

David Dill/Arrowhead State Trail

Master Plan

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Executive Summary

The David Dill/Arrowhead State Trail is a 125-mile natural surface state trail that connects the Taconite State Trail (including the David Dill/Taconite) just west of Tower, MN to the Blue Ox Trail just south of International Falls, MN. The trail was legislatively authorized in 1975, a master plan was completed in 1980 (amended in 1983 after the trail route was identified) and the trail was constructed soon after. The DNR routinely reviews and updates master plans for state trails, parks and recreation area to accommodate for new recreation trends and new science. This master plan is the result of a review of the 1980 David Dill/Arrowhead State Trail master plan. Once approved, the new master plan will be used to guide the future use, maintenance, and development of the trail.

Ownership and Management Considerations

Much Most of the David Dill/Arrowhead State Trail lies on land that is managed by a public agency such as the DNR, St. Louis and Koochiching Counties and the US Forest Service. Sections of the trail also cross private lands, which include industrial and non-industrial uses. Of the DNR-managed land, the majority is managed by the Division of Forestry. This includes lands within the School Trust, which provides revenue for Minnesota's public schools. The DNR leases the School Trust land the trail crosses. The trail also crosses DNR parcels managed by the Parks and Trails Division and the Ecological and Water Resources Division.

Recommended Uses

The David Dill/Arrowhead State Trail is a multi-use, multi-season trail. However, not all allowable uses can be accommodated on all sections of the trail. It is also important to recognize that even with multi-use trails, not all uses are compatible on the same alignment at the same time, or during the same season. The DNR has developed two seasons of use for the David Dill/Arrowhead State Trail: winter season and summer season.

Winter season: Snowmobiling, cross-country skiing, skijoring, dogsledding/mushing (currently by special use only) and fat-tire biking.

Summer season: Off-highway vehicles, bicycling (including fat tire biking), horseback riding, hiking/walking/jogging/running, hunting, environmental education/interpretation and fishing access.

Use considerations and management

Not all uses will be feasible along the entire corridor of the trail. For planning purposes, the DNR divided the trail into seven planning section. Each section was then evaluated for the addition of summer motorized use based upon social and resource feasibility. The planning sections include:

- Section 1: Taconite State Trail to Cook GIA Trail-Low feasibility;
- Section 2: Cook GIA Trail to Landing GIA Spur Trail-Low to moderate feasibility;
- Section 3: Landing GIA Spur Trail to Pelican River/CR 180-Moderate feasibility;

- Section 4: Pelican River/CR 180 to Arrowhead Link Trail-Low feasibility;
- Section 5: Arrowhead Link Trail to Bearscratch Road-Low to moderate feasibility;
- Section 6: Bearscratch Road to Sheep Ranch Road-Moderate feasibility;
- Section 7: Sheep Ranch Road to Gamma (Kabetogama) Road-Moderate feasibility; and
- Section 8: Gamma (Kabetogama) Road to Blue Ox Trail-Low feasibility.

This plan also guides trail management such as construction and maintenance. General trail management objectives (TMOs) were developed to provide consistent trail management from year to year. Finally, this plan discusses ecological and cultural aspects of trail management.

Background and Planning History

The David Dill/Arrowhead State Trail was first authorized by the Minnesota Legislature in 1975 as part of the Arrowhead Regional Trail. The natural surface trail traverses 125 miles of northern Minnesota through rolling hills, mixed pine and hardwood forests and flatter lowland sections. Enormous boulders and exposed rock can be found along the hillier sections of the trail. The trail begins by intersecting the Taconite State Trail just west of Tower before moving northward through the Pelican Lake area and ending at an intersection with the Blue Ox Trail just south of International Falls.

The Department of Natural Resources (DNR) completed construction on the David Dill/Arrowhead State Trail in the mid-1980s. Since then, multiple trails, including snowmobile, off-highway vehicle (OHV) and non-motorized, have been constructed in the area of the state trail, many utilizing the state trail to make important connection to other trails, amenities and features. Today, the trail is managed by the DNR through the Parks and Trails Division.

The trail is part of a larger system of State Trails known as the Arrowhead Region Trail System (*Minnesota Statute 85.015, subdivision. 13*). Along with the David Dill/Arrowhead, this system includes the Taconite State Trail (including the David Dill/Taconite), The David Dill/Tomahawk Trail, the C.J. Ramstad/Northshore State Trail and the Mathew Lourey State Trail.

In 2016, the Minnesota Legislature established the David Dill Memorial Trail in northeastern Minnesota. David Dill was an elected member of the Minnesota House of Representatives from 2002 until his death in 2015. Dill represented District 3A, which includes Cook, Lake, Koochiching, and St. Louis counties. He was a champion of the outdoors; whose legislative efforts focused on mining, outdoor recreation, agriculture finance, the environment, natural resources, and economic development. The David Dill Memorial Trail follows state and unit trails through his former district, including the entire David Dill/Arrowhead State Trail.

Planning history

As a state trail, the David Dill/Arrowhead is part of the outdoor recreation system in Minnesota. The outdoor recreation system was formed by the 1975 passage of the Outdoor Recreation Act, or ORA, (*Minnesota Statute 86A*) and classified 11 components, or units, of outdoor recreation. The ORA also requires a management plan for each unit classified under it prior to any construction except routine maintenance. This master plan will serve as the management plan for the trail. The plan will act as a guide for trail management. Nothing in this plan supersedes existing laws, rules or land use agreements.

The Outdoor Recreation Act includes state parks, state recreation areas, state trails, state scientific and natural areas, state wilderness areas, state forests, state wildlife management areas and state water-access sites.

Previous David Dill/Arrowhead State Trail planning

The DNR completed a master plan for the trail in December, 1980 (then known as the Tower to International Falls Trail) and updated the plan in 1983 reflecting selected alignments. The original master plan identified the trail to be managed primarily for snowmobiling, but other uses such as horseback riding, bicycling, hiking, hunting/fishing access and ski touring were also identified as managed uses if future demand increases. Although this existing plan satisfies the requirements of the ORA, Parks and Trails routinely reviews and updates management and master plans for Minnesota's state parks and state trails to adapt to new and emerging recreational trends, incorporate reliable and up-to-date resource information not available when the trail was first developed and respond to visitors' desires and needs.

Parks and Trails system plan

In 2015, Parks and Trails developed a system plan to help manage its facilities throughout the state. State trails were classified into one of three classifications based upon several factors including visitation, variety of uses, connections to communities/other recreation, the quality of the experience and partnerships. The three classifications include Destination, Core: Division-led and Core: Partner-led. The David Dill/Arrowhead State Trail was classified as a "Core: Division-led" trail. This means the trail will be well maintained, provide a safe and enjoyable visitor experience with basic services and is maintained by the Parks and Trails Division. The 2015 plan was updated in 2019 to provide additional operational guidance for staff. In the 2019 update, the David Dill/Arrowhead was identified to be a primary trail corridor. A primary trail corridor provides a high priority for acquisition & development, rehabilitation, operations and maintenance, trailhead opportunities and orientation & interpretation while ensuring all state trails remain safe and natural resources are protected. The trail is still maintained by the DNR Parks and Trails Division, although partners may assist with maintenance along certain sections of the trail.

Planning process

Parks and Trails uses a public approach to develop master plans. Local stakeholders approached Parks and Trails about a year prior to the beginning of the master plan process to discuss the need for a review of the David Dill/Arrowhead State Trail. Parks and Trails held a public scoping meeting on September 4, 2019 along the trail in Cook, MN. Approximately 25 citizens attended the meeting representing recreational interests such as ATV riding, hunting, snowmobiling and non-motorized winter sports. During a 30-day public comment period (August 22, 2019-September 18, 2019), Parks and Trails received 27 comments from a variety of recreationist such as ATV riders, hunters, horseback riders and snowmobilers.

Comments received during the scoping process expressed a wide range of thoughts and ideas. ATV riders and horseback riders want more access to the trail. ATV riders would like to use the trail, either in whole or in part for access to other trail systems and provide a recreational experience. Equestrians would like treadway improvements for summer use as well as trailhead improvements for easier horse access. Snowmobilers would like to see no changes to the winter use of the trail, and hunters would like the sections of the trail that are currently co-managed as hunter walking trails to remain non-motorized. During the planning process, the DNR must carefully review the comments and accommodate while ensuring environmental sustainability and minimal conflicts between user groups. Figure 1 illustrates the trail master planning process.

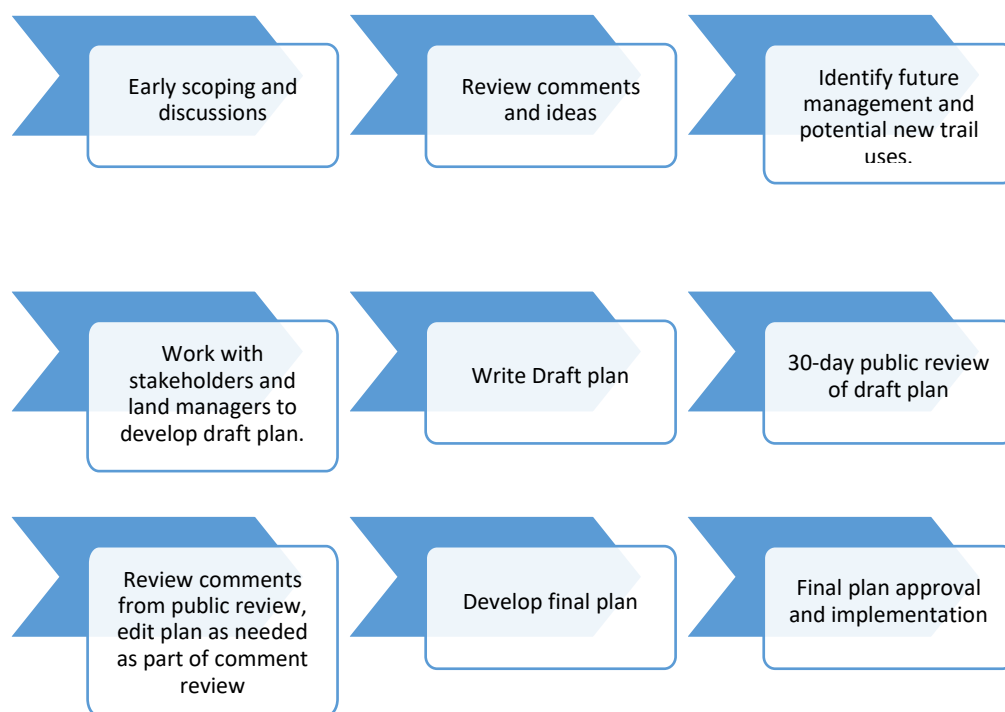


Figure 1: Trail master plan process.

What is a state trail?

A state trail is a trail authorized by the Minnesota Legislature and governed under the ORA. Minnesota Statute 86A.05, *subdivision 4* defines a state trails as:

(a) A state trail shall be established to provide a recreational travel route which connects units of the outdoor recreation system or the national trail system, provides access to or passage through other areas which have significant scenic, historic, scientific, or recreational qualities or reestablishes or permits travel along an historically prominent travel route or which provides commuter transportation.

(b) No unit shall be authorized as a state trail unless its proposed location substantially satisfies the following criteria:

(1) permits travel in an appropriate manner along a route which provides at least one of the following recreational opportunities:

(i) travel along a route which connects areas or points of natural, scientific, cultural, and historic interest;

(ii) travel through an area which possesses outstanding scenic beauty;

(iii) travel over a route designed to enhance and utilize the unique qualities of a particular manner of travel in harmony with the natural environment;

(iv) travel along a route which is historically significant as a route of migration, commerce, or communication;

(v) travel between units of the state outdoor recreation system or the national trail system; and

(2) utilizes, to the greatest extent possible consistent with the purposes of this subdivision, public lands, rights-of-way, and the like; and

(3) provides maximum potential for the appreciation, conservation, and enjoyment of significant scenic, historical, natural, or cultural qualities of the areas through which the trail may pass; and

(4) takes into consideration predicted public demand and future use.

(c) State trails shall be administered by the commissioners of transportation or natural resources as specified by law in a manner which is consistent with the purposes of this subdivision. State trails established by the commissioner of natural resources shall be managed to provide a travel route through an area with a minimum disturbance of the natural environment and recognizing other multiple land use activities. Trail markers shall be limited to those providing safety information and interpretation.

(d) Facilities for the rest and comfort of trail users shall be provided primarily within units of the outdoor recreation system through which the trail passes. When additional facilities are required to insure the rest and comfort of the traveler, the managing agency may develop such facilities along the trail and shall designate the facilities as trail waysides. In addition to the foregoing purpose, trail waysides shall be developed for the preservation and interpretation of the trail's natural, historic, or scenic values, and may include facilities for primitive camping, picnicking, sanitation, and parking for access to the trail.

It is the responsibility of the Parks and Trails Division to develop and manage the state trails administered by the DNR. Parks and Trails manages over 1,300 miles of state trails ranging from smooth asphalt trails to natural surface trails. Many other trails have been designated as state trails, but have yet to be developed. Figure 2 identifies current state trails throughout Minnesota.

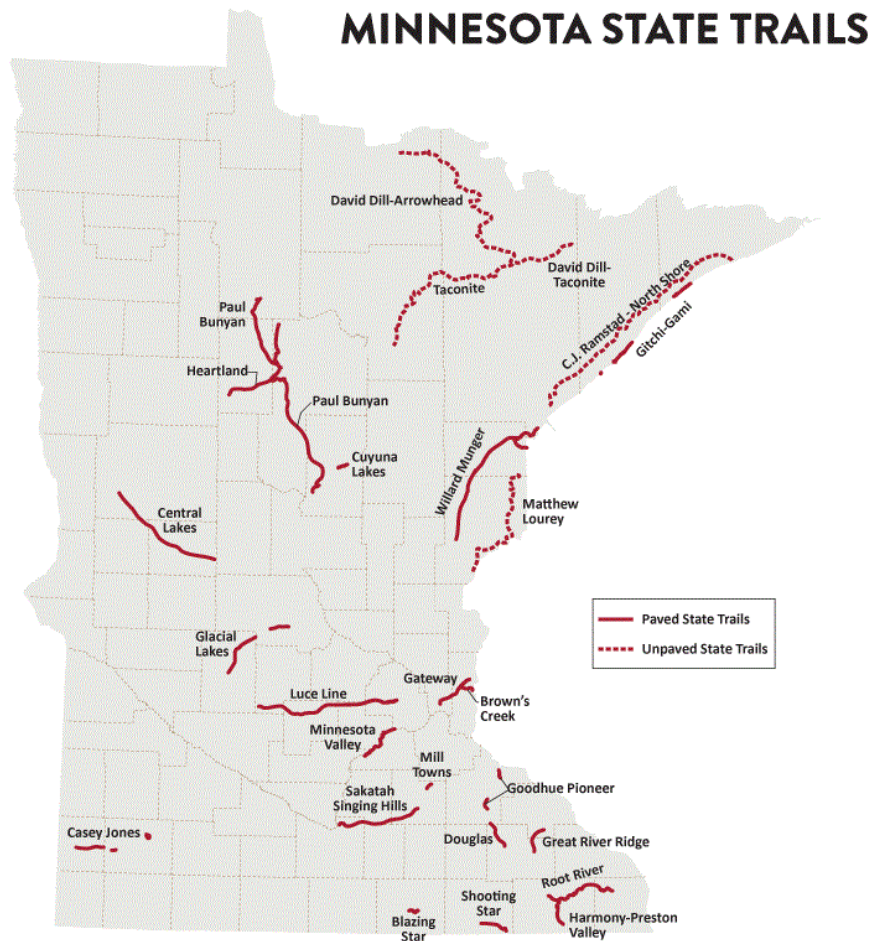


Figure 2: Minnesota State Trails

David Dill/Arrowhead State Trail background

Trail alignment

The alignment for the David Dill/Arrowhead State Trail was identified in the 1983 revision of the 1980 master plan. When identifying the trail alignment, the DNR sought to utilize publicly-owned land to the greatest extent possible. This resulted in over 90% of the trail sitting on publically-owned land. The David Dill/Arrowhead State Trail ranges from 20-30 feet wide, allowing for two-way snowmobile traffic.

Trail clearance is typically 15-20 feet and bridges and culverts are designed to accommodate snowmobile groomers.

Current uses

Snowmobiling is the primary use of the trail and the entire trail is open to snowmobiling. Twenty-Two snowmobile trails intersect the trail along its length. Approximately 69 miles of trail are suitable for summer uses such as horseback riding, mountain biking and hiking. The 1980 master plan identified hunting and fishing access as important uses of the trail. Approximately 6.9 miles of the trail are managed as hunter walking trails, which provide grouse and woodcock hunting opportunities.

Trail/land management

The David Dill/Arrowhead State Trail is managed by the Department of Natural Resources-Parks and Trails Division. Parks and Trails is responsible for trail maintenance, trail clearing and winter grooming for snowmobile use.

While scoping the route for the trail, the DNR utilized public land to the greatest extent possible. This resulted in a vast majority of the trail sitting on land that is publically owned. The Minnesota DNR manages approximately half of the land base for the trail, mostly within the Kabetogama State Forest. Other public land managers include St. Louis County, Koochiching County and the US Forest Service. Table 1 identifies the various land managers along the trail.

Public				Public-School Trust		Private	
County	DNR-FOR	DNR-PAT	USFS	DNR-FOR	DNR-ECO	Industrial	Non-Industrial
41.4 miles	8.6 miles	0.9 miles	16.2 miles	49.8 miles	0.9 miles	4.8 miles	2.9 miles

Table 1: Land managers along the David Dill/Arrowhead State Trail.

On portions of the trail that are not owned by the DNR, the DNR works with the land owner to receive permission to allow the trail to cross their land. These agreements range from verbal, “hand shake” agreements to permanent easements. Many of these agreements also explain what activities are/are not permitted along the state trail corridor in that area. If a new proposed use is not consistent with the current agreement, a new agreement must be accepted prior to allowing the new use. Additionally, if substantial investments in a portion of the trail are proposed, the DNR may pursue a longer-term agreement.

The trail alignment is subject to change at any time based on resource protection, management activities or changes in land owner agreements.

Special management considerations

Aside from the public-private land consideration, there are multiple types of land management considerations along and within the vicinity of the David Dill/Arrowhead State Trail. Each of these management types carry certain limitations on the type of use permitted.

