GTAC
GOGEBIC TACONITE

June 17, 2013

Wisconsin Department of Natural Resources
101 South Webster Street
PO Box 7921
Madison, WI 53707-7921

Dear Secretary Stepp:

Re: Preapplication Notice
Wisconsin Statutes 295.465

This letter serves to provide a Notice of Intent to the Wisconsin Department of Natural Resources of Gogebic Taconite, LLC's intention to file an application for a mining permit at least 12 months from this date. As required by the above referenced statute, the US Army Corps of Engineers are also receiving a letter indicating the Notice of Intent for filing an application for a mining permit in Wisconsin.

Included in this submittal, you will find:

- A Preapplication Narrative addressing the requirements of Wisconsin Statutes 295.46.
- A check in the amount of $100,000 as per the requirements of Wisconsin Statutes 295.73 (3)(b)(1).sca
- Map 1 PREAP – Location Map
- Map 2 PREAP – Conceptual Project Map
- Map 3 PREAP – Property Owner Map
- Map 4 PREAP – Soils Map
- Map 5 PREAP – Conceptual Reclamation Plan

We look forward to discussing the project in more detail with your staff. Any questions should be directed to our Hurley office at (715) 561-2601. Our mailing address is:

Gogebic Taconite, LLC
402 Silver Street
Hurley, WI 54534

Sincerely,

Timothy J Myers

Timothy J Myers
Engineer

## 295.46 (1) Preapplication Description

***A person who files a bulk sampling plan under s. 295.45 with regard to a proposed mining project shall file, together with the bulk sampling plan, a general description of the proposed mining project. A person who proposes to engage in a mining project, but who does not file a bulk sampling plan, shall file a general description of the proposed mining project with the department at the time that the person provides the notice of intent to file an application for a mining permit under s. 295.465. The general description shall include all of the following:***

### *295.46 (1)(a)*

***A description of the proposed mining site.***

The proposed mining site is located in the Town of Anderson, Iron County, Wisconsin and the town of Morse in Ashland County. The site will be located 7.4 miles east of Mellen and 5.8 miles west of Upson.

The proposed mining site is described as the following:

In Iron County, the following parcels in Township 45 North, Range 1 West:

In Section 28

- Part of NE SE, 35.96 acres
- SW SE, 40.00 acres
- SE SE, 40.00 acres

In Section 31

- NWNE 40.00 acres
- SWNE 40.00 acres
- NENW 40.00 acres
- NWNW 40.00 acres
- SWNW 45.81 acres
- SENW 40.00 acres
- NESW 39.40 acres
- NWSW 40.00 acres
- SWSW 39.01 acres
- SESW 39.63 acres
- NESE 40.00 acres
- NWSE 39.94 acres
- SWSE 40.00 acres
- SESE 40.00 acres

In Section 32

- NENE 40.00 acres
- NWNE 39.95 acres
- SWNE 40.00 acres
- SENE 40.00 acres
- NENW 39.47 acres
- NWNW 40.00 acres
- SENW 40.00 acres
- NESW 40.00 acres
- NWSW 40.00 acres
- SWSW 40.00 acres
- SESW 40.00 acres
- NESE 40.00 acres
- NWSE 40.00 acres
- SWSE 40.00 acres
- SE SE 40.00 acres

In Section 33

- SWNE 40.00 acres
- SENE 40.00 acres
- SWNW 40.00 acres
- SENW 40.00 acres
- NESW 40.00 acres
- NWSW 40.00 acres
- SWSW 40.00 acres
- SESW 40.00 acres
- NESE 40.00 acres
- NWSE 40.00 acres
- SWSE 40.00 acres
- SESE 40.00 acres

In Iron County, the following Sections In Township 44 North, Range 1 West:

- All of Section 4
- All of Section 5
- All of Section 6
- All of Section 7
- All of Section 8
- All of Section 9

In Ashland County, the following parcels in Township 45 North, Range 2 West:

All of Section 1

- NENE 39.29 acres
- NWNE 39.94 acres
- SWNE 40.00 acres
- SENE 40.00 acres
- NENW 39.00 acres
- NWNW 40.00 acres
- NESE 40.00 acres
- NWSE 40.00 acres
- Part of SW NW 37.30 acres
- SE NW 40.00 acres
- NE SW 40.00 acres
- NW SW 40.00 acres
- SW SW 40.00 acres
- SE SW 40.00 acres
- SW SE 40.00 acres
- SE SE 40.00 acres

In Section 2

- NENE 40.00 acres
- NWNE less 1.5 acres in NW corner, 38.50 acres
- SENE 40.00 acres
- NESE 40.00 acres
- NWSE 40.00 acres
- SWSE 40.00 acres
- SESE 40.00 acres

In Section 11

- NENE 40.00 acres
- NWNE 40.00 acres

In Section 12

- SENE 40.00 acres
- NENW 40.00 acres
- NWNW 40.00 acres
- NE NE 40.00 acres
- NW NE 40.00 acres

Refer to the "Map 3 PREAP - Property Owner Map" for a general location. Lands owned by RGGS Lands and Minerals, Ltd, L.P., LaPointe Iron Company and Chester Company, Limited are enrolled in the Managed Forestland Program.

The Proposed Mining Site Boundary includes 6,744 Acres. The Proposed Mining Site Boundary includes all lands owned, leased or optioned by the Applicant at the time of this submittal.

The Conceptual Facility Outline currently includes 3,122 disturbance acres. The size and extent of the proposed mining site will be modified after data collection and studies have been completed as part of the mining permit application.

***295.46 (1)(b)***

***A map that shows all of the following:***

***295.46(1)(b)(1) The boundaries of the area of land that will be affected by the proposed mining project.***

The Mining Site boundary of the proposed project is delineated in "Map 2 PREAP - Conceptual Project Map".

***295.46(1)(b)(2) The location and names of all streams, roads, railroads, pipelines, and utility lines on or within 1,000 feet of the proposed mining site.***

Refer to "Map 3 - Conceptual Project Map" for locations and names of streams, roads, railroads, pipelines and utility lines. Each is discussed below.

Wisconsin Trunk Highway 77 is located north of the project boundary. Highway 77 generally trends in an east/west configuration in this area. Highway 77 is a paved highway with 80,000 lb weight limits.

In Ashland County, Lake Drive (formerly identified as County Road MM) travels from Highway 77 in a southward direction. The road construction is a graveled public road with some portions paved.

In Iron County, Moore's Park Road travels from Highway 77 to a dead end near Tyler Forks River. The road is a graveled public road.

A railroad grade exists within 1,000 feet of the proposed project. The railroad grade is owned by the Canadian National Railway. Rail and ties were removed in 1995 by the predecessor, Wisconsin Central Railroad. Connection to the active railroad line in Mellen would include the reinstallation of 6.2 rail miles on existing railroad property.

There are no pipelines within 1,000 feet of the proposed project.

Excel Energy owns a 3-phase powerline located north of Wisconsin State Trunk Highway 77.

Bayfield Electric owns a single phase powerline located along Ballou Creek on the west side of the project.

***295.46(1)(b)(3) The name or names of the owner or owners of the proposed mining site.***

The applicant controls the mineral and/or surface property through Options to Lease with the following entities:

Surface Property Only:

Iron County
300 Taconite Street
Hurley, WI 54534

Surface and Mineral Property:

RGGS Land and Minerals, Ltd., L. P.
P O Box 1266
Virginia, MN 55792

LaPointe Iron Company
3920 13th Avenue East
Hibbing, MN 55746

Chester Company, Limited
3920 13th Avenue East
Hibbing, MN 55746

Refer to "Map 4 PREAP - Property Owner Map" for parcel locations.

***295.46(1)(b)(4) The name of each city, village, or town in which the proposed mining site is located and the name of any other city, village, or town that is located within 3 miles of the proposed mining site.***

Refer to the "Map 1 PREAP - Location Map". The Proposed Project is located in the Town of Anderson in Iron County and the Town of Morse in Ashland County. There are no city or village boundaries within 3 miles of the proposed mining site.

***295.46(1)(b)(5)The federal natural resources conservation service land capabilities classifications of the area affected by the proposed mining project.***

Refer to the "Map 4 PREAP - Soils Map". The Soils Map contains the federal Natural Resources Conservation Service land capabilities as the background. The tables to describe the various soils types are attached in the Appendix.

The Land Capabilities Classifications for the area include:

Prime Farmland – Of the 6,957 acres in the query area, 1,028 acres were identified as Farmland of Local Importance. These areas are identified with Map Unit Symbol 5353B. These areas are found in forested areas which are low lying and near streams. There are no commercial agricultural activities within the proposed mining area.

Forage Suitability – The following ratings were found for the project area:

| | |
|---|---|
| G090AY001WI | 20.73% of the acreage |
| G090AY002WI | 36.45% of the acreage |
| G090AY003WI | 28.10% of the acreage |
| G090AY004WI | 8.16% of the acreage |
| G090AY005WI | 1.14% of the acreage |
| G090AY010WI | 5.42% of the acreage |

Hydric Soils – The following ratings were found for the project area:

| | |
|---|---|
| Hydric | 6.88% of the acreage |
| Partially Hydric | 41.84% of the acreage |
| Not Hydric | 1.81% of the acreage |
| Unknown Hydric | 49.47% of the acreage |

Non-Irrigated Classification Class

| | |
|---|---|
| Capability Class I | 0.0% of the acreage |
| Capability Class II | 14.32% of the acreage |
| Capability Class III | 0.49% of the acreage |
| Capability Class IV | 1.47% of the acreage |
| Capability Class V | 2.58% of the acreage |
| Capability Class VI | 30.77% of the acreage |
| Capability Class VII | 50.38% of the acreage |

Non-Irrigated Classification

| | |
|---|---|
| Erosion | 23.41% of the acreage |
| Soil limitation within the root system | 46.17% of the acreage |
| Excess water | 30.41% of the acreage |

Soil Taxonomy Classification

- 16.63% Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplorthods
- 0.50% Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplorthods
- 1.40% Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Typic Endoaquepts
- 42.62% Coarse-loamy, iotic, frigid Alfic Oxyaquic Fraglorthods
- 5.18% Coarse-loamy, iotic, frigid Typic Endoaquods
- 19.53% Coarse-loamy, mixed, superactive, frigid Argic Fraglaquods
- 5.70% Coarse-loamy, mixed, superactive, frigid Fragic Haplorthods
- 3.52% Euic, frigid Fluvaquentic Haplosaprists
- 4.56% Euic, frigid Typic Haplosaprists
- 0.35% Sandy or sandy-skeletal, mixed, dysic, frigid Terric Haplosaprists

Conservation Tree and Shrub Group

Minimal rating information was available.

***295.46(1)(b)(6) The elevation of the water table.***

Information on groundwater elevations is sparse. Groundwater well data is not readily available due to the lack of population nearby. The general geology of the region involves rock strata that dip at 65 to 70 degrees from horizontal. The resulting bedrock groundwater is not found in layers of select rock but in fracture and joint systems. Some groundwater may be found at the interface between the soils and the bedrock as well. A review of surface water elevations provides some understanding of the system.

Surface water in the project area follows the regional flow direction with waters from the south draining towards Lake Superior to the north.

There are three distinct regions in the project area. In the southern part of the Project Area, the surface water is found at a higher elevation as compared to the area north of the iron bearing ridge. The ridge top area has the highest surface elevations but minimal, if any surface water. The northern part of the Project Area has the lowest surface water elevation, as much as 100 feet lower than the southern portion of the Project Area.

The Project Area is framed by Tyler Forks on the eastern side and Ballou Creek on the western boundary.

Tyler Forks has an elevation of 1472 at the southeast corner of the Project Area, elevation 1454 immediately upstream of the iron formation, and elevation 1396 at the railroad grade bridge near the northeast corner of the Project Area.

Ballou Creek has an elevation of 1499 at the southwest corner of the Project Area. The water elevation is 1465 immediately upstream of the iron formation and elevation 1426 at the confluence with Devil's Creek at the northeast corner of the Project Area.

Refer to the "Map 1 PREAP - Location Map". The surface water elevations of the streams are denoted.

*295.46 (1)(c)*

***A general description of the nature, extent, and final configuration of the proposed excavation and mining site, including an estimate of the production of tailings, waste rock, and other refuse and the location of their disposal.***

Refer to the "Map 5 PREAP - Final Configuration Map" for the extent of the mining activity.

The proposed excavation will involve an open pit design to utilize large earthmoving equipment to remove the deposit. The excavation will be designed to be a trapezoidal shape with the side walls set at a selected angle for stability. Haulroads will be developed in the side walls to provide access to the working levels of the excavation.

The mining area is defined by Ballou Creek to the west and Tylers Fork River to the east. The Ironwood Formation runs west to east and is steeply dipping at 65 degrees from horizontal. The streams listed above are the boundary feature for determining the extent of the mining reserve associated with this mining project.

The final set back distances from Ballou Creek and Tylers Fork River to the excavation will be determined after the hydrogeologic model has been developed.

Mine Waste rock is estimated to consist of 44% of the material stored in the waste areas. The remaining 56% of the material will be plant reject.

Material sizes would include a normal 6-12 inch diameter mill waste known as cobbing material. A prescribed feed rate of this material if fed back into the mill to be used a grinding medium in the processing. The smaller size fractions are more common and are produced at various stages of the processing ranging from the primary crushing through the magnetic separation.

Mine Waste Rock can be various sizes depending on the strata being excavated. The large scale machinery may produce large materials as well as fines.

All of these materials will be placed according to a designed plan that will be described in the mining application.

The conceptual mine plan indicates that the Ironwood-Iron Formation will be excavated in two steps, described as pits. All of the following numbers are conceptual estimates. The Mining Permit Application will include detailed studies where the geotechnical investigations will provide the slopes of the excavation walls and the fill construction specifications for the stockpile areas.

Pit 1 is located on the eastern side of the mining reserve. Pit 1 will be excavated and the tailings and waste rock will be placed in the Waste Disposal Area. The estimated storage volume is 391,000,000 cubic yards stored on 1,132 acres. The final Pit 1 excavation is proposed to reach the 800 feet elevation at its deepest point.

Pit 2 is located on the western side of the mining reserve. The Pit 2 tailings and waste rock will be stored in the Pit 1 excavation. The estimated storage volume is 220,000,000 cubic yards within 329 acres. The final Pit 2 excavation is proposed to reach the 800 feet elevation at its deepest point.

Once mining has been completed, the Pit 2 excavation would be allowed to fill with water to become a lake. The estimated surface area of the final lake would be 386 Acres. The development of the hydrogeologic model is needed to determine the final water elevation in the pit.

Ancillary areas would include drainage control areas, access roads, haulroads, plant areas, railroad areas, buildings and support facilities.

***295.46 (1)(d)***

***A general conceptual description of the likely operating procedures of the proposed mining project.***

Pre-Mining Activity – The vegetation will be removed by forestry methods and harvested for use as commercial products. Any remaining materials will be disposed of in accordance with the relevant statutes.

Stormwater Drainage Plan – A Stormwater Construction Plan will be used to establish the initial disturbance sediment control. More permanent facilities will be provided by the Drainage Control System.

Drainage Control – A system of collection ditches and sedimentation structures will be constructed to collect surface runoff from site activities. The Drainage Control Plan will

include perimeter ditches and sediment basins to collect and store surface runoff. Water encountered in the mining excavation will also report to the Drainage Control system. The collected water will be used in the mining facilities for process water and raw water needed for mining activities. A Stormwater Management Plan will be employed during the construction of the Drainage Control System.

Topsoil - Any topsoil material encountered will be removed and stockpiled for future reclamation use. The timing of the recovery of materials from the Topsoil stockpiles will coincide with the different mining activities. For example, Topsoil from Pit 1 will be stored in the Soil Storage Stockpile until Pit 2 has been completed. Pit 1 topsoil will be used to cover the exposed rock surfaces. Topsoil from Pit 2 will be used to cover the Waste Storage Area that Pit 1 has stockpiled.

Surface Mining – Raw ore and extraneous bedrock material will be removed by surface mining methods. The mining system would use drilling and blasting techniques, large shovels, excavators and/or wheel loaders for loading large off-highway trucks for haulage. Other equipment would include bulldozers, loaders, trucks and various construction and mining equipment of different sizes.

The raw ore will be trucked from the pit to the Primary Crusher.

Beneficiation Mill - Mill activities will include Primary Crushing, Stockpiling Raw Ore, Blending Raw Ore and Raw Ore Milling. The ore would be milled to a fine material by a combination of autonomous or SAG mills, ball mills and rod mills. The minimized ore would be processed through magnetic separators and classifying cyclones to extract the iron ore concentrate. Water will be used as a transport medium within the mill.

Pelletizing – The iron ore concentrate would be mixed with limestone and bentonite in a balling mill to create a specific sized pellet, typically 3/8-inch in diameter. Limestone will be added to meet customer specifications and could total nine percent (9%) of total weight of the shipped product. Bentonite clay is used as a binding agent and would be used at a rate of about 16 pounds per pellet ton. The freshly balled pellet would be passed through an induration furnace to harden the pellet for shipment.

Transportation – The finished product would be placed in bulk storage. Trains will be the primary method used to transport the product to market. Unit train loading is proposed. In a unit train, the locomotives and railcars remain connected during the loading operation. The locomotives pull the cars through the loadout at a specified pace to match the loading rate of the loadout facility. Typical loading times for a unit train can range from two to four hours. A unit train can haul up to 15,000 tons of product.

Utilities and Consumables – Taconite mining consumes large amounts of electricity. The beneficiation mill uses large electrical motors to operate machines to crush the rock and to operate the various components.

The mining activity will use electricity to operate the rope shovels and drills. There are possible applications for hybrid trucks that operate on diesel fuel in the pit areas but would convert to electric assist in high demand areas such as haulroads grades that would be equipped with a trolley system.

The amount of electricity required for the operation is not available from the local infrastructure. Existing powerlines may need to be upgraded to obtain service for the facility. A power plant for the facility has not been proposed. A power substation will be required on site to reduce the delivered voltage to the various distribution voltages required for the project.

Natural Gas would be used to fuel the pellet furnace. A gas service line will be needed to provide the necessary volume of natural gas for the operation. There are gas transmission lines several miles north of the project that could be used to access a source of natural gas.

Water is consumed in the pellet making process and released as steam. Water is also the transport medium to separate the iron concentrate from the reject material. Water will also be lost to evaporation. Water can be lost in the waste storage as well.

The Water Supply may be sourced on site from storm runoff and pit water stored with the Drainage Control System. If on-site water is not adequate to meet the quantity of water needed to operate, then off-site sources of water would be investigated. Other sources of water could be existing groundwater wells, existing well fields, new groundwater wells or public water supplies.

Limestone will be required at a rate of up to 630,000 tons per year. This material is included in the pellet balling to provide limestone for the steel making process in an amount specified by the blast furnace customer. Delivery for this material will probably occur as a backhaul situation with the railroad. Unit trains on the return trip could be loaded with limestone.

Bentonite Clay will be used as a binder in the pellet making process. The material would be delivered in separate trains than the unit train shipments.

Fuel Oil and lubricants will be stored in a Fuel Containment Area. This material may be delivered by highway trucks or by rail.

Other Activities – The site will include ancillary support areas including offices, training facilities, warehouse, shops, fuel storage, utilities distribution, water storage, wastewater treatment facilities and sanitary facilities.

*295.46 (1)(e)*

***The likely location, and a general description, of the excavation, waste site, and processing facilities relating to the proposed mining project.***

Refer to Map 2 PREAP – Conceptual Project Map for the general location of the excavation, waste site and processing facilities.

Excavation – The excavation will be focused on the Ironwood – Iron Formation that runs in a general west to northeast direction. The ore body is approximately 850 feet thick and has a regional dip of 65-degrees from horizontal configuration to the northwest.

Waste Site – The waste site will receive the reject material from the mill and the low grade ore excavated from the mine site. The waste site will be located south of the ore body. The waste site will receive a mixture of plant tailings and material uneconomical to process.

The proposed facility will use dry stacking techniques to produce a tailings material that can be managed with heavy equipment. The tailings would be mechanically dewatered before placement. The recovered water will be returned to the water management system for future use in the plant.

Soils Storage Stockpile – The soils stockpile area will store soil material for future reclamation use. One soils storage stockpile could be located south of the ore body.

Processing Facilities – The processing facilities will be located north of the iron body. The facilities will contain ore stockpiles, crushers, beneficiation mill, a pellet plant and railroad facilities.

*295.73 (3)(b)(1)*

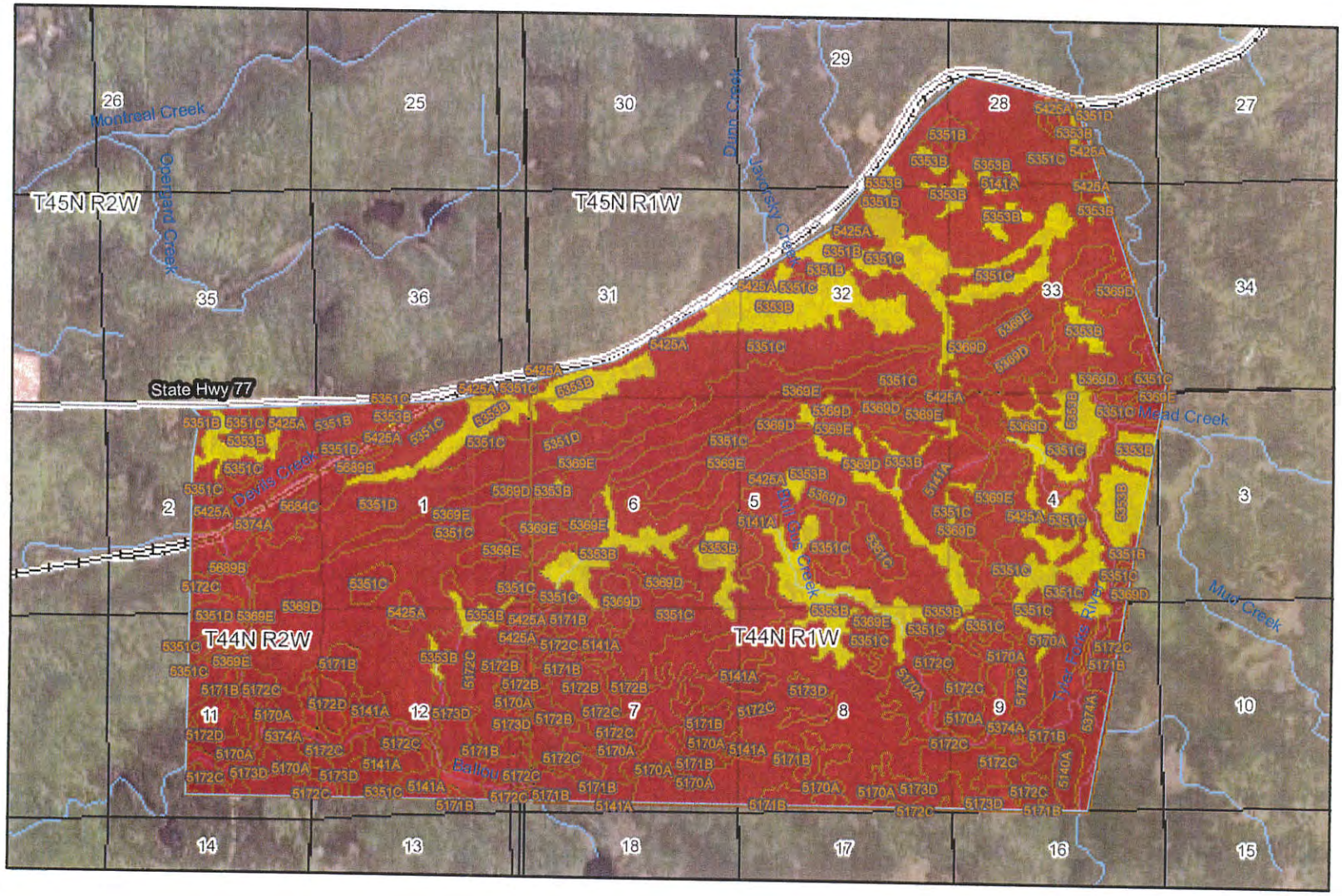
***The applicant shall pay the fees under par. (a) as follows:***
***One hundred thousand dollars shall be paid at the time that the bulk sampling plan is filed under s. 295.45 or at the time that the notice of the intention to file a mining permit application is filed, whichever is first.***

The first payment of $100,000 is included in this submittal.

