Passes motion to recommend (a) 6-month moratorium on expansion and creation of new nonmetallic mining operations and (b) impact study of nonmetallic mining with recommendations to be conducted by three county departments (highway, zoning, health and human services).
March 27	Meeting of Buffalo County Health & Human Services/Veterans Committee; comment from 9 citizens (against) and Public Health Officer re: sand mining.
March 29-Oct 31, 2012	Buffalo County moratorium on expansion and creation of new nonmetallic mining operations (Buffalo County ordinance #12-03-03).
April 10	La Crosse County Board encourages Gov. Walker, their state senator and representatives and WI Counties Assn to support requiring the WI Dept of Health Services to conduct a health impact assessment of frac sand mining hazards and to develop recommendations for actions to protect public health if needed. (La Crosse County resolution, other county info tab).
April 13	First meeting of moratorium study group (highway, zoning, health & human services plus extension)
April?	Community economic impact study committee specific to Buffalo County sand mining forms. Goal: 4 community meetings facilitated by UW-Extension; report findings to public, not make recommendations to Buffalo County board of supervisors.
April 26	Grantsburg, WI – Berm failed at silica sand washing pond owned by Interstate Energy Partners frac sand mine; sediment ran off-site and eventually into St. Croix River. DNR determines mine failed to maintain dikes and berms to control storm water; allowed discharges of storm water without a permit; and failed to notify the DNR of facilitiy expansions, production increases or process modifications that led to new discharges.
May 9	Meeting of Buffalo County Board of Adjustments. Heard 2 proposals: (1) Glacier Sands looped railway loading station and sand drying plant near CFC School (on privately owned land along Kamrowski Road in Town of Milton), and (2) Seven Sands LLC consortium mining projects in towns of Montana and Mondovi. Board unanimously tabled all permit applications after hearing presentations.

June 14	Meeting of Buffalo County Board of Adjustments. Issued permit to Gregory Weber to extract sand from Dover site (County Highway BB); applied before moratorium, will be operation in 2 months, condition attached to monitor private wells located on-site or within a half-mile range. R&J Rolling Acres application to mine & wash sand in Town of Gilmanton tabled again (for second time), so board can review Highway 88 assessment reports.
June 14	The EPA announces a proposal to strengthen the National Ambient Air Quality Standards (NAAQS) by decreasing the annual PM 2.5 standard from 15 mcg/m^3 to 12-13 mcg/m^3 (final rule December 2012).
June 25	WALHDAB (WI Assn of Local Health Depts & Boards) sends letter to secretaries of WI Dept of Health Services and WI DNR requesting 3 specific actions (task force, 4 health risk assessments in western WI, crystalline silica monitoring studies) to help determine the public health consequences of living near a frac sand mine or frac sand processing facility and the potential for exposure to crystalline silica and other human health hazards. Cites data from August 2011 WI DNR silica study.
June 25	Meeting of Buffalo County DHHS/veterans affairs committee. Lori Miller & Jen Rombalski discuss progress in studying effects of sand mining on air quality and groundwater. Committee approves posting of frac sand resources on health dept web page, so committee members and public have access to study documents.
July 5	Meeting of Ag & Extension Education Committee. 2 members discussed visit to Chippewa County Sand plant tour, as part of WI Associated County Extension Committees (WACEC) district 5 annual meeting on 6/8/12. "The Chippewa County Sand plant tour was impressive; Mr. Youngbauer remarked on the size and scale of the operation, that the process was contained inside a building, it was quiet, there was no dust and the top soil was well-bermed."
July 9	Frac sand resource list posed on Buffalo County Health Dept web site.
July 24	Meeting of Buffalo County Board of Adjustment. Starkey/Glacier Sands application for sand mining CUP and railroad loading facility CUP in Town of Milton denied. Public comment lasted 4 hours; 300 people attended, including DNR representatives, lawyers, expert testimony.
July 25	Meeting of Buffalo County DHHS/veterans affairs committee. Given update on public health response to frac sand study.
July 25	WI Dept of Health Services & WI DNR response to 6/25/12 WALHDAB letter. "Although we are not able to agree to your specific requests at this time, we believe we are addressing the key concerns you have raised through current regulatory practices....WDNR believes that existing regulatory tools provide for successful management of the issue." Cites examples of working with industry to control PM emissions at "maximum feasible level" – applicants must submit fugitive dust control plans with permit applications, monitoring plans must include PM, WDNR helping facilities* "that wish to monitor the ambient air near their facilities more thoroughly than is currently required," issued violations, reviewed monitoring data (assisted by WDHS) but haven't seen air problems that are "likely to lead to unsafe exposures for nearby residents." ** WDNR representative attended 7/24/12 BOA meeting; said 2 staff people available to inspect all industries in WI.*
Aug 9	Buffalo County Board of Adjustment tables action on Seven Sands permit in town of Montana.
Aug 28	Meeting of Buffalo County DHHS/veterans affairs committee. Will review public health response final report & recommendations.

O. References

"Airborne respirable silica near a sand and gravel facility in Central California," Shiraki & Holmen, Environmental Science & Technology, vol, 36, no 23, 2002 (particulate matter tab)

"American Public Health Association applauds EPA for proposing stronger protections against soot," APHA news release, 6/15/12 (particulate matter tab)

"Are frac sand restrictions at Winona Port legal?", Winona Post, 7/11/12 (media tab)

Buffalo County Ordinance #12-03-03, March 2012 (front of binder).

EPA (particulate matter tab):
- NAAQS overview of proposal to revise the air quality standards for particle pollution
- NAAQS summary of proposed improvements to air quality standards for particle pollution and updates to the air quality index

"Frac sand in Wisconsin" map & fact sheet, Wisconsin Geological & Natural History Survey, Factsheet 05, 2012. (other misc info tab)

"Frac sand mining," Minnesota Pollution Control Agency, http://www.pca.state.mn.us/index.php/air/air-quality-and-pollutants/air-pollutants/frac-sand-mining.html (particulate matter tab)

Health Impact Project, Robert Wood Johnson Foundation & PEW Charitable Trusts. Deadline: Sept 28, 2012. Award budget: up to $75,000. Project period: 18 months. www.healthimpactproject.org/project/opportunities (other misc info tab)

Kathleen Vinehout letter, 12/21/11 (public comments tab).

La Crosse County Board of Supervisors resolution, April 10, 2012 (other counties tab)

"Lidar characterization of crystalline silica generation and gravel plant," Trzepla-Nabaglo, Shiraki & Holmen; Journal of Hazardous Materials 132, 2006.

OSHA/NIOSH Hazard Alert – Worker exposure to silica during hydraulic fracturing, June 2012. (exposure reports tab)

"Particle pollution," WI DNR, http://dnr.wi.gov/topic/AirQuality/Particles.html, accessed 6/19/12 (particulate matter tab).

"Particulate and silica health risk research," UW-Eau Claire College of Nursing & Health Sciences, https://www.uwec.edu/CONHS/programs/enph/silica/silicaresearch1.htm, accessed 3/21/12 (particulate matter tab).

Petition by citizens for the promulgation of rules to govern respirable crystalline silica emissions, sent to WI DNR, February 18, 2011? (DNR tab)

"Planning and zoning for frac sand mining," Center for Land Use Planning, UW-Stevens Point, April 2012. (zoning tab)

"Potential health risks from the proposed sand processing plant in Chippewa Falls," Crispin Pierce, UW-Eau Claire, Feb 2009 (Pierce UWEC tab)

Research to Action: Assessing and Addressing Community Exposures to Environmental Contaminants, US DHHS, National Institutes of Health. Application period: May 5, 2012 to Sept 8, 2012. Award budget: up to $500,000/year. Project period: up to 5 years. http://grants.nih.gov/grants/guide/pa-files/PA-12-153.html (other misc info tab)

"Toxicity tests in animals: extrapolating to human risks," Environmental Health Perspectives, Oct 1993.

"Weber sand mining permit approved," Buffalo County Journal, 6/21/12 (media tab).

Wisconsin DNR. "Report tyo the Natural Resources Board: Silica Study." August 2011, AM-407 2011 (DNR tab)

P. Contacts Made

(Not all-inclusive)

- *Jean Durch,* Public Health Officer, Chippewa County (email)
- *Allen Frechette,* Environmental Health & Building Inspection Manager, Scott County (MN) (email)
- *Tom Hiebert,* superintendent, Cochrane-Fountain City School District (email)
- *Tracey Holloway*, associate professor, Environmental Studies, Atmospheric & Oceanic Sciences and Civil & Environmental Engineering; director, SAGE (Center for Sustainability & the Global Environmental), Nelson Institute; UW-Madison (phone)
- *Todd Mahr,* MD; pediatric allergiest, Gundersen Lutheran; clinical professor of pediatrics, UW School of Medicine; chair, American Lung Association-Wisconsin Chapter (phone)
- *Crispin Pierce,* associate professor, Environmental Nursing & Public Health, UW-Eau Claire (website/email)
- *Julie Swanson,* co-director, Wisconsin Clearinghouse, WI Division of Health Services (email)
- *Del Twidt,* County Board Chair, Buffalo County (email)
- Tom Wolletz, WI DNR

SCOTT COUNTY
STATE OF MINNESOTA

INTERIM USE PERMIT
GREAT PLAINS SAND, LLC MINING AND PROCESSING FACILITY

LOUISVILLE & SAND CREEK TOWNSHIPS

May 1, 2012

CONDITIONS FOR MINING AND PROCESSING FACILITY

Project Name: Great Plains Sand, LLC Mining and Processing Facility

Location: The legal description for the land subject to this Interim Use Permit (IUP) is as legally described on attached Exhibit a which is incorporated herein by reference (hereinafter referred to as the "Subject Property").

I. GENERAL CONDITIONS

A. Legal Compliance:

1. Prior to the start of each operation and certain construction activities identified on Exhibit d, Great Plains Sand, LLC hereinafter "Operator" shall obtain any required Federal, State, County, Township and other local permits for each operation and/or construction activity, including, but not limited to, from the Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, and Scott County and any other applicable government agency, as applicable to each operation and/or construction activity. Operator shall submit evidence of all required permits to Scott County. If the County reasonably determines that work on the Subject Property does not comply with specific permit requirements, the County shall provide written notice to the Operator specifying any asserted non-compliance and the Operator shall have twenty-one (21) days from the date of such notice (unless a longer term is permitted by the County or the Great Plains Sand Mining Review Committee (hereinafter referred to as the "Committee")) to cure any asserted non-compliance. In the event the County reasonably determines that Operator has not remedied the specified non-compliance upon expiration of such cure period, then the County may, at its option, refuse to allow continued mining activities pursuant to this IUP until the Operator so complies. Upon the County's

demand, the Operator shall cease all work until there is compliance as reasonably determined by the County. All costs associated with any permit review and submission of monitoring reports to the County and the Committee shall be the sole responsibility of the Operator.

2. Operator shall comply with all applicable federal, state, county and township ordinances, rules, regulations and permits including, but not limited to, the standards of the Minnesota Pollution Control Agency "MPCA" and other regulations and standards applicable to the mining operation.

3. The Interim Use Permit for Great Plains Sand, LLC mining and processing operations shall comply with the plans and mining narrative attached to this permit collectively referred to as the "Approved Plans" which are all incorporated herein by reference. The Operator shall have the right to request modifications, as appropriate, to the Approved Plans and mining narrative so long as such modifications continue to substantially comply with the approved plans and narrative. The County staff shall have the authority to determine whether changes requested by the Operator substantially comply with the approved plans and mining narrative. The County shall give notice to the Committee of any modifications granted to the Approved Plans. If the Approved Plans vary for the written terms of this IUP, the terms that are the most conservative shall control. The Approved Plans are as follows:

Exhibit Index

a. Subject Property Legal Description

b. Interim Use Permit Application dated March 12, 2012

c. Interim Use Permit Application Figures 1-11

d. Certain specified construction activities

e. Resource Management Plan dated April 19, 2012 Sheets 1 & 6 dated March 21, 2012, Sheets 3-5 dated April 18, 2012 and Sheet 2 dated April 23, 2012 prepared by Sunde Engineering (hereinafter referred to as the "RMP")

f. Groundwater and Surface Water Monitoring and Mitigation Plan dated April 24, 2012 prepared by Sunde Engineering, PLLC

g. Fugitive Dust Control Plan dated February 2012 prepared by Wenck Associates, Inc.

h. Blast Monitoring Plan dated April 24, 2012 prepared by Sunde Engineering, PLLC

i. PM10 Ambient Air Monitoring Plan dated February 2012, Revised April 2012 prepared by Wenck Associates, Inc.

j. Photometric Plan dated March 8, 2012 prepared by Parsons

k. Subject Property Maps A-D prepared by Sunde Engineering, PLLC

l. Expected Traffic Description prepared by Great Plains Sand, LLC

m. Parameters for Annual Report

n. Braun Intertec Geotechnical Evaluation dated February 15, 2012, addendum dated February 29, 2012 and letter dated December 15, 2011

o. David Braslau Noise Assessment dated August 23, 2011

p. Noise Testing and Mitigation Plan to be develop by the Operator and approved by the Mining Review Committee prior to operation of the processing facility.

q. Developer's Agreement dated May 1, 2012

r. Narrative from the Proposed Mining Operational Overview dated February 24, 2012 prepared by Great Plains Sand, LLC

s. Narrative from the Supplement to Proposed Mining Operational Overview dated February 29, 2012 prepared by Great Plains Sand, LLC

t. Additional Structures Receiving Pre-Blast Surveys

u. Reclamation Plan dated March 12, 2012 prepared by Sunde Engineering, PLLC.

v. MNDOT Recommendation

4. Operator shall comply with all obligations contained in the Developer's Agreement dated May 1, 2012 attached hereto as Exhibit Q including, but not limited to, the establishment of the Committee, payment of County and Townships' costs and expenses, the establishment of an escrow fund and security for the project.

