Environmental Assessment Worksheet

Giants Ridge Mountain Bike Park

Prepared for
Iron Range Resources & Rehabilitation

April 2019

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July 2013 version

ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at: http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. Project Title

Giants Ridge Mountain Bike Park

2. Proposer

Iron Range Resources & Rehabilitation
Contact person: Jim Plummer
Title: State Planning Director
Address: 1003 Discovery Drive
City, State, ZIP: Chisholm, MN 55719
Phone: (218) 274-7006
Email: jim.plummer@state.mn.us

3. RGU

Iron Range Resources & Rehabilitation
Contact person: Mark Phillips
Title: Commissioner
Address: 4261 Hwy 53 South
City, State, ZIP: Eveleth, MN 55734
Phone: (218) 735-3000 Ext 2
Email: mark.phillips@state.mn.us

4. Reason for EAW Preparation

Required:

- EIS Scoping
- **X** Mandatory EAW

Discretionary:

- Citizen petition
- RGU discretion
- Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s): 4410.4300 Subp. 37 Recreational Trails.

5. Project Location

- County: St. Louis
- City/Township: City of Biwabik and White Township
- PLS Location (¼, ¼, Section, Township, Range): Refer to Table 5-1
- Watershed (81 major watershed scale): St. Louis River
- GPS Coordinates: Latitude: 47.573536 Longitude: -92.313645 NAD1983
- Tax Parcel Numbers: Refer to Table 5-2

Table 5-1 PLS Location

Township	Range	Section	Quarter(s)
58	16	1	NE
58	15	6	NW
59	15	19	NW, SW
53	15	30	NW, SW
53	15	31	NW, SW
59	16	13	NW, NE, SW, SE
59	16	14	NE
59	16	23	NE, SE
59	16	24	NW, NE, SW, SE
59	16	25	NW, NE, SW, SE
59	16	26	NE, SE
59	16	35	NE

Table 5-2 Tax Parcel Numbers

Parcel Numbers			
015-0060-00010	015-0110-04870	015-0088-00650	570-0015-00570
015-0088-00450	015-0110-04880	015-0100-00860	570-0017-00330
015-0088-00510	015-0088-00490	015-0110-04700	570-0017-00410
015-0088-00530	015-0088-00500	015-0110-04750	570-0015-00490
015-0110-02970	015-0088-00640	570-0015-00510	570-0015-00540
015-0110-04830	015-0110-02950	570-0017-00380	570-0017-00520
015-0110-04890	015-0110-04720	570-0015-00530	679-0012-00650
015-0088-00350	015-0110-04730	570-0015-00550	679-0014-00170
015-0088-00370	015-0110-04850	570-0017-00390	679-0016-00170
015-0110-02960	015-0110-04860	570-0017-00540	679-0014-00660
015-0110-04840	015-0110-04900	570-0017-00630	
015-0110-04841	015-0088-00620	570-0015-00500	

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project. (Figure 1)
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable). (Figure 2)
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan. (Figure 2)

All figures are included in the "Figures" section at the end of the EAW.

6. Project Description

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

The Department of Iron Range Resources and Rehabilitation (IRRR) proposes to construct up to 35.2 miles of purpose-built, single-track mountain biking (MTB) trails within the Giants Ridge Recreation Area located north of Biwabik, Minnesota. The Project will be located on approximately 2,386 acres of land that will serve community residents and function as a tourist destination.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

Background

The IRRR proposes to construct up to 35.2 miles of MTB trail, referred to as the Giants Ridge Mountain Bike Park (or Project), on approximately 2,386 acres of land. The Project will be located north of the city of Biwabik within the Giants Ridge Recreation Area (Giants Ridge), a regional year-round destination recreation area in northeast Minnesota (Figure 1). Project contractors include Schoenbauer Consulting LLC (Owners' Representative), Kay Lynn Enterprises, LLC (Field Design and Construction Management), Barr Engineering Co. (engineering, environmental, and GIS mapping services), and several professional trail building contractors.

Giants Ridge currently offers alpine skiing, Nordic skiing, snowboarding, snowshoeing, disk golf, climbing wall, natural children's playground and hiking as well as golfing at two nationally acclaimed courses. The addition of gravity and cross-country MTB trails will allow Giants Ridge to leverage existing infrastructure and amenities, including a chalet/event center, lodging, parking, and an express chairlift to expand non-winter recreation activities.

The Project will use the existing infrastructure at Giants Ridge, requiring only construction of new trails. The trails will be constructed near the existing alpine ski slopes and Nordic ski trails as well as in the surrounding areas. No additional modifications to the existing equipment and processes, such as grooming and snowmaking, will be required. Additionally, no demolition or remodeling of existing structures is proposed for the Project.

Project Components

The Project will include up to 35.2 miles of MTB trail. The goal of the Project is to construct high-quality, professionally designed, flow mountain bike trails that take full advantage of the elevation and natural topography of Giants Ridge and surrounding areas. The gravity trails will be accessed by the Sarajevo Express chairlift that has been outfitted with racks to carry bikes on the lift (Figure 2). The cross-country trails will be accessed directly from the chalet area (Figure 2).

As shown on Figure 2, specific components of the Project include:

- Proposed Trails
  - 2.7 miles of "easy" trails, designated for beginner users (illustrated in green)
  - 2.3 miles of "more difficult" trails, designated for intermediate users (illustrated in blue)
  - 2.1 miles of "difficult" trails, designated for advanced and expert users (illustrated in black)
  - 26.9 miles of trail are yet to be assigned a level of difficulty, or "not assigned;" difficulty will be assigned to these portions of the trail further on in the design process (illustrated by long-dashed lines)
  - 1.2 miles of gravity trails (illustrated in gray)
- A proposed trailhead will be located at the Chalet, which will provide the following facilities for trail users:
  - restrooms
  - lockers (available for rent)
  - lunch area
  - bike rentals
  - parking
- The following additional amenities will be constructed for the Project:
  - informational kiosk including maps, user etiquette, invasive species prevention, and interpretive signage
  - bike repair station
  - boot brushes and bike wash station to help minimize the spread of invasive species

Design and Construction

To maximize trail durability, sustainability, and safety for the Project, the trails have been professionally designed in accordance with the International Mountain Biking Association's (IMBA) professional design guide entitled "Trail Solutions – IMBA's Guide to Building Sweet Single Track" (IMBA's Sustainable Trail-building Guidelines). The conceptual centerlines of the trails are shown in Figure 2.

Professional crews of mountain bike trail builders will use rubber-tracked equipment to manipulate the existing soil to build the trail tread. In portions of the trail where the native soil contains a high amount of organic soil, additional surfacing material may be required per routine trail construction and maintenance practices in order to construct a sustainable trail tread, berms, and other trail features if necessary.

The constructed trails will not exceed six feet in width and may be less than six feet wide for the trails designated as "more difficult" (blue trails) and "difficult" (black trails). The gravity trails will have a maximum gradient of 20 percent to help reduce erosion. The location of each trail may be shifted to minimize environmental effects and/or address routing considerations during final design. Trail ceilings (the upper boundary for vegetation clearing) for mountain bike trails typically range from seven to nine feet.

Project construction is anticipated to start in the summer 2019 and conclude in the fall 2020. The final schedule will depend on the availability of construction funds and contractors. Mechanical and hand tools will be used during construction. Mechanized tools will include mini-excavators, mini-skid steers, powered wheelbarrows, and brush mowers; hand tools will include chainsaws, brush cutters, shovels, and picks.

Operations and Maintenance

An operations and maintenance plan has been drafted to address the Redhead, Giants Ridge, and Tioga MTB trail projects. The plan is entitled "Operations and Maintenance Plan – Giants Ridge, Redhead and Tioga Mountain Bike Trails."

The Project area will be free and open for public use as trail conditions allow (trail users will have the option to buy a lift ticket to use the Sarajevo Lift for mountain-top access). Trail closures will occur at any time when warranted by unsuitable and/or unsafe conditions. A mobile gate will be present at the trailhead to control and/or restrict access to the trails when necessary. Giants Ridge will provide long-term trail maintenance and upkeep. Giants Ridge will operate and maintain the Sarajevo lift.

c. Project magnitude:

Table 6-1 6-1 provides a summary of the Project's magnitude.

Table 6-1 Project Magnitude Summary

Component	Size
Total Trail Acreage[1]	13.2 acres
Total Project Area Acreage	2,386 acres
Linear project length	35.2 miles
Number and type of residential units	n/a
Commercial building area (in square feet)	n/a
Industrial building area (in square feet)	n/a
Institutional building area (in square feet)	n/a
Other uses—specify (in square feet)	n/a
Structure height(s)	n/a

[1] Calculation assumes an average 3-foot-wide trail width.

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

The purpose of the Project is to enhance the economic vitality of the East Range area and provide year-round recreational opportunities for a broad spectrum of users. Creating a destination, high-quality, mountain-biking trail system as a new amenity will enhance this goal.

In order to continue to grow as a year-round recreational destination, Giants Ridge recognizes the need to offer a diverse array of recreational activities that will attract a broad audience throughout the year. Mountain biking is a popular activity that is growing, including during the winter months with fat-tired biking. The addition of a destination mountain bike park at Giants Ridge will result in an increase in direct jobs, including construction, maintenance, and operations. Indirect jobs will be created as a result of increased demand for lodging, food and beverage, bike rental and repair, and other service-related businesses.

e. Are future stages of this development including development on any other property planned or likely to happen? ▪ Yes **X** No

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

f. Is this project a subsequent stage of an earlier project? **X** Yes ▪ No

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

Construction of three gravity trails, totaling less than three miles, were approved in 2017 with a budget of $250,000. At the time of the gravity trail project approval, no additional trail construction was proposed. Constructions of the gravity trails occurred in 2017 and 2018 with the first gravity trail completed in November 2017.

7. Cover Types

Estimate the acreage of the site with each of the following cover types before and after development:

An assessment of land cover types for the Project area was estimated using data from the U.S. Geological Survey National Land Cover Dataset in conjuncture with the National Wetland Inventory (NWI) dataset and existing trail alignments. The land cover types for the Project area are summarized in Table 7-1 and shown in Figure 3.

Table 7-1 Summary of Cover Types (acres)

Cover Type	Before (Acres)	After (Acres)
Wetlands	148.1	148.1
Deep water/streams	10.0	10.0
Wooded/forest	1,908.7	1,902.3
Brush/grassland	170.0	163.6
Cropland	0	0
Lawn/landscaping	0	0
Impervious Surface	0	0
Other (Trail)	12.5	25.3
Other (Developed or Barren Land)	137.2	137.2
Total Area	**2,386.5**	**2,386.5**

8. Permits and Approvals Required

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

Table 8-1 8-1 provides a list of permits and approvals required for the Project.

Table 8-1 Permits and Approvals Required

Unit of Government	Type of Application	Status
St. Louis County	WCA Approval	Submit if needed
Minnesota Pollution Control Agency (MPCA)	NPDES/SDS Construction Stormwater General permit #MNR1000001	To be submitted
MN State Historical Preservation Office (SHPO)	Historic Properties Review	Submit if needed
U.S. Army Corps of Engineers (USACE)	Section 404 Permit	Submit if needed
United States Forest Service (USFS)	Conditional Use Permit	Coordination with USFS is underway

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19.

All potential cumulative impacts are discussed in EAW Item 19, Cumulative Potential Effects.

9. Land Use

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

Land use in the vicinity of the Project primarily consists of a mix of recreational use and undeveloped forest land (Figure 3). Approximately 1,909 acres of the Project area is undeveloped forested land. Approximately 305 acres of the Project area have been previously disturbed at Giants Ridge from the development of trails, ski slopes, and golf courses. Figure 7 identifies the location of the existing cross country ski trails within the Project area.

The surrounding land use for the Project area includes commercial and residential development in the City of Biwabik (Figure 1).

Major roadways include County Highway 138, which crosses the Project area, and connects to Minnesota State Highway 135 farther south of the Project area. Land use

within the Project area includes lodging and other developments associated with Giants Ridge (Figure 2). The Project area is also located within and adjacent to the Superior National Forest, part of U.S. National Forest system. This forest has a mixed-use management for logging and recreational activities such as camping, boating, and fishing.

Figure 4 shows the current land-use data based on the St. Louis County tax information for parcels within the surrounding area for the Project. The following three land uses were identified within the Project area: state public property, state administered lands, and federal national forest. The Project area will be located on federal national forest, state (IRRR) public property and state (IRRR) administered lands. The surrounding land use within the Project area includes lodging and other developments associated with the Giants Ridge Recreation Area (Figure 3). The surrounding land use for the Project area includes undeveloped forest with some human development. County Highway 138 is located to the east of the Project and runs north to south generally.

The Project area is also located within and adjacent to the Superior National Forest, part of the U.S. National Forest system. The forest has a mixed land use and is managed for logging and recreational activities such as camping, boating, and fishing.

According to The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil data, no prime farmland is present within the Project area. However, farmland of statewide importance (Gnesen loam, 0 to 3 percent slopes and Cloquet loam, 2 to 8 percent slopes; Figure 5) are located within the Project area.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

City of Biwabik

The city of Biwabik has developed a Comprehensive Plan (revised July 2003), which includes the Project area. This plan identifies Giants Ridge zoning as "Open Space – Conservancy land" and discusses the Project area in Section 2, "Community Facilities & Services."

The city of Biwabik's plan states that the trails at Giants Ridge "make up some of the best riding in the area". Additionally, the plan recognizes that the city of Biwabik is in a unique situation to strengthen its position through tourism, including nearby resorts and attractions, such as those offered by Giants Ridge. Specifically, the plan states that

recreation developments at Giants Ridge will help build the base of visitors to the area and increase the demand for local services.

St. Louis County

St. Louis County has developed a Comprehensive Land Use Plan, which establishes a long-term vision for managing land use within the county. One of the goals of the plan, as defined in the Land Use section, is to "expand the regional trail system or other uses that are compatible with outdoor recreation and tourism."

Northern St. Louis County Trails Task Force

The Northern St. Louis County Trails Task Force drafted the "2017/2018 St. Louis County & Northeast Koochiching Country Trails Plan." This plan addresses trails in St. Louis County and northeast Koochiching County and acts as a guide to develop and maintain a quality system of multi-use trails that enhance the quality of life and tourism of northern Minnesota. Goals of the plan relevant to the Project area include:

- Connect to other trails, communities, destinations, and service businesses.
- Open to collaboration between user groups and trail administrators to ensure quality experiences to create economic efficiencies and sustainability.
- Maximize use in all seasons by allowing compatible uses to exist in corridors where possible and appropriate.
- Inclusive of trail hubs that provide parking, safety features, information, and amenities.
- Positively impact the area's tourism economy while still providing quality recreation experiences and health benefits to residents.
- Construct and maintain trails using known best practices that limit environmental impacts.

Giants Ridge Recreation Area

The IRRR prepared the "Core Area Master Plan" for Giants Ridge in 2017 to guide future development. The plan identified three primary goals:

- Realize the opportunity for winter business
- Increase the opportunity for summer business
- Identify opportunities for future development and accommodations

The Core Area Master Plan identifies the continued development of the trail networks at Giants Ridge, with a focus on adding additional miles of MTB trails.

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The Project aligns with current and proposed land uses as well as the Biwabik Comprehensive Plan and St. Louis County's Comprehensive Land Use Plan. It is anticipated that the Project will not have any impact on adjacent land uses or zoning districts.

Through personal communication with the city of Biwabik's City Administrator, it was determined that the Project will be in compliance with the current city zoning districts. As a result, the Project will not require any additional permitting from the city.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

The Project will be fully compatible with the nearby land uses, as well as applicable zoning and comprehensive plans for the Project area.

10. Geology, Soils and Topography/Land Forms

a. Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

The Project area is located within the Giants Range Batholith, which is comprised of porphyritic quartz monzonite, monzodiorite, Schistose biotitic meagraywacke, and slate britt sequence. According to the Minnesota Geological Survey County Atlas (2016), the Project area includes up to 125 feet of glacial till consisting of sandy loam diamicton, sand, silt, clay, and gravel. Well logs from the Minnesota Department of Health's Minnesota Well Index suggests that the depth to bedrock near Giants Ridge is approximately 100 feet below the soil surface.

No previously recorded sinkholes or karst locations were identified within the Project area. Only minor grading will occur along the trail alignment, so no impacts to the geological features within the Project area are anticipated.

b. Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and grading. Discuss impacts from project activities (distinguish between construction and

operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

According to the NRCS soil data, the soils in the Project area are primarily loamy material derived from dense gravel logement till (Figure 5 and Table 10-1). Design considerations will be taken to minimize erosion throughout the trail alignment, particularly in steeply sloped areas. The final trail alignment will avoid soils with high erosion potential where possible, and incorporate shallow inclines or trail armoring where avoidance is not possible. No soils with severe ratings for erosion hazards or are located within the Project area.

Table 10-1 NRCS Soil Classifications and Limitations within Project Area

NRCS Soil Unit	Acres in Project Area	Landform / Parent Material	Drainage Class	Capacity of the Most Limiting Layer to Transmit Water (Ksat)	Prime Farmland?	Hydric Soil?	Erosion Hazard (Road or Trail)
Eaglesnest-Babbitt complex, 1 to 8 percent slopes, bouldery	422.9	Loamy drift over dense gravelly lodgment till	Moderately well drained	Moderately high	No	No	Slight
Eaglesnest stony loam, 4 to 12 percent slopes, very bouldery	408.5	Loamy material over dense till	Moderately well drained	Moderately high	No	No	Slight
Cloquet-Pequaywan complex, 0 to 45 percent slopes, pitted	276.5	Loamy material over gravelly outwash	Well-drained	High	No	No	Severe
Eveleth-Conic complex, 20 to 50 percent slopes, very bouldery	207.8	Loamy material over dense till	Well-drained	Moderately high	No	No	Severe
Babbitt, bouldery-Aquepts, rubbly, complex, 0 to 3 percent slopes	171.9	Loamy drift over dense gravelly lodgment till	Somewhat poorly drained	Moderately high	No	No	Slight

NRCS Soil Unit	Acres in Project Area	Landform / Parent Material	Drainage Class	Capacity of the Most Limiting Layer to Transmit Water (Ksat)	Prime Farmland?	Hydric Soil?	Erosion Hazard (Road or Trail)
Eveleth-Conic, bouldery-Rock outcrop complex, 18 to 30 percent slopes	135.8	Loamy drift over dense gravelly lodgment till	Well-drained	Moderately high	No	No	Moderate
Babbitt stony loam, 0 to 3 percent slopes, bouldery	119.8	Loamy material over dense till	Somewhat poorly drained	Moderately high	No	No	Slight
Eaglesnest-Wahlsten complex, 2 to 8 percent slopes, bouldery	101.3	Loamy drift over dense gravelly lodgment till	Moderately well drained	Moderately high	No	No	Slight
Conic, very bouldery-Insula, very bouldery-Rock outcrop complex, 20 to 70 percent slopes	99.8	Loamy drift over dense gravelly lodgment till over bedrock	Well-drained	Moderately high	No	No	Severe
Eveleth-Eagelsnest-Conic complex, bouldery, 6 to 18 percent slopes, very rocky	80.8	Loamy drift over dense gravelly lodgment till	Well-drained	High	No	No	Moderate
Rifle soils, 0 to 1 percent slopes	71.5	Organic material	Very poorly drained	High	No	Yes	Slight
Eveleth stony loam, 8 to 18 percent slopes, bouldery	61.6	Loamy drift over dense gravelly lodgment till	Well-drained	Moderately high	No	No	Moderate
Bowstring and Fluvaquents, loamy, 0 to 2 percent slopes, frequently flooded	57.9	Alluvium	Very poorly drained	High	No	Yes	Slight

NRCS Soil Unit	Acres in Project Area	Landform / Parent Material	Drainage Class	Capacity of the Most Limiting Layer to Transmit Water (Ksat)	Prime Farmland?	Hydric Soil?	Erosion Hazard (Road or Trail)
Conic, bouldery-Insula, bouldery-Rock outcrop complex, 8 to 25 percent slopes	38.5	Loamy drift over bedrock	Well-drained	Moderately high	No	No	Severe
Cloquet-Pequaywan complex, 0 to 18 percent slopes, pitted	34.4	Loamy material over gravelly outwash	Well-drained	High	No	No	Severe
Cloquet loam, 2 to 8 percent slopes	34.2	Loamy material over gravelly outwash	Well-drained	High	Farmland of statewide importance	No	Moderate
Udorthents, loamy (cut and fill land)	21.0	Variable soil material	Well-drained	Not Ranked	No	No	Not rated
Biwabik-Graycalm complex, 1 to 8 percent slopes	16.5	Gravelly outwash	Excessively drained	High	No	No	Moderate
Gnesen loam, 0 to 3 percent slopes	15.3	Loamy material over gravelly outwash	Somewhat poorly drained	High	Farmland of statewide importance	No	Slight
Tacoosh mucky peat, 0 to 1 percent slopes	6.7	Organic material over glaciofluvial sediments	Very poorly drained	High	No	Yes	Slight
Aquepts, 0 to 2 percent slopes, rubbly	4.2	Glaciofluvial sediments	Very poorly drained	Moderately high	No	Yes	Slight
Cathro muck, depressional, 0 to 1 percent slopes	1.0	Organic material over glaciofluvial sediments	Very poorly drained	High	No	Yes	Slight
Rollins-Cloquet complex, 8 to 18 percent slopes	0.3	Loamy material over gravelly outwash	Somewhat excessively drained	High	No	No	Moderate
Eaglesnest-Babbitt complex, 1 to 8 percent slopes, bouldery	422.9	Loamy drift over dense gravelly lodgment till	Moderately well drained	Moderately high	No	No	Slight

The soils within the Project area range from excessively well drained to very poorly drained. Well-drained soils are desirable for natural surface trails as they minimize the potential for trail damage due to rutting and erosion. The trail alignment will be flagged in the field to avoid high erosion areas and poorly drained soils. If wetland areas or seeps are encountered during final trail design, the trail will be rerouted or crossed by bridges or boardwalks to avoid potential wetland impacts.

The final design of the trails will be in accordance with the IMBA's Sustainable Trail building Guidelines to reduce erosion on a long-term scale. Erosion and sediment control best management practices (BMPs) will be implemented during construction and maintenance to provide trail stabilization and minimize soil erosion. BMPs may include (but are not limited to) erosion-control blankets, biologs, vegetation buffers, mulch, and silt fencing. Many of these BMPs will be implemented as part of the stormwater pollution prevention measures discussed in EAW Section 11.b.ii. In the event of erosion concerns during operations, measures will be taken to address the erosion and may include temporary closure and realignment. Routine trail maintenance will be conducted to preserve trail sustainability as well as provide safe access to all users.

Preliminary estimates of grading and excavation assume an average trail width of 36 inches (three feet) and an average Project area slope of 30 percent. A three-foot-wide trail width was used for the estimates because it is estimated that the final widths of the trails will be significantly less than the maximum six-foot-wide trail assumed throughout this document. Additionally, not all of the trails will require grading or excavation.

Approximately 13.2 acres will need to be graded for the trail. The total amount of excavated or regraded soil will be approximately 18,020 cubic yards. Excavated or regraded soil will be used in other locations along the trail alignment or trailhead area. Soils or gravel will not be removed from the Project area.

11. Water Resources

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. Below.

   i. Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The Project is located within the St. Louis River watershed (Figure 6a). Wynne Creek, a perennial stream, flows east through the northern half of the Project area into Wynne Lake. There are NWI wetlands located throughout the Project area. No lakes are located within the Project area (Figure 6a).

According to the NWI, there are 62 wetlands located within the Project area that cover approximately 148.13 acres. The majority of the wetlands are classified as palustrine wetlands, which are defined as non-tidal wetlands that are dominated by trees, shrubs, and persistent-emergent and emergent mosses or lichens (Table 11-1). In addition, one riverine wetland was identified adjacent to Wynne Creek.

Table 11-1 NWI Wetlands Located Within the Project Area

Cowardin Classification	Number of Wetlands	Area (Acres)
PABGb	6	7.80
PEM1A	3	11.67
PEM1C	3	5.39
PEM1Cb	4	8.01
PEM1F	3	9.96
PEM1Fb	2	4.26
PFO1/SS1D	1	3.78
PFO1B	3	9.26
PFO1C	1	1.67
PFO2Dg	1	0.20
PFO4/SS1B	2	11.21
PFO4Bq	5	10.56
PSS1/3Bq	1	>0.01
PSS1/4B	3	43.30
PSS1/EM1B	2	0.47
PSS1/EM1C	2	1.45
PSS1/EM1Cb	1	4.12
PSS1B	3	2.59
PSS3/FO5Bq	1	2.53
PUBF	1	1.20
PUBFb	1	0.70
PUBGb	6	5.73
PUBGx	6	1.57
R2UBG	1	0.67
Total	62	148.13

Table 11-2 identifies the DNR Public Waters Inventory (PWI) numbers, waterbody designations, and waterbody impairments for all waterbodies located within one mile of the Project area.

Table 11-2 Surface Waters and Respective Designations within One Mile of the Project Area

Waterbody Name	Waterbody Type	DNR Public Waters Inventory Number	Special Designation	MPCA 303d Impairment
Wynne	Lake	69043402P	None	Aquatic Consumption
Sabin (Embarrass Mine)	Lake	69042900P	Lake of Biological Significance	Aquatic Consumption
Embarrass	Lake	69049600P	None	Aquatic Consumption
Sabin	Lake	69043401P	None	None
Embarrass River	River	n/a	None	Aquatic Life
Wynne Creek	River	n/a	None	None

There are no trout lakes or streams, wild or scenic rivers, wild rice lakes, calcareous fens, wildlife lakes, migratory waterfowl lakes, or outstanding resource value waters located within one mile of the Project area.

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within an MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

Depth to groundwater varies throughout the Project area due to the heterogeneity of glacial till depth and composition. According to the Minnesota Hydrogeology Atlas (2016), the depth to water table ranges from 0 to greater than 50 feet within the Project area. Locations with poorly drained soils may contain ponded water at the soil surface. The final trails will avoid these areas and/or cross these areas with bridges to minimize impacts.

According to Minnesota Department of Health (2019) data, the Project area is not located within a designated Wellhead Protection Area. Figure 6b identifies the locations of wells located in the vicinity of the Project area. Construction will be limited

to general grading and vegetation impacts. The use of BMPs as discussed in Section 11bii will help mitigate the erosion potential into surface waters. No impacts to groundwater are anticipated.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater – For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

The Project will use the existing restrooms located at Giants Ridge, which will result in increased use of the facility. However, it is anticipated that increased use will not exceed the capacity of the facility.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

Not applicable; the Project will not discharge wastewater to a SSTS.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

Not applicable; the Project will not discharge wastewater to surface water.

ii. Stormwater – Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

Depending on the trail surface soil, trails will either directly infiltrate or shed stormwater to adjacent vegetation for infiltration. Trail design will incorporate the IMBA's Sustainable Trail-building Guidelines, which were created specifically to allow trails to drain water in a non-erosive manner. Some of the key guidelines are as follows:

- Avoid the Fall Line: Fall-line trails usually follow the shortest route down a hill, the same path that water flows. The problem with the fall-line trails is that they focus water down their length. The speeding water strips the trail of soil, thereby exposing roots, creating gullies, and scarring the environment.
- Avoid Flat Areas: If the trail is not located on a slope, there is potential for the trail to become a collection basin for water. The trail tread must always be slightly higher than the ground on at least one side for the water to properly drain.
- Follow the Half Rule: A trail's grade should not exceed half the grade of the sideslope the trail traverses or it is considered a fall-line trail.
- 10 percent Average Guideline: Overall, a trail's grade should be maintained at 10 percent average grade or less, which are the most sustainable grades to prevent erosion. Short sections may exceed 10 percent as long as the Half Rule is used.
- Maximum Grades of 15-25 Percent: Grades should only exceed maximum grade amounts for very short distances or in special conditions, such as bedrock surfaces or other sustainable features.
- Grade Reversals: Grade reversals are recommended every 20 to 50 feet to allow water to exit the trail tread at the low point.
- Trail Outslope: The outer edge of the trail should be slightly lower than the hillside or inside edge by 5 percent, which will encourage water to sheet across the trail rather than traveling down the trail center.

Construction Stormwater General Permit coverage will be obtained from the MPCA, and a Stormwater Pollution Prevention Plan (SWPPP) will be developed for the Project. In addition to strategic erosion-minimization trail design, BMPs such as erosion control blankets, biologs, vegetation buffers, mulch, silt fencing, and select supplemental seeding (as necessary) will be implemented as appropriate during construction. Due to the existing vegetation buffers present throughout the Project area, stormwater generated during construction and operation is not anticipated to have significant effects on water quality.

During operations and in accordance with the operations and maintenance plan, Giants Ridge or their maintenance partners, will regularly inspect for erosion that may occur and will stabilize the exposed areas as needed.

iii. Water appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

Not applicable; no water appropriation is anticipated during construction or operation of the Project.

iv. Surface Waters

a) Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

In the event that a wetland crossing cannot be avoided, bridges or elevated boardwalks on piers or driven pilings would be used to mitigate potential impacts to wetlands. The following best practices would be used to avoid altering the wetland's cross-section or hydrological characteristics:

- Avoid crossing open bodies of water or other wetlands when possible.
- Design crossing(s) to traverse a narrow section of wetland.
- Design crossing(s) to keep disturbance to a minimum.
- Span as much of the wetland as possible between pilings.
- Avoid disturbance to wetland soils and other vegetation.

- Avoid fragmenting wetland wildlife habitat by building away from wildlife travel corridors.

It is anticipated that bridges or an elevated boardwalk will be required for the proposed Wynne Creek crossing. Consultation will occur with the applicable agencies to confirm potential permitting requirements. Unavoidable wetland impacts will require wetland mitigation. Mitigation will be determined as part of the USACE Section 404 and Minnesota Wetland Conservation Act permitting processes.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Not applicable; the Project will not physically modify or alter (e.g., draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration) any surface water features (e.g., lakes, streams, ponds, intermittent channels, county/judicial ditches) beyond current operations.

12. Contamination/Hazardous Materials/Wastes

a. Pre-project site conditions – Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

The Project will be constructed on undeveloped forest land within and adjacent to Giants Ridge (Figure 2). There are no documented contaminated sites or other known potential environmental hazards within the Project area. The Project is not expected to cause or exacerbate any existing environmental hazards.

b. Project related generation/storage of solid wastes – Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

A solid waste receptacle will be placed at the trailhead area at the chalet prior to any construction activities and will be serviced regularly by Giants Ridge. All solid wastes generated during the construction and operations will either be disposed of at the chalet waste receptacle or taken offsite for disposal in accordance with applicable requirements. No environmental effects are anticipated as a result of Project-related solid waste generation.

c. Project related use/storage of hazardous materials – Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

The use of mechanical equipment fluids and fuels during construction and long-term operation poses the primary potential source of environmental contamination. Fuel containers transported for trail construction and future maintenance will not exceed 10 gallons; fueling will be performed more than 100 feet from wetlands and surface waters. Equipment operators will perform daily checks on equipment with fluids to confirm that the equipment is in proper working order, free of leaks, and equipped with spark arrestors, if applicable.

The release of fluids or fuels is not anticipated, and construction and maintenance crews will carry appropriately sized spill kits onsite in order to immediately clean all spills. Any waste resulting from spill cleanup will be carried offsite and properly disposed of as discussed above in 12.b. No above- or below-ground storage tanks are proposed for the Project.

d. Project related generation/storage of hazardous wastes – Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Not applicable; the Project is not anticipated to generate hazardous waste.

13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

General Landscape Characteristics

The Project area is located within the DNR Ecological Classification System's Nashwauk Uplands subsection of the Northern Superior Uplands section of the Laurentian Mixed Forest Province. The landform of the Nashwauk Uplands subsection is characterized by its rolling till plains, moraines, and flat outwash plains. Historically, the moraines and till plains were typically dominated by aspen-birch forest and mixed hardwood-pine forest while the outwash plains were composed of white pine-red pine forest and jack pine barrens. Currently, the Nashwauk Uplands subsection is dominated by quaking aspen. Forest management, recreation, and mining are the dominant land uses.

Fishery Resources

According to the DNR LakeFinder online tool, no fisheries are located within lakes in the vicinity of the Project area, which includes Wynne Lake and Sabin Lake. These lakes have a variety of fish such as black bullhead, black crappie, bluegill, northern pike, cisco species, rock bass, walleye, yellow bullhead, and yellow perch.

Wildlife Resources

The Project area is located within the Superior National Forest which contains habitat for a variety of wildlife species. However, much of the Project area has been previously disturbed by the development of existing recreational facilities (i.e., alpine skiing, Nordic skiing, MTB trails, golf courses, etc.). It is anticipated the Project area will be utilized by generalist wildlife species such as raccoons, skunks, white-tailed deer, moose, gray wolves, and black bear. Other nongame wildlife species in the Project area likely include songbirds, raptors, and bats. The Project area may provide habitat for eagles and osprey due to its close proximity to Wynne Lake and Sabin Lake.

Vegetation

Northern boreal forests found in the Project area are typically dominated by black spruce (*Picea mariana*), white spruce (*Picea glauca*), and quaking aspen (*Populus tremuloides*). Wetlands and their dominant vegetation that are found in the Project area include flooded forest – cotton wood (*Populus deltoids*) and silver maple (*Acer saccharinum*), seasonally flooded forest – green ash (*Fraxinus pennsylvanica*) and American elm (*Ulmus americana*), and scrub/shrub slender willow (*Salix petiolaris*) and red-osier dogwood (*Cornus sericea*).

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-898) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

DNR Natural Heritage Information System

The DNR Heritage Information System (NHIS) database (license agreement LA-898) was reviewed in April 2019 to identify state-listed endangered (E), threatened (T), special concern (SC), and watchlist plant and animal species located within one mile of the Project area. Based on this review, there are two known occurrences of rare species within the Project area; the floating marsh marigold (*Caltha natans*; E) and barren strawberry (*Waldstenia fragarioides var. fragaroides*; SC).

- Floating marsh marigold is a vascular plant that is found in shallow, slow-moving water in streams, creeks, pools, ditches, sheltered lake margins, swamps, and beaver ponds. It typically roots in mud, silt, or clay.
- Barren strawberry is a vascular plant that is often found in forests that are dominated by pine species as well as mixed pine and hardwood forests. It is typically found in locations with partial sun; however, it is also found in fully-shaded forest understory.

In addition to these two species, the American bittern (*Botaurus lentiginosus*; watchlist), Michigan moonwort (*Botrychium michiganense*; watchlist), pale moonwort (*Botrychium pallidum*; SC), necklace sedge (*Carex laxiflora var ormostachya*; SC), least moonwort (*Botrychium simplex*; SC), and a colonial waterbird nesting area were previously recorded within one mile of the Project area. However, watchlist species and SC species are not protected under Minnesota's Protection of Threatened and Endangered Species Statute.

A concurrence letter was sent to the NHIS staff to verify the presence of and avoidance of potential impacts to state protected species within one mile of the Project area.

Federally Listed Species

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) online tool was utilized in April 2019 to identify if any federally listed plant and wildlife species were found within the Project area. The following species are listed within the Project area:

- Northern long-eared bat (*Myotis spetentrionalis*): This is a species that roosts and broods young in large trees that have shaggy bark, cavities, or otherwise exhibit signs of decay, particularly aspen. It is federally listed as a threatened species and state-listed as a species of special concern.
- Gray wolf (*Canis lupus*): This species occupies a wide range of habitats from mixed hardwood-coniferous forests in the wilderness and sparsely settled areas to forest and prairie landscape dominated by agricultural and pasture lands. The gray wolf is federally listed as a threatened species; however, it is not a state-listed species.
- Canada lynx (*Lynx canadensis*): This species is a solitary, large-ranging species that prefers mature coniferous forest habitat where the snowshoe hare is found. The lynx is federally listed as a threatened species and state-listed as a species of special concern. The Project area is also located within designated critical habitat for the Canada lynx.
- Piping plover (*Charadrius melodus*): This species nests on open, sparsely vegetated sand or gravel beaches adjacent to alkali wetlands or major river systems. The piping plover is federally listed as a threatened species and state-listed as an endangered species.

Publicly available DNR data were reviewed to determine if any Minnesota Biological Survey (MBS) native plant communities, Sites of Biodiversity Significance (SBS), or Scientific and Natural Areas (SNAs), or other sensitive ecological resources are present within the Project area. According to the DNR data, no native plant communities, SBS, or SNAs have been identified within the Project area. Sabin Lake (Embarrass Mine) is a lake of Outstanding Biological Significance and is located approximately 0.88 miles southeast of the Project area. This lake will not be impacted by the Project.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species

from the project construction and operation. Separately discuss effects to known threatened and endangered species.

Fisheries Resources

No impacts to fisheries resources are anticipated from the Project. Impacts to Sabin Lake (Embarrass Mine) are also not anticipated due to its distance from the Project area (0.88 miles southeast).

Wildlife Resources and Habitat

Wildlife and their habitats will be affected by activities related to trail development and usage. The types of environmental effects potentially generated from the development of the Project include limited removal of understory vegetation along the trail route; accidental introduction of invasive species; and disturbance and alteration of use patterns of wildlife species, especially avoidance of the trail network by those species that are sensitive to human intrusion.

Some degree of understory habitat fragmentation will occur, but overstory habitat integrity should remain with little or no Project-related change in canopy coverage. Construction- and maintenance-related effects will be temporary, while species sensitive to human intrusion may show long-term responses, such as abandonment of preferred foraging or nesting areas. Disturbance that alters behaviors within a local population, which then results in displacement effects, may ultimately affect the health and status of some local populations, including local reductions. Species predisposed to use constructed trails as part of their life histories, such as white-tailed deer, could benefit from the trails. No regional consequences are anticipated.

Vegetation

Trail construction should not appreciably affect the dominant overstory vegetation and adjacent subcanopy because a Project goal is to minimize new canopy openings. The ground-layer vegetation will typically remain intact except for the six-foot-wide trail corridor itself. Over time, the grasses will be the type of vegetation most likely to survive in the managed trail corridor, since they are the most tolerant of trampling. Existing closed canopy areas will likely remain so before, during, and after construction because minimal tree removal will be necessary for many parts of the site due to previous clearcut harvesting and thinning activities. To the degree any open canopy habitats persist as a function of ongoing trail management, the corridors can result in locally high richness and diversity throughout the breadth of the clearings.

Floating Marsh Marigold

Habitat for this species is located within the Project area associated with Wynne Creek. The trail will cross the creek upstream from a previously recorded floating marsh marigold population. There is potential for the species to be impacted by the construction of the boardwalk due to potential sedimentation that could occur from the work. According to the DNR Rare Species Guide, floating marsh marigold is sensitive to habitat disturbances, particularly alterations of naturally-occurring water level fluctuations, herbicides nutrient enrichment, sedimentation, and non-native species invasion.

Colonial Waterbird Nesting Area

The colonial waterbird nesting area, which is located just northeast of the Project area, was last observed in 1991 and is primarily composed of blue heron (*Ardea herodias*). Construction activities could result in temporary noise disturbance effects to birds inhabiting this area.

Bald Eagle

Suitable habitat for the bald eagle is present within the vicinity of the Project area; therefore, construction activities could produce physical, visual, and noise disturbance effects to bald eagles. This is particularly relevant during the nesting season from February 15 to August 15 when eagles are most sensitive to human disturbance.

Northern Long-Eared Bats

Potential summer roosting and foraging habitat for the federally threatened Northern Long-Eared bat may be present within the Project area. Based on guidance provided by the USFWS, Northern Long-Eared bat habitat can be classified as trees measuring at least 3 inches in diameter with peeling bark or crevices. According to the DNR, the nearest hibernacula is approximately 22.3 miles northeast from the Project area and no known maternity roost trees have been identified within the vicinity of the Project area (DNR 2018). Therefore, no prohibited take would occur under the final 4 (d) rule published by USFWS. In general, any Project-related removal of large trees with suitable bark, cavities, or degree of decay could diminish available roosting and rearing habitat. Tree removal during the summer months could dislocate and directly affect nursing females with pups.

Gray Wolf

The Project occurs within or near suitable habitat for the gray wolf. This species typically occupies forested areas which are present throughout the Project area. The gray wolf prefers den sites in upland areas that offer protection from the weather and human

disturbance. The Project is not likely to affect the gray wolf adversely due to the long-ranging roaming nature of the species and the predisposition to avoid human disturbance. The disturbance from the Project will be temporary and will result in minimal changes to the landscape that should not affect these species.

Canada Lynx

The Project area is located within designated critical habitat for the Canada lynx which is made up of large tracks of boreal forest. The Project will require the clearing of vegetation within the three-foot-wide corridor along proposed trail alignment. It is not likely the species will be directly impacted by the Project as the lynx is a mobile species that tends to avoid human activities. It is likely the species will continue to use the Project area once construction is completed as the landscape will experience minimal change as a result of the Project. The disturbance from the Project will be temporary and will result in minimal changes to the landscape that should not affect these species.

Piping Plover

The Project area is not located within any large river systems that could be utilized as nesting locations for the Piping plover. The Project area has been disturbed from previous mining activity, and no shoreland is located within the Project area.

Invasive Species

Project-related construction and ongoing visitor use can provide opportunities for the introduction and/or spread of invasive plant species. Invasive species can adversely affect wildlife habitat and reduce biodiversity, the latter due to invasive species outcompeting native plants. Soil disturbance due to construction, unmanaged trail development, or trail use may provide conditions suitable for invasive plant species to be introduced to the Project area by animals, birds and wind, operator clothing, or on equipment, trucks, or bicycles from offsite infested areas. Materials, such as gravel, could provide seedstock for the introduction of invasive plant species to the Project area. The site has not been field surveyed for the presence of invasive species.

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

Wildlife Resources

There are measures available to minimize operational impacts to wildlife which include retaining vegetative communities and associated habitat to the extent practicable, controlling the potential introduction and spread of invasive plant species, maintaining the

minimum corridor width to six feet in meeting Project objectives, and limiting adverse effects to adjacent vegetation. Application of soil erosion and sedimentation BMPs can also reduce potential adverse effects on wildlife habitat.

Floating Marsh Marigold

Potential impacts to the floating marsh marigold will be mitigated by limiting the level of disturbance to Wynne Creek and through the use of BMPs. Impacts to the stream will be limited by the construction of a boardwalk as opposed to larger impoundment structures. The boardwalk would have minimal impacts to the stream hydrology and would allow the stream to flow unrestricted. Sedimentation will be avoided through the implementation of erosion control measures during construction, such as floating turbidity curtains.

Bald Eagle

The principal means to avoid impacts to nesting bald eagles is to follow the National Bald Eagle Management Guidelines. Specifically, work cannot occur within 660 feet of an occupied nesting during the nesting season, which occurs from approximately February 15 to August 15 in northern Minnesota. Surveys to determine the presence of active nests will be conducted prior to tree clearing and/or construction as outlined in the Operational Agreement.

Northern Long-Eared Bat

Tree clearing, if required, will be conducted in accordance with the final 4 (d) rule published by USFWS to prevent prohibited take of the northern long-eared bat occurs. Specifically, no trees will be cleared within 150 feet of a known, occupied roost tree from June 1 to July 31, and no trees will be cleared within 0.25 miles of a known hibernaculum at any time. Data collection of known, occupied roost trees and hibernacula is updated by the DNR and USFWS regularly, and data will be reviewed upon DNR and USFWS data releases, which is expected to occur in April of every year.

Gray Wolf and Canada Lynx

There are Project measures available to minimize impacts to any gray wolf or Canada lynx that may use the Project area. These measures include controlling the potential introduction and spread of invasive plant species, maintaining the minimum corridor width to meet Project objectives, and limiting impacts to adjacent vegetation. The Project proposer commits to avoid denning sites if found.

Invasive Species

To reduce the risk of introducing or spreading invasive species in the Project area, the following measures will be followed:

- equipment brought on-site will be cleaned of soil and debris prior to use during construction
- soil disturbance will be minimized to the extent practicable
- the import of new materials will be minimized by reusing onsite materials
- construction crews will utilize staging areas that are free of invasive species
- informational kiosks will be installed at the trailhead to increase public awareness of the threat that invasive species pose to natural ecosystem and measures they can take to minimize their spread
- bike washing station and boot cleaning brushes will be installed at the trailhead for the public use

Soil erosion and sedimentation BMPs will be installed to prevent impacts to plant and fish communities outside of the directly impacted areas. BMPs may include but are not limited to sustainable trail design (refer to Section 11.b.ii), erosion control blankets, biologs, vegetation buffers, mulch, and silt fencing. Areas with soil disturbance beyond the average 6-foot wide trail corridor, such as the back side of gravity trail embankments, will be seeded with a DNR recommended native seed mix in order to minimize the spread and/or establishment of invasive species.

No other fish, wildlife, plant communities, or sensitive ecological resources are expected to be impacted, and therefore, no additional measures are planned.

14. Historic Properties

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

A data request was sent to the SHPO to identify known cultural resources within one-mile of the Project area. A total of 25 historical sites were identified within one-mile of the Project area. The majority of the sites were identified southwest of the Project area and

within the City of Biwabik. Of these 25 sites, one site (21SLms) is located within the Project area.

21SLms was identified as the location of the Wine Lake Lookout. According to St. Louis County parcel data, this site is located on a land parcel owned by the State of Minnesota and was designated for use as a ranger station, but there is no evidence that the ranger station or lookout was ever built. The property is located along a previously constructed MTB trail and will not be impacted by the Project. As a result, no impacts to any previously recorded cultural resources is anticipated.

15. Visual

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

There are currently opportunities for scenic views and vistas throughout Giants Ridge. As part of this Project, turn-outs and other rest areas would be incorporated into the trail design to allow trail users to safely enjoy scenic views and vistas.

Construction will occur during daylight hours and will introduce temporary lighting at a small, localized scale only if needed. Permanent lighting infrastructure already exists on the ski hill and around the Chalet and parking areas. No additional permanent lighting is proposed as part of the Project.

The Project is not expected to generate any adverse visual effects on or near the Project area.

16. Air

a. Stationary source emissions – Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Not applicable; the Project will not introduce any stationary emission sources.

b. Vehicle emissions – Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

The Project is not anticipated to generate a substantial increase in traffic-related air emissions during construction, operation, and future maintenance activities. A small increase in vehicle-related air emissions may be expected as a result of increased visitation by recreation users.

The Project is not expected to cause any substantial decrease in air quality.

c. Construction traffic related to the delivery of project materials and the hauling off-site of excess soil would temporarily increase traffic during construction. To minimize vehicle emissions. Dust and odors – Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

In addition to hand tools, portions of the trail construction will be performed using small diesel- or gasoline-powered mechanized equipment such as mini-excavators, mini-skid steers, powered wheelbarrows, chainsaws, and brush-cutters. These tools will emit exhaust fumes when in operation. The trail construction will require soil work that could result in minimal odors and dust.

The proposed trailhead will require minimal new infrastructure, and therefore, only minor construction activities are anticipated. Any dust produced from trailhead construction activities will be controlled with water or a chemical dust suppressant if necessary.

There are no known sensitive receptors near the Project.

17. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Existing noise conditions in the Project area consist of natural sounds typical of forested land, vehicle traffic, and motorized recreational equipment.

During construction activities, small diesel- or gasoline-powered mechanized equipment will temporarily generate noise while operating during daylight hours, which are defined under State noise rules as those hours between 7 AM and 10 PM. Noise levels can be decreased through noise-reduction mufflers on construction and other maintenance equipment. The limited trailhead construction activities will likely produce minor and temporary noise during daylight hours.

Residential homes are located 0.02 miles from areas of the Project. Ongoing trail maintenance activities are expected to be limited to daytime hours. Maintenance activities will primarily utilize hand tools and/or small equipment such as snowmobiles, chainsaws, brush cutters, or similar. Noise produced during periodic trail maintenance is not expected to be distinguishable from other existing maintenance activities in the surrounding areas.

No substantial change in long-term noise impacts is expected during operation of the Project and quality of life is also not expected to change.

18. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

The Project will utilize existing paved parking lots at Giant Ridge. A total of 760 parking spaces will be available to trail users (Figure 2). No additional parking spaces are proposed for the Project.

The Project is initially expected to generate 5,000 to 10,000 non-local trips per year. With local and non-local visitors, the Project is expected to generate approximately 110 trips per day with a maximum peak hour traffic of seven trips per hour projected on Saturday afternoons. The majority of these trips will likely occur during the spring, summer, and fall months. The traffic estimates are based on an extrapolation from use levels at the Cuyuna Country State Recreation Area, which has a similarly sized trail system located approximately 105 miles to the southwest from the Project.

Bicyclists and hikers will be able to access the Project and the proposed trailhead from the Mesabi Trail, which is located along the south boundary of the Project area (Figure 2). No public transit will be available.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.

If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance.

The minor increase in traffic generated by the Project is not anticipated to affect traffic congestion on adjacent roads or the regional transportation system. Vehicle traffic accessing the Project will travel on County Highway 138 (Figure 2), which has an average annual daily traffic (AADT) of up to 4,300 vehicles (provided by the Minnesota Department of Transportation). The AADT estimate (in 2015) is 830 vehicles for the segment of County Highway 138 that visitors will use to access the Project. After completion of the Project, winter visitation at Giants Ridge is anticipated to continue to exceed summer visitation. Existing transportation infrastructure, which accommodates the existing winter traffic, is anticipated to be more than sufficient for the lower summer traffic.

Due to the proposed modest increase in traffic due to the Project and the available capacity of County Highway 138, project-related traffic is not expected to affect local roads or the regional transportation system adversely.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

The Project will use an existing under-utilized parking lot and amenity infrastructure to avoid the need for expanded transportation infrastructure.

19. Cumulative Potential Effects

(Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

As outlined in MNR 4410.1700, subp. 7, item B, the RGU must consider the significance of the Project's cumulative effects, including "whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect…" To analyze the Project for significant cumulative effects, the impacts of the Project are combined with past, present, and foreseeable future projects within the affected area of the Project. Specifically, resources impacted by the Project are assessed for spatial and temporal overlap with similar effects from past, present, and foreseeable future projects.

The Project's primary environmental effects will occur during the Project's construction phase (Table 19-1). Minor environmental effects from construction include soils, vegetation, visual resources, and noise impacts as discussed in the applicable sections above. These impacts will be restricted to the trail corridor in the Project site and a limited adjacent area. Potential impacts identified in Table 19-1 will be mitigated through various management techniques.

Table 19-1 Cumulative Environmental Effects

Impact	Timeframe	Impact Area	Nature	Management Technique
Soils	Short-term, temporary	Trail corridors in Project area	Minor	Temporary BMPs
Vegetation	Permanent	3-foot wide corridor along the trail	Minor	Avoidance and minimization
Visual	Permanent	Project area	Minor	Limited to daytime hours
Noise	Short-term, temporary	Project area	Minor	Limited to daytime hours

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Future infrastructure development within the vicinity of the Project area may include the development of hiking/multi-use trails on the mountainside and from the chalet at Giants Ridge to Sabin Lake. Within the Project area, a future project may include an access road for ski lift maintenance.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The Project will create up to 35.2 miles of trails (Table 6-1), which is less than one percent of the total Project area. This Project will result in a minor cumulative effect of overall increased pervious (trail) and impervious surfaces. As the cumulative potential effects are minor in nature, will be managed through appropriate mitigation measures, and will be limited to the immediate Project area, no significant environmental effects are anticipated as a result of the Project.

20. Other Potential Environmental Effects

If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

The Project is not anticipated to cause any additional environmental effects beyond those addressed above.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.

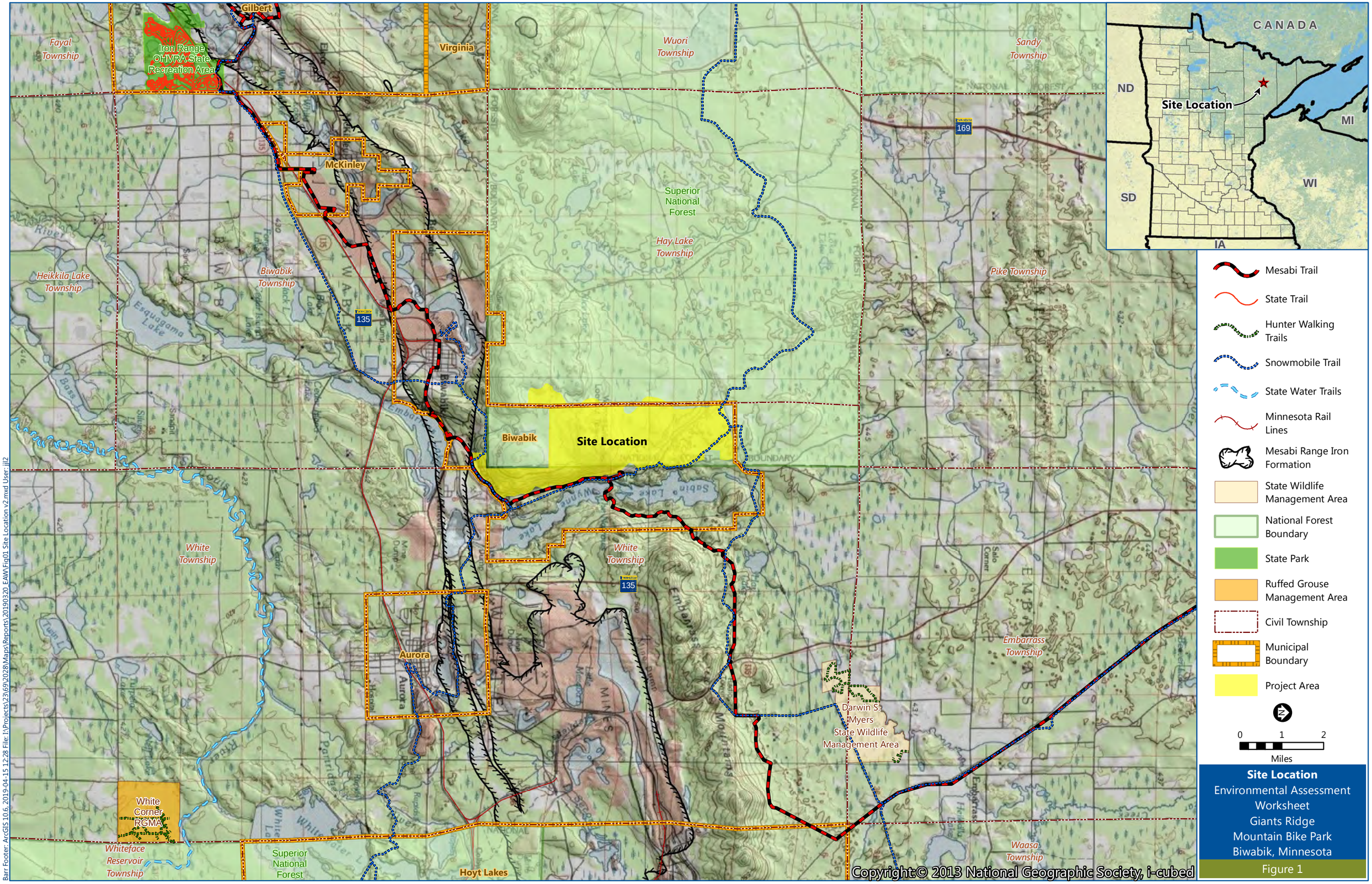
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature: _____ **Date:** 4-30-2019

Mark Phillips

Title: Commissioner
Iron Range Resources & Rehabilitation

Figures



Site Location
Environmental Assessment Worksheet
Giants Ridge Mountain Bike Park
Biwabik, Minnesota

Figure 1

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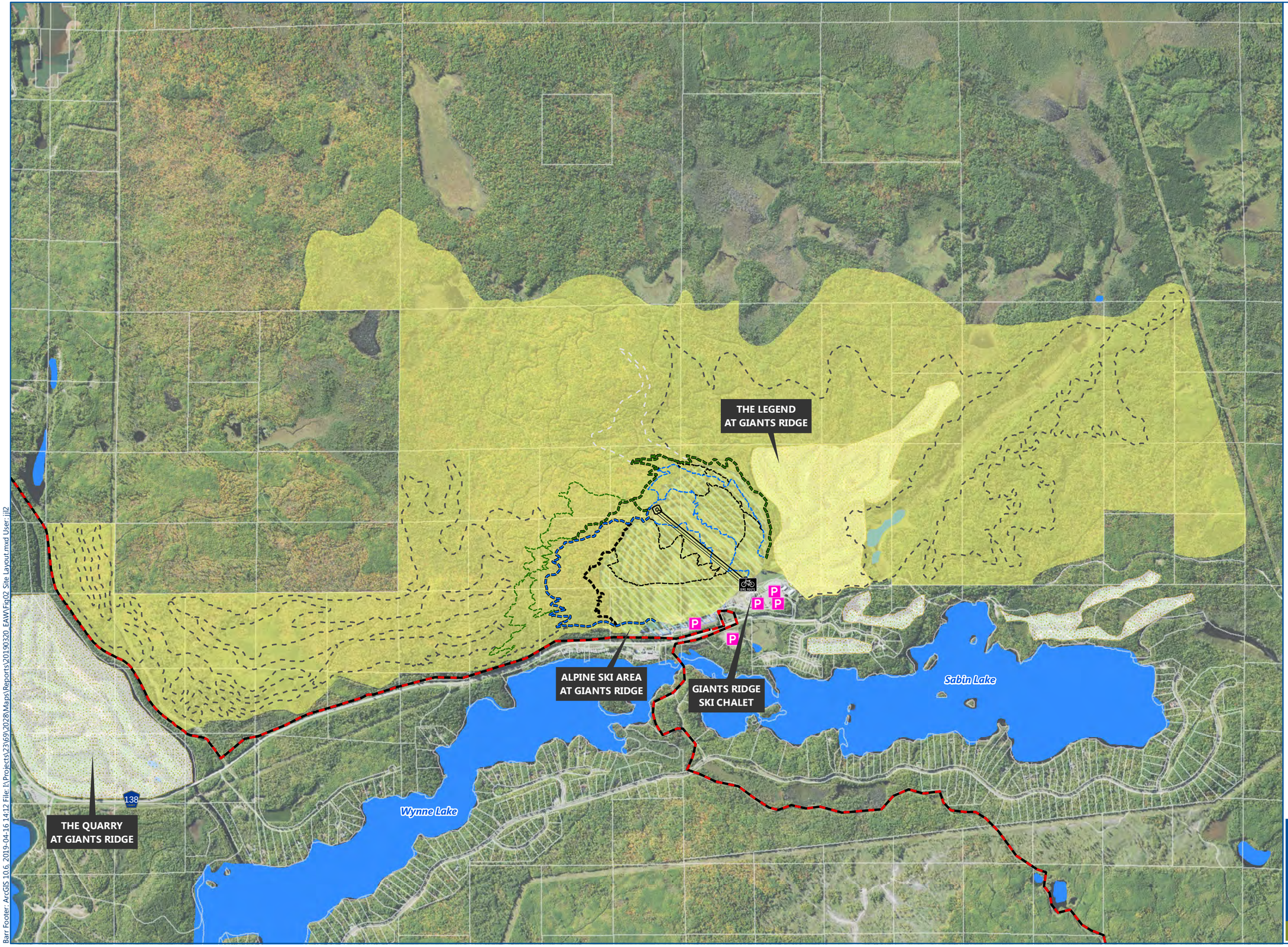

Trail Head
Parking
Waterbody
Alpine Ski Area
Golf Course
Property Boundary
Project Area
Mesabi Trail
Sarajevo Express Chairlift

Completed MTB Trails by Difficulty

More Difficult
Difficult
Easy

Proposed MTB Trails by Difficulty

More Difficult
Difficult
Easy

Other Proposed Trails

Gravity Run Trail
Cross Country MTB Trail

0 1,250 2,500
Feet

Image Source: FSA (2017)

Site Layout
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota

Figure 2

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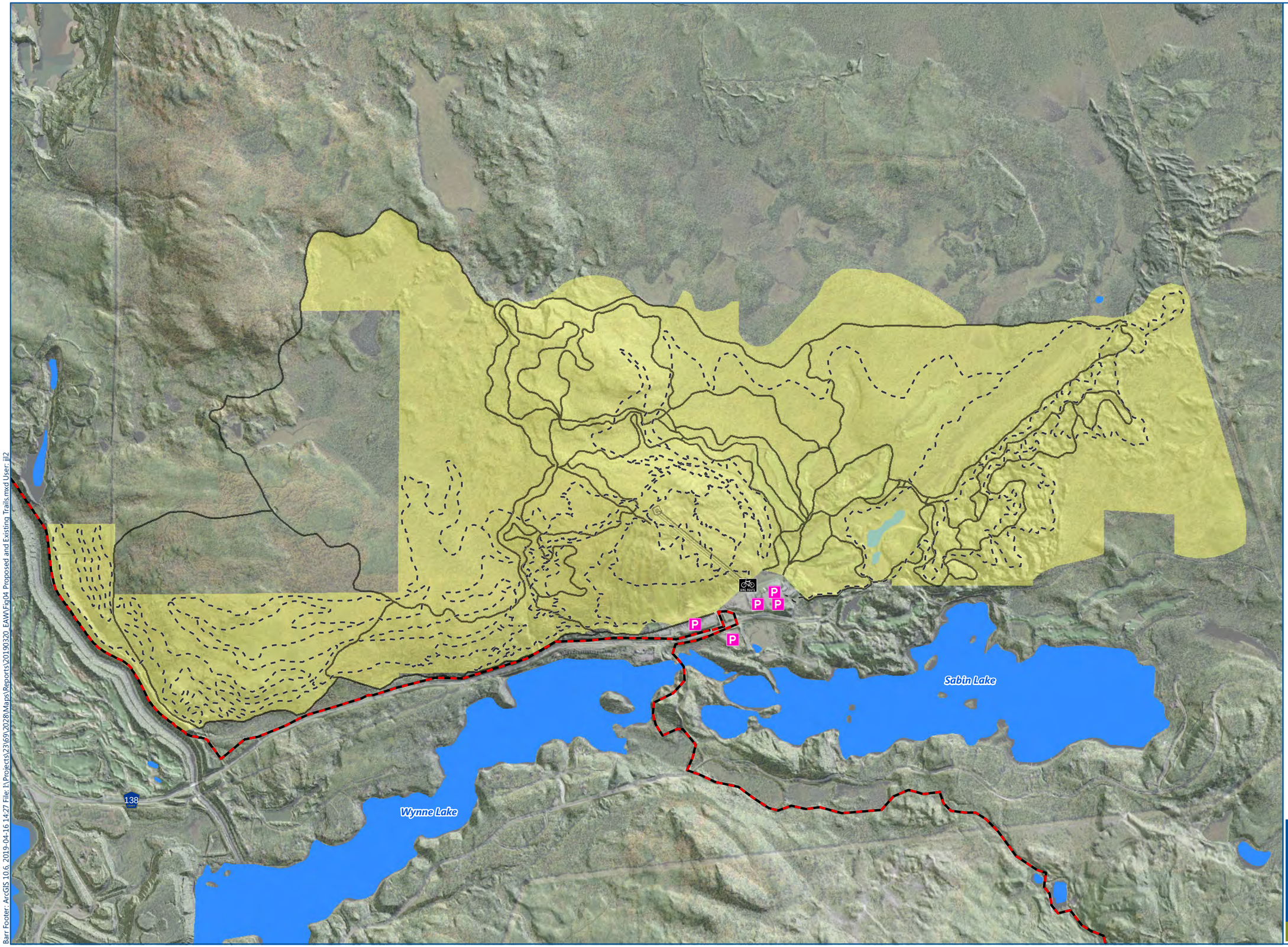
Land Cover
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota

Figure 3



Trail Head
Parking
Waterbody
Property Boundary
Project Area
Mesabi Trail
Sarajevo Express Chairlift
Proposed Trail Network
Existing Trail Network

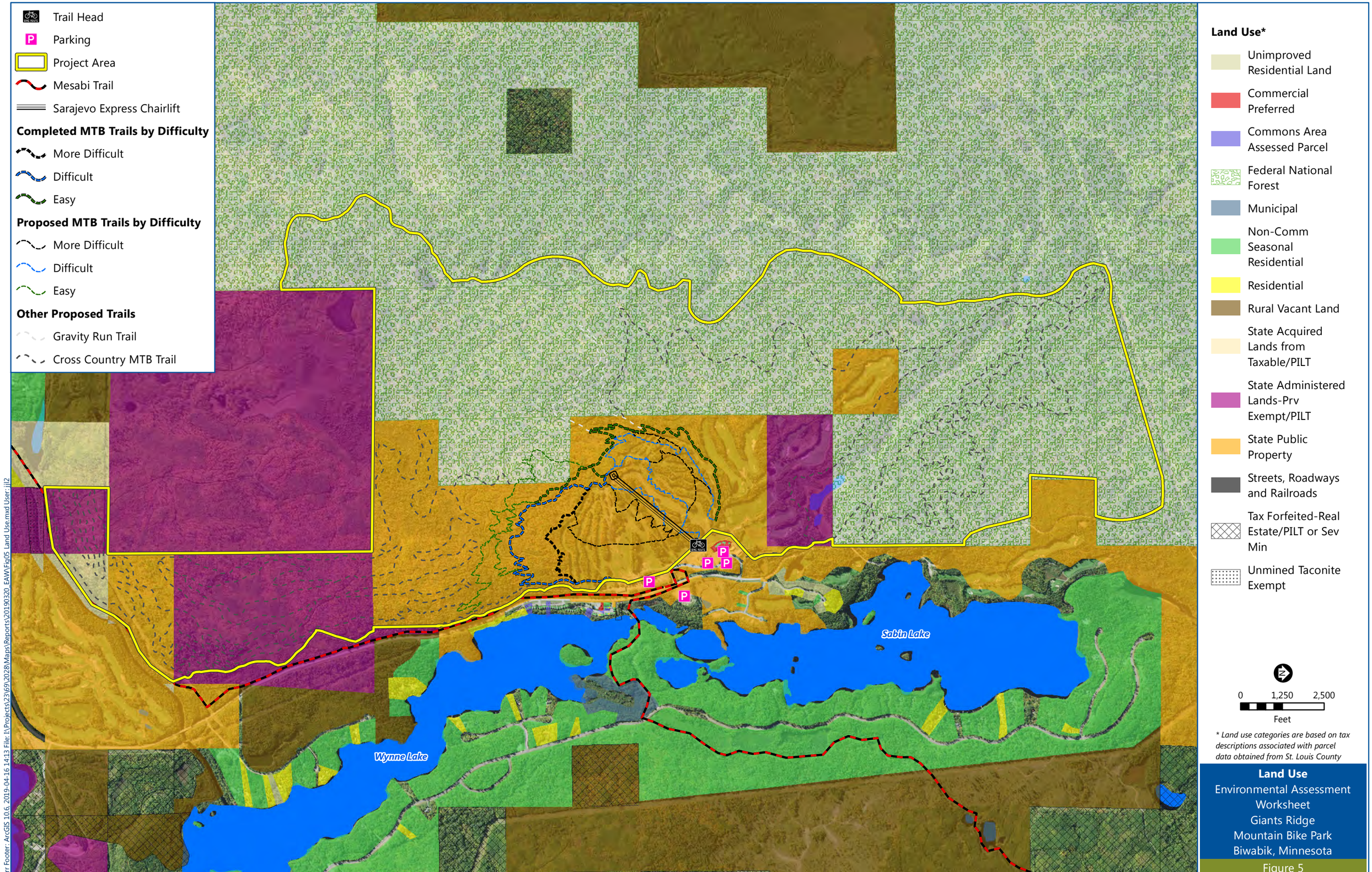
0 1,250 2,500
Feet

Image Source: FSA (2017)

Proposed and Existing Trails
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota

Figure 4

Barr Footer: ArcGIS 10.6, 2019-04-16 14:27 File: I:\Projects\23\69\2028\Maps\Reports\20190320_EAW\Fig04 Proposed and Existing Trails.mxd User: jjl2


Trail Head
Parking
Project Area
Mesabi Trail
Sarajevo Express Chairlift
Completed MTB Trails by Difficulty
More Difficult
Difficult
Easy
Proposed MTB Trails by Difficulty
More Difficult
Difficult
Easy
Other Proposed Trails
Gravity Run Trail
Cross Country MTB Trail
Sabin Lake
Wynne Lake
Land Use*
Unimproved Residential Land
Commercial Preferred
Commons Area Assessed Parcel
Federal National Forest
Municipal
Non-Comm Seasonal Residential
Residential
Rural Vacant Land
State Acquired Lands from Taxable/PILT
State Administered Lands-Prv Exempt/PILT
State Public Property
Streets, Roadways and Railroads
Tax Forfeited-Real Estate/PILT or Sev Min
Unmined Taconite Exempt
0
1,250
2,500
Feet
* Land use categories are based on tax descriptions associated with parcel data obtained from St. Louis County
Land Use
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota
Figure 5
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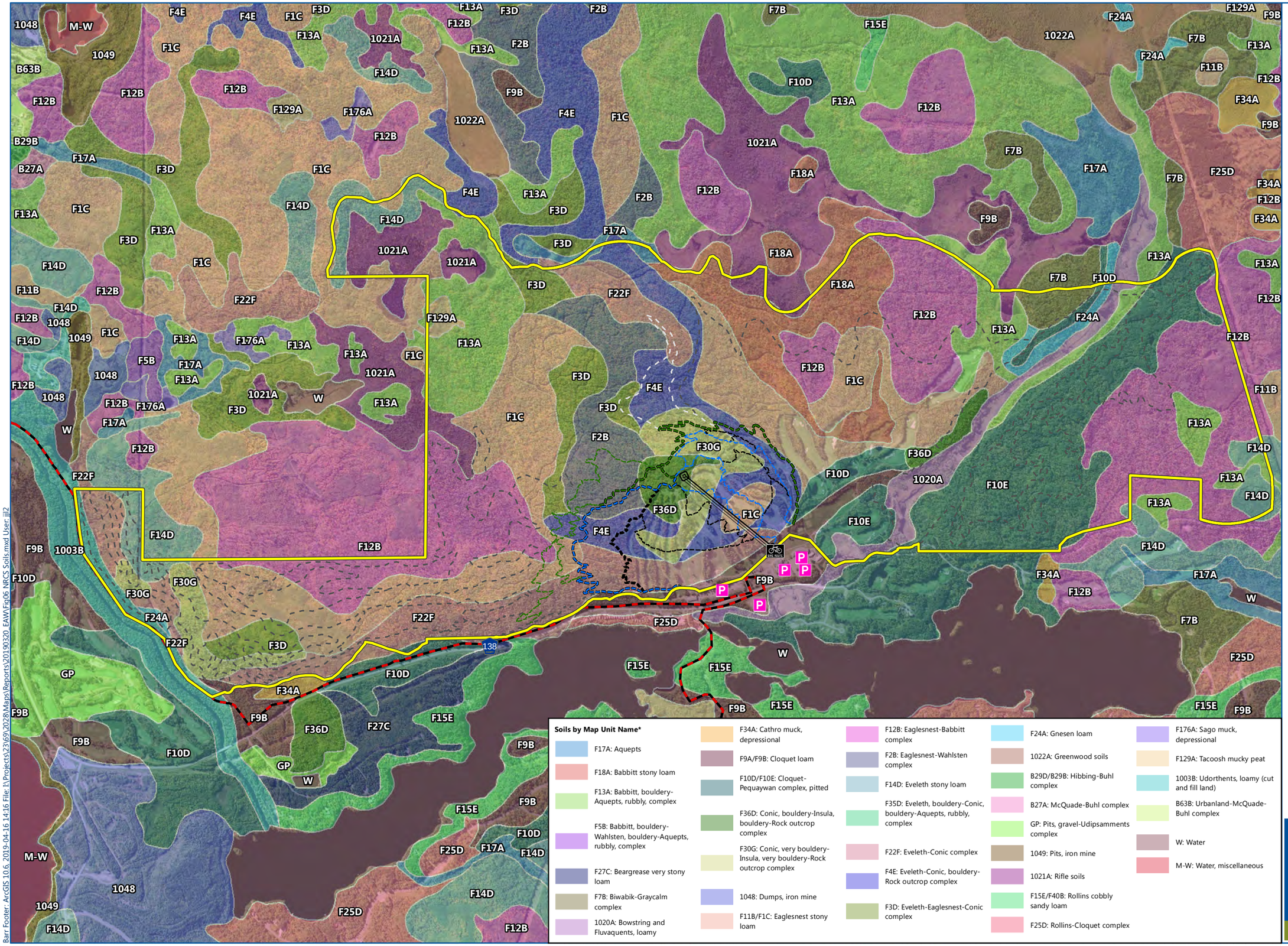

NRCS Soils
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota

Figure 6

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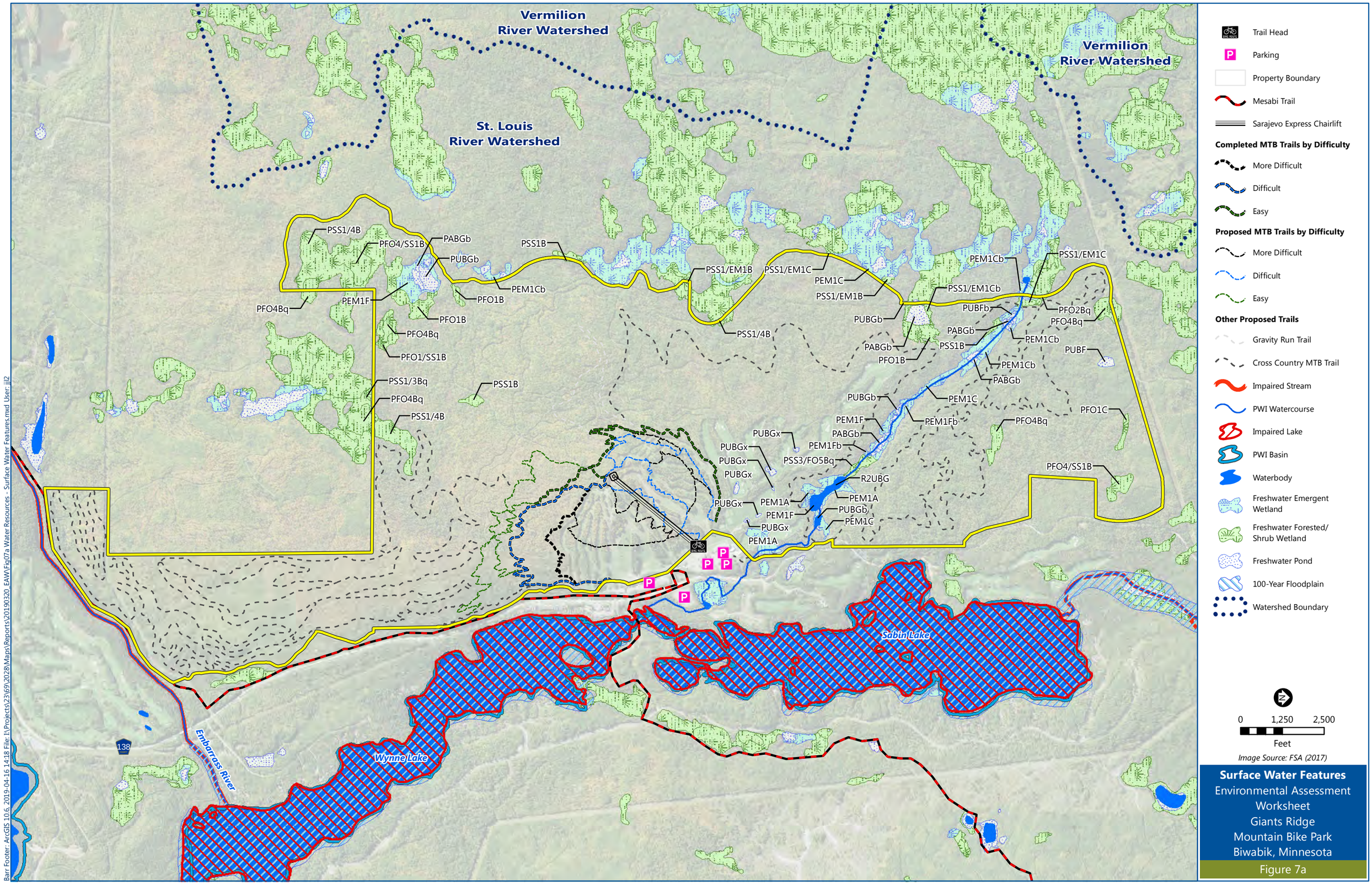

Image Source: FSA (2017)

Surface Water Features
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota

Figure 7a

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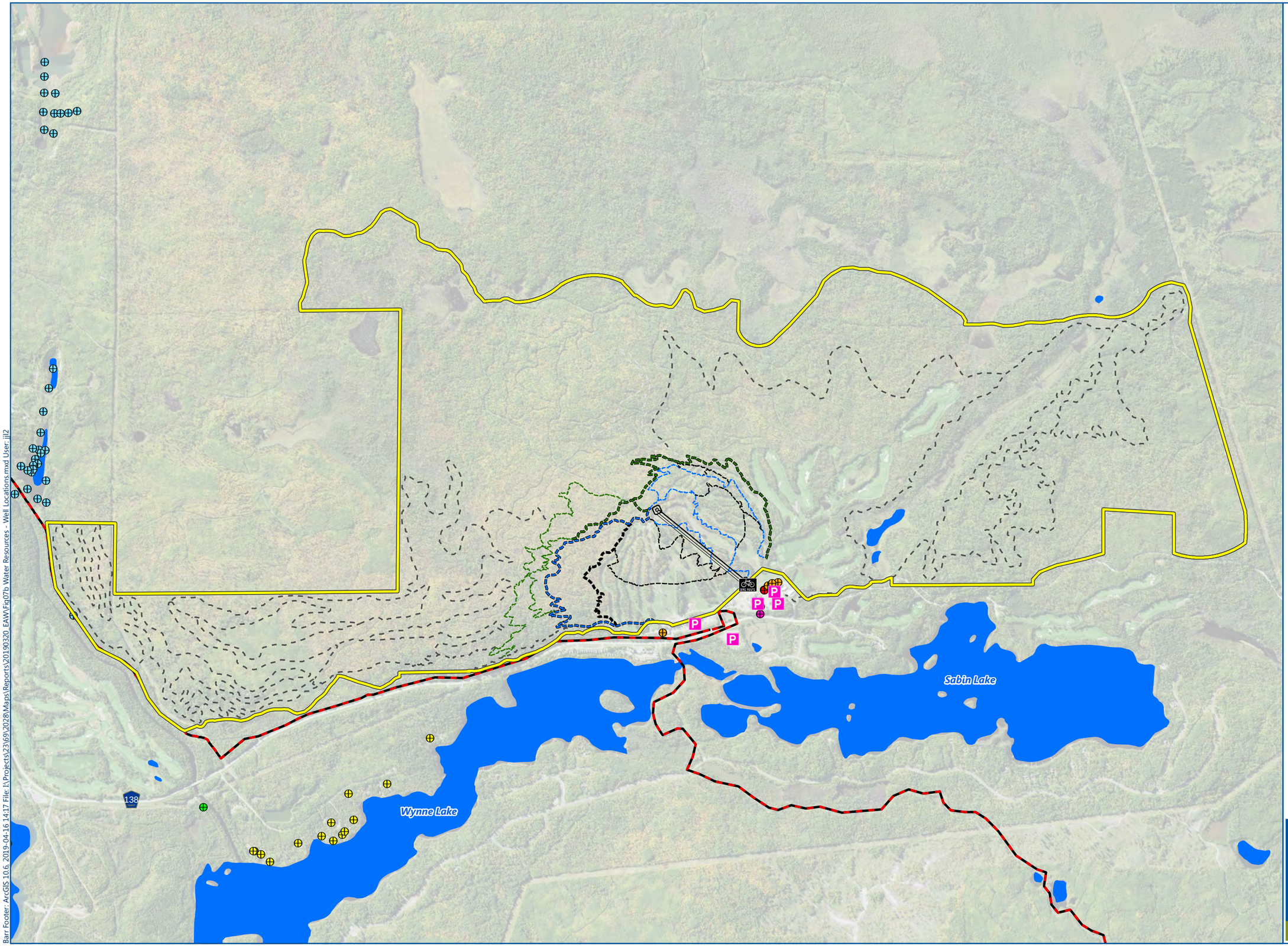

Trail Head
Parking
Waterbody
Property Boundary
Mesabi Trail
Sarajevo Express Chairlift

Completed MTB Trails by Difficulty

More Difficult
Difficult
Easy

Proposed MTB Trails by Difficulty

More Difficult
Difficult
Easy

Other Proposed Trails

Gravity Run Trail
Cross Country MTB Trail

CWI Wells by Use

Domestic
Elevator
Exploration
Industrial
Public Supply/Non-Community
Test Well

0 1,250 2,500
Feet

Image Source: FSA (2017)

Well Locations
Environmental Assessment Worksheet
Giants Ridge
Mountain Bike Park
Biwabik, Minnesota

Figure 7b

Barr Footer: ArcGIS 10.6, 2019-04-16 14:17 File: I:\Projects\23\69\2028\Maps\Reports\20190320_EAW\Fig07b Water Resources - Well Locations.mxd User: jjl2

Appendix A

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