ENVIRONMENTAL ASSESSMENT WORKSHEET

Note to preparers: An electronic version of this Environmental Assessment Worksheet (EAW) form and a fact sheet on preparing one are available at the Minnesota Pollution Control Agency (MPCA) website at http://www.pca.state.mn.us/programs/envr_p.html. A booklet, *EAW Guidelines*, is also available at the Minnesota Environmental Quality Board (EQB) website at http://www.eqb.state.mn.us/review.html or by calling 651-296-6300. The EAW provides information about a project that may have the potential for significant environmental effects. The EAW is prepared by the Responsible Governmental Unit (RGU) or its agents to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer must supply any reasonably accessible data for — but should not complete — the final worksheet. If a complete answer does not fit in the space allotted, attach additional sheets as necessary. The complete question as well as the answer must be included if the EAW is prepared electronically.

Note to reviewers: The Environmental Assessment Worksheet (EAW) provides information about a project that may have the potential for significant environmental effects. This EAW was prepared by the Minnesota Pollution Control Agency (MPCA), acting as the Responsible Governmental Unit (RGU), to determine whether an Environmental Impact Statement (EIS) should be prepared. The project proposer supplied reasonably accessible data for, but did not complete the final worksheet. Comments on the EAW must be submitted to the MPCA during the 30-day comment period which begins with notice of the availability of the EAW in the Minnesota Environmental Quality Board (EQB) *EQB Monitor*. Comments on the EAW should address the accuracy and completeness of information, potential impacts that are reasonably expected to occur that warrant further investigation, and the need for an EIS. A copy of the EAW may be obtained from the MPCA by calling 651-757-2101. An electronic version of the completed EAW is available at the MPCA website at http://www.pca.state.mn.us/news/eaw/index.html#open-eaw.

1. Project Title: Minnesota Proppant, LLC silica sand excavation, transportation, processing and export

2. Proposer: Minnesota Proppant, LLC

Contact Person Jennifer Dessner

and Title Public Relations Director

Address 1141 Whitewater Ave
St. Charles, MN 55972

Phone 507-951-7434
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3. RGU: Winona County Planning Department

Contact Person Jason Gilman, AICP

and Title Planning and Environmental Services Director

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4. Reason for EAW Preparation:

EIS Scoping		Mandatory EAW	X	Citizen Petition		RGU Discretion		Proposer Volunteered	

If EAW or EIS is mandatory give EQB rule category subpart number and name:

4410.4300 Subpart 12B – Nonmetallic Mineral Mining – local government unit
4410.4300 Subpart 14A2 – Industrial, Commercial and Institutional Facilities – local government unit
4410.4300 Subpart 36 – Land Use Conversion – local government unit

5. **Project Location:**	**County**	Winona	**City/Twp**	City of St. Charles/St. Charles Twp & Saratoga Twp

Processing and Trans-Load Facility
Part of SE ¼ Section 21, Twp 106N, Range 10 West
Part of SW ¼ Section 22, Twp 106N, Range 10 West
Part of NE ¼ Section 28, Twp 106N, Range 10 West
Part of NW ¼, Section 27, Twp 106N, Range 10 West
Slurry Pipeline Route
Parts of Sections 27 and 34 of Twp 106N, Range 10 West and Parts of Sections 3, 10, 14, 15 and 23 of Twp 105N, Range 10 West.
Slurry Injection Station/Campbell Quarry
Parts of SW ¼ of Section 14, Twp 105N, Range 10 West
Parts of NW ¼ of Section 23, Twp 105N, Range 10 West

GPS Coordinate:	Processing and Trans-Load Facility	N 92°01'10"	W 43°57'45"
	Slurry Pipeline Route (midpoint)	N 92°00'15"	W 43°54'50"
	Slurry Injection Station/Campbell Quarry	N 91°59'45"	W 43°53'20"
Tax Parcel Numbers			
	Processing and Trans-Load Facility	13.000.1570	
		13.000.2230	
		13.000.2180	
		13.000.1710	
		13.000.1720	
	Slurry Pipeline Route	Not Applicable	
	Slurry Injection Station/Campbell Quarry	14.000.1540	
		14.000 .0900	
		14.000.1541	

Tables, Figures, and Appendices attached to the EAW:

- Figure "General Site Location Map"
- Figure "United States Geological Survey
- Figure "Hydrology Map Slurry Injection Station/Campbell Quarry"
- Figure "Hydrology Map Processing and Trans-Load Facility
- Figure "NHIS data"
- Figure "Environmental Benefits Index map"
- Figure "Land Cover Types Slurry Injection Station/Campbell Quarry"
- Figure "Land Cover Types Processing and Trans-Load Facility"
- Figure "1941 Aerial Photo Slurry Injection Station/Campbell Quarry"
- Figure "1941 Aerial Photo Processing and Trans-Load Facility"
- Figure "1927 Parcel Map Slurry Injection Station/Campbell Quarry"
- Figure "1927 Parcel Map Processing and Trans-Load Facility"
- Figure "County Well Index Map Slurry Injection Station/Campbell Quarry"
- Figure "County Well List Slurry Injection Station/Campbell Quarry"
- Figure "County Well Index Map Processing and Trans-Load Facility"
- Figure "County Well List Processing and Trans-Load Facility"

- Figure "Protected Waters Map"
- Figure "Bedrock Geology"
- Figure "Depth to any Restrictive Layer"
- Figure "Karst Inventory Map"
- Figure "Soil Map Slurry Injection Station/Campbell Quarry"
- Figure "Soil Map Processing and Trans-Load Facility"
- Figure "EPA National Clean Diesel Campaign (NCDC) Quantifier"
- Figure: "Silica sand sources in close proximity to Slurry Injection Station"
- Figure - "State Historical Preservation Office Report"
- Figure - "Custom Soil Resource Report Map – Crop Productivity Index"
- Figure "St. Charles - Sub Areas Proposed Land Use"
- Figure "Winona County Land Use Plan"
- Figure "Archaeological Assessment"
- Figure "Draft Operation and Reclamation Plan for Campbell Quarry"

6. Description:

a. Provide a project summary of 50 words or less to be published in the *EQB Monitor.*

Combination of non-metallic mineral mining to extract silica sand for manufacturing and the oil/gas industries, a slurry injection station and six mile long hydro-transport buried pipeline for the mineral, an industrial sand processing facility, a rail transport trans-load facility, and inline water treatment and recycling system for the hydro-transport facilities.

b. Give a complete description of the proposed project and related new construction. Attach additional sheets as necessary. Emphasize construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes. Include modifications to existing equipment or industrial processes and significant demolition, removal or remodeling of existing structures. Indicate the timing and duration of construction activities.

The bedrock of southeastern Minnesota in close proximity to the project consist of strata's of St. Peter and Jordan sandstone. The close proximity of these formations to the surface allows for economical extraction. The grains of these sandstones are highly coveted in the oil and natural gas industries as a proppant used in the hydraulic fracturing process used to extract the oil and natural gas. New developments in directional boring in combination with improvements in hydraulic fracturing technologies has greatly increased the volume of gas and oil that can be extracted from shale formations within the United States. These advancements have made drilling and extraction more productive and economical which has increased the market demand for silica sand proppants.

Silica sand mining and processing in Southeastern Minnesota

Silica sand has been mined in southeastern Minnesota for generations. Until recently, it was only done on small scales in quarries of 1 to 10 acres and material was usually trucked no further than 20 miles from the source. When interest in mining and processing local silica sand sources was first brought to light, officials within Winona County and surrounding communities acted proactively and placed moratoriums on all silica sand mine proposals. After studying the pros

and cons and implementing a road use agreement policy, Winona County lifted their moratorium which allowed for this project to proceed. At this time, three EAW's and Conditional Use Permits for mineral extraction are currently under consideration within Winona County.

Creation of Minnesota Proppant, LLC (project proposer)

Within the last two years, two separate groups of local investors started exploring the economics of mining and processing the highly coveted product. One group was focused on the mining aspects and the other group on processing the material at a location with rail road access which is preferred for shipping of processed products. Ultimately, the mining group bought the land the processing group had procured and project proposer Minnesota Proppant, LLC was created. This EAW covers the proposal Minnesota Proppant, LLC has outlined to create an integrally planned and designed mining, transportation and processing facility within and south of the city of St. Charles, Minnesota.

Based on early meetings with concerned citizens and local government officials, the following general concerns with trucking and processing plans were raised:

- Truck traffic
- Noise and dust
- Impact on local Amish Communities
- Use of polyacrylamides in water clarification systems
- Reclamation of quarries

A major point of contention with concerned neighbors has been due to the proposed increase in truck traffic hauling material to and from the quarries, processing facilities and final transport stations which are predominantly rail loading stations located along the Mississippi River. This project proposes two features which will reduce truck traffic.

The first truck traffic reduction is the fixed processing facility which is located adjacent to a railroad line. Construction of a spur line will allow for loading of the processed material to be exported from the area without requiring additional truck traffic. The second is a slurry pipe which will transfer the raw silica sand from a site closest to the quarries to the processing facility. This greatly reduces the amount of truck traffic that will travel through the City of St.Charles or along highways between the quarries and the processing facility.

The processing of the raw silica sand at a fixed location is more environmentally friendly and economically feasible than mobile facilities. Having a fixed location allows for more control over the material, waste and water use. It allows for more oversight to control potential pollution or nuisances that neighbors have expressed as concerns.

Construction for this project will include:

- A spur rail line off the existing CP railroad along the north property line for Trans-Loading processed material.
- A Slurry Injection Station and 6 mile long hydro-transportation pipeline for slurry conveyance of raw material from mine to processing facility
- An industrial silica sand processing facility including a hydro-separator, drying facilities, screeners and storage silos

- A second Slurry Injection Station and parallel hydro-transportation slurry return line for unsuitable material and water conveying from the processing facility back to the mine
- A water clarifying system which will remove silt and clays so that the water used in the slurry operation can be recycled without large settlement ponds
- Campbell Quarry – a source of sand material centrally located to other nearby sources
- Improvements to local roads and construction of new local roads accessing the processing facility and future industrial zoned lots

In addition to proppants, silica sand is also extensively used in industrial processing, glass making, foundry molds, optical fibers, sand blasting, water purification/filtration, architectural and engineered coatings, as engineered fill and locally, due to it being naturally void of organic matter and presenting less opportunity for bacterial growth, as bedding for dairy cows. Additional land at the processing facility will be developed for industrial uses which may lend themselves to processing of silica sand for any of the uses listed above. Depending on the use, future environmental studies may be required to cover aspects outside the scope of this study.

Slurry Injections Station and Slurry Pipeline

A slurry pipe, a long distance hydro-transport system, works by mixing the raw silica sand with water at a Slurry Injection Station which is then is pumped in large diameter pipes to the processing facility. The pipes are buried underground where they are protected from exposure to the elements and hidden from view. Along the route, booster pumps will be installed which will keep the sand and water mixture moving. The spacing for these booster pumps is based on a formula factoring in elevation, distance and other friction loses. On average, they will be spaced every 1.5 miles.

Processing Facility

At the processing facility, the slurry mixture will be run through a hydro-sizer which will separate particles based on their hindered settling rate differential. This will remove many of the fines and impurities that are considered waste materials. The materials from the hydro-sizer are still a slurry mixture of sand and water. The waste material will be conveyed to an injection station where it will be returned to the Slurry Injection Station. The separated material of value is then conveyed to a dewatering screen. This is a steeply inclined and mechanized screen surface which achieves rapid drainage. This process converts the slurry to sand with 10% and 15% moisture content.

At this point, the sand still has too high of a moisture content to be dried economically. The sand will be placed in a building and further draining through gravity will lower the sand pile to between 4% and 5% moisture content. Once the achieved moisture content is reached, the material is ready to be sent to the dryer and final sizing.

(NOT COMPLETE)
Drying
Screening
Baghouse
Sorting
Storage

Recycling of Hydro-Transportation and Processing Water

Married to the dewatering process at both the processing plant and the slurry injection station are the collection and recycling of the water used in hydro-transport and hydro-sizing. Post hydro-sizing is the first opening in the loop. The waste slurry, water collected off the dewatering screen and water collected off the piles are all conveyed to the onsite slurry injection station where the water and waste sand is returned to the Slurry Injection Station. When the waste slurry outlets, it will pass over a dewatering screen and the sand will be stockpiled to allow for additional gravity dewatering before being transported for use in mine reclamation projects. The water from the dewatering screen and the stockpile drain will be processing in the clarifier before being reintroduced to the Slurry Injection Station which will continue the cycle.

The Clarifier will have similarities to a wastewater treatment plant with the exception that the minerals and water being processed only contains trace if any organics. Not having to treat organics means treatment for pathogens or BOD are not required. This simplifies the system to being a process to remove impurities so that the recycled water can be reintroduced into the hydro-transportation portion of the process. The material that will be processed is also very low in clay content so the suspension of solids is minimal compared to systems in western Wisconsin which process sand with up to 15% clay content. This allows for a number of pretreatment options and clarifiers which can be implemented in series for best results.

There are many systems and mechanisms that may be used in the clarification process such as centrifuges and belt filter presses. The system proposed for this project is a treatment train including a dewatering screen, a Recessed Plate Frame Filter Press and finally a tank clarifier:

1. The slurry material returning from the processing facility is run across a dewatering screen.
2. The dewatered waste material is then run across mechanical mediums of the Recessed Plate Frame Filter Press to remove additional moisture before the material is conveyed to a stockpile to be transported for reclamation efforts.
3. Effluent from the dewatering screen and filter press are directed to a tank clarifier which may use polymer components to flocculate solids. The solids that drop out are also conveyed to the waste material stockpile.
4. Treated water is incorporated back into the Slurry Injection Station to continue the cycle.

Concerns have been raised that polyacrylamide may contaminate the nerve toxin acrylomide or may be de-polymerized to form acrylomide. The Environmental Protection Agency has researched these links and found that proper use of polyacrylamide flocculants is safe. This aspect is further described in Item 18 – Water Quality – Waste Water.

The water clarification and recycling process could be performed with the use of large settling ponds. Clarifiers as proposed are much more expensive at initial startup but the benefits as opposed to settling ponds are:

- alleviate the lag time required for treatment using settling ponds
- better quality control of water being reintroduced to the hydro-transport system

- minimizing the footprint of the project (pond take up large areas)
- remove the potential for breaching of dikes or leaks through pond liner membranes
- elimination of point source surface and ground water pollution
- elimination of pond maintenance costs

Campbell Quarry

New Construction

New construction will include grading of berms, ditches, a permanent storm water treatment pond stockpiles, access roads and staging areas which can be constructed from onsite materials and finished with topsoil that will be salvaged onsite. Permanent structures will include the the infrastructure for the Slurry Injection Station equipment, Clarifier and water supply which will include drilling for a new waters supply well. The majority of this equipment will be housed inside roofed structures. Other infrastructure which may not be housed under roof are the conveyors for transport of waste and raw sand as well as any loading/loading equipment or bunkers. Other new construction may include scales, parking for trucks, equipment and employees. An onsite septic system will be installed separate from the clarifier system. The onsite septic system will be strictly for treatment of employee bathroom and "tap" water wastes which will be similar to an office/shop use.

The access roads within the property and around the loading/unloading area will be constructed to a width of 28 feet to support two-lane passage of haul trucks. The road bed will be constructed of materials from on-site along with a crushed aggregate driving course. The drive from County Road 6 to the loading/unloading areas will have a dust free surface of either bituminous or concrete.

Operations Methods - Mining Sequence

Mining will begin at the southeast end of the sand hill formation and proceed to the northwest. The initial phase will include stripping and placement of overburden to construct the building pads for the Slurry Injector Station, loading/unloading areas, access routes and permanent storm water treatment pond . The subsequent phase of mining will work northwesterly to excavate the materials to the quarry boundary. Reclamation will create a level area south of the level pad constructed in phase one. Excavation will not intercept the water table. There will be no dewatering at the site.

The existing access to the site is from County Road 6 and accesses an existing privately owned and operated grain bin setup. This access will be improved based on requirements of the Winona County Highway Engineer. Improvements are anticipated to include a right turn lane into the site and dust free surfacing. The current sight distance at the access intersection with CR 6 is good.

Provided the Slurry Injection Station is operational, material mined from the quarry will not require hauling on public roads. It is anticipated that sand will be screened of large chunks and debris and hauled directly to the raw sand stockpile for injection. Other trucks from regional quarries will be hauling material to the site to provide raw material to be transported in the slurry pipline. These trucks will have haul route occuring along County, State and Federal Highway

designated as haul routes that do not affect primary residential streets. At the site, proper signage per MnDOT MUTCD shall be installed near the access. This is to ensure only the approved access sites are utilized for ingress and egress.

Proposed mining and hauling may take place between 6am and 10 pm CST. Permission from the county zoning administrator may be granted for operations beyond these hours to respond to public or private emergencies or whenever any reasonable or necessary repairs to equipment are required to be made. Mining can take place year round but hauling and excavation of materials are greatly affected when temperatures are below freezing. Hauling is further affected by spring road bans which are established by MnDOT.

Blasting may be necessary to remove the cap rock off the ridge and to loosen well cemented sandstone. If blasting is found to be necessary the owner and operator will retain professional and licensed blasting contractors who operate in accordance with all federal, state, county and township regulations. No explosives will be stored on the site. The blasting contractor will notify all adjoining neighbors in advance of the blast alerting them to the time and duration of the event and vibration monitoring shall be done as necessary at the adjacent homes and structures within ¼ mile of the proposed blast. A 24-hour notification will be given to adjacent property owners and local government units. Professional and licensed blasting contractors will follow standard operating procedures to reduce dust control that includes reducing the size of the charge, time and sequence of blasts and monitoring the wind speed and direction.

The standard blast operating procedures will include a plan for all blasts providing contact information of the blasting contractor and monitoring consultant. The plan will show the lands cleared, shot pattern, charges, timing sequence, seismograph locations (standards and practices), safety plan and Certificates of Insurance. Within 5 days of each blasting event, the blasting contractor will provide a report to the operator and local government unit describing the Pre and Post blast observations within the site and surrounding area and Seismograph findings.

A generalized sequence of operations and methods is:

1. Survey phase limits and areas not to be disturbed.
2. Install perimeter silt fence. Construct down slope erosion control measures.
3. Remove surface vegetation in the area to be excavated. Large woody material may be chipped and stockpiled for mulch.
4. Strip and stockpile topsoil. Seed the topsoil stockpile to establish vegetation to prevent erosion. A pasture mix with a nursery crop of oats or rye are acceptable seed mixes.
5. Construct any temporary sedimentation basins and their outlets.
6. Construction any diversion ditches and berms as shown in the operation and reclamation plan to direct any stormwater runoff from the current phase of construction to the temporary sedimentation basins.
7. Remove overburden materials and either stockpile or place in areas where they can permanently remain as part of the reclamation plan. Stockpile areas shall be placed within the mining limits and positioned to aid in the blocking prevailing winds which will aid in prevention of wind erosion. Suitable materials from the overburden will be used for access roads. Areas downstream of stockpiles must be protected with vegetated berms, wood chip berms, silt fence or other approved BMP's. Watering of stockpiles with a tanker truck may be necessary to prevent dust and wind erosion. Overburden stockpiles that will

remain in place longer than 14 days and are susceptible to wind erosion shall be covered with topsoil, seed, and mulch.

8. Side slopes of berm, ditches, roads and temporary basins are to be covered with topsoil and seeded to reestablish vegetation.
9. Limestone having marketable value may be excavated, crushed, screened and stockpiled. Unsuitable limestone will be placed with overburden in stockpiles or in reclamation area. Dust mitigation measures for crushing and screening operations may be mitigated at the feed and discharge points using wet suppression; this may also include conveyors if utilized. The mined material may be sprayed with water to coat the outer surface before loaded for crushing and grinding to prevent dust from becoming liberated and airborne.
10. Course sands are excavated, pulverized, screened to remove aggregate chunks or debris that may find its way into the product and stockpiled. Dust mitigation measures as described in number 9 may be followed.
11. Fine sands are excavated, pulverized, screened to remove aggregate chunks or debris that may find its way into the product and stockpiled. Dust mitigation measures as described in number 9 may be followed.
12. Material is loaded into trucks and weighed for transport to an offsite transfer facility or processing facility.
13. Unsuitable sand, approximately 25% hauled to the offsite processing facility, is hauled back to the quarry and placed in stockpiles or placed in areas where it can permanently remain as part of the reclamation plan. Unsuitable sand is sand that doesn't meet the specifications of the end user which is based on sieve size. The 25% hauled back to the site is suitable for fill material to be used in reclamation. Once covered with an average minimum of 6" of topsoil it shall be seeded and mulched to establish a vegetative cover.
14. After sand material is exhausted from the current phase limits and overburden and waste materials have been placed and leveled per the reclamation plan, an average minimum of 6" of topsoil shall be respread.
15. The site will be seeded and stabilized through revegetation. A pasture mix with a nursery crop of oats or rye are acceptable seed mixes.
16. When all construction activity is complete in the reclaimed area, temporary diversions ditches/berms and temporary basins are to be removed. Areas disturbed during removals shall be seeded and stabilized through revegetation.
17. Final terrain is returned to pasture land, forest or a combination thereof. Due to the potential lack of adequate topsoil and subsoils, the reclaimed areas are not intended for row crop cultivation. If during reclamation it is determined that soil conditions are suitable for future row crop production, the mine operator and owner shall contact the Winona County NRCS/SWCD office for assistance on the proper procedures for returning the site to row crop production. Factors to be addressed for returning the reclamation area to row crop production are soil depth, topsoil depth and color, organic content of soils, nutrient content of soil and drainage upstream, within and downstream of reclamation area.

NOTE: Additional activities may be warranted due to site conditions, weather conditions or phasing limitations.

Reclamation

As defined in the Operation and Reclamation Plan, reclamation will take place in phases such that disturbed areas are limited to a maximum of 10 acres being open at any one time. After sand has been removed to the design elevation, overburden and unsuitable sands will be placed

in lifts, leveled and compacted. Once this area has reached its final design elevation, an average minimum of 6" of topsoil from either stockpiles or ongoing stripping will be spread evenly. The reclaimed area will be seeded with a pasture grade grass mix.

This quarry site was picked for its central location to other silica sand sources. The siting of the Slurry Injection Station and clarifiers will allow for this site to be mined and reclaimed in a very short period of time. Depending on speed of construction of the processing facility and slurry pipeline as well as the market for the material, the timeline for mining and reclaiming the site could be 2 to 5 years. If the site is dormant for an extended period of time, the operator is responsible for applying the requirements outlined by the Reclamation Plan for site stabilization. A performance bond is required which may be drawn on if the operator does not produce.

Areas that have been reclaimed shall be inspected yearly with a report placed into the SWPPP documents. Reclaimed areas that are not stabilized to the conditions outlined in the plan will be addressed and reinspected until stabilization is complete. All parts of the mine are under a performance bond as required by Ordinance.

Final Use

Once grass has had an opportunity to become established, which may take more than one growing season, the reclaimed area may be fenced and pastured or it may be left to nature. Due to the lack of adequate topsoil and subsoils, the reclaimed areas are not intended to be put into row crop cultivation. If during reclamation it is determined that soil conditions are suitable for future row crop production, the mine operator and owner shall contact the Winona County NRCS/SWCD office for assistance on the proper procedures for returning the site to row crop production. Factors to be addressed for returning the reclamation area to row crop production are soil depth, topsoil depth and color, organic content of soils, nutrient content of soil and drainage upstream, within and downstream of reclamation area.

TRAFFIC SUMMARY – TRIPS PER DAY – TRUCKS HAULING GMATERIAL TO THE SLURRY INJECTION STATION – ALTERNATIVE HAULING (ANOTHER SLURRY LINE, OVERHEAD CONVEYORS, AUGERS)

The development is proposing to generate a total of xx truck trips per day (xx trucks in and xx trucks out) and 20 employee trips per day (xx in and xx out). This equates to xx truck trips and x employee trips in the peak hours (xx trucks in and xx trucks out ~ x employee trips in or out) Truck traffic from other mines will travel along CSAH 6.

c. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The purpose of this project is to mine and process high grade industrial silica sand, an important natural resource used in manufacturing and the oil and gas industry throughout North America. Uses for this sand in manufacturing is as the base product in the production of glass, as an abrasion material, a filter medium, for casting in foundaries and many other uses too extensive to list here. Many of the silica sand deposits in southeastern Minnesota have the required size and hardness required for the use as "frac" sand in the oil and natural gas industry. Developing this sandstone resource will provide a ready supply of frac sand to the industry. The mined material is subject to sales tax which will provide a benefit to the local government unit. Due to local

concerns with truck traffic initially proposed by the project, the slurry pipeline has been incorporated to minimize truck traffic between the mines and the processing facility.

From the mine to the processing facility, this project will employ approximately 80 people fulltime and many others during phases of construction.

d. Are future stages of this development including development on any other property planned or likely to happen? ☒Yes ☐No

If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

The project described herein covers all aspects of mining and processing industrial silica sand from clearing the overburden to transporting the raw material, processing it for specific buyers and loading rail cars for shipment via railroad. The development of other property near the processing facility and trans-load facility are limited to manufacturers or other sand users which may develop existing and proposed commercial/industrial zoned lands within the City of St.Charles.

Outside of the City of St. Charles, future stages associated to this development will be mining of the silica sand material for the processing facility. The silica sand formation (St.Peter Sandstone) that this proposal will extract from extends throughout southeastern Minnesota in great quantities. However, only those locations where it is easily accessible are currently economically feasible. The slurry injection station described in this project is located amongst the greatest sources of the high grade sand found near the surface in southeastern Minnesota. Its location to other potential sand sources was deliberate to allow for phased development of other sand mines.

There have been recent expressed interest in developing silica sand quarries from this same formation within a mile of this site and at least two quarry applications are pending and subject to EAW's declarations. It shall be noted that those projects CAN move forward without this project. The greatest impact on any mines proposed in close proximity of this project is that the facilities proposed will reduce the distance, by many miles, that the material will need to be trucked to be processed and shipped by rail. This project has the potential to greatly reduce truck traffic on County, State and Federal roads. Any reduction in truck traffic will reduce vehicle emissions for those projects, reduce wear and tear on the local transportation system and increase vehicle safety by taking those trucks off the road.

No matter how many quarries are approved for mining, there will always be economic and physical limitations on the amount of sand which can be extracted, transported, processed and shipped from this facility. Those physical limitations and Conditional Use Permit requirements for all quarries, as outlined within the Winona County zoning ordinance, will allow for organized planning, administration and implementation of multiple mine locations.

e. Is this project a subsequent stage of an earlier project? ☐ Yes ☒ No

If yes, briefly describe the past development, timeline and any past environmental review.

There are existing and operating silica sand mines spread across southeastern Minnesota and there is are sand processing facilities as near to the project as Winona. This project will centralize the mining, transportation, processing and shipping in a centralized location which will allow greater environmental oversight as well as economic benefit to the communities within and adjacent to this important natural resource.

7. Project Magnitude Data

Total Project Area (acres) _____ **or Length (miles)** _____

Number of Residential Units: **Unattached** _____ **Attached** _____ **Maximum Units Per Building:** _____

Commercial/Industrial/Institutional Building Area (gross floor space): **total square feet** _____

Indicate area of specific uses (in square feet):

Office _____ **Manufacturing** _____
Retail _____ **Other Industrial** _____
Warehouse _____ **Institutional** _____
Light Industrial _____ **Agricultural** _____
Other Commercial (specify) _____
Building height _____ **If over 2 stories, compare to heights of nearby buildings** _____

Refer to EAW guidelines 4410.4300 Subpart 14 with special attention to the notes regarding figuring the Category A versus Category B with the arithmetic calculation as defined under the Residential development.

8. Permits and approvals required. List all known local, state and federal permits, approvals and financial assistance for the project. Include modifications of any existing permits, governmental review of plans, and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minn. R. 4410.3100.*

Unit of Government	Type of Application	Status
Winona County	Conditional Use Permit (Mine)	To be applied for
Winona County	Driveway Access (change of use)	To be applied for
Winona County	Utility within Right of Way Permit	To be applied for
MnDOT	Utility within Right of Way Permit	To be applied for
MPCA	Non metallic Mining and NPDES/SDS	To be applied for
City of St. Charles/St.Charles Twp	Annexation/Orderly Annexation Agr.	To be applied for
City of St. Charles	Rezone Application	To be applied for
MnDept Health	Watermain Extension Permit	To be applied for
MPCA	Sanitary Sewer Extension Permit	To be applied for
MPCA	NPDES General Stormwater Permit for Construction Activities	To be applied for
MPCA	Air Emissions Permit	To be applied for
Winona County	Wetland No-Loss Application	Pending
City of St.Charles	Building Permit	To be applied for
City of St. Charles	Grading Permit	To be applied for

9. Land use. Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.

Processing and Trans-Load Facility

Pre-settlement vegetation documented by the MNDNR County Biological Survey maps from the 1846-1908 Public Land Survey with Pre-Settlement Vegetation indicated the location of the processing and trans-load facility were prairie before the passage of the Homestead Act of 1862 where the majority of land in Winona County was plowed for agricultural production. The 1927 Atlas – Plat Book and Rural Directory of Winona County, Minnesota indicated Section 21, 22, 27 and 28 St. Charles Township were divided between 40 – 160 acre parcels. Historical review of the 1940 aerial photographs showed the property was in agricultural land use (See Figure "1940 Aerial Photo"). During the early agriculture history of the area from 1880 to 1920 the cropland was dominated by small grains (oats, wheat, barley) and hay ground or pastures lands. As farming became mechanized with tractors and combines corn began to dominate the cropland in the 1930's. With the advent of chemical nitrogen fertilizers after 1950 cropland typically had a hay, oats and corn rotation. Soybeans were introduced to more widespread cultivation in the 1970's. Currently the cropland is dominated by a corn and soybean rotation that relies on heavy fertilizer inputs and the use of chemical herbicides.

The site is currently zoned Agricultural/ Resource Conservation within Winona County and St.Charles Township. It is planned as Light Industrial on the St. Charles Comprehensive Plan. Current and recent land uses are/were agricultural in nature with row crop across the majority of the property and a former farmstead located in the northeast corner of the subject property. The farmstead is not used for residential purposes as all that remains are two outbuildings and an area with a few trees which used to be the yard area. There is one small area of woodland (less than 3 acres) along the south property line where the topography rises quickly and row crop production is not feasible. The agricultural uses are the same as adjacent lands. There are a16 residential and /or agricultural building sites located within a half mile of the property. Previous environmental impacts within the agricultural portion of the property would be due to the application of fertilizers and pesticides and any erosion that has occurred due to yearly disturbances to the soil. There is no evidence to indicate that there are or have been environmental hazards due to this use attributable to the site.

This project plan has been based on the property being annexed into the City of St.Charles and being zoned Light Industrial. This zoning designation and the proposed facilities are compliant and per the Comprehensive Plan of the City and County. With the size of the property and the distance the facilities will be from residences, the processing and trans-load facility are adequately spaced to mitigate the nuisances brought by the change of use of the land. Any change of use of a property has consequences and development of the site will have consequences the similar to as if this property were being converted to single family houses. Other design features such as keeping the raw product and processing facilities under a roof are not required but will be done to mitigate potential nuisances such as noise and light. Other benefits of the facilities as proposed over other options are that the product brought in will be wet and housed under a roof so raw stockpiles will not be susceptible to wind erosion. The hydro-sorting, drying and screening process are all under roof and finished product is housed in silos so

there are no points in the system to allow rogue dust to escape. Having the system enclosed will also reduce the amount of light that would be given off by an open air facility.

There are no wetlands on the property. There are some small wetlands located north of the property. The project will not cause disturbance of these wetlands. The alignment for utility extension nor does the site have any known environmental hazards due to past uses.

Slurry Pipeline Route

The alignment is proposed to run from the Campbell Quarry, west along the County Highway 6 right of way; thence north along the County Road 123 right of way; continue north along the County Highway 35/37 right of way to the Amish communities Shetler school site where the alignment will run cross country until entering the Minnesota Proppants site where it will end for processing at the processing facility. Land uses along this alignment are agricultural in nature. The pipe will be buried so that its installation will only be a temporary disturbance for roadways and driveways along the alignment. At certain points along the alignment, booster pumps will be required which will be located just outside the right of way. These locations will be based on ease of accessibility and are likely to be located on the edge of agricultural fields.

The Slurry Pipeline will be pumping a mixture of water and sand, neither of which pose an environmental hazard should there be a break in the pipeline. The alignment within the right of way follows areas previously disturbed during road construction activities. Areas that may deflect from the right of way will be running across row crop agricultural lands. The slurry pipeline will not be running through any existing known contaminated sites. It will cross existing utility lines which may include an underground gas line. During the design phase of this project, those interfaces will be explored and potential conflicts addressed.

The purpose for the Slurry Pipeline is to minimize truck traffic. The corridor that the pipeline will run was similar to the alignment truck traffic was proposed. Through discussions with concerned neighbors, many of which are Amish, the truck traffic concern became very evident. The buried pipeline reduces the chances for conflicts between trucks and the much slower moving horses and buggies the Amish use for daily transportation.

Slurry Injection Station/Campbell Quarry

Pre-settlement vegetation documented by the MNDNR County Biological Survey maps from the 1846-1908 Public Land Survey with Pre-Settlement Vegetation indicated the location of the Slurry Injection Station and Campbell Quarry were prairie before the passage of the Homestead Act of 1862 where the majority of land in Winona County was plowed for agricultural production. The 1927 Atlas – Plat Book and Rural Directory of Winona County, Minnesota indicated Section 14 and 23 of Saratoga Township was divided between 40 – 160 acre parcels. Historical review of the 1940 and 1991 aerial photographs showed the Campbell Quarry was in agricultural land use (See Figure “1940 Aerial Photo”). During the early agriculture history of the area from 1880 to 1920 the cropland was dominated by small grains (oats, wheat, barley) and hay ground or pastures lands. As farming became mechanized with tractors and combines corn began to dominate the cropland in the 1930’s. With the advent of chemical nitrogen fertilizers after 1950 cropland typically had a hay, oats and corn rotation. Soybeans were introduced to more

widespread cultivation in the 1970's. Currently the cropland is dominated by a corn and soybean rotation that relies on heavy fertilizer inputs and the use of chemical herbicides.

The site is currently zoned Agricultural/ Resource Conservation. Current and recent land uses are/were agricultural in nature with row crop, farmsteads and pasture lands located within the property. These are the same uses as adjacent lands. The owner of the land currently has large grain bins and an elevator setup located east of the proposed Slurry Injection Station. Other than sharing a driveway access, this grain setup will not impact the proposed project and the proposed project does not affect the grain setup. The Slurry Injection Station and mining operations will be located within the crop land and pasture lands. Previous environmental impacts within the agricultural portion of the property would be due to the application of fertilizers and pesticides and any erosion that has occurred. There is no evidence to indicate that there are or have been environmental hazards due to this use attributable to the site.

The mining activities of this project are a temporary use. Once the mining area of the site is reclaimed, the property will again be pasture or a similar low impact use. The Slurry Injection Station will continue to operate as such for material that may be brought into the site. This project is outside the visibility of any existing residences and is compatible with adjacent and nearby land uses.

10. Cover Types. Estimate the acreage of the site with each of the following cover types before and after development:

Processing and Trans-Load Facility

	Before	After		Before	After
Types 1-8 wetlands	0	0	**Lawn/landscaping**	3.15	43.99
Wooded/forest	4.60	3.55	**Impervious Surfaces**	0	158.89
Brush/grassland	0	44	**Stormwater pond**	0	4.5
Cropland	309.27	52	**Other (Right of Way)**	2.45	12.54
			TOTAL	319.47	319.47

Slurry Pipeline Route – Not Applicable

Slurry Injection Station/Campbell Quarry

	Before	After		Before	After
Types 1-8 wetlands	0	0	**Lawn/landscaping**	6.9	6.9
Wooded/forest	0	0	**Impervious Surfaces**	1.4	4.5
Brush/grassland	46.5	53.7	**Stormwater pond**	0	2.2
Cropland	220.8	208.9	**Other (Right of Way)**	4.6	4.6
			TOTAL	280.8	280.8

If before and after totals are not equal, explain why.

11. Fish, Wildlife, and Ecologically Sensitive Resources.

a. Identify fish and wildlife resources and habitats on or near the site and describe how they would be affected by the project. Describe any measures to be taken to minimize or avoid impacts.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

b. Are any state (endangered or threatened) species, rare plant communities or other sensitive ecological resources on or near the site? ☐ Yes ☐ No

If yes, describe the resource and how it would be affected by the project.

Describe any measures that will be taken to minimize or avoid adverse impacts. Provide the license agreement number (LA-_____) and/or Division of Ecological Resources contact number (ERDB 20120383 & 20120384) from which the data were obtained and attach the response letter from the DNR Division of Ecological Resources. Indicate if any additional survey work has been conducted within the site and describe the results.

12. Physical Impacts on Water Resources. Will the project involve the physical or hydrologic alteration (dredging, filling, stream diversion, outfall structure, diking, and impoundment) of any surface waters such as a lake, pond, wetland, stream or drainage ditch? ☐ Yes ☒ No

If yes, identify water resource affected and give the DNR Public Waters Inventory (PWI) number(s) if the water resources affected are on the PWI. _____

Describe alternatives considered and proposed mitigation measures to minimize impacts.

Processing and Trans-Load Facility

There are no surface waters such as lakes, ponds, wetlands, streams, or drainage ditches located on the Project site itself. There is a roadside ditch along the west boundary which will remain as well as a ditch along the north boundary at the railroad. Within the property there are broad swales and waterways in the existing agricultural lands. These flow north to the railroad right of way where there were wetlands delineated. The project will not disturb these wetlands and onsite storm water treatment facilities are being designed to mimic existing conditions for the quantity of runoff but with improved quality of runoff.

Slurry Pipeline Route

The slurry pipeline will cross intermittent streams but no continuous flows or water bodies. Any disturbances within the intermittent flowage areas will be stabilized with erosion control blanket and seed or other energy dispersion products as required to return the ground to predistubance quality or better.

Slurry Injection Station/Campbell Quarry

There are not surface waters located within the project footprint. There is an intermittent stream which will be bridged with a culvert which will lie east of the slurry injection facilities. This

action essentially slow down the velocity of runoff at this location which will reduce the risk of downstream erosion during snowmelt or rainfall events.

13. Water Use. Will the project involve installation or abandonment of any water wells, connection to or changes in any public water supply or appropriation of any ground or surface water (including dewatering)? ☒ Yes ☐ No

If yes, as applicable, give location and purpose of any new wells; public supply affected, changes to be made, and water quantities to be used; the source, duration, quantity and purpose of any appropriations; and unique well numbers and DNR appropriation permit numbers, if known. Identify any existing and new wells on the site map. If there are no wells known on site, explain methodology used to determine.

No new wells are proposed as part of the overall project. No well was located in the northeast corner of the property during a land survey or search of the County Well Index (see Figure "County Well Index Map"). If a well is discovered, it shall be sealed by a professional per Minnesota Department of Health requirements.

The water supplier for the project will be the City of St. Charles whose water system operates under DNR appropriations permit number 63-0751. The city of St. Charles currently supplies water to its constituents by three (3) wells ranging from 667 to 736 feet deep, drawing water from the Multiple and Ironton-Galesville aquifers. The pumping capacity of the wells are rated for 1280 gallons per minute. Above ground storage reservoirs provide 1 million gallons of capacity. The system is permitted and operated in accordance with current Minnesota Department of Health requirements as a public water supply. The system currently provides domestic water to 3725 residents plus businesses (2010 census). Daily water use in 2006 averaged 442,000 gallons per day with a peak day demand of 600,000 gallons. After the fire that destroyed Northstar Foods in April of 2009, these figures dropped to a 2011 average of 224,657 gallons per day with a peak day demand of 393,000 gallons. This is a decrease of over 200,000 gallons per day.

Development of the project requires an expansion to this municipal water distribution system. The alignment for this pipeline is approximately three quarters of a mile across private land for which a public utility easement has been procured. Once inside the project area, the waterline will generally be run west to east in a location established to allow for future connections. To ensure uninterrupted service, a second line will be extended to the property which will run along a route approximately one mile long. The water distribution pipes lines within the City of St.Charles are currently estimated to cost approximately $1.3 million. It will be possible to expand the planned water system to provide public supply to other areas if further annexations are requested from property owners.

Processing Facility, Slurry Pipeline Route & Slurry Injection Station

The hydro-transport system, hydro-separators, clarifier, slurry pipeline and slurry injection systems are essentially a closed loop system where water is recycled at both end of the project. The major loss in this system is water which is still in the sand when it is sent to the dryer. On average, hydro-separated sand will have 4% moisture when it reaches the dryer. The evaporation of this water must be replenished which is the largest operations draw off the public water distribution system. Based on drying 600 tons of material per hour at 4% moisture and 1%

loss off stockpiles attributed to evaporation, the peak water replenishment rate calculates to 120 gallons per minute. If the facility were able to operate at peak production year round, the water usage would equate to 172,800 gallons per day, and 63.1 million gallons per year. As noted above, the daily average use has dropped by over 200,000 gallons per day for the City of St. Charles since the loss of Northstar Foods.

The slurry pipeline will be fed by water supplied by the City of St.Charles at the processing facility. A water supply line will be run parallel to the slurry lines. The pressure of the water will be maintained with booster pumps as they are needed along the route. This water supply line is required to add water to the slurry pipeline at the hydro-transport booster pumps stationed along the alignment. The supply line will end at the Slurry Injection Station and does not require looping.

The Slurry Injection System will be supplied by water treated through the clarifier and supplemented by water from the supply line described above. During initial start up, the system is calculated to require 2 million gallons of water to fill the pipelines. The initial filling of the lines will be coordinated with the City of St. Charles public works staff to ensure there are no pressure losses or drop in storage capacity for city services or fire protection.

A water clarification system will be installed which will allow for recycling of the wash and slurry water. The water treated in the clarifier is not palatable water which can be brought back into the City supply. However, recycling wash water will greatly reduce the amount of make up water required to be brought into the system. The clarifier system is further described under Item 18 Water Quality – Waste water.

Trans-load Facility & Campbell Quarry

The rail line spur and quarry will not have water service lines plumbed to them. Any water required for their operations will be drawn from locations at the processing plant or slurry injection station.

Summary of anticipated peak water uses:

Replenishment of evaporated water:	172,800 gallons/day
60 employees at processing plant:	1050 gallons/day
10 employees at mine/slurry injection station	175 gallons/day
Total anticipated average daily water use	174,025 gallons/day
Industrial lots to be developed in the future	Unknown

After the Northstar Foods fire, the average daily water use for the City of St.Charles dropped by over 200,000 gallons per day. This project proposed to use 7/8 of the water previously used on a daily basis. If proposed uses in the future industrial lots or other new development within the City create draws that affect the City water supply, the City will has sufficient well capacity to accommodate additional users. Additional storage for fire flow may be required in the future but at this time, the City's water supply and storage infrastructure is satisfactory to handle this project.

Northstar Foods was by far the largest water user and the loss of their revenues from utilities has been an economic hardship ever since the fire. The sale of water will greatly improve the coffers

of the City of St.Charles as they have been without this income source since 2009. The City will not be required to expand their existing system to handle the project which would have triggered a mandatory EAW under Minnesota Rule 4410.4300 Subpart 24 for Water Appropriations and Impoundments.

14. Water-related land use management districts. Does any part of the project involve a shoreland zoning district, a delineated 100-year flood plain, or a state or federally designated wild or scenic river land use district? ☐ Yes ☒ No

If yes, identify the district and discuss project compatibility with district land use restrictions.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

15. Water Surface Use. Will the project change the number or type of watercraft on any water body?
☐ Yes ☒ No

If yes, indicate the current and projected watercraft usage and discuss any potential overcrowding or conflicts with other uses.

16. Erosion and Sedimentation. Give the acreage to be graded or excavated and the cubic yards of soil to be moved: See below acres; See below cubic yards. Describe any steep slopes or highly erodible soils and identify them on the site map. Describe any erosion and sedimentation control measures to be used during and after project construction.

Processing and Transload Facility – 287.5 acres disturbed - 950,000 CY
Campbell Quarry – 54.9 acres disturbed – 2.2 Million CY

Processing and Trans-Load Facility

Soil #	Soil Name	Slope %	Hydrologic Group	Kf	T factor
11D	Sogn silt loam	6 to 30	D	0.28	1
79B	Billett fine sandy loam	1 to 6	A	0.24	3
81B	Boone loamy fine sand	2 to 6	A	0.24	3
81C	Boone loamy fine sand	6 to 15	A	0.24	3
299B	Rockton silt loam	1 to 6	C	0.28	2
301A	Lindstrom silt loam	1 to 3	B	0.32	5
1936	Hoopeston sandy loam, bedrock substratum	0 to 2	A/D	0.10	4
1937	Lawler loam, bedrock substratum	0 to 2	B/D	0.20	4
1951	Flagler sandy loam, bedrock substratum	0 to 2	A	0.10	3

A					
1951B	Flagler sandy loam, bedrock substratum	2 to 6	B	0.10	3
1953	Marshan silt loam, loamy substratum	0 to 2	B/D	0.28	5
1954B	Spinks loamy fine sand, bedrock substratum	1 to 6	A	0.15	4
1955 A	Waukee loam, bedrock substratum	0 to 2	B	0.24	4
1955B	Waukee loam, bedrock substratum	2 to 6	D	0.24	4

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Soil Erosion Factors: Kf – whole soil on a rock free basis, Tf = wind erodibility group and wind erodibility index. CER – Crop Equivalency Rating; Slope – in percent

The four hydrologic soil groups (HSGs) are described as:
Group A—Soils in this group have low runoff poten- tial when thoroughly wet. Water is transmitted freely through the soil. Group A soils typically have less than 10 percent clay and more than 90 percent sand or gravel and have gravel or sand textures. Some soils having loamy sand, sandy loam, loam or silt loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments.

The limits on the diagnostic physical characteristics of group A are as follows. The saturated hydraulic conductivity of all soil layers exceeds 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24 inches]. Soils that are deeper than 100 centimeters [40 inches] to a water imperme- able layer are in group A if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 10 micrometers per second (1.42 inches per hour).

Group B—Soils in this group have moderately low runoff potential when thoroughly wet. Water transmis- sion through the soil is unimpeded. Group B soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures. Some soils having loam, silt loam, silt, or sandy clay loam textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments.

The limits on the diagnostic physical characteristics of group B are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] ranges from 10.0 micrometers per second (1.42 inches per hour) to 40.0 micrometers per second (5.67 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24inches]. Soils that are deeper than 100 centimeters [40 inches] to a water impermeable layer or water table are in group B if the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface exceeds 4.0 micrometers per second (0.57 inches per hour) but is less than 10.0 micrometers per second (1.42 inches per hour).

Group C—Soils in this group have moderately high runoff potential when thoroughly wet. Water transmis- sion through the soil is somewhat restricted. Group C soils typically have between 20 percent and 40 percent clay and less than 50 percent sand and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures. Some soils having clay, silty clay, or sandy clay textures may be placed in this group if they are well aggregated, of low bulk density, or contain greater than 35 percent rock fragments.

The limits on the diagnostic physical characteristics of group C are as follows. The saturated hydraulic conductivity in the least transmissive layer between the surface and 50 centimeters [20 inches] is between 1.0 micrometers per second (0.14 inches per hour) and 10.0 micrometers per second (1.42 inches per hour). The depth to any water impermeable layer is greater than 50 centimeters [20 inches]. The depth to the water table is greater than 60 centimeters [24inches]. Soils that are deeper than 100 centimeters [40 inches] to a restriction or water table are in group C if the saturated hydraulic conductivity of all soil lay- ers within 100 centimeters [40 inches] of the surface exceeds 0.40 micrometers per second (0.06 inches per hour) but is less than 4.0 micrometers per second (0.57 inches per hour).

Group D—Soils in this group have high runoff poten- tial when thoroughly wet. Water movement through the soil is restricted or very restricted. Group D soils typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures. In some areas, they also have high shrink-swell potential. All soils with a depth to a water impermeable layer less than 50 centimeters [20 inches] and all soils with a water table within 60 centimeters [24 inches] of the surface are inthis group, although some may have a dual classification, as described in the next section, if they can be adequately drained.

The limits on the physical diagnostic characteristics of group D are as follows. For soils with a water im- permeable layer at a depth between 50 centimeters and 100 centimeters [20 and 40 inches], the saturated hydraulic conductivity in the least transmissive soil layer is less than or equal to 1.0 micrometers per sec- ond (0.14 inches per hour). For soils that are deeper than 100 centimeters [40 inches] to a restriction or water table, the saturated hydraulic conductivity of all soil layers within 100 centimeters [40 inches] of the surface is less than or equal to 0.40 micrometers per second (0.06 inches per hour).

Dual hydrologic soil groups—Certain wet soils are placed in group D based solely on the presence of a water table within 60 centimeters [24 inches] of the surface even though the saturated hydraulic conduc- tivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition. For the purpose of hydrologic soil group, adequately drained means that the seasonal high water table is kept at least 60 centimeters [24 inches] below the surface in a soil where it would be higher in a natural state.

Currently the site consist mainly crop land with an area of grasses and minor trees around a former farm building site near the northeast corner of the property. According to the Natural Resource Conservation Services Soil Survey for Winona County, there are three predominant soil types within the boundar: Flagler sandy loam, (with slopes ranging from 0 to 6 percent), Boone loamy fine sand (with slopes ranging from 2 to 15 percent), Hoopeston sandy loam (with slopes ranging from 0 to 2 percent). The existing soils are conducive to rapid infiltration meaning there is minimal runoff under normal conditions.

Chapter 9.15 of the Winona County Zoning Ordinance outlines the requirements for Soil Erosion and Sediment Control for the proposed Project. A conservation plan will be developed with the Winona County Soil and Water Conservation District which will adopt "Best Management Practices" to minimize soil erosion. Mass grading of the site will be a temporary activity which once the site is graded to the elevations required, final surfacing will be applied and the site will generally be stabilized. The final surfacing will be a mix of dust free surfacing (concrete and bituminous), roofs of buildings, green space and the rail road tracks.

An onsite storm water treatment pond is proposed within the site. This is further described in Item 17 Water Quality – Surface Water Runoff.

The site will operate under a Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) permit which will require a Storm Water Pollution Prevention Plan (SWPPP). This SWPPP will be part of the grading and erosion control plan. The focus of the SWPPP is to eliminate or minimize storm water that comes into contract with exposed soils from discharging off the site. This is accomplished by utilizing Best Management Practices (BMPs) such as the implementation of temporary sedimentation ponds, permanent storm water treatment ponds, diversion berms and swales, rock checks, silt fence, hydro-seeding, erosion control blankets and locating temporary stockpiles away from concentrated flows.

Slurry Pipeline Route

The alignment of the slurry pipeline will cross approximately six miles of mixed soils types. The pipes will be buried underground in a steel casing. During construction and potentially during long term maintenance is the only times the soil will be disturbed in the proximity of the pipeline. Construction plans for the pipeline will include directions for implementation of Best Management Practices which will address how to stabilize the different soil types encountered.

The installation of the pipeline will operate under a Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) permit which will require a Storm Water Pollution Prevention Plan (SWPPP). This SWPPP will be part of the construction plans. The focus of the SWPPP is to eliminate or minimize storm water that comes into contract with exposed soils from discharging outside the construction zone. This is accomplished by utilizing Best Management Practices (BMPs) such as the rock checks, silt fence, hydro-seeding and erosion control blankets..

Slurry Injection Station/Campbell Quarry

Soil #	Soil Name	Slope %	Hydrologic Group	Kf	T factor
11D	Sogn silt loam	6 to 30	D	0.28	1
285A	Port Byron silt loam	1 to 3	B	0.32	5
285B	Port Byron silt loam	3 to 6	B	0.32	5
285C	Port Byron silt loam	6 to 12	B	0.32	5
301A	Lindstrom silt loam	1 to 3	B	0.32	5
301C	Lindstrom silt loam	6 to 12	B	0.32	5
301D	Lindstrom silt loam	12 to 20	B	0.32	5
476D	Frankville silt loam	12 to 18	C	0.37	2
484D	Eyota fine sandy loam	12 to 20	B	0.20	5
492C	Nasset silt loam	6 to 12	B	0.37	3
831F	Spinks-Boone-Sogn complex, rocky	15 to 60			
	Spinks,rocky		A	0.15	4
	Boone, rocky		B	0.20	3
	Sogn, rocky		D	0.32	1
898F	Bellechester-Broadale complex, rocky	15 to 60			
	Bellechester, rocky		A	0.10	4
	Brodale, rocky		B	0.28	5

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Soil Erosion Factors: Kf – whole soil on a rock free basis, Tf = wind erodibility group and wind erodibility index. CER – Crop Equivalency Rating; Slope – in percent

Currently the site is a mix of crop land and pasture with some trees. According to the Natural Resource Conservation Services Soil Survey for Winona County, there are four predominant soil types within the quarry boundary. Port Byron silt loam (with slopes ranging from 1 to12 percent), Lindstrom silt loam (with slopes ranging from 1 to 20 percent), Spinks-Boone-Sogn complex(with slopes ranging from 15 to 60 percent) and Bellechester-Brodale complex, rocky (with slopes ranging from 15 to 60 percent. The existing soils are conducive to rapid infiltration

meaning there is minimal runoff under normal conditions.

Chapter 9.15 of the Winona County Zoning Ordinance outlines the requirements for Soil Erosion and Sediment Control for the proposed Project. A conservation plan will be developed with the Winona County Soil and Water Conservation District which will adopt "Best Management Practices" to minimize soil erosion.

At the mine, all of the silt loam soils are susceptible to wind and water erosion if exposed without protections. The topsoil will be removed from the areas to be mined in stages and retained in berms and stockpiles or will be used for site reclamation. Mining will create additional exposures of sandstone faces and will create temporary steep slopes at the active face. The location of the active face and associated steep slopes will move as mining progresses through the site. Measures to control erosion and sedimentation will be implemented at the site. These measures include:

- Conduct Mining in Phases: Stripping will be limited to the portion of the site which can be mined in one or two mining seasons, thereby minimizing exposure to large open areas, at higher elevations, throughout the duration of the mining operation.
- Stripping will be stockpiled or shaped into perimeter berms or used immediately in ongoing site reclamation activities. Materials stored in perimeter berms will be used in final site reclamation.
- Stockpile areas shall be placed within the mining limits and positioned to aid in the blocking prevailing winds which will aid in prevention of wind erosion. Suitable materials from the overburden will be used for access roads. Areas downstream of stockpiles must be protected with vegetated berms, wood chip berms, silt fence or other approved BMP's. Watering of stockpiles with a tanker truck may be necessary to prevent dust and wind erosion. Overburden stockpiles that will remain in place longer than 14 days and are susceptible to wind erosion shall be covered with topsoil, seed, and mulch.
- Vegetation will be established on the top and outer slope of all berms to minimize erosion and potential for off site sedimentation. These areas will be seeded with MnDOT's seed mixture 340 (native seed mixture for Sandy/Dry areas mid height) at an application rate equivalent to MnDOT Standard Spec. 2575. Berms will be seeded and mulched within 7 days of completion of shaping. Vegetation will be inspected to insure adequate establishment and coverage. Areas that are not properly becoming established with vegetation will be reseeded and may require additional additives such as compost manure or with organic fertilizers and crop nutrients to establish vegetation.
- Site runoff from active mining areas will be directed internally with diversion berms and ditches to temporary sedimentation basins. Temporary sedimentation basins may be earthen structures located on the quarry limits during early phases of construction and located at low points within the floor of the quarry during later phases. Runoff will collect in the low areas and infiltrate into the underlying sandy soils.

The site will operate under a Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) permit which will require a Storm Water Pollution Prevention Plan (SWPPP). This SWPPP is part of the Operation and Reclamation plan. The focus of the SWPPP is to eliminate or minimize storm water that comes into contract with aggregate stockpiles or exposed soils from discharging off the site. This is accomplished by utilizing Best Management Practices (BMPs) such as the temporary sedimentation pond, diversion berms and swales, rock checks, silt fence, erosion control blankets, locating stockpiles

away from concentrated flows, the recessing of the mine below adjacent undisturbed lands, and the directing of storm water to internally low areas on the site.

Reclamation will be ongoing once the process begins, thereby limiting the number of open acres at any given time.

Near the completion of mining, any sandstone slopes that are to remain exposed will be shaped to not exceed 1 foot horizontal to 2 feet vertical. Areas where overburden has been placed shall not exceed 4 foot horizontal to 1 foot vertical. The leveled area will vary in slope from 0.5% to 2% and may be terraced to balance the final reclamation process.

All reclaimed areas, other than the exposed sandstone face, will be covered with topsoil to a quality consistent with the current site and surrounding area (spread salvaged topsoil). Final seeding will be a pasture grass mix as sold at local agribusinesses. The quality of the topsoil placed shall be analyzed to determine if and how much fertilizer may be needed to support the young grass. Once grass has had an opportunity to become established, which may take more than one growing season, the reclaimed area may be fenced and pastured or it may be left to nature. Due to the lack of adequate topsoil and subsoils, the reclaimed areas are not intended to be put into row crop cultivation. The reclaimed areas would be conducive to some agricultural development through forestry. The final use will be determined by the property owner.

All temporary erosion and sediment control materials will be properly disposed of within 30 days after final site stabilization is achieved or after the temporary measures are no longer needed.
During construction of the site, Best Management Practices (BMP's) such as silt fence and diversion berms will be put into place to protect the steep slopes so that water flowing across them does not cause erosion. To protect steep slopes where there are concentrated flows, it may be necessary to collect and pipe the stormwater water to the stormwater treatment basins located below the steep slopes. Other BMP's throughout the site will include: seeding and mulching disturbed areas, erosion control blanket on erosion prone slopes, silt fence, rock checks and temporary sedimentation basins.

Post construction erosion and sediment control measures will include street sweeping and periodic maintenance of temporary and permanent stormwater treatment basins. These basins are described in Item 17.

17. Water Quality – Surface-water Runoff.

a. Compare the quantity and quality of site runoff before and after the project. Describe permanent controls to manage or treat runoff. Describe any storm-water pollution prevention plans.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

b. Identify routes and receiving water bodies for runoff from the site; include major downstream

water bodies as well as the immediate receiving waters. Estimate impact runoff on the quality of receiving waters.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

18. Water Quality – Wastewater.

a. Describe sources, composition and quantities of all sanitary, municipal and industrial wastewater produced or treated at the site.

Explain why this project does not trigger an mandatory EAW 4410.4300 Subpart 18 for Wastewater Systems

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

b. Describe waste treatment methods or pollution prevention efforts and give estimates of composition after treatment. Identify receiving waters, including major downstream water bodies (identifying any impaired waters), and estimate the discharge impact on the quality of receiving waters. If the project involves on-site sewage systems, discuss the suitability of site conditions for such systems.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

c. If wastes will be discharged into a publicly owned treatment facility, identify the facility, describe any pretreatment provisions and discuss the facility's ability to handle the volume and composition of wastes, identifying any improvements necessary.

Processing and Trans-Load Facility

Slurry Pipeline Route

19. Geologic hazards and soil conditions.

a. Approximate depth (in feet) to

Processing & Transload Facility	**Ground water:**	**40**	**minimum;**	**60**	**average.**
	Bedrock:	**exposed**	**minimum;**	**4 feet**	**average.**
Slurry Injection Station/ Mine	**Ground water:**	**140 feet**	**minimum;**	**150 feet**	**average.**
	Bedrock:	**exposed**	**minimum;**	**4 feet**	**average.**

Describe any of the following geologic site hazards to ground water and also identify them on the site map: sinkholes, shallow limestone formations or karst conditions. Describe measures to avoid or minimize environmental problems due to any of these hazards.

Processing Facility Water level = Elevation 1101 based on averages of 8 wells within one mile.

Campbell Quarry = Elevation 1069 based on averages of 7 wells within one mile

The proposed development is located in an area of the state known for its Karst conditions (See Figure "Karst Inventory Map"). The Karst topography in Southeastern Minnesota is due to the combination of natural water flows and the high solubility of the carbonate rock formations (Limestone) that are near the surface. Over time, the natural waters in the area have dissolved the limestone through both corrosion (the chemical erosion of the rock) and corrosion (the mechanical erosion of rock by a moving agent such as water or ice). This carbonate water solution has carried away material along subterranean conduits, thereby creating caves, sinkholes and other depressions. These conduits can be a direct link to groundwater contamination if contaminants are allowed into them.

Potential contaminants from the project or lots being created could include leaks from storage tanks and distribution systems for fuel and chemicals used in material processing and runoff from fertilizer and pesticides used on lawn areas. In most situations, any storage tanks containing significant volumes of hazardous materials will be required to have secondary containment systems per state and federal laws.

Sinkholes are usually a tell tale sign of Karst formations that need to be mitigated and there are sinkholes on properties adjacent to the development. While sinkholes can be capped and filled, building structures over them is not a recommended practice. Sinkhole probability and risk assessment within the project limits should be based on the negative effects of a sinkhole forming and chances for contamination of the groundwater system. If a proposed use is determined to have a high risk potential, then resistivity testing may be required to determine the sinkhole probability for the area below the proposed structure. A location determined to be at risk may be mitigated by moving the building location, exposing and sealing underlying fractures or other methods that are proven to address Karst related issues.

If a Karst formation is encountered during general grading activities, that formation will need to be analyzed to determine its structural and groundwater risk potential. If the water source feeding a Karst formation is removed or redirected, the potential of expansion of the formation is

greatly reduced. In situations where concentrated flows are draining into a Karst formation; the upstream runoff quality would need to be analyzed to determine the threat to the groundwater. Dye studies may also be necessary to determine the extent of groundwater impact.

There is not a one size fits all solution for dealing with potential Karst formations. Most grading, underground utility and building activities do not have a negative effect. Development activities which can have negative effects are concentration of untreated water sources such as storm water treatment ponds or holding ponds for water clarification processes. This development is proposed to have a storm water treatment ponds. The locations for these ponds will be analyzed to determine if their sites are suitable based on soil and Karst conditions. The ponds may require a liner which may be clay or a synthetic material. Liners are common in ponds and do not require any additional permits for construction. This project does include a water clarification process for recycling of hydro-transportation which is being designed using mechanical systems instead of a large holding pond. This eliminates any chance for large scale conveyance directly into a Karst formation. The decision to use a mechanical clarifier was not determined due to Karst probability.

Campbell Quarry

The mining footprint of the site is underlain by bedrock of the Platteville Limestone, Glenwood Shale at the top of the ridge above elevation 1,225 and is underlain by the St. Peter Sandstone to a depth of 90-100 feet thick over the entire site.

The Platteville/Glenwood sequence is less than 20-25 feet thick and represents a resistant cap rock over the top of the sand ridge.

The St. Peter Sandstone is a fine grained to medium grained, very well sorted, poorly cemented quartz sandstone with round grains making the sand desirable for silica sand.

The bedrock geology of the site is of Middle Ordovician age where the Platteville and Glenwood Formations are the first encountered bedrock (See Figure “Bedrock Geology”). The Winona County Soil Survey indicates the first encountered bedrock is shallow and is found only 1 to 6.6 feet below the ground surface (See Figure “Depth to any Restrictive Layer”). Beneath the caprock on the top of the ridge lies the St. Peter Sandstone that ranges from 90 to 100 feet thick and extends into the side slopes of the ridge.

No karst features, sinkholes or caves are known to exist in the vicinity and there are no mapped sinkholes in the immediate vicinity of the property. The sinkhole probability as defined by the Minnesota Geological Survey shows the site is within an area of “low to moderate probability” for karst features (See Figure “Karst Inventory Map”). This classification is defined as an area that has only widely scattered individual sinkholes or isolated clusters of 2 to 3 sinkholes where the average sinkhole density is less than one sinkhole per square mile. The upper 70-80 feet of the St Peter Sandstone is not prone to sinkhole formation.

Sinkholes formation can be most easily avoided by preventing the concentration of water in ponds. If sinkholes do occur the sinkholes can be easily mitigated by bridging or filling in accordance with Best Management Practices that are widely accepted in the areas where sinkholes do occur.

Static water levels have been recorded from County Well Index data at an elevation of approximately 1,074 feet in the vicinity of the site.

Environmental problems concerning groundwater contamination from karst susceptibility or shallow bedrock conditions will be minimized by avoiding the use of hazardous materials during the mining activities. Operations will also prevent farmland runoff from entering the mining site where rapid infiltration will occur. Mining operators will trained to detect the early warning signs of sinkhole development to the extent practicable and will employ extreme caution with mining equipment around the sinkhole fringes. In the event a sinkhole does form a Professional Geologist will be consulted to properly close the sinkhole in a manner that will promote protection of groundwater resources.

b. Describe the soils on the site, giving Natural Resources Conservation Service classifications, if known. Discuss soil texture and potential for ground-water contamination from wastes or chemicals spread or spilled onto the soils. Discuss any mitigation measures to prevent such contamination.

Processing and Trans-Load Facility

Currently the site consist mainly crop land with an area of grasses and minor trees around a former farm building site near the northeast corner of the property. According to the Natural Resource Conservation Services Soil Survey for Winona County, there are three predominant soil types within the boundar: Flagler sandy loam, (with slopes ranging from 0 to6 percent), Boone loamy fine sand (with slopes ranging from 2 to 15 percent), Hoopeston sandy loam (with slopes ranging from 0 to 2 percent). The existing soils are conducive to rapid infiltration meaning there is minimal runoff under normal conditions.

Soil #	Soil Name	Slope %	Hydric	CER
11D	Sogn silt loam	6 to 30	NH	6
79B	Billett fine sandy loam	1 to 6	NH	60
81B	Boone loamy fine sand	2 to 6	NH	22
81C	Boone loamy fine sand	6 to 15	NH	21
299B	Rockton silt loam	1 to 6	PNH	53
301A	Lindstrom silt loam	1 to 3	NH	99
1936	Hoopeston sandy loam, bedrock substratum	0 to 2	NH	52
1937	Lawler loam, bedrock substratum	0 to 2	PNH	77
1951A	Flagler sandy loam, bedrock substratum	0 to 2	NH	65
1951B	Flagler sandy loam, bedrock substratum	2 to 6	NH	53
1953	Marshan silt loam, loamy substratum	0 to 2	PH	62
1954B	Spinks loamy fine sand, bedrock substratum	1 to 6	PNH	45
1955A	Waukee loam, bedrock substratum	0 to 2	NH	69
1955B	Waukee loam, bedrock substratum	2 to 6	NH	66

Hydric – NH=Non Hydric, PNH=Predominantly Non Hydric, PH=Predominantly Hydric; CER – Crop Equivalency Rating; Slope – in percent

According to the Winona County Web Soil Survey the predominant soils have properties that allow water to transmit the most limiting layer in the soil profile at rates of 0.14 in/hr to 1.98 in/hr on the lower end to 5.95 in/hr to 19.98 in/hr on the higher end. As a result the potential for groundwater contamination from chemical inputs under these conditions is high due to the rapid infiltration capacities of the soil. However, conversion from farmland will remove yearly applications of agricultural chemicals and fertilizers and any there are no proposed hazardous materials that will be used or stored at the processing facility other than fuel and solvents common to industrial processing. These materials have state and federal storage requirements which will be adhered to which are specific to employee safety as well as to limit potential for spills and contaminations. Therefore, the threat to groundwater contamination is low.

Site grading and construction will require the use of heavily equipment which use of fuels, lubricants and hydraulic fluids. Mobile transport venders will be used to replenish and maintain heavy equipment and trucks. Post construction, the sand processing equipment will be housed inside buildings which will have hard surfacing. These machines will use fuels, lubricants and hydraulic fluids.

In the event that a spill does occurs, mitigation measures including spill containment and emergency preparedness materials such as absorbent materials and pads will be kept on-site. Employees will be trained on procedures to contain spills of hazardous materials.

Slurry Pipeline Route

The alignment of the slurry pipeline will cross approximately six miles of mixed soils types. The pipes will be cased and the materials transferred will be water and sand. A leaking pipe would be noticeable immediately as it would shut down production. If a leak were to happen, it would be contained in the sleeve the pipes will be within which is required for inspection and periodic maintenance. Should be some chance the pipeline and sleeve be breached, the material is water and sand which would not be a spill of hazardous material. The pipeline would be shut down, the break fixed and any materials cleaned up and trucked back to the mine for use in reclamation.

Slurry Injection Station/Campbell Quarry

Currently the site is a mix of crop land and pasture with some trees. According to the Natural Resource Conservation Services Soil Survey for Winona County, there are four predominant soil types within the quarry boundary. Port Byron silt loam (with slopes ranging from 1 to12 percent), Lindstrom silt loam (with slopes ranging from 1 to 20 percent), Spinks-Boone-Sogn complex(with slopes ranging from 15 to 60 percent) and Bellechester-Brodale complex, rocky (with slopes ranging from 15 to 60 percent. The existing soils are conducive to rapid infiltration meaning there is minimal runoff under normal conditions.

Soil #	Soil Name	Slope %	Hydric	CER
11D	Sogn silt loam	6 to 30	NH	6
285A	Port Byron silt loam	1 to 3	PNH	99

285B	Port Byron silt loam	3 to 6	PNH	98
285C	Port Byron silt loam	6 to 12	NH	91
301A	Lindstrom silt loam	1 to 3	NH	99
301C	Lindstrom silt loam	6 to 12	NH	92
301D	Lindstrom silt loam	12 to 20	NH	73
476D	Frankville silt loam	12 to 18	NH	43
484D	Eyota fine sandy loam	12 to 20	NH	59
492C	Nasset silt loam	6 to 12	NH	77
831F	Spinks-Boone-Sogn complex, rocky	15 to 60	NH	1
898F	Bellechester-Broadale complex, rocky	15 to 60	NH	3

Hydric – NH=Non Hydric, PNH=Predominantly Non Hydric, PH=Predominantly Hydric; CER – Crop Equivalency Rating; Slope – in percent

According to the Winona County Web Soil Survey these soils have properties that allow water to transmit the most limiting layer in the soil profile at rates of 0 in/hr to 0.14 in/hr on the lower end to 0.57 in/hr to 1.98 in/hr on the higher end. In isolated areas the Bellechester-Broadale complex found on the backslope of the hillside is considered excessively drained with capacity to transmit water through the most limiting layer at rates of 5.95 in/hr to 19.98 in/hr. As a result the potential for groundwater contamination from chemical inputs under these conditions is high due to the rapid infiltration capacities of the soil. There will be fuel and solvents stored at the site for daily operations. These materials have state and federal storage requirements which will be adhered to which are specific to employee safety as well as to limit potential for spills and soil and groundwater contamination. The only proposed bulk chemicals planned to be stored and used at the site are flocculants which will be used in the enclosed, closed loop clarifier. The bulk materials are relatively non-toxic but storage and handling protocol will be monitored. Residual material from the use of the flocculants has potential for groundwater contamination. This if further discussed under Item 18 – Water Quality, Wastewater. Therefore, the threat to groundwater contamination is low.

Site grading and construction will require the use of heavily equipment which use of fuels, lubricants and hydraulic fluids. Mobile transport venders will be used to replenish and maintain heavy equipment and trucks. Post construction, the sand processing equipment will be housed inside buildings which will have hard surfacing. These machines will use fuels, lubricants and hydraulic fluids.

In the event that a spill does occurs, mitigation measures including spill containment and emergency preparedness materials such as absorbent materials and pads will be kept on-site. Employees will be trained on procedures to contain spills of hazardous materials.

20. Solid Wastes, Hazardous Wastes, Storage Tanks.

a. Describe types, amounts and compositions of solid or hazardous wastes, including solid animal manure, sludge and ash, produced during construction and operation. Identify method and location of disposal. For projects generating municipal solid waste, indicate if there is a source separation plan; describe how the project will be modified for recycling. If hazardous waste is generated, indicate if there is a hazardous waste minimization plan and routine hazardous waste reduction assessments.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

Construction debris.

b. Identify any toxic or hazardous materials to be used or present at the site and identify measures to be used to prevent them from contaminating ground water. If the use of toxic or hazardous materials will lead to a regulated waste, discharge or emission, discuss any alternatives considered to minimize or eliminate the waste, discharge or emission.

COPY STATEMENT IN ITEM 6 REGARDING POLYACRYLAMIDES

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c. Indicate the number, location, size and use of any above or below ground tanks to store petroleum products or other materials, except water. Describe any emergency response containment plans.

Processing and Trans-Load Facility

Slurry Pipeline Route

Slurry Injection Station/Campbell Quarry

21. Traffic. Parking spaces added: _____ **Existing spaces (if project involves expansion):** _____
Estimated total average daily traffic generated: _____
Estimated maximum peak hour traffic generated and time of occurrence: _____

Indicate source of trip generation rates used in the estimates.

***If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW.* Using the format and procedures described in the Minnesota Department of Transportation's Traffic Impact Study Guidance *(available at* http://www.oim.dot.state.mn.us/access/pdfs/Chapter%205.pdf) or a similar local guidance, provide an estimate of the impact on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.**

22. Vehicle-related Air Emissions. Estimate the effect of the project's traffic generation on air quality, including carbon monoxide levels. Discuss the effect of traffic improvements or other mitigation measures on air quality impacts.

Vehicle related air emissions include carbon monoxide, hydrocarbons, NOx, particulate patter and sulfur dioxide from employee automobiles, haul trucks, and excavation equipment such as

loaders and back hoes. The project is expected to have a small but not significant or adverse impact on air quality from vehicle related air emissions.

The slurry pipeline will eliminate truck traffic from the proposed Campbell Quarry as well as greatly reduce the road miles traveled from other mines which will in turn limit an increase in Vehicle-related Air Emissions versus a scenario that does not include the slurry pipeline. Emissions from vehicles and equipment are controlled by the manufacturer in accordance with SEPA regulations and federal fuel standards. All equipment and trucks will be compliant with current air emission, efficiency and fuel use standards.

Processing and Trans-Load Facility

Vehicle use generated by this project will consist of employees cars and pickup trucks, one loader transferring sand from the separator pile to the dryer, trucks making deliveries or hauling materials offsite, and periodic train engines. The topography and proposed building spacing and heights should not contribute to pockets of air with higher pollution levels due to vehicle air emissions.

Slurry Pipeline Route

Daily monitoring of the components of the slurry pipeline will include one vehicle traveling between the processing plant and slurry injection station along the 6 mile slurry pipeline route to monitor the booster pumps as well as operations at both ends.

Slurry Injection Station/Campbell Quarry

Vehicle related air emissions generated by the excavation of material at the quarry will primarily be from mobile sources including heavy equipment at the mine. The equipment anticipated to be required is 2 backhoes, 2 loaders and 6 off-road trucks that will haul the material from the mine to the slurry injection station. Since power will be nearby, any elevators or powerscreens are anticipated to be operated using electric motors. The mining equipment will be confined to a 10 acre working/staging area that will migrate across the Campbell Quarry site as the mining progresses. At the mine site the open atmosphere, elevation and topography of the loading areas allows for diffusion of the engine emissions and will not cause weather inversions or contribute to pockets of air with excessive pollution levels.

The Slurry Injection Station will have one loader which will position raw material into the hoppers for injection into the slurry line. This loader may also provide functions such as loading trucks with waste sand to be hauled away as part of reclamation activities. Over the road trucks which may haul material to the site are not factored into the vehicle air emission calculations. Other vehicle related emissions will be specific to employees cars and pickup trucks.

Since this area will be open to the elements, there is no cause to expect any significant decrease in the air quality due to vehicle-related air emissions. This site will operate similar to other material mines within Minnesota. Additionally, the topography and proposed buildings should not contribute to pockets of air with higher pollution levels.

Basis of Daily Vehicle Air Emissions

60 employees at processing facility
10 employees at slurry station/Campbell quarry
2 company vehicles for service personnel transportation.
4 loaders
2 backhoes
6 off road trucks
1 unit train

Mobile source emissions from the added traffic will be ephemeral. With a xx hour day the x trucks/day haul vehicles will pass by any particular point on the haul route at a rate of xx trucks/hour. Based upon the EPA's online Diesel Emission Quantifier (DEQ) we have modeled and quantified the annual diesel emissions at the Processing Facility for xxx truck trips per day. Modeled output values quantified vehicle-related air emissions for three criteria pollutants including nitrogen oxides (NO_x), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), in addition to hydrocarbons (HC) and carbon dioxide (CO_2). A summary of the modeled results in provided in the table below.

Annual Vehicle-related Air Emissions from the Processing Facility (xxx trucks/day)

Pollutant	NO_x	$PM_{2.5}$	HC	CO	CO_2
Emissions (short tons/yr)	xx	xx	xx	xx	xx

Note: Results are based on 500,000 gallons of diesel fuel per year.

Detail of the model assumptions and calculations used to quantify vehicle-related air emissions are included in Figure "EPA National Clean Diesel Campaign (NCDC) Quantifier"

No air quality issues exist in the vicinity of the processing facility, slurry pipeline, slurry injection station or mine at the present time. The level of traffic generated by the project is not expected to lead to any measurable decrease in air quality due to vehicle emissions.

23. Stationary Source Air Emissions. Describe the type, sources, quantities and compositions of any emissions from stationary sources of air emissions such as boilers, exhaust stacks or fugitive dust sources. Include any hazardous air pollutants (consult *EAW Guidelines* for a listing), any greenhouse gases (such as carbon dioxide, methane, and nitrous oxides), and ozone-depleting chemicals (chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride). Also describe any proposed pollution prevention techniques and proposed air pollution control devices. Describe the impacts on air quality.

The project has multiple sources of stationary source air emissions. They range from dust originating from the removal of vegetation , open enclosure transportation of materials within the mine and stockpiling of materials which are all subject to wind erosion. Other sources are dust stirred up by mining equipment, truck traffic and blasting to remove overburden. The sand drying, screening, storage and loading process also has potential for creation of stationary source air emissions. The potential for each emission has been explored at its source and summed to ensure the project is not subject to EAW requirements under Rule 4410.4300 Subpart 15 for Air

Pollution. This subpart of the EAW is triggered when a stationary source facility generates 250 tons or more per year of any single air pollutant after installation of air pollution control equipment.

Processing and Trans-Load Facility

When material enters the processing facility, it is in slurry form and immediately hydro-separated before dewatering commences. The slurry pipeline, hydro-separating and dewatering are all operated by electric motors and do not have any emission potential as the material is either encased or wet beyond limits that would allow air dispersion. Material that may be temporary stockpiled to allow additional moisture to drain off is located under roof providing protection from the wind and does not sit for ample enough time to allow dry to the point of air dispersion. The first opportunity for an air emission is during drying.

Two parallel rotary drum dryers with 300 ton per hour capacity will be used to dry the product after hydro-separating. The primary fuel source for the dryers will be natural gas. The dryer will be equipped with a baghouse dust collector system. The bags are monitored throughout the operation of the dryer and when air flow becomes restricted they are automatically shaken. Dust drops to a bin at the bottom of the baghouse and the fines may be either hauled by truck back to the mine or incorporated into the unsuitable waste sand which is pumped back in the slurry line where it is dewatered and used as fill in the reclamation area active at that time.

As sand leaves the dryers, it is sent through the screens where it separated by size and conveyed to silos for storage until it is loaded onto rail cars. The screening process also incorporates a baghouse dust collector system which functions like the one used for the dryers.

In conjunction with the baghouses may be cyclone collectors which improve the function of the baghouses by collecting particles between the process that makes particles airborne, drying or screening, and the baghouse, the final shield, which collects the airborne particles.

Sand that has been screened is conveyed by belts and augers to enclosed storage silos. At this point, most fines which may become airborne particulates have been removed but there is still potential. The loading systems from the silos to rail car and trucks is designed to minimize the potential for suspending any fines remaining in the final product. In most situations, the rail cars will be covered so that moisture from humidity and rainfall does not have direct access to the dry material.

Land clearing operations will result in dust emissions. Areas cleared will be limited to the minimal amount needed for current mining operations. Brush and tree waste removed will be processed to recover wood chips and compostable materials and will be either chipped on site or transported to a licensed processing facility. There will be no open burning on the property.

This facility will require an air emission permit from the MPCA.

MnProppants

Buildings - Stationary sources would be natural gas burning boilers and furnaces serving commercial buildings. The newly constructed building furnaces are not considered major sources. Pollutants from these sources will be carbon monoxide, carbon dioxide, and nitrous oxides. All new stationary sources will be subject to current requirements within the Minnesota State Building Code for efficiency.

Drying Plant – Stationary sources associated with the drying plan will be the natural gas burning rotary drum dryers and the mechanical screeners with separate the washed and dried sand by size

prior to the material being conveyed to silos before loadout. The screening process will incorporate a pre-cleaning cyclone followed by a screening tower bag house.

Gas Air Emissions:
Preliminary design is based on operating two 10x54 rotating drum dryers which will run off natural gas. Each dryer consumes fuel at a rate which creates 55.0 Million BTU/hr. This releases the following pollutants:
Sulfur Dioxide = 0.00lb/hr (source Tarmac)
Nitrogen Oxides = 10.8 lb/hr (source Tarmac)
Carbon Monoxide = 11.40 lb/hr (source Tarmac)
Carbon Dioxide = 8915 lb/hr (calculation based on 117lb/Million BTU)
Assuming operations of 24 hours a day, 365 days per year, yearly outputs are:
Sulfur Dioxide = 0 ton (source Tarmac)
Nitrogen Oxides = 94.6 tons (source Tarmac)
Carbon Monoxide = 99.9 tons (source Tarmac)
Carbon Dioxide = 39,050 tons (calculation based on 117lb/Million BTU)

Particulate Air Emissions:
The calculated amount of particulate that would leave each dryer bag house stack is 3.27 lb/hr or 14.3 tons per year assuming all day, everyday operations (327 gr/scf). With two dryers, this equates to 28.6 tons of emissions per year.
The screening tower bag house emission calculations include a cyclone pre-cleaner with design limits of 0.47lb/hr or 2.05 tons per year, again assuming all day, everyday operations (.0.25 gr/dscf). With two screeners operating, this equates to 4.1 tons of emissions per year.
Associated air emissions would be from the

The numbers stated above are based on the anticipated equipment that will be ordered, installed and operational. Different equipment could be used which could increase or decrease the amount of particulate air emissions. These air emissions will be subject to an MPCA permit which will be enforced. The entire sand operation from mine to rail car is being designed to keep the particulate air emissions below the 250 tons threshold which would require a mandatory EAW per MN Rules.

Screen house
After drying, the sand is conveyed to mechanical screeners where separate the dry sand by sizes requested by the consumer. The separated sand is usually the final product which is then transferred to holding bins while awaiting loading for transport. This screening system includes a bag house for collection of fine particles. With a properly operating wash plant (offsite), the amount of fines collected is anticipated to be around 3%. If a use for these fines cannot be found, they will be transported back to the mine to be incorporated into the reclamation plan. The screening process has been calculated to accept 30,000 lbs per hour into the baghouse.

Other developments within the property
No other uses have been proposed on the subject property. Any future development of vacant land will be subject to environmental review and permitting. Pollution prevention techniques and air pollution control devices will be at the discretion of individual lot developers and applicable laws. Currently unknown lot developers may propose uses that may manufacturer or process materials that would have negative air emissions. These facilities and proper pollution

prevention techniques will need to be addressed during the site plan approval processes specific to those currently unknown uses.

Slurry Pipeline Route

No stationary source emissions will be created by the pipeline or booster pumps along the route. The booster pumps will be operated with electricity and the pipeline is buried beneath the surface which will be stabilized with vegetation.

Slurry Injection Station/Campbell Quarry

Stationary sources would be an onsite fuel burning furnaces used for heating office and employee areas within the building on the site. Pollutants from this source would be carbon monoxide, carbon dioxide and nitrous oxides. All new stationary sources will be subject to current requirements within the Minnesota State Building Code for efficiency.

Disturbance of the land will create potential for the following air emissions:
Dust from land disturbance = xx tons per acre exposed
Dust from stockpiles = xx tons
Dust from blasting of overburden = xx tons

Mine is a temporary disturbance, control during stripping, mining and reclamation.

Summary

This project is subject to permitting specific to Air Emissions which is administered by the Minnesota Department of Health. The project proposer is working with the agency to create a concise plan for minimizing potential air emissions as well as containment and collection of emissions at the point sources listed above. It is anticipated that the project will be subject to inclusion of PM monitors that will collect data at a threshold which has yet to be required by law. These monitors would collect air emissions specific to sizes attributable to crystalized silica and the data collected would be used for studying the impact, whether it be benign or negative, of silica sand mining and processing. Only after these studies can there be quantified changes to air emission requirements for the industry as a whole. As of the date of this assessment, the operation and processing plans are within the guidelines and requirements of the all county, state and federal rules.

24. Odors, noise and dust. Will the project generate odors, noise or dust during construction or during operation? ☒ Yes ☐ No

If yes, describe sources, characteristics, duration, quantities or intensity and any proposed measures to mitigate adverse impacts. Also identify locations of nearby sensitive receptors and estimate impacts on them. Discuss potential impacts on human health or quality of life. (Note: fugitive dust generated by operations may be discussed at item 23 instead of here.)

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25. Nearby resources. Are any of the following resources on or in proximity to the site?

a. Archaeological, historical, or architectural resources? ☐ Yes ☒ No
b. Prime or unique farmlands or land within an agricultural preserve? ☐ Yes ☒ No
c. Designated parks, recreation areas, or trails? ☐ Yes ☒ No
d. Scenic views and vistas? ☐ Yes ☒ No
e. Other unique resources? ☐ Yes ☒ No

If yes, describe the resource and identify any project-related impacts on the resources. Describe any measures to minimize or avoid adverse impacts.

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26. Visual impacts. Will the project create adverse visual impacts during construction or operation? Such as glare from intense lights, lights visible in wilderness areas and large visible plumes from cooling towers or exhaust stacks? ☒ Yes ☐ No

If yes, explain.

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27. Compatibility with plans and land use regulations. Is the project subject to an adopted local comprehensive plan, land use plan or regulation, or other applicable land use, water, or resource management plan of a local, regional, state or federal agency? ☒ Yes ☐ No

If yes, describe the plan, discuss its compatibility with the project and explain how any conflicts will be resolved. If no, explain.

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28. Impact on infrastructure and public services. Will new or expanded utilities, roads, other infrastructure or public services be required to serve the project? ☒ Yes ☐ No

If yes, describe the new or additional infrastructure or services needed. (Note: any infrastructure that is a connected action with respect to the project must be assessed in the EAW; see *EAW Guidelines* for details.)

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29. Cumulative potential effects. Minn. R. 4410.1700, subp. 7, item B requires that the RGU consider the "cumulative potential effects of related or anticipated future projects" when determining the need for an environmental impact statement. Identify any past, present or reasonably foreseeable future projects that may interact with the project described in this EAW in such a way as to cause cumulative potential effects. (Such future projects would be those that are actually planned or for which a basis of expectation has been laid.) Describe the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects *(or discuss each cumulative effect under appropriate item(s) elsewhere on this form)*.

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30. Other Potential Environmental Impacts. If the project may cause any adverse environmental impacts not addressed by items 1 to 28, identify and discuss them here, along with any proposed mitigation.

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31. Summary of issues. *(Do not complete this section if the EAW is being done for EIS scoping; instead, address relevant issues in the Draft Scoping Decision Document, which must accompany the EAW.)* List any impacts and issues identified above that may require further investigation before the project is begun. Discuss any alternatives or mitigative measures that have been or may be considered for these impacts and issues, including those that have been or may be ordered as permit conditions.

RGU CERTIFICATION

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages, or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minn. R. 4410.0200, subps. 9b and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Name and Title of Signer: Jason Gilman, Planning and Environmental Services Director
Winona County Planning Department

Date: _____

The format of the Environmental Assessment Worksheet was prepared by the staff of the Environmental Quality Board. For additional information, worksheets, or for EAW Guidelines, contact: Environmental Quality Board, 520 Lafayette Road, St. Paul, Minnesota, 55155-4194, 651-296-6300, or at their website http://www.eqb.state.mn.us/review.html.