Forest Trail Designations/Areas with Limitations. In 2008, the DNR completed a forest classification and trail/road designation for Kabetogama State Forest. The plan identified most of the Kabetogama State Forest as “managed” in respect to OHVs. A managed classification allows motor vehicles to travel on all roads, trails and forest access routes that are not posted as “closed.” Although the Kabetogama as a whole was classified as managed, seven areas were identified as areas with motor vehicle use limitations. Six of these areas were classified as “closed,” meaning OHVs may not enter them and one area was classified as “limited,” meaning OHVs may travel on designated roads and trails only. County-owned lands are managed similar to the state forest classification for the area where the county-owned lands are located.

Hunter walking trails. The David Dill/Arrowhead State Trail shares a trail corridor with three hunter walking trails. Hunter walking trails provide comparatively easy access to grouse and woodcock areas. Hunter walking trails that share a corridor with the state trail include Bearscratch (1.7 miles), Elephant Lake (4.5 miles) and Highway 115 (0.5 miles).

Old growth forest. The David Dill/Arrowhead State Trail crosses two stands of old growth forest. Old growth forest are forests that have developed over a long period of time, essentially free from catastrophic disturbances. They contain large, old trees of long-lived species that are beyond traditional rotation (harvest) age. High-quality old growth forests also have relatively complex stand structure (such as snags and woody debris), higher stand mortality, and few invasive species. They also include rare species or native plant communities. Within old growth forests, the DNR strives to maintain or restore the integrity of old growth communities. Timber harvesting is not allowed within designated old growth areas (including salvage and timber improvements); wildlife opening and browse regeneration development cannot occur; pesticides cannot be used (except to protect against serious exotic threats); metallic mineral exploration is prohibited; and new road development is not allowed (with very few exceptions).

School Trust Lands. School Trust Lands are managed by the DNR as a trustee and for the benefit of Minnesota’s public schools. DNR management activities such as mineral leasing, timber sales and surface leasing of the lands are the primary revenue sources and are deposited into the Permanent School Fund. For state trails corridors on School Trust Lands, DNR Parks and Trails leases land from the Office of the School Trust. Future leases will continue to contain language regarding non-exclusive use and rights of access for forest, mineral and other activities.

Scientific and Natural Areas (SNA). Scientific and natural areas preserve Minnesota's natural heritage. Recreation use in these areas is limited to protect the habitat and natural diversity. The David Dill/Arrowhead State Trail crosses two SNAs. Approximately one-mile of the trail traverses the East Rat Root River SNA. This 2,892-acre SNA protects a peatland landform, including a minimally disturbed raised bog and featureless water track. Popular forms of recreation within the SNA include bird and wildlife watching, hiking, photography, snowshoeing, cross-country skiing, fishing, hunting, trapping and snowmobiling on the state trail.

Approximately 2.3 miles of the trail crosses the Lost Lake Peatland SNA. This 2,660-acre SNA protects one of the least disturbed peatlands in Minnesota. Popular forms of recreation within the SNA include bird and wildlife watching, hiking, photography, snowshoeing, cross country skiing, fishing, hunting, trapping and snowmobiling on the David Dill/Arrowhead and Iron Ore trails.

US Forest Service Motor Vehicle Use Mapping (MVUM). Similar to the state forest classification and trail designation, the US Forest Service has completed their MVUM for the Superior National Forest. US Forest Service lands are managed similar to "limited" DNR classification. Additionally, the hunter-trapper exemption does not apply to US Forest Service lands. Approximately 16.2 miles of the David Dill/Arrowhead State Trail are located on US Forest Service land and the MVUM for these sections must be reviewed prior to allowing new uses.

The US Forest Service is a Federal agency under the Department of Agriculture responsible for managing the Nation's forest and grass lands.

Voyageur County ATV Trail System. The Voyageur Country ATV Trail System is currently under development in the area around the David Dill/Arrowhead State Trail. When complete, the Voyageur Country ATV Trail System will connect the communities of Cook, Orr, Crane Lake, Kabetogama, Littlefork, and International Falls. It will also connect to other large ATV trail systems such as the Prospector's Loop and Quad Cities trail systems. In 2017, Voyageur County ATV Club completed a master plan for their trail system. This plan includes the use of several parts of the David Dill/Arrowhead State Trail for summer ATV use. At the time of the development of this master plan, Voyageur Country ATV is completing an Environmental Assessment Worksheet for their trail system, including the proposed use of the David Dill/Arrowhead State Trail.

Voyageurs National Park. Although the David Dill/Arrowhead State Trail does not enter Voyageurs National Park, the trail is within one-mile of the park boundary and several snowmobile trails connect the state trail to trails within Voyageurs National Park. The National Park was established in 1975 and encompasses approximately 218,000 acres along the US-Canadian Border. Popular forms of recreation within the national park include boating, camping, fishing, non-motorized recreation and snowmobiling.

Regional Context

The David Dill/Arrowhead State Trail provides an important connection between the Taconite State Trail to the south and the Blue Ox Multi-Use Trail to the north. From these connections, trail visitors can connect Bemidji and International Falls to Duluth and Grand Maris via the David Dill/Tomahawk and North Shore State Trails. Various other trails provide connections to the region's state parks, state and national forests, scientific and natural areas, Voyageurs National Park as well as the region's cities and towns.



Trail infrastructure

Bridges/Culverts. Sixteen bridges are located along the David Dill/Arrowhead State Trail to provide crossings for larger rivers and streams. In 2019, an inventory of bridges along the trail was conducted. Bridge condition ranged from “fair” to “Excellent.” Multiple culverts are used to cross smaller water bodies and wet areas of trail. Because snowmobiling is a popular form of recreation along the trail, all water crossings must be constructed to accommodate snowmobile groomers.

Trail Shelters. There are ten trail shelters along the trail to protect trail visitors from the elements. Shelters feature a dirt floor as well as an area for a fire and are intended to be used for a short break while enjoying the trail. Each trail shelter area also includes a pit toilet.



Figure 4: A typical trail shelter with pit toilet in background.

Parking. There is one parking area along the state trail where the trail crosses Minnesota Highway 1. Other parking opportunities exist at road/trail crossings and trail heads along a connector trail. Trail users also leave directly from their home or overnight accommodations.

Developing sustainable natural surface trails

Natural surface trails such as the David Dill/Arrowhead State Trail offer an experience not found on pavement or other surfaces and serve a variety of motorized and non-motorized users. Special considerations should be given to natural surface trails to ensure the trail remains sustainable. Unlike paved trails, natural surface trails should be designed with erosion, displacement and site contours in mind. The DNR has identified three key principles that set the foundation for designing sustainable natural surface trails in its Trail Planning, Design, and Development Guidelines:

1. Natural surface trails are shaped, not built;
2. Carefully consider tread alignments, site slopes and tread grades are favored over extensive grading and other mechanical means to create a trail;
3. Potential changes to tread shape due to compaction, displacement and erosion must be anticipated as part of the design process; and
4. Permanently close and obliterate trails that are unsustainable.

Because the David Dill/Arrowhead State Trail follows an existing alignment and was developed primarily for winter use, the entire trail may not be suitable for summer use. Other sections of the trail must be improved or rerouted to provide a sustainable route for new uses. The DNR will evaluate the sustainability of the current and potential new uses prior to allowing a new use on a section of the trail. Although this master plan may allow a new use along the trail, the trail in its entirety will not be open to every use, and sections will only be opened after they are signed open.

Recommended Uses

The David Dill/Arrowhead State Trail is a multi-use, multi-season trail. However, not all uses will be appropriate along the entire length of the trail nor year-round. The DNR has developed two seasons of use for the David Dill/Arrowhead State Trail: winter season and summer season. Uses will be unique for each season. A winter use of the trail may not be appropriate in the summer and vice-versa. In general, non-motorized use will be allowed along the entire trail, even though the trail may not be managed specifically for non-motorized use.

Winter season uses

Snowmobiling. Snowmobiling is a recommended use along the entire length of the trail. The David Dill/Arrowhead State Trail currently provides vital connections to other snowmobile trails in the area and is recognized as a corridor trail by the Minnesota United Snowmobilers Association (MnUSA). Snowmobiling is recommended as the primary winter use.

The primary trail use will be snowmobiling, which will be available the entire length of the trail.

Cross-Country Skiing. Cross-Country Skiing may be appropriate along sections of the trail where practical and desired. The trail will not be managed primarily for cross country skiing, but the use will not be prohibited.

Skijoring. A winter sport where a person on cross-country skis is pulled by a dog, horse or other animal. The trail will not be managed for skijoring, but it may be accommodated where cross-country skiing occurs.

Dogsledding/Mushing. A winter sport where a sled or sleigh is pulled by one or more dogs used to travel over ice or winter. A person who travels by dogsled is called a musher. When multiple dogs are used to pull a sled, they are attached to the sled and each other using a cable, chain or rope. Dogsledding is not currently allowed on state trails, except by special use permit. Prohibiting this use is not recommended as the use may be permitted in the future or by special use permit.

Fat-tire biking. Fat-tire biking is an emerging winter sport throughout the country. A fat-tire bike is a bicycle with large, low-pressure tires designed for travel over winter or sandy soils. Winter fat-tire biking is permitted on State Trails, but it is not actively managed due to the potential safety issues presented by mixing uses. The trail will not be managed for winter fat-tire biking, but the use will not be prohibited.

Summer season

The following uses are recommended during the summer season. Prior to permitting summer season use, the section of trail under consideration will be evaluated and any maintenance performed. Summer non-motorized use is permitted along the entire trail, however some areas will not be actively managed for summer non-motorized use due to treadway conditions.

Off-highway vehicles (OHV). OHVs include several types of vehicles including all-terrain vehicles (ATV), off-highway motorcycles (OHM) and off-road vehicles (ORV). OHV use is generally considered a seasonal use, generally from spring to fall. OHV use will only be permitted where the trail is signed as open to OHVs or a specific subset of OHVs (i.e. Class 1 and 2 ATVs only).

- All-Terrain Vehicles (ATV) - (Defined in *Minnesota Statutes, 84.29, Subdivisions 8-10.*) An ATV is a motorized vehicle with: (1) not less than three, but not more than six low pressure or non-pneumatic tires; (2) a total dry weight of 2,000 pounds or less; and (3) a total width from outside of tire rim that is 65 inches or less. The term "ATV" includes a Class I and Class II all-terrain vehicle. ATV use may be accommodated on some sections of the trail where it meets sustainability criteria.
- Off-Highway Motorcycle (OHM) - (Defined in *Minnesota Statutes, 84.787, Subdivision 7.*) An OHM is a motorized off-highway vehicle traveling on two wheels. OHMs have a seat or saddle designed to be straddled by the operator and have handlebars for steering control. Motorcycles may be legal for highway use and still considered to be OHMs if used for off-highway operation on trails or natural terrain.
- Off-Road Vehicle (ORV) - (Defined in *Minnesota Statutes 84.797, Subdivision 7*) An ORV is a motorized recreational vehicle capable of cross-country travel on natural terrain, such as a 4x4, and is larger in size than a Class II ATV. Vehicles not considered ORVs include snowmobiles, ATV and OHMs, motorcycles, watercraft, or aircraft. Farm, logging, military, emergency, law enforcement, utility, trail grooming, and construction vehicles are not considered to be ORVs when used for their intended purpose.

Bicycling. Bicycling, including fat tire and mountain biking, is currently a popular use among some of the upland section of the trail. Further improvements to the trail treadway may increase the popularity of bicycling along the trail.

Horseback riding. Horseback riding is currently not a popular use of the David Dill/Arrowhead State Trail. As treadway improvements are made, horseback riding may become more popular. The Minnesota Horse Trail Pass is required on all horse trails located on DNR-administered lands, including State Trails and state forest lands.

The entire trail corridor may not be suitable for summer use. The DNR will evaluate specific sections on a case-by-case basis.

Class I –ATV –all-terrain vehicle that has a total width from outside of tire rim to outside of tire rim that is 50 inches or less.

Class II - ATV – all-terrain vehicle that has a total width from outside of tire rim to outside of tire rim that is greater than 50 inches, but not more than 65 inches.

Hiking/walking; jogging/running. Hiking or walking is the second-most popular activity on state trails for summer users. Hiking, walking, jogging and running are recommended along the entire length of the trail, however some areas may be inaccessible due to wet soils. Dog walking is recommended the entire length of the trail as long as owners properly leash and clean up dog waste. Minnesota state trail rules require all pets to be restrained by leashes not more than 6 feet in length (*Minnesota Rules 6100.3900, subpart 4*). Exceptions may be made through special use permit.

Hunting. Hunting is allowed the entire length of the trail during legal hunting season and in accordance with rules and regulations. Minnesota Rules for hunting related to state trails states:

No firearm or bow and arrow shall be discharged within the trail at any time, except for the purpose of lawful hunting during the period from September 15 to March 30 only. No rifle, shotgun with slug or bow and arrow shall be discharged upon, over, or across the trail treadway at any time.” (Minnesota Rules 6100.3600)

Environmental Education/Interpretation. Use of the trail for environmental education and nature study, whether for individual trail users or for groups, is encouraged. Nature photography is a popular activity. In particular, state forests and SNAs have special landscape features that should be included in interpretive sites and informational kiosks.

Fishing Access. The trail crosses many streams including several designated trout streams, with four aquatic management areas designated for fishing. The trail offers access to these unique and remote areas. However, not all stream crossings have fishing opportunities.

Accessibility

State trails comply with the Americans with Disabilities Act (ADA) design standards. In 2011, rules issued by the U.S. Department of Justice allow “other power-driven mobility devices” (OPDMDs) to be used by people with mobility disabilities on all state or local government lands and facilities. The definitions of an OPDMD is broad and covers all devices used for locomotion by people with mobility disabilities, except wheelchairs, but including Segway personal transporters, electric-assisted bicycles, OHVs, snowmobiles and highway licensed vehicles (HLVs).

The following OPDMDs are allowed on paved and aggregate trails on DNR lands: electric personal assistive mobility devices and electric-assisted bicycles. Also allowed are the following electric-powered devices: foot scooters, tracked mobility chairs, and tricycles. Natural barriers and primitive development may limit some from accessing all areas, including much of the David Dill/Arrowhead State Trail.

A DNR Commissioner's Order posted on the DNR's website includes a table that explains where OPDMDs can be used and when a special permit is needed.
http://www.dnr.state.mn.us/accessible_outdoors/opdmd/index.html

Special use permits

At its discretion, the DNR may issue special use permits for activities that may or may not be normally permitted along the trail. The Parks and Trails area and district supervisors should consider whether the requested use is typically permitted along the trail, conflicts with existing trail users and resource and treadway impacts when considering the issuance of a special use permit.

The DNR issues special use permits for large events or activities typically not permitted in an area.

Trail Planning Sections and Allowed Use

For planning purposes, the DNR separated the trail into seven sections. Trail sections were based upon similar ecological conditions, current uses and demand for future use. Common landmarks such as other trails, roads or rivers were used to clearly identify each section. Some sections were further separated into subsections that were too small to be their own section. Each section was then evaluated for the addition of summer motorized use based upon social and resource feasibility. The planning sections include:

- Section 1: Taconite State Trail to Cook GIA Trail;
- Section 2: Cook GIA Trail to Landing GIA Spur Trail;
- Section 3: Landing GIA Spur Trail to Pelican River/CR 180;
- Section 4: Pelican River/CR 180 to Arrowhead Link Trail;
- Section 5: Arrowhead Link Trail to Bearscratch Road;
- Section 6: Bearscratch Road to Sheep Ranch Road;
- Section 7: Sheep Ranch Road to Gamma (Kabetogama) Road; and
- Section 8: Gamma (Kabetogama) Road to Blue Ox Multi-use Trail.

OHV use was used for this evaluation as its addition (particularly ATV) was the most requested new use during the initial scoping period and the use is considered by many to be the most impactful use. If a section of trail is opened to motorized use after improvements and signing, the trail section will also be open to non-motorized use. Table 2 describes factors considered for feasibility.

Feasibility Ranking	Social	Resource
High	<ul style="list-style-type: none"> • Impacts to current uses are negligible; • Strong desire by public for section of trail; • Provides connections to other trails and facilities and • The use is compatible with current land uses and land owner agreements. 	<ul style="list-style-type: none"> • Trail treadway requires limited to no improvements and • Listed species, cultural resources and wetlands are few to none and the new use can easily accommodate those present.
Moderate	<ul style="list-style-type: none"> • New uses will have limited impact to current uses; • Moderate desire by public for section of trail; • May provide connections to other trail with minor development and • Landowner agreements may need updated to reflect the new use. 	<ul style="list-style-type: none"> • Moderate improvements and trail reroutes may be required; • Site surveys and permits may be required prior to construction and • Listed species, cultural resources and wetlands may be present.
Low	<ul style="list-style-type: none"> • New use would displace current users; • Low desire by public for section of trail; • No connections to other trails are possible and • Landowner agreements specifically prohibit the new use. 	<ul style="list-style-type: none"> • The trail would require significant upgrades and reroutes to be sustainable and • Listed species, cultural resources and wetlands are present and avoidance is not possible.

Table 2: Criteria used to identify new use feasibility.

