Northern Heights Park

Trail Update

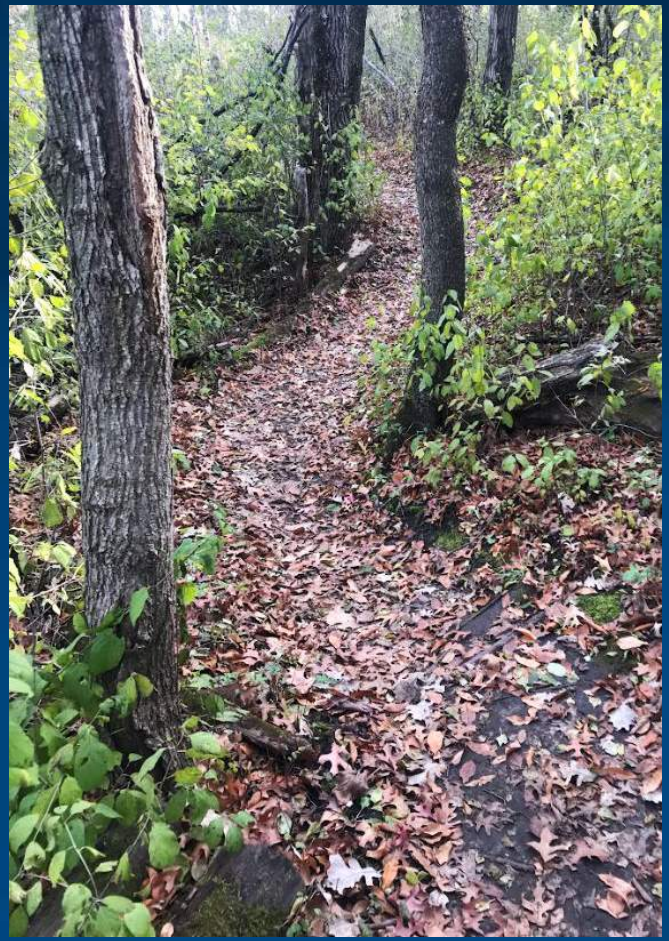
March 16, 2024





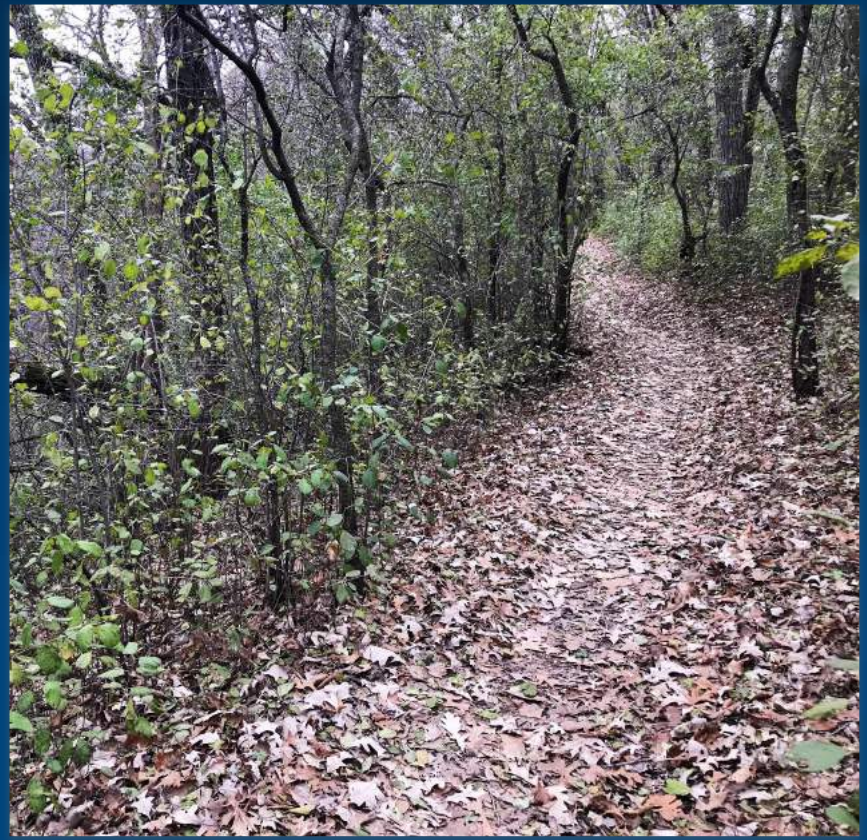


What is RASC?



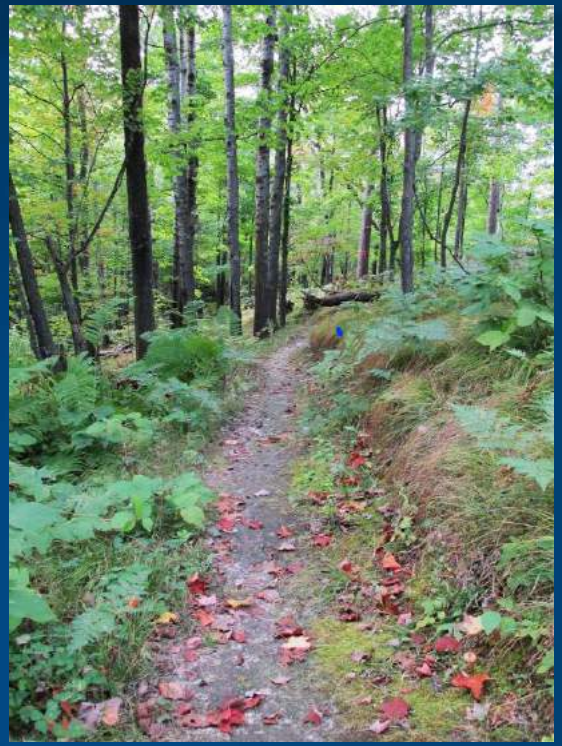
- Increase access to the park
- Increase community enjoyment of healthy activities
  - Hiking, trail running, biking, snowshoeing etc.
- Respect residential properties
- Seek resident feedback

RASC Goals For This Plan

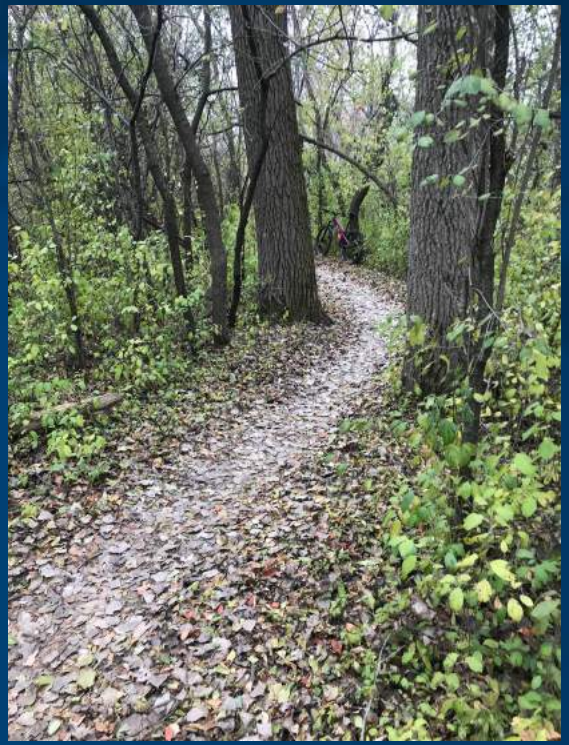


- Meeting with Parks & Rec staff to understand the process
- Meeting with Parks/WSB engineering firm to understand the evaluations needed
- Meeting with Parks/WSB staff with the results
- Meeting with Parks/County staff to help interpret the WSB results
- Walked the property with GPS software
- Utilized trail software including MN Topo LIDAR
- Meeting with Parks & Rec to review trail

How did we get here?


What is a sustainable single-track trail?



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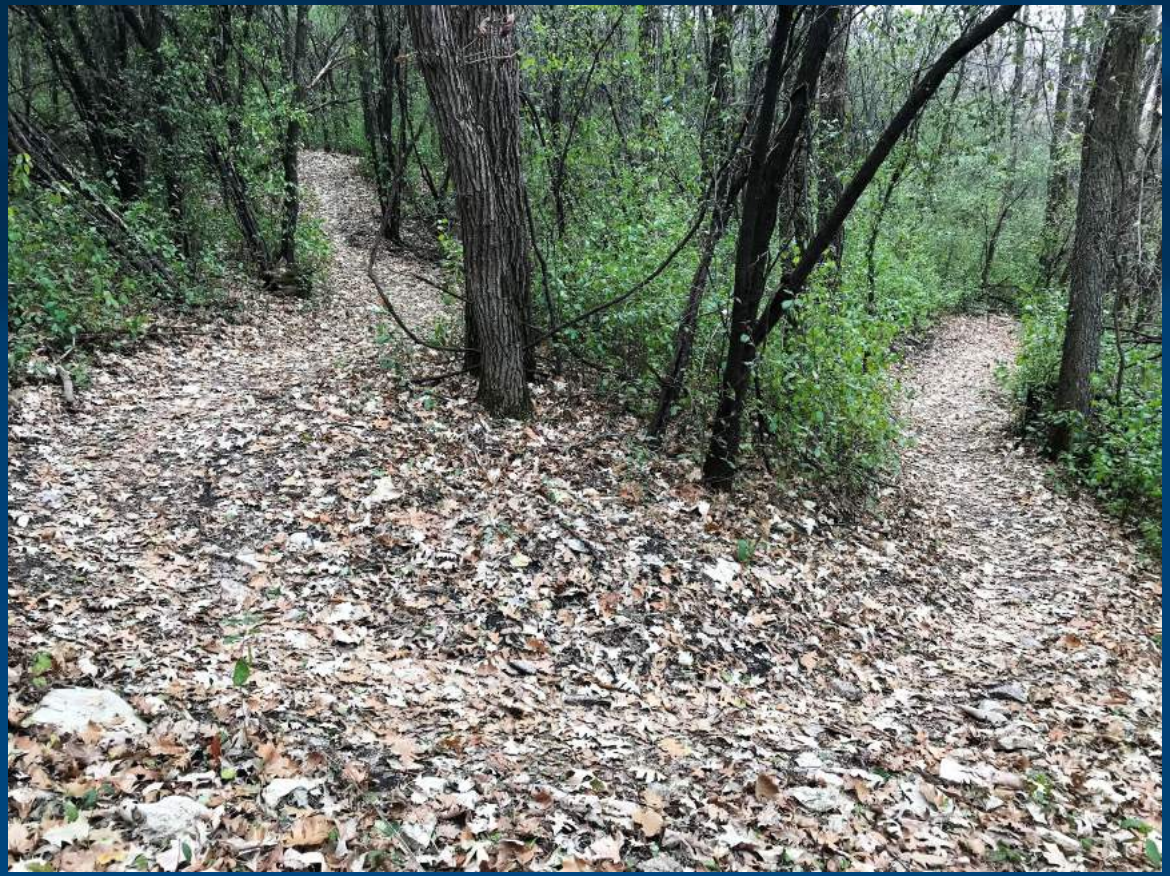
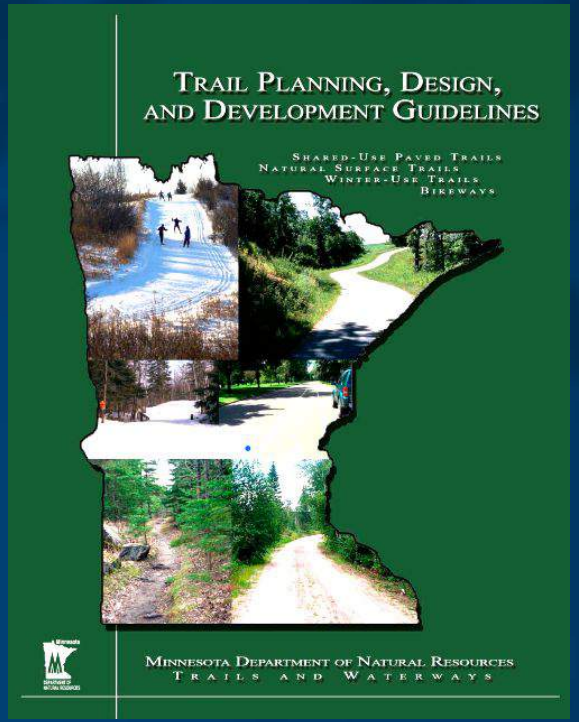
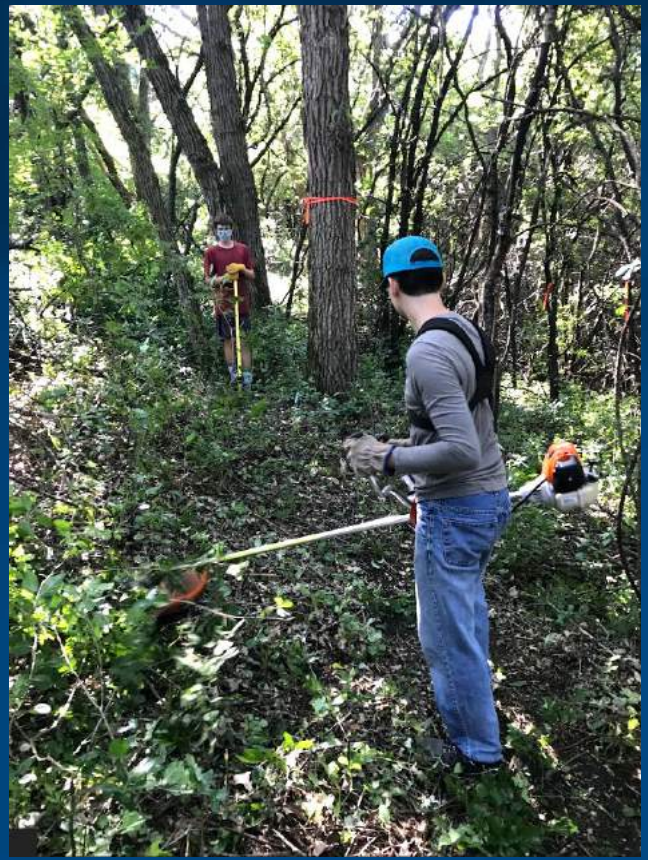




Built Using Best Practices

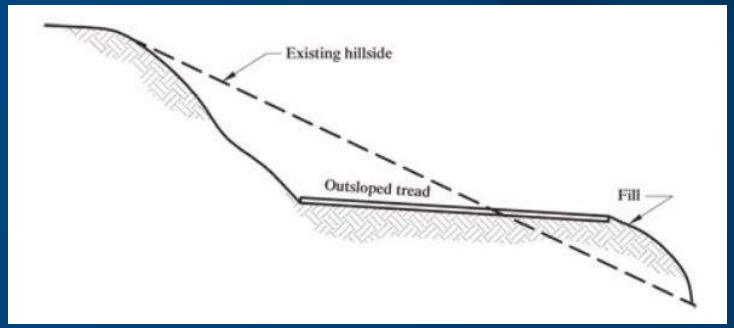
- Design/flagging
  - Consider overall space
  - Desired trail characteristics
  - Turn diameters
  - Slope severity and length
  - Natural features
  - User safety
  - Soil durability
  - Water impacts
  - Rare plant species

How are sustainable trails built?



Example of a “rake and ride” trail

- Rough-in the trail
  - Remove understory, adjacent invasive species
    - Weed whip, Brush mower, pruners
  - Benching, as needed
    - Manually create or tracked 6-way blade implement



How are sustainable trails built?

Example of hand-made bench trail

- Clear organic matter
  - Leaves
  - Branches
  - Understory
  - Loamy soil

- Finish
  - McLeod
  - Hoe
  - Rake
  - Shovel
  - Mattock
  - Tamper

How are sustainable trails built?

Example of hand-made bench trail

- Water Management
  - 5% gradient across tread to move water off trail
  - Back slope / fill slope on benched trail
  - Grade reversals and tread diverters to shed water that may run down the trail

How are sustainable trails built?

Downhill support allows for narrower bench trails

Trail Construction Details

By math, % grade = **rise/run**

25% grade goes up 1’ in elevation for every 4’ traversed

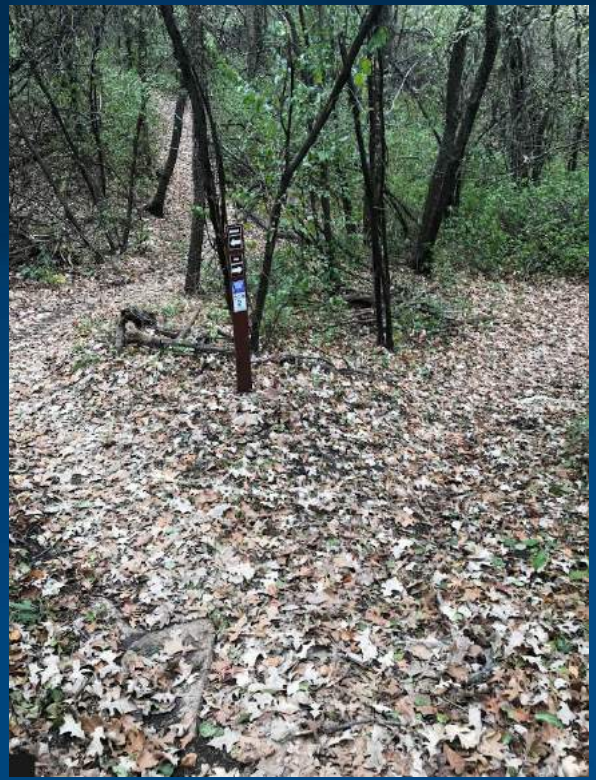
- 5% Cross trail grade
- 92% of the trail goes up/down between 5-10% grade
- 6% of the trail goes up/down between 10-15% grade
- 1.7% of the trail (134’) goes up/down between 15-20%

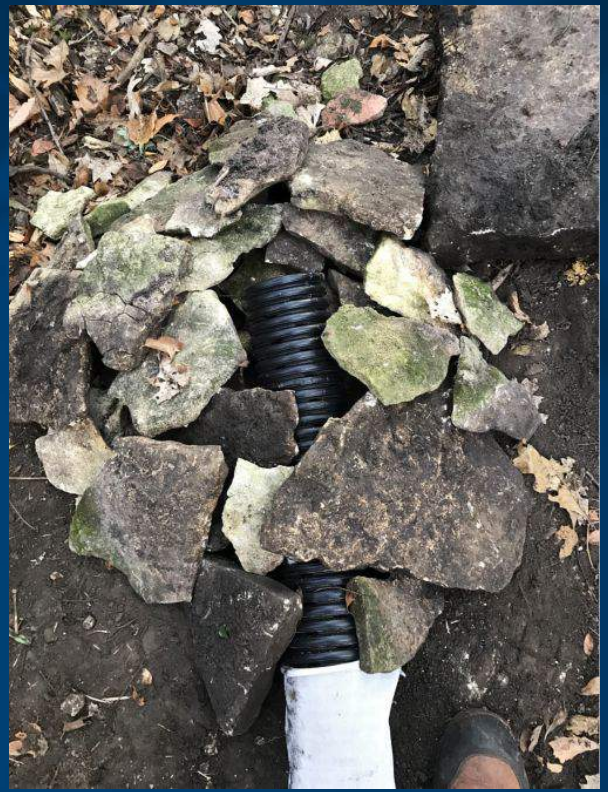
Side slope grade breakdown

- 50% (half of the trail) goes along <20% grade
- 93.5% goes along <35% grade
- 4% is 35-40% grade
- 1.8% is 40-45%
- 0.6% (~16 steps) is 45-50%

What is % grade?

Another option





Examples of water management techniques with a natural finish

Trail Construction Details

Examples of water management techniques with a natural finish

Trail Construction Details

Examples of water management techniques

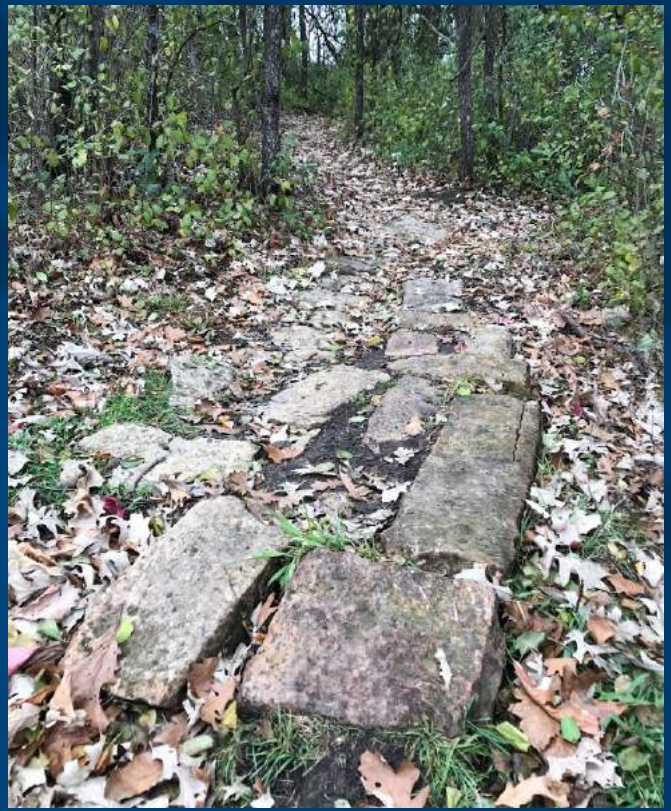
Other water management options

2019

2023

Trail Maintenance Mediation

2019



2023

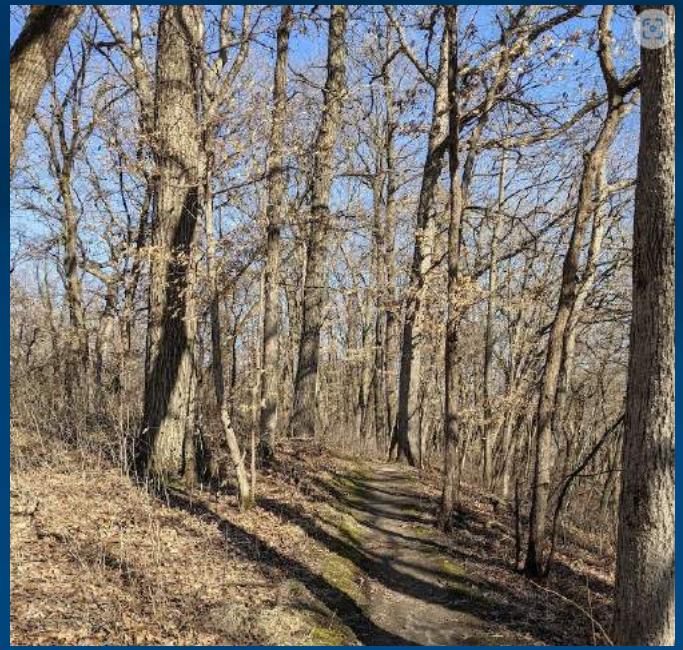
Trail Maintenance Mediation

Before

In Use (August-April)

Five Months After Decommissioning

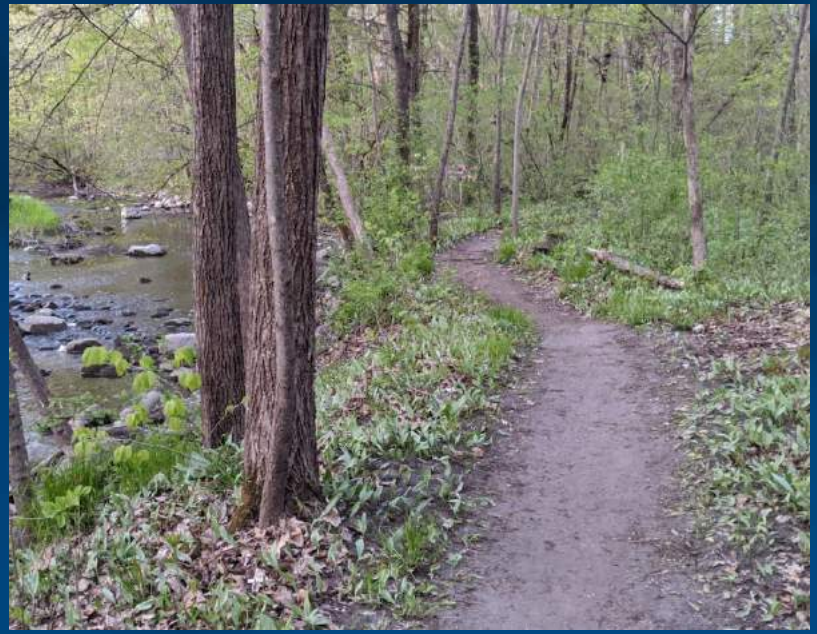
Trail Aging



Owatonna

Redwing

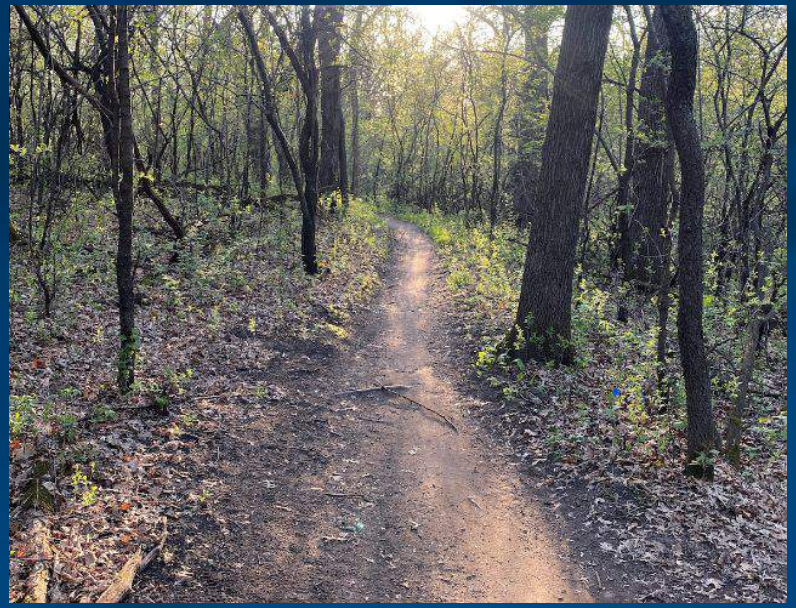
Like other MN cities…



Northfield

St. Cloud

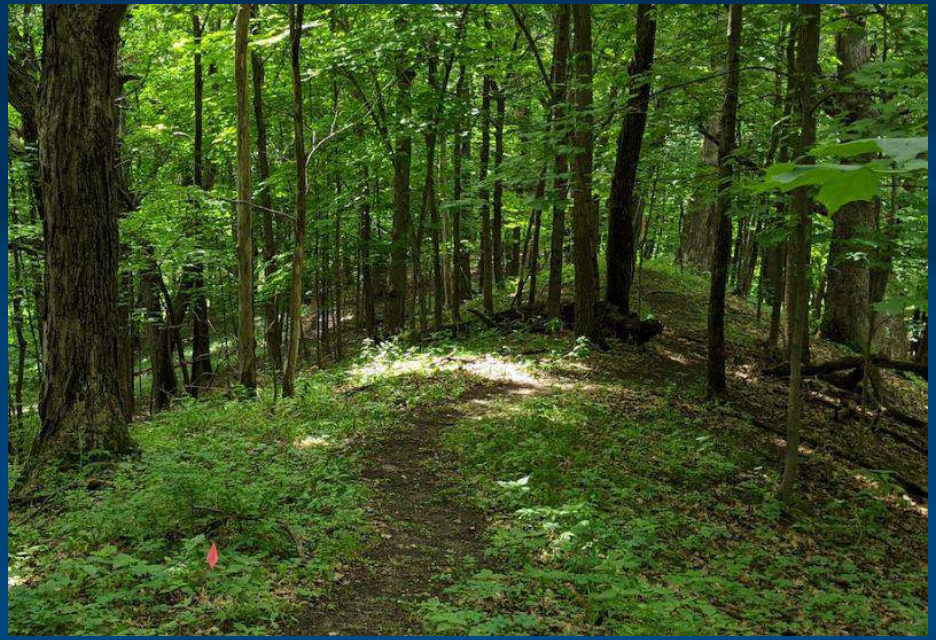
Like other MN cities…



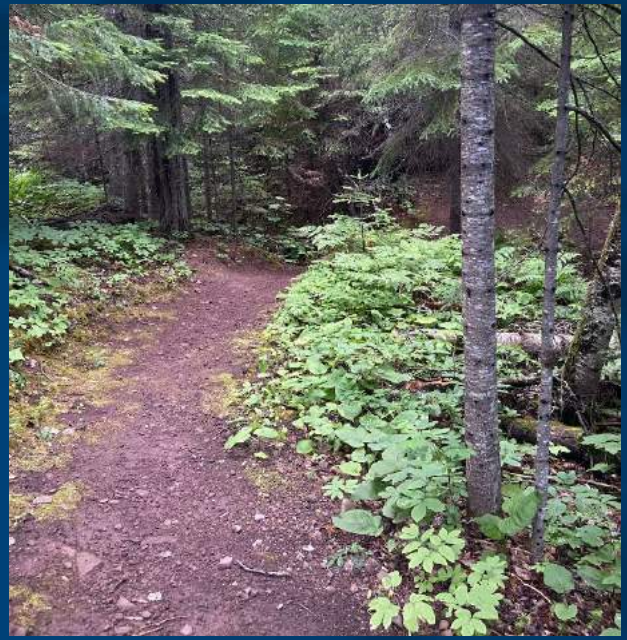
Eagan

Crosby

Like other MN cities…

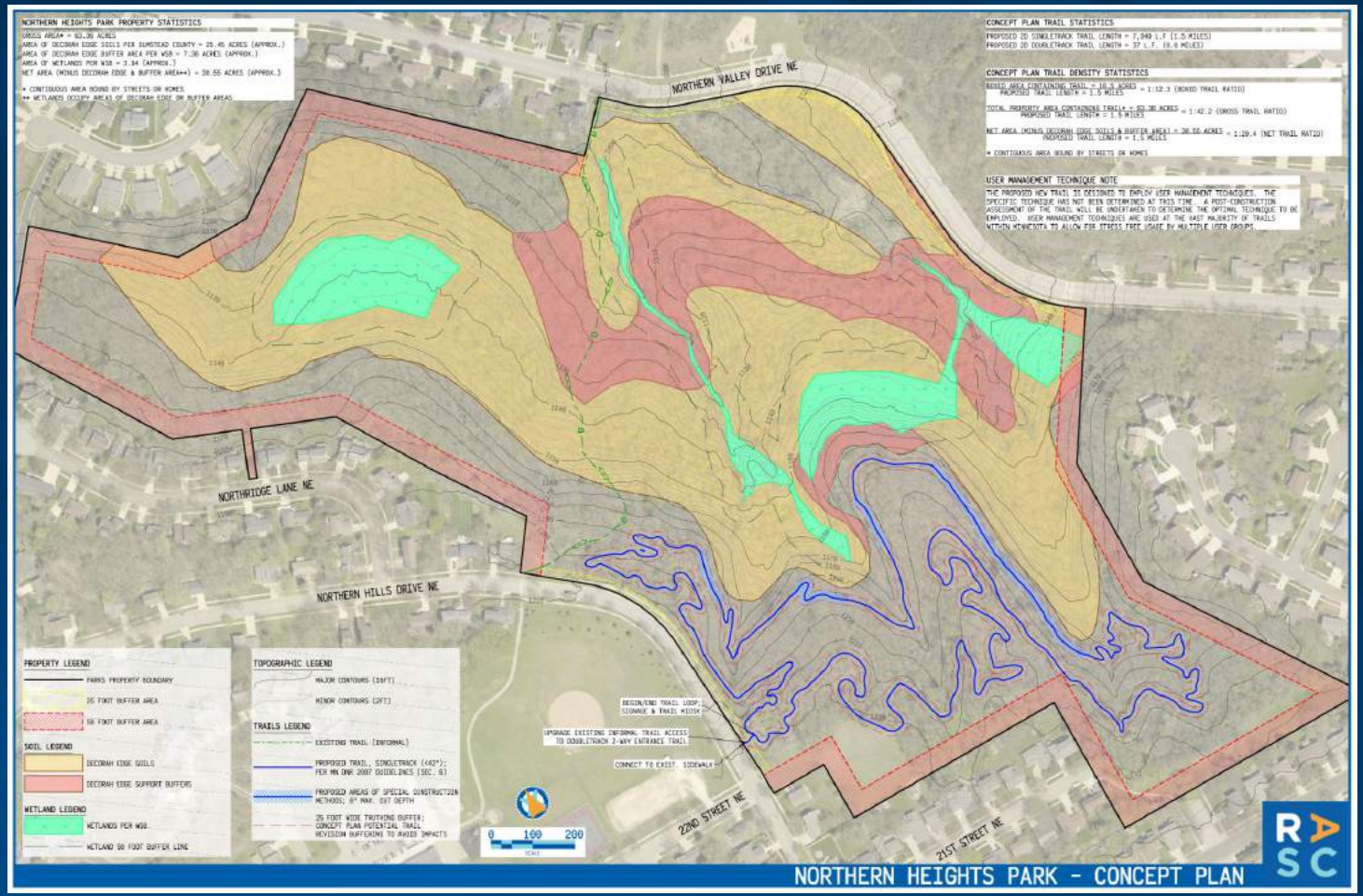


Faribault



Grand Marais

Over 900 trails in MN… 108 miles in city parks.

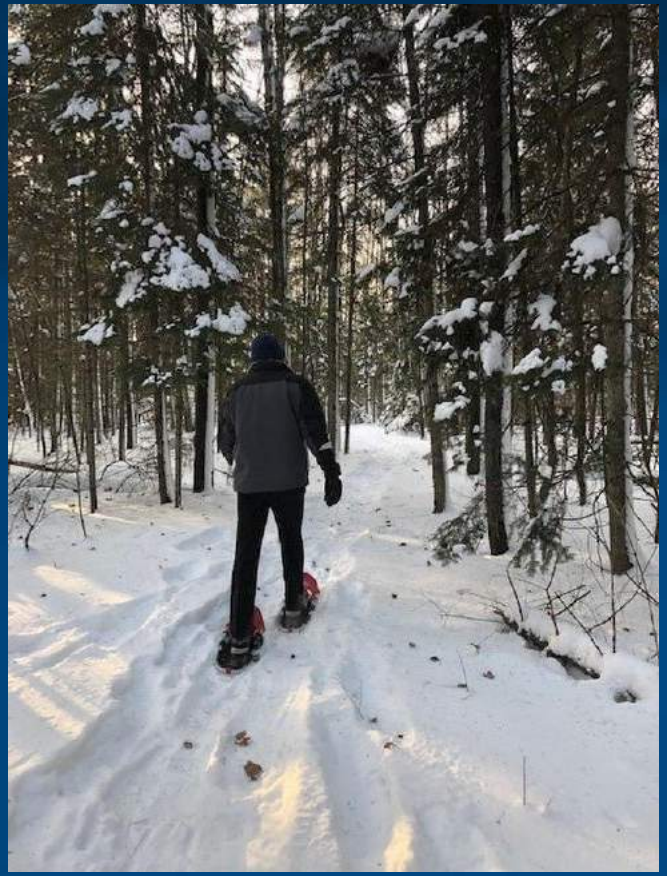


Trail Proposal

Summer Trail Uses Can Include

- Mountain Biking
- Hiking
- Trail Running
- Bird Watching
- Dog Walking
- Casual Strolling

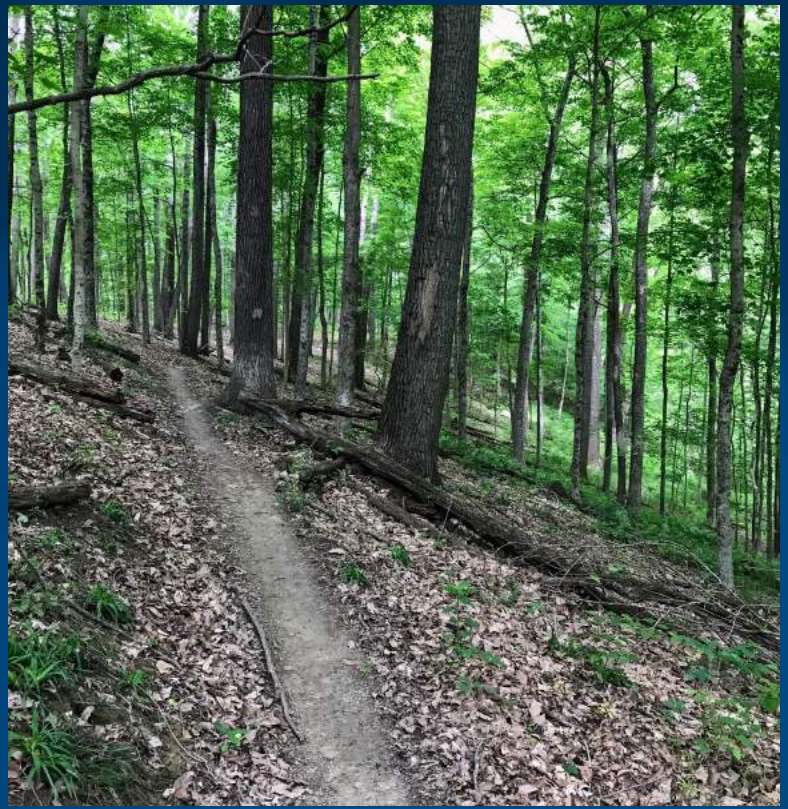
Trail Uses



Winter Trail Uses Can Include

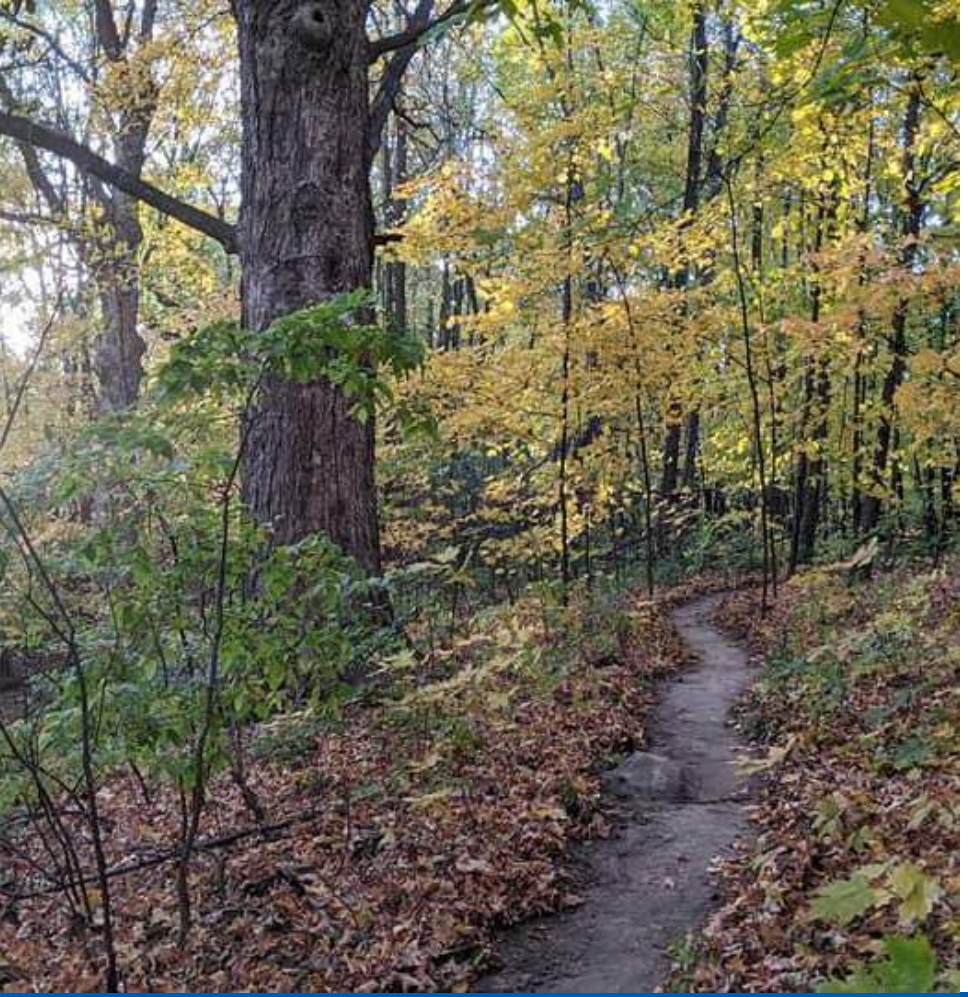
- Hiking
- Snowshoeing
- Bird Watching
- Dog Walking
- Casual Strolling

Trail Uses



- RASC has no interest or need to host major events at this trail. We view this trail to be neighborhood oriented which may have additional benefits for nearby Churchill Elementary.
- RASC has no interest or need for any services from Parks such as bathrooms, porta potties, bike repair stations, parking lots etc.
- RASC is not requesting any special place in the existing parking lot nor asking for any change to the ball field, ice rink or other current amenities.

Concerns - Impact To Current Park



Big Picture: What are ‘Sustainable Trails’?

Joshua Rebennack

- Live in Central Minnesota

Secular Work:

- Civil/Environmental engineering for the last 25 years

Advocacy:

- Sustainable Trails

Experience:

- Trail Boss since 2009
- Designed over 17 miles of hiker/biker trails in state parks & county lands
- Created state bonding requests for trails
- Written multiple Environmental Assessments (EA) & Environmental Assessment Worksheets (EAW) for trails
- Travel the country helping communities create urban trail experiences
- Due paying member of the Rewilding Institute & Mossy Earth

Introduction

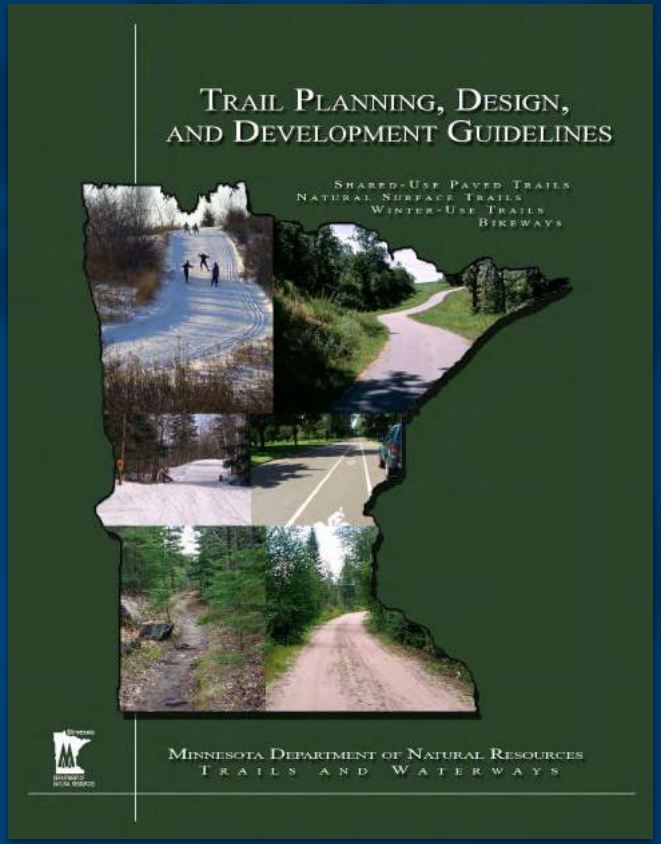
RASC

What are Sustainable Trails?

Trail Planning, Design, and Development Guidelines, Minnesota Department of Natural Resources, Parks and Trails Division, 2007:

"The guidelines establish a common language to foster consistency in classifying and developing trails across Minnesota… The guidelines emphasize the development of physically and ecologically sustainable trails that will serve the needs of users for generations to come while preserving the sense of place and protecting the surrounding environment."

- Page 1.1 (page 8 PDF)



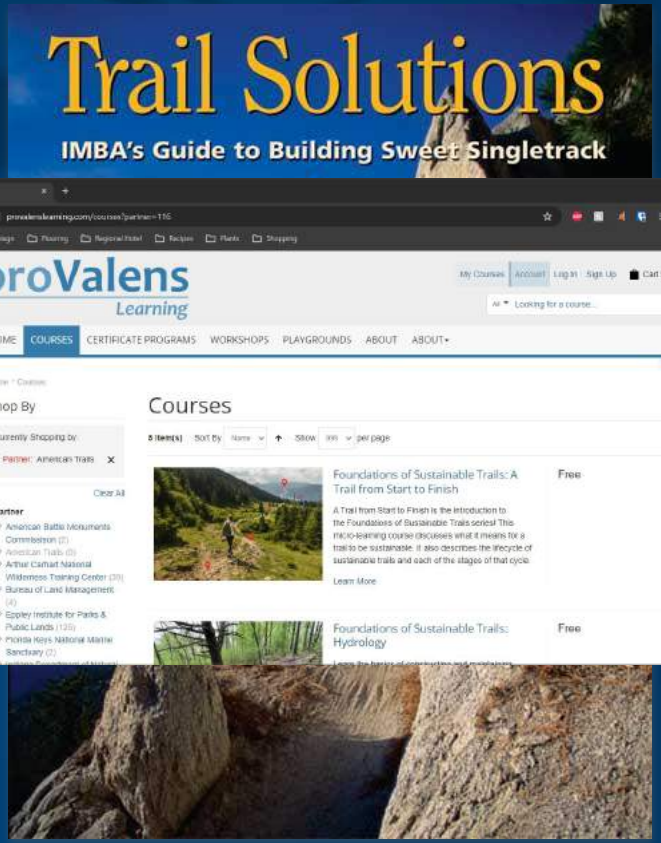
Where does the term come from?

In 2007 the following guidelines were released:

- American Trails
- Minnesota Department of Natural Resources (MN DNR)
- United States Forest Service (USFS)

All these guidelines were built atop the 2004 International Mountain Biking Association (IMBA) guidelines. (pg. 6.2; (195) MN DNR)

We consider these trail guidelines (American Trails, MN DNR, USFS) or any trail guideline built atop them to be defining “sustainable trails”.



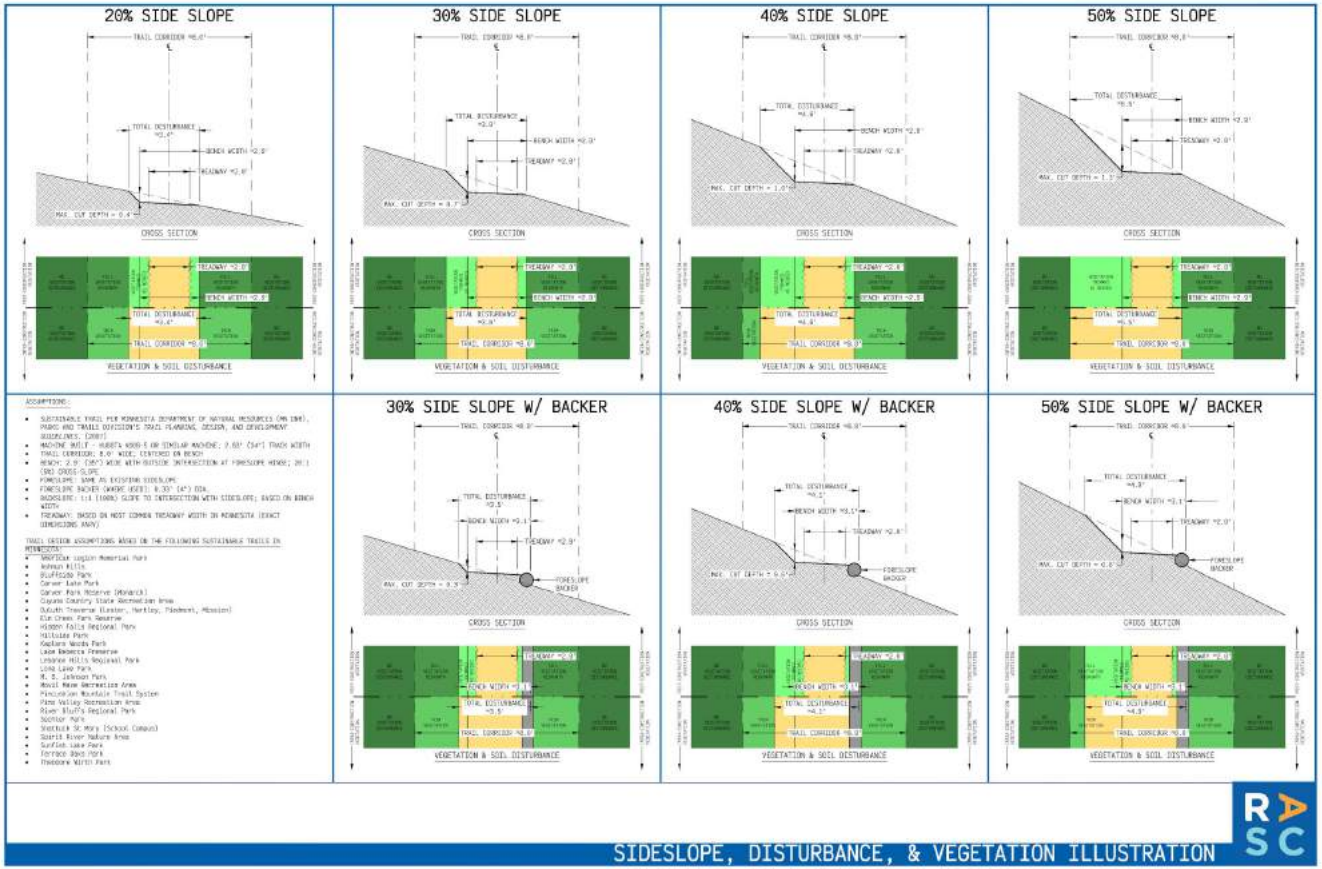
It's not just Minnesota…

A sustainable trail is:

- A trail built and maintained to a sustainable standard
  - (American Trails 2007, MN DNR 2007, USFS 2007)
- Benchcut
- Rolling Contour layout
- Minimum & maximum linear grades
- Designed for shared use

- 7.44 sq.ft./14.5” depth
- 1369 l.f.
- Assume 50%
- 189 cu.yd. soil loss

What (structurally) are Sustainable Trails?



Benchcut Depths

Sustainable Trails - Everything, All at Once

Sustainable Trails - Do They Work?

“In summary, this research reveals that trail grade and slope alignment angle appear to have the greatest influence on soil loss from recreational trails. A Trail Sustainability Rating System is offered to trail designers and managers to more clearly guide the development and evaluation of trail sustainability and to illustrate the tradeoffs between these influential factors. In most instances a limited number of trail segments will be identified as “unsustainable” and managers can replace them with alternative reroutes that feature side-hill alignments and low grades.”

Marion, Jeffrey L., and Jeremy Wimpey. "Assessing the influence of sustainable trail design and maintenance on soil loss." Journal of Environmental Management 189 (2017): 46-57

“This study fills the knowledge gaps by unveiling the multi-dimensionality of trail degradation and examining the effects of managerial and use-related factors by multivariate statistical techniques….Furthermore, hiking generates “all-around” degradation while the influences of mountain biking mainly concentrate on tread surface; management strategy should be formulated with the consideration of their effect on specific degradation dimensions. This study would benefit both trail professionals and park managers in decision-making and future research.”

Fang, Wei, and Sai-Leung Ng. "Trail degradation caused by mountain biking and hiking: a multi-dimensional analysis." Journal of environmental management 351 (2024): 119801

Sustainable Trails - What Does the Science Say?

To summarize:

- Sustainable trails are not just pleasant sounding language
- Sustainable trails are a real, definable standard, with expansive guidelines & educational tools to go with them
- Sustainable trails are the only state-sanctioned way to build trails
- Sustainable trails are designed for use by multiple user groups
- Sustainable trails have 20 years of rigorous scientific study & local (Minnesota) history behind them

Consider for a moment…

Big Picture: Trails in Minnesota

Lets focus on one type of trail:

- Urban (inside a city)
- Sustainable Trail
- Allowed use for mountain bikes

By the numbers (per Trailforks)...

660 total miles of trail

108 miles in small parks

Minnesota Trails - By the Numbers

13.4% of the total miles of this type of trail in the USA are in Minnesota

Minnesota has the largest number of parks with sustainable trails

Minnesota also wrote the book on these types of trails:

- Trail Planning, Design, and Development Guidelines (2007)
- Mountain Bike Trail Development Guidelines (2023)

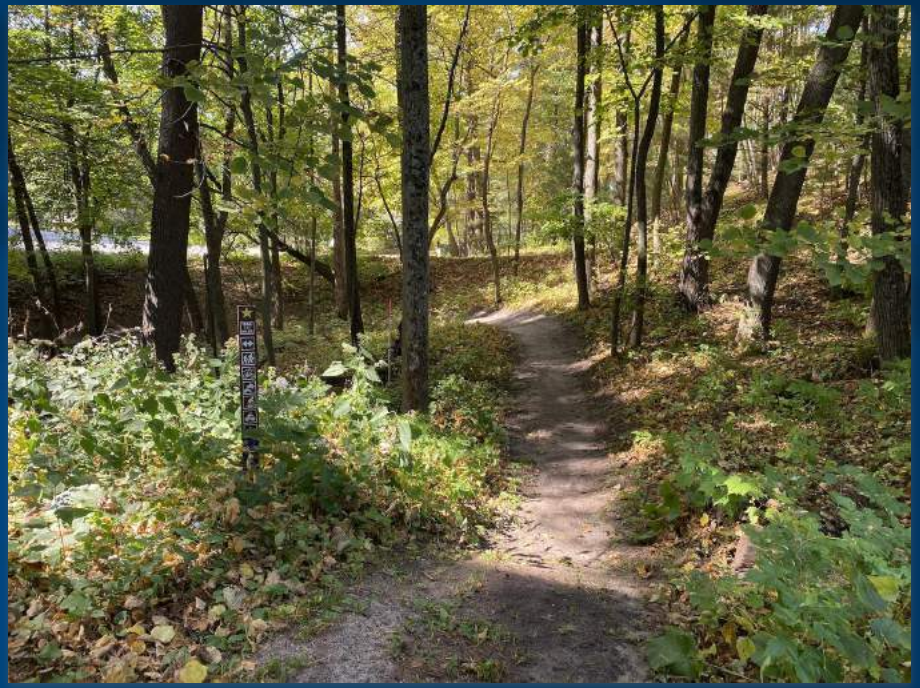
Minnesota codified the User Management Techniques

Minnesota entities regularly host groups to learn what we know

Minnesota Trails - The Wise Sage

Minnesota Trails - So Far Ahead

- Most sustainable trails are located in urban natural areas or urban wildernesses.
    - Traverse des Sioux Park (St. Peter), Pine Valley Park (Cloquet), Valley View Park (Oak Park Heights), etc.
- Most sustainable trails are in parks partially or completely surrounded by residential neighborhoods
    - Lone Lake Park (Minnetonka), American Legion Park (Grand Rapids), Serenity Hills/Trapper Pond (Buffalo), Ashmun HIlls (Brainerd), etc.
- Most sustainable trails use trail ratios, not park size, to determine length of trail
    - Hillside Park (Elk River), Hidden Falls (St. Paul), Reid Park (Lake Elmo), M. B. Johnson Park (Moorhead), etc.



Minnesota Trails - Comparison to a Proposal

By any measure, sustainable trails are a runaway success in Minnesota

Lets narrow down what “success” means, for a moment.

- A trail that has been around for some time.
- A trail that is loved by its visitors.
- A trail that does all this without messing up the park it's in.
- One that is appreciated by the land manager.

Are then trails in Minnesota successful?

Minnesota Trails - Success Gets Noticed

“Working with the mountain bike community is a highlight of what I get to do and model of example how to cost-effectively manage a public recreational opportunity.”

- Katie Pata, Park Operations Supervisor at Dakota County Parks

“Three Rivers Park District maintains four singletrack trail systems. These are an important part of our recreational offerings and get park users into the more natural settings of the parks.”

- John Moriarty, Senior Manager of Wildlife at Three River Parks District

Minnesota Trails - Success Gets Noticed

Minneapolis Parks	Three Rivers	City of Duluth
2004	2004	2004
0 miles	8* miles	23* miles
2024	2024	2024
15 miles	67 miles	103 miles

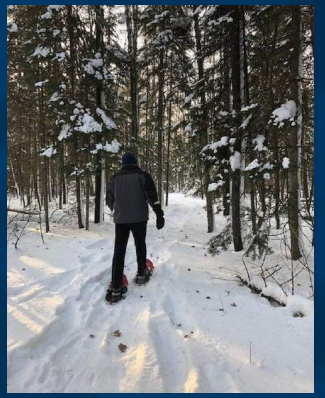
Minnesota Trails - Successful Growth

To summarize:

- Minnesota leads the nation in sustainable trails in urban parks; especially small-scale residential natural areas
- Minnesota quite literally wrote the book on how to do low-environmental impact, sustainable trails, shared by users
- The Concept Plan for Northern Heights Park is not different from other trails in Minnesota
- The Concept Plan for Northern Heights Park is designed to meet or exceed the standards other trails in Minnesota use
- These type of trails have been a successful in other communities

Consider for a moment…




Questions and comments