

A person wearing a black helmet and a black tank top is riding a mountain bike on a dirt trail. The trail is surrounded by a dense forest of tall, thin trees with green and yellowing leaves, suggesting an autumn setting. The person is leaning forward, and the bike is angled as if taking a turn or a jump. The background is filled with the canopy of the forest, with sunlight filtering through the leaves.

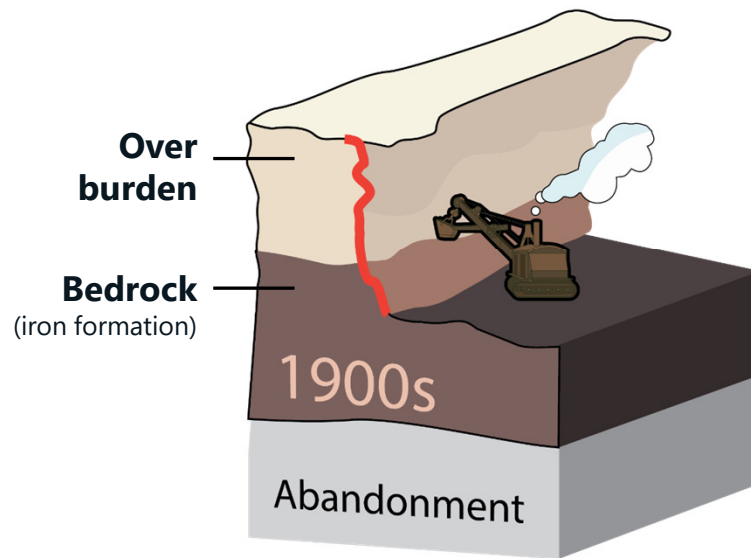
# Community revitalization through mineland repurposing


presentation for SME UT 01/17/24

Pete Kero, P.E. Barr Engineering Co.