MAPS
Map 1 PREAP – Location Map
Map 2 PREAP – Conceptual Project Map
Map 3 PREAP – Property Owner Map
Map 4 PREAP – Soils Map
Map 5 PREAP – Conceptual Reclamation Plan

APPENDIX
National Resources Conservation Service land capabilities files

Farmland Classification—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )




Map Scale: 1:47,500 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 500, 1,000, 2,000, 3,000

Feet: 0, 2,500, 5,000, 10,000, 15,000

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Units

**Soil Ratings**

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

**Political Features**

- Cities
- PLSS Township and Range
- PLSS Section

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads

## MAP INFORMATION

Map Scale: 1:47,500 if printed on A size (8.5" × 11") sheet

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ashland County, Wisconsin
Survey Area Data: Version 10, Feb 15, 2012

Soil Survey Area: Iron County, Wisconsin
Survey Area Data: Version 8, Aug 16, 2011

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/2/2005; 8/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Farmland Classification

| Farmland Classification— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | Not prime farmland | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | Not prime farmland | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | Not prime farmland | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | Not prime farmland | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | Not prime farmland | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | Not prime farmland | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | Not prime farmland | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | Not prime farmland | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | Not prime farmland | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | Not prime farmland | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | Farmland of local importance | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | Not prime farmland | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | Not prime farmland | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | Not prime farmland | 76.9 | 1.1% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | Not prime farmland | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | Not prime farmland | 35.1 | 0.5% |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | Not prime farmland | 43.8 | 0.6% |

| Farmland Classification— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

| Farmland Classification— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | Not prime farmland | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | Not prime farmland | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | Not prime farmland | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | Not prime farmland | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | Not prime farmland | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | Not prime farmland | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | Not prime farmland | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | Not prime farmland | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | Not prime farmland | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | Not prime farmland | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | Farmland of local importance | 908.7 | 13.1% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | Not prime farmland | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | Not prime farmland | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | Not prime farmland | 168.1 | 2.4% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | Not prime farmland | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

## Rating Options

*Aggregation Method:* No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

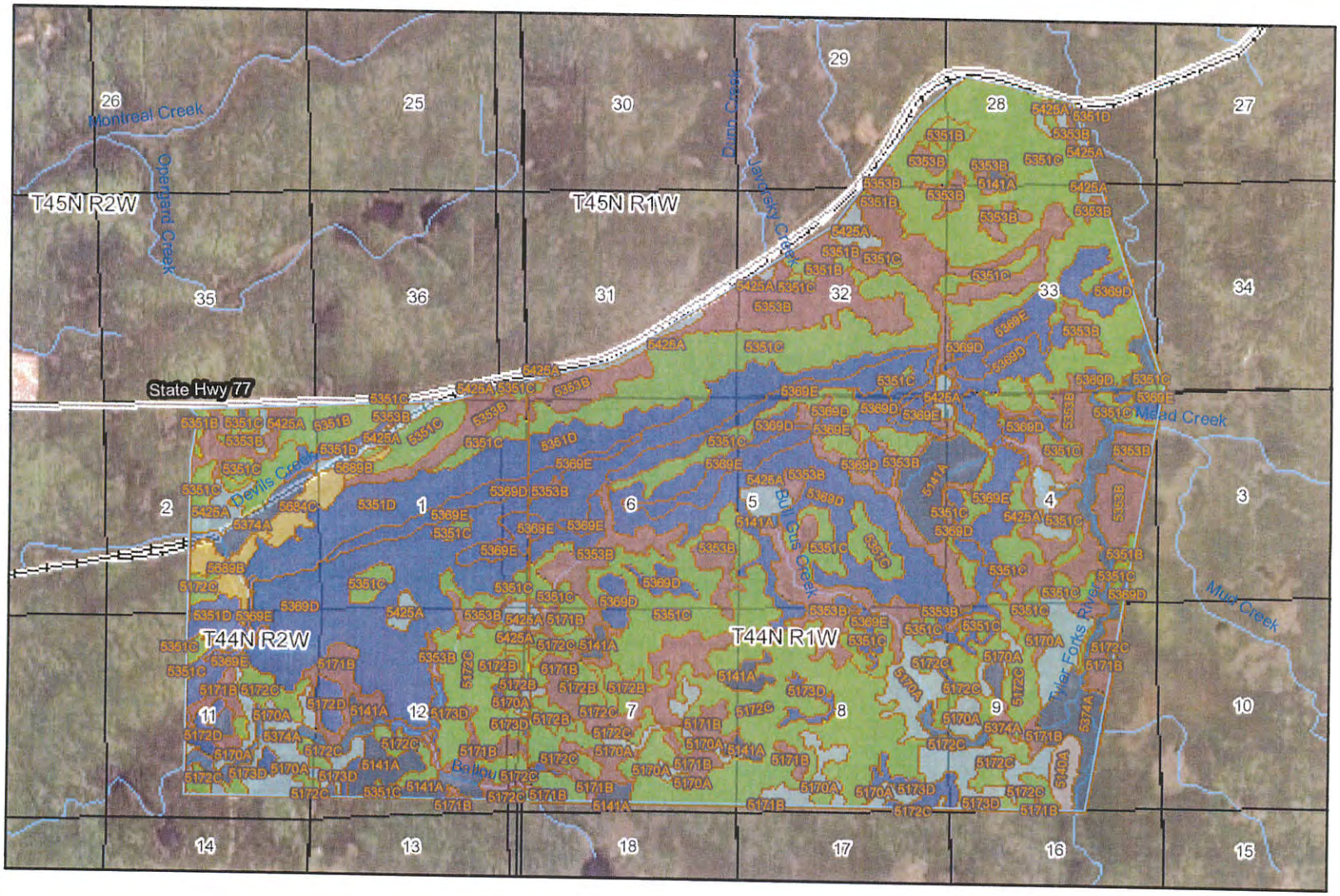
For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

*Tie-break Rule:* Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Forage Suitability Group ID (Component Table)—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )




Map Scale: 1:47,500 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 500, 1,000, 2,000, 3,000

Feet: 0, 2,500, 5,000, 10,000, 15,000

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Units

**Soil Ratings**

- G090AY001WI
- G090AY002WI
- G090AY003WI
- G090AY004WI
- G090AY005WI
- G090AY010WI
- Not rated or not available

**Political Features**

- Cities
- PLSS Township and Range
- PLSS Section

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads

## MAP INFORMATION

Map Scale: 1:47,500 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ashland County, Wisconsin
Survey Area Data: Version 10, Feb 15, 2012

Soil Survey Area: Iron County, Wisconsin
Survey Area Data: Version 8, Aug 16, 2011

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/2/2005; 8/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Forage Suitability Group ID (Component Table)

| Forage Suitability Group ID (Component Table)— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | G090AY010WI | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | G090AY004WI | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | G090AY001WI | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | G090AY002WI | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | G090AY002WI | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | G090AY003WI | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | G090AY003WI | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | G090AY002WI | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | G090AY002WI | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | G090AY003WI | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | G090AY001WI | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | G090AY003WI | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | G090AY003WI | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | G090AY010WI | 76.9 | 1.1% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | G090AY004WI | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | G090AY005WI | 35.1 | 0.5% |

| Forage Suitability Group ID (Component Table)— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | G090AY005WI | 43.8 | 0.6% |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

| Forage Suitability Group ID (Component Table)— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | G090AY010WI | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | G090AY004WI | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | G090AY001WI | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | G090AY002WI | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | G090AY002WI | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | G090AY003WI | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | G090AY002WI | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | G090AY002WI | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | G090AY003WI | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | G090AY001WI | 908.7 | 13.1% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | G090AY003WI | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | G090AY003WI | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | G090AY010WI | 168.1 | 2.4% |

| Forage Suitability Group ID (Component Table)— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | G090AY004WI | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

Forage suitability groups (FSGs) consist of one or more individual soil map unit components having similar potentials and limitations for forage production. Soils within a forage suitability group are sufficiently uniform to support the same adapted forage plants under the same management conditions, require similar conservation treatment and management to produce the quality and quantity of forage plants desired, and have comparable potential productivity.

FSGs are numbered in the same manner as ecological sites. The number consists of five parts. The first part is a G, which indicates a forage suitability group. The second part is a 3-digit number coupled with one letter to identify the MLRA. The third part is an additional letter identifying the LRU where applicable. The fourth part is a 3-digit FSG number. The last part is a 2-digit state postal code.

The forage suitability group is stored in the Component table in the database. This information is stored in the Ecological Site table for some areas. To access such data, see choices for ecological sites in the Land Classification folder.

## Rating Options

*Aggregation Method:* Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

*Component Percent Cutoff: None Specified*

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

*Tie-break Rule:* Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

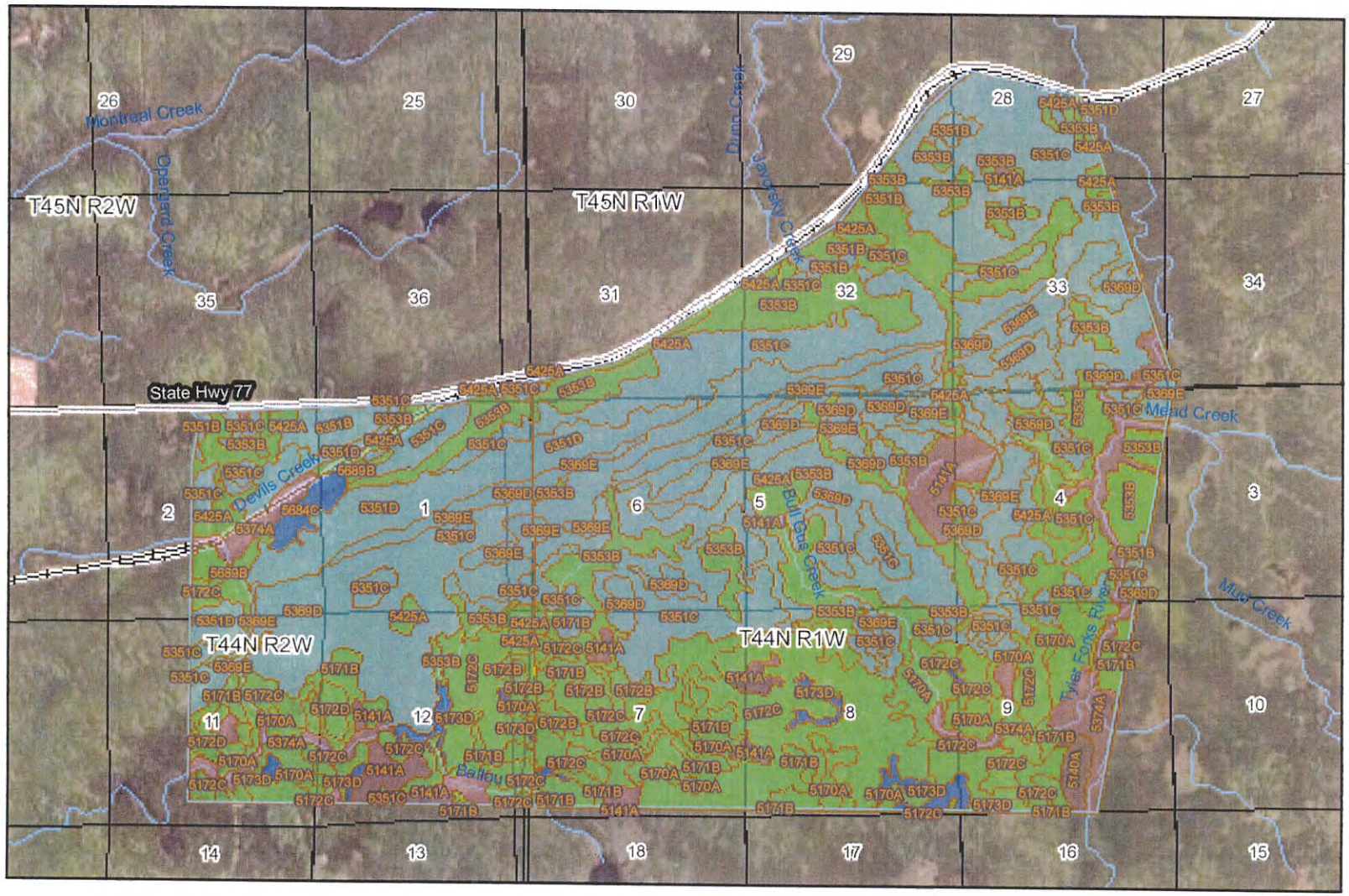
Hydric Rating by Map Unit—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )

90° 35' 53"

90° 28' 8"

46° 21' 18"

46° 21' 8"




46° 17' 43"

46° 17' 33"

90° 36' 2"

90° 28' 18"

Map Scale: 1:47,500 if printed on A size (8.5" x 11") sheet.

N

Meters
0 500 1,000 2,000 3,000

Feet
0 2,500 5,000 10,000 15,000

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Units

**Soil Ratings**

All Hydric

Partially Hydric

Not Hydric

Unknown Hydric

Not rated or not available

**Political Features**

Cities

PLSS Township and Range

PLSS Section

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

## MAP INFORMATION

Map Scale: 1:47,500 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ashland County, Wisconsin
Survey Area Data: Version 10, Feb 15, 2012

Soil Survey Area: Iron County, Wisconsin
Survey Area Data: Version 8, Aug 16, 2011

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/2/2005; 8/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Hydric Rating by Map Unit

| Hydric Rating by Map Unit— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | All Hydric | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | Partially Hydric | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | Partially Hydric | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | Partially Hydric | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | Partially Hydric | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | Partially Hydric | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | Not Hydric | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | Unknown Hydric | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | Unknown Hydric | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | Unknown Hydric | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | Partially Hydric | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | Unknown Hydric | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | Unknown Hydric | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | All Hydric | 76.9 | 1.1% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | Partially Hydric | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | Not Hydric | 35.1 | 0.5% |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | Partially Hydric | 43.8 | 0.6% |

| Hydric Rating by Map Unit— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

| Hydric Rating by Map Unit— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | All Hydric | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | All Hydric | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | Partially Hydric | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | Partially Hydric | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | Partially Hydric | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | Partially Hydric | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | Not Hydric | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | Unknown Hydric | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | Unknown Hydric | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | Unknown Hydric | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | Partially Hydric | 908.7 | 13.1% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | Unknown Hydric | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | Unknown Hydric | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | All Hydric | 168.1 | 2.4% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | Partially Hydric | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

This rating indicates the proportion of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is designated as "all hydric," "partially hydric," "not hydric," or "unknown hydric," depending on the rating of its respective components.

"All hydric" means that all components listed for a given map unit are rated as being hydric, while "not hydric" means that all components are rated as not hydric. "Partially hydric" means that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

## Rating Options

*Aggregation Method:* Absence/Presence

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Absence/Presence" returns a value that indicates if, for all components of a map unit, a condition is always present, never present, partially present, or whether the condition's presence or absence is unknown. The exact phrases used for a particular attribute may vary from what is shown below.

"Always present" means that the corresponding condition is present in all of a map unit's components.

"Never present" means that the corresponding condition is not present in any of a map unit's components.

"Partially present" means that the corresponding condition is present in some but not all of a map unit's components, or that the presence or absence of the corresponding condition cannot be determined for one or more components of the map unit.

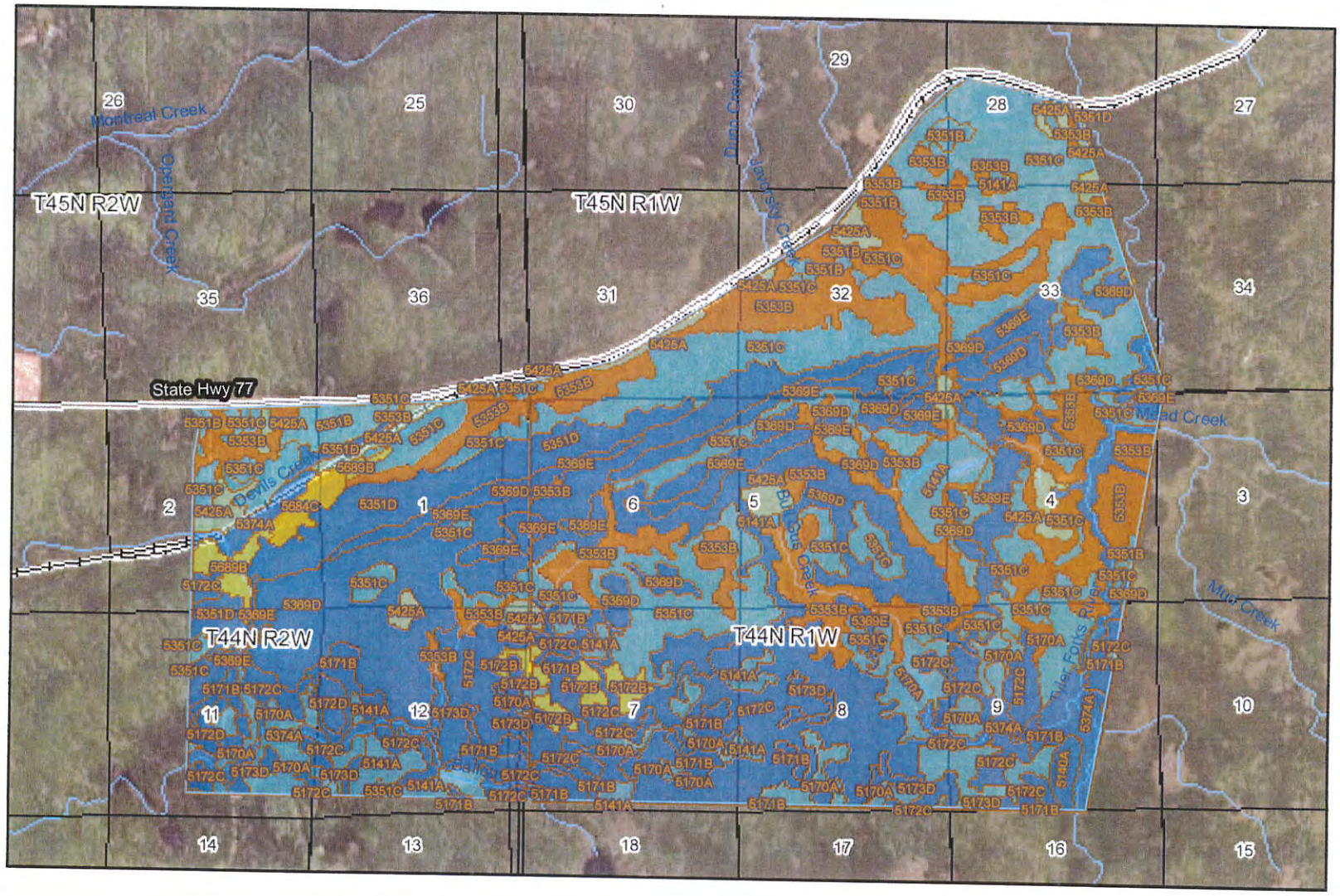
"Unknown presence" means that for components where presence or absence can be determined, the corresponding condition is never present, but the presence or absence of the corresponding condition cannot be determined for one or more components.

The result returned by this aggregation method quantifies the degree to which the corresponding condition is present throughout the map unit.

*Tie-break Rule:* Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Class—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )




Map Scale: 1:47,500 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 500, 1,000, 2,000, 3,000

Feet: 0, 2,500, 5,000, 10,000, 15,000

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Units

**Soil Ratings**

Capability Class - I

Capability Class - II

Capability Class - III

Capability Class - IV

Capability Class - V

Capability Class - VI

Capability Class - VII

Capability Class - VIII

Not rated or not available

**Political Features**

Cities

PLSS Township and Range

PLSS Section

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

## MAP INFORMATION

Map Scale: 1:47,500 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ashland County, Wisconsin
Survey Area Data: Version 10, Feb 15, 2012

Soil Survey Area: Iron County, Wisconsin
Survey Area Data: Version 8, Aug 16, 2011

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/2/2005; 8/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Nonirrigated Capability Class

| Nonirrigated Capability Class— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | 6 | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | 6 | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | 7 | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | 4 | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | 7 | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | 7 | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | 7 | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | 6 | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | 6 | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | 7 | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | 2 | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | 7 | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | 7 | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | 7 | 76.9 | 1.1% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | 5 | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | 3 | 35.1 | 0.5% |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | 4 | 43.8 | 0.6% |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

| Nonirrigated Capability Class— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | 7 | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | 6 | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | 6 | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | 7 | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | 4 | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | 7 | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | 7 | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | 6 | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | 6 | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | 7 | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | 2 | 908.7 | 13.1% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | 7 | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | 7 | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | 7 | 168.1 | 2.4% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | 5 | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