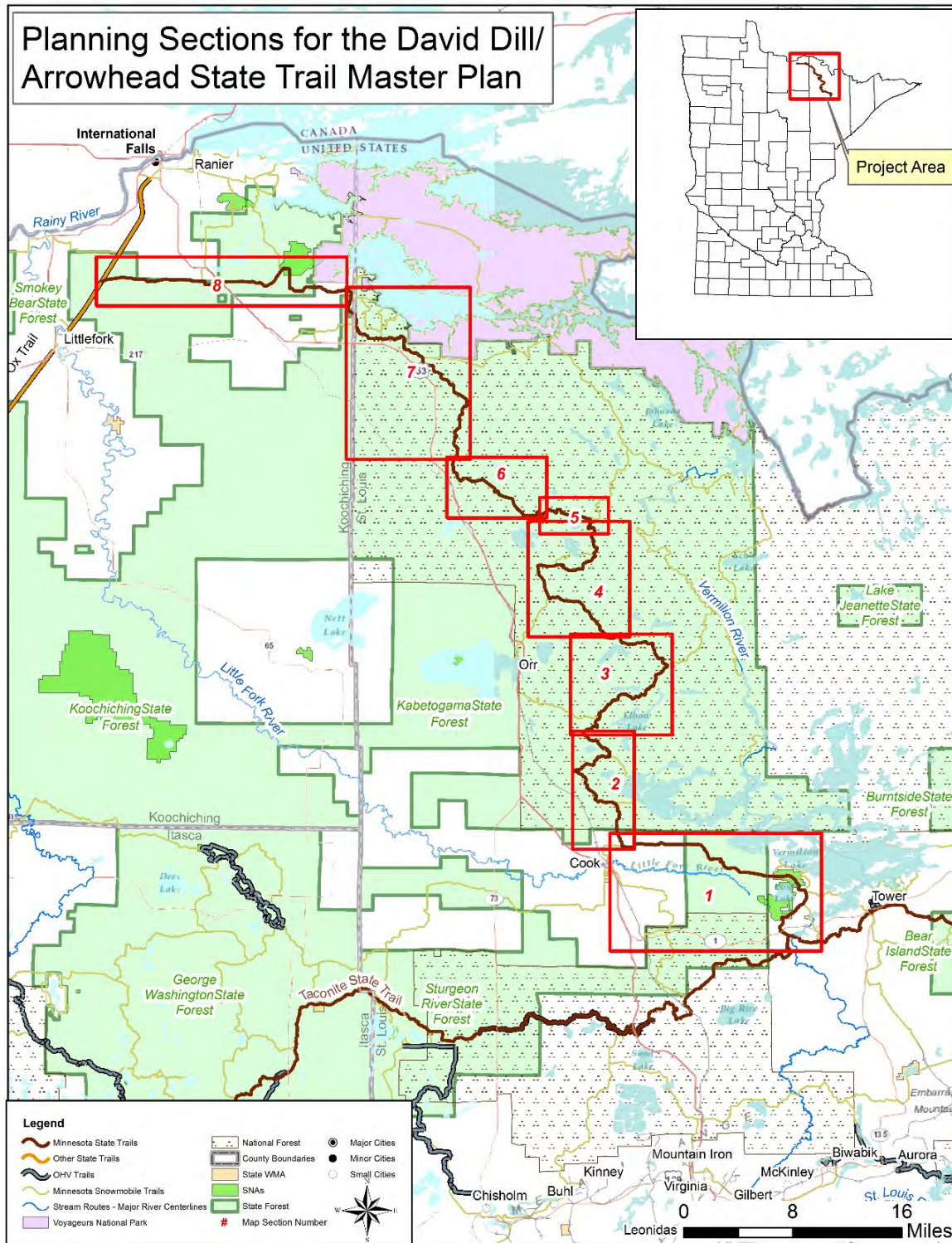


Figure 5: David Dill/Arrowhead State Trail master plan sections.

Section 1: Taconite State Trail to Cook GIA Trail

Section 1 extends from the intersection with the David Dill/Taconite State Trail to the Cook Grant in Aid snowmobile trail north of Cook. This trail section is generally lowland and wetlands are abundant. A majority of the corridor is on land that is managed by St. Louis County and DNR Forestry. Small portions cross privately-owned land and the DNR has agreements with these landowners. DNR Forestry managed land along this section is part of the School Trust. Approximately 2.3 miles of the trail in Section 1 cross the Lost Lake Peatland SNA and 0.5 miles shares a corridor with the Highway 115 Hunter Walking Trail.

Current uses and trail infrastructure

This section of trail is primarily used for winter recreation such as snowmobiling. Due to the significant wet areas, this section is not popular for summer uses, with the exception of the shared corridor with the Highway 115 Hunter Walking Trail. Road intersections include one Minnesota trunk highway and seven county roads. Five snowmobile trails intersect with this section of trail—all before trail mile 10. There is one bridge in the Lost Lake Swamp and one trail shelter (Frazer Bay shelter) along this section of trail.

Feasibility ranking-Low

Social-Low. The social feasibility for this trail section is low. Although a majority of this trail is publically-owned, the DNR heard no requests to allow summer motorized use. The section of trail does not connect to any other current or planned formal trails. Motorized use would conflict with current management and users of the Lost Lake Peatland SNA and Highway 115 Hunter Walking Trail.

Resource-Low. The resource feasibility for this section of trail is low. The trail is almost entirely within wetlands, which would make upgrading for summer use extremely difficult and costly. Rerouting would not be feasible due to the extensive network of wetlands. The Lost Lake Peatland SNA protects one of the least disturbed peatlands in Minnesota. Finally, several rare plants have been identified along this section of trail.

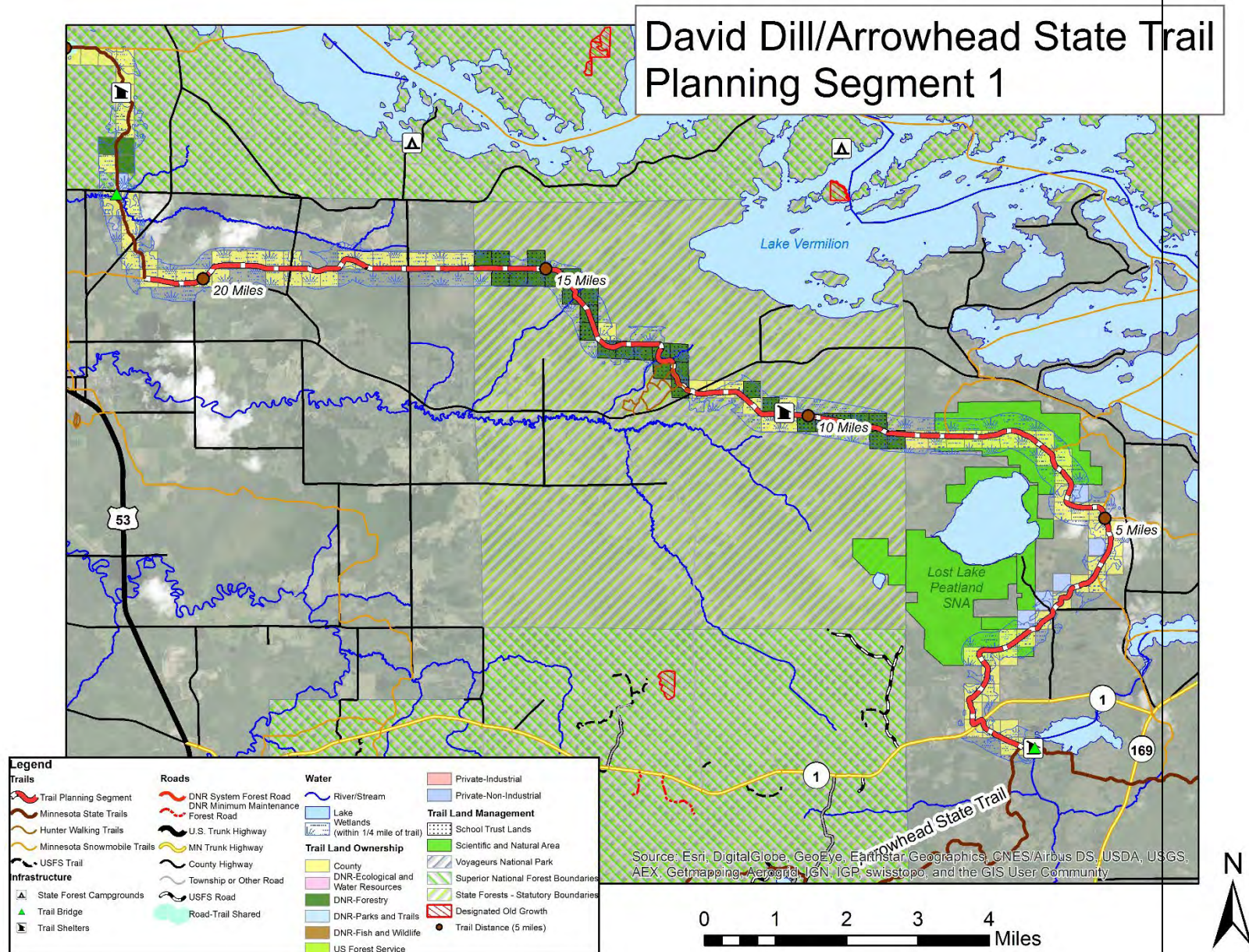


Figure 6: David Dill/Arrowhead State Trail master plan section one.

Section 2: Cook GIA Trail to the Landing GIA Snowmobile Spur Trail

Section 2 extends from the Cook Grant in Aid snowmobile trail to The Landing GIA Spur Trail. This section follows a combination of lowland wetlands and upland sections of trail. Similar to Section 1, a majority of the trail is located on lands managed by DNR Forestry (School Trust) and St. Louis County.

Current uses and trail infrastructure

Current use includes winter recreation as well as limited summer recreation. The trail currently experiences some illegal motorized use to make connections between Haley Forest Road and private timber roads. Two other snowmobile trails intersect with the David Dill/Arrowhead in Section 2 as well as multiple forest roads currently open to OHVs, including the popular Haley Forest Road. The trail intersects with two county roads and shares approximately 0.8 miles with Winnifred Road. There are two bridges – one across Flint Creek and another across Hoodoo Creek – and one trail shelter (Wakemup Bay) along this section of trail. No snowmobile trails intersect with this section of trail.

St. Louis County has adopted an ordinance that allows the operation of ATVs on all County Roads outside of city limits.

Feasibility Ranking- Low to Moderate

Social- Low to Moderate. The social aspects of allowing summer use to this section of trail are low to moderate. No current uses would be displaced. The trail provides an extension from the Haley Forest Road (currently open to OHVs) and may become an important connection if private roads (such as the Alvina Rd) in the area are officially open to OHVs. If the private roads are opened, the social feasibility for this section may increase. There is currently little to no pressure to open the trail going south from the Haley Road to the Cook Trail because of the resource concerns and the existing ATV route connections. One exception to that is that the Voyageur club has requested in the past that the Arrowhead be opened to ATVs from the Winnifred Rd to the Wakemup GIA trail to create an alternative ATV connection to Cook. They have also requested the trail be open to ATVs from the Arrowhead/Wakemup GIA Trail junction south to the Wakemup shelter and overlook.

Resource-Low to Moderate. Section 2 is a mix of lowland wetlands and upland areas. In the wetland areas, significant improvements would need to be accomplished prior to permitting summer use. The upland sections of trail will require some tread improvements such as hardening prior to permitting summer use. State listed species have been identified along this trail section and proper measures will need to be taken to avoid impacting the listed species.

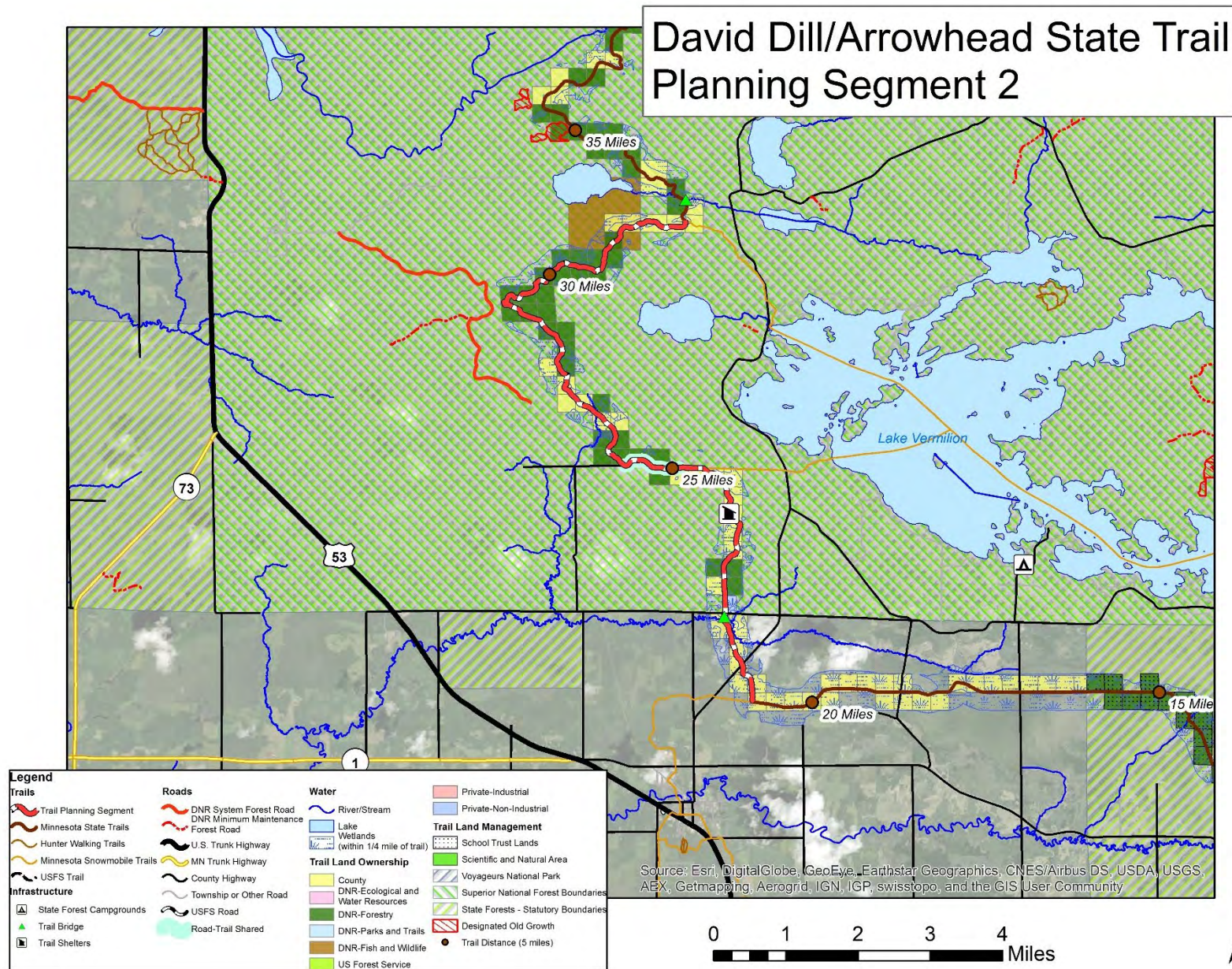


Figure 7: David Dill/Arrowhead State Trail master plan section two.

Section 3: Landing GIA Snowmobile Spur Trail to the Pelican River/CR 180

Section 3 extends from Landing Grant in Aid Snowmobile Spur Trail to the Pelican River/CR 180 trail intersection. Section 3 contains more upland areas compared to Sections 1 and 2. Much of the trail is located on public lands including land managed by the DNR Divisions of Forestry and Parks and Trails, St. Louis County and the US Forest Service. The remaining portions of trail in this section are on privately owned land. St. Louis County is currently undertaking a land exchange for some of the parcels along this section of trail.

Current trail uses and infrastructure

Portions of this section trail are currently used by class 1 ATVs and OHMs under the US Forest Service Motor Vehicle Use Maps (MVUM). At the time of this plan, the US Forest Service is updating the MVUM for this section of trail to include class 2 ATVs, although. The City of Orr is accessible using DNR Forestry and County (including county forest roads and county highways) roads open to ATVs along this section of trail. The trail shares approximately 0.5 miles of the Novak Forest Road. There are four bridges (not including the bridge on the Novak Forest Road) and two shelters along this section of trail.

Feasibility Ranking-Moderate

Social-Moderate to High. With the exception of trail miles 44-48 (South Ban Lake Rd north to CR 23), this section of trail is highly socially feasible for OHV use. The trail between miles 44-48 scores low feasibility due to its low environmental feasibility and the existing ATV connection around this portion on the Elbow Lake Forest Road. The portion of the trail from South Ban Lake and Elbow Lake Forest Roads to the Susan Lake Road area just north of the Hoodoo Creek Bridge can provide a critical OHV connection to the City of Cook. The portion of trail from Orr-Buyck Road (County Road 23) north to County Road 180 is located on US Forest Service, School Trust and St. Louis County land and is currently open to class 1 ATVs and OHMs through the US Forest Service's MVUM. This section links to other routes and trails on US Forest Service and St. Louis County land that are currently open to class 1 ATVs and OHMs as well as areas desired by OHV riders to access fishing locations.

Resource-Low to Moderate. The portion of trail from South Ban Lake and Elbow Lake Forest Roads to Susan Lake Road area is mostly on high ground with some wetland areas. A reroute around one of the wetlands may be possible if a land exchange St. Louis County is pursuing is completed. Unless the reroute is completed, the resource feasibility for this portion of trail will remain low to very low (ATV trail construction in this portion is near impossible without the reroute).

Because of wetlands, the resource feasibility is low for the portion of trail between trail miles 44-48. The trail between County Road 23 (Orr-Buyck Road) and Mile 51.5 (where the existing ATV route turns off trail and continues north) has a moderate to high resource feasibility. From that point north to County Rd 180 has low to moderate feasibility. These portions contain a mix of uplands and wetlands. However, existing trails provide routes around the wetland areas. Several state listed plants and animals are located along this section of trail and avoidance measures will need to be taken if this section is opened to summer use.

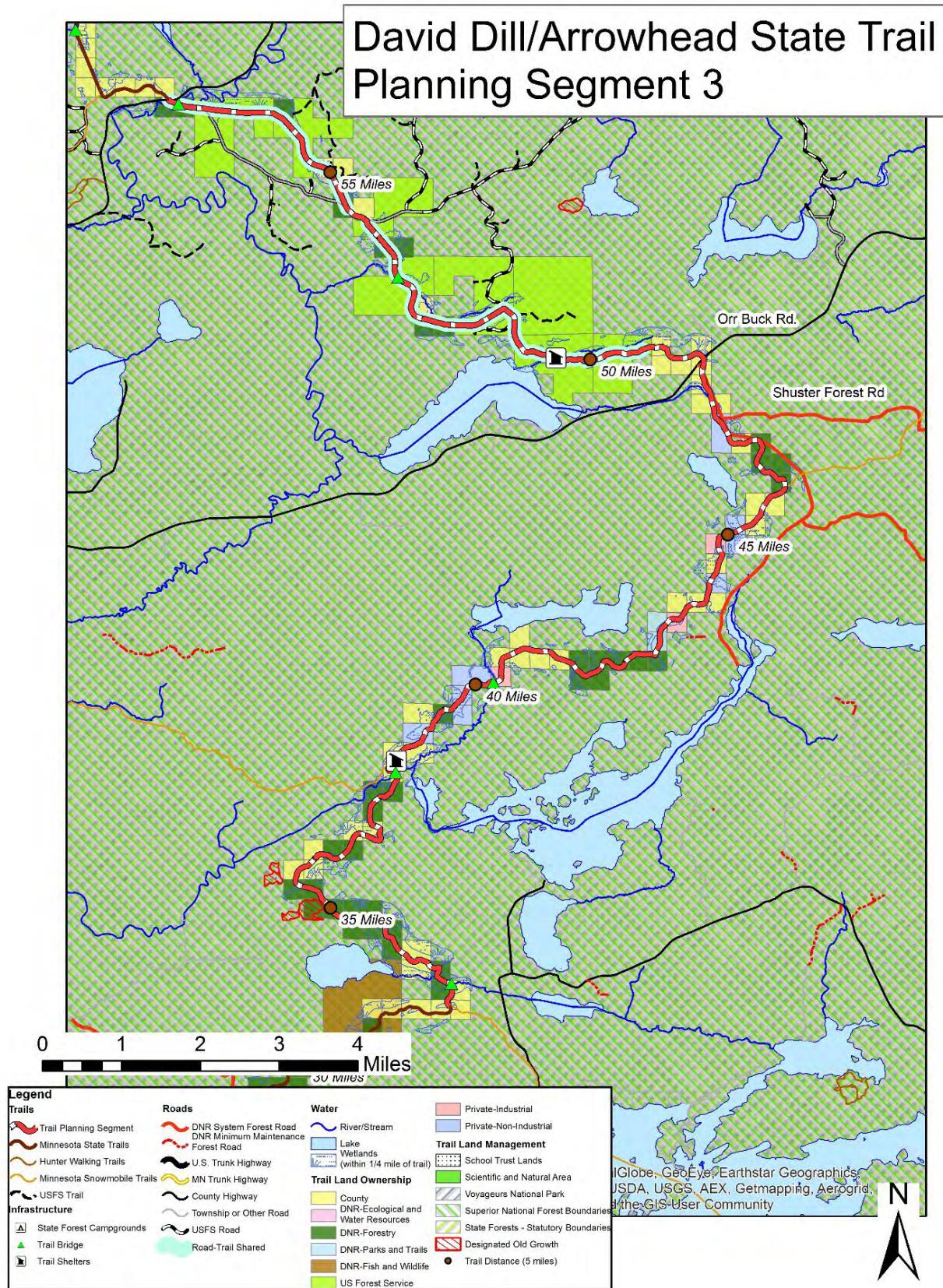


Figure 8: David Dill/Arrowhead State Trail master plan section three.