## Part 1: a framework for mineland reclamation





 Unstable slope

# pre-law mining



Photo courtesy of Itasca County Historical Society



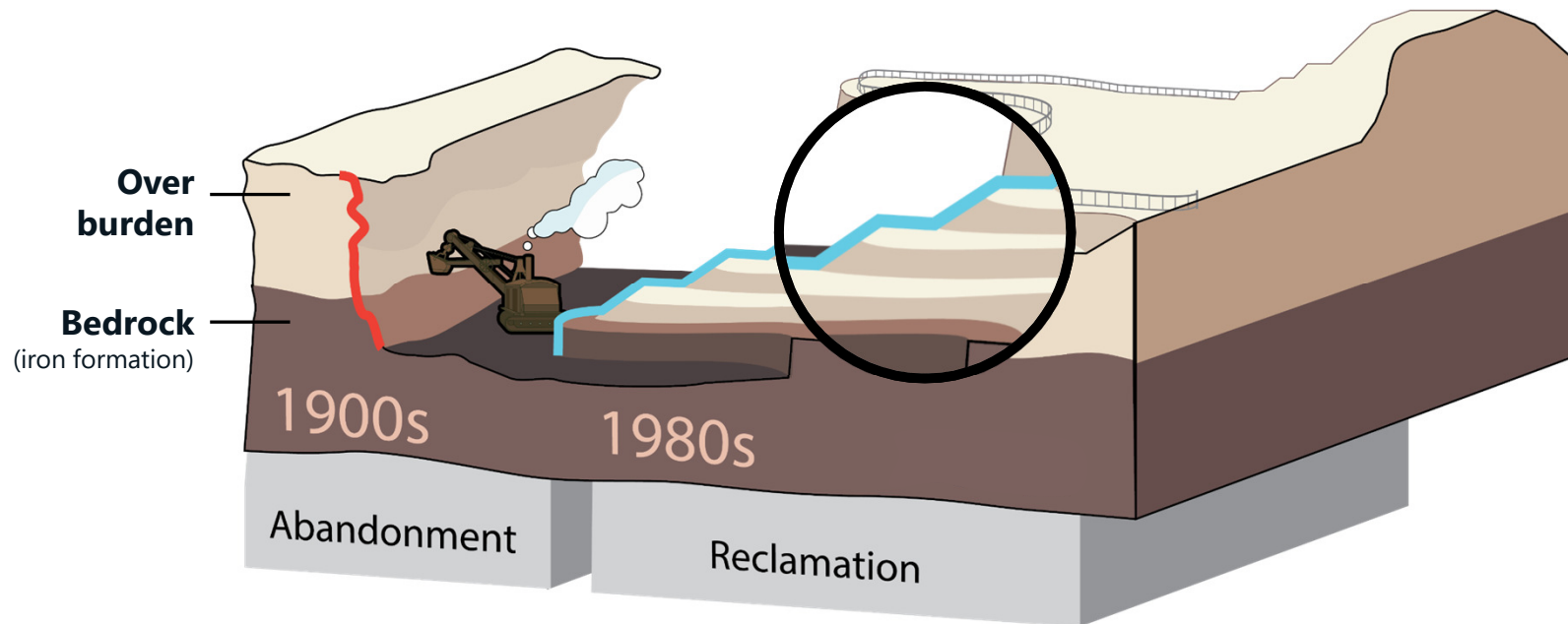


Photo from Library of Congress, 1941









■ Unstable slope

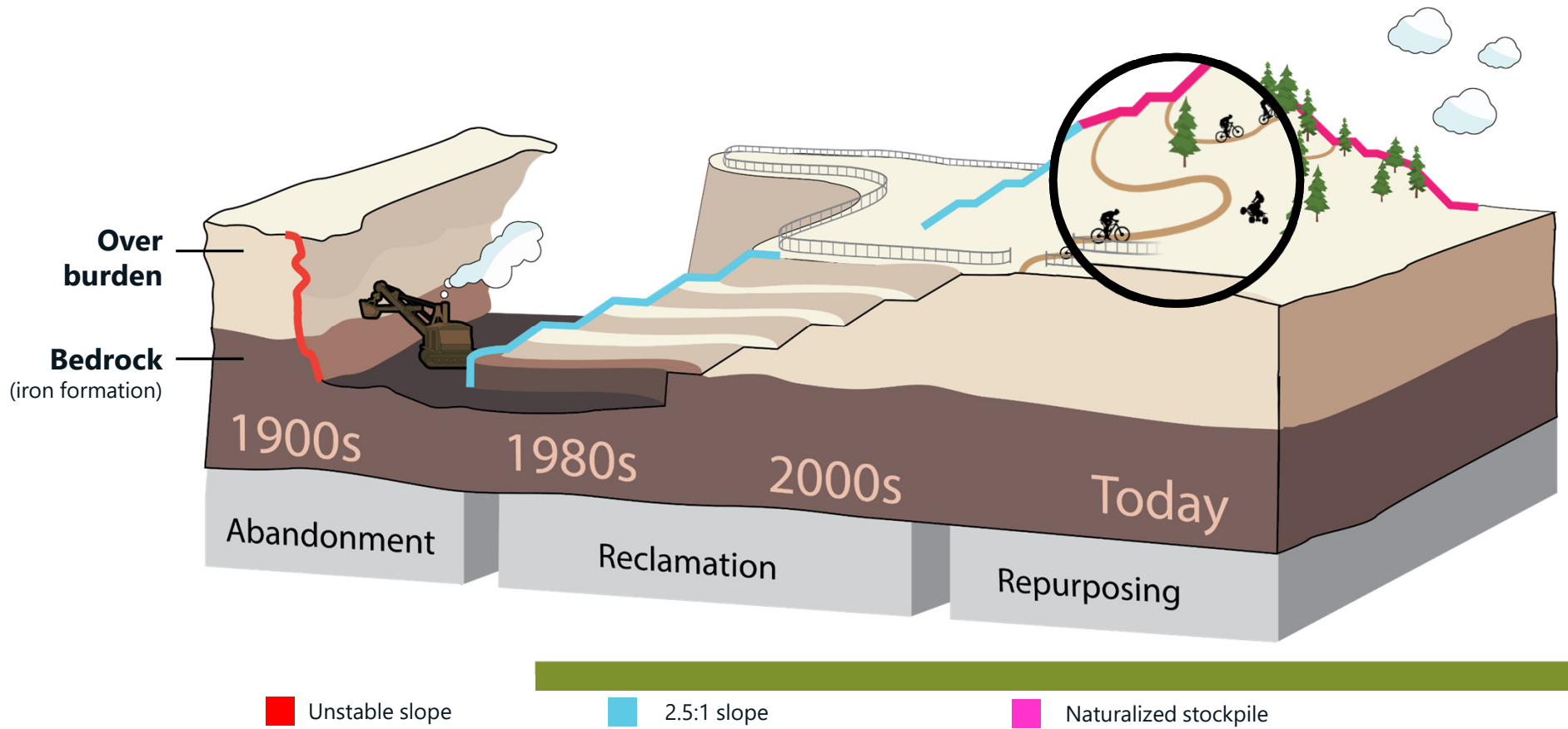
■ 2.5:1 slope





Photo by Vance Gellert





## Part 2: Quiz game about repurposed minelands





# Mineland or Vacationland?

An interactive quiz game

by Pete Kero, P.E.

Barr Engineering Co.



# Kayaking and paddleboarding

Redhead Mountain Bike Park



Apostle Islands National Lakeshore





# Golfing

Wisconsin Dells



The Quarry at Giants Ridge





# Mountain biking

Duluth, MN



Redhead Mountain Bike Park





# Hiking

Porcupine Mountains State Park, MI



Redhead Mountain Bike Park



# Waterfront Office Parks

Centennial Lakes, MN



Orlando, FL





# Forest-bathing

Kinney overburden stockpile



Boundary Waters Canoe Area



# Jeeping and ATVing

Gilbert OHV Park, Gilbert, MN



Moab, UT





# Diving

Mexico



Cuyuna Country State Rec Area



# Fishing

Falls River, Yellowstone National Park



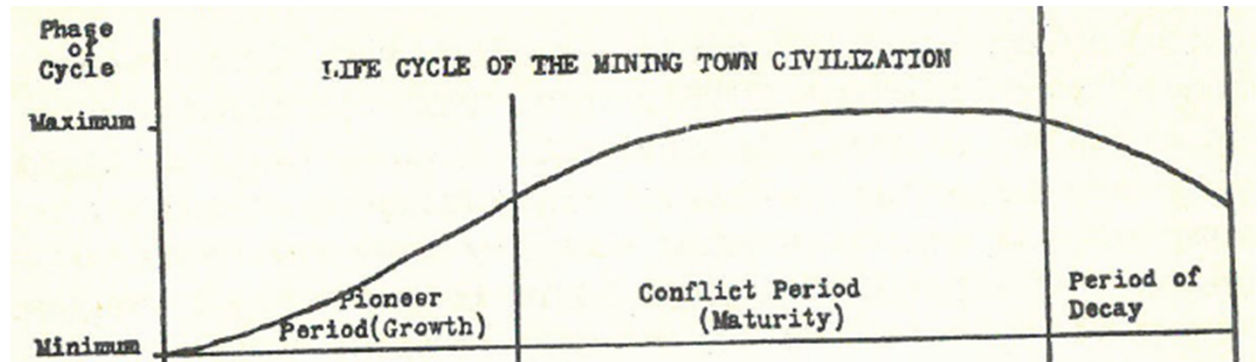
Kinney Pit, Kinney MN





## Part 3: why minelands should be repurposed

## Three Iron Mining Towns (1938)



"the final period on the Mesabi will be one of decay and disintegration."

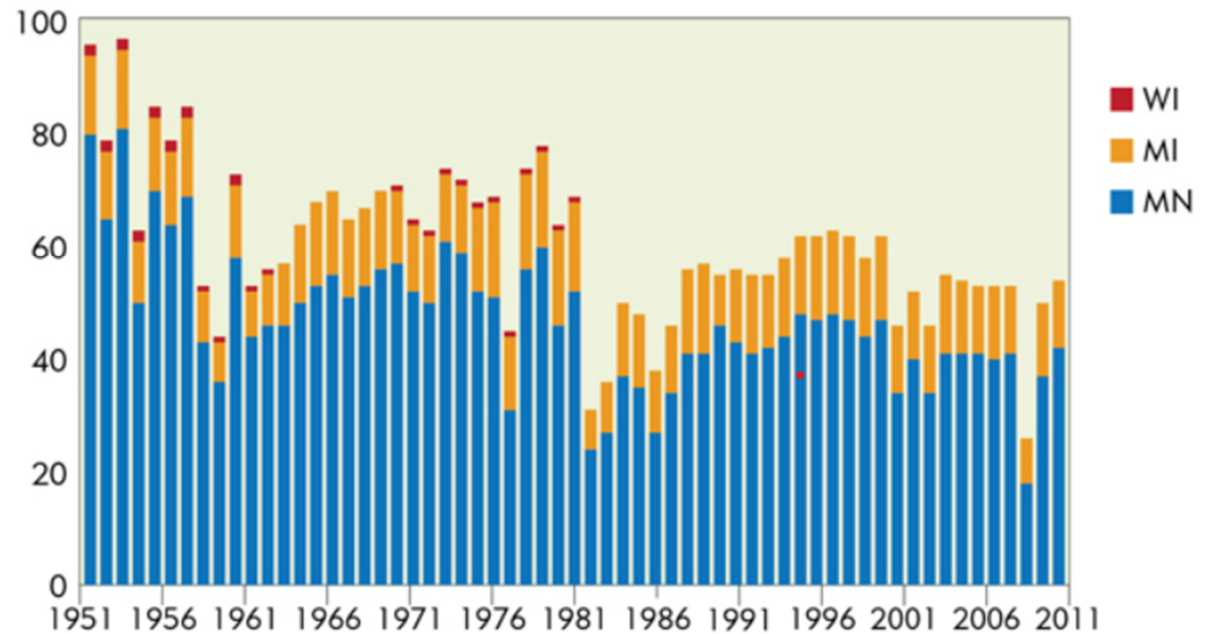


peak iron ore  
production  
occurred in 1955

Chart 1

## A long fall for Ninth District iron production

Millions of metric tons of iron ore



Source: U.S. Geological Survey, Minerals Yearbooks

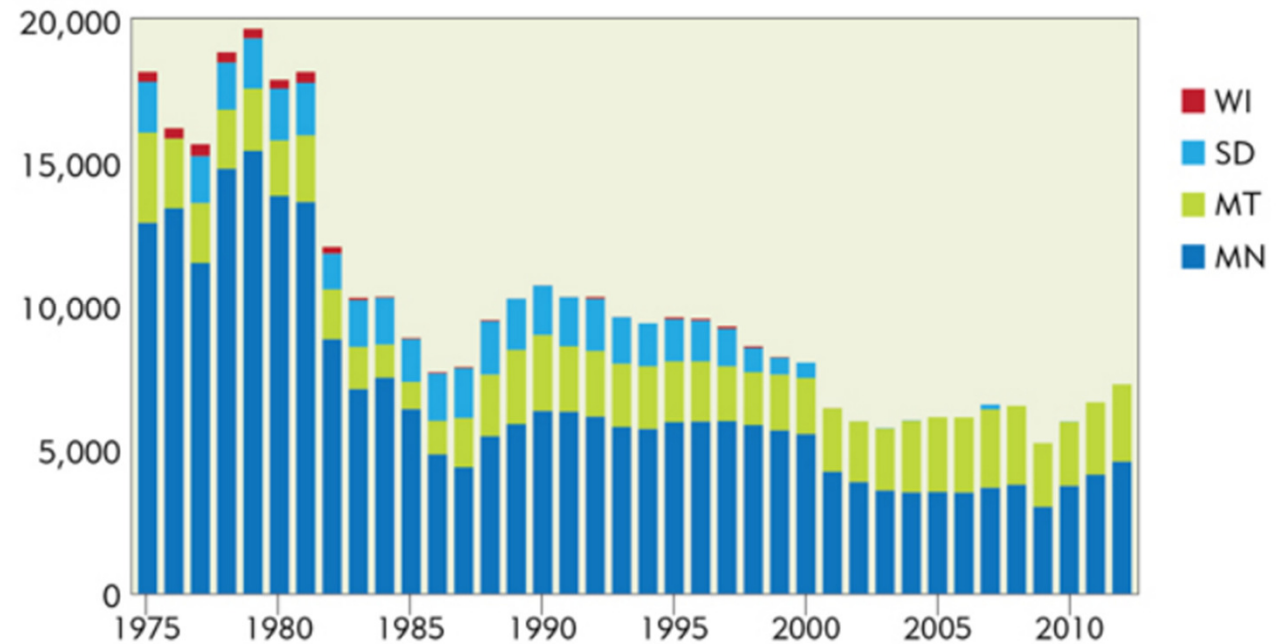
Chart from Minneapolis Federal Reserve article, "Pedal to the Metal" 2014

peak mining  
employment  
occurred in  
1979

Chart 2

## Fewer working at the mine

Employment\* in district metal mining



\* Standard Industrial Classification data through 2000  
Source: Bureau of Labor Statistics

Chart from Minneapolis Federal Reserve article, "Pedal to the Metal" 2014



peak  
population  
occurred  
around 1980

Historical population		
Census	Pop.	%±
1900	2,481	—
1910	8,832	256.0%
1920	15,089	70.8%
1930	15,666	3.8%
1940	16,385	4.6%
1950	16,276	-0.7%
1960	17,731	8.9%
1970	20,744	17.0%
1980	21,193	2.2%
1990	18,046	-14.8%
2000	17,071	-5.4%
2010	16,361	-4.2%
2020	16,214	-0.9%
U.S. Decennial Census <sup>[15]</sup>		

Similarly Sized Cities In US			
US Rank	Name	Population	Growth 2000-2021
2232	Bellevue, Wisconsin	16,122	35.6%
2233	Dublin, Georgia	16,121	-0.2%
2234	Hugo, Minnesota	16,109	144.1%
2235	Dickson, Tennessee	16,085	24.5%
2236	Floral Park, New York	16,083	0.7%
2237	Mount Pleasant, Texas	16,079	13.3%
2238	<b>Hibbing, Minnesota</b>	16,077	-5.8%
2239	Lynden, Washington	16,048	67.6%
2240	The Dalles, Oregon	16,043	29.2%
2241	Dyersburg, Tennessee	16,024	-8.3%
2242	Easthampton Town, Massachusetts	16,022	
2243	Opa-locka, Florida	16,022	7.1%
2244	Grain Valley, Missouri	16,002	199.2%

community  
attitudes  
suffering in 2007

## Community Brand Barometer

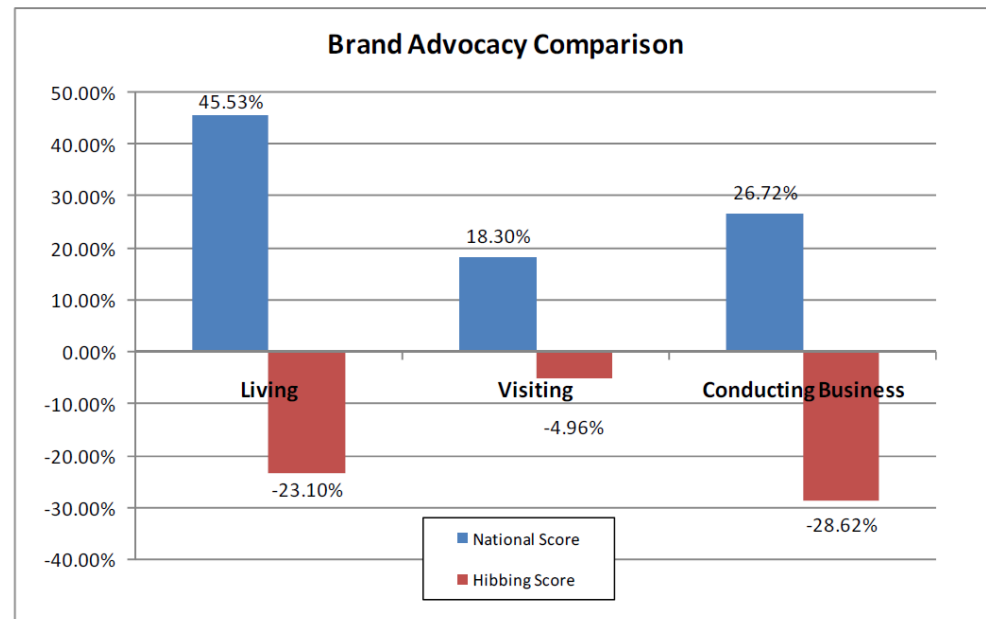


Chart from Hibbing Community Branding Survey, 2007



# importance of social license to operate

MINEXCHANGE 2022

## Social license to operate is feature of MINEXCHANGE 2022

by Nancy Profera, Associate Editor and William Gleason, Editor

More than 5,000 delegates gathered in Salt Lake City, UT from Feb. 28-March 3 for the MINEXCHANGE 2022 SME Annual Conference & Expo. The conference included a wide range of technical sessions covering the full breadth of the mining and underground construction industries as well as a vibrant exhibit hall with 472 companies showcasing the latest in cutting-edge technology.

With more than 100 technical sessions to choose from, conference participants moved among different themes and topics as they listened to presentations that varied in length from 15 minutes to an hour. Broad topics included advancing cybersecurity, health and safety, innovation and technology, environmental issues, green mining and technology, geosciences and geotechnical topics, tailings, coal and energy, mine closure and reclamation, mine water treatment, infrastructure materials and Utah industrial minerals.

At the opening keynote session on Feb. 28, Mikko Keto, chief executive officer of FLSmidth, discussed the "big picture of mining" during the last five to 30 years. He said there will continue to be more demand than supply over time, regardless of the commodity, in part because of a rapidly developing middle-class lifestyle emerging in countries like India and Indonesia.

"The green transition is also underpinning a lot of the demand for commodities," said



working so as to get the community buy-in that is so critical for projects to be successful.

Keto said that FLSmidth, one of the sponsors of MINEXCHANGE 2022, is targeting zero emissions and has invested in research and development to meet its commitments. "FLSmidth has one of, if not the, biggest mining labs exploring these topics right here in Salt Lake," he said.

United States Ambassador Todd Chapman discussed in his keynote talk his work with international governments, environmental groups and indigenous communities. Chapman spent 30 years working abroad representing the United States as ambassador to Brazil and Ecuador as well as working in Mozambique. He said that mining is in his DNA as his father was an engineer and his father-in-law worked

**U.S. Ambassador Todd Chapman addressing the audience at the keynote session. Chapman spent 30 years working abroad representing the United States in Brazil and Ecuador.**

"tremendous resistance to mining"

"immense amount of pressure from stakeholders to operate in a socially and environmentally sustainable way"

"with a lack of social license, the project just isn't going to happen"

"Right now, your detractors are defining the industry. It's important that the mining industry take the lead."

"It'll be worth it because they (community members) will then be your ambassadors."

Excerpt from article in Mining Engineering published by SME, 2022

## benefits of mine repurposing

- Develop secondary source of income (Steffens, 2003).
  - Source of community pride (Dean, 2011) and improvement to the quality of life for residents.
  - Attract and retain talent and businesses.
  - At scale, become a tourist destination.
-





## Part 4: community revitalization when minelands are repurposed



## Case Study #1:

### Cuyuna Country State Recreation Area (CCSRA)

- 1982-1984: Last mining shipments.
- 1993: CCSRA designated.
- 2005: Paved trail construction began.
- 2011: 25-mile mtn. bike trail opened at a \$1 million construction cost. Usage of 15,552 cyclists and 2,802 campers.
- 2014: 22,525 cyclists. Estimated impact of \$2 million/year (Hook). Amenities survey conducted.
- 2016: 30,000 cyclists. Twelve new businesses created (~80 new jobs).
- 2019-2023: Additional 50-miles of mtn. bike trail added for \$3.1 million. In 2021, DNR estimated annual 300,000 visits and 119,000 cyclists. Fifty new businesses.





## Case Study #2

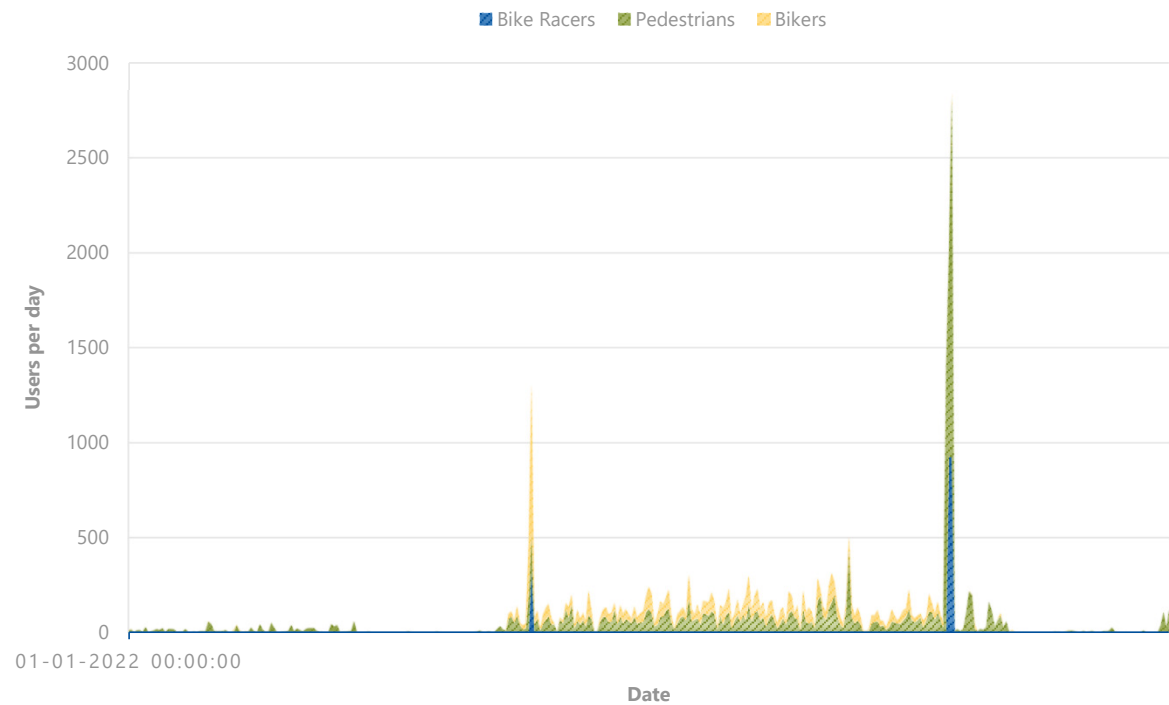


- 1976-1977: Last mining shipments.
- 2008-2015: Redhead idea proposed. Location in Chisholm identified.
- 2017: Redhead presentation to SME MN.
- 2018: \$1.777 million awarded. Land and operating agreements completed. Minnesota Statute 180 amended.
- 2019-2021: 25-mile mtn. bike trail constructed. Non-motorized water recreation established. ATV trail and emergency egress established.
- June 26, 2021. Grand Opening.
- October 15-16, 2022: 1,849 high school cyclists and their families arrive for Minnesota Cycling Association Race. Estimated \$926,000 impact in one weekend.
- 2022: Two statewide and one national award. Redhead debuts in **Biketown** documentary. IMBA hosts conference. 28,528 estimated visitors. At least 5 new businesses created.



# User trends in Redhead's second year

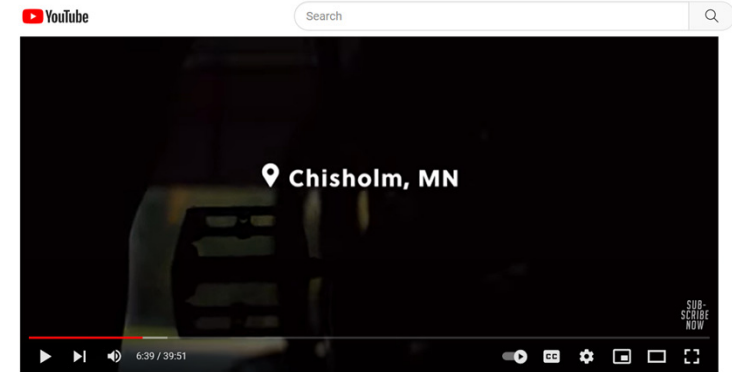
## REDHEAD TRAIL USE - 2022







## Case Study #2 (cont.)



How Trails Transform Communities // Biketown

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Biketown is a story of mountain bikers, unlikely partnerships and the communities they create.

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before and  
after



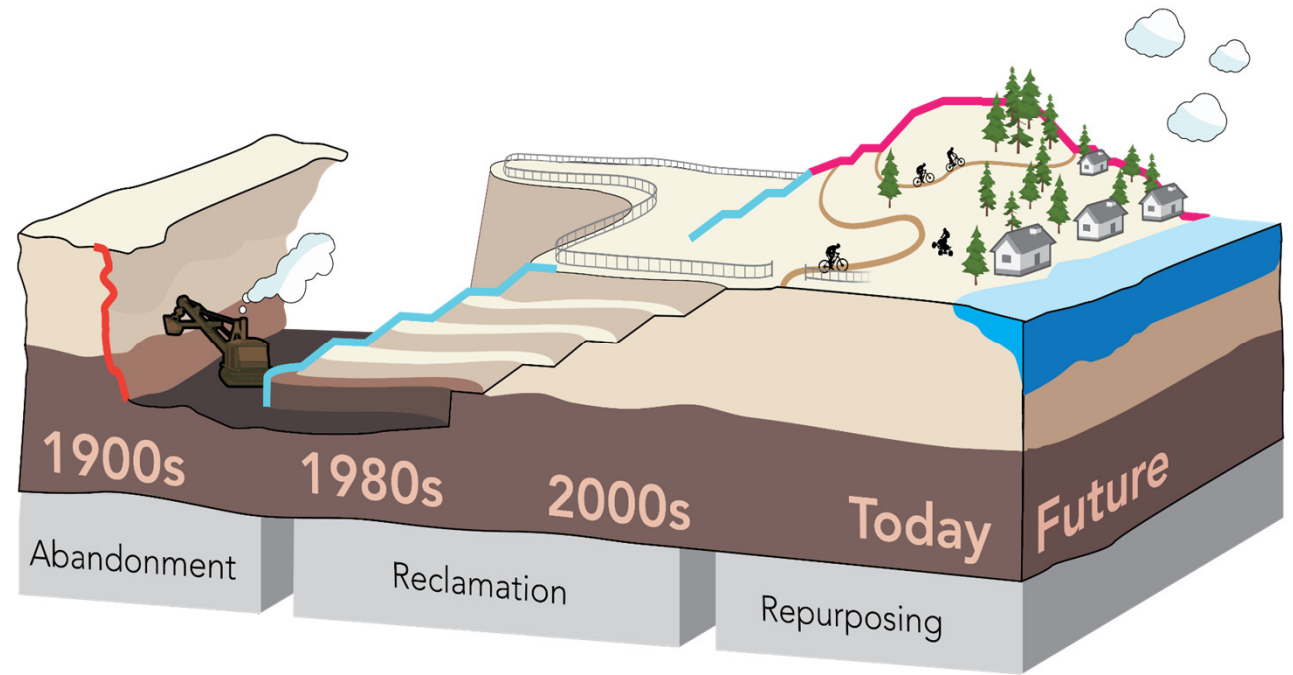
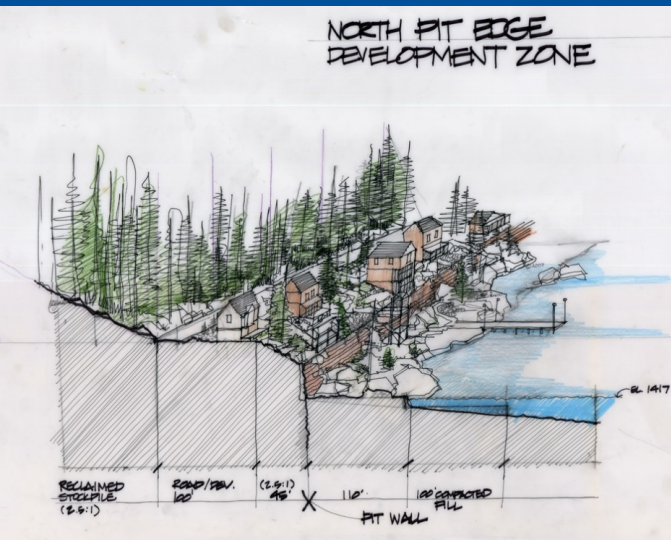
Photo from Minnesota Discovery Center



Photo courtesy of Joe Trelevan



# setting the stage for the future



Schematic from Northwest Architectural Archives



Thank you!



Photo courtesy of Minnesota Discovery Center archives