NOTE:
All mine related information is taken from the publically available TALON 2021 Preliminary Economic Analysis - PEA (https://talonmetals.com/wp-content/uploads/2021/02/Talon-Tamarack-PEA3_2021.pdf) and 2022 PEA (https://talonmetals.com/wp-content/uploads/2022/11/Final_NI43101_Report_Talon_TamarackN_20221102.pdf)

Tamarack Water Alliance

Water is Life – Talon Tamarack Project

https://tamarackwateralliance.org/

Water is Life - Talon Metals and the Tamarack North Project

- Protecting Minnesota's land of sky blue waters matters now more than ever.
- The proposed Talon Metals nickel sulfide mine in Tamarack, MN risks the destruction of the rural vacation land of Aitkin County, home to more than 460 inland lakes, wetlands, and the origin of the Mississippi and St. Croix River watersheds
- Clean water is life
  - It fulfills our need for health, food, leisure, provides a home
  - 55%-60% of a human adult body is water
  - Anishinaabe seasonally harvests tens of thousands of acres of wild rice in Northeastern Minnesota's undisturbed watersheds. Manoomin is sacred to their way of life
  - Functions as a transportation route and climate regulator
- We must consider the grave risks of sulfide mining to our water rich environment. What follows is an examination of the water impacts as spelled out by Talon Metals and how that compares with the Michigan Eagle Mine, an operating nickel sulfide mine Talon seeks to emulate.

Minnesota's Prime Wild Rice Lakes Threatened

- Pristine water quality must be maintained for wild rice to germinate, grow, and survive.
  - Sulfates bound in glacial/bedrock geology are released when the water is disturbed due to mining, endangering wild rice fields.
  - Many lakes and streams around the Great Lakes have already lost their wild rice.
  - Wild rice is hard to restore once it is gone.
- Losing rice beds impacts wildlife who eat wild rice.
  - Hundreds of thousands of ducks and birds visit Rice Lake National Wildlife Refuge every year.
  - This shallow lake is a vital flyway for birds.
  - One of Minnesota's most important wild rice lakes as it attracts the most waterfowl.
- Minnesota's Wild Rice Sulfate Standard
  - Minnesota's wild rice sulfate standard limits sulfate to 10 parts per million (ppm or mgL) in wild rice waters.
  - Under the Clean Water Act of 1973 the Wild Rice Sulfate Standard has been adopted by the MPCA and the EPA.

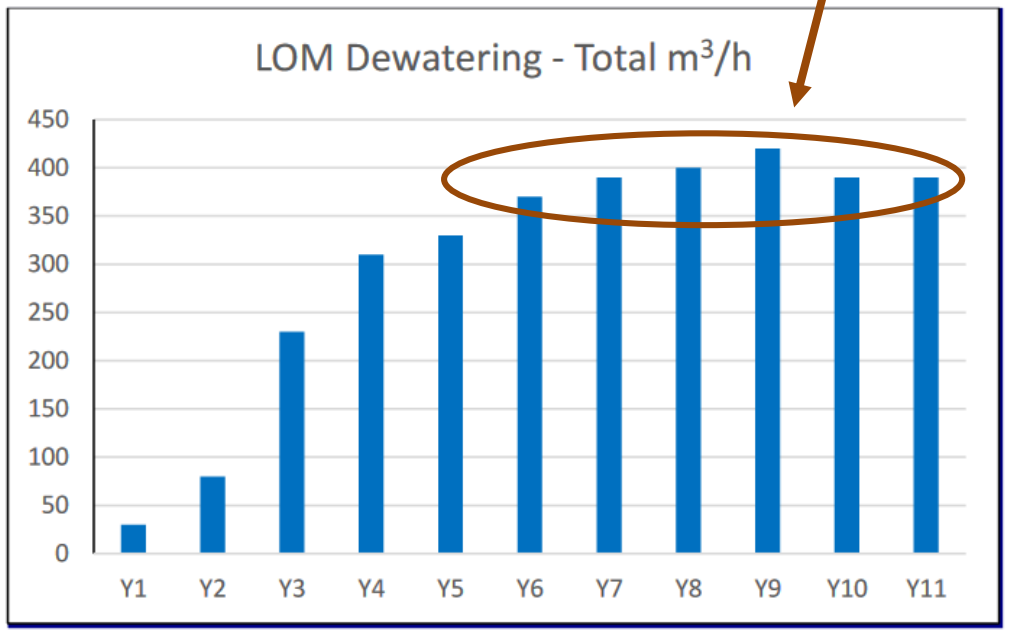
Research done by Dr. John Moyle in the "1940s" through the "1970s" indicates that increased sulfates in the surface waters impairs and eventually kills wild rice