Section 4: Pelican River/CR 180 to the Arrowhead Link Trail

Section 4 includes portions of the Elephant Lake Hunter Walking Trail. The section is entirely on public lands managed by St. Louis County, DNR Forestry and the US Forest Service. The trail is currently managed as non-motorized hunter walking trail in the fall.

Current uses and infrastructure

This section of trail is highly popular among hunters as it is part of a hunter walking trail. The main truck of the Elephant Lake Hunter Walking Trail shares a corridor with the state trail for approximately five miles. This section also intersects several National Forest roads that are open to OHVs as well as five other snowmobile trails (including the Arrowhead Link). Two bridges and one shelter are located along this section of trail.

Feasibility-Low

Social-Low-Moderate. Because of the current use as a non-motorized hunter walking trail during the summer months, allowing motorized uses may displace some of the hunters who frequent this area. This section of trail traverses several privately-owned parcels. Agreements with those land owners must be reviewed and possibly updated prior to allowing new uses. With the exception of a small section from Miles 63 to 64, this section was not specifically requested for OHV use during the scoping period. The section of trail from Trail Miles 64-66.5 is highly socially feasible and may provide a connection for OHV enthusiasts from County Road 180-National Forest Road 203. National Forest Road 203 provides connections to several OHV trails within US Forest Service managed land. Existing roads and trails may provide an alternative to the desired route.

Resource-Low-Moderate. This section contains a mix of lowland wetlands and uplands. The section to the west of County Highway 180 contains significant ash wetlands as well as threatened plant species. Allowing summer motorized use may require an endangered species take permit and feasibility along this section is low. The section to the east of County Highway 180 contains upland sections, but improvements will still be required prior to allowing summer motorized use.

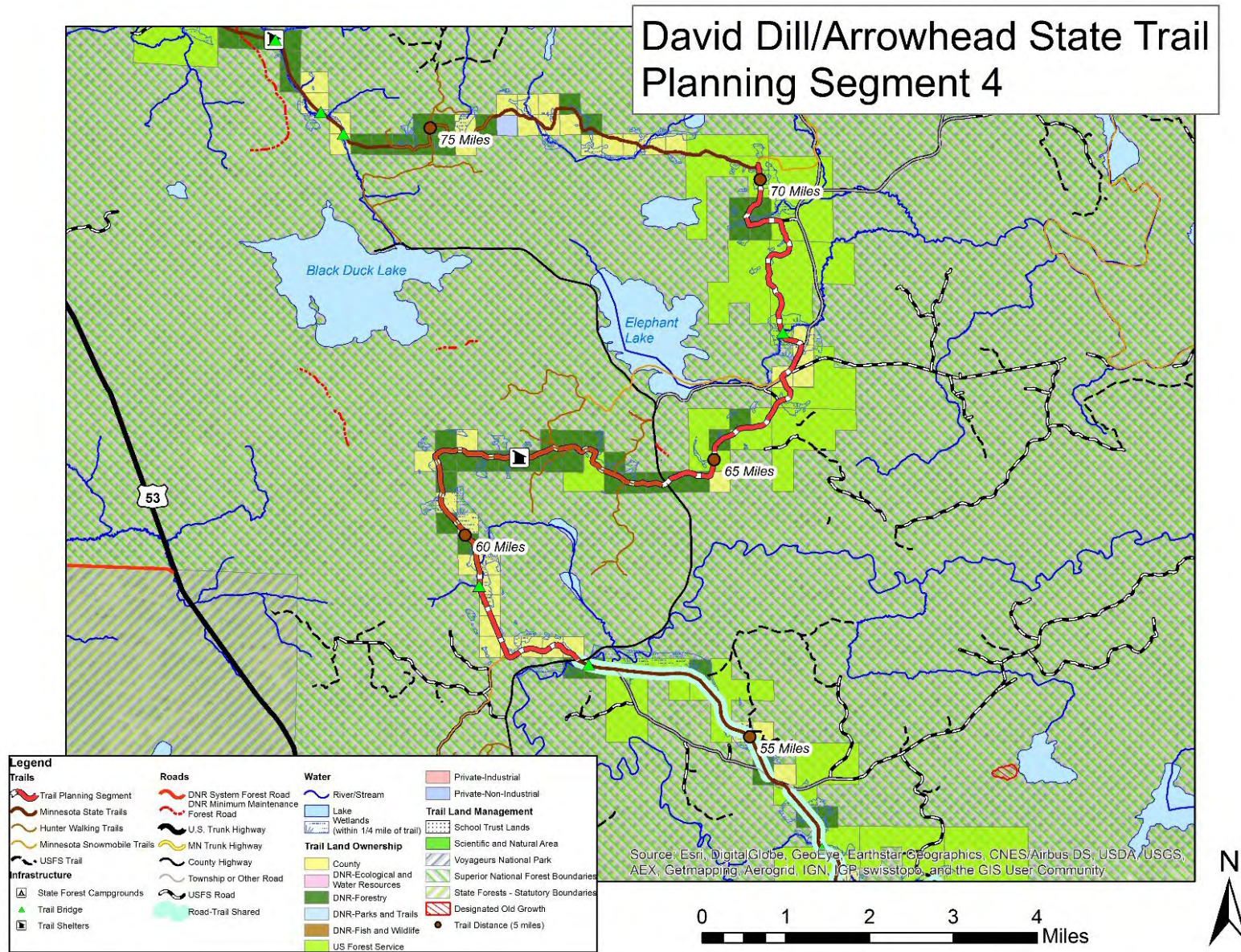


Figure 9: David Dill/Arrowhead State Trail master plan section four.

Section 5: Arrowhead Link GIA Snowmobile Trail to Bearscratch Road

Section 5 extends from the intersection with the Arrowhead Link GIA snowmobile trail to Bearscratch Road. With the exception of a short section (approximately 150 feet), this entire portion of trail is located on publically owned land managed by St. Louis County, DNR Division of Forestry and the US Forest Service. DNR Forestry managed land within this section is a combination of acquired and School Trust lands.

Current uses and infrastructure

Current trail uses along section 5 include winter use and hunting. The final one-mile shares a corridor with the Bearscratch Hunter Walking Trail. No bridges are located on this section. The silver lake trail shelter and a bridge are on an old section of the trail (the “silver lake reroute”) that was routed around a number of years ago.

Feasibility-Low to Moderate

Social-Moderate. This portion has moderate social feasibility. In their master plan, Voyageur Country ATV identified developing this section for ATV (using the Silver Lake reroute to go around Bug Creek), but club priorities may be higher in other sections. This section of trail traverses one privately-owned parcel. The agreement with the land owner must be reviewed and possibly updated prior to allowing new uses. Trail Miles 74-75 share the treadway with the Bearscratch Hunter Walking Trail, which provides non-motorized hunting opportunities. If change in use is in conflict with the current agreements, a new agreement between DNR Parks and Trails and other Divisions must be reached prior to allowing the new use.

Resource-Low. The majority of this Section is a mix of uplands and wet areas, with the exception of the Bug Creek crossing, a substantial wetland crossing. The Silver Lake reroute provides an acceptable ATV route around the Bug Creek crossing with an existing bridge on an old alignment of the State Trail, but the rest of this section remains very wet in spots. The Silver Lake reroute itself will require treadway improvements to support the increased traffic associated with a signed and mapped OHV trail. No State Listed Species have been observed along this Section of the trail.

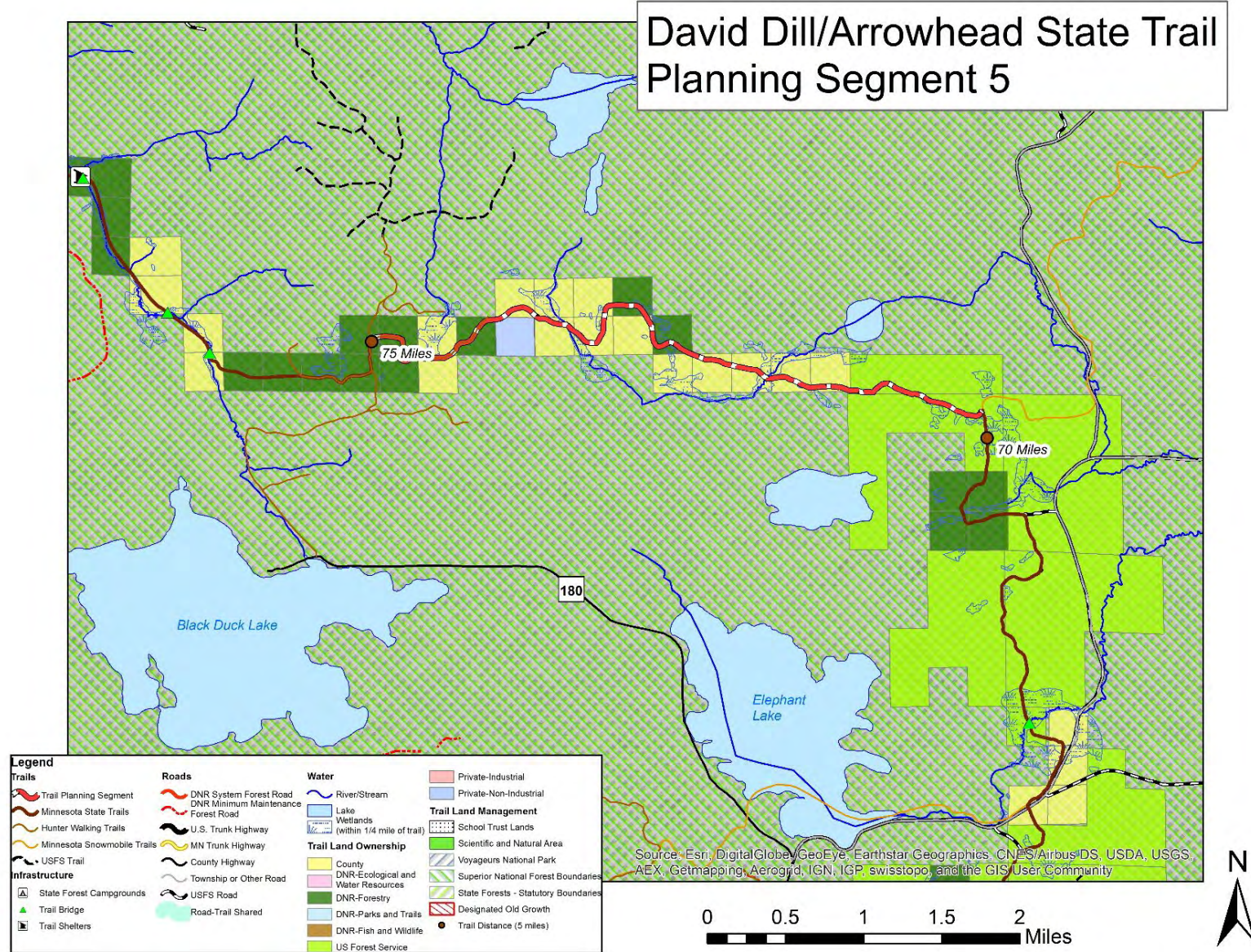


Figure 10: David Dill/Arrowhead State Trail master plan section five.

Section 6: Bearscratch Road to Sheep Ranch Rd

Section 6 extends from the trail intersection with Bearscratch Road to the Sheep Ranch Forest Road. A majority of this Section of trail is located on lands managed by the US Forest Service, DNR Forestry and the St. Louis County Land Department. Section 6 also crosses three parcels of privately owned industrial land.

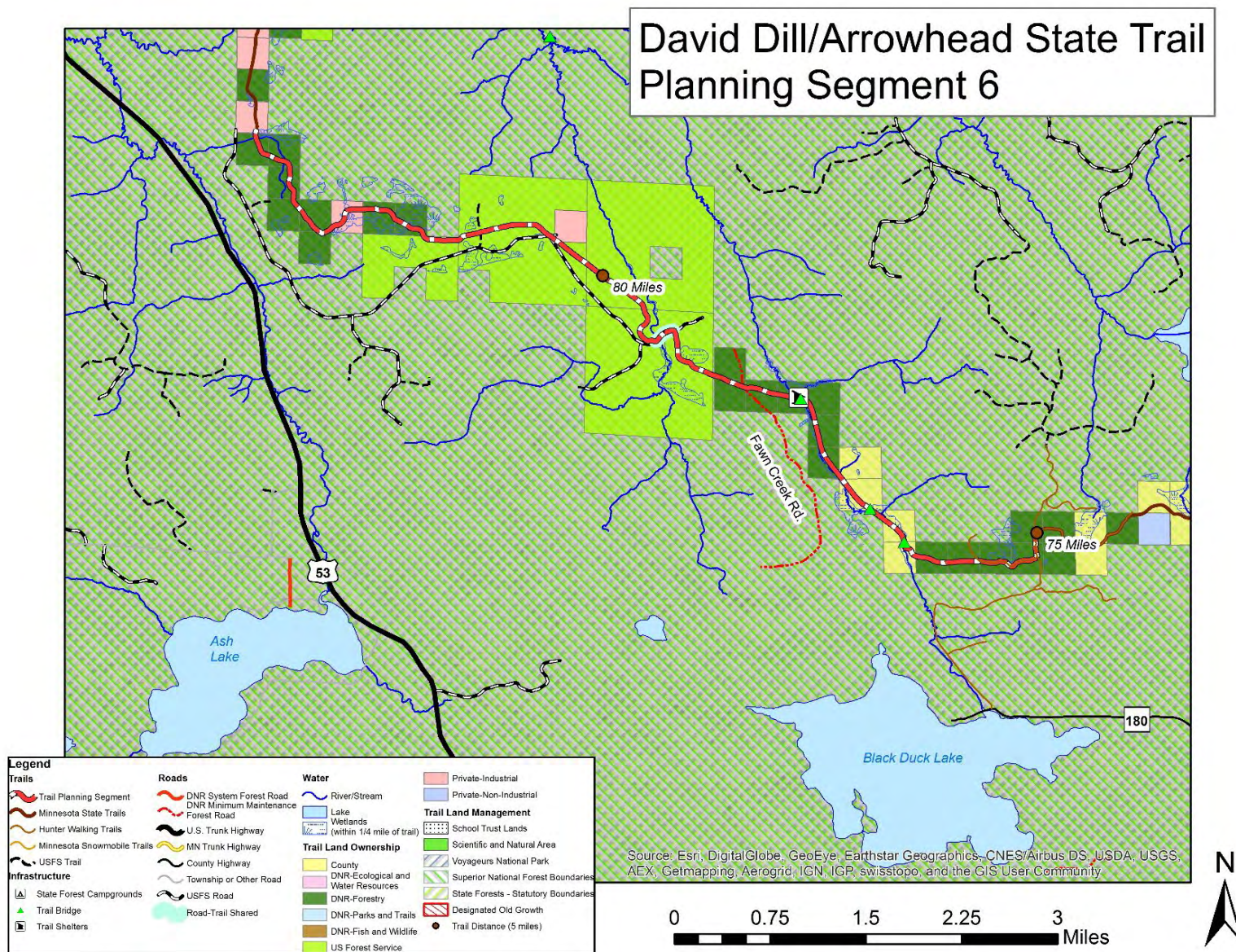
Trail uses and infrastructure

Hunting and summer recreation activities are popular along Section 6 as there are several areas of high ground. Winter use includes snowmobiling and non-motorized uses. The trail section shares a corridor with the Bearscratch Hunter Walking Trail for approximately 0.7 miles. Several state forest, US Forest Service and county roadways that are currently open to OHVs intersect with this section. Three bridges that cross the Black Duck River and one trail shelter are located along this section of trail.

Feasibility-Moderate

Social-Moderate to High. After Trail Section 7, the portion of this section that uses the Blackduck Grade is one of the more desirable portions for OHV enthusiasts. OHV use along portions of this corridor would provide critical connections with routes within the Kabetogama State Forest. Miles 75-76 share a corridor with the Bearscratch Hunter Walking Trail. This may cause a conflict with the existing use and Parks and Trails should work with DNR Wildlife staff to identify a suitable alternative for either the David Dill/Arrowhead State Trail or the Bearscratch Hunter Walking Trail prior to allowing OHVs to utilize this portion of trail. Along the sections of trail that are privately owned, if change in use is in conflict with the current agreements, a new agreement between the DNR and the landowner must be reached prior to allowing the new use.

Resource-Low-Moderate. Resource feasibility for this section of trail is moderate. The section is a mix of upland areas and wetlands. Some of the wetland areas can be rerouted around such as Trail Miles 78-83. A reroute around this section utilizing Fawn Creek Road is currently used by OHVs and the section of trail may be gated to prohibit illegal use. Other wet areas may require improvements such as culverts, reroutes or fabric and fill to allow OHV use.



Section 7: Sheep Ranch Road to Gamma (Kabetogama) Road

Section 7 extends from the trail intersection with the Sheep Ranch Forest Road to Trail Mile 101 located just west of the Gamma (Kabetogama) Road. Based on discussions with OHV stakeholders, this section is the most desirable corridor along the trail for OHV connections. The section would be especially complementary to the extensive network of OHV routes within the Kabetogama State Forest. Portions of the trail located on US Forest Service managed lands are currently open to OHMs and class one ATVs. A majority of this Section of trail is located on lands managed by the US Forest Service and DNR Forestry. Section 7 also crosses several parcels of privately owned land-including industrial and non-industrial.

Trail uses and infrastructure

Hunting and summer recreation activities are popular along Section 7 as there are several areas of high ground. A portion of trail north of Ash River Road is mowed and open for mountain bike use. Winter use includes snowmobiling and non-motorized uses. Several state forest, US Forest Service and county roadways that are currently open to OHVs intersect with this section. Two bridges and one trail shelter are located along this section of trail.

Feasibility-Moderate

Social-High. Section 7 is the most desirable trail sections for OHV enthusiasts. It would provide an important trail connection between communities within Koochiching County and St. Louis County. It would also bring closer the reality of connecting the Blue Ox multi-use trail to the extensive network of trails within the Kabetogama State Forest. Portions of the trail located on US Forest Service managed lands are currently open to OHMs and ATVs. This section of trail traverses several privately-owned parcels. Agreements with those land owners must be reviewed and possibly updated prior to allowing new uses. A potential connection to the Wooden Frog State Forest Campground utilizing county roads may be possible if the campground is reviewed for OHV ingress and egress.

Resource-Moderate. Resource feasibility for this section of trail is moderate. The section is a mix of upland areas with a number of lowlands and wetlands in key sections. Tread improvements along this section, including hardening of upland areas will be required prior to allowing summer motorized use. Wetland improvements may include reroutes, culverts and fabric and fill. Rerouting around some of the major wetland areas within this section will require new agreements with private land owners. The trail section crosses one stand of old growth forest near mile 90. Special considerations to the old growth forest must be considered if new construction or routing takes place near the old growth stand.

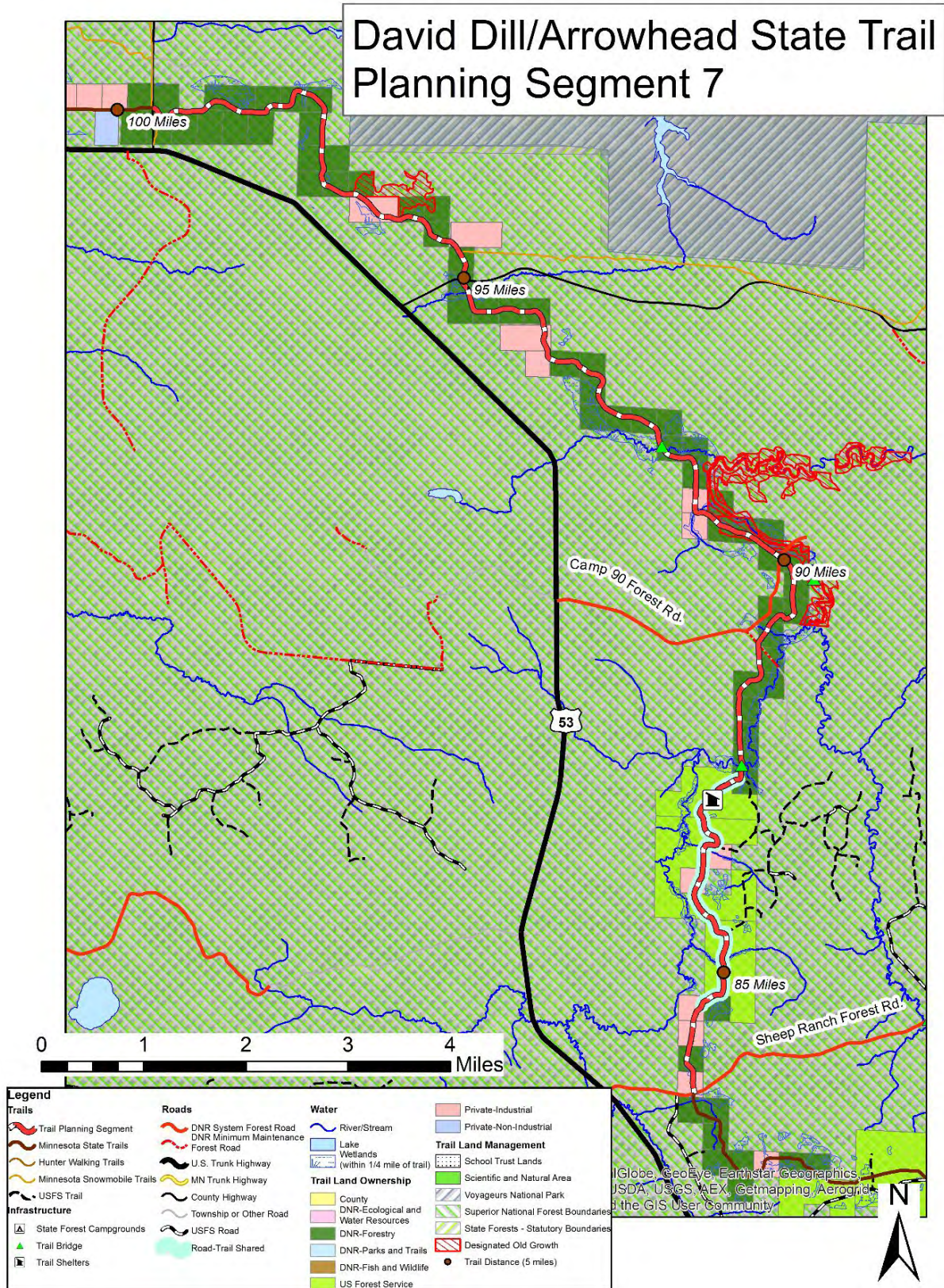


Figure 12: David Dill/Arrowhead State Trail master plan section seven

Section 8: Gamma (Kabetogama) Road to the Blue Ox Multi Use Trail

Section 8 extends from Mile 101 to the northern terminus of the David Dill/Arrowhead State Trail with the Blue Ox Multi Use Trail. The Blue Ox Trail is managed as a winter snowmobile trail and summer ATV trail. Public land along this Section is managed by St. Louis and Koochiching counties, DNR Forestry and DNR Ecological and Water Resources. Private land ownership consists of industrial and non-industrial lands. This Section of trail also traverses the East Rat Root River SNA, which protects a peatland landform.

Trail uses and infrastructure

Because of wetlands, this section does not see much summer use. Several county roads and US Highway 53 intersect with this trail section. Three bridges—two that cross Rat Root River and one that crosses the Tom Cod River are located along this trail section. Three trail shelters are located along this section of trail.

Feasibility-Low

Social-Low. There are no trail connections for summer use along this portion of trail. Additionally, OHV use would conflict with the management and visitor experiences at the East Rat Root River SNA.

Resource-Low. This section of trail is relatively low wetland with few opportunities to reroute. Areas along this Section protect unique geologic resources such as those found in the East Rat Root River SNA. The trail section crosses one stand of old growth forest near mile 123. Special considerations to the old growth forest must be considered if new construction or routing takes place near the old growth stand.

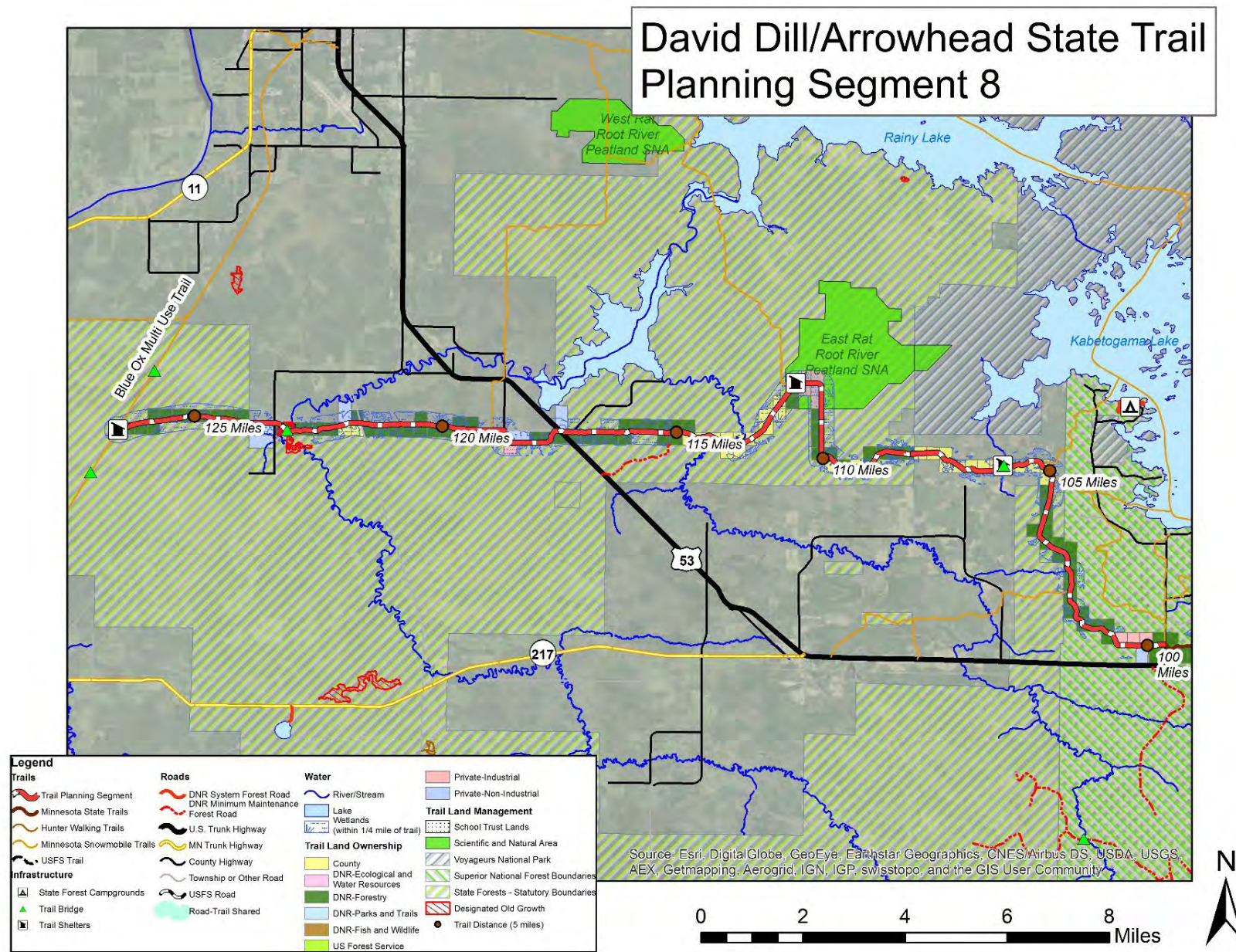


Figure 13: David Dill/Arrowhead State Trail master plan section Eight.

Trail Management

History of use

The David Dill/Arrowhead State Trail has been in operation for over 30 years. Primarily developed as a snowmobile trail, summer use has been limited non-motorized uses and to higher, dryer sections of the trail. Popular summer uses include hunting and fishing access and bicycle riding. Although the DNR does not currently maintain the trail for summer use, portions of the trail near the Ash River Trails is also mowed for mountain biking.

Trail use and registration trends

To get a better understanding of the use along the David Dill/Arrowhead State Trail, the DNR installed a trail counter near the city of Orr in December, 2019. For the period between December 24, 2019-March 22, 2020, trail counts ranged between 0 counts per day to 458 counts per day. Total trail counts for this time period is 7,693 and averaged approximately 85 counts per day. The heaviest use was on Saturdays where trail use averaged approximately 205 counts per Saturday. It should be noted that this is a snapshot of one month of trail use in one area and may not reflect the total use along the trail. Also, the trail counter does not differentiate between types of uses or direction of use, so some trail visitors may have been counted multiple times.

Registration trends

The DNR tracks registration data for multiple current and potential new uses of the David Dill/Arrowhead State Trail. Snowmobile registrations peaked in 2001 with just under 300,000 registered sleds and have been in decline since. In 2019, about 195,000 snowmobiles were registered in Minnesota. During the same time period, OHV registrations have increased by over 200,000, with ATV and OHM registrations more than doubling and ORV registrations more than tripling. Additional registration information can be found in Appendix A.

Horse pass sales

In 2006, the Minnesota Legislature authorized the Minnesota Horse Pass, which is now required to ride, lead or drive horses on lands administered by the DNR, including state trails. Horse passes are available through annual passes for \$21 or daily passes for \$5. Additionally, the DNR offers a commercial horse pass for riders that rent horses. Funds from Horse Pass sale may be used to for operations and maintenance of horse-related facilities such as campgrounds, trailheads and trails.

Annual horse passes have averaged approximately 6,000 passes per year and provides approximately \$100,000/year in dedicated funds horse-related projects.

Trail operations and maintenance

Monitoring and maintenance of the David Dill/Arrowhead State Trail is critical to provide a safe and enjoyable experience. Natural surface trails such as the David Dill/Arrowhead State Trail provide an experience that many trail enthusiasts enjoy. However, natural surface trails are also more susceptible to severe weather events and heavy use, if not designed and maintained properly. Adequate maintenance of state trails is critical to maintain the high experience trail visitors have come to expect.

The David Dill/Arrowhead State Trail was originally developed primarily for snowmobile use. Because snowmobile trails utilize frozen ground, they may cross areas that are not suitable for non-frozen use, leaving areas too wet in non-frozen conditions for use without substantial upgrades. In areas that are not suitable for non-frozen use, careful consideration of the desire for use, trail upgrades needed and natural resource priorities must take place before implementation.

Trail management objectives

Trail management objectives (TMOs) are used to clearly identify allowable and managed uses, desired recreational experience, intended difficulty level, maintenance frequency and type of maintenance performed. Because the David Dill/Arrowhead State Trail is multi-use, multi-seasonal, the trail may have different TMOs each season. The TMOs listed below are general and may not reflect all TMOs for the David Dill/Arrowhead State Trail.

Year-round TMOs

Corridor: The DNR will manage a single treadway for the state trail to the greatest extent possible. The single treadway will allow efficient maintenance and inspection of the tread surface. Soil conditions or ownership agreements may require two treadways in limited areas, if the area makes a vital connection for summer use.

Cross-slope. The DNR recommends an average cross-slope of 2% for snowmobile trails with 5% acceptable for limited distances. To accommodate the single treadway approach, the DNR will adhere to this TMO for both seasons of trail operations.

Trail Clearing: The trail corridor should be brushed to a width of approximately 30-feet. This will allow for a 15-20-foot wide trail, including a 5-foot buffer on each side. This width provides a clear year-round sight line and allow trail drying after rain events. The clearance of the trail would be approximately 15-20 feet high to allow maintenance and grooming equipment access.

Trail Grades: Erosion is not a major concern for snowmobile trails compared to summer use trails such as OHV and horse. This is because snowmobiles do not come in direct contact with the terrain. Because of the low potential for erosion, safety aspects and the wide turning radius of snowmobiles and groomers, snowmobile trails typically follow the fall line of a hill rather than the contours. Conversely, summer uses such as OHVs, hiking, horses directly come in contact with the terrain have a high potential for erosion if a trail is too steep. Summer use trails are typically limited to an average grade of 10% and a maximum grade of 25%. Soil conditions, amount and type of use, trail length along the steep grade and depth to bedrock should be taken into factor when determining if a slope can sustain the maximum grade for summer use. If a steep section of trail makes an important connection for summer use, the trail may be rerouted to allow a gentler slope.

Trail monitoring: The trail should be monitored on a consistent schedule. During trail monitoring visits, DNR staff should check the trail surface, no invasive plant occurrences, trail facilities such as shelters and trail bridges and culverts. In areas of the trail where OHV use is permitted, Trail Ambassadors may be utilized to monitor the trail and report their findings to the DNR.

Trail signage: Type and placement of signs along the trail should follow Department and Division manuals, guidance and policies. Typically, this includes cautionary signs along the trail and at intersections, regulatory signs and wayfinding signs. Additional sign information can be found in the “Wayfinding information” section of the master plan.

Mowing: Trail mowing in the summer is important maintenance activity for summer and winter use. Mowing allows issues with the treadway to be identified, allows the trail surface to dry quicker after rain events and allows snow to compact faster. The trail should be mowed at least once per year where feasible.

Trail surface: The trail surface should be flat and wide enough for two snowmobiles to pass during the winter season (15-20-feet). In areas for summer use that need improvements to the trail surface, those improvements should extend the full surface width of the trail so that winter use is not affected.

Winter season TMOs.

Managed use: The trail’s winter season managed use will be snowmobiling. Non-motorized winter sport uses will also be allowed, but the trail will not specifically be managed for those uses.

Grooming: Winter grooming provides a hard, smooth surface. Grooming should be done as needed during the winter season depending on snow conditions and trail traffic. Grooming should be two passes, creating a trail width of no less than 14 feet wide.

Difficulty level: The purpose of the David Dill/Arrowhead State Trail is to provide a variety of experiences for a variety of users. A difficult trail experience for one user

Managed use is the use the trail is primarily maintained for. Other uses are permitted and can be signed, but the trail will not specifically be managed for those uses.

or use may be an easy trail experience of another trail user or use. To accommodate as many users and trail uses as possible, the trail will be managed as easy to moderate, depending on location.

Summer season TMOs

Managed use: During the summer, the trail will be managed for multiple use. This includes motorized (where permitted) and non-motorized users.

Rutting/grooming: Because of the multiple use of the trail, the treadway should remain smooth as trail ruts not only affect summer uses, but winter uses as well. The trail should be monitored regularly for ruts and ruts should be fixed when discovered.

Protrusions: Protrusions are rocks, roots and other materials that may stick up from the trail surface and create a challenge for the rider. Because of the multiple use nature of the trail and the necessity of a smooth surface for winter groom, major protrusions should be removed from the trail surface during the summer season.

Difficulty level: The purpose of the David Dill/Arrowhead State Trail is to provide a variety of experiences for a variety of users. A difficult trail experience for one user or use may be an easy trail experience of another trail user or use. To accommodate as many users and trail uses as possible, the trail will be managed as easy to moderate, depending on location.

Trail support facilities

The David Dill/Arrowhead State Trail contains one designated parking area located just west of Tower along Highway 1. As future funding and priorities allow, the DNR may provide trail maps, rules and regulations and emergency information at the parking area or at natural stopping/gathering points along the trail, i.e. at the junction of the Arrowhead and Taconite State Trails. The trail may be accessed from other parking areas via connector trails. The DNR currently does not intend to develop more parking areas along the trail. However, if future demand warrants additional parking, the DNR may consider adding new parking facilities.

Ten trail shelters are located along the trail, which provide visitors a place to stop, warm up, and rest. Basic amenities such as picnic tables and pit toilets are located at the trail shelters. Maintenance and improvements will be performed at trail shelters as needed.

Currently, there are no designated camping facilities along the David Dill/Arrowhead State Trail. Trail users are encouraged to utilize designated campgrounds and hotels or resorts within the vicinity of the trail for overnight accommodations. Dispersed camping is permitted on state forest lands. Other land owners and managers may have different regulations governing camping. It is up to the trail user to understand whose land they are on and specific regulations related to camping.

Temporary trail closures

To protect the trail surface and natural resources as well as visitor safety, portions of the trail may be closed temporarily at various times. Potential reasons to close a portion include unsustainable trail due to seasonal thaw or heavy rain events, or safety considerations due to active logging or mineral extraction operations on/surrounding the trail. A majority of the David Dill/Arrowhead State Trail is located on lands managed for multiple uses. At times, land managers may utilize the trail to extract timber or minerals. Nothing in this plan prohibits utilization of the trail during timber harvest or mineral extraction operations, however land managers should coordinate with the DNR so that affected portions of the trail are signed properly and mitigated for safety if the trail continues to be left open, or temporarily closed if safety cannot be maintained during operations. To inform trail visitors of a temporary closure, the DNR may use one or all of these methods: 1) announce the closure on its website; 2) put out a news release; or 3) sign the closed areas of trail.

Trail operations and maintenance considerations
OM-1: Develop TMOs for summer and winter seasons to clearly communicate trail management priorities with trail visitors and future managers.
OM-2: Conduct year-round inspections to detect maintenance issues before they compromise safety or trail integrity.
OM-3: Continue to develop partnerships with local, county and Federal agencies to provide maintenance on shared surfaces.
OM-4: Consider new and expanded use of the trail where demand is present and natural resource considerations and trail agreements allow.
OM-5: Develop partnerships with clubs and organizations to assist with trail monitoring and maintenance.
OM-6: Temporarily close sections of the trail to protect the trail surface natural resources and visitors during spring thaw, after heavy rain events or during timber harvest.
OM-7: Install gates or barriers to prevent illegal use along sections of the trail not open year 'round. Consider gates at intersections with Grant-in-Aid snowmobile trails as they may not be open for summer use.

Table 3: Trail operations and maintenance considerations.

Information and interpretative services

Wayfinding information

Trail visitors expect the DNR to provide reliable information to accurately plan trips and find their way along the trail. Trail maps displaying facilities found along the

trail, distances between points and near-by facilities should be displaced at strategic locations along the trail. Trail visitors should expect to find trail maps and current trail information on the DNR webpage as well as local DNR offices. Online maps should be georeferenced so trail visitors can download them to their smartphones and find their location along the trail.

At trail intersections, the DNR should install and maintain wayfinding signs. These signs should display basic trail information such as trail direction and allowed trail uses. Additionally, signs displaying information such as direction and distance to fuel, food, lodging and medical services should be erected at key trail junctions and parking areas. Wayfinding signs should adhere to the DNR sign manual.

Trail rules, regulations and enforcement

State trail use is governed by *Minnesota Rules, Chapter 6100*, Public uses of state parks and other recreation areas. Rules and regulations should be displayed on user-friendly trail information boards located at strategic locations along the trail. If a particular illegal use is occurring in certain areas, the DNR should install problem-specific signs reminding trail visitors to not participate in the illegal behavior.

Trail rules and regulations are enforced by DNR conservation officers and deputy county sheriffs. Additionally, along sections of the trail that are open to OHVs, volunteer Trail Ambassadors may patrol the trail and promote safe and ethical trail use through education.

Interpretive Services

The DNR Parks and Trails Division interpretive program “forges emotional and intellectual connections to Minnesota’s natural and cultural heritage by provoking curiosity, encouraging discovery, and inspiring stewardship across generations.”

The division’s interpretive services program connects people with the outdoors through self-guided and staff-led experiences. Professional interpreters present in a variety of ways: personal experiences such as naturalist-led talks, special events and outdoor skills building programs; and self-guided experiences such as interpretive trails, exhibits, brochures and electronic media.

The goal of interpretive services along the David Dill/Arrowhead State Trail is to promote the unique natural, cultural and recreational resources of the trail, enhance the trail visitor’s understanding, appreciation and stewardship of the trail (through interpretation and signage); encourage considerate behavior towards other trail visitors (foster trail etiquette); and to satisfy trail orientation and safety needs (through signage).

Because of the trail’s length and the ability of users to travel at higher speeds (speed limit on state trails is 50 miles per hour), safety, orientation and interpretive messages will be spaced at greater intervals and at sites which are natural stopping

The "Minnesota DNR Volunteer Trail Ambassador Program" was established by the DNR Divisions of Enforcement, Parks & Trails and Forestry. The program exists to promote safe, environmentally responsible operation of OHVs through informational, educational contacts and monitoring efforts. Oversight and management of the program is the responsibility of the DNR Division of Enforcement, Safety/Education section.

points such as access points, intersections (trails and roads), shelters, and scenic overlooks.

Proposed interpretive themes

Natural resource themes for interpretation

- Identify and demonstrated the significance of unique geologic features
- Identify and demonstrate the significance of natural resources such as native plant communities and wildlife found in the area.

Cultural resource themes for interpretation

- Identify and demonstrate the historical and present day significance of the logging/timber industry in the area.
- Identify and demonstrate the historical and present day significance of the mining industry in the area.
- Identify and demonstrate the historical and present day significance of the Civilian Conservation Corps in the area.

Recreational resource themes for interpretation

- Identify and demonstrate the recreational significance of the trail.
- Identify methods for promoting recreational use of the trail through skill building programs and events.

Information and interpretive services considerations

IIS-1: Provide maps at trailheads, major intersections and in print at local DNR offices and online for visitor wayfinding. Online maps should be georeferenced so visitors can locate themselves utilizing their smartphones while on the trail.

IIS-2: Follow Parks and Trails and DNR sign guidelines and manuals so signs and wayfinding information is clear and concise. Provide community services information, trail orientation, wayfinding signage, trail rules, and trail courtesy/etiquette information at key locations and intersections along the trail. Include universal trail use symbols to communicate shared uses along the trail. Consider developing a sign plan for the trail.

IIS-3: Utilize volunteer Trail Ambassadors along sections of the trail open to OHVs to promote safe and ethical OHV riding.

IIS-4: Develop/incorporate an interpretive plan for the trail so that users better understand the trail's unique natural, cultural and recreational features.

IIS-5: Improve existing or develop new information kiosks at trail heads and major trail intersections. Consider information such as maps, rules and regulations and interpretive information about unique features along the trail.

Information and interpretive services considerations

IIS-6: Provide trail orientation signs at junctions with other trails or roads, parking lots, trail shelters, and trailheads so that trail users understand allowable uses on each trail or trail segment. Not all uses are allowed on all segments of the trail system. For example, many grant-in-aid snowmobile trails intersect with the David Dill/Arrowhead State Trail. Horses and OHVs are not allowed on most of these grant-in-aid snowmobile trails. Trail users need clear and accurate signage to understand where and when they are allowed the trail.

IIS-7: Coordinate with local emergency managers and 911 dispatch by posting GPS coordinates at major intersections along the trail. Include 911 grid markers on trail maps so visitors can quickly relay their location to 911 dispatchers.

Table 4: Information and interpretive services considerations.

Enforcement

Enforcement is a vital aspect of successful trail management. In general, Minnesota's state trails are safe, but violations of the rules and regulations do occasionally happen. User conflicts, noise violations, unauthorized use of the trail and trespass are all potential violations of the trail rules and regulations. Enforcement of state trail rules and regulations, information and education, trail design, trail maintenance and the mix of trail uses are all factors that contribute to the maintenance of a safe and secure trail environment.

The DNR's Division of Enforcement have primary responsibility to enforce trail rules and regulations. Local law enforcement and county sheriffs may also assist as necessary. Additionally, Trail Ambassadors may inform trail users of minor violations and explain the importance of following the rules and regulations.

Off-trail travel

The David Dill/Arrowhead State Trail crosses various land ownership and management authorities. These land owners and managers may have additional restrictions for use on their lands. Additionally, there are many trails that intersect with the state trail that may not be open for certain uses (e.g. snowmobile trails may not be open for OHVs). Parks and Trails will take a proactive approach signing trail boundaries and providing accurate maps that identify permitted uses. If trespass issues arise, Parks and Trails may take additional steps such as additional signage, gates or other management methods in coordination with law enforcement and associated land owners/managers. If OHV use causes damage on lands closed to OHVs, the land owner/manager may apply for reimbursement through the OHV damage account.



Minnesota Trail Ambassadors



State Trail boundary sign

Enforcement Considerations

ENF-1: Provide an adequate level of enforcement through a multifaceted approach to help maintain a safe and secure trail environment, to encourage trail users to understand and obey trail rules, and to respect other trail users and adjoining properties.

ENF-2: Develop on-site information that targets important trail courtesies to provide a safe and enjoyable experience for trail visitors.

ENF-3: Continue to work with local law enforcement, local first responder, and/or emergency medical services personnel to insure public safety.

ENF-4: Increase visibility of DNR staff during peak use times to provide information to the public and an enforcement effect.

ENF-5: Ensure trail boundaries are properly signed. When off-trail use is identified, proper measures such as signing, blocking and enforcement are taken.

Table 5: Enforcement considerations.

Natural Resource and Cultural Resources

Ecological Classification System

Minnesota uses an Ecological Classification System (ECS) for ecological mapping and landscape classification. Ecological land classifications are used to identify, describe, and map progressively smaller areas of land with increasingly uniform ecological features. The state is separated into four ecological provinces defined using major climate zones, native vegetation and biomes. The four ecological provinces include Eastern Broadleaf forest, Laurentian Mixed Forest, Tallgrass Aspen Parklands and Prairie Parklands.

Each ecological province is subdivided into sections and subsections. Sections are defined by origin of glacial deposits, regional elevation, distribution of plants and regional climate. Subsections further Figure 13 identifies the province, sections and subsections along the David Dill/Arrowhead State Trail.



Minnesota's ecological provinces

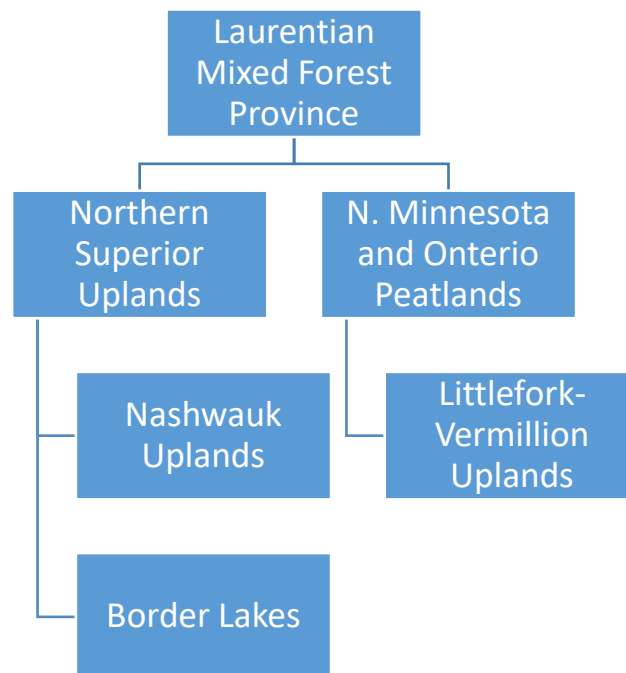


Figure 14: Ecological provinces, sections and subsections along the David Dill/Arrowhead State Trail.

Laurentian Mixed Forest Province

The Laurentian Mixed Forest (LMF) Province is characterized by broad areas of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps. The landscape ranges from rugged lake-dotted terrain with thin glacial deposits over bedrock, to hummocky or undulating plains with deep glacial drift, to large, flat, poorly drained peatlands.

Northern Superior Uplands Section

The Northern Superior Uplands Section (NSU) largely coincides with the extent of the Canadian Shield in Minnesota. The NSU is characterized by glacially scoured bedrock terrain with thin and discontinuous deposits of coarse loamy till and numerous lakes. The section has high relief, reflecting the rugged topography of the underlying bedrock.

Nashwauk Uplands Subsection

This subsection includes rolling till plains and moraines and flat outwash plains formed by the Rainy Lobe glacier. Most striking is the Giants Range, a narrow bedrock ridge towering 200 to 400 feet above the surrounding area. It trends southwest to northeast. Bedrock is locally exposed in the end moraines. Small bogs and potholes are common. Soils tend to be sandy to fine-loamy glacial till and outwash sand. They are classified as boralfs, which means they are cold, well-drained soils developed under forest vegetation.

The Nashwauk Uplands are located along a continental divide through Giants Range. Water flowing north eventually goes into Hudson Bay, water flowing west enters the Mississippi River Watershed and water flowing south flows into Lake Superior.

Land ownership in this Subsection is approximately equally split between public and private along the Arrowhead State Trail corridor. Forest management and recreation are the most important land uses in this Subsection, although mining is also present. Trail section 1 is partially located within this subsection.

Border Lakes Subsection

This subsection includes scoured bedrock uplands or shallow soils on bedrock, with a large number of lakes. Stream valleys are typically deep due to the east-west movement of glacial ice. Many of the larger valleys have converted to east-west lakes. Topography is dominantly rolling hills with irregular slopes and many outcrops of bedrock. Minnesota's highest point, Eagle Mountain (2,301-feet above mean sea level) is located in this Subsection.

The soils in this Subsection are derived from a mantle of acid, cobbly, and gravelly glacial till of variable depth. Coarse-loamy to coarse soil textures are most common. There are small areas of sandy and clayey lacustrine soil in the western portion of the subsection. About 5% of the unit is occupied by organic soils. Dominant forest communities include jack pine forest, white pine-red pine forest and hardwood-conifer forest. Logging has occurred in this subsection, but due to inaccessibility and sparse densities of forest stands, much of the area has not been logged. Today, recreation is a major land use. Trail sections 1, 2 and 7 are partially located within this subsection as well as all of trail sections 3, 4, 5 and 6.

Northern Minnesota and Ontario Peatlands Section

The Northern Minnesota and Ontario Peatlands Section is generally flat and poorly drained. Lake deposits are covered primarily by bogs, swamps, fens and other peatland vegetation. In the eastern areas of this Section, the peatlands are acidic, deep and old.

Littlefork-Vermillion Uplands Subsection

The Littlefork-Vermillion Uplands Subsection is bounded by the Littlefork River to the west, Glacial Lake Agassiz to the south and the Vermillion River and Crane Lake to the east. This subsection is a transitional zone between the flatter, swampier Agassiz Lowlands Subsection to the west and the rolling hills of the Border Lakes Subsection to the east.

Soils within this Subsection are clayey to loamy and formed from lake-laid sediments and glacial till. These soils are moderately well to poorly drained. Organic soils are common, but do not dominate the landscape (as they do to the west in the Agassiz Lowlands). Peat depths vary from shallow to deep (1 to 15 feet thick). Soils are classified primarily as Aqualfs (wet forested soils), Aquents (wet undeveloped soils), Boralfs (well to moderately well drained forested soils), and Hemists (moderately decomposed peat). Historically, native vegetation was dominated by white pine, red pine and jack pine forests. Lowlands were occupied by sedge fen, black spruce-sphagnum bog and white cedar-black ash swamp. Today, quaking aspen is the most common tree species. Timber harvest, particularly aspen, and recreation are two of the most important land uses. Trail sections 1, 2 and 7 are partially located within this subsection.

Climate

Minnesota is located in the upper Midwest of the United States and is consider a humid continental climate with hot summers and cold winters. Temperatures in International Falls range from an average low of -7 degrees Fahrenheit in January to an average high of 78 degrees Fahrenheit in July. International Falls averages 26 inches of rain and 71 inches of winter per year. Temperatures in Tower range from and average low of – 8 degrees Fahrenheit in January to an average high of 78 degrees Fahrenheit in July. Tower averages 28 inches of rain and 67 inches of winter per year.

Climate change

Climate change alters the character of the state's lands, waters, plants, fish and wildlife, and affects the DNR's ability to manage these resources for the long-term benefit of the public. The DNR's responsibility is to use the best available science to implement adaptation strategies that will minimize the negative impacts of climate

change on the state's natural resources, outdoor recreation opportunities, and commercial uses of natural resources.

The DNR's climate management strategies are guided by DNR Operational Order #131, "Climate Adaptation and Mitigation in Natural Resource Management." The DNR is committed to enhancing ecosystem resilience and reducing the negative impacts of climate change on the state's resources and outdoor recreation opportunities. Climate change will impact temperature and precipitation patterns. The rate of increase of average annual temperature in Minnesota from 1970-2014 has been 5.0°F/century. Temperatures are expected to continue increasing into the foreseeable future with the greatest change reflected in winter minimums.

Annual average precipitation is anticipated to increase by 3-5" per century. In addition, the number of heavy precipitation events has increased annually, resulting in more frequent and heavier flooding events. Climate change could impact outdoor recreation and trail management. A decline in winter snowfall amounts and season length could impact the feasibility of winter (winter-based) recreation activities. On the other hand, warmer temperatures in the spring and fall could extend the season for traditional summer uses.

Likely impacts of climate change on outdoor recreational activities include:

- Increased shoulder seasons: Warmer temperatures earlier in the spring and later in the fall may extend shoulder seasons, meaning the demand for almost all summer activities could be extended earlier in the spring and later in the fall.
- Adjustments may be needed as participation in traditional winter sports declines due to changing winter weather patterns. Climate change is expected to impact outdoor recreation on the trail.
- A shift to greater use and demand for summer trail activities will likely generate greater maintenance and sustainability issues for existing trail systems, both motorized and non-motorized uses. Existing facilities may become over-used resulting in impacts to facilities and natural resources.
- Some cold-water lakes and streams may warm to the point that the fishery changes to a more warm-water based fauna. This could have an impact on angling recreation.
- A decline in winter snowfall amounts and season length will mean decreased funding to dedicated accounts related to those activities such as cross country skiing and snowmobiling because of fewer users and registrations.
- Winter staffing may need to be adjusted if dedicated funds are impacted by changing climatic conditions.

