

**Goodhue County
Mining Study
Committee**

**Summary Report
October 2013**

MSC Summary Report 3 October 2013

The Planning Advisory Commission was presented with an alternative request to the Save the Bluff Zoning Amendment at the August 19, 2013, PAC Meeting.

County Commissioners Dan Rechtzigel and Jim Bryant have met with representatives of Save the Bluffs, Keith Fossen and Jody McIlrath to discuss other options to address the issues and concerns regarding silica sand mining, processing and transportation that have been identified by Save the Bluffs.

As an alternative to the request to create an Overlay Zone District, prepare an Economic Cost/Benefit Analysis and consider further amendments to the text of Article 14; Save the Bluffs requested that the PAC table consideration of Zoning Amendment request and extend the public hearing until the October 21, 2013, Regular Planning Advisory Commission Meeting to allow for review and consideration of the following amendments to Article 14:

1. Increase in the setback requirement for Mineral Extraction Facilities from the R-1 Suburban Residence Zone District from a minimum of 1000 feet to a minimum of 1 mile.
2. Restriction on permitting of Mineral Extraction Facilities within 1 mile of the Ordinary High Water Line of the Mississippi River.
3. Inclusion of specific language in the Ordinance regarding procedures to be used to enforce mining related provisions of the Zoning Ordinance.
4. Restrict the use of flocculants and coagulants in the processing of non-metallic minerals.

At the PAC meeting, Save the Bluffs representatives agreed to sign an extension for the consideration of their request until a meeting prior to March 4, 2014. The PAC referred the new request, in addition to the previous application, to the MSC for review and comment.

The MSC met on September 4, 2013 to discuss these requests. The Save the Bluffs representatives provided the following four items instead of the ones provided to the PAC:

1. 1 mile setback from high population areas, such as cities, hamlets, and residential subdivisions;
2. 1 mile from the high water mark of the Mississippi – which protects the Great River Road and related tourism;
3. Prohibit the use of flocculants (or better yet, permit only dry processing); and
4. Set harsh penalties (such as canceling the permit) for violations.

There was extensive discussion regarding the first two items. A map was shown at the meeting showing the implications of the additional setbacks.

The discussion for **Item 1** included refining the “high population areas” and the “residential subdivisions” to R-1 zoning districts. There are numerous platted subdivisions within the County that are not zoned R-1 and are being used for agricultural purposes, including mining. A more distinct, less arbitrary determination would be to use the R-1 zoning districts because they have gone through the zoning process, are well defined, and are specifically regulated for residential use.

A straw poll of the proposal of a one mile setback from the R-1 zoning district at the September 4, 2013 MSC meeting was nearly a split vote: three members against, five members in favor, and one member

abstaining. There did not appear to be support for the one mile setback from cities. The County currently has one Hamlet zoning district. It appears the silica resource is not the uppermost bedrock and not easily accessible in this area, however, it does have mixed uses including residential and the map included a one mile setback from that district.

After the MSC September 4, 2013 meeting, the EQB posted their recommended setbacks as required by statute. It is interesting to note that their recommended setbacks for silica sand mining and processing from existing dwellings, public school, church, public institutions, parks, and residential zoning district boundaries is 500 feet. The County's current ordinance is twice that distance at 1000 feet. The EQB recommendations were heard at their September 18th board meeting and the public comments concerning this particular setback were extremely negative.

Setback discussion continued at the MSC September 25, 2013 meeting. The majority of the MSC were not able to support a one mile setback as requested. It was felt that the one mile distance was an arbitrary number and that there was not a good basis to support it.

Recommendation: The MSC recommends denial of the request for the one mile setback from high population areas, such as cities, hamlets, and residential subdivisions for the following reasons:

- The County requires dust control (Article 14, Sec. 6, Subd 4, D,E, J) at the facility and within 600 feet of the facility
- If the facility is excavating, transferring, processing, or stockpiling silica sand, the operator must continuously monitor air quality/air particulate and weather conditions to determine if the dust is being controlled (Article 14, Sec. 6, Subd 4, E)
- The County can add additional setbacks and conditions (Article 14, Sec. 5, Subd 4, E) as part of a permit; the Board can approve, modify, or deny the request (Article 14, Sec. 5, Subd 4, F)
- Haul routes are to be submitted and approved through the permit process (Article 14 Sec. 5, Subd. 1, A, Map B. 17; Sec. 5, Subd. 1, H; Sec. 6, Subd. 5, A)
- Hours of operation can be controlled through conditions (Article 14, Sec.6, Subd. 4,A; Sec. 5, Subd. 4, E,2)

Item 2 was also discussed at length. The reason for the one mile from the Mississippi was explained as protecting the Great River Road area; however, the road falls outside that one mile buffer in most places. The question then became "why not setbacks from other rivers like the Cannon River?" Looking at the map, cities, bluffs, dwelling and other restrictions cover nearly the entire length and more of the mile river setback and it was felt that the additional coverage was unnecessary. It was also pointed out that the small portion of area not covered by the one mile R-1/Hamlet buffers fall within Florence Township, which has essentially banned silica mining.

Additional discussion ensued about additional protection for DNR public waters located within the Blufflands Sub-ecological Classification System (see discussion on Page 9).

Recommendation: The MSC recommends denial of the request for a one mile setback from the high water mark of the Mississippi for the following reasons:

- It fails to cover the majority of the Great River road within the County
- It fails to recognize or protect other public waters in the County

Item 3 discussion concerns the use of chemicals in the processing of the materials. The word "flocculant" is more of a generic term for a substance added to the sand/water slurry to aid in the

separation of the material fines. The issue of concern is the use of certain chemical flocculants that are frequently used that may be cancer causing such as acrylamides. The MSC agrees to the prohibition of certain chemicals (see Page 8).

Recommendation: The MSC recommends prohibiting certain flocculants (see Page 8) for the following reasons:

- There are available non-COC substitutes on the market that can be used
- There are dry processing procedures that can be used
- It prevents potential environmental abatement issues (such as contamination of water supplies) if the waste containment, mine restoration, or storage and handling of COC's is compromised.
- Negative effects of the use of these chemicals may not be evident for many years; these effects may not be discovered until long after an operation has reclaimed the site

The EQB recommends that if acrylamides are utilized "Monitoring for acrylamides should be required for all facilities that propose to use acrylamides."

Item 4 discussed the process for penalizing operations that violate their permits or conditions. There are numerous parts to address in this item. First, the current ordinance refers to Traffic Studies, Road Impact agreements, and Development Agreements, all of which are also being suggested as recommendations from the EQB. Agreements would be specific to the proposed project and the financial assurances and escrows are negotiated with the owner/operator based upon numerous aspects including but not limited to the road impacts, the duration and extent of operations, and reclamation plans. Sample documents were provided in the MSC's July 2011 Summary Report.

Second, County staff have been discussing a fair and reasonable process for revoking Conditional/Interim Use Permits in general. The current zoning ordinance states that "a violation of any condition set forth in a conditional use permit shall be a violation of this Ordinance and automatically terminate the permit" (Article 4, Section 9), and "a conditional use permit shall become void one year after being granted by the Board unless used or if discontinued for a period of ninety (90) days" (Article 4, Section 10).

Depending on the severity of the violation or non-use, staff would communicate with the permit holder to try to rectify the situation. If the violation is deemed to be significant enough to warrant the revocation of the permit, staff would bring it to the County Board for action.

It is felt that due to the fact that the County Board grants the permits (with particular conditions), that it should be the decision and action of the County Board, not staff, to take away the permits. It is also felt that since the permit went through a public process for permission, it should go to a public hearing at the County Board in a similar way if the permit is in jeopardy of being revoked.

If something should occur on the permitted property that would be considered an eminent public health issue, the County's Environmental Health staff in coordination with the Attorney and Sheriff's offices has the authority to immediately enforce abatement actions as outlined in the following statute:

145A. Powers and Duties of Board of Health

Subd. 7. Entry for inspection. To enforce public health laws, ordinances or rules, a member or agent of a board of health may enter a building, conveyance, or place where contagion, infection, filth, or other source or cause of preventable disease exists or is reasonably suspected.

Subd. 8. Removal and abatement of public health nuisances.

(a) If a threat to the public health such as a public health nuisance, source of filth, or cause of sickness is found on any property, the board of health or its agent shall order the owner or occupant of the property to remove or abate the threat within a time specified in the notice but not longer than ten days. Action to recover costs of enforcement under this subdivision must be taken as prescribed in section [145A.08](#).

(b) Notice for abatement or removal must be served on the owner, occupant, or agent of the property in one of the following ways:

(1) by registered or certified mail;

(2) by an officer authorized to serve a warrant; or

(3) by a person aged 18 years or older who is not reasonably believed to be a party to any action arising from the notice.

(c) If the owner of the property is unknown or absent and has no known representative upon whom notice can be served, the board of health or its agent shall post a written or printed notice on the property stating that, unless the threat to the public health is abated or removed within a period not longer than ten days, the board will have the threat abated or removed at the expense of the owner under section [145A.08](#) or other applicable state or local law.

(d) If the owner, occupant, or agent fails or neglects to comply with the requirement of the notice provided under paragraphs (b) and (c), then the board of health or its agent shall remove or abate the nuisance, source of filth, or cause of sickness described in the notice from the property.

Subd. 9. Injunctive relief. In addition to any other remedy provided by law, the board of health may bring an action in the court of appropriate jurisdiction to enjoin a violation of statute, rule, or ordinance that the board has power to enforce, or to enjoin as a public health nuisance any activity or failure to act that adversely affects the public health.

Subd. 10. Hindrance of enforcement prohibited; penalty. It is a misdemeanor deliberately to hinder a member of a board of health or its agent from entering a building, conveyance, or place where contagion, infection, filth, or other source or cause of preventable disease exists or is reasonably suspected, or otherwise to interfere with the performance of the duties of the board of health.

Subd. 11. Neglect of enforcement prohibited; penalty. It is a misdemeanor for a member or agent of a board of health to refuse or neglect to perform a duty imposed on a board of health by statute or ordinance.

Recommendation: The MSC recommends establishing procedures for the revocation of conditional/interim use permits. There are no specific text amendments available at this time to recommend. Staff will make this a priority for 2014.

Recommendations and Findings for the Save the Bluffs Zoning Amendment Application request

Extension of Silica Sand Mining Interim Ordinance/Moratorium

The application requested an extension of the moratorium to allow time to establish a Silica Sand and Natural Resources Overlay District. The application was submitted prior to the County Board's decision on August 6, 2013 to extend the moratorium for an additional six months (ending March 6, 2014).

Recommendation: The MSC recommends denial of the request to extend the moratorium due to the fact that the County Board has already extended the moratorium.

Establishment of a Silica Sand and Natural Resources Overlay District:

An overlay district has been discussed many times throughout the last two years of study. The various committees (MSC, PAC, and County Board) have not moved in the direction of creating an overlay district specifically for silica sand mining.

The general consensus is that the current setbacks and bluffland protections, in essence, already provide direction for where mining can and cannot occur. Others feel that the current setbacks do not provide enough surety. For instance, a setback to a dwelling could be eliminated if a mineral extraction facility purchases the dwelling. On the other hand, district boundaries can also be changed through the public process.

The setback discussion would still need to occur even if an overlay district was established: in the areas where a mineral extraction facility could operate, how close should it be to a dwelling, school, road, etc.? How close could a facility locate next to an overlay district which bans silica sand mining?

Recommendation: The MSC recommends denial of the request to establish a Silica Sand and Natural Resources Overlay District for the following reasons:

- Natural resources are identified, located, and reviewed as part of the mineral extraction application process (Article 14, Sec. 5, Subd. 1, A, 9,11,13; Sec. 6, Subd. 4, J)
- Bluffland areas are protected in the ordinance: Mineral Extraction Facilities cannot grade, excavate or fill within the bluff impact zones Article 12, Sec. 4, Subd. 7)
- The County Board can add additional setbacks and conditions (Article 14, Sec. 5, Subd. 4, E) as part of a permit; the Board can approve, modify, or deny the request (Article 14, Sec. 5, Subd. 4, F)

Overall Economic Cost/Benefit Analysis:

The application requests the County to prepare an Economic/Cost Benefit Analysis that would entail researching and analyzing the potential costs and benefits if a silica sand facility was established in Goodhue County. The MSC felt this was too limiting to look just at one specific industry. Much of the discussion was centered around the negative effects a mining operation could have on the County's recreation and tourism industries, and its natural resources.

The MSC reviewed proposed changes to the Comprehensive Plan which suggests that the County include specific language to outline the importance of recreation and tourism in the County, along with more clarification of the preservation of natural, historic, and cultural visual elements in the County. If the Comprehensive Plan changes are approved, staff would put forth a request to perform a more in-depth study of the County's recreation and tourism activities and actual economic benefits derived from those activities.

Recommendation: The MSC recommends denial of request to prepare an Economic/Cost Benefit Analysis of analyzing the potential costs and benefits of a silica sand facility locating in Goodhue County for the following reasons:

- The Comprehensive Plan should outline the importance the County places on recreation and tourism before a study is sanctioned
- The request is too limited in scope and not cost effective to request a study to determine the potential effects of just one type of industry on Goodhue County's resources
- It was felt that just defining the scope of the research, the questions to ask, and setting the assumptions and parameters (how many mines, how big, where) would take many meetings of discussion before a Request For Proposal could be presented and a subsequent study performed

Requirement for Cost/Benefit Analysis for New Mineral Extraction Facilities:

The application requests new Mineral Extraction Facilities to submit a "narrative of cost/benefit analysis" and "cost benefit analysis addressing economic impacts of the proposed project" as part of the application process.

All businesses perform some sort of Cost/Benefit analysis when they decide to open-expand-or close a business. Their analysis would be concerned with issues such as being able to satisfy all the required regulations, pay their employees, and operate profitably. The request from the Save the Bluffs application seems to focus on the questions of pay levels, who will be employed, is the industry stable, what the environmental impacts would be, how a facility would impact existing businesses, and determining the economic impact of the silica sand industry on the local economy. Some of these particular details could be considered private business data, and a narrative discussing the other items may only result in generalized information. The environmental impacts are currently being addressed in the application process.

The County grants permits based upon many factors, but mainly if the proposal is compatible with surrounding land uses, zoning, and Comprehensive Plan goals and policies. The County does not guarantee success of the operation when they grant the permits. Land uses that may have a large or long-term impact within the County may require financial securities and development agreements to ensure compliance and abatement or restoration funding guarantees. These mechanisms are currently listed in the ordinance.

The MSC discussed if there would be any funding information that would be beneficial to know as part of an application (see proposed wording on Page 8).

Recommendation: The MSC recommends denial of request that new Mineral Extraction Facilities submit a "narrative of cost/benefit analysis" and "cost benefit analysis addressing economic impacts of the proposed project" as part of the application process for the following reasons:

- Applicants currently have the potential requirement to perform Traffic Impact Studies and enter into Road and Development Agreements (Article 14, Sec. 6, Subd 5) as a condition of their permit. These studies and agreements would cover infrastructure issues, and any specific negotiations concerning impacts to the area.
- The County has not requested nor required a cost/benefit analysis for any previous conditional use permits

Amendment of provision related to use of Best Practices:

The application requests that the County establish Best Practices for Mineral Extraction Facilities.

The MSC discussed who should establish Best Practices for Mineral Extraction Facilities. It was felt that the County does not have the expertise for this and that the state agencies are a more appropriate resource for this task. It is also noted that the Mining Technical Evaluation Panel would be relied upon to provide this expertise.

The MSC did suggest wording to clarify the purpose of Best Practices in the ordinance (see Page 8).

Recommendation: The MSC recommends denial of request that the County establish Best Practices for Mineral Extraction Facilities for the following reasons:

- The County does not possess the expertise to determine Mineral Extraction Best Practices
- The ordinance establishes a Mining Technical Evaluation Panel that consists of licensed professionals with appropriate expertise to guide the County in Best Practices (Article 14, Sec. 7)
- The state has established a Technical Assistance Team (gleaned from Goodhue County's ordinance) composed of experts to aid governments in the review, permitting, and monitoring of silica sand operations

Proposed Article 14 Changes:

Article 14

Section 5, Subdivision 2: Supporting Documentation

U. Description of local public monies or subsidies anticipated to be used in the establishment, operation, monitoring, or reclamation aspects of the proposal.

Section 6, Subdivision 3: Use Restrictions

A. The following uses are prohibited unless specifically authorized in the mineral extraction permit:

1. ~~A~~ The production or manufacturing of veneer stone, sills, lintels, out flagstone, hearthstones, paving stone and similar architectural or structural stone, and the storing or stockpiling of such products on the site.

2. ~~B~~ The manufacture of concrete building blocks or other similar blocks permanent ready-mixed concrete, or permanent asphalt production plants and any similar production or manufacturing processes.

B. The use of flocculants, such as acrylamides, or any known chemical that is considered to be a Contaminant of Concern (COC) as defined by the Environmental Protection Agency, is prohibited from use in the washing or processing of the mineral resource.

Section 6, Subdivision 4:

T. Best Practices. In order to protect the environment and the public's health, safety and welfare, ~~The County expects~~ applications ~~to~~ shall incorporate Best Practice standards into the design, operation, and reclamation of Mineral Extraction Facilities. A list of Best Practice documents is available through the Zoning Administrator. The County reserves the right to update the list as appropriate.

Section 7, Subdivision 7:

If the Mineral Extraction Facility is excavating, stockpiling, processing, or transporting silica sand a Mining Technical Report shall be required.

Section 4, Subdivision 7:

Mineral Extraction Facilities shall be prohibited within 1000 feet from Public Waters as defined in MS 103G.005 or to the limit of the floodplain of the Public Water whichever is greater, within the Bluffland Subsection area as defined in the Ecological Classification System defined by the Minnesota DNR.

OR

Mineral Extraction Facilities within 1000 feet from Public Waters as defined in MS 103G.005 or to the limit of the floodplain of the Public Water whichever is greater, within the Bluffland Subsection area as defined by the Minnesota DNR in the Ecological Classification System, shall submit a hydrogeological risk assessment report which includes information necessary to assess potential impacts to hydrogeological features as a result of the operation. This report must be submitted as part of the Conditional/Interim Use permit application.

Bluffland Subsection of the Paleozoic Plateau Ecological Section in Southeastern Minnesota

Minnesota Statutes 103G.005 define Public Waters in Subdivision 15:
Subd. 15. **Public waters.**

(a) "Public waters" means:

- (1) water basins assigned a shoreland management classification by the commissioner under sections 103F.201 to 103F.221;
- (2) waters of the state that have been finally determined to be public waters or navigable waters by a court of competent jurisdiction;
- (3) meandered lakes, excluding lakes that have been legally drained;
- (4) water basins previously designated by the commissioner for management for a specific purpose such as trout lakes and game lakes pursuant to applicable laws;
- (5) water basins designated as scientific and natural areas under section 84.033;
- (6) water basins located within and totally surrounded by publicly owned lands;
- (7) water basins where the state of Minnesota or the federal government holds title to any of the beds or shores, unless the owner declares that the water is not necessary for the purposes of the public ownership;
- (8) water basins where there is a publicly owned and controlled access that is intended to provide for public access to the water basin;
- (9) natural and altered watercourses with a total drainage area greater than two square miles;
- (10) natural and altered watercourses designated by the commissioner as trout streams; and
- (11) public waters wetlands, unless the statute expressly states otherwise.

(b) Public waters are not determined exclusively by the proprietorship of the underlying, overlying, or surrounding land or by whether it is a body or stream of water that was navigable in fact or susceptible of being used as a highway for commerce at the time this state was admitted to the union.

The Bluffland Subsection is located within the Paleozoic Plateau Ecological Section in SE MN. The Paleozoic Plateau is just 1 of 10 different Ecological Sections throughout MN, and there are 26 different Subsections that define a region's climate, landscape, vegetation, geology, etc. The MN Legislature identified the Paleozoic Ecological Section as an area in need of additional protection of our groundwater resources. Groundwater recharge in this ecological section is often dynamic, difficult to predict and easily susceptible to contamination. Preventing the possibility of groundwater contamination should be a priority in this region.

According to a report provided by MNDNR, the Bluffland Subsection has 156 Species of Greatest Conservation Need (SGCN) which is the most of any other Subsections in State. Eighty-two of the SGCN species are listed as endangered, threatened or of special concern. The report is an overview of the specific habitat features and species inventory for each Ecological Subsection in the State: <http://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/profiles/blufflands.pdf>)

This document also states "**Retaining** or restoring the health of stream systems is an important conservation objective in this Subsection." This sentence supports our efforts in reducing the potential impacts to the stream corridors (streams, shoreland and associated valley walls). Concerns with impacting sensitive recharge areas of cold water streams, public water resources, ecotourism and the quality of wildlife habitat corridors warrant additional setbacks/scrutiny within the Bluffland Subsection.

In 2013, the State legislature also recognized the karst conditions and landforms in Southeastern Minnesota by directing the Environmental Quality Board to work with local units of government to

establish standards for the area which take into account the unique aspects of its geography (Minnesota Statutes Section 116C.99, Subd 2).

Based upon the above referenced research, the MSC acknowledged the importance of this area but did not agree on whether the area should be prohibited from all mining or if more scrutiny should be required in these areas and potentially be restricted from all mining based upon the proposal (see proposed wording for both options Page 8).

Comprehensive Plan

In response to concerns expressed by County residents, business owners, and the Save the Bluffs Group; the Mining Study Committee has recommended that the Planning Advisory Commission and County Board consider amendments to the Goodhue County Comprehensive Plan to emphasize the importance of recreation and tourism to the County's economy and quality of life. The MSC has recommended revision of Comprehensive Plan, Element 3 (Conservation, Water, and Sustainable Development), Goal 4 and Element 5 (Economic Development), New Goal 4 (Recreation and Tourism) as follows: (proposed new text shown in red)

ELEMENT 3 (Conservation, Water, and Sustainable Development)

GOAL 4: PROTECT CULTURAL, HISTORIC, SCENIC, AND RECREATIONAL AMENITIES

Protect our cultural, historic and scenic areas including public and private recreation facilities and uses from incompatible land use change.

SUMMARY

The scenic beauty of Goodhue County was cited as one of our most distinctive features. Bluff lands, river valleys, farmland and woodland were all mentioned as having significant importance. Concern was expressed that these views not be lost to the built environment.

Policy

1. Sign controls measures shall be in place along county roads and highways to preserve the unobstructed view of the natural beauty of the County.
2. An adequate amount of open space shall be preserved.
3. The natural, historic and cultural visual elements that define a community's sense of place shall be preserved.
4. Development including temporary land use activities such as mineral extraction or timber harvesting shall be compatible with the natural environment and accomplished without destroying environmental character or natural amenities.
5. Development including temporary land use activities such as mineral extraction or timber harvesting shall be compatible with the cultural environment, historic structures and historic districts and accomplished without destroying the historical and cultural character or amenities.
6. Community design patterns shall promote effective and efficient use of natural, historic and cultural resources.

Element 5 (Economic Development),

Goal 4 (New): Recreation and Tourism

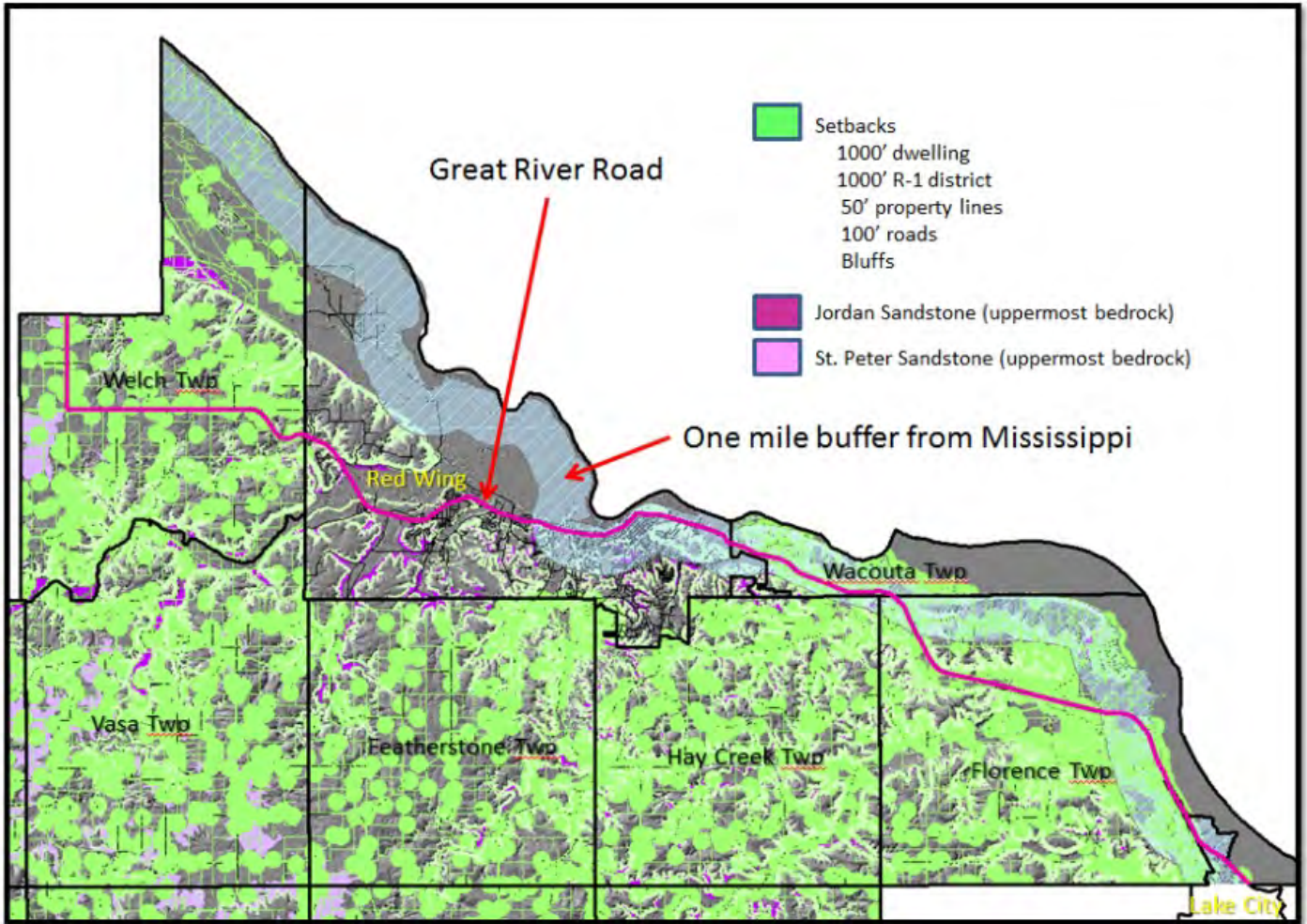
Summary: Recreation and tourism contribute to the Goodhue County economy and quality of life by directly and indirectly supporting local businesses.

The Inventory document for this Comprehensive Plan includes a section on “Recreation and Tourism” (pages 64-66). Key recreation and tourism uses and activities are identified including: preserved natural lands; historic sites and tourism amenities; recreational facilities; airports, marinas, boat access and dams; and recreational trails.

Policies:

1. Recognize public and private recreation facilities and activities that serve both the local population and visitors.
2. Recognize economic benefits generated by recreation and tourism businesses and activities.
3. Consider potential impacts on recreation and tourism when evaluating any significant land use change that may result from a change of zone or zoning permit such as a conditional use permit or interim use permit.
4. Coordinate with local Chambers of Commerce, Tourism Organizations, the State of Minnesota, the Prairie Island Indian Community and existing recreation and tourism oriented businesses to promote Goodhue County.

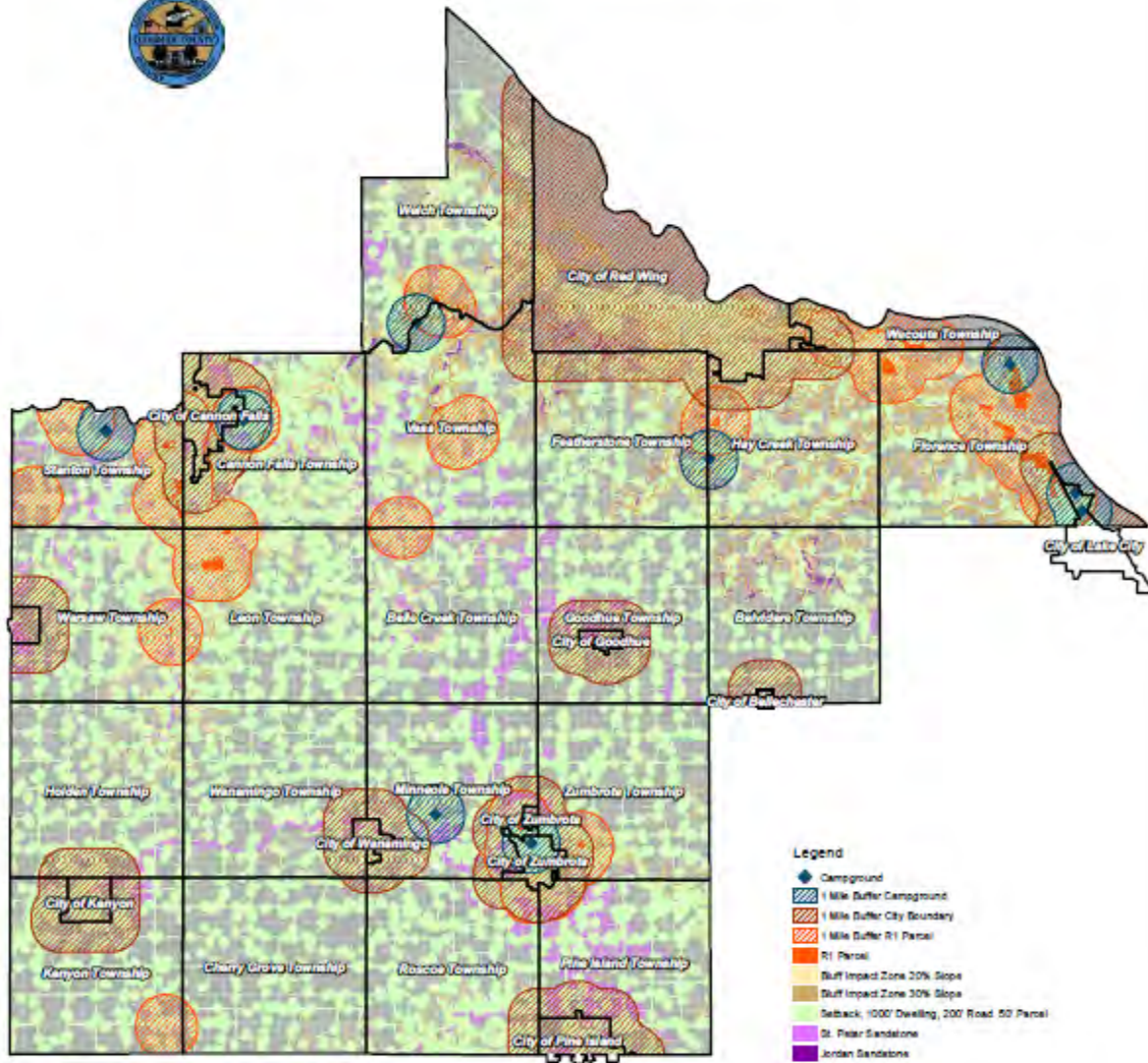
Maps:



GOODHUE COUNTY, MINNESOTA

MINING STUDY

CURRENT REGULATIONS WITH ADDITIONAL SAVE THE BLUFFS RESTRICTIONS



Legend

- Campground
- 1 Mile Buffer Campground
- 1 Mile Buffer City Boundary
- 1 Mile Buffer R1 Parcel
- R1 Parcel
- Bluff Impact Zone 20% Slope
- Bluff Impact Zone 30% Slope
- Setback: 100' Dwelling, 200' Road 50' Parcel
- St. Peter Sandstone
- Jordan Sandstone



0 1.5 3 6 Miles

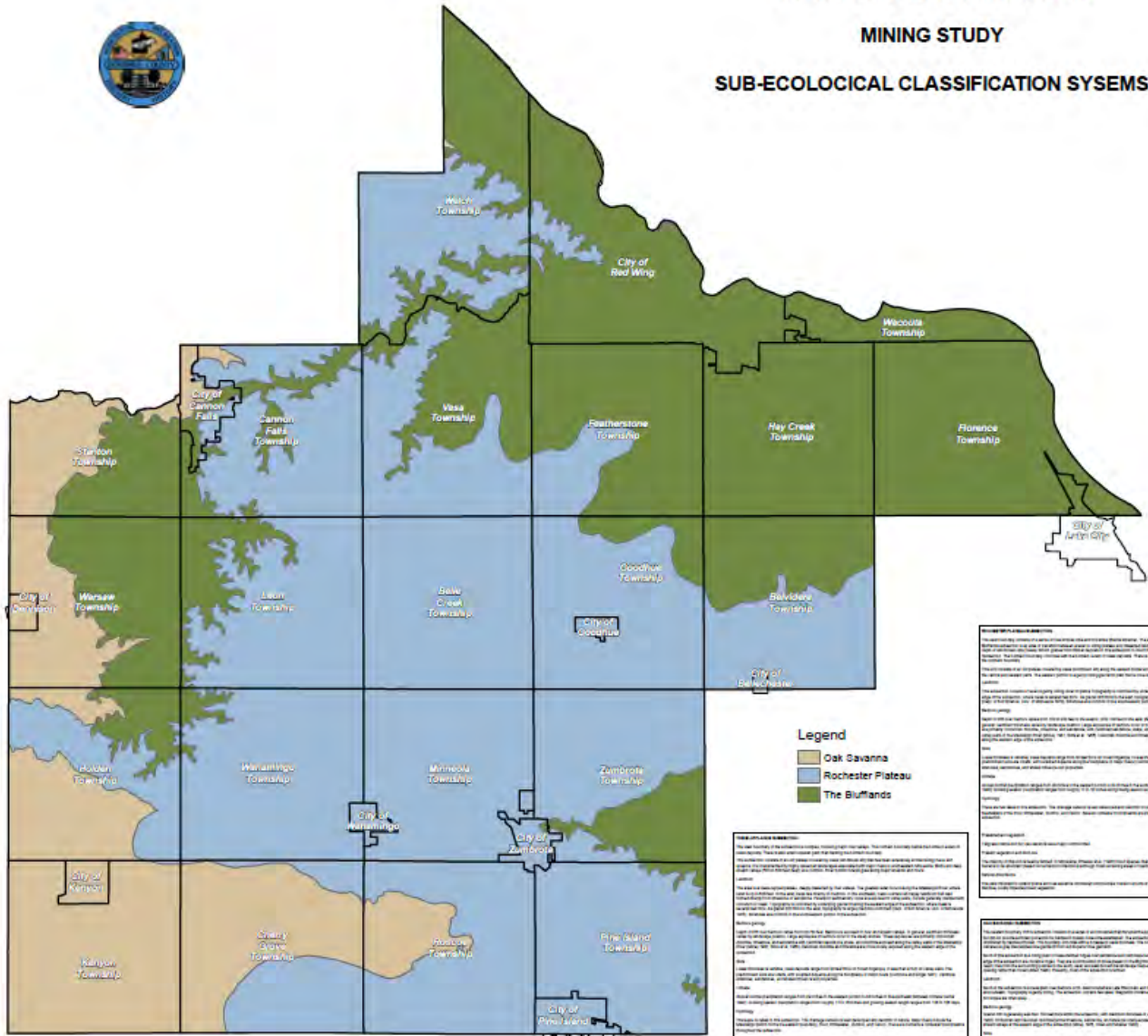
1 inch = 27,500 feet

DATA DISCLAIMER: Goodhue County assumes NO liability for the accuracy or completeness of this map OR responsibility for any associated direct, indirect, or consequential damages that may result from its use or misuse.
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GOODHUE COUNTY, MINNESOTA

MINING STUDY

SUB-ECOLOGICAL CLASSIFICATION SYSTEMS



- Legend**
- Oak Savanna
 - Rochester Plateau
 - The Bluffs

Oak Savanna
 This is a landscape of oak trees and grasses. It is a natural landscape that has been modified by human activity. The landscape is characterized by a mix of oak trees and grasses. The landscape is a result of human activity and is not a natural landscape. The landscape is a result of human activity and is not a natural landscape. The landscape is a result of human activity and is not a natural landscape.

Rochester Plateau
 This is a landscape of rolling hills and fields. It is a natural landscape that has been modified by human activity. The landscape is characterized by rolling hills and fields. The landscape is a result of human activity and is not a natural landscape. The landscape is a result of human activity and is not a natural landscape. The landscape is a result of human activity and is not a natural landscape.

The Bluffs
 This is a landscape of steep hills and bluffs. It is a natural landscape that has been modified by human activity. The landscape is characterized by steep hills and bluffs. The landscape is a result of human activity and is not a natural landscape. The landscape is a result of human activity and is not a natural landscape. The landscape is a result of human activity and is not a natural landscape.

Map Symbols
 This section describes the symbols used on the map to represent various features. It includes symbols for cities, townships, and other geographical features. The symbols are designed to be easily recognizable and consistent throughout the map.

Map Scale
 The map scale is 1 inch = 2.5 miles. This scale allows for a detailed view of the county while maintaining a clear overview of its entire extent.

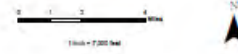
Map Orientation
 The map is oriented with North at the top. A north arrow is provided to indicate the direction of North.

Map Data
 The map data was collected from various sources, including aerial photography, ground surveys, and historical records. The data was processed and analyzed to create the sub-ecological classification system shown on the map.

Map Accuracy
 The map is accurate to the best of our knowledge. However, there may be some minor discrepancies between the map and actual ground conditions. The map is intended to provide a general overview of the county's sub-ecological classification systems.

Map Contact
 For more information about the map or the mining study, please contact the Goodhue County Planning and Development Department. The contact information is provided in the bottom right corner of the map.

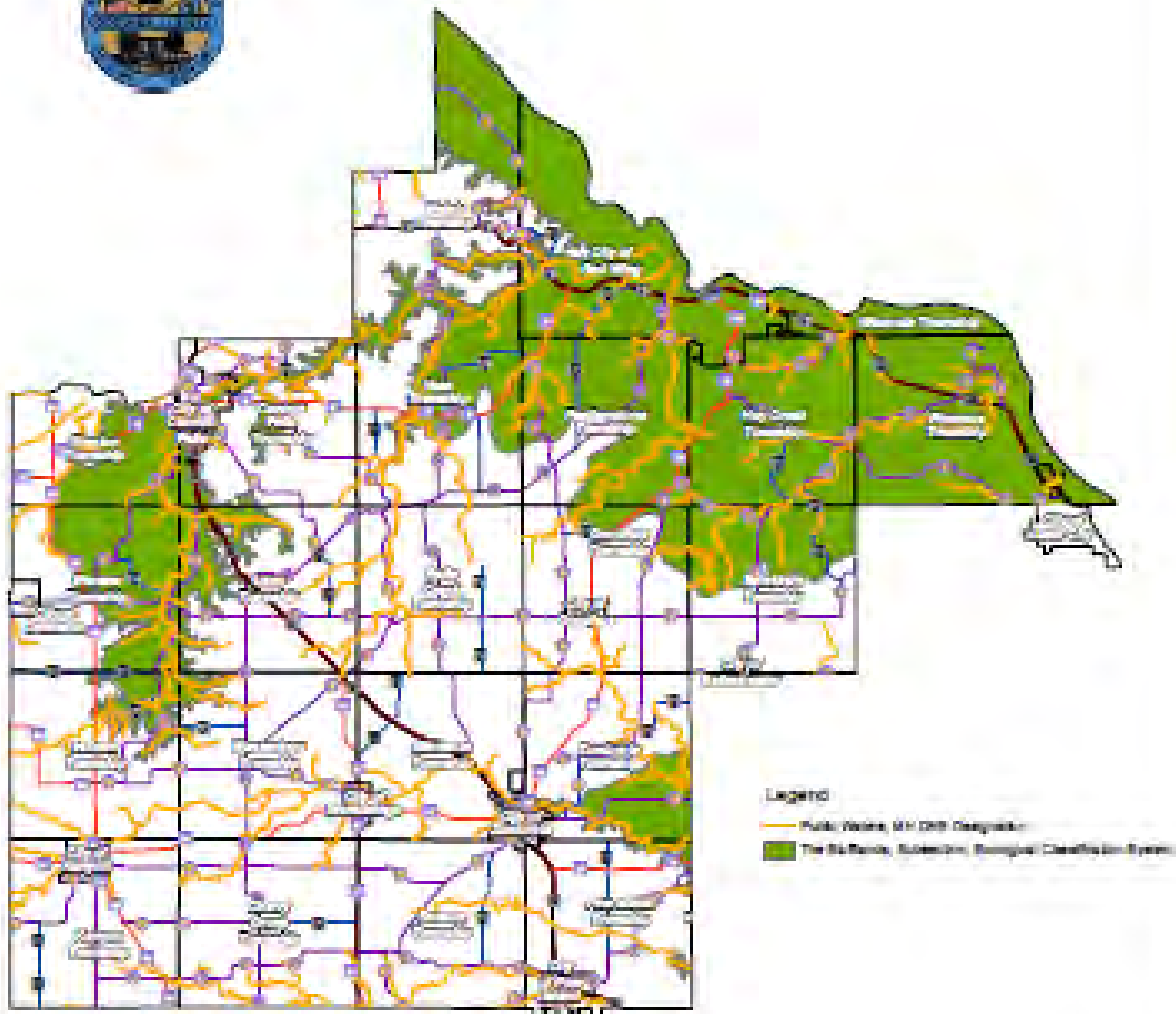
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 COUNTY: Goodhue County
 PROJECT: Mining Study
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 SCALE: 1 inch = 2.5 miles
 SOURCE: [Source]



GOODHUE COUNTY, MINNESOTA

MINING STUDY

PUBLIC WATERS AND THE BLUFFLANDS



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