Sulfate pollution increases the release of inorganic mercury from sediments called Methylmercury. This accumulates in the food chain and contaminates fish. When people eat mercury-tainted fish it affects the developing brains of fetuses, babies, and children resulting in lowered IQ. Adding sulfate to a wetland also increases algae blooms in once clear Minnesota

Metal / Ore Processing – Impact on Water

Between 2 - 2.6M Gallons per day

- Talon originally planned to use the tailings mixed with cement to create a cement paste that would be used to fill the mined out stopes (caverns)
- Minimizes cave-ins BUT ALSO, the "set" cement mixture decreases water seepage
- However, by moving all the tailings to North Dakota, how do they fill these mined out stopes in the mine?
  - If Talon does not fill the mined out stopes, these areas become sources of mine water that must be "dewatered" from the mine. The more surface area you leave exposed in the mine, the more water seeps into the mine so the 2.6 million gallons is now a very low end estimate. In reality, real pumping levels may be MUCH more!
  - If Talon continues down the plan to fill the stopes with a cement paste, where do they get the material? Logically, on average, they might need another 40 or so train car loads of gravel shipped every day, 365 days a week. From where?
- Blasting may also increase water seepage from new / expanded cracks



Page 228 of the 2021 Talon PEA

Figure 16-16: Mine Dewatering Requirements

- Groundwater inflows are based on an average inflow of 9.9 gpm per water bearing feature
- An average of one water bearing feature per 216 m of drill data has been measured through past logging;
- It is assumed that groundwater inflows can be reduced by 20% by grouting;
- **TALON HAS NO PLACE TO DUMP THIS WATER WHICH OF COURSE MUST ALSO BE FILTERED!**

New Eagle Mine Report – Large Water Level Impacts

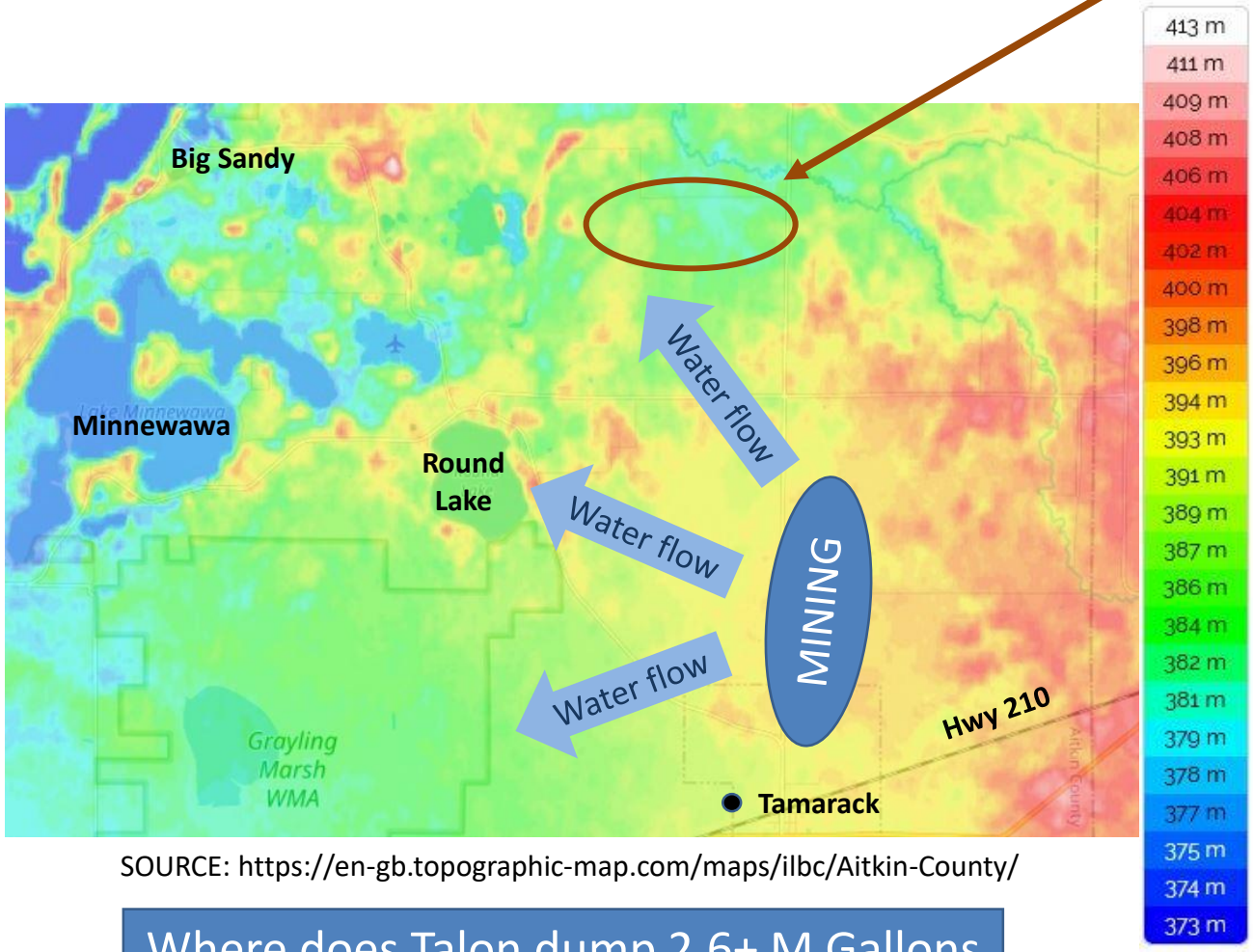
- Given mine service well pumping of approximately **90,000 gallons per day** (from page 11 of the referenced report), a few examples of surface water level monitoring outages are listed below (from page 21) -
  - **QAL023B** – The mean water level readings from October 2020 – May 2021 and August – September 2021 **were a maximum of 1.7 feet (ft) below the calculated minimum background baseline level. The lowest reading was recorded in May 2021. Water levels were not measured at this location from June through September because the water levels fell far enough below the equipment at this monitoring location that it didn't take readings.**
  - **QAL044B** – The mean water level readings from January – September 2021 were **a maximum of 1.1 ft below the minimum baseline level** calculated for this location. The lowest reading was recorded in September 2021.
  - **QAL065D** – The mean water level readings from January – September 2021 were **a maximum of 1.1 ft below the minimum baseline level** calculated for this location. The lowest water level was recorded in August and September 2021.
  - **QAL066D** – The mean water level readings from October 2020 – September 2021 were **a maximum of 2.0 ft below the minimum baseline level** calculated for this location. The lowest reading was reported in September 2021
- Despite well pumping of less than 5% of that projected in Tamarack, significant drops in surface water were measured, potentially much greater than 2 feet (at QLA023B).

A multi-year independent water flow analysis must be done in the Tamarack area given the high risk of water impact (e.g. collaborative study with Univ of Minn, tribes and Talon)

2021 Annual Mining and Reclamation Report, Eagle Mine, LLC (https://www.eaglemine.com/_files/ugd/145c36_8ba8f315c6d04aec933216a522621511.pdf)

Mining – Impacted Areas

New Deposit – closer to lakes, Savanah State Park, …



SOURCE: https://en-gb.topographic-map.com/maps/ilbc/Aitkin-County/

Where does Talon dump 2.6+ M Gallons of water per day???

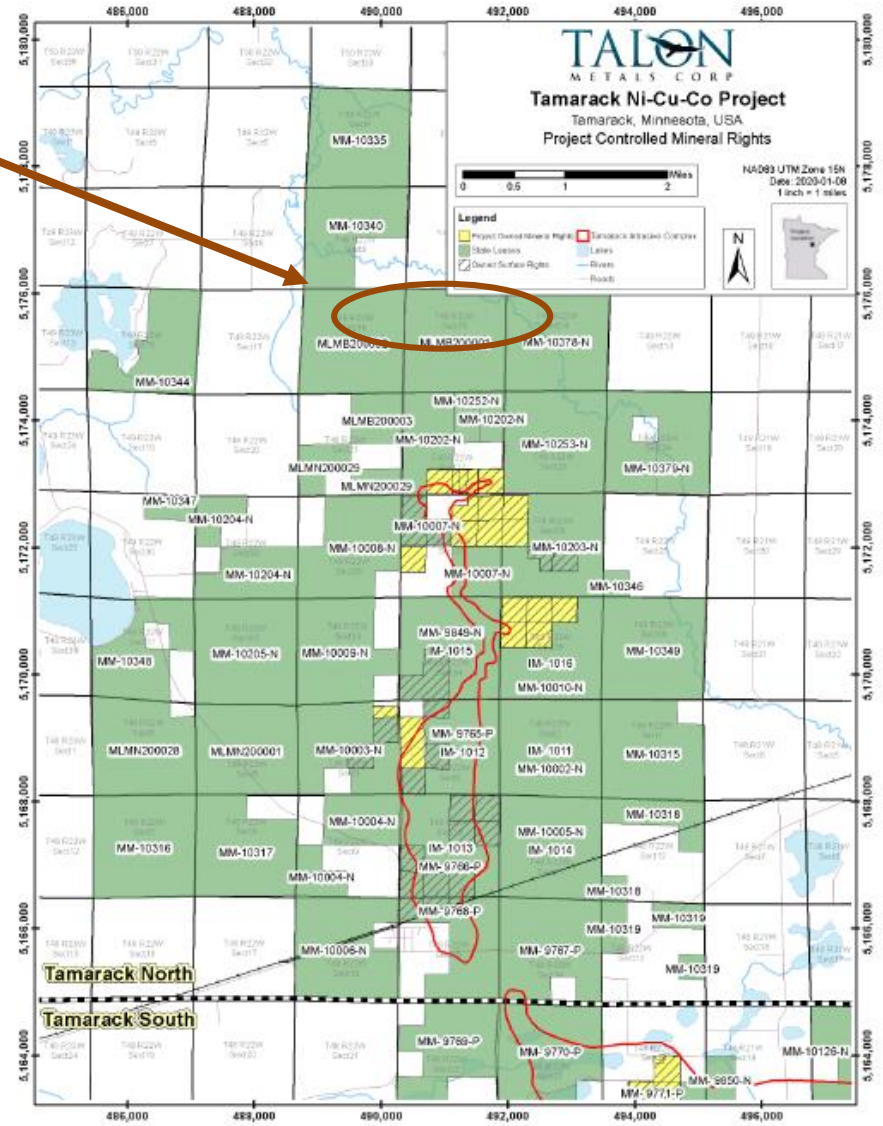


Figure 4-2: Tamarack North Project Mineral and Surface Rights

Other Concerns

- At Eagle Mine TDRSA (Temporary Development Rock Storage Area) is lined with both a primary and secondary lining
  - A leak detection system is installed between the liners to monitor primary lining integrity
  - A total of approximately 55 gallons of water was purged from the leak detection sump in 2020, a larger volume than 2019.
  - Thus we see that the lining system does leak after only a few years of operation
  - **The leak levels are currently very small at this point but as noted in the document, increasing slightly over time.**
- Vented Airborne Dust from blasting and ore handling is contaminated with sulfide particles as well as many other toxic minerals – Eagle Mine monitors for at least 33 toxic substances
  - No provision in the Talon PEA to address airborne contamination
  - At the Tamarack mine site, the plant is replaced by a huge rail facility to transport the ore to North Dakota
  - Talon will be loading at least 43 rail ore cars each day (365 days a year).
  - This large rail loading facility will create additional toxic dust issues
- Impacts on the community
  - Blasting will occur right underneath (within 700 – 1000 ft) of the town of Tamarack.
  - Blast impacts will be felt by all for many miles
  - Economy – tourism dollars will be greatly reduced … who wants to vacation (or live) next to a toxic sulfide mine site
  - People in the area will suffer from impaired rice production (impacting native peoples), lower water levels and contamination of the environment

BACKUP MATERIAL