Wildlife

The area surrounding the David Dill/Arrowhead State Trail offers abundant habitat for a variety of wildlife species. Because the trail traverses three ecological subsections multiple wildlife species roam along the trail corridor. Multiple lakes, rivers, streams and wetlands along the trail corridor area also important features to the mammals, birds, reptiles and amphibians that may inhabit the trail corridor.

Mammals

Distinguished mammal species in the trail area include: black bear, white-tailed deer, Canada lynx, northern bog lemmings, smoky shrew, rock vole, heather vole, gray wolf, American badger, American pine marten, northern myotis, bat, beaver, bobcat, and mink. The transition between three different ecological subsections provides habitat for many diverse mammal species.

Birds

Minnesota's northern forests provide habitat for many avian species, including: bald eagles, spruce grouse, American bitterns, ospreys, northern goshawks, great gray owls, boreal owls, boreal chickadees, Connecticut warblers, gray jays, black-backed woodpeckers, yellow rails, merlins, red-necked grebes, and trumpeter swans.

Reptiles and amphibians

Reptiles and amphibians in the vicinity of the trail include Common snapping turtle, eastern red-backed salamander, spring peeper, boreal chorus frog, wood frog, northern leopard frog, mink frog, and red belly snake.

Threatened, endangered and species of special concern

The DNR maintains inventory and information on Minnesota's threatened, endangered and species of special concern through the Natural Heritage Information System (NHIS). The NHIS provides information on Minnesota's rare plants, animals, native plant communities, and other natural features. This database is continually updated as new information becomes available and it the most complete source of data available for these features. The list of features found within one mile of the David Dill/Arrowhead State Trail can be found in Appendix B.

Species of greatest conservation need

Species of greatest conservation need (SGCN) have been identified for each ecological subdivision in Minnesota. Minnesota defines Species in Greatest Conservation Need (SGCN) as native animals, nongame and game, whose populations are rare, declining, or vulnerable to decline and are below levels desirable to ensure their long-term health and stability. Many SGCN are known to

Threatened: A plant or animal species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in Minnesota.

Endangered: A plant or animal species that is threatened with extinction throughout all or a significant portion of its range in Minnesota.

Species of Special Concern: A species that, although it is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

exist within the three ecological subsections that intersect the trail. Table 6 identifies the number of SGCN in each subsection.

Ecological Subsection	Number of SGCN
Border Lakes	69
Littlefork-Vermillion Uplands	67
Nashwauk Uplands	60

Table 6: SGCN in Ecological Subsections

Wildlife Considerations

WLD-1: Prior to any new construction, review updated NHIS data and adhere to best practices to reduce the potential to disturb listed species.

WLD-2: Minimize disturbance to SGCN. Maintain SGCN habitats along the trail and adhere to any county, state or federal wildlife management plans.

WLD-3: Work closely with wildlife and non-game wildlife staff to stay up-to-date on information regarding threatened, endangered species of special concern.

WLD-4: Provide interpretation and education related to wildlife species one may encounter along the trail to educate trail users.

Table 7: Wildlife considerations

Water Resources

Minnesota is unique as the state contains two continental divides: the Laurentian Divide and the St. Lawrence Divide. Waters north of the Laurentian Divide flow north into the Hudson Bay. Waters south flow south into the Gulf of Mexico. Waters north of the St. Lawrence Divide, but south of the Laurentian Divide flow into the Great Lakes and St. Lawrence Seaway. Waters south of the divide flow into the Gulf of Mexico and the Atlantic Ocean. The two divides meet just south of the David Dill/Arrowhead State Trail near Hibbing.

Basins and Watersheds

A basin (or drainage basin) is an area of land drained by a river or lake and its tributaries. Minnesota has 10 major drainage basins. Each drainage basin is made up of smaller units called watersheds, which correspond to the drainage of a tributary or lake system. Minnesota has 80 major watersheds. The David Dill/Arrowhead State Trail crosses or intersects numerous wetland and river resources located within one basin (Rainy River) and three major watersheds.

The Rainy River Basin sits on Minnesota's border with Canada and is home to some of the state's finest forest and water resources. Voyageurs National Park and the Boundary Waters Canoe Area Wilderness are located within the Rainy River Basin, as are several of Minnesota's most famous walleye fisheries and many popular trout streams. Other prominent uses of natural resources in the basin are forestry, mining

and various forms of recreation, including the David Dill/Arrowhead State Trail. The waters from the Rainy River Basin flow north, eventually reaching the in Hudson Bay.

The David Dill/Arrowhead State Trail meanders across three major watersheds: the Vermillion River (Sections 1,2,3,4,5), the Littlefork River (Sections 1,2,7) and the Rainy River-Rainy Lake (Sections 6 and 7).

Stream Crossings

Stream and rivers are important resources that provide clean water for drinking, wildlife and fish habitat and recreation. It is important to keep these resources in pristine condition so that future generations may also benefit. The David Dill/Arrowhead State Trail contains 50 stream and river crossings, of which 15 are designated trout streams or tributaries to designated trout streams and 33 are public water courses. The trail crosses one impaired stream, the Blackduck River. Impaired streams are streams that fail to meet one or more water quality standards according to the Minnesota Pollution Control Agency.

Existing trail crossings of waterways include 16 bridges and multiple culverts and fords as acceptable for existing trail uses. In 2017, the DNR inspected the trail bridge crossings and identified maintenance needs. Potential new uses or additional summer use will require further evaluation and assessments to determine appropriate crossings prior to implementation. This may include new bridges to allow for unimpeded stream flow, fish passage, reduction of erosion and sedimentation and overall stream protection.

Wetlands

The David Dill/Arrowhead State Trail crosses numerous wetlands over its length. Wetlands play an important role in the ecosystem as they filter water before returning it to the aquifers, streams or lakes. These include public waters wetlands, which are administered by the DNR and non-public waters wetlands, which are administered by the local government unit. Because the trail was originally developed primarily for winter use/snowmobiling, impacts to sensitive areas was minimized. The DNR must carefully consider impacts to wetlands when developing the trail for summer season use.

The preferred method for developing summer trails in wetland areas is to avoid wetlands. If this cannot be accomplished, the DNR will reduce impacts by utilizing constructions techniques that have minimal impact on the cross section of the wetlands. Finally, the Minnesota Wetland Conservation Act requires no net loss of wetlands, so the DNR must mitigate any impacts to wetlands by purchasing wetland credits.

Designated Trout Streams are streams the DNR specially manages for trout habitat.

Public water are water bodies that meet the requirements of [M.S. 103G.005, Subd. 15](#)

Water Resource Considerations

WAT-1: Utilize bridges and bottomless culverts to the greatest extent possible for stream crossings to avoid impacts to the stream channel.

WAT-2: Avoid impacts to wetlands. If a new summer use may cross a wetland area, consider rerouting the trail. If it is not possible to reroute the trail review construction methods that are most practical, but have minimal impact on the wetland.

WAT-3: Consult with other DNR division staff prior to constructing a new water crossing to determine the best possible crossing.

WAT-4: Utilize native plants from the local area when revegetating an impacted area.

WAT-5: Follow the requirements of permits related to construction.

Table 8: Water resource considerations.

Vegetation

Pre-settlement vegetation

The three ecological subsection that the David Dill/Arrowhead State Trail crosses contain a mix of deciduous and coniferous trees.

Within the **Nashwauk Uplands Subsection**, white pine-red pine forest and jack pine barrens were common on outwash plains. Aspen-birch forest and mixed hardwood-pine forest were present on moraines and till plains. Wetland vegetation included conifer bogs and swamps.

Within the **Border Lakes Subsection**, Heinselman (1974) describes the major forest communities as jack pine forest, white pine-red pine forest, and hardwood-conifer forest. The latter community was dominated by balsam fir, white spruce, paper birch, and quaking aspen. Fire dependence characterizes all of these forest types. Jack pine is most prevalent in the two areas where the landscape is least dissected by small lakes, north of Vermilion Lake and within and north of the Sawbill Outwash Plain. Areas most dissected by lakes are where white pine-red pine forests are most common, probably as a result of partial fire protection (Albert 1993).

Within the **Littlefork-Vermilion Uplands Subsection**, Marschner (1974) mapped much of the subsection as aspen-birch forest that would eventually become conifer dominated (white pine, white spruce, and balsam fir). The eastern portion was dominated by white pine, red pine, and jack pine forest. Lowlands were occupied by sedge fen, black spruce-sphagnum bog, and white cedar-black ash swamp. There were also low moraines and beach ridges dominated by jack pine forest or trembling aspen-paper birch forest.

Present-day vegetation

Logging of conifer trees has been an important forest use for much of the trail area in recent history. This has made quaking aspen the dominant tree species in much of the trail corridor. However, within the Border Lakes Subsection, large areas remained unlogged leaving stands of old growth timber.

Minnesota Biological Survey

The Minnesota Biological Survey (MBS) systematically collects, interprets, monitors and delivers data on plant and animal distribution as well as the ecology of native plant communities and functional landscapes. To date, 84 out of Minnesota's 87 counties have been surveyed, including portions of St. Louis and Koochiching Counties. Approximately 109 miles of the David Dill/Arrowhead State Trail have preliminarily been identified as moderate, high or outstanding sites of biological significance. The Lost Lake Peatlands SNA is ranked as an outstanding site of biological significance and the East Rat Root River Peatlands SNA is ranked as a high site of biological significance. The DNR plans to map native plant communities within high and outstanding sites of biological significant in the future. Once mapping is complete, Parks and Trails will review native plant communities to ensure trail management will not interfere with native plant management.

Forest management plans guide vegetation management on timber-producing state forest lands. Plan coverage areas are determined by the ECS section boundaries. Additional information and guidance can be found in the Border Lakes and North 4 plans.

Invasive Species

As access to natural areas becomes higher, so does the risk of spreading invasive plants. Along the David Dill/Arrowhead, Canada thistle is the most prevalent invasive plant. The DNR should monitor the trail to minimize the potential of spreading invasive species. In areas where OHV use is permitted, volunteer trail ambassadors may assist in monitoring for invasive species.

While conducting trail development or maintenance, Parks and Trails will follow the direction of DNR Operational Order 113, which directs DNR staff on measures to reduce the spread of invasive species. DNR volunteers are also expected to follow the guidance within Operational Order 113.

Invasive species will be physically removed where practicable or treated with herbicides if necessary. All herbicide applications would comply with labeling, safety protocols and the precautions prescribed in DNR Operational Order 59, which governs the DNR's use of pesticides. The Operational Order specifies that all pesticide applications must be preceded by a natural heritage database review to insure endangered or threatened species or significant native plant communities are not harmed.

Minnesota sites of biological significance include:

"Outstanding" sites contain the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes.

"High" sites contain very good quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes.

"Moderate" sites contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have strong potential for recovery of native plant communities and characteristic ecological processes.

"Below" sites lack occurrences of rare species and natural features or do not meet MBS standards for outstanding, high, or moderate rank. These sites may include areas of conservation value at the local level, such as habitat for native plants and animals, corridors for animal movement, buffers surrounding higher-quality natural areas, areas with high potential for restoration of native habitat, or open space.

Vegetation Considerations

VEG-1: Utilize native, locally sourced plants to revegetate areas impacted by erosion, over use and construction.

VEG-2: Restore or establish native woodlands or wetlands plantings along the trail to minimize maintenance, establishment of invasive plants and erosion potential.

VEG-3: Train staff and volunteers on identification of invasive plants. Inspect the trail and eradicate invasive plants as necessary.

VEG-4: Avoid or minimize impacts to Minnesota Biological Survey Sites of Outstanding or High Significance.

VEG-5: Regularly coordinate and communicate with land managers about trail management and operations to ensure and promote high quality recreational opportunities along the trail and connected recreational units and systems.

Table 9: Vegetation Considerations.

Fisheries

The use of the David Dill/Arrowhead State Trail for fishing access is an important use of the trail. Additionally, a healthy fish population indicates healthy water quality, which is important for plants, wildlife and human health. Ensuring a healthy fish population should remain an important value of trail management.

Designated trout streams

The David Dill/Arrowhead State Trail crosses eight designated trout streams and two designated trout stream tributaries. Trout streams have special regulations to protect trout populations and are governed under Minnesota Rules 6264.0050. Designated trout streams are mostly found in the northeast Arrowhead region and southeast Minnesota. Along designated trout streams and tributaries, the DNR takes special precautions to protect stream beds for fish habitat and reproduction.

Minnesota has two species of native trout: brook trout and lake trout. Lake trout are not typically found in rivers and streams. Two other trout species were introduced to Minnesota in the late 19th century: brown and rainbow trout. Trout are more sensitive to environmental changes than many other fish, with native brook trout among the most sensitive. Because of this, the DNR must take great precautions protecting Minnesota's designated trout streams and tributaries.

Fisheries Considerations

FISH-1: Manage run off so that it does not flow directly into a stream or lake.

FISH-2: Utilize bridges or bottomless culverts when crossing designated trout streams/tributaries to not impact the stream channel.

FISH-3: Ensure stream banks are stable and erosion prevention measures are in place along stream crossings.

FISH-4: Consult with local DNR fisheries staff to determine the best stream crossing method for a particular area.

Table 10: Fisheries Considerations.

Cultural Resources

Historical context

Prior to the arrival of Europeans, the Dakota lived in the area surrounding the David Dill/Arrowhead for over two centuries. Coincidentally, around the time of European arrival, the Dakota were forced out of the area by the Chippewa.

The first Europeans to arrive in the area were French Voyageurs, sent by merchants of Montreal and Quebec to discover new sources of fur in the year 1660. The importance of fur trading in the region continued through the early years of the 19th century. Three companies: the Hudson Bay Company, the Northwest Company and the American Fur Trading Company established forts and routes throughout present-day southern Ontario and northern Minnesota. Eventually the fur trade shifted northward and its existence in Minnesota ended.

In the late 19th century the logging industry dominated St. Louis and Koochiching Counties. Pine and cedar were the first trees to attract loggers. In the 1890's, paper producers saw the value in spruce and established the region's first paper mill (Northwest Paper Company) in Cloquet.

In 1865, Minnesota State Geologist Henry H. Eames surveyed the mineral resources in the area. The state discovered high grade iron ore deposits and small amounts of gold. This began a short gold rush, but the gold proved to be too difficult and too expensive to extract. The iron ore, however, became a valuable industry for the area. The railroads followed and soon small settlements sprung up. Today, iron ore mining remains an important industry in the area.

Socioeconomic context

The David Dill/Arrowhead State Trail crosses St. Louis and Koochiching Counties in northeastern Minnesota. St. Louis County has the sixth-highest population in the state, however, a majority of these people live in the Duluth, MN-Superior, WI metropolitan area. International Falls is the largest community in close proximity to

the state trail. The population in the trail area has declined slightly from 2000-2010. Table 11 illustrates the population change of the counties and cities located along the trail.

County	2000 Population	2010 Population	Change	Percent Change
St. Louis	200,528	200,226	-302	-0.2%
Koochiching	14,355	13,317	-1,038	-8.2%
City				
Tower	479	500	21	4.4%
Cook	622	574	-48	-8.3%
Orr	249	267	18	7.2%
International Falls	6,703	6,424	-279	-5.8%

Table 11: Major communities along the trail.

Public Review

Prior to final approval, the public will have the opportunity to review and comment on the draft plan during a 30-day public review period. The final plan will reflect comments received during the public review period.

Implementation

Minnesota Statutes Chapter 86A.09 requires that a master plan be prepared for state trails before trail development can begin – although planning, design, and land acquisition can take place before the plan is complete. Trail users and trail advocates need to recognize that the completion of a master plan is only one step in what typically is a long process of implementation.

Many first-generation state trails were developed on abandoned rail right-of-ways that the state or local governments were able to acquire. The David Dill/Arrowhead State Trail is unique because the trail was developed by piecing together public land parcels, but also crossing significant portions of private lands.

DNR staff work closely with private land owners along the trail to secure trail placement. Typically, the DNR will acquire the land or an easement on a willing seller basis, keeping in mind that a series of acquisitions on adjoining properties will be needed in order to create a trail segment with a logical beginning and end. If purchasing the land or an easement is not possible, the DNR will seek a long-term lease or permit from the land owner for the trail. On lands not owned by the DNR, the easement, lease or permit may also identify what activities are permitted through the agreement. If a new activity is considered for that portion of trail, the agreement must be revised prior to the new use.

Process to allow a new use

This plan does not automatically open the David Dill/Arrowhead State Trail to new uses. This plan explores the feasibility of new uses and allows the DNR to upgrade section of the trail and sign them as open to a new use. This section will explain the process to permit a new use to sections of the state trail.

- **Complete the master plan.** This master plan guides the development and uses permitted along the state trail. This master plan provides for current uses of the state trail as well as the possibility of new uses where feasible.
- **Explore the feasibility of new use additions to sections of the trail.** The DNR must consider land ownership, natural resource qualities such as slope, wetlands and cultural resources and connectivity. The trail alignment must meet state and federal guidelines and rules for width, shoulders, curvature, accessibility, etc. Therefore, it is important for local governments and trail groups to coordinate their efforts with DNR staff. While there may be priorities specific to the David Dill/Arrowhead State Trail, statewide priorities must also be considered in the greater context of the state trail system. DNR will work with stakeholders to help determine priorities, funding, timelines, and staff resources in context with other needs and demands.
- **Contact and consult with local land owners.** Many sections of the David Dill/Arrowhead State Trail cross lands that are not managed by the DNR. Prior to allowing a new use along a section of the trail, the DNR should work with the land managers to identify and mitigate any concerns. Land owner concerns often involve privacy, safety and liability. If the current agreement does not identify multiple uses, the agreement should be updated.
- **Resource Assessment Policy # 040.** Consult the Parks and Trails Resource Assessment Policy Manual to determine whether a formal resource assessment is required for proposed development or implementation of projects or proposals. This process also takes into consideration environmental review and permit requirements and may be conducted prior to or during the trail engineering and design process.
- **Trail engineering and design.** The design process offers a final opportunity to assess feasibility, including the need to avoid sensitive natural or cultural resources and address constraints such as wetlands or steep slopes. Trail alignments may shift during the design process. Construction may be staggered or sequenced along the trail. Construction may occur on one or more segments, while the processes of negotiation and design continue on others.
- **Ongoing maintenance and stewardship.** Trail associations often act as “eyes on the trail” to monitor conditions, notify the DNR of concerns and

volunteer on certain efforts. Local units of government may provide trail maintenance via a cooperative agreement.

- **Orientation and Interpretation.** All trails are developed with traffic safety and directional signs. Some trails provide interpretive signs that highlight notable natural and cultural resources and landscape features. An interpretive plan may be developed to identify themes and features that will be interpreted.

Development resources

The DNR and outside partners offer a variety of resources that focus on trail construction, maintenance and funding. Below is a list of potential resources available.

Financial resources

- Snowmobile Trails Assistance Program - Grant-in-Aid (GIA) Program:
http://www.dnr.state.mn.us/grants/recreation/gia_snowmobile.html
The snowmobile GIA program funds local government units and clubs for grooming and maintenance of snowmobile trails. Although state trails are generally maintained by the DNR Parks and Trails Division, the DNR may partner with local groups to provide grooming and trail maintenance through the GIA program.
- Off-Highway Vehicle (OHV) Grant-in-Aid Program: for all-terrain vehicles (ATV), off-highway motorcycles (OHM), and off-road vehicles (ORV):
http://www.dnr.state.mn.us/grants/recreation/gia_ohv.html
The OHV GIA program funds local government units and clubs for construction and maintenance of OHV trails. Although state trails are generally maintained by the DNR Parks and Trails Division, the DNR may partner with local groups to provide trail maintenance through the GIA program.
- OHV Damage Account:
<http://www.dnr.state.mn.us/ohvdamageaccount/index.html>
The OHV Damage Account provides funding to repair damage to private or public lands caused by OHVs. The land where the damage occurred must be closed to OHV use and the land manager must have made reasonable efforts to identify the responsible parties, seek restitution and prevent future damage.
- Cross-Country Ski Grant-in-Aid Program:
http://www.dnr.state.mn.us/grants/recreation/gia_crosscountry.html
The cross-country ski GIA program funds local government units and clubs for grooming and maintenance of cross-country ski trails. Although state trails are generally maintained by the DNR Parks and Trails Division, the DNR

may partner with local groups to provide grooming and trail maintenance through the GIA program.

- Parks and Trails Legacy Grant Program:
http://www.dnr.state.mn.us/grants/recreation/pt_legacy.html
The Parks and Trails Legacy Grant Program provides funding for parks and trails of regional significance outside of the seven county metropolitan area.
- Local Trail Connections Grant Program:
http://www.dnr.state.mn.us/grants/recreation/trails_local.html
The Local Trail Connections Grant Program provides funding to local government units to provide connections between significant public resources (such as historical places, open spaces, parks or trails) and communities. Although these grants cannot be used to fund development and maintenance of the state trail, they may fund maintenance of vital connector trails between the state trail and local communities.
- Federal Recreation Trail Grant Program (also available for state trails):
http://www.dnr.state.mn.us/grants/recreation/trails_federal.html
The Federal Recreation Trail Grant Program (F RTP) provides Federal funding for motorized and non-motorized trails.
- Regional Trail Grant Program:
http://www.dnr.state.mn.us/grants/recreation/trails_regional.html
The Regional Trail Grant Program provides funding for trails of regional significance outside of the seven county metropolitan area.

Trail development resources

- **Minnesota DNR Parks and Trails Division.** The Minnesota DNR Parks and Trails Division provides a variety of resources for trail development on its website as well as in the [Trail Planning, Design, and Development Guidelines](#).
- **National Off-Highway Vehicle Conservation Council.** The National Off-Highway Vehicle Conservation Council (NOHVCC) offers a variety of resources for OHV trail development on its [website](#) as well as their [Great Trails](#) publication.
- **State Organizations.** State organizations such as the [ATV Association of Minnesota](#), [Minnesota Four Wheel Drive Association](#), [Amateur Riders of Motorcycles Association-AMA District 23](#) and the [Minnesota United Snowmobilers Association](#) provide various resources related to trail development and maintenance.

Plan modification

The DNR Parks and Trail Division's state trail master plans document a partnership-based planning process, and the recommended actions resulting from that process. These comprehensive plans recognize that all aspects of trail management are interrelated, and that all recommendations should also be interrelated.

Over time, however, conditions change that affect some of the plan recommendations or even an entire plan. Plans need to acknowledge changing conditions, and be flexible enough to allow for modifications as needed. There are two types of plan modifications: plan revisions and plan amendments. Minor plan revisions concern less controversial issues and can generally be made within the DNR Parks and Trails Division as plan revisions. Larger issues that represent changes in management direction or involve other portions of the Department, or other state agencies, are addressed as plan amendments. The DNR Parks and Trails Division will make the decision whether a plan revision or plan amendment is appropriate.

To maintain consistency between plans and processes, all revisions and amendments will be coordinated through the DNR Parks and Trails Division Policy, Programs and Planning Section. Requests for planning assistance should be directed to the DNR Parks and Trails Division's policy, programs and planning manager in the Central Office, St. Paul.

Plan amendments

From time to time the DNR must amend master plans to accommodate proposed changes that may not rise to the level of a new master plan. The DNR has developed a process to determine if a plan amendment is appropriate.

Plan amendment criteria

Before determining if an amendment is appropriate, the DNR must consider:

- Does the proposed change alter the mission, vision, goals, specific management objectives, or proposed development plans outlined in the plan?
- Is the proposed change controversial between elected officials and boards, user groups, the public, adjacent landowners, other DNR divisions or state agencies?
- Does the proposed change directly affects other state agencies (i.e., Minnesota Historical Society)?

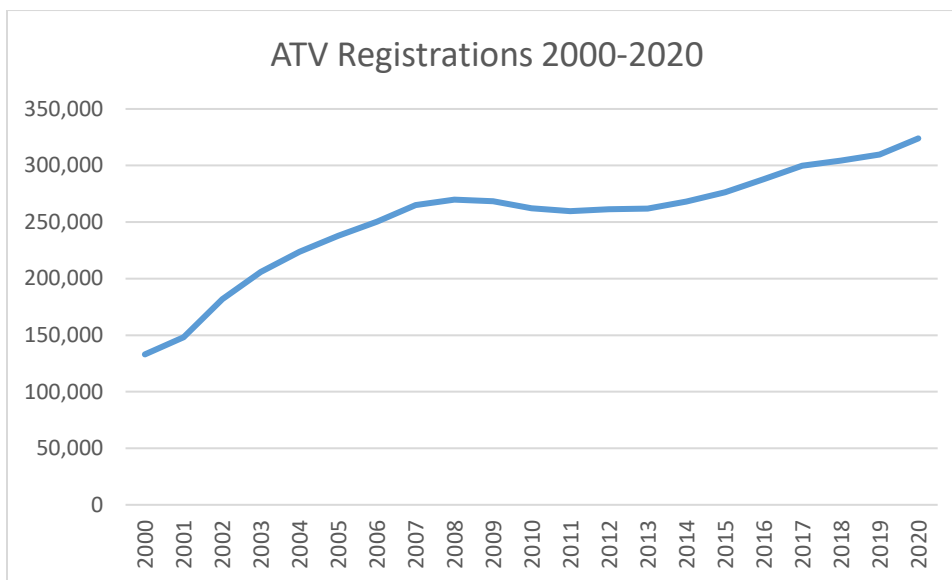
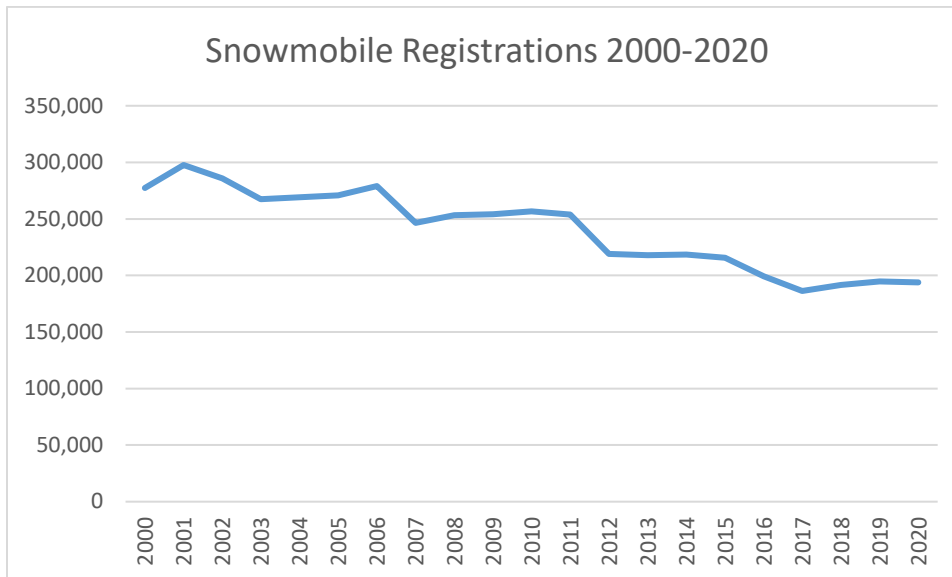
Plan amendment process

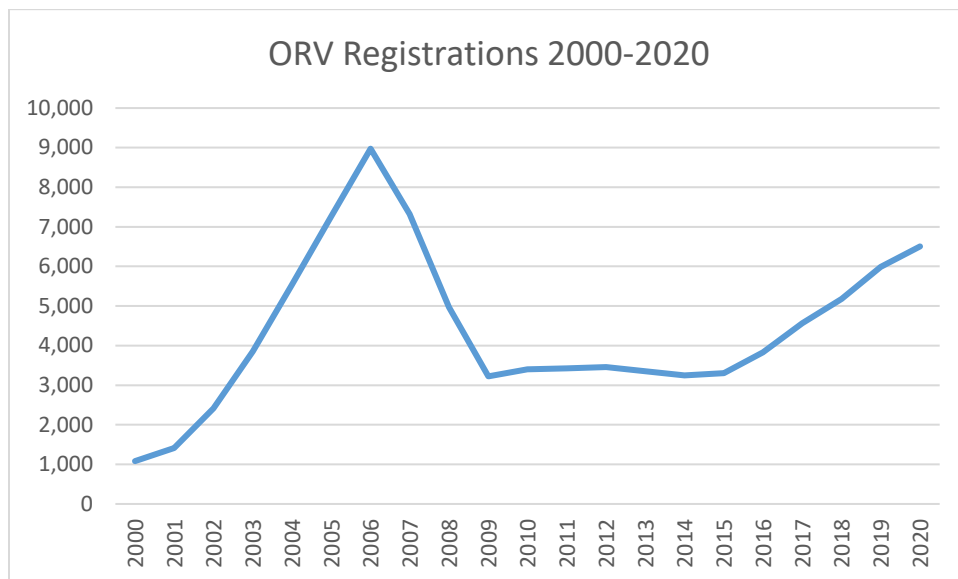
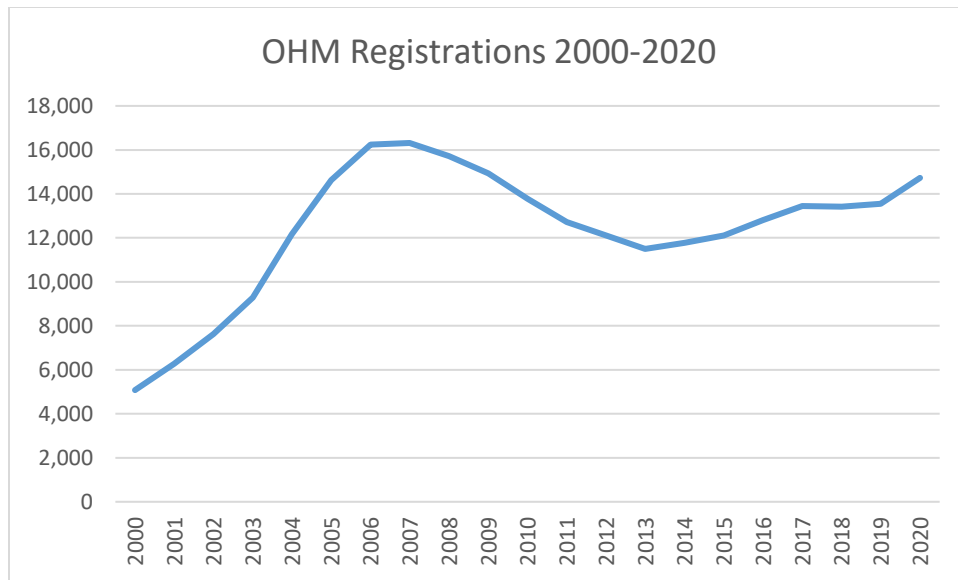
The DNR follows a process similar to that of the master plan process for plan amendments. The typical process includes:

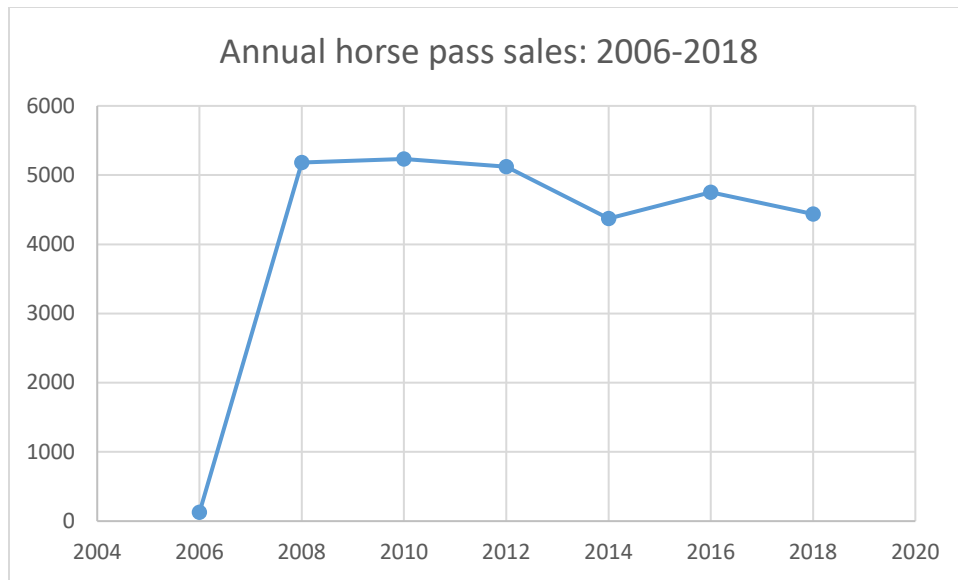
1. Review the proposed change at the area and regional level. Determine the scope of the project and what stakeholders should be involved. Discuss the proposed change with the stakeholders. If the issue may be controversial, provide an opportunity for public input.
2. Draft the plan amendment. Ask for review by other DNR divisions as well as Parks and Trails resource assessment staff. If the proposed change affects other government agencies, coordinate with those agencies to ensure all proper reviews are followed.
3. Conduct a 30-day public review of the plan amendment. This period should include a public review meeting in close proximity of the project area.
4. Review and respond to public comments. Amend the amendment if necessary after review of the comments.
5. Final review and signature by DNR leadership.

Appendix A: Registration trends for snowmobile, OHV and horse pass

The following charts display recreational vehicle registration and annual pass sales for popular activities the DNR administers. Although registration and sale data can be used as a proxy, the numbers do not fully represent level of use by individuals or user groups in general. Snowmobiling remains a popular winter activities in Minnesota, but level of registrations may fluctuate depending on snow conditions. The Arrowhead Region of Minnesota typically has some of the most consistent snow conditions, thus remaining popular among snowmobilers.







Appendix B: Listed features within one mile of the David Dill/Arrowhead State Trail.

The following is a list of state listed features located within one-mile of the David Dill/Arrowhead State Trail. The DNR Natural Heritage Information System (NHIS) was queried in early 2020 to compile this list. Prior to any new construction along the trail, an updated NHIS report will be obtained to identify any new discoveries. The species status in Minnesota is classified as the following:

- **Endangered (END):** The species is threatened with extinction throughout all or a significant portion of its range within Minnesota.
- **Threatened (THR):** The species is likely to become endangered within the foreseeable future throughout all or a significant portions of its range within Minnesota.
- **Special Concern (SPC):** Although the species is not endangered or threatened, it is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status.
- **No legal status (NON):** A species that currently does not meet any of the above criteria, but the Natural Heritage and Nongame Research Program is gathering data for possible future listing.

Type	Common Name	Scientific Name	Federal Listing	State Listing
Vascular Plant	Mountain yellow-Eyed Grass	<i>Xyris montana</i>	--	Special Concern
Vascular Plant	Small Greenwood Orchid	<i>Platanthera Claveliata</i>	--	Special Concern
Vascular Plant	Neat Spikerush	<i>Eleocharis nitida</i>	--	Special Concern
Vascular Plant	Torrey's Mannagrass	<i>Torreyochloa Pallida</i>	--	Special Concern
Vascular Plant	Floating Marsh Marigold	<i>Caltha natons</i>	--	Endangered
Vascular Plant	Lapland Buttercup	<i>Ranunculus lapponicus</i>	--	Special Concern
Vascular Plant	Northern Oak Fern	<i>Gymnocarpium robertianum</i>	--	Special Concern
Vascular Plant	White Adder's Mouth	<i>Malaxis monophyllos var. brachypoda</i>	--	Special Concern
Vascular Plant	Discoid Beggartics	<i>Bidens discoidea</i>	--	Special Concern
Vascular Plant	Coastal Sedge	<i>Carex exilis</i>	--	Special Concern
Vascular Plant	Bog Rush	<i>Duncus stygius var. americanus</i>	--	Special Concern
Vascular Plant	Cuckoo Flower	<i>Cardamine Pratensis</i>	--	Threatened
Invertebrate Animal	A Caddisfly	<i>Hydroptila novicola</i>	--	Delisted
Invertebrate Animal	Laurentian Tiger Beetle	<i>Cicindela denikei</i>	--	Special Concern
Invertebrate Animal	A Caddisfly	<i>Goera stylata</i>	--	Threatened
Invertebrate Animal	Creek Heelsplitter	<i>Lasmigona compressa</i>	--	Special Concern
Vertebrate Animal	Northern Goshawk	<i>Accipiter gentilis</i>	--	Special Concern
Vertebrate Animal	Bald Eagle	<i>Haliaeetus leucosephalas</i>	--	Delisted
Vertebrate Animal	Trumpeter Swan	<i>Cygnus buccinators</i>	--	Special Concern
Vertebrate Animal	Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Threatened	Special Concern
Vertebrate Animal	Little Brown Myotis	<i>Myotis lucifusus</i>	--	Special Concern