

**Written Statement of Becky Rom
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Ely, Minnesota
Hearing on H. Con. Res. 34 and HR __
Before the Subcommittee on Energy and Mineral Resources
Natural Resources Committee
May 11, 2023**

Introduction.

I support Public Land Order 7917, which withdrew 225,504 acres of public lands and minerals located in the headwaters of the Boundary Waters Canoe Area Wilderness (Boundary Waters) in the Superior National Forest (Withdrawal Area) from the federal mineral leasing program for twenty years (Withdrawal Order). I strongly oppose House Congressional Resolution 34 and HR __.

Overview of the significance and logic of the Superior National Forest Mineral Withdrawal (Public Land Order 7917); the extraordinary importance of the Boundary Waters, the Withdrawal Area, and the water; and the threat posed by sulfide-ore copper mining.

The Boundary Waters is the most heavily visited Wilderness in the National Wilderness Preservation System—a distinction it has held every year since the Wilderness Act passed in 1964. At 1.1 million acres, it is the largest Wilderness east of the Rocky Mountains and north of the Everglades. The Boundary Waters is the only large lake-land Wilderness and the most family-friendly Wilderness in America. It offers unmatched fishing, hunting, and recreational opportunities for all Americans. The Boundary Waters significantly contributes to more than 22,000 jobs and \$1.4 billion in tourism economic activity in northern Minnesota alone. It is at the heart of a diverse and stable economy in a huge swath of northern St. Louis, Lake, and Cook Counties.

The Superior National Forest is a well-managed and immensely popular national forest in which many thousands of people live, work, and play. Converting national forest lands in the Withdrawal Area to single use—an industrial mining district stretching many thousands of acres—would seriously, perhaps fatally, unbalance that sustainable economic-residential-recreational region. Few would wish to live or play in the vicinity of a vast industrial operation that degrades the heart of the Superior National Forest.

Congressional Resolution 34 and HR __ risk the Superior National Forest - including the Withdrawal Area; the 220,000-acre Mining Protection Area created by the Boundary Waters Canoe Area Wilderness Act of 1978 which protects three entry corridors; and the Boundary Waters. These areas together are referred to hereinafter as Protected Areas. The two bills also risk the downstream areas of Ontario's 1.1 million-acre Quetico Park and the 218,000-acre Voyageurs National Park.

The Protected Areas encompass a water-dominated northern landscape unique in America's public lands inventory; they hold ecological, social, and economic significance of continental and worldwide importance. The Withdrawal Area encompasses the federal lands and minerals lying within the Rainy River Headwaters sub-watershed. The Rainy River Headwaters forms the major portion of the headwaters of the Boundary Waters. The Protected Areas were greatly at risk of, and remained unprotected from, sulfide-ore copper mining pollution and defilement until the Withdrawal Order. Without the Withdrawal Order, the Boundary Waters would be at risk of devastating and irreparable water pollution by acid, heavy metals, and sulfates; 80.1% of the Boundary Waters lies within the Rainy River Headwaters, downstream of the areas in the Headwaters where Antofagasta of Chile and other companies sought to mine copper and other sulfide-ore minerals. Further, aquatic and terrestrial ecosystem destruction from mine development on the periphery and upstream of the Boundary Waters would have unpreventable spillover effects into the Wilderness. Frank Ongaro, the former executive director of Mining Minnesota, a copper mining industry group, admits that mining causes major damage. "*Mining by its nature and scale causes significant changