



April 6, 2012

TO: Red Wing Sustainability Commission and
Red Wing Advisory Planning Commission

FROM: Brian C. Peterson, AICP, Planning Director

RE: **April 11, 2012 Joint Workshop on Silica Sand Mining**

The Red Wing Sustainability Commission and the Red Wing Advisory Planning Commission will conduct a joint workshop related to the Silica Sand Mining Moratorium Study from 7 to 9 PM on April 11, 2012 in the Council Chambers of Red Wing City Hall. The Agenda for the meeting is as follows:

AGENDA

1. Call to Order
2. Notes from March 13, 2012 Workshop Meeting
3. Review and Discuss Committee Report Outline and Material
4. Other Discussion
5. Adjournment

Silica Sand Mining Moratorium Report Outline 4-6-12

- I. Introduction
 - a. Background to Moratorium
 - b. What is Frac Sand?
 - c. Location of Frac Sand in Red Wing
 - d. What does a typical sand mine operation look like?
 - i. Overburden removal/excavation
 - ii. Excavation
 - iii. Blasting
 - iv. Crushing
 - v. Processing
 - vi. Transportation
 - vii. Reclamation
- II. Potential Environmental Impacts
 - a. Air
 - b. Water Resources
 - c. Fisheries
 - d. Solid Waste Management
 - e. Recreation and Managed Lands
 - f. Endangered and Threatened Species and Habitats
 - g. Archeological and Historic Impacts
 - h. Socio-Economic
 - i. Transportation
- III. Red Wing Comprehensive Plan Guidance
 - a. 2007 Comprehensive Plan References
 - b. Open Space Preservation Plan
- IV. Existing Regulatory Framework
 - a. State and Federal Regulations and Permits
 - i. US Army Corp of Engineers Section 404 Water Act Permit
 - ii. US Army Corp of Engineers Discharge Permit (Water Quality Permit)
 - iii. MPCA NPDES/SDS Construction Activity Permit
 - iv. MPCA NPDES/SDS Permit – Construction Sand & Gravel, Rock Quarrying & Hot Mix Asphalt Production
 - v. MPCA Section 401 Water Quality Certification
 - vi. MNDNR Water Appropriations Permit

Performance Standards in the Current City of Red Wing Zoning Regulations
55-100 Performance Standards

- A) **Purpose.** The regulations of this section are designed to protect all uses in zones, which allow housing, by right from certain objectionable off-site impacts associated with nonresidential uses. These impacts include noise, vibration, odors, glare, and others. The standards ensure that uses provide adequate control measures or locate in areas where the community is protected from health hazards and nuisances. The use of objective standards provides a measurable means of determining off-site impacts. This method protects specific industries or firms from exclusion in a zone based solely on the general characteristics of industries in the past.
- B) **Relationship to Other Regulations.** The off-site impact standards are in addition to all other regulations of the City Code. The standards do not replace or superseded regulations of the Minnesota Pollution Control Agency, relevant county regulations, or standards such as the Uniform Fire Code.
- C) **Measurements.**
- 1) Measurements for compliance with these standards shall be made from the property line or within the property of the affected site. Measurements may be made at ground level or at habitable levels of buildings.
 - 2) If the city does not have the equipment or expertise to measure and evaluate a specific complaint, it may request assistance from another agency or may contract with an independent expert to perform such measurements. The City may accept measurements made by an independent expert hired by the controller or operator of the off-site impact source. If the City contracts to have measurements made and no violation is found, the city will bear the expense, if any, of the measurements. If a violation is found, City expenses will be charged to the violator. Nonpayment of the costs is violation of the Code, and enforced through the provisions Division 85 Enforcement and Penalties of this Code.
- D) **Non-Conforming Uses by Reason of Off-Site Impact Standards.** Any use existing on January 1, 2000, or any subsequent amendment to this Code and permitted by right that does not meet the requirements of one or more of the off-site impact standards established explicitly in this section or by reference shall be subject to the nonconforming use provisions of Article IV, Division 70.
- E) **Exemptions.** The off-site impact standards do not apply to machinery, equipment, and facilities, which were at the site and in compliance with existing regulations at the effective date of these regulations. Any new or additional machinery, equipment, or facilities must comply with the standards of this chapter. Documentation is the responsibility of the proprietor of the use if there is any question about when the equipment was brought to the site.

F) **Bulk Storage (Liquid).** All uses associated with the bulk storage of oil, gasoline, liquid fertilizer, chemicals, nuclear fuels, reactor elements, and similar liquids shall require a conditional use permit in order that the City Council may have assurance that fire, explosion, or water or soil contamination hazards are not present (that would be detrimental to the public health, safety, and general welfare). All existing, above-ground liquid storage tanks having a capacity in excess of ten thousand (10,000) gallons shall be treated as if they have an existing conditional use permit and shall meet all applicable Federal and State standards and regulations. For expansion of existing developments and new developments the City Council may require the development of diking around said tanks. Diking shall be suitably sealed and shall hold a leakage capacity equal to one hundred fifteen percent (115%) of the tank capacity. The City Council may require pressure testing of storage tanks on a periodic basis. All developments shall meet Federal and State regulations that govern the construction and operation of such Bulk Storage facilities.

G) **Noise.** It shall be unlawful to make, continue, or cause to be made or continued, any noise in excess of the noise levels set forth unless such noise be reasonably necessary to the preservation of life, health, safety, or property.

1) **Measurement of Noise.** Any activity not expressly exempted by this section which creates or produces sound regardless of frequency exceeding the ambient noise levels at the property line of any property (or if a condominium or apartment house within any adjoining development) by more than six (6) decibels above the ambient noise levels as designated in the following table at the time and place and for the duration then mentioned, shall be deemed to be a violation of the Ordinance, but any enumeration herein shall not be deemed to be exclusive.

Duration of Sound	6:00 PM - 10:00 PM (residential districts) and		
	7:00 AM - 6:00 PM (all districts)	6:00 PM - 7:00 AM (all other districts)	10:00 PM - 7:00 AM (residential districts)
Less than 10 min.	75 db	70 db	60 db
Between 10 min. and 2 hours	70 db	60 db	50 db
In excess of 2 hrs.	60 db	50 db	40 db

2) In determining whether a particular sound exceeds the maximum permissible sound level in the above table:

- a) Sounds in excess of the residential district limitations as measured in residential district are in violation of this section whether the sound originates in a residential district or any other district;
- b) During all hours of Sunday and State and Federal holidays, the maximum allowable decibel levels for residential districts are set as forth in Column III of the table.

- 3) Sounds emanating from the operation of motor vehicles on a public highway, aircraft, outdoor implements such as power lawn mowers, snow blowers, power hedge clippers, and power saws, and pile drivers or jackhammers and other construction equipment are exempt from the provisions of this section. Sounds emanating from lawful and proper activities at school grounds, playgrounds, parks, or places wherein athletic contests take place are also exempt from the provisions of this Ordinance.
- H) **Explosives.** No activities involving the storage, use or manufacture of materials or products, which could decompose by detonation, shall be permitted except such as are specifically permitted by the Council in designated Industrial Districts. Such materials shall include, but not be confined to, all primary explosives, such as lead azide and mercury fulminate, all high explosives and boosters, such as TNT, tetryl and nitrates propellants and components thereof such as nitrocellulose, black powder and nitroglycerin, and blasting explosives such as dynamite.
- I) **Radiation and Electrical Interference.** No activities shall be permitted that emit dangerous radioactivity beyond enclosed areas. There shall be no electrical disturbance (except from domestic household appliances) adversely affecting the operation at any point of any equipment including, but not limited to, radio and television reception other than that of the creator of the disturbance.
- J) **Vibration.** Continuous, frequent, or repetitive vibrations, which exceed 0.002g peak, may not be produced. In general, this means that a person of normal sensitivities should not be able to feel any vibrations.
- 1) **Exceptions.** Vibrations from temporary construction and vehicles which leave the site (such as trucks, trains, airplanes, and helicopters) are exempt. Vibrations lasting less than 5 minutes per day are also exempt. Vibrations from primarily on-site vehicles and equipment are not exempt.
- 2) **Measurement.** Seismic or electronic vibration measuring equipment may be used for measurements when there are doubts about the level of vibration.
- K) **Odor.** Continuous, frequent, or repetitive odors may not be produced which exceed scentometer No. 0. The odor threshold is the point at which an odor may just be detected. The scentometer reading is based on the number of clean air dilutions required to reduce the odorous air to the threshold level. Scentometer No. 0 is 1 to 2 dilutions of clean air.
- 1) **Exception.** An odor detected for less than 15 minutes per day is exempt.
- L) **Particulates.** No solid or liquid particles shall be emitted at any point in concentrations to exceed 0.1 grains per cubic feet of conveying gas in any residential

district and 0.3 grains per cubic feet of conveying gas in any other district. For measurement of the amount of particles in gases resulting from combustion, standard corrections shall be applied to a stack temperature of 500 degrees Fahrenheit, and fifty percent (50%) excess air.

- M) **Lighting, Lighting Fixtures and Glare.** In all districts, any lighting used to illuminate an off-street parking area, or other structure or area, shall be arranged as to deflect light away from any adjoining residential zone or from the public streets. Direct or sky-reflected glare, whether from floodlights or from high-temperature processes such as combustion or welding shall not be directed into any adjoining property. The source of light shall not be directed into any adjoining property. The source of light shall be hooded or controlled so as not to light adjacent property. Bare light bulbs shall not be permitted in view of adjacent property or public right-of-way. No light or combination of lights which cast light on a public street shall exceed one (1) foot candle meter reading as measured from the centerline of said street nor shall any light or combination of lights which cast light on residential property exceed .04 foot candles.
- 1) Lighting standards shall not exceed twenty-five (25) feet or the height of the principal building on the lot; whichever is less, without a Conditional Use Permit.
 - 2) All lighting in Non-Residential Districts used for the external illumination of buildings, so as to feature said building, shall be placed and shielded so as not to interfere with the vision of persons on adjacent highways or adjacent property.
 - 3) All illumination of signs and any other outdoor features shall not be of a flashing, moving or intermittent type. Artificial light shall be maintained stationary and constant in intensity and color at all times when in use.

Silica Sand Mining Moratorium Report

Brief Overview

This section touches upon considerations of regulatory approaches to silica sand mining operations for the City of Red Wing. Our joint workshop of Sustainability & Planning Commissions have been tasked to study the particulars of silica sand mining but this overview may be part of a broader need of an overall Resource Extraction Ordinance for the City of Red Wing. This is meant to be a framework for discussion and relies on a comprehensive view of the zoning considerations inherent in an overall Resource Extraction Ordinance but is not complete without thorough review of relevant Minnesota State statutes in all areas of Non-Metallic Mining.

Definition of Nonmetallic Mining Activities

Nonmetallic minerals means a product, commodity or material consisting principally of naturally occurring, organic, inorganic, nonmetallic, non-renewable material. Nonmetallic minerals include but are not limited to stone, rock, sand, gravel, asbestos, beryl, diamond, clay, coal, feldspar, peat and talc.

Nonmetallic mining means any or all of the following:

- (a) Extraction from the earth of mineral aggregates or nonmetallic minerals for off-site use or sale, including drilling and blasting as well as associated activities such as excavation, grading and dredging of such materials.
- (b) Manufacturing or processing operations that may involve the use of equipment for the crushing, screening, separation, or blending of the mineral aggregates or nonmetallic minerals obtained by extraction from the mining site or with materials transferred from off-site.

- (c) Manufacturing processes aimed at producing non-metallic products for sale or use by the operator.
- (d) Stockpiling of nonmetallic products for sale or use off-site and stockpiling of waste materials.
- (e) Transport of the extracted nonmetallic materials, finished products or waste materials to or from the extraction site.
- (f) Disposal of waste materials.
- (g) Reclamation of the extraction site.

Some exempted considerations to all nonmetallic mining operations

- (a) Excavations or grading by a person solely for domestic or farm use at a person's residence or farm.
- (b) Excavations or grading conducted for the construction, reconstruction, maintenance or repair of a highway, railroad, or any other transportation facility where the excavation or grading is entirely within the property boundaries of the highway, railroad or other transportation facility.
- (c) Grading conducted for preparing a construction site or restoring land following a flood or natural disaster.
- (d) Excavations for building construction purposes conducted on the building site.
- (e) Nonmetallic mining at nonmetallic mining sites where less than one acre of total affected acreage occurs over the life of the mine.
- (f) Removal from the earth of products or commodities that contain only minor or incidental amounts of nonmetallic minerals, such as commercial sod, agricultural crops, ornamental or garden plants, forest products, Christmas trees or plant nursery stock.

The above descriptions should be considered and weighed against already existing regulations & any already existing activity of a like nature in the Red Wing City Code

City of Red Wing Resource Extraction Ordinances should regulate at a minimum the following:

- 1) The location, the specific type, size and depth of the Resource Extraction/Nonmetallic Mining Operations, including any related commercial and industrial Operations (processing plants, rail/barge/truck load out areas, etc.)
- 2) Hours and days of Operations
- 3) Setbacks from roadways and property lines
- 4) Noise, odor, visual and light emission controls
- 5) Financial protections for the City of Red Wing
- 6) Closure/reclamation requirements
- 7) Blasting, stockpiling, drilling and excavation requirements
- 8) Waste disposal requirements
- 9) Specific operation plan approvals
- 10) Off-site requirements
- 11) Air and ground water protection requirements
- 12) Hazardous waste controls
- 13) Reporting, inspection and security requirements
- 14) Penalty provisions
- 15) Fee assessments

The City of Red Wing may already have many regulatory controls in place regarding a number of these items but having a comprehensive ordinance directly addressing the factors of resource extraction will allow the City of Red Wing to receive honest and comprehensive answers to any application or inquiry from a resource extraction interested party

ZONING CONTENT

This may be a tad redundant but it is important to understand the actual and specific regulatory content within the Zoning Ordinance that will serve to regulate, administer, and enforce the Resource Extraction Operations, closure and reclamation of Resource Extraction activities, including periphery, related, or supplementary commercial and industrial operations. These are the crucial items to be included in all Resource Extraction/Nonmetallic Mining Zoning Ordinances.

- (a) The proper definition of what specific type or types of nonmetallic minerals are to be regulated by the Zoning Ordinance
- (b) In what Zoning Districts are the operations and related commercial and industrial operations to be “permitted” uses and what districts are “conditional” uses
- (c) The proper definition and description of what is to be a “Resource Extraction” Site including the related commercial and industrial operations, OR any expansion of a current site or other related operations.
- (d) The creation of a DETAILED COMPREHENSIVE APPLICATION form. Application should address SPECIFIC concerns and compliance under Federal and State laws and regulations, including specific concerns related to:
 - i. Exploration
 - ii. Mining
 - iii. Processing
 - iv. Refining
 - v. Transporting
 - vi. Closure
 - vii. Reclamation
 - viii. Worker Safety
 - ix. Inspection Concerns

x. Compliance with Local Ordinance

xi. Financial Penalties, Fees, Considerations

(e) Specific Operation requirements for proposed new or expansion site operation (all Nonmetallic mining operations, including related commercial and industrial) are to be in full compliance with Federal and State law and regulations, and with the proposed Conditional Use Permits. Permits should include at a MINIMUM the following:

1. Specific property on-site mine control provisions in the permit for protection of adjacent or near land owners and residents, including

i. Buffer zones/setbacks from property and road lines

ii. Berms/screening/other aesthetic controls

iii. Fencing

iv. Specific notice provisions to neighbors regarding blasting, drilling or other possible nuisance actions

v. Erosion/run-off controls

vi. Noise controls

vii. Air/dust controls

viii. Light pollution controls

ix. Ground water/surface water protection controls

x. Hazardous waste controls

xi. Specific site boundaries

2. Specific off-site requirements, including the related and associated commercial or industrial site requirements.

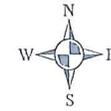
(f) A detailed closure and reclamation plan with proper and complete financial security (e.g. bond, line of credit) to be filed with the City of Red Wing to provide financial assurance of full land restoration in compliance with the restoration requirements of the State of Minnesota and the City of Red Wing. ***highly recommend that there be provisions in the Ordinance that ensure all reclamation includes native vegetation and organic/inorganic materials consistent with the existing natural surroundings of the immediate region, perhaps even higher requirements than currently provided for by nominal standards***

- (g) Specific insurance requirements for bodily injury coverage at the site and related operations with required certificate of insurance demonstrating the required coverage and amounts of coverage
- (h) Specific topsoil removal and topsoil storage requirements for the estimated term of operation
- (i) Specific road control and usage requirements, for Resource Extraction/Nonmetallic Mining operators, employees, agents and INDEPENDENT CONTRACTORS, at the site and related operations including access routes, transport routes, transport vehicle weight limits, road speed limits, road parking and specific required contracts for road maintenance and use.
- (j) Specific daily operation requirements
 - i. Hours/days of operations (including off-site related facilities)
 - ii. Road access locations at site
 - iii. Water usage at site
 - iv. Hazardous waste storage at site
 - v. Chemical/flammable material storage at site
 - vi. Specific areas to be mined at site, including the timeline and sequence or areas to be mined
 - vii. Location of building, structures and equipment at site
 - viii. Erosion/surface water controls to site from adjacent or near landowners
 - ix. Specific public health and safety daily requirements as a result of vehicle traffic impacts and material or dust discharge off-site from transport vehicles

Quartz-Rich Bedrock Layers in the Red Wing Area

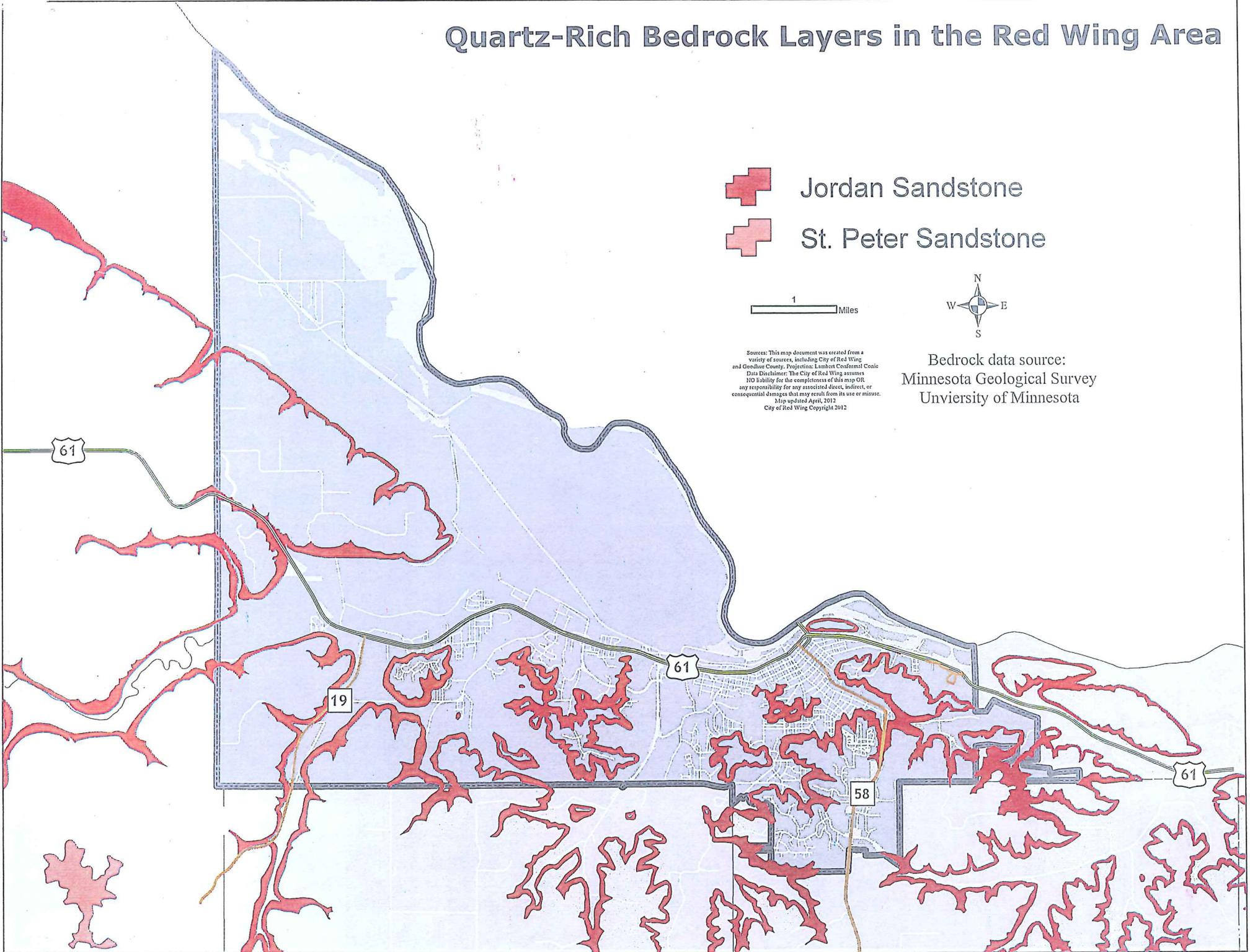
-  Jordan Sandstone
-  St. Peter Sandstone

1 Miles

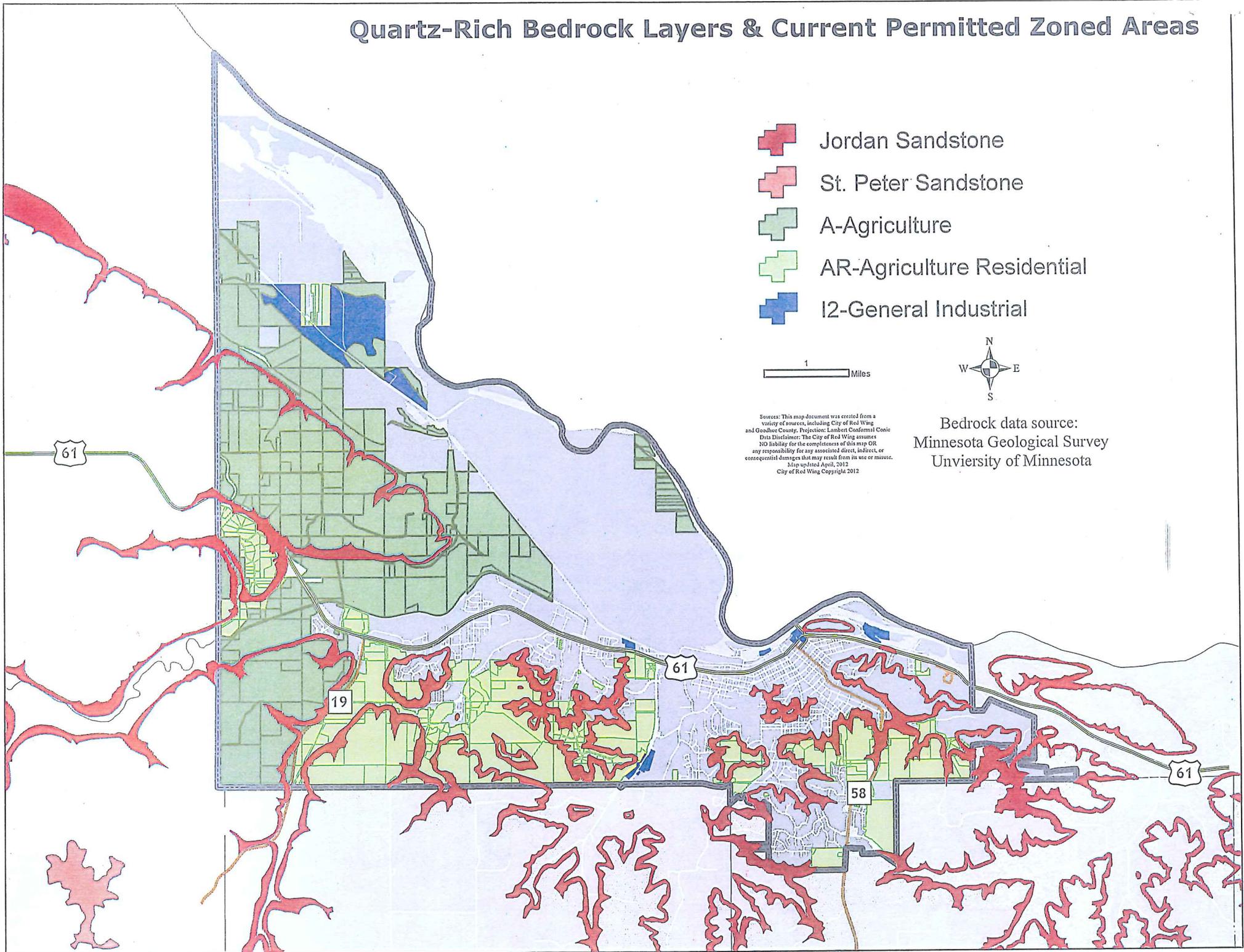


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Bedrock data source:
Minnesota Geological Survey
University of Minnesota



Quartz-Rich Bedrock Layers & Current Permitted Zoned Areas



- Jordan Sandstone
- St. Peter Sandstone
- A-Agriculture
- AR-Agriculture Residential
- I2-General Industrial

1 Miles



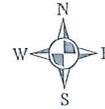
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Quartz-Rich Bedrock Layers & Proposed Permitted Zoned Areas

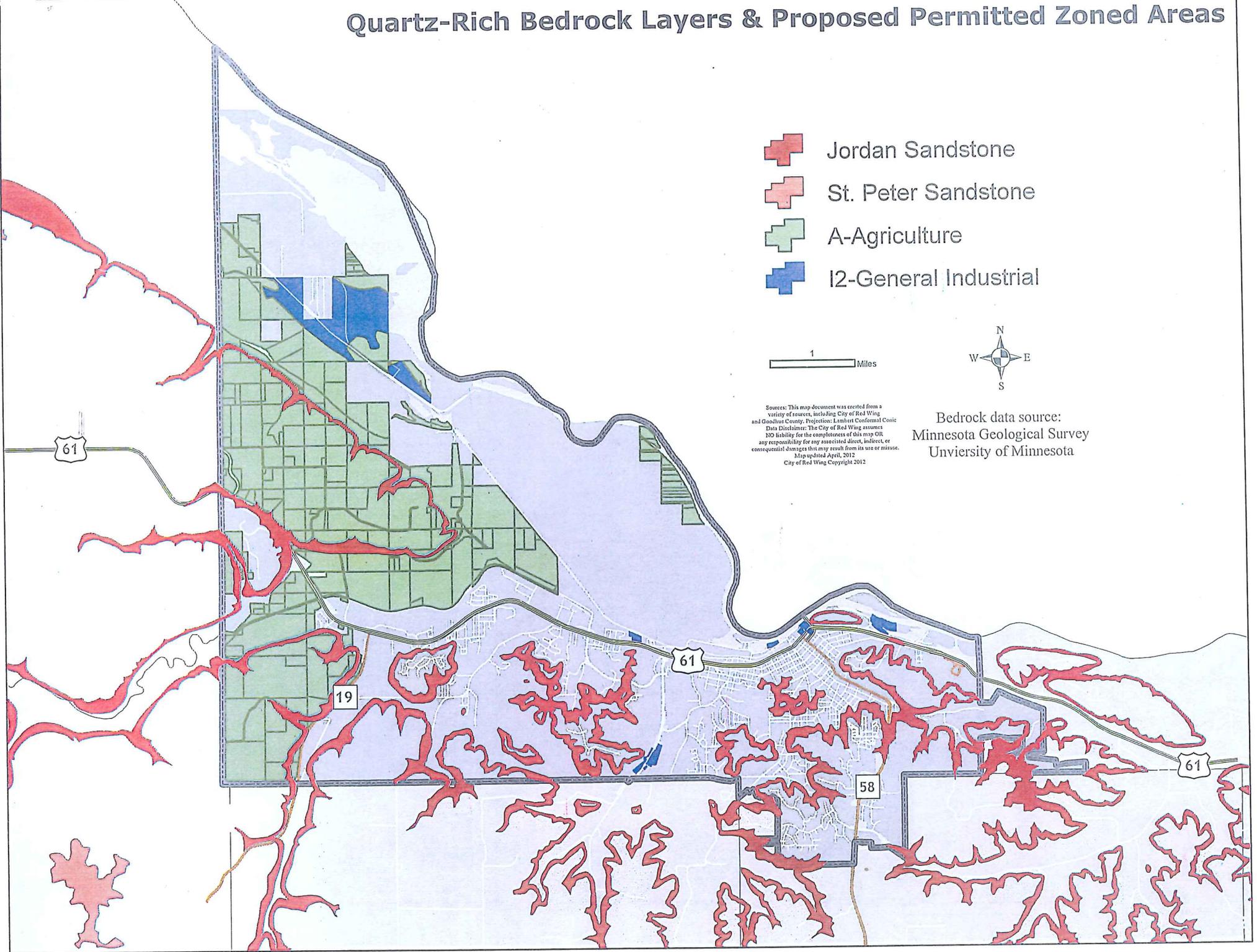
-  Jordan Sandstone
-  St. Peter Sandstone
-  A-Agriculture
-  I2-General Industrial

1 Miles



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Quartz-Rich Bedrock Layers & Proposed Permitted Zoned Areas Including Open Space Priority Properties

Open Space Priority Ratings

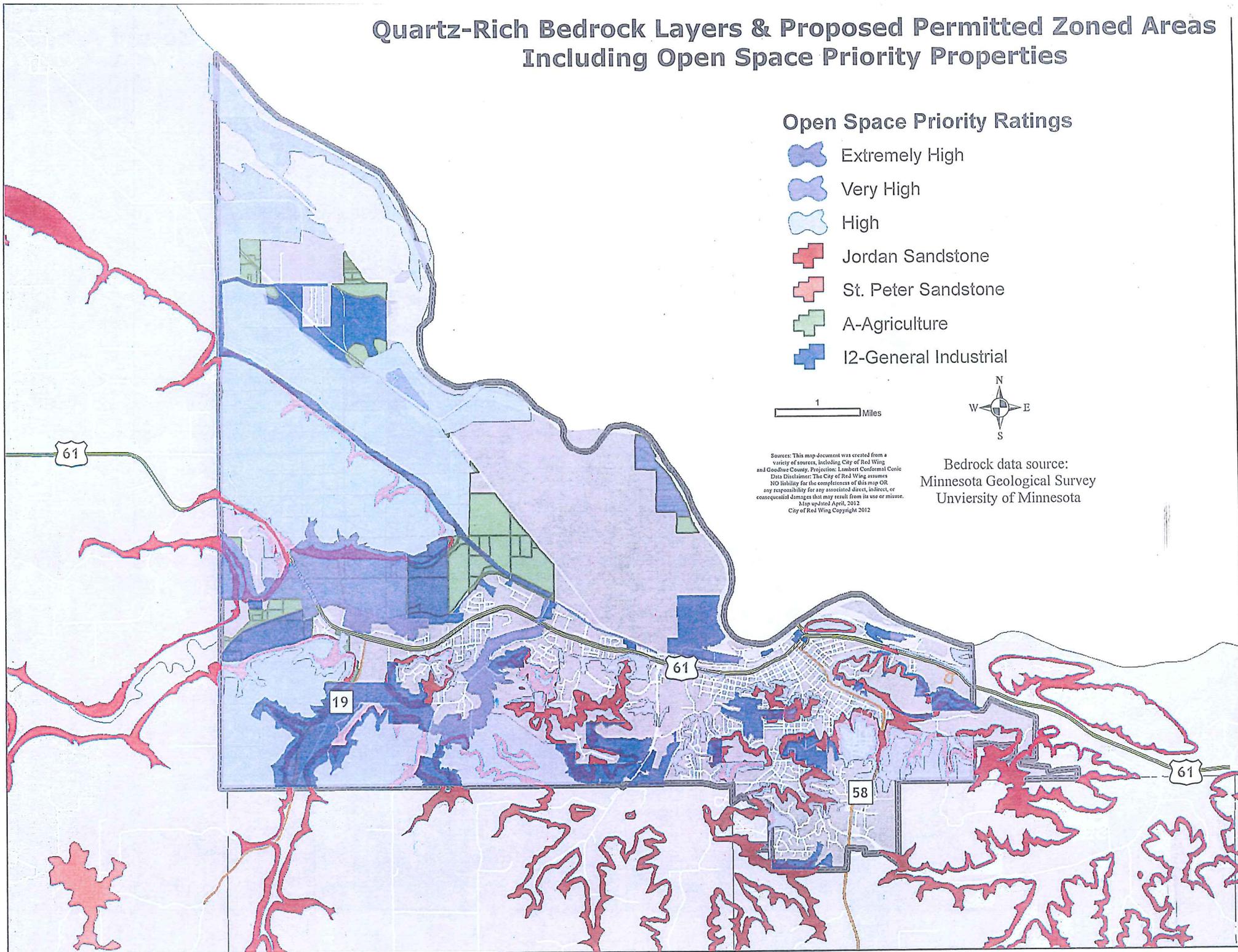
-  Extremely High
-  Very High
-  High
-  Jordan Sandstone
-  St. Peter Sandstone
-  A-Agriculture
-  I2-General Industrial

1 Miles



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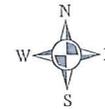


Quartz-Rich Bedrock Layers & Proposed Permitted Zoned Areas Including Open Space Priority Properties & Public/Private Owned Open Space

Open Space Priority Ratings

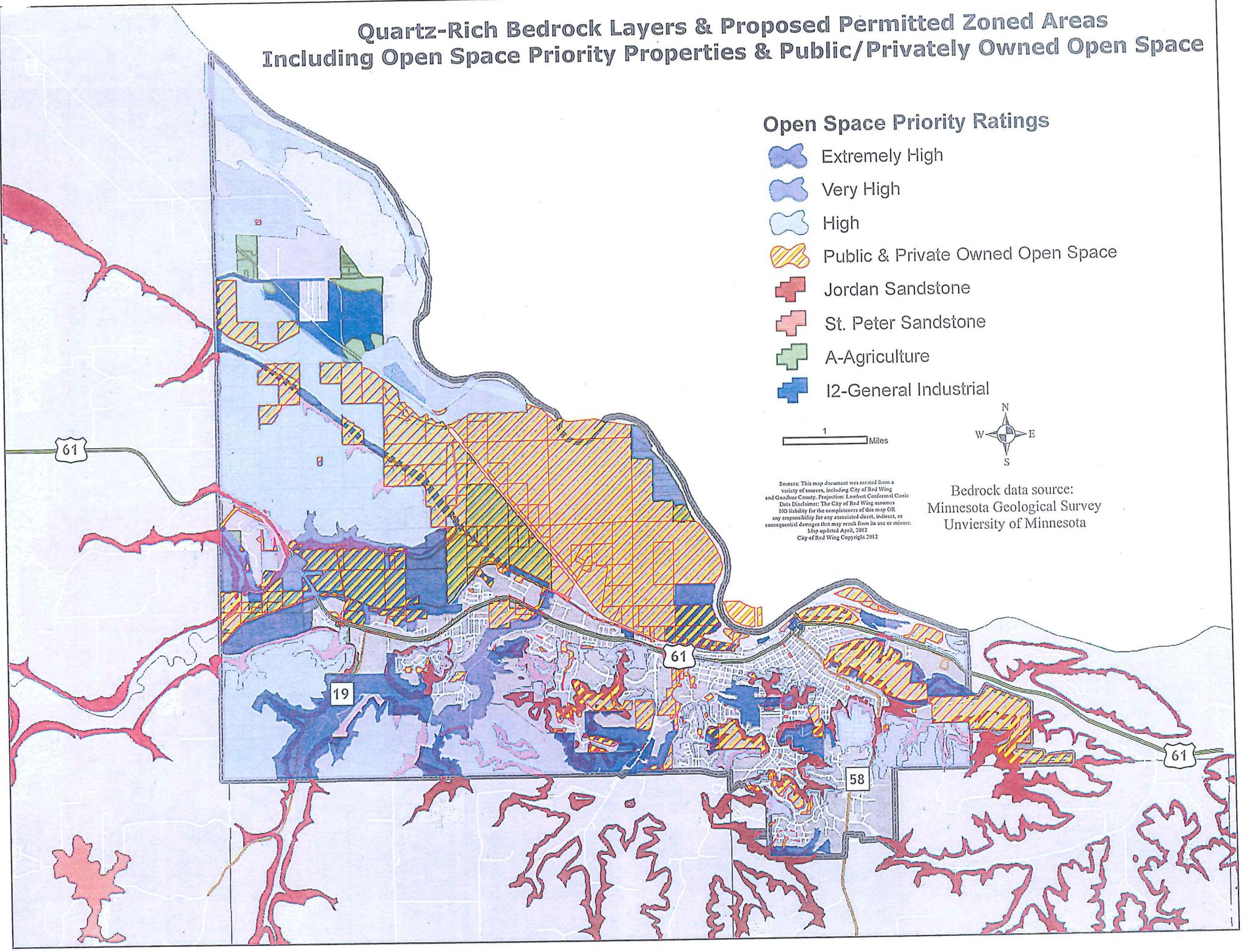
-  Extremely High
-  Very High
-  High
-  Public & Private Owned Open Space
-  Jordan Sandstone
-  St. Peter Sandstone
-  A-Agriculture
-  I2-General Industrial

1 Miles

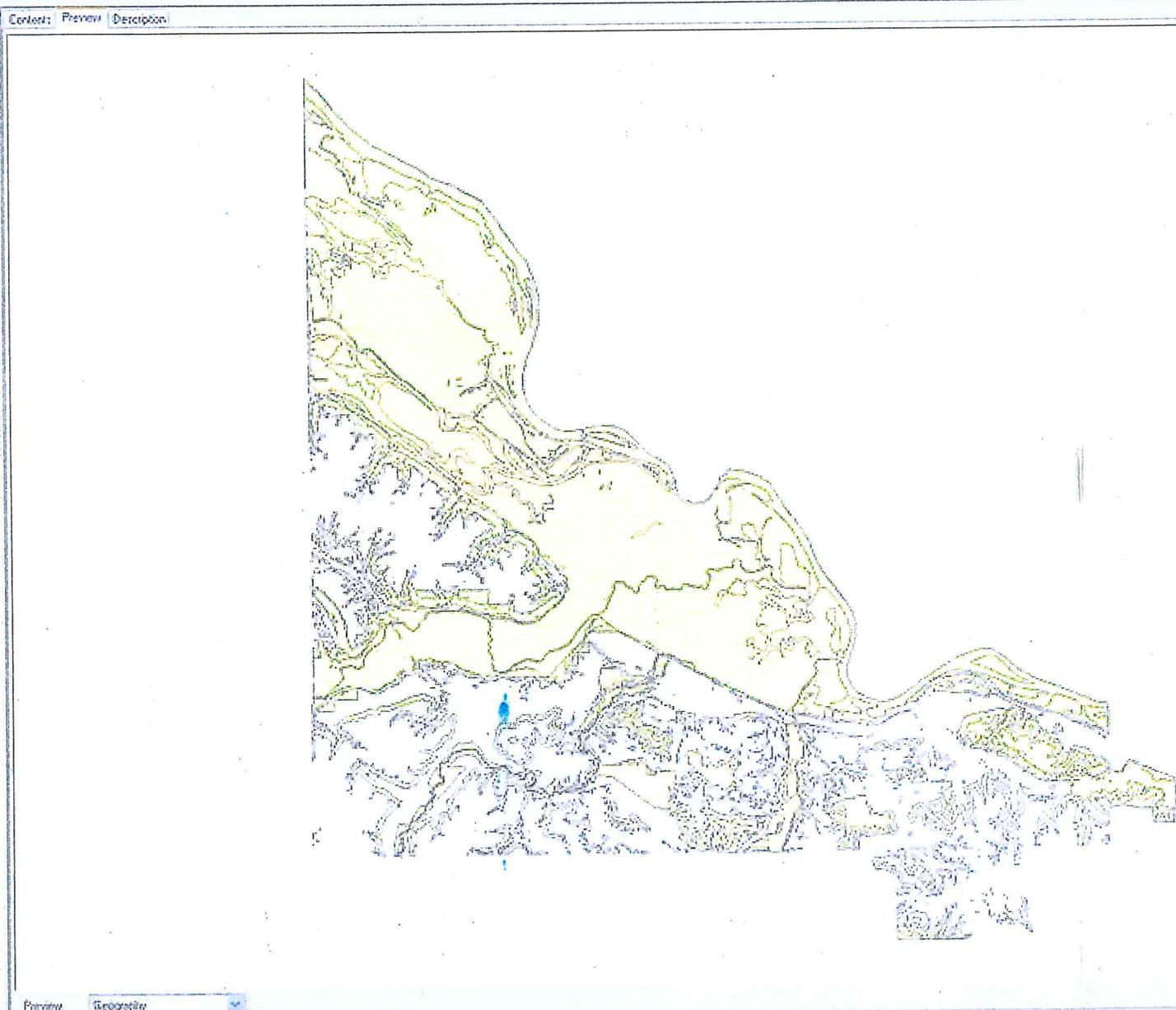


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- Folder Connections
 - C:
 - H:
 - O:
 - of/Arrival Photos
 - of/PW Utility Records
 - of/SP/SP Data
 - of/Site Maps
- Toolboxes
- Database Servers
- Database Connections
 - Add OLE DB Connection
 - Add Local Database Connection
 - Connection to SQL Server
 - rw_ArcSDE_GDB.DBO.Archaeology
 - rw_ArcSDE_GDB.DBO.Archival_Parcel
 - rw_ArcSDE_GDB.DBO.Bio_Fed
 - rw_ArcSDE_GDB.DBO.CompPlan
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 - rw_ArcSDE_GDB.DBO.Market_Business_FP
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 - rw_ArcSDE_GDB.DBO.Natural_Communities
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 - rw_ArcSDE_GDB.DBO.Contours
 - rw_ArcSDE_GDB.DBO.Landmarks
 - rw_ArcSDE_GDB.DBO.Emergency_Management
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 - rw_ArcSDE_GDB.DBO.Market_Inventory
 - rw_ArcSDE_GDB.DBO.PW_State_Data
 - rw_ArcSDE_GDB.DBO.Open_Space
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 - rw_ArcSDE_GDB.DBO.Conservation_Easements
 - rw_ArcSDE_GDB.DBO.Historic_Frog
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 - rw_ArcSDE_GDB.DBO.Preservation_Indices
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 - rw_ArcSDE_GDB.DBO.Subdivisions
 - rw_ArcSDE_GDB.DBO.Sustainability
 - rw_ArcSDE_GDB.DBO.Trails
- GIS Servers



Quartz-Rich Bedrock Layers & Sensitive Landscapes

Category

-  Sensitive
-  Undevelopable
-  Water
-  Jordan Sandstone
-  St. Peter Sandstone

1 Miles



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