B. Permit Review:

1. This IUP shall be reviewed as provided by the Scott County Zoning Ordinance and may be amended at any time in the event that the Scott County Board of Commissioners, through the proper public hearing process as provided for in the Scott County Zoning Ordinance and this IUP, reasonably determines that the actual operations of the mine and/or information gained through studies such as the EIS currently being completed for the Merriam Junction Sands project present a material adverse impact to health and/or human safety that relates specifically to the operations on the Subject Property and is not able to be addressed or mitigated through the Approved Plans identified above or the provisions of this IUP.

2. Operator shall prepare an annual Great Plains Sand Mining Report for the mine for submission to the Committee, the County and the Townships. The Committee upon receipt of the Report, may forward their recommendations, if any, for the review of the Scott County Planning Commission, the Townships and the Scott County Board of Commissioners. See Exhibit m for topics to be covered in the Annual Report.

3. Any proposed modifications to monitoring plans required in this IUP shall be included in the annual report.

C. Great Plains Sand Mining Review Committee:

Operator shall participate as a member of the Committee to review issues and present recommendations to the Scott County Board of Commissioners on issues that may arise as a result of operations on the Subject Property. Section 4 of Exhibit q, the Developer's Agreement, lists the general make-up and powers of the Committee.

D. Incorporation of Environmental Assessment Worksheet:

The Environmental Assessment Worksheet, ("EAW") and comments received were reviewed by the Scott County Board on March 13, 2012. The Board considered the comments and Staff response to comments, the Findings of Fact and Conclusions and determined that the EAW was adequate and an Environmental Impact Statement was not required. Staff Response to Comments and Findings of Fact and Conclusions as presented to the Board on March 13, 2012 are hereby incorporated by reference to be used as a guidance document, including all mitigation measures identified therein.

E. Costs

All costs associated with any permit review and submission of monitoring reports to the County, the Townships and the Committee shall be the sole responsibility of the Operator. All costs associated with remediation activities and development and operation of the site in compliance with the Approved Plans shall also be the sole responsibility of the Operator.

F. Required Notifications

All notifications, reports and other correspondence required herein shall be provided by the Operator to the County, the Townships and the Committee.

G. General Conditions:

1. Operator shall identify a person within the company for the residents, the Louisville and Sand Creek Town Boards or Scott County to contact regarding concerns regarding the IUP.

2. This Interim Use Permit is issued specifically to Great Plains Sand, LLC or its assigns.

3. Mining, for the purposes of this IUP, will be limited to dirt moving, berm construction, pond construction, overburden removal, drilling, stripping, digging, rock breaking, screening, blasting, processing, loading and the on-site movement of materials. Any activity not enumerated shall require prior written approval of the Committee.

4. All signage shall conform to the Scott County Sign Ordinance.

5. The property shall be maintained in a neat and orderly manner.

6. All mobile equipment, vehicles and miscellaneous storage shall be located on site and screened from view. Only equipment used in the mining, processing and loading operations shall be allowed to be stored on site.

7. The stockpiled topsoil must be re-spread on the site and shall not be sold or removed.

8. The Operator shall provide to the Scott County Auditor's Office appropriate payment due for gravel tax in accordance with State and County regulations. Operator shall provide the Townships with monthly reports of sand tonnage being shipped from the Subject Property.

9. If future actions by the County Board require all gravel mining operations to pay an annual license fee the owner/operator shall pay such fee.

10. Prior to constructing/relocating the office building presently on the Subject Property a septic system must be identified by a licensed septic designer and protected during mine operations.

11. A hazardous waste license shall be obtained if required by Scott County. Best Management Practices shall be implemented limiting onsite maintenance of equipment.

12. Truck traffic shall be limited to the traffic described in the Expected Traffic Description included as Exhibit l.

13. Operator shall secure an access permit from the Minnesota Department of Transportation (MnDOT) and comply with all permit and access requirements imposed by MnDOT. Any improvements required by MnDOT shall be constructed at the sole expense of the Operator unless otherwise paid for by MnDOT or another party. If the improvements required by MnDOT result in the need to have the primary access to the site via Bluff Drive, then the applicant shall apply for and secure an amendment to this IUP prior to transporting product via any method other than rail. The MnDOT permit requirements when received shall be attached hereto as Exhibit v. Nothing in this paragraph shall restrict the Operator's ability to use rail at the subject property.

14. Buildings not used for the mining operations shall be removed.

15. The area shown on Exhibit u (Reclamation Plan) identifying the location of the future septic site for the Subject Property shall not be disturbed and shall be protected during all phases of mining activities.

16. Perimeter fencing shall be maintained at all times along the border of the Subject Property with Bluff Drive and the Bennett homestead and shall be installed and maintained in phases as mining progresses along the border of the Subject Property with TH 169. Upon approval by

the County, Operator shall also install and maintain fencing along the northern boundary of the County's property immediately north of the Subject Property.

II. MINE OPERATIONS

A. Setbacks:

1. Mining Setbacks: Mining activity, including removal of overburden, shall be setback a minimum distance as described below, except for where the adjoining property owner has agreed in writing to a lesser distance, or where Operator is the adjoining property owner.

   a. Material processing shall not be conducted closer than 100 feet from a property line except for items specifically shown on Exhibit c Figure 4 "Processing Area Site Plan" of the Interim Use Permit Application dated March 12, 2012, nor closer than 500 feet to any residential structure.

   b. Mining operations shall not be conducted closer than 200 feet to any residence or residential zoning district boundary existing on the approval date of the mining interim use permit.

   c. Mining operations shall not be conducted closer than 30 feet to any property line, or within 30 feet of the right-of-way line of any existing or proposed street or highway. The recommendations of Braun Intertec contained in their report dated December 15, 2011 shall be followed for any existing or proposed right of way. Side slopes of the mining operation shall be in conformance with the Approved Plans.

B. Hours of Operation

1. The processing of materials shall be permitted on Monday through Saturday 24 hours per day. Processing of materials shall not take place on Sundays or holidays without Committee approval. After processing operations have commenced for at least 6 months (but in no event prior to June 1, 2013), Operator may request that the Committee consider granting its approval to process materials without the Sunday restriction. In determining whether or not to grant Operator's request, the Committee will review Operator's compliance with Minnesota State noise standards as well as the

nuisance level of impulse noises. The Committee shall permit the processing of materials 24 hours per day, seven days a week if the Operator's processing activities meet Minnesota State nighttime noise standards and the Operator establishes and implements a plan to address nuisance impulse noise. Further, Operator shall comply with the restrictions on certain operations in accordance with paragraphs II.B.2–4 below.

2. All blasting shall be conducted between the hours of 10:00 A.M. and 6:00 P.M. Monday through Saturday. Operator shall make every effort possible, to limit the blasts to between the hours of 10:00 A.M. and 3:00 P.M. No blasting is permitted on Sundays or holidays without special Committee approval.

3. All quarry operations including overburden removal shall be conducted between the hours of 7:00 A.M. and 7:00 P.M. No quarry operations are permitted on Sundays and holidays without special Committee approval.

4. Berm construction shall be confined to the hours of 7:00 A.M. to 7:00 P.M. No berm construction is permitted on Sundays and holidays without special Committee approval.

5. Mitigation measures necessary to control fugitive dust and other nuisances maybe conducted at any time including Sundays and Holidays.

III. SURFACE WATER QUALITY AND QUANTITY

A. Surface Water Quality:

1. Operator shall comply with all provisions of any required National Pollutant Discharge Elimination System (NPDES) permit for the mine. A copy of the current construction storm water and industrial storm water/NPDES permit(s) shall be provided by Operator to Scott County to be kept on file for review by County officials or the public.

2. A Groundwater and Surface water Monitoring and Mitigation Plan prepared by Sunde Engineering is attached hereto as Exhibit f. The Groundwater and Surface Water Monitoring and Mitigation Plan shall be followed for the duration of the mine unless amended by the Committee. Operator shall provide the County, the Townships and

the Committee with copies of all groundwater and surface water monitoring reports within 30 days of receipt of those reports.

3. Contaminant Management. Operator shall review and reevaluate its Groundwater and Surface Water Monitoring and Mitigation Plan annually.

4. Storm water runoff from the mine to surrounding properties shall not exceed predevelopment runoff rates based on 2, 10, and 100 year storm events. All areas used to convey storm water runoff shall be covered by permanent, dense vegetative cover or other permanent structural controls.

5. Storm water facilities to accommodate drainage from the Scott County owned parcel (PID #70260010) and Scott Land Company Parcel (PID #70290010) as shown in the approved RMP will be constructed at the commencement of the operation. The facilities will provide rate control for the 2, 10, and 100 year events assuming both parcels fully develop to 75% impervious to pre-settlement rates. Volume controls (infiltration) necessary to comply with this requirement will also be provided.

6. The Operator must provide a drainage and utility easement in favor of the public covering the storm water facilities in Section III.A.5. The easement also must include access to the facilities across or through the mine site, as well as allow for future connections to the facilities from the Scott County Owned parcel (PID #70260010).

7. Operator shall implement during all phases of mining, all applicable Best Storm Water Management Practices (BMPs) as may be necessary to protect surface water quality. These BMPs include but are not limited to:

    a. All berms shall be seeded with vegetation as defined in the approved RMP in a timely manner after completion of berm construction.

    b. Reclamation shall proceed in a continuous manner consistent with the phasing of mining operations on the Subject Property.

    c. Stormwater ponds and infiltration areas shall be constructed within the mining area as identified in the RMP.

d. All oils, solvents and other hazardous waste shall be managed and disposed of in accordance with the Scott County Hazardous Waste Management rules.

IV. GROUNDWATER QUALITY AND QUANTITY

A. Ground Water:

1. Operator shall secure a DNR water appropriations permit(s). Operator shall be in compliance at all times with the conditions or rules of an Appropriation of Waters of the State permit.

2. Dewatering is not allowed, other than as stated in the EAW and as permitted by the DNR water appropriations permit(s).

3. Mining in the water table to a depth of fifty (50) feet is allowed but the lowest five (5) feet of the Jordan Sandstone shall not be excavated.

4. A Groundwater and Surface water Monitoring and Mitigation Plan prepared by Sunde Engineering is attached hereto as Exhibit f. The Groundwater and Surface Water Monitoring and Mitigation Plan shall be followed for the duration of the mine unless amended by the Committee. Operator shall provide the County, the Townships and the Committee with copies of all groundwater and surface water monitoring reports.

5. Monitoring wells.

   a. Operator shall comply with Groundwater and Surface Water Monitoring and Mitigation Plan for the mine.

   b. When the advancement of mining necessitates the removal of monitoring wells Operator shall be responsible for sealing all monitoring wells not in use. Further, Operator shall be responsible for sealing all monitoring wells upon the completion of mining and reclamation activities in the area.

   c. Monitoring results shall be submitted annually and presented within the annual report to the Committee unless a current report is requested by the Committee in which case Operator shall provide the requested report within 14 days of obtaining the analytical results.

d. All costs associated with the groundwater monitoring program are to be paid fully by Operator.

e. If requested by the Committee, for a period of two (2) years (or such lesser period terminating upon development of a substantial portion of the Subject Property for an end use), Operator shall keep some monitoring wells active after mining activities have ended to monitor any problems of contaminate entering into the lake to be created according to the Approved Plans.

6. Mitigation of Adverse Effects on Water Wells.

a. The installed and active monitoring wells within the identified Groundwater and Surface Water Monitoring and Mitigation Plan for the mine will generally be used to determine if mine activities are having a specific impact on static water levels or contamination in domestic drinking water wells.

b. Should a domestic water or irrigation well develop problems reasonably believed to be a result of Operator's mining activities, the procedures outlined in the Developer's Agreement attached hereto as Exhibit Q shall be followed.

c. Any wells that become unused and/or unsealed as a result of Operator's mining activities shall either be put back into service or be sealed by a licensed well contractor, in accordance to Minnesota Rules, Chapter 4725.

7. Petroleum or chemical storage tanks.

a. No petroleum based or chemical products shall be stored in the excavation area of the Subject Property. Petroleum fuel tanks on mobile equipment shall be excluded from this restriction.

b. Fueling or vehicle maintenance stations shall be located on an impervious or paved surface.

c. Above ground petroleum tanks shall be equipped with secondary containment structures or double-walled tanks as

approved by the Minnesota Pollution Control Agency (MPCA). An impervious surface shall be provided for parking of any mobile fuel or chemical tanks. All spills must be reported as required by state law.

d. Below ground petroleum or chemical storage tanks shall be prohibited. Any existing below ground storage tanks shall be brought up to current leak detection standards as prescribed by the MPCA.

8. All waste oil products shall be properly recycled.

9. All minimum setbacks as prescribed by the MPCA and MDH shall be observed between water wells and petroleum or chemical storage tanks or other potential contaminant sources.

V. OPERATIONAL NOISE

A. Noise

1. A Noise Assessment of the project was prepared by David Braslau dated August 23, 2011 attached hereto as Exhibit o. Sound level mitigation measures identified in this plan shall be implemented to reduce the potential impact from noise on residences and the Minnesota Valley Wildlife Refuge.

2. Prior to operation of the processing facility, a Noise Testing and Mitigation Plan shall be developed for the site. The noise plan shall be reviewed by the Committee and will be incorporated herein by reference as Exhibit p upon approval by the majority of the Committee members.

3. Use of all production equipment will be designed to meet the federal and MPCA noise standards at the nearest receptor. The Operator will be immediately notified in the event County staff or any member of the Committee receives a complaint regarding noise generated by mining operations. If the Committee or County staff reasonably believes the complaint is valid, then the complaint will be addressed using the process set forth in the Noise Testing and Mitigation Plan.

4. Operator shall exercise its best efforts to control noise to minimum practical levels. Backup horns, bells, strobe lights, and other warning devices shall be adjusted to the minimum level required by law. Further, Operator shall use broadband or white noise backup alarms on all of its mobile equipment. This restriction shall not apply for third-party contractor equipment operated on the Subject Property so long as such equipment is utilized only between the hours of 7:00 A.M. and 7:00 P.M.

5. Operator shall construct screening berms as shown on the Approved Plans where such a berm is necessary to screen the mining activities from public view. Construction of the berm shall be completed on a phased basis as set forth in Exhibit c Figure 3 of the Interim Use Permit Application dated March 12, 2012 during overburden removal before each sand mining phase so as to screen mining activities from public view to the extent reasonably possible. The berm shall remain in place until mining ceases and final reclamation begins, at which time the berm shall be removed.

VI. BLASTING

A. Pre-blast Structural surveys

1. Operator shall conduct pre-blast structural surveys of all residences located within one-half mile of the Subject Property for which approval is granted from the property owner, prior to commencing mining operations. Copies of the pre-blast surveys shall be submitted to the Committee and Scott County.

2. Operator shall perform additional pre-blast structural surveys for buildings that are either newly-constructed or are remodels or additions affecting structural components of the building within one-half mile of the Subject Property during the operation of the mine (which survey shall occur immediately prior to issuing the certificate of occupancy for such structures) for which approval is granted from the property owner and for those structures specifically identified on Exhibit t for which approval is granted from the property owner.

3. The Operator shall provide the County prior notice of all proposed surveys, and the Committee shall have the right to accompany the inspector.

B. Blasting Standards

1. A Blast Monitoring Plan prepared by Sunde Engineering is attached hereto as Exhibit h. The Blast Monitoring Plan shall be followed for the duration of the mine unless amended by the Committee. Operator shall provide the County and the Committee with copies of all blast reports and blast monitoring reports.

2. All blasts shall be designed and conducted so as not to cause damage to private or public property. The Operator will be immediately notified in the event County staff or any member of the Committee receives a complaint regarding damage caused by blasting. If the Committee or County staff reasonably believes the complaint is valid, then the complaint will be addressed using the process set forth in the Blast Monitoring Plan.

3. The County or the Committee shall have the authority to engage an independent blasting consultant as mutually agreed to by all members of the Committee to review the Operator's blasting procedures on an annual basis. All costs associated with such consultant shall be paid by Operator.

4. Seismic data gathered for each blasting event shall be reviewed, analyzed for compliance parameters and signed by Operator's licensed blaster. If analysis of the data suggests a violation, then corrective actions shall be taken as required by the Blast Monitoring Plan attached hereto as Exhibit h.

5. Operator will designate the location of two seismic monitoring sites for each blast to monitor blasts. No more than two additional seismic monitoring sites may be designated within one-half mile of the Subject Property by either Scott County and/or the Committee to address specific complaints from the public.

6. Detailed blasting records shall be kept by Operator. These records are to locate where each blast is taking place, delay pattern, and the identification, direction and distance to structures. GPS coordinates shall be used to identify blast locations, which may then be utilized to determine the distance of blasts to any structure. These blast records are to be made available to Scott County, the Townships and the Committee upon request.

C. Additional Blasting Compliance Measures:

1. Operator will use all industry standard measures to control fly rock with the intent that fly rock not leave the Subject Property.

2. If seismic data analysis indicates an exceedance of the limits set forth in the Blast Monitoring Plan at a structure outside the Subject Property, Operator shall notify both Scott County and the Committee within one week of receiving the analysis and provide a summary of a review of their blast design procedures and a plan to eliminate future exceedances. Any vibration exceedance at a structure outside the Subject Property shall also be noted in the annual report.

3. Operator shall obtain all required permits from the Scott County Sheriff's Office.

4. Committee members and neighbors identified by committee members shall be notified at least 24 hours prior to a blasting event. It is recognized that the exact timing of proposed blasts may not be ascertainable prior to the day blasting occurs due to the influences of weather and other conditions on blast timing.

VII. AIR QUALITY

A. Air Emissions Permit:

1. A Total Facility Operating Permit for operations located within the mine permit area shall be secured from the MPCA and Operator shall comply with all terms and conditions of such permit.

2. Monitoring shall be performed in compliance with the procedures outlined in the Ambient Air Monitoring Plan attached hereto as Exhibit i to establish ambient dust conditions around the mine prior to mining operations beginning. This information must be presented to the County and the Committee to summarize findings for current conditions defining monitoring process and conditions during monitoring. After operations begin, monitoring must be completed to establish post operational dust conditions with data and results being delivered to the County and to the Committee. Data and results will be compared to MPCA standards to verify compliance with the Total Facility Operating Permit.

3. The results of all monitoring activities shall be presented in the Annual Report to Scott County, the Townships and the Committee.

B. Dust Control:

1. Erosion and dust control measures shall be applied as necessary to control fugitive dust. Operator shall follow the Fugitive Dust Control Plan prepared by Wenck, attached hereto as Exhibit g. Operator shall provide the County, the Townships and the Committee with copies of all dust monitoring reports required under VII.A above.

2. In any exposed areas outside of the quarry that have not been covered by permanent vegetation Operator shall water these exposed areas within the permitted area during those periods when weather conditions are generating fugitive dust.

3. Haul roads within mine permit area boundaries shall be sprayed with water or other permitted dust suppressants as needed to control fugitive dust.

4. Operator shall provide environmentally friendly dust control by application of GreenGuard or other approved dust suppressant, as necessary for unpaved township roads if these roads are being used by truck traffic originating from and as a result of the mining operations within the project site.

5. A site-specific PM10 Ambient Air Monitoring Plan prepared by Wenck Associates, Inc. dated February 2012 is attached hereto as Exhibit i. This Air Monitoring Plan shall be followed for the duration of the mine unless amended by the Committee.

6. If the State of Minnesota adopts standards for ambient silica dust, Operator shall be required to comply with those standards.

VIII. RECLAMATION

A. Reclamation Plan:

1. Reclamation shall be in substantial conformance with Exhibit u of the Interim Use Permit Application dated March 12, 2012.

2. When mining is completed, a registered engineer shall certify to the County and Townships that the site has been restored in accordance with the Reclamation Plan dated March 12, 2012 attached hereto as Exhibit U and the Braun Intertec Geotechnical Evaluation Reports attached hereto as Exhibit n.

3. Operator shall be ultimately responsible for all means and methods utilized in the implementation of all mining, processing and reclamation plans. Operator shall implement a process substantially similar to Braun Intertec's reclamation recommendations as stated in Braun's evaluation attached as Exhibit n to the IUP.

4. The Reclamation Plan shall include a frontage road in the location identified on Exhibit u of the Interim Use Permit Application dated March 12, 2012. The Operator shall dedicate the right-of–way for the frontage road in a location reasonably acceptable to the Townships and shall be responsible for the cost of constructing the frontage road to the Townships' road specifications at the time the property is developed for its end use. It is understood that the frontage road will not be constructed until the mining operation is complete, at the earliest.

5. Buildings not used for the mining operations shall be removed. At the conclusion of the mining operation the processing plant shall be removed from the site unless an acceptable use can be identified for the building in the sole discretion of the County. Security for reclamation shall remain in place until the processing plant is removed or an alternate use is identified for the building.

6. The stockpiled topsoil must be re-spread on the site and shall not be sold or removed.

B. Reclamation Standards:

1. Reclamation shall be conducted in the general sequence and manner as described in the Reclamation Plan included herein as Exhibit u.

2. Reclamation shall be on-going with back filling of areas and establishment of vegetation proceeding as soon as practical after a mining area has been completed.

3. Reclamation shall follow the RMP vegetation requirements.

4. Any revision in content of the above referenced reclamation plans will require Operator to submit the proposed revisions to the plan to Scott County Planning and Zoning and receive approval from the Scott County Board prior to implementation of the revised plan.

5. Operator shall report all reclamation activities in the Annual Report to be submitted to Scott County, the Townships and the Committee.

6. Operator shall engage a geotechnical engineer to design and periodically observe the reclamation backfilling and monitoring processes (including surcharge monitoring) and provide reports on such activities to the County, the Townships and the Committee when received by Operator from the geotechnical engineer.

7. At the conclusion of the reclamation process the Operator's geotechnical engineer must perform a post reclamation evaluation and certify to the County, the Townships and the Committee that the reclaimed areas are suitable for future end use of the Subject Property. In the case of Township road corridors in reclaimed areas, the geotechnical engineer must provide certification to the Operator and the Townships that settlements shall not exceed the maximum projected limits referenced in Section D of in Braun's evaluation attached as Exhibit n to this IUP, specifically limiting anticipated settlements to less than 1 inch for pavements and buildings for the final condition. The settlement must be evenly distributed such that spot settlements or shear settlements shall not occur.

IX. LIGHTING

All lighting at the mine shall comply with the Photometric Plan attached hereto as Exhibit j. Further, prior to installing any new or temporary outdoor lighting not referenced in Exhibit j, other than emergency lighting, Operator shall submit an outdoor lighting plan to both Scott County, the Townships and the Committee and receive approval prior to implementation of the revised plan, which approval shall not be unreasonably withheld.

X. INSPECTIONS

The premises and operations shall be available for inspections by the authorized County inspectors, as specified by the County Board and members of the Committee and Township Officers, within normal company working hours upon reasonable advance notice to the Operator. Any inspectors must identify themselves to an employee of the Operator before entering onto the property and must be escorted by an employee of the Operator at all times to ensure the safety of the inspectors. Inspectors shall receive hardhats, safety glasses and reflective vests from the Operator upon arrival. Inspectors will be required to provide all other safety equipment they may desire are that may be required in compliance with the applicable State and Federal laws and regulations.

Site-Specific PM_{10} Ambient Air Monitoring Plan

Great Plains Sand Processing Facility

Wenck File #2771-01

Prepared for:

GREAT PLAINS SAND, LLC
15870 Johnson Memorial Drive
Jordan, MN 55352

February 2012 and
Revised April 2012

Prepared by:

WENCK ASSOCIATES, INC.
1802 Wooddale Drive
Suite 100
Woodbury, MN 55125
(651) 294-4580

Wenck

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1.0 Introduction

On August 31, 2011, an Environmental Assessment Worksheet (EAW) was submitted to Scott County, the Responsible Government Unit (RGU), on behalf of Great Plains Sand, LLC (Great Plains). The EAW was mandatory according to Minn. 4410.4300, subp. 12. B – Non-metallic Mining Mineral.

The proposed project (Project) is to acquire the Scott Land Company property and certain rights to the Q Prime property from Progressive Rail, Inc. and operate a sandstone mining facility to produce hydraulic fracturing sand (frac sand) for use in the natural gas and oil industry. The Project is located in Louisville and Sand Creek Townships in Scott County, Minnesota. A general site layout is shown in Figure 1.

Operations at the mine will consist of the excavation and mining of the sandstone, as well as blasting, drilling and hauling of sandstone. The mined material will be brought to a central processing area on the site where it will be crushed, screened, washed to remove silt and other impurities, dried and stored. Most of the finished product will be transported offsite via rail (a rail line currently serves the site). A small portion will be loaded out via trucks.

As identified in the EAW and in support of the Industrial Use Permit, Great Plains Sand, LLC (Great Plains) has agreed to conduct ambient air monitoring. This is to address concern regarding silica dust emissions from the site and to assess fugitive dust mitigation measures. There is no ambient air quality standard set for silica, and control of silica dust is the same control typically used for particulate matter (PM). Great Plains will conduct ambient air monitoring for particulate matter and for particulate matter less than 10 microns (PM_{10}) to determine ambient concentrations and is submitting this site-specific ambient air monitoring plan (SSAAMP). For informational purposes only, Great Plains will conduct ambient monitoring for crystalline silica.

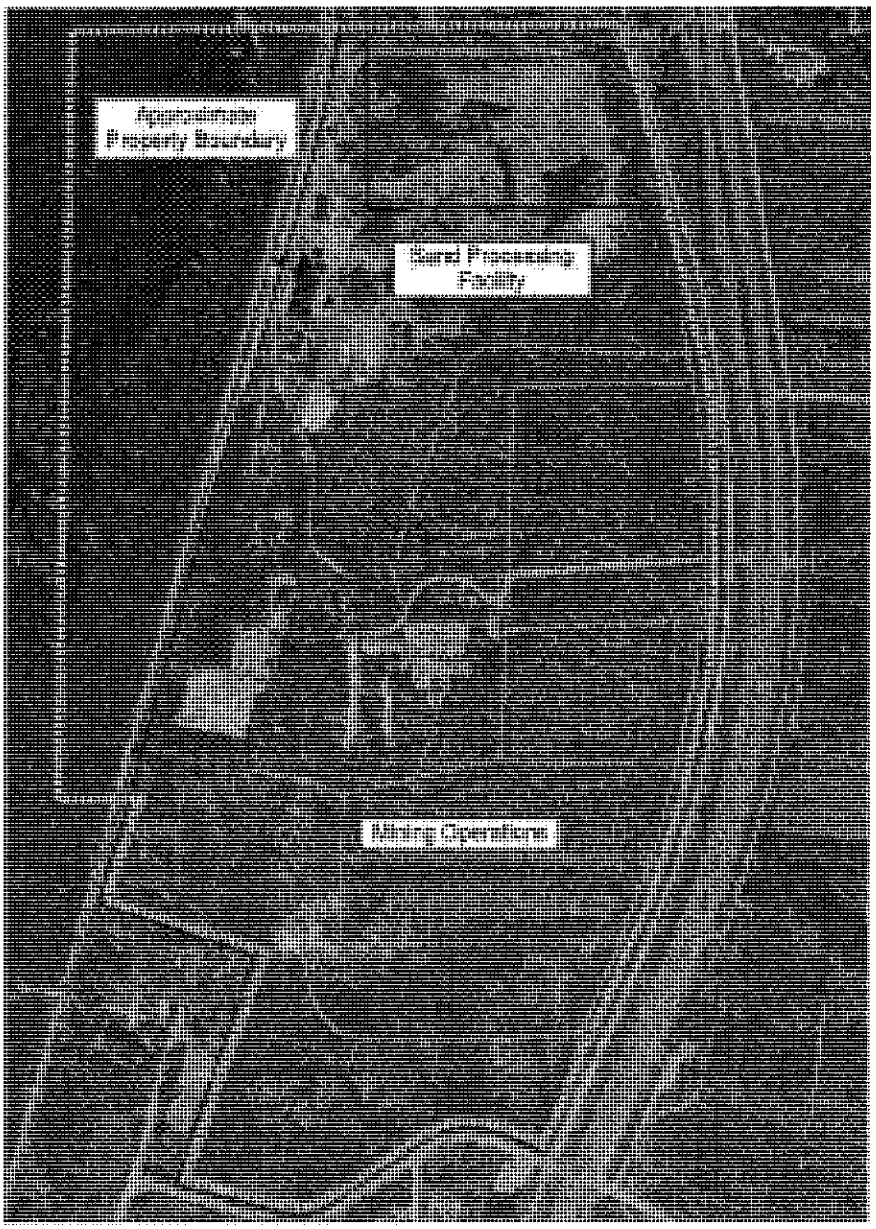


Figure 1: Great Plains Project Site Layout

2.0 Process Description

Great Plains Sand, LLC is proposing to construct a facility to produce hydraulic fracturing sand (frac sand) for use in the oil and gas industry. This site has a history of mining and has adequate reserve to operate for another 15-20 years. Active mining on this site occurred in the 1980's. Since that time there have been other land use operations on site. Some equipment, processing buildings and rail load out facilities still exist and will be utilized in this operation. Processes at the mine will include the mining of sandstone, washing, drying, screening and loadout of the sand. These processes are described in further detail below.

2.1 MINING AND EXCAVATING

Equipment to be utilized for mining and excavating includes a bulldozer, front-end loader, mine trucks, backhoe, drill and rock breaker. Drilling and blasting will be utilized where necessary to loosen the sandstone for excavation. Excavation takes place in two distinct areas. These areas are excavating above and below the water table. The above water table excavation will utilize a loader or backhoe to dig up the sand and load it into trucks for transport to the wet processing facility. The below water table excavation will utilize a backhoe, dredge or dragline to initially remove material from the water and prepare it for loading into trucks for transport to the wet processing facility. Activities with emissions at the mine will consist of mine equipment, fugitive road emissions and fugitive stockpile wind erosion emissions.

2.2 WET PROCESSING FACILITY

The existing on site building will be renovated and utilized in the operation. Processing will take place both adjacent to and within the existing building. As part of the wet processing, there will be emissions from the crusher, unpaved roads, stockpiles, loader and conveyors. Once the sand has been washed, the high moisture content will cause control by wet suppression, and emissions from material handling associated with the washed sand will be negligible.

2.3 DRY PROCESSING FACILITY

The dry processing portion of the facility will operate year round. Processing equipment that is located within or adjacent to the building include a dryer feed hoppers and conveyors. Loadout operations into the rail cars will operate 24 hours per day (8760 hours per year). This entire process from the point at which the sand exits the dryer through loadout will be controlled by a baghouse. The baghouse exhausts to the ambient air by a single stack.

Facility emissions will be caused by the material handling equipment (conveyors, belts, stackers, hoppers, screen, etc.), front-end loaders, the dryer (including emission from combustion) and the unpaved plant roads. Emissions from the unpaved roads will be controlled by watering.

2.4 PROJECT LOCATION

The project is located east of the Louisville Swamp in Jordan, Minnesota.

2.4.1 Topography

The proposed sand processing facility will be located on the eastern side of Louisville Swamp, which is a floodplain forest. The terrain is fairly flat, with a slight rise in terrain east of the proposed facility as shown in Figure 2. According to the Minnesota Valley National Wildlife Refuge, the Louisville Swamp floods three out of every five years creating large surface water bodies west of the proposed facility.

The surface elevation of Great Plains ranges from approximately 700 feet above mean sea level (msl) to 775 feet above msl. The site generally slopes from the west to the east.

Figure 2: Great Plains Terrain Contours

2.4.2 Climate

The climate of this region varies greatly by season. The annual precipitation is 36.65 inches, with 50 percent of the rainfall occurring between June, July, and August. The mean annual average temperature is 46.4 °F. Seasonal average temperatures range from the upper teens in the winter to the low 70s in the summer. Mean annual evaporation is approximately 42.5 inches (pan measurement).

Average winds of 4.2 meters per second (m/s) (9.4 miles per hour (mph)) are predominantly from the northwest or the southeast as show in Figure 3. Discussion on representative meteorological data is found in Section 3.0.

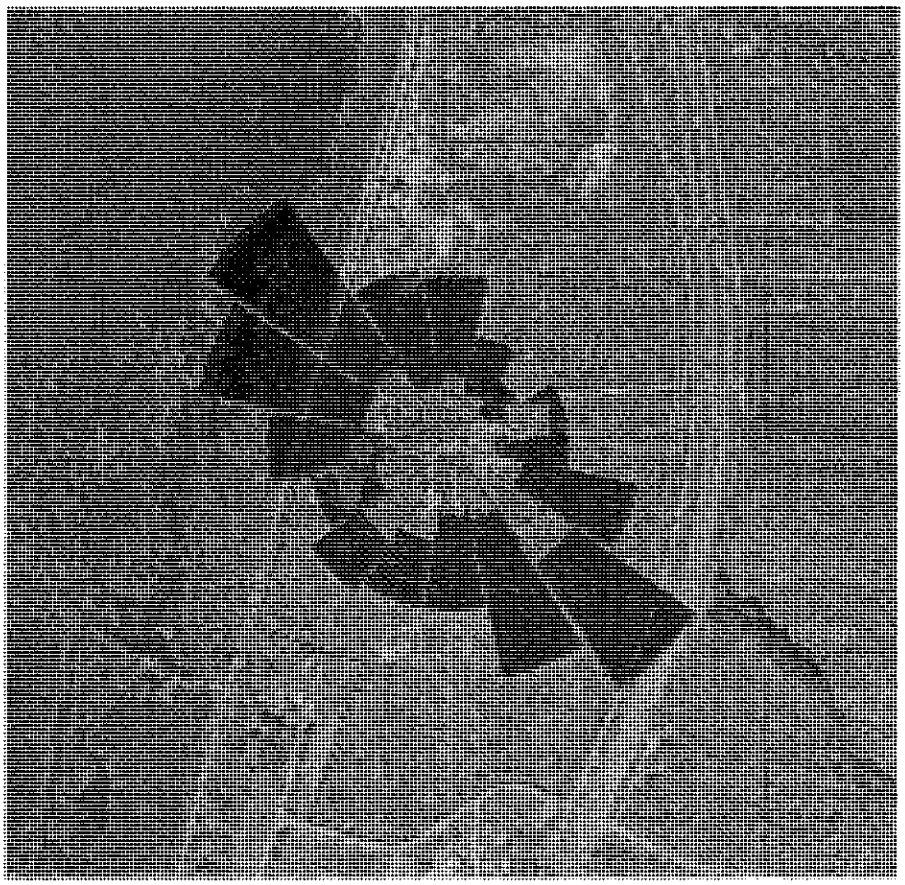


Figure 3: Wind Rose Overlaid on Proposed Great Plains Sand Mine Site

3.0 Monitoring Stations

The overall strategy for assessing impacts from potential PM_{10} emissions at Great Plains is to monitor ambient air between the site and nearby properties. Monitoring stations will be placed at two locations. One PM_{10} monitoring station will be placed on the south-southeast corner of the property near the property line. Placing monitors near the facility property line will give the earliest possible indication of any airborne contaminant migration moving off property that may cause adverse impacts to human health. Another monitoring station will be placed on the eastern side of the property near the middle (office) access road. At this monitoring station, Great Plains will monitor for total particulate, PM_{10} and crystalline silica.

Wind data from two nearby meteorological stations was analyzed in order to determine the proper location for ambient air monitors at the Project site. The two sites, Flying Cloud Airport (FCM) in Eden Prairie, Minnesota and the Minneapolis - St. Paul International Airport (MSP) in St. Paul, Minnesota, are 10 and 22 miles from the project site respectively.

Surface roughness is the most sensitive surface characteristic in determining meteorological characteristics that will affect ambient air concentration. Land cover data was compared at these two meteorological stations with land cover data from areas in the vicinity of the Great Plains site. MSP had more similar land features to Great Plains than FCM. The reason for this is the floodplain (which often causes a smooth body of water east of the proposed project location) is best represented by the smooth surface area that represents MSP. Even though FCM is closer to the site, the surface characteristics of MSP are more representative of Great Plains and therefore used in the meteorological analysis.

The proposed monitoring locations in conjunction with the weather station will enable measurement of particulate concentrations caused by the facility. WRPLOT View version 7.0 from Lakes Environmental was used to create Figure 3 in order to display wind patterns for MSP. MSP surface data is from 2006 through 2010 and was processed by the Minnesota Pollution Control Agency (MPCA) using AERMET version 11059.

The approximate locations of the proposed ambient air monitors are shown in Figure 4.

The proposed monitors are to be placed at the two locations as proposed on Figure 4. The purpose of the east monitoring site is to measure concentrations in the direction of neighboring properties. It will be placed at a distance from Highway 169 to minimize traffic impacts. An on-site meteorological station will also be installed to continuously collect hourly wind speeds and wind direction.

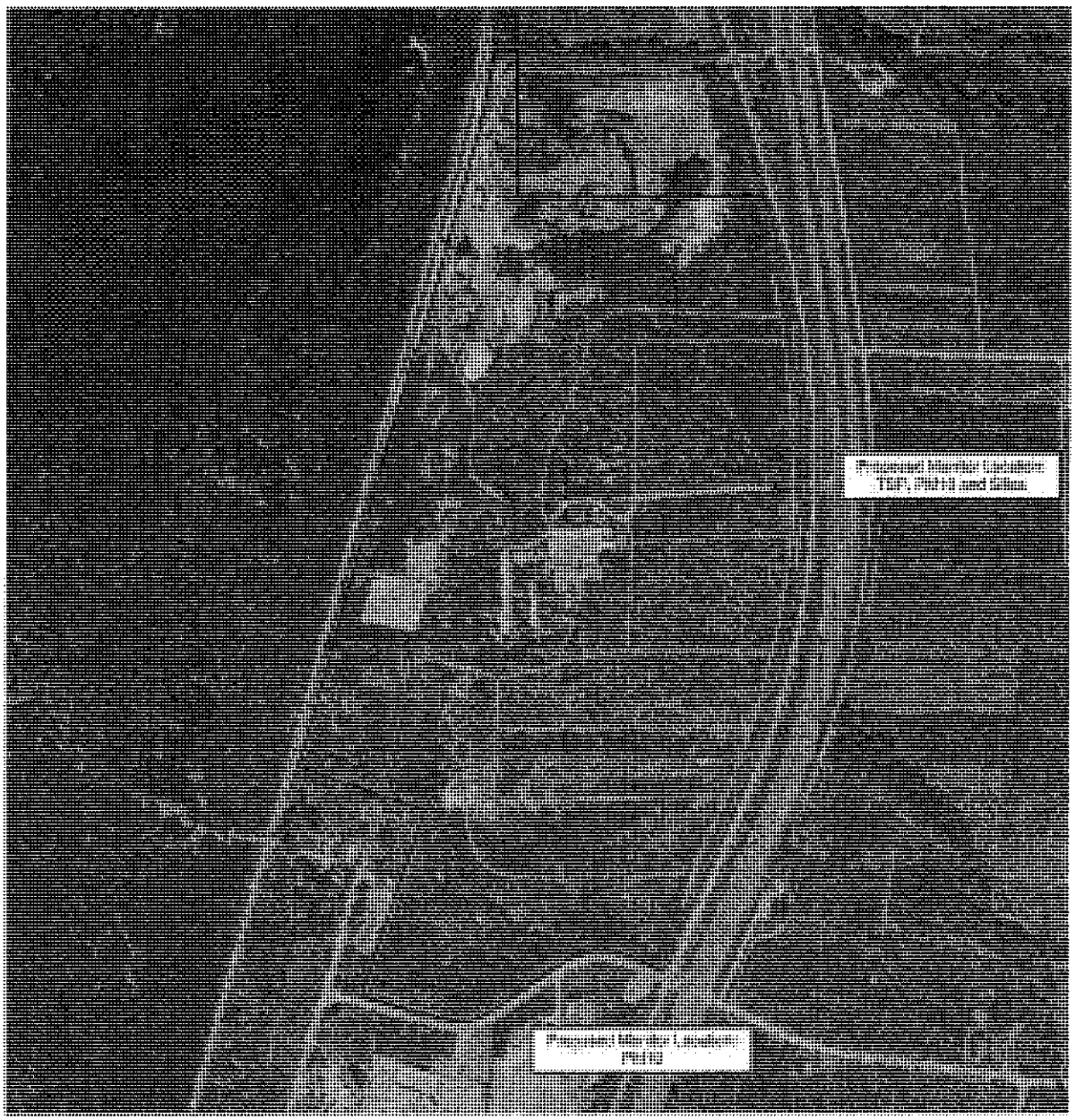


Figure 4: Proposed Monitor Locations

4.0 Sampling and Analytical Methods

4.1 ANALYTICAL METHODS

EPA guidance on sampling methods for particulate matter is outlined in 40 CFR Part 58. Great Plains will follow this guidance in developing ambient air sampling methods and amend this document as necessary when sampling methodology has been determined in more detail. Great Plains will consult with MPCA ambient monitoring staff on equipment specifics prior to sourcing ambient monitoring equipment.

The sampler height will be 2-7 meters above the ground, and at least 20 meters away from the nearest street or trees, which meets the EPA specification for such a monitor. Specifics for the meteorological stations (met station) will be determined when an equipment manufacturer and specific parameters have been defined.

Crystalline silica will be measured utilizing NIOSH Method 7602.

4.2 SAMPLING FREQUENCY

It is expected that PM_{10} concentrations identified from the downwind monitor will be below 80 percent of National Ambient Air Quality Standards (NAAQS). For PM_{10} samplers and the total particulate sampler, a 24-hour sample will be taken from midnight to midnight (local standard time) every sixth day to ensure consistency.

Great Plains will increase the monitoring frequency for total particulate or PM_{10} if a monitor measures a concentration from Great Plains of greater than 0.8 but less than 0.9 times the applicable ambient standard. If one of the PM_{10} monitors measures a concentration from Great Plains of greater than 0.9 times the ambient standard Great Plains will continue monitoring using a continuous monitor. Great Plains can reduce the monitoring frequency back to the base timing (24-hour sample taken from midnight to midnight (local standard time) every sixth day) when three consecutive months of sampling results are less than 0.8 times the applicable standard.

Great Plains will begin total particulate and PM10 monitoring upon the start of mining and will continue to monitor for a minimum time period of three years from the start of operation or for three years after having exceeded an ambient standard at a downwind ambient monitor, whichever is longer.

Great Plains will collect crystalline silica sample once every 12th day. Monitoring will commence upon the commencement of mining and will continue to monitor for silica for a period of 12-months.

4.3 REPORTING REQUIREMENTS

Great Plains will submit quarterly reports to Scott County and to the Minnesota Pollution Control Agency summarizing the ambient monitoring results. The reports will be due within 45 days of the end of the calendar quarter.

Great Plains will notify Scott County staff within 24 hours of receiving sample results exceeding the ambient PM10 standards. The notification can be electronically or verbally and will include the date of the exceedance, the highest concentration and a summary of the measures taken to reduce emissions at the plant.

Great Plains will periodically revisit the SSAAMP with the Great Plains Sand Review Committee to address any potential issues, specific details, and/or schedule updates, etc. as needed while performing ambient air monitoring.

SCOTT COUNTY
LOUISVILLE TOWNSHIP
SAND CREEK TOWNSHIP
DEVELOPMENT AGREEMENT

THIS AGREEMENT, entered into this 1st day of May, 2012, by and between Louisville Township and Sand Creek Township, both townships under the laws of the State of Minnesota, governed by a Board of Supervisors (collectively the "Township"), Scott County, a body corporate and politic existing under the law of the State of Minnesota (the "County"), Scott Land Company LLC and Q Prime Inc. collectively referred to herein as "Landowner" and Great Plains Sand, LLC referred to herein as "Operator";

WITNESSETH:

WHEREAS, the Landowner is the fee owner and the Operator is proposing to mine and process material on the real property described in attached Exhibit a pursuant to an Interim Use Permit (the "IUP") issued by the County, which real property is the subject of this Agreement and shall hereinafter be referred to in its entirety as the "Subject Property"; and

WHEREAS, the Operator has entered into a purchase agreement with Scott Land Company LLC to acquire all portions of the Subject Property owned by Scott Land Company LLC before commencing processing operations on the Subject Property ; and

WHEREAS, upon consummation of the sale of Scott Land Company LLC's property to Operator pursuant to the foregoing recital, Operator shall be considered a "Landowner" hereunder and Scott Land Company LLC shall cease to be considered a "Landowner" hereunder; and

WHEREAS, the County has issued the IUP for the Operator's proposed mining and processing activities contingent upon compliance with certain County and Township requirements including, but not limited to matters set forth herein; and

WHEREAS, the County and Township require that certain Infrastructure Improvements (as hereinafter defined) be installed to serve the Subject Property and be financed by the Operator; and

WHEREAS, Operator will be conducting activities on the Subject Property that will be monitored by a review committee pursuant to terms established both in this Agreement and in the IUP; and

WHEREAS, this Agreement is entered into for the purpose of setting forth and memorializing for the parties and subsequent owners, the understandings and covenants of the parties concerning the mining activities to take place on the Subject Property and the conditions imposed thereon;

NOW, THEREFORE, IT IS HEREBY AND HEREIN MUTUALLY AGREED, in consideration of each party's promises and considerations herein set forth, as follows:

1. **Construction of Infrastructure Improvements.**

The Operator, at its sole expense, shall construct the improvements as legally required by MNDOT ("Infrastructure Improvements") as shown on attached Exhibit v incorporated herein by reference (the "Approved Plans") as outlined in the IUP.

All such improvements shall be constructed according to the Approved Plans, County and Township Ordinances and the standards adopted by the County and Township, along with all items required by the County and Township Engineers. Any revisions to the Approved Plans requested by Operator shall be submitted to the County and Township for prior approval.

2. **Surety Requirements.**

Operator shall post an irrevocable letter of credit with the County in an amount sufficient to ensure compliance with the conditions of the IUP and Reclamation Plan set forth on Map C included as part of Exhibit k to the IUP based upon an estimate of reclamation grading costs. It is understood and agreed by the parties that the County is holding the letter of credit on behalf of itself and the Townships. The County, upon the reasonable request of either Sand Creek or Louisville

Townships shall draw on the letter of credit to the extent that funds are available to satisfy the obligations of the Operator to the Townships. Reclamation grading costs and costs to construct the unpaved frontage road on the Subject Property identified on Map D included as part of Exhibit k to the IUP shall be reasonably estimated by the County in multiple phases, and the amount of the letter of credit will be increased or decreased (as the case may be) as operations on the Subject Property progress over time consistent with the phases estimated by the County and subject to the provision of Subsection 3(B)(3). The initial amount of this Letter of Credit will be $783,348.09 and is subject to annual review and approval by the Great Plains Sand Mining Review Committee for adequacy as set forth in the preceding sentence. In the event the Great Plains Sand Mining Review Committee, in its reasonable discretion, determines that an additional surety is needed to assure adequate funds are available for the Reclamation Plan the Operator shall provide such additional security within thirty (30) days of being notified in writing by the Committee that additional security is required. Said letter of credit or surety must meet the approval of the Committee and the County Attorney as to form and issuing bank.

Except as provided below, following not less than three (3) business days' prior notice to the Operator, the County may draw on its letter of credit to complete any of the obligations of the Operator under this Agreement and the IUP including, but not limited to, Infrastructure Improvements, compliance with permits and the Approved Plans described above, to reimburse itself for costs incurred in the drafting or enforcement of the IUP, to pay for costs associated with monitoring or mitigation required by the IUP.

In the event that any Letter of Credit, or other surety referred to herein is ever utilized and found to be deficient in amount to pay or reimburse the County and Township in total as required herein, the Operator agrees that upon being billed by the County, Operator will pay within thirty (30) days of the mailing of said billing, the said deficient amount. If there should be an overage in the amount of utilized security, the County will, upon making said determination, refund to the Operator, without interest, any monies which the County has in its possession which are in excess of the actual costs of the project as paid by the County within ten (10) business days of the County's identification of such overage.

In the event any surety referred to herein is in the form of an irrevocable letter of credit which by its terms may become null and void prior to the time at which all monetary or other obligations of the Operator are paid or satisfied, it is agreed that the Operator shall provide the County with a new letter of credit or other surety, acceptable to the County, at least forty-five (45) days prior to the expiration of the

original letter of credit. If a new letter of credit is not received as required above, the County may, without notice to the Operator, declare a default in the terms of the IUP and thence draw in part or in total, at the County's sole discretion, upon the expiring letter of credit to avoid the loss of surety for the continued obligations.

3. **Surety Release.**

A. Periodically Operator may request of the County that the letter of credit or surety be reduced. All such decisions to proportionately decrease the letter of credit shall be at the sole discretion of the County in consultation with the Townships and the Great Plains Sand Mining Review Committee.

B. The Operator may request of the County a reduction or release of any surety as follows:

1. When another acceptable letter of credit or surety is furnished to the County to replace a prior letter of credit or surety. The form of any irrevocable letter of credit or other surety must be approved by the County Attorney prior to its issuance.

2. When all or a portion of the obligations of the Operator pursuant to the IUP have been satisfied, the letter of credit or surety may be reduced by the dollar amount attributable to that portion of the obligations so completed at such time as a licensed professional engineer has certified to the County that the obligations of the Operator have been done and performed according to Approved Plans. In no event shall the letter of credit be reduced below 25% of its original amount unless agreed to in writing by the Townships.

3. Except as provided above, as to all requests brought under this section, the County shall have complete discretion whether to reduce/release or not to reduce/release said letter of credit.

4. The costs incurred by the County and the Townships in processing any reduction/release request shall be billed to the Operator and paid to the County and Township within thirty (30) days of mailing of such billing.

4. **Review Committee.** The Great Plains Sand Mining Review Committee is being established to review the IUP for the Subject Property and to advise Scott County on an ongoing basis pursuant to the following terms and conditions:

A. **Establishment.** There is hereby established by the execution of this Agreement the "Great Plains Sand Mining Review Committee" (hereinafter referred to as the "Committee") for the purposes of ensuring the health and welfare of Scott County residents including, but not limited to, routinely reviewing the mining operations on the Subject Property, compliance with the IUP and recommending modification of the IUP conditions to the Scott County Planning Commission and the Scott County Board. The Committee shall consist of eight (8) members, consisting of two (2) representatives appointed by Louisville Township, two (2) representatives appointed by Sand Creek Township, two (2) representatives appointed by Scott County and two (2) representatives appointed by the Operator. Committee members shall be compensated at the rate determined by the Committee.

B. **Permit Review.** The IUP shall be reviewed periodically by the Committee and may be amended by the Scott County Board of Commissioners through the proper public hearing process and based upon the recommendation of the Committee and the Scott County Planning Commission, subject to the limitations set forth in the Scott County Zoning Ordinance, Section I.B.1 of the IUP and Minnesota law.

C. **Committee Procedures.** The Committee shall elect a Chair and a Vice-Chair from among its members. The Chair shall act as the presiding officer at Committee meetings and the Vice-Chair shall act as the presiding officer at any meetings not attended by the Chair. The Committee shall have authority to adopt by-laws governing its own procedures.

D. **Committee Quorum.** Four (4) of the Committee members present shall constitute a quorum for the purposes of all Committee meetings. A quorum of the Committee must include at least one (1) member from Louisville Township, and one (1) member from Sand Creek Township. Committee staff shall utilize their best efforts to schedule the Committee meetings at such time as at least one (1) member from the Operator and one (1) member from the County can be present.

E. **Meetings.** Regular meetings of the Committee shall be held on a monthly basis, unless otherwise determined by the Committee. Special meetings may be called by the Committee Chairperson or by any four (4) Committee members. Notice of all regular and special meetings shall be given to all Committee Members and the Operator via electronic mail as well as in such a manner so as to comply with the Open Meeting Law and shall be open to the public.

F. **Voting.** Each Committee member shall have one (1) vote on all matters brought before the Committee. Unless otherwise specified herein, the Committee may take action on any issue by majority vote of all members. Voting by proxy is not allowed. In the event a Committee member is not able to attend a meeting in person, then such member may appoint an alternate individual to attend the meeting on such member's behalf and vote on matters brought before such meeting. Appointment of an alternate individual may be accomplished by providing notice of such appointment to the Chair or Vice-Chair via electronic mail or any other form of writing. In the case of a tie vote of the Committee the matter shall be presented to the Scott County Planning Department for study and a determination of the issue.

G. **Committee Office.** The mailing address of the Committee shall be Scott County Planning Department, 200 Fourth Avenue W, Shakopee, MN 55379, telephone (952) 496-8475. This address may be changed by the Committee. Further, Scott County shall act as the fiscal agent and administrative staff for the Committee including complying with the Open Meeting Law and the Data Practices Act.

H. **Revenue and Security.** All costs required to conduct the stated business and purpose of this Committee shall be paid for by the Operator. Operator shall provide to the County, in cash or certified check, as a condition of the IUP, for deposit in a segregated escrow account the amount of $20,000.00 to be used to pay Committee costs (the "Escrow Account"). As the escrow amount is depleted, Operator shall furnish additional funds as requested in writing by the County, not to exceed the initial deposit amount. Any amounts not utilized from this escrow account shall be returned to the Operator, without interest, when mining and restoration is completed and all financial obligations to the County have been satisfied. If Operator fails to pay any bill within thirty (30) days of receipt by Operator and the escrow account is insufficient, then, following ten (10) days' prior notice to Operator, the County may specially assess such costs against the Subject Property, utilize the letter of credit and/or take necessary legal action to recover such costs.

I. **Powers.** The Committee shall have and is hereby given all powers, duties and functions specifically enumerated in the IUP and set forth in this Agreement, including but not limited to the following as determined by a majority vote of the Committee and in relation to activities conducted by Operator on the Subject Property:

1. To employ and determine the terms of employment of consultants, engineers, legal counsel, and other qualified personnel deemed necessary to carry out the work of the Committee.

2. To cause reports, plans, studies and recommendations to be prepared.

3. To invite other governmental agencies, such as the U.S. Fish and Wildlife Service and MNDOT, to provide technical advice to the Committee.

4. To monitor the mining operations undertaken pursuant to the IUP and to discuss health and safety issues presented by the mining operation including, but not limited to, ambient dust, operational noise, blasting, fencing and security at the mining site, end use reclamation plan, hours of operation, surface and ground water quality and air quality so as to make periodic recommendations to the Scott County Planning Commission and the Scott County Board regarding the IUP.

5. **Groundwater**. The following provisions shall govern the Committee's mitigation of adverse effects on water wells from operations on the Subject Property.

   a. Operator has agreed to implement the Groundwater and Surface water Monitoring and Mitigation Plan included as Exhibit f to the IUP.

   b. The Committee shall retain water resource experts ("Water Resource Expert") and licensed well drillers ("Driller") to investigate and determine, as needed, potential responsibility for alleged interferences with or damage to subject wells from the following list:

      Water Resource Expert:

      Barr Engineering
      700 West 77th Street
      Minneapolis, MN 55435
      (952) 832-2600

Well Driller:

Bohn Well Drilling Co.
18190 Dairy Lane, Ste. 101
Jordan, MN
(952) 445-4809

Associated Well Drillers
13160 Pioneer Trail
Eden Prairie, MN
(952) 941-1530

Hartmann Well Drilling & Service LLP
308 Main Street E.
New Prague, MN
(952) 758-2202

Leuthner Well Inc.
1860 Arboretum Blvd.
Victoria, MN
(952) 443-2582

The Parties acknowledge and agree that an expert provided by these companies may not be based at the location listed above. These experts shall serve at the pleasure of the Committee. The list of experts can be expanded as needed by the Committee provided that any new expert Water Resource Expert and Driller added to the list must be unanimously reviewed and approved by all members of the Committee.

c. *Pre-Mining Notice.* Prior to commencing below-water mining activities on the Subject Property, Operator shall mail written notice to all parties owning property within one-half (½) mile of the Subject Property (based upon addresses on file with Scott County and reflected in publicly-available tax records) informing the property owners of the following:

i. their right to file a claim with the Operator regarding any well interference or damage that they believe relates to Operator's activities on the Subject Property;

ii. emergency contact information that the property owner must utilize to report any alleged interference or damage with the property owner's well as a result of activities on the Subject Property;

iii. the specific information that must be conveyed to the Operator to allow Operator to process complaints relating to alleged well interference or damage, including, but not limited to, the dates and times during which any activities are expected to be performed on the well to determine the cause or extent of any interference or damage;

iv. the specific limitations governing the Committee's ability to take action pursuant to this Subsection 4(I)(5);

v. in the event a property owner fails to follow the foregoing provisions or Operator is found not to be at fault, then the property owner will be personally responsible for all costs incurred by the property owner; and

vi. any complainant shall retain all rights as they may have under Minnesota State law and are not bound by the decisions of the experts retained by the Operator and the Committee.

The form of notice will be approved by the Committee, which approval shall not be unreasonably withheld, and will be accompanied by a copy of the current Minnesota DNR Well Information and Complaint Questionnaire.

d. *Annual Property Owner Notice.* No later than January 15th of each year while mining or processing activities are taking place on the Subject Property, Operator shall mail written notice to all owners of an Eligible Well (as hereinafter defined in Subsection 4(I)(5)(g))(based upon addresses on file with Scott County and reflected in publicly-available tax records):

i. providing current emergency contact information that the property owner must utilize to report any alleged

interference or damage with an Eligible Well as a result of activities on the Subject Property; and

iii. reminding such property owners of the rights and limitations set forth in Subsection 4(I)(5)(c) above.

The form of notice will be approved by the Committee, which approval shall not be unreasonably withheld, and will be accompanied by a copy of the current Minnesota DNR Well Information and Complaint Questionnaire.

e. *Response to Groundwater Complaints*. Operator shall establish and maintain an emergency telephone number that property owners must utilize to report any alleged interference any Eligible Well as a result of activities on the Subject Property. No later than five (5) hours following receipt of a proper notice of interference with an Eligible Well or 9:00 am the morning following receipt of a proper notice of interference with an Eligible Well (whichever is later), Operator shall notify the following parties of the complaint via electronic mail:

i. all members of the Committee;

ii. the Town Clerk of the Township in which the alleged interference occurs;

iii. the designated Scott County staff liaison; and

iv. the Water Resource Expert or Driller.

The owner of an Eligible Well alleged to experience interference or damage will be responsible for retaining a well driller or other party to assess the well and for paying all testing and re-drilling costs in response to any alleged interference as outlined in the Ground Water Monitoring Plan. Any parties retained by the well owner will be working for well owner and shall not have any responsibilities or rights with respect to the Committee, Scott County or the Operator.

In order for a complaint regarding an Eligible Well to be actionable by the Committee, the well owner must allow

representatives of Operator, the Committee and the Water Resource Expert and/or Driller to be present during any activities performed on the well to determine the cause or extent of any interference as outlined in the Ground Water Monitoring Plan. The Water Resource Expert and/or Driller will observe the actions of the well driller or other parties retained by the well owner and assess the well and data from the Operator's monitoring wells to determine the cause of alleged interference to an Eligible Well. The Water Resource Expert and/or Driller shall deliver a report to the Committee, the Townships, the County, the Operator, and the well owner regarding each eligible groundwater complaint no later than ten (10) days following the Water Resource Expert's and/or Driller's assessment of the well. Such report shall indicate the Water Resource Expert's and/or Driller's degree of certainty as to the report's findings and the percentage to which the Operator's activities on the Subject Property directly contributed to the alleged well interference, if any.

f. *Remedies*. In the event a Driller examines the well on behalf of the Committee, then the Driller shall provide a written report of the cause of well interference or damage to the Committee and the Operator. In the event the Driller's report identifies Operator's activities as a cause of the interference or damage and Operator agrees with the Driller's report in the Operator's sole discretion, then the Operator shall reimburse the well owner for actual third-party costs incurred by the well owner based upon the percentage of responsibility identified by the Driller. In the event the Operator disagrees with the Driller's report for any reason, then the Driller shall communicate its findings to the Water Resource Expert and facilitate the Water Resource Expert's examination of the well (which may be conducted upon not less than a minimum twenty-four (24) hours prior notice to Operator and in the presence of the Operator and/or its representative(s), if the Operator so chooses). Following examination of the well, the Water Resource Expert shall prepare the report required pursuant to Subsection 4(I)(5)(e) above. In the event such report concludes with an 85% or greater certainty that Operator's activities on the Subject Property directly contributed to the alleged well interference, then the report shall also designate the percentage by which the Operator's

activities contributed to such interference relative to any other factors that might have also contributed to the interference.

The Committee shall have the authority to demand that the Operator reimburse the well owner for actual third-party costs incurred by the well owner based upon the percentage of responsibility attributed to the Operator's activities in the Water Resource Expert's report. In the event the Operator does not provide such reimbursement within five (5) business days of receipt of demand from the Committee, then the Committee shall have the right to draw funds from the Escrow Account to reimburse the well owner for actual third-party costs incurred by the owner based the percentage of responsibility attributed to the Operator's activities in the Water Resource Expert's report. Notwithstanding anything herein to the contrary, the Operator shall only be required to reimburse the property owner for the percentage of the owner's costs directly attributed to the Operator's activities in the Water Resource Expert's report and upon receipt from the property owner of a release and stipulation acceptable to the Operator within twenty (20) days of the Committee's demand for payment. If the Escrow Account is not sufficient, then Committee shall have right to request the County draw on the Letter of Credit to cover the eligible costs.

g. *Limitations on Operator's Responsibility for Interference.* The property owner shall only be entitled to the remedies set forth in the forgoing subsection in the event all of the following conditions are met to qualify the well as an "Eligible Well":

i. the property owner permits Operator to access the property prior to commencing below-water mining activities on the Subject Property and during any work or modifications to the well to perform initial testing to establish baseline characteristics of the well (meaning recording any readily available information regarding the well, measuring the water level depth at the time the baseline is established and applying a sticker to the well to identify the fact that the well has been tested pursuant to this Agreement.);

ii. the Operator is provided a minimum twenty-four (24) hours prior notice before property owner initiates any activity to the well in response to alleged interference with the well;

iii. the property owner provides the Operator a completed Minnesota DNR Well Information and Complaint Questionnaire at the time of issuing the complaint to the Operator;

iv. the property owner utilizes only a licensed well driller to perform work on the well and the property owner allows representatives of the Operator, the Committee and the Water Resource Expert to be present during any activities performed on the well to determine the cause or extent of any interference or damage, if Operator and Committee so choose, and agree to hold the Operator, Committee and their respective representatives harmless from and against any liability or claims resulting from their presence on the property, except to the extent caused by the gross negligence or willful conduct of the Operation, Committee or their respective representatives. The Parties agree that should Operator be duly noticed as provided above, the well owner may commence with remedying the cause of the well interference without Operator or the Water Resource Expert being present and shall not have waived any rights under this section of the Agreement; and

v. the property owner provides Operator a release and stipulation acceptable to the Operator within twenty (20) days of the Committee's demand for payment.

In the event Operator is determined to have any responsibility pursuant to his Subsection 4(I)(5), the costs to be reimbursed to the well owner shall be limited to drinking water utilized while well is dry, drinking water utilized for livestock, initial exam, and remedial action.

Notwithstanding anything herein to the contrary, the Operator shall not be obligated to perform initial testing to establish

baseline characteristics of a well unless the well pump is readily accessible for examination without unreasonable movement of structures or other extraordinary measures.

6. **Blasting.** The following provisions shall govern the Committee's mitigation of damage to surrounding structures from blasting operations on the Subject Property.

   a. Operator has agreed to implement the Blast Monitoring Plan included as Exhibit h to the IUP.

   b. The Committee shall retain blasting experts (the "Blasting Expert") and pre-blast inspectors (the "Inspector") to investigate and determine, if needed, potential responsibility for alleged structural damage from the following list:

Blasting Expert:

Intercontinental Development Corporation, Inc.
P.O. Box 189
Montville, OH 44064
(440) 474-6700
VCE, Inc.
2604 Foster Avenue
Nashville, TN 37210
(800) 747-3844

Barr Engineering
700 West 77th Street
Minneapolis, MN 55435
(952) 832-2600

VCE, Inc.
2604 Foster Avenue
Nashville, TN 37210
(800) 747-3844

Inspector:

Vibra Tech Engineers, Inc.
777 Roosevelt Road, Suite 110
Glen Ellyn, IL 60137
(800) 858-0681

VCE, Inc.
2604 Foster Avenue
Nashville, TN 37210
(800) 747-3844

The Parties acknowledge and agree that an expert provided by these companies may not be based at the location listed above. These experts shall serve at the pleasure of the Committee. The list of experts can be expanded as needed by the Committee provided that any new expert Blasting Expert and Inspector added to this list must be unanimously reviewed and approved by all members of the Committee.

c. *Pre-Blast Survey.* At least fifteen (15) days prior to first commencing blasting activities on the Subject Property, Operator shall mail written notice to all parties owning building structures within one-half (½) mile of the Subject Property and other building structures mutually agreed to between the Committee and the Operator (based upon addresses on file with Scott County and reflected in publicly-available tax records) informing the structure owners of the following:

i. their right to have a pre-blast survey conducted of their structure (including a survey of both the interior and exterior of the structure assessing basement foundations and other relevant features) by the Inspector retained by the Operator to establish the structure's condition and identify any potential structural issues or concerns prior to the commencement of blasting activities on the Subject Property;

ii. their obligation to notify the Operator of the need to update the pre-blast survey in the event of any

renovation of an existing structure or new construction on vacant property;

iii. their right to file a claim with the Operator regarding any structural damage that they believe relates to Operator's activities on the Subject Property;

iv. emergency contact information that the property owner must utilize to report any alleged structural damage to the property owner's structure as a result of activities on the Subject Property;

v. the specific information that must be conveyed to the Operator to allow Operator to process complaints relating to alleged structural damage, including, but not limited to, the dates and times during which damage occurred and a description of the damage to the extent such knowledge is known by the Property Owner;

vi. the specific limitations governing the Committee's ability to take action pursuant to this Subsection 4(I)(6);

vii. in the event a property owner fails to follow the foregoing provisions or Operator is found not to be at fault, then the property owner will be personally responsible for all costs incurred by the property owner; and

viii. any complainant shall retain all rights at they may have under Minnesota State law and are not bound by the decisions of the experts retained by the Operator and the Committee.

The form of notice will be approved by the Committee, which approval shall not be unreasonably withheld.

The Inspector will perform a pre-blast survey on each existing eligible structure (including a survey of both the interior and exterior of the structure assessing basement foundations and other relevant features) to establish the structure's condition and identify any potential structural issues or concerns prior

to the commencement of blasting activities on the Subject Property. In each instance where new construction or remodeling is completed on structures within one-half (1/2) mile of the Subject Property, the property owner shall be responsible for notifying Operator of proposed construction not less than ten (10) days prior to commencement of the proposed construction project and the Committee and Operator shall follow such pre-blast surveying procedures as they mutually agree upon. The County shall use reasonable efforts to notify property owners of their rights under this subsection 4(I)(6) at the time the County receives building permit applications for new construction or renovations. Copies of all pre-blast surveys will be provided to the property owner, the Operator, the Townships, the Committee and Scott County. Only structures for which pre-blast reports are provided shall be considered "Eligible Structures" for the purposes of this Agreement.

e. *Response to Blasting Complaints.* Operator shall establish and maintain an emergency telephone number that property owners must utilize to report any alleged blasting complaints as a result of activities on the Subject Property. Within seven (7) days of receiving any notice of alleged structural damage to an Eligible Structure, Operator shall notify the following parties of the complaint via electronic mail:

i. all members of the Committee;

ii. the Town Clerk of the Township in which the alleged interference occurs;

iii. the designated Scott County staff liaison; and

vi. the Blasting Expert or Inspector.

Upon receipt of notice of a claim of structural damage caused by the Operator's activities on the Subject Property, the Blast Expert and/or Inspector will review the blast data maintained by the Operator's blasting company to verify whether any blasts exceeded the United States Office of Surface Mining Reclamation and Enforcement ("OSM") standards and will report those initial findings to the Committee, the Townships, Scott County and the Operator.

In the event seismic data analysis indicates an exceedance of the OSM limits at an Eligible Structure, then the Operator and Committee shall arrange a time with the structure owner to visit the structure (along with their respective engineers and other representatives) to review the alleged damage along with the Blast Expert and/or Inspector and any representatives retained by the structure owner. The Inspector shall deliver a report to the Committee, the County, the Townships, the Operator and the property owner regarding each eligible structural complaint no later than ten (10) days following the Inspector's assessment of a structure. Such report shall indicate the Inspector's degree of certainty as to the report's findings and the percentage to which the Operator's activities on the Subject Property directly contributed to the alleged structural damage, if any.

The Committee shall have the authority to examine complaints concerning blasting regardless of whether seismic data analysis indicates an exceedance of OSM limits at an Eligible Structure.

f. *Remedies*. In the event that the Inspector's report required pursuant to Subsection 4(I)(6)(e) above concludes with an 85% or greater certainty that Operator's activities on the Subject Property directly contributed to the alleged structural damage, then the report shall also designate the percentage by which the Operator's activities contributed to such structural damage relative to any other factors that might have also contributed to the damage.

The Committee shall have the authority to demand that the Operator reimburse the structure owner for actual third-party costs incurred by the owner to remedy structural damage based upon the percentage of responsibility attributed to the Operator's activities in the Inspector's report. In the event the Operator does not provide such reimbursement within five (5) business days of receipt of demand from the Committee, then the Committee shall have the right to draw funds from the Escrow Account to reimburse the structure owner for actual third-party costs incurred by the owner based upon the percentage of responsibility attributed to the Operator's activities in the Inspector's report. Notwithstanding anything

herein to the contrary, the Operator shall only be required to reimburse the property owner for the percentage of the owner's costs directly attributed to the Operator's activities in the Inspector's report and upon receipt from the property owners of a release and stipulation acceptable to the Operator within twenty (20) days of the Committee's demand for payment. If the Escrow Account is not sufficient, then Committee shall have right to request County draw on the Letter of Credit to cover the eligible costs.

g. *Limitations on Operator's Responsibility for Structural Damage*. Property owners shall only be entitled to the remedies set forth in the forgoing subsection in the event all of the following conditions are met:

i. the structure qualifies as an Eligible Structure as defined above;

ii. blast data maintained by the Operator's blasting company indicates that blasts exceeded the OSM standards;

iii. the Operator is provided a minimum of seven (7) days prior notice before property owner initiates any professional review of the Eligible Structure in response to alleged structural damage unless it is deemed an emergency by Committee staff, in which case Committee staff must provide Operator notice immediately upon concluding an emergency exists;

iv. the property owner allows representatives of Operator, the Committee and the Blast Expert and/or Inspector to be present during any professional review of the Eligible Structure performed to determine the cause or extent of any structural damage, if Operator and Committee so choose, and agree to hold the Operator, Committee and their respective representatives harmless from and against any liability or claims resulting from their presence on the property, except to the extent caused by the gross negligence or willful conduct of the Operator, the Committee or their respective representatives; and

v. the property owner provides Operator a release and stipulation acceptable to the Operator within twenty (20) days of the Committee's demand for payment.

In the event Operator is determined to have any responsibility pursuant to his Subsection 4(I)(6), the costs to be reimbursed to the structure owner shall be limited to remedial action costs incurred by the structure owner based upon the percentage of responsibility attributed to the Operator's activities on the Subject Property in the Inspector's report.

5. **Abandonment of Project - Costs and Expenses.** In the event Operator should abandon the proposed development of the Subject Property, the County and Township's costs and expenses related to attorney's fees, engineering fees, professional review, drafting of this Agreement, and any other expenses undertaken in reliance upon the Operator's obligations set forth in the IUP and this Agreement shall be paid by said Operator within thirty (30) days of the mailing of the billing for such costs by the County and Township. In addition, in the event the Operator ceases both mining and processing activities on the Subject Property for more than one (1) continuous year, and fails to provide sufficient ground-cover to prevent continuing soil erosion from the Subject Property, or fails to leave the abandoned property in a condition which can be mowed using conventional lawn mowing equipment, Operator agrees to pay all costs the County and Township may incur in taking whatever action is necessary to provide ground-cover on the Subject Property to the point where undeveloped grounds are level and covered with permanent vegetation sufficient to prevent continuing soil erosion from the Subject Property and to facilitate mowing of the Subject Property.

6. **Operator to Pay County and Township's Costs and Expenses.** It is understood and agreed that the Operator will reimburse the County and Township for all administrative, legal, planning, engineering and other professional costs incurred in the creation, administration, enforcement or execution of this Agreement, and the approval of the IUP for the Subject Property, as well as all engineering expenses incurred by the County and Township in designing, approving, constructing, installing, and inspecting the Infrastructure Improvements and reclamation activities described above. Specifically, the Operator shall pay an hourly fee for consulting engineering administration, which shall include monitoring of construction, consultation with the Operator and its engineers on status or problems regarding the project, monitoring during the warranty period and processing of requests for reduction in security. Construction monitoring or observation shall include full or part time observation at the discretion of the Township. Operator agrees to pay all such costs within thirty (30) days of the date of billings by the County and

Township. Bills not paid within thirty (30) days of date of billing shall accrue interest at the rate of six (6%) percent per year.

Further, all costs required by the Township to conduct their activities set forth in this Agreement shall be paid for by the Operator. Operator shall provide to each of Louisville Township and Sand Creek Township, in cash or certified check, for deposit in a segregated escrow account the amount of five thousand and No/100 dollars ($5,000.^{00}$) to be used to pay such Township costs. As the escrow account is depleted, Operator shall furnish additional funds as requested in writing by the Townships, not to exceed the initial deposit amount. Any amounts not utilized from this escrow account shall be returned to the Operator, without interest, when mining and restoration is completed and all financial obligations to the Townships have been satisfied. If additional escrow is required or bills incurred beyond the escrow amount, Operator shall be billed directly for such costs. If the Operator fails to pay any bill within thirty (30) days of the date of billing and the escrow account is insufficient, then, following ten (10) days' prior notice to Operator, the County and Townships may specially assess such costs against the Subject Property and/or take necessary legal action to recover such costs.

7. **Drainage Requirements.** Operator shall comply with the approved Resource Management Plan attached as Exhibit e to the IUP for drainage from the Subject Property, and shall make any necessary improvements or go through any necessary procedures to ensure compliance with any Federal, State, County or Township laws and ordinances, all at Operator's expense.

8. **Maintain Public Property Damaged or Cluttered During Construction.**

Operator shall assume full financial responsibility for any damage which may occur to public property including but not limited to roadways, streets, street sub-base, base, bituminous surface, curb or storm sewer when said damage occurs as a result of the activity which takes place pursuant to the IUP. Operator further agrees to pay all costs required to repair the streets, utility systems and other public property damaged or cluttered with debris when occurring as a direct or indirect result of the mining activity that takes place pursuant to the IUP.

If Operator fails to fulfill its obligations in the foregoing paragraph within thirty (30) days after being notified in writing by the County and/or Township, the County or Township may undertake making or causing such obligations to be fulfilled. When the County or Township undertakes such activity, Operator shall reimburse the County or Township for all of their expenses within thirty (30) days of a billing. If Operator fails to pay said bill within thirty (30) days of the date of mailing of a

billing, then, following ten (10) days' prior notice to Operator, the County and Township may specially assess such costs against the Subject Property and/or take necessary legal action to recover such costs and the Operator agrees that the County and Township shall be entitled to attorneys' fees and costs incurred by the County and Township as a result of such legal action.

9. **Temporary Easement Rights.** Operator shall provide access to the Subject Property as required by the IUP. The County, Township and Committee agree not to unreasonably interfere with the progress of any work being performed at the Subject Property.

10. **Miscellaneous.**

A. Operator agrees that all construction items required under this Agreement are items for which Operator is responsible for completing and all work shall be done at Operator's sole expense.

B. If any portion, section, subsection, sentence, clause, paragraph or phrase of this Agreement is for any reason held invalid by a Court of competent jurisdiction, such decision shall not affect the validity of the remaining portion of this Agreement.

C. The action or inaction of any party shall not constitute a waiver or amendment to the provisions of this Agreement. To be binding, amendments or waivers shall be in writing, signed by all parties and approved by written resolution of the County, the Township and the Operator's governing board. The failure by any party to promptly take legal action to enforce this Agreement shall not be a waiver or release.

D. This Agreement shall run with the land and shall be recorded against the title to the Subject Property.

E. Operator represents to the County and Township that all mining activities on the Subject Property pursuant to the IUP will comply with all County, State, Township and Federal laws and regulations. Operator agrees to obtain all required Federal, State, County, Township and other local permits. If the County or Township determines that the mining activities do not comply with applicable laws, the County may, at its option and after appropriate due process is afforded to the Operator, refuse to allow mining activities to continue on the Subject Property until the Operator so complies.

F. Prior to the execution of this Agreement, Operator shall provide the County and Township with evidence of good and marketable title to all of Subject Property. Evidence of good and marketable title shall consist of a Title Insurance Policy or Commitment from a national title insurance company, or a title opinion and an abstract of title updated by an abstract company registered under the laws of the State of Minnesota.

G. Operator shall comply with and receive all required permits relating to storm water, ponding and wetland related restrictions, if any, legally required by the County, Township and/or any applicable provisions of State and Federal law.

H. Operator shall provide the County and the Township with an as built grading plan including certification by a registered land surveyor or engineer that all ponds, swales, and ditches have been constructed on the Subject Property.

I. Operator, its successors or assigns, shall strictly comply with all local and state weed control laws. The County or Township shall provide the Operator written notice of any alleged violation of this section. Should the Operator, its successors or assigns, fail to comply with the provisions of this section within fifteen (15) days following Operator's receipt of such notice, then the County or Township may enter onto the Subject Property upon not less than twenty-four (24) hours prior notice to bring the property into compliance with the weed control laws and the Operator shall be responsible for the costs actually incurred by the County or Township to control said weeds.

J. Third parties shall have no recourse against the Operator, Committee, Township or Scott County under this Agreement as this Agreement is not intended for the benefit of any third-parties.

K. Each right, power or remedy herein conferred upon the Operator, Township and County is cumulative and in addition to every other right, power or remedy, express or implied, now or hereafter arising, available to Operator, Township or County, at law or in equity, or under any other Agreement, and each and every right, power and remedy herein set forth or otherwise so existing may be exercised from time to time as often and in such order as may be deemed expedient by the Operator, Township or County and shall not be a waiver of the right to exercise at any time thereafter any other right, power or remedy.

The Operator shall have the right to construct the frontage road to serve the Subject Property in compliance with the requirements set forth herein

within one hundred eighty (180) days of completing mining activities. The frontage road shall be constructed to the Townships respective road standards in effect at the time of construction. The road construction plans shall be inspected and approved by the Townships and Townships shall have the right to inspect construction of the frontage road. In lieu of constructing the frontage road to serve the Subject Property, the Operator may pay the frontage road construction costs covered by the letter of credit to the Townships upon the cessation of mining activities. The letter of credit shall be increased in equal increments upon the start of each new phase of mining operations to allow present value payment of $240,318.38 to Louisville Township and $58,213.77 to Sand Creek Township towards the cost of constructing such frontage road to Township road specifications. The letter of credit amount allocated pursuant to this paragraph shall be reviewed at each new phase of mining operations and may be adjusted by the Committee pursuant to the Construction Cost Index as published by the Engineer News-Record or other publication agreed upon between the Committee and Operator with the base year being 2012. In the event the Operator determines not to construct the frontage road itself, the final amount payable to each Township pursuant to this paragraph shall be paid by the Operator upon the cessation of mining activities.

It is understood that the frontage road will not be constructed until the mining operation is complete and the Subject Property is developed. In the event that the amounts contributed herein by Operator exceed the actual third-party costs incurred to build the frontage road to the Townships' gravel road standard, then the Townships shall refund such overpayment amount to the Operator not later than thirty (30) days following determination of such overpayment amount. It is further understood, that the acceptance of the funds described above from the Operator does not preclude the County or Townships from seeking further financial contribution from any future owner and/or developer of the Subject Property should the amounts contributed herein by the Operator prove insufficient to build the frontage road to the Townships' bituminous road standards.

12. **Dedications to the County and Township.**

A. **Improvement Dedications to Township:** The Operator, upon presentation to the Township of evidence of good and marketable title to Subject Property and upon the execution of this Agreement, shall cause the following dedications to be made to the Township:

1. Landowners shall dedicate access and drainage easements to the Township over, under and across all drainage ponds and infiltration basins located on the Subject Property in a form and with legal descriptions acceptable to the Township Attorney.

2. Landowners shall dedicate to the Township the frontage road on the Subject Property identified on Map D included as part of Exhibit k to the IUP. Acceptance by the Township of any dedication shall occur upon passage of a resolution to such effect by the Town Board. All dedications shall be in a form and with legal descriptions acceptable to the Township Attorney.

3. Landowners shall dedicate to the Township drainage and utility and slope easements located within the Subject Property. Said dedications shall be in a form and with legal descriptions acceptable to the Township Attorney.

B. **Improvement Dedications to County:** There are no dedications to the County as part of this Agreement.

13. **Claim Waiver and Indemnity.** The Operator agrees to waive any and all claims whatsoever against the Township and the County and its respective governing boards, agents, employees, contractors, and representatives as a result of processing and approval of the IUP application.

14. **Assignment of Contract.** The obligations of the Operator under this Agreement cannot be assigned without the express written consent of the County and Township through resolution.

15. **Limited Approval.** Approval of this Agreement by the parties in no way constitutes approval of anything other than that which is explicitly specified in this Agreement.

16. **Professional Fees.** The Operator will pay all professional fees incurred by the County and Township in connection with the processing and approval of the IUP application. Said fees include attorney's fees, engineer's fees, planner's fees, and any other professional fees incurred by the County and Township in processing the IUP application and preparing this Agreement.

17. **Plans Attached as Exhibits.** All exhibits to the IUP specifically referenced in this Agreement are hereby incorporated into this Agreement by reference as they appear in the IUP.

18. **Integration Clause, Modification by Written Agreement Only.** This Agreement represents the full and complete understanding of the parties and neither party is relying on any prior agreement or statement(s), whether oral or written. Modification of this Agreement may occur only if in writing and signed by a duly authorized agent of all parties.

19. **Notification Information.** Any notices to the parties herein shall be in writing, delivered by hand or registered mail addressed to the Town Clerks at their official addresses as well as to the other remaining parties at the addresses listed below: The current addresses of the Parties are as follows:

Louisville Township:	Louisville Town Clerk 92 Mallard Drive Shakopee, MN 55379
Sand Creek Township:	Sand Creek Town Clerk 20501 Cedar Valley Road Jordan, MN 55352
Operator:	Great Plains Sand, LLC 1242 Adrian Drive Chaska, MN 55318
Landowner:	Scott Land Company, LLC 21778 Highview Ave Lakeville, MN 55044
	Q Prime Inc. 729 7th Ave New York, NY 10019
County:	Scott County Planning Department 200 Fourth Avenue W Shakopee, MN 55379

20. **Standard of Conduct.** Except with respect to the County's discretion set forth in Subsections 3(A) and 3(B)(3) above and the last sentence of the final paragraph in Section 2, all parties to this Agreement and the Committee shall act in a reasonable manner with respect to all decisions, obligations, duties and actions performed, as well as all costs incurred and all limitations imposed, in connection with this Agreement or the IUP.

21. **Agreement Effect.** This Agreement shall run with the land and be binding upon and extend to the representatives, heirs, successors and assigns of the parties hereto.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Township, the County and the Operator have caused this Agreement to be duly executed on the day and year first above written.

LOUISVILLE TOWNSHIP

John Weckman, Chairperson

LuAnne Lemke, Clerk

SAND CREEK TOWNSHIP

Cy Wolf, Chairperson

Rita Tauer, Clerk

SCOTT COUNTY

Tom Wolf, Chairperson

Gary Shelton, County Administrator

OPERATOR

By Weldon W. Gilbertson, CEO
Great Plains Sand, LLC

LANDOWNER

_____
By David Fallon
Scott Land Company, LLC

Clifford Bunster
_____
By
Q Prime Inc.

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this _____ day of _____, 2012, by John Weckman, Chairperson of Louisville Township, Scott County Minnesota, pursuant to the authority granted by its Town Board.

_____
NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this _____ day of _____, 2012, by LuAnne Lemke, Clerk of Louisville Township, Scott County Minnesota, pursuant to the authority granted by its Town Board.

_____
NOTARY PUBLIC

LANDOWNER

By David Fallon
Scott Land Company, LLC

By _____
Q Prime Inc.

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this 1st day of May, 2012, by John Weckman, Chairperson of Louisville Township, Scott County Minnesota, pursuant to the authority granted by its Town Board.

GERALD STAFFORD DUFFY
Notary Public-Minnesota
My Commission Expires Jan 31, 2015

NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this 1st day of May, 2012, by LuAnne Lemke, Clerk of Louisville Township, Scott County Minnesota, pursuant to the authority granted by its Town Board.

CONSTANCE MAE KOCHLIN
Notary Public-Minnesota
My Comm. Expires Jan. 31, 2013

NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this 1st day of May, 2012, by Cy Wolf, Chairperson of Sand Creek Township, Scott County Minnesota, pursuant to the authority granted by its Town Board.

GERALD STAFFORD DUFFY
Notary Public-Minnesota
My Commission Expires Jan 31, 2015

Gerald S. Duffy
NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this 1st day of May, 2012, by Rita Tauer, Clerk of Sand Creek Township, Scott County Minnesota, pursuant to the authority granted by its Town Board.

GERALD STAFFORD DUFFY
Notary Public-Minnesota
My Commission Expires Jan 31, 2015

Gerald S. Duffy
NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

The foregoing instrument was acknowledged before me this 30th day of April, 2012 by Weldon W. Gilbertson as Chief Executive Officer on behalf of Great Plains Sand, LLC.

ASHLEY IRENE LINDAHL
NOTARY PUBLIC - MINNESOTA
MY COMMISSION EXPIRES 1/31/2013

Ashley Lindahl
NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this _____ day of _____, 2012 by David Fallon as _____ on behalf of Scott Land Company, LLC.

_____
NOTARY PUBLIC

STATE OF New York)
) ss.
COUNTY OF New York)

The foregoing instrument was acknowledged before me this 3 day of May, 2012 by Clifford Bernstein as Co-President on behalf of Q Prime Inc.

RICARDO SETKA
Notary Public - State of New York
NO. 01SE6152634
Qualified in Kings County
My Commission Expires 3/6/15

_____
NOTARY PUBLIC

STATE OF MINNESOTA)
)ss.
COUNTY OF SCOTT)

Subscribed and sworn to before me this ____ day of _____, 2012 by Tom Wolf, Scott County Board Chair on behalf of Scott County, State of Minnesota and pursuant to the authority of the County Board.

_____
NOTARY PUBLIC

STATE OF MINNESOTA)
) ss.
COUNTY OF SCOTT)

The foregoing instrument was acknowledged before me this 1st day of May, 2012 by David Fallon as _____ on behalf of Scott Land Company, LLC.

GERALD STAFFORD DUFFY
Notary Public-Minnesota
My Commission Expires Jan 31, 2015

NOTARY PUBLIC

STATE OF _____)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2012 by _____ as _____ on behalf of Q Prime Inc.

NOTARY PUBLIC

STATE OF MINNESOTA)
)ss.
COUNTY OF SCOTT)

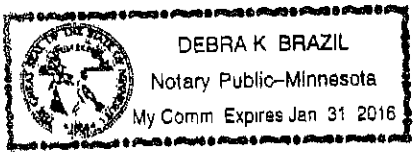
Subscribed and sworn to before me this 11th day of May, 2012 by Tom Wolf, Scott County Board Chair on behalf of Scott County, State of Minnesota and pursuant to the authority of the County Board.

DEBRA K BRAZIL
Notary Public-Minnesota
My Comm Expires Jan 31 2016

NOTARY PUBLIC

STATE OF MINNESOTA)
)ss.
COUNTY OF SCOTT)

Subscribed and sworn to before me this 11th day of May, 2012 by Gary Shelton, Scott County Administrator on behalf of Scott County, State of Minnesota and pursuant to the authority of the County Board.



NOTARY PUBLIC

DRAFTED BY:
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