## Rating Options

*Aggregation Method:* Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

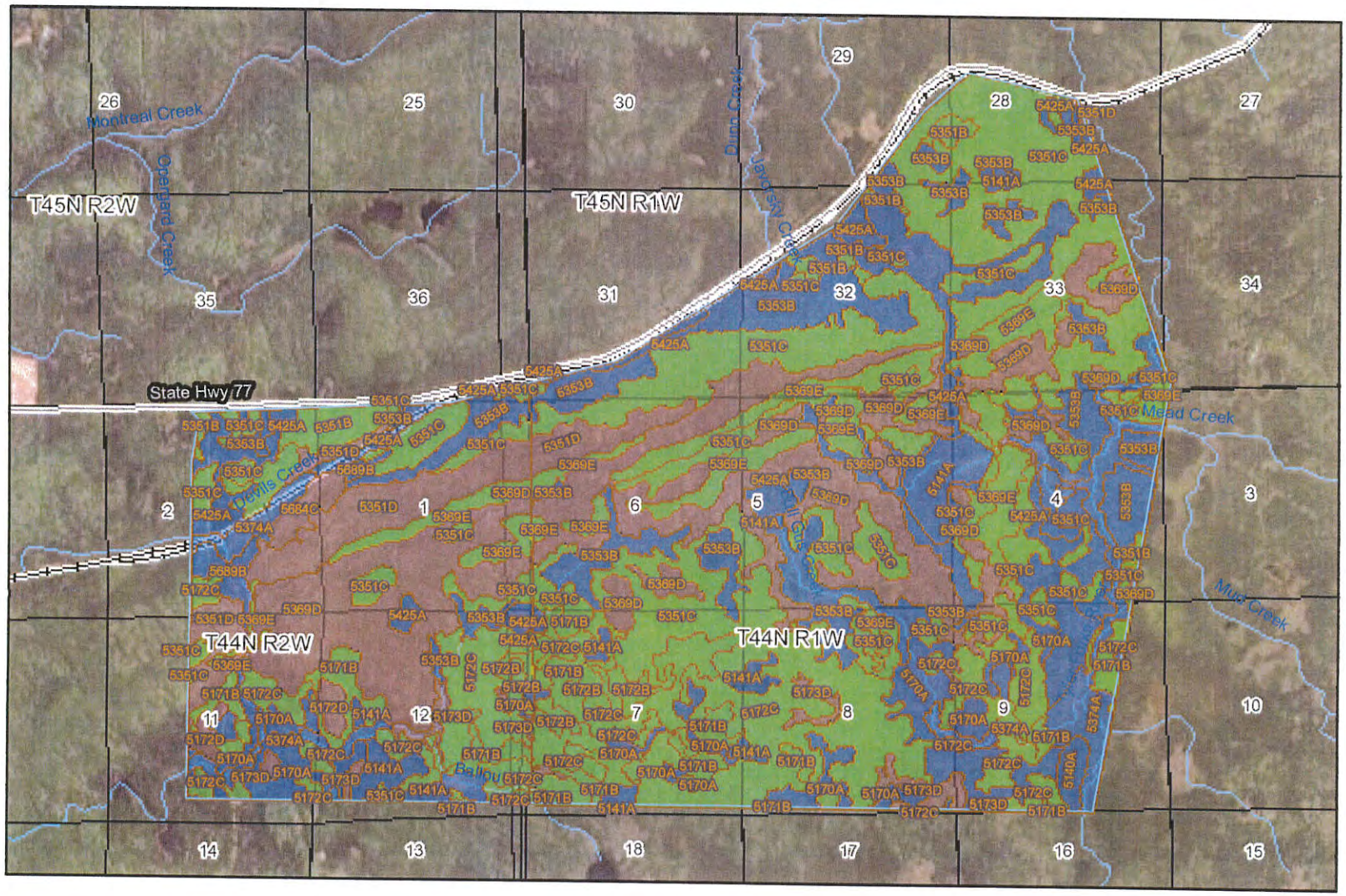
*Component Percent Cutoff: None Specified*

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

*Tie-break Rule:* Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Nonirrigated Capability Subclass—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )

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N

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Feet: 0, 2,500, 5,000, 10,000, 15,000

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Units

**Soil Ratings**

Erosion

Soil limitation within the rooting zone

Excess water

Climate condition

Not rated or not available

**Political Features**

Cities

PLSS Township and Range

PLSS Section

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

## MAP INFORMATION

Map Scale: 1:47,500 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ashland County, Wisconsin
Survey Area Data: Version 10, Feb 15, 2012

Soil Survey Area: Iron County, Wisconsin
Survey Area Data: Version 8, Aug 16, 2011

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/2/2005; 8/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

| Nonirrigated Capability Subclass— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | w | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | w | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | w | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | s | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | s | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | s | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | e | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | s | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | s | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | e | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | w | 908.7 | 13.1% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | e | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | s | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | w | 168.1 | 2.4% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | w | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability subclasses are soil groups within one capability class. They are designated by adding a small letter, "e," "w," "s," or "c," to the class numeral, for example, 2e. The letter "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; "w" shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); "s" shows that the soil is limited mainly because it is shallow, droughty, or stony; and "c," used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by "w," "s," or "c" because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, or wildlife habitat.

## Rating Options

*Aggregation Method:* Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

*Component Percent Cutoff: None Specified*

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

*Tie-break Rule:* Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

# Nonirrigated Capability Subclass

| Nonirrigated Capability Subclass— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | w | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | w | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | s | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | s | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | s | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | e | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | e | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | s | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | s | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | e | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | w | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | e | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | s | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | w | 76.9 | 1.1% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | w | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | e | 35.1 | 0.5% |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | w | 43.8 | 0.6% |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

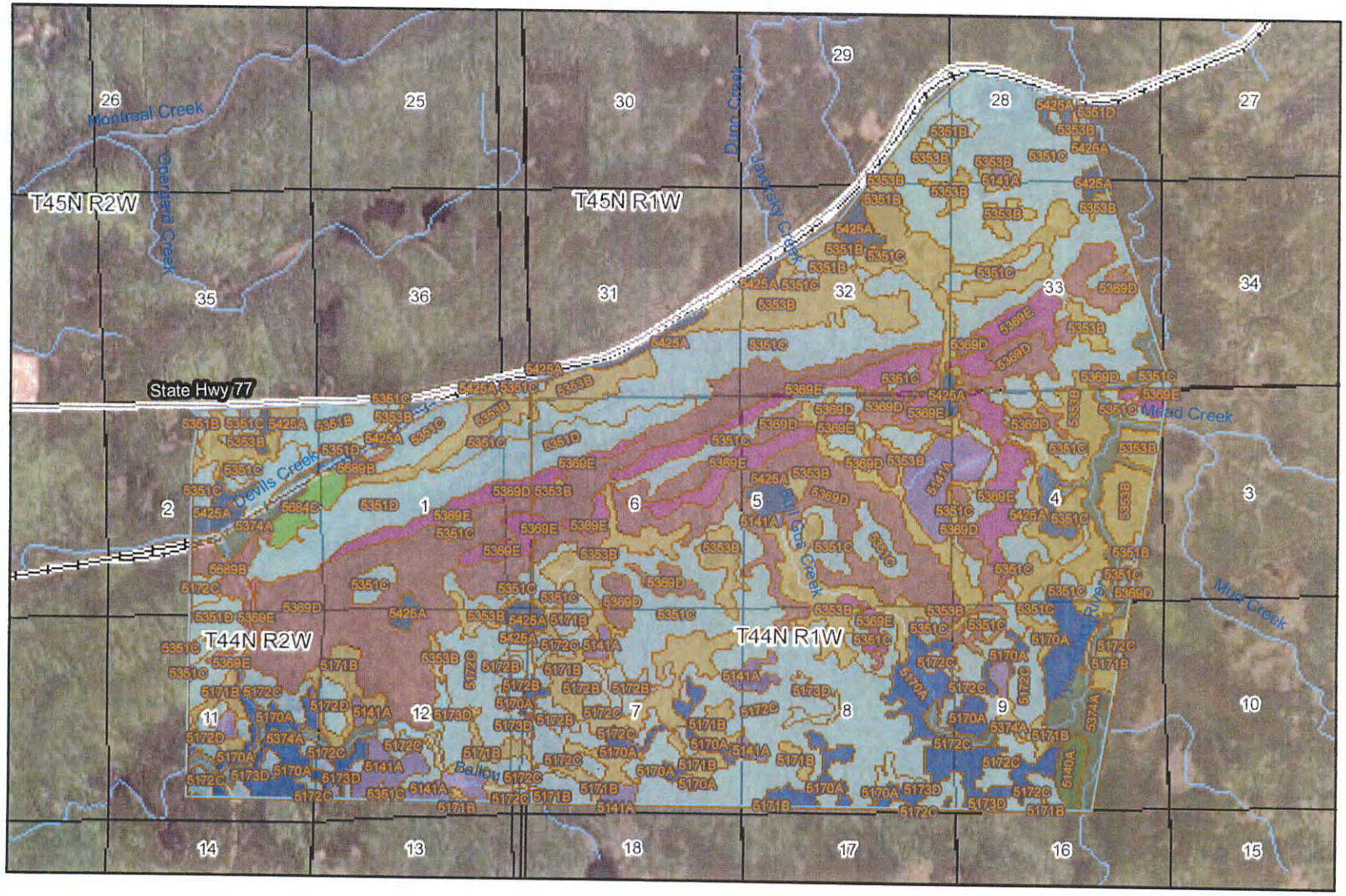
Soil Taxonomy Classification—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )

90° 35' 53"

90° 28' 8"

46° 21' 18"

46° 21' 8"




46° 17' 43"

46° 17' 33"

90° 36' 2"

90° 28' 18"

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USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

Soil Map Units

**Soil Ratings**

Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplorthods

Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplorthods

Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Typic Endoaquepts

Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods

Coarse-loamy, isotic, frigid Typic Endoaquods

Coarse-loamy, mixed, superactive, frigid Argic Fragiaquods

Coarse-loamy, mixed, superactive, frigid Fragic Haplorthods

Euic, frigid Fluvaquentic Haplosaprists

Euic, frigid Typic Haplosaprists

Sandy or sandy-skeletal, mixed, dysic, frigid Terric Haplosaprists

Not rated or not available

**Political Features**

Cities

PLSS Township and Range

PLSS Section

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

## MAP INFORMATION

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# Soil Taxonomy Classification

| Soil Taxonomy Classification— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | Euic, frigid Typic Haplosaprists | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Typic Endoaquepts | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | Coarse-loamy, mixed, superactive, frigid Argic Fragiaquods | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | Coarse-loamy, mixed, superactive, frigid Argic Fragiaquods | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplorthods | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | Coarse-loamy, mixed, superactive, frigid Fragic Haplorthods | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | Euic, frigid Fluvaquentic Haplosaprists | 76.9 | 1.1% |

| Soil Taxonomy Classification— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | Coarse-loamy, isotic, frigid Typic Endoaquods | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Typic Haplorthods | 35.1 | 0.5% |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplorthods | 43.8 | 0.6% |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

| Soil Taxonomy Classification— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | Sandy or sandy-skeletal, mixed, dysic, frigid Terric Haplosaprists | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | Euic, frigid Typic Haplosaprists | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Typic Endoaquepts | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | Coarse-loamy, mixed, superactive, frigid Argic Fragiaquods | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | Coarse-loamy, isotic, frigid Alfic Oxyaquic Fragiorthods | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | Coarse-loamy, mixed, superactive, frigid Argic Fragiaquods | 908.7 | 13.1% |

| Soil Taxonomy Classification— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid Oxyaquic Haplorthods | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | Coarse-loamy, mixed, superactive, frigid Fragic Haplorthods | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | Euic, frigid Fluvaquentic Haplosaprists | 168.1 | 2.4% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | Coarse-loamy, isotic, frigid Typic Endoaquods | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

This rating presents the taxonomic classification based on Soil Taxonomy.

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999 and 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. This table shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Alfisols.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalfs (Ud, meaning humid, plus alfs, from Alfisols).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (Hapl, meaning minimal horizonation, plus udalfs, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

References:

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. (The soils in a given survey area may have been classified according to earlier editions of this publication.)

## Rating Options

*Aggregation Method:* Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

*Component Percent Cutoff: None Specified*

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

*Tie-break Rule:* Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

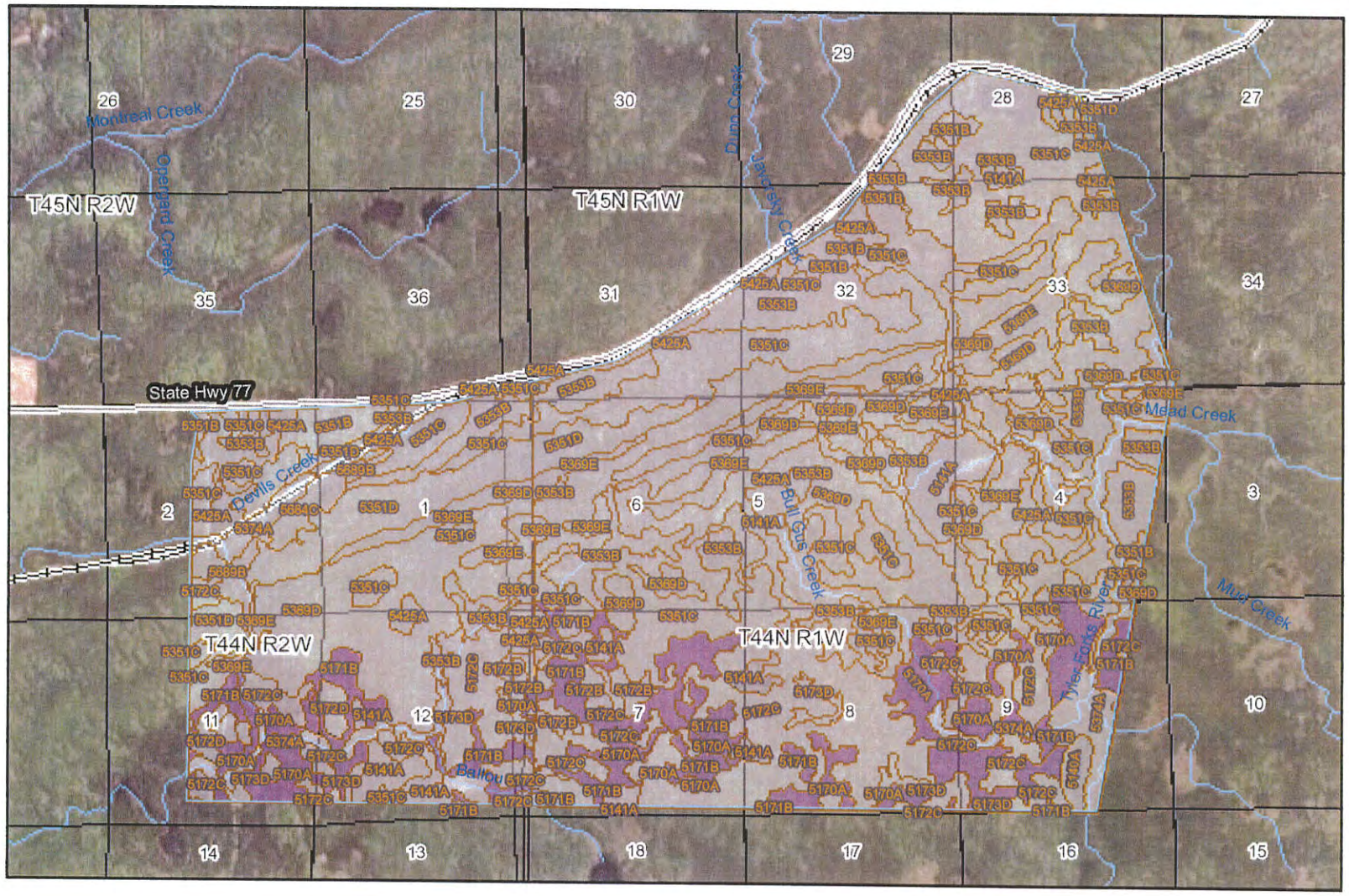
Conservation Tree and Shrub Group—Ashland County, Wisconsin, and Iron County, Wisconsin
(Gogebic Taconite Preapplication )

90° 35' 53"

90° 28' 8"

46° 21' 18"

46° 21' 8"




46° 17' 43"

46° 17' 33"

90° 36' 2"

90° 28' 18"

Map Scale: 1:47,500 if printed on A size (8.5" x 11") sheet.

N

Meters: 0, 500, 1,000, 2,000, 3,000

Feet: 0, 2,500, 5,000, 10,000, 15,000

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Units

**Soil Ratings**

- 1
- 1A
- 1H
- 1K
- 1KK
- 1S
- 1SK
- 1SKK
- 2
- 2A
- 2H
- 2K
- 2KK
- 3
- 3A
- 4
- 4A
- 4C
- 4CA
- 4CC
- 4CK
- 4K
- 5
- 5A
- 5K
- 5KK
- 6
- 6A
- 6D
- 6DA
- 6DK
- 6G
- 6GA
- 6GK
- 6GKK
- 6K
- 6KK
- 7
- 7A
- 8
- 8K
- 9C
- 9L
- 9N
- 9NW
- 9W
- 10
- Not applicable
- Not rated or not available

**Political Features**

- Cities
- PLSS Township and Range
- PLSS Section

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads

## MAP INFORMATION

Map Scale: 1:47,500 if printed on A size (8.5" × 11") sheet

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ashland County, Wisconsin
Survey Area Data: Version 10, Feb 15, 2012

Soil Survey Area: Iron County, Wisconsin
Survey Area Data: Version 8, Aug 16, 2011

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 6/2/2005, 8/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Conservation Tree and Shrub Group

| Conservation Tree and Shrub Group— Summary by Map Unit — Ashland County, Wisconsin (WI003) | | | | |
|---|---|---|---|---|
| **Map unit symbol** | **Map unit name** | **Rating** | **Acres in AOI** | **Percent of AOI** |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | | 78.5 | 1.1% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | 10 | 97.5 | 1.4% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | 10 | 100.3 | 1.4% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | | 10.1 | 0.1% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | | 239.3 | 3.4% |
| 5172D | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 35 percent slopes | | 35.4 | 0.5% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | | 34.0 | 0.5% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | | 63.5 | 0.9% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | | 191.6 | 2.8% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | | 245.1 | 3.5% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | | 119.4 | 1.7% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | | 399.5 | 5.7% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | | 76.7 | 1.1% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | | 76.9 | 1.1% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | | 77.5 | 1.1% |
| 5684C | Amasa cobbly fine sandy loam, 6 to 18 percent slopes | | 35.1 | 0.5% |
| 5689B | Chabeneau-Channing-Gogebic complex, 0 to 6 percent slopes, stony | | 43.8 | 0.6% |
| **Subtotals for Soil Survey Area** | | | **1,924.0** | **27.7%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

| Conservation Tree and Shrub Group— Summary by Map Unit — Iron County, Wisconsin (WI051) | | | | |
|---|---|---|---|---|
| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
| 5140A | Dawson, Greenwood, and Loxley soils, 0 to 1 percent slopes | | 24.7 | 0.4% |
| 5141A | Lupton-Pleine-Cathro complex, 0 to 1 percent slopes | | 130.6 | 1.9% |
| 5170A | Minocqua-Pleine-Cathro complex, 0 to 2 percent slopes | 10 | 282.9 | 4.1% |
| 5171B | Tula-Wormet-Gogebic complex, 0 to 6 percent slopes, very stony | 10 | 230.5 | 3.3% |
| 5172B | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 6 percent slopes | | 51.3 | 0.7% |
| 5172C | Gogebic, very stony-Pence, very stony-Cathro complex, 0 to 18 percent slopes | | 606.9 | 8.7% |
| 5173D | Gogebic-Pence complex, 18 to 35 percent slopes, very stony | | 56.5 | 0.8% |
| 5351B | Gogebic silt loam, 2 to 6 percent slopes, very stony, rocky | | 41.9 | 0.6% |
| 5351C | Gogebic silt loam, 6 to 18 percent slopes, very stony, rocky | | 1,322.8 | 19.0% |
| 5351D | Gogebic silt loam, 18 to 35 percent slopes, very stony, rocky | | 67.6 | 1.0% |
| 5353B | Tula-Gogebic complex, 0 to 6 percent slopes, stony | | 908.7 | 13.1% |
| 5369D | Dishno-Gogebic-Peshekee-Rock outcrop complex, 18 to 35 percent slopes, very stony | | 714.2 | 10.3% |
| 5369E | Michigamme-Schweitzer-Peshekee-Rock outcrop complex, 35 to 55 percent slopes, very stony | | 319.6 | 4.6% |
| 5374A | Bowstring-Arnheim complex, 0 to 1 percent slopes, frequently flooded | | 168.1 | 2.4% |
| 5425A | Foxpaw-Gay, stony complex, 0 to 2 percent slopes | | 107.9 | 1.6% |
| **Subtotals for Soil Survey Area** | | | **5,034.2** | **72.4%** |
| **Totals for Area of Interest** | | | **6,957.3** | **100.0%** |

## Description

Each tree and shrub species has certain climatic and physiographic limits. Within these parameters, trees and shrubs may be well suited or poorly suited to a given environment because of climate or site or soil characteristics. On the basis of the performance of individual species to specific conditions of soil, climate, physiography, and management, Conservation Tree and Shrub Groups (CTSGs) have been developed. Individual soils have been grouped with similar soils into one of the 10 main CTSGs. Most of these main groups are further divided into subgroups.

This interpretation provides guidance in selecting the species best suited to each of the groups of soils within each vegetative zone. It also can be used for predicting survival, height, growth, species attributes, and effectiveness and for selecting species for windbreaks, riparian plantings, recreation and wildlife plantings, and ornamental or environmental plantings.

Tree and shrub species associated with each CTSG are broken down by vegetative zones (rainfall zones). These lists are available in the local office of the USDA, Natural Resources Conservation Service, or on the Web in the electronic Field Office Technical Guide. Because vegetative zones are rather large, climatic differences within a zone should be considered when species are recommended for planting. For example, some species adapted to the eastern end of a zone may be inadequately adapted to the western end. Care must be taken to ensure that conditions on individual sites are considered when species suitability and performance are determined. A case-by-case decision may be necessary to determine which CTSG is most appropriate when an individual site has characteristics that differ from those of the CTSG in which it occurs. These differences occur because of inclusions of other soils, site modifications (such as leveling and drainage manipulation), soil pH (calcareous sites), irrigation, soil amendments, or other factors.

## Rating Options

*Aggregation Method:* Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

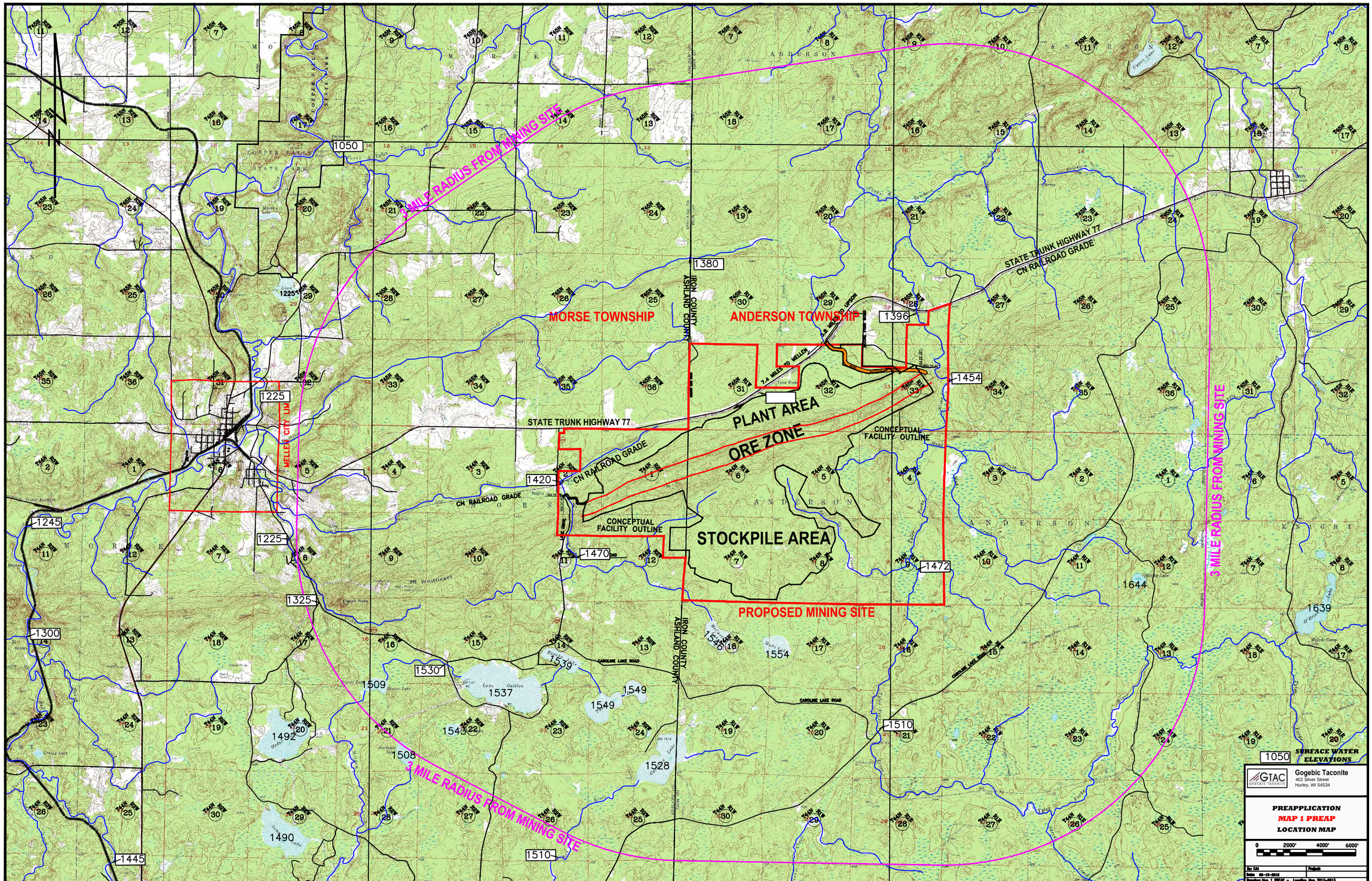
The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

*Component Percent Cutoff: None Specified*

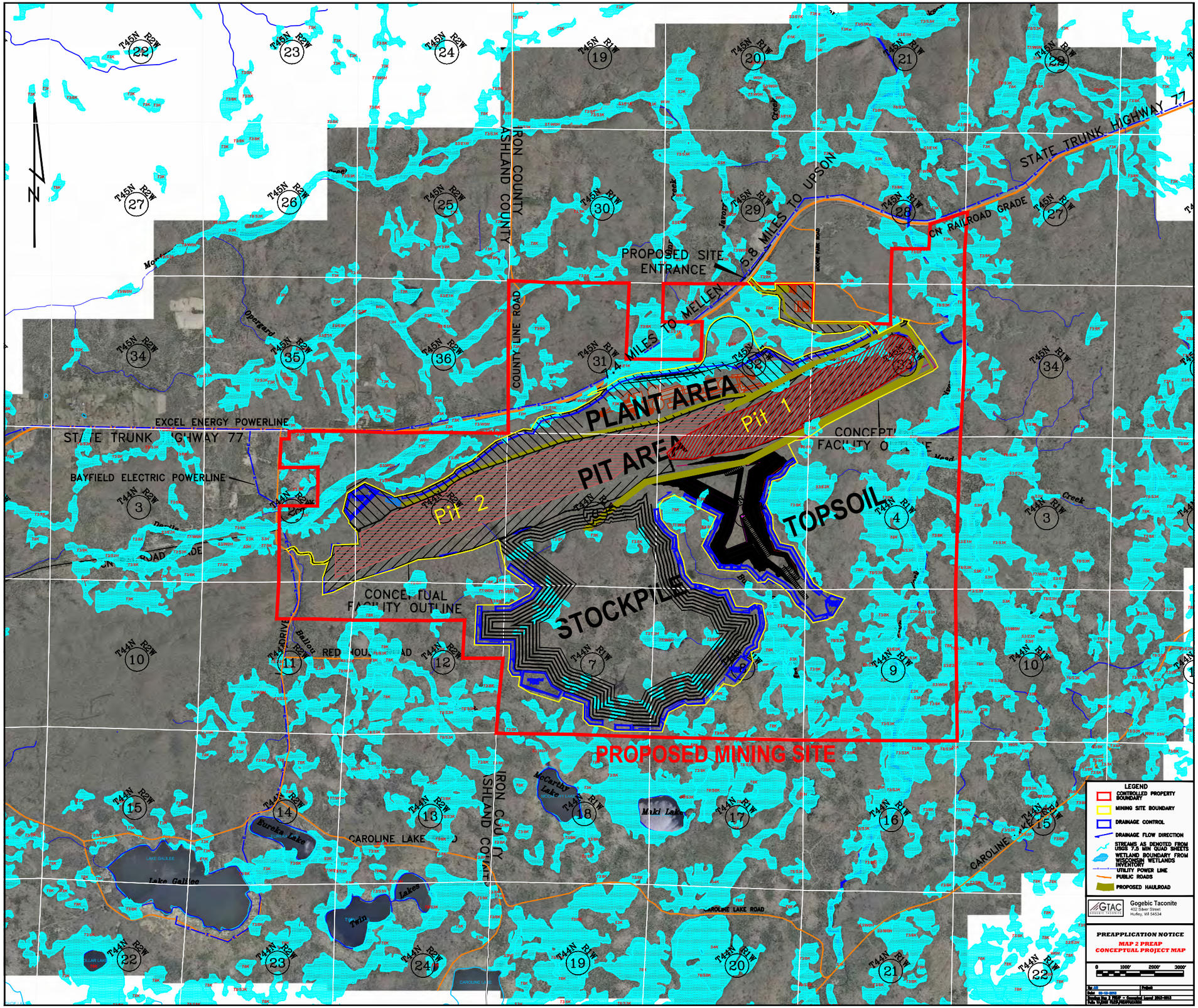
Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

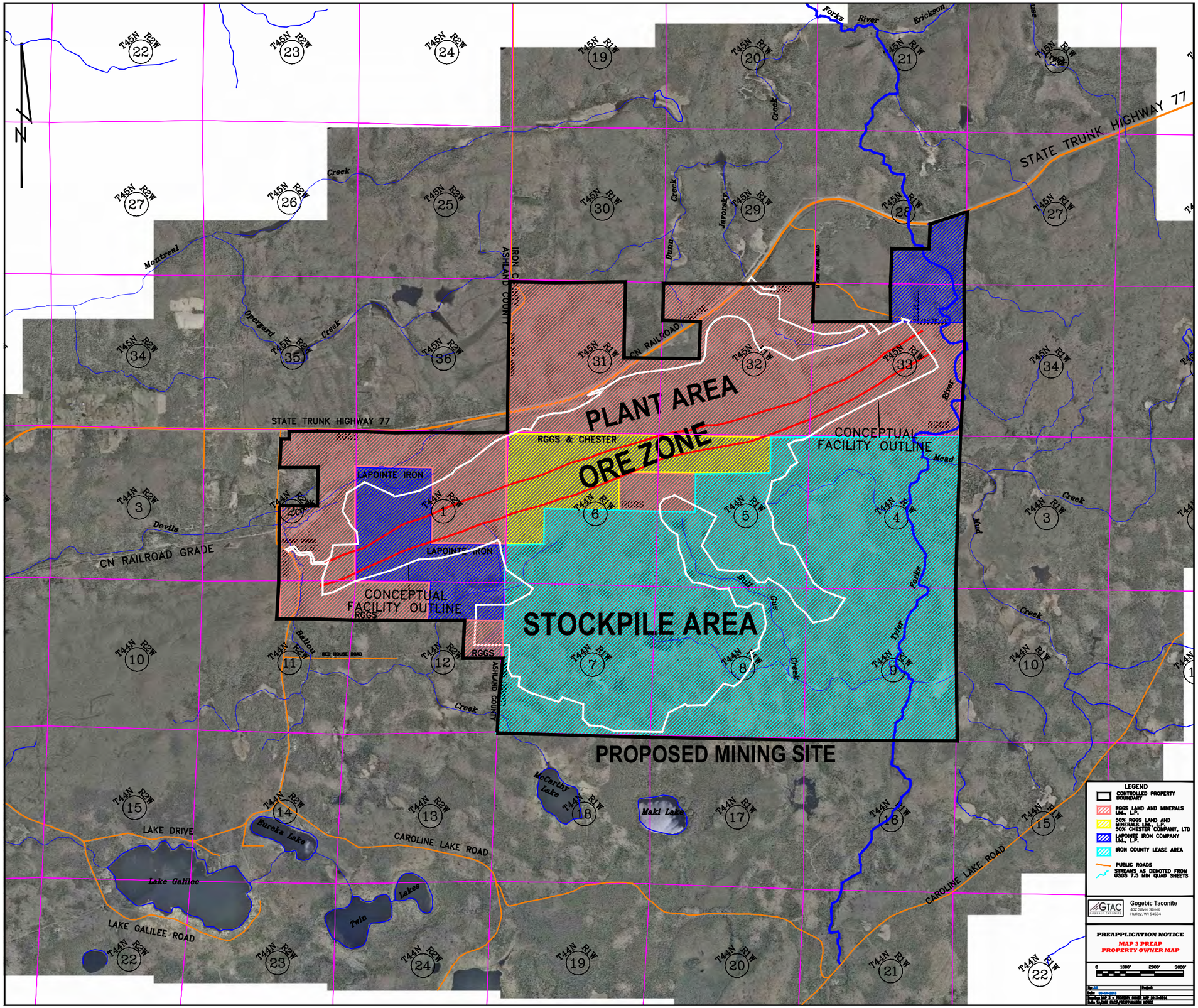
*Tie-break Rule:* Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

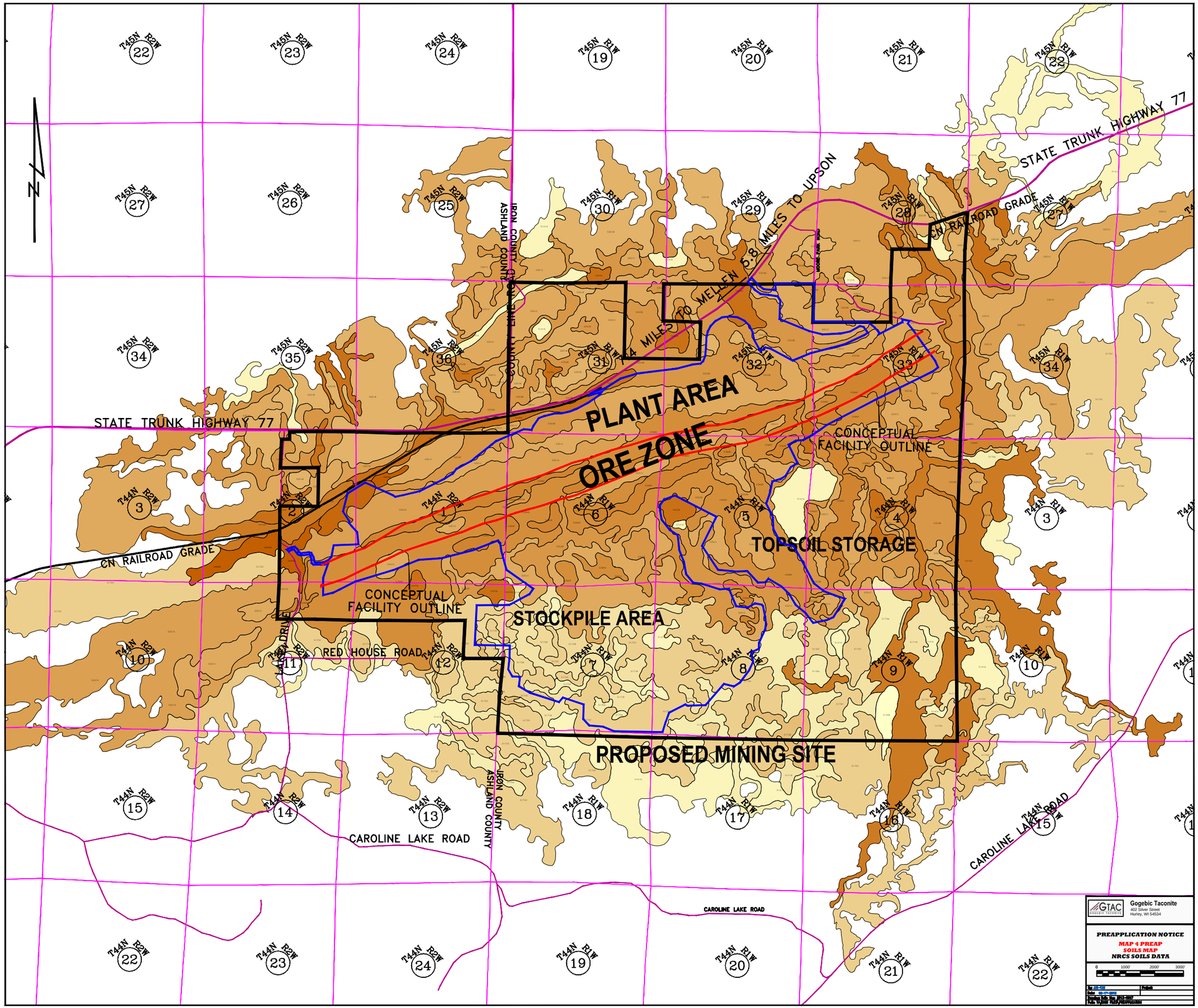


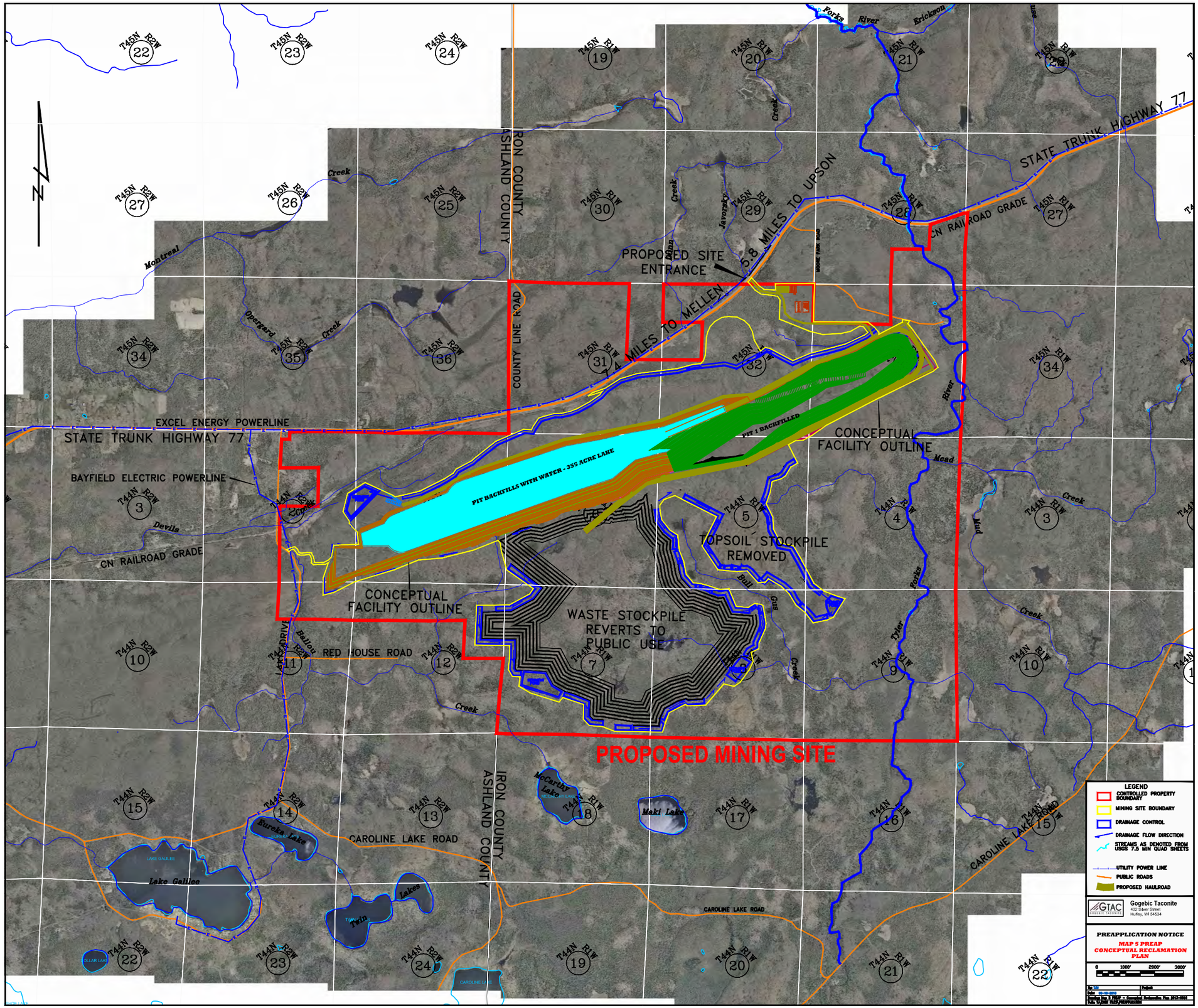
3 MILE RADIUS FROM MINING SITE
MORSE TOWNSHIP
ANDERSON TOWNSHIP
IRON COUNTY
ASHLAND COUNTY
STATE TRUNK HIGHWAY 77
CN RAILROAD GRADE
PLANT AREA
ORE ZONE
CONCEPTUAL FACILITY OUTLINE
STOCKPILE AREA
PROPOSED MINING SITE
MELLEN CITY LIMIT
CAROLINE LAKE ROAD
1050
1380
1396
1454
1225
1420
1470
1472
1245
1325
1300
1530
1509
1537
1539
1549
1543
1508
1492
1528
1490
1445
1510
1546
1554
1644
1639
SURFACE WATER ELEVATIONS
GTAC
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
PREAPPLICATION
MAP 1 PREAP
LOCATION MAP
0
2000'
4000'
6000'


STATE TRUNK HIGHWAY 77
CN RAILROAD GRADE
5.8 MILES TO UPSON
PROPOSED SITE ENTRANCE
7.4 MILES TO MELLEN
IRON COUNTY
ASHLAND COUNTY
COUNTY LINE ROAD
PLANT AREA
Pit 1
Pit 2
PIT AREA
TOPSOIL
STOCKPILES
CONCEPTUAL FACILITY OUTLINE
EXCEL ENERGY POWERLINE
BAYFIELD ELECTRIC POWERLINE
RED HOUSE ROAD
CAROLINE LAKE ROAD
PROPOSED MINING SITE
Lake Galilee
Eureka Lake
McCarthy Lake
Maki Lake
Twin Lakes
LEGEND
CONTROLLED PROPERTY BOUNDARY
MINING SITE BOUNDARY
DRAINAGE CONTROL
DRAINAGE FLOW DIRECTION
STREAMS AS DEPICTED FROM USGS 7.5 MIN QUAD SHEETS
WETLAND BOUNDARY FROM WISCONSIN WETLANDS INVENTORY
UTILITY POWER LINE
PUBLIC ROADS
PROPOSED HAULROAD
GTAC
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
PREAPPLICATION NOTICE
MAP 2 PREAP
CONCEPTUAL PROJECT MAP
0 1000' 2000' 3000'



PLANT AREA
ORE ZONE
STOCKPILE AREA
PROPOSED MINING SITE
CONCEPTUAL FACILITY OUTLINE
CONCEPTUAL FACILITY OUTLINE
STATE TRUNK HIGHWAY 77
STATE TRUNK HIGHWAY 77
CN RAILROAD GRADE
CN RAILROAD GRADE
LAPOINTE IRON
LAPOINTE IRON
RGGS & CHESTER
RGGS
RGGS
IRON COUNTY
ASHLAND COUNTY
ASHLAND COUNTY
LAKE DRIVE
LAKE GALILEE ROAD
CAROLINE LAKE ROAD
CAROLINE LAKE ROAD
Lake Galilee
Eureka Lake
Twin Lakes
McCarthy Lake
Maki Lake
Montreal
Opergard Creek
Devils
Ballou
Creek
Dunn Creek
Javorsky
Forks River
Erickson
Mead
Mud
Tyler Forks
Bull Gus Creek
T45N R2W
T45N R1W
T44N R2W
T44N R1W
LEGEND
CONTROLLED PROPERTY BOUNDARY
RGGS LAND AND MINERALS Ltd., L.P.
50% RGGS LAND AND MINERALS Ltd., L.P. 50% CHESTER COMPANY, LTD
LAPOINTE IRON COMPANY Ltd., L.P.
IRON COUNTY LEASE AREA
PUBLIC ROADS
STREAMS AS DENOTED FROM USGS 7.5 MIN QUAD SHEETS
GTAC
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
PREAPPLICATION NOTICE
MAP 3 PREAP
PROPERTY OWNER MAP
0 1000' 2000' 3000'


STATE TRUNK HIGHWAY 77
CN RAILROAD GRADE
5.8 MILES TO UPSON
4 MILES TO MELLEN
PLANT AREA
ORE ZONE
CONCEPTUAL FACILITY OUTLINE
TOPSOIL STORAGE
STOCKPILE AREA
PROPOSED MINING SITE
RED HOUSE ROAD
CAROLINE LAKE ROAD
IRON COUNTY
ASHLAND COUNTY
T45N R2W
T45N R1W
T44N R2W
T44N R1W
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
PREAPPLICATION NOTICE
MAP 4 PREAP
SOILS MAP
NRCS SOILS DATA
0 1000' 2000' 3000'



STATE TRUNK HIGHWAY 77
CN RAILROAD GRADE
PROPOSED SITE ENTRANCE
5.8 MILES TO UPSON
7.4 MILES TO MELLEN
IRON COUNTY
ASHLAND COUNTY
COUNTY LINE ROAD
EXCEL ENERGY POWERLINE
STATE TRUNK HIGHWAY 77
BAYFIELD ELECTRIC POWERLINE
PIT BACKFILLS WITH WATER - 355 ACRE LAKE
PIT 1 BACKFILLED
CONCEPTUAL FACILITY OUTLINE
TOPSOIL STOCKPILE REMOVED
CONCEPTUAL FACILITY OUTLINE
WASTE STOCKPILE REVERTS TO PUBLIC USE
RED HOUSE ROAD
PROPOSED MINING SITE
CAROLINE LAKE ROAD
Lake Galilee
Eureka Lake
Twin Lakes
McCarthy Lake
Maki Lake
LEGEND
CONTROLLED PROPERTY BOUNDARY
MINING SITE BOUNDARY
DRAINAGE CONTROL
DRAINAGE FLOW DIRECTION
STREAMS AS DENOTED FROM USGS 7.5 MIN QUAD SHEETS
UTILITY POWER LINE
PUBLIC ROADS
PROPOSED HAULROAD
GTAC
Gogebic Taconite
402 Silver Street
Hurley, WI 54534
PREAPPLICATION NOTICE
MAP 5 PREAP
CONCEPTUAL RECLAMATION PLAN
0 1000' 2000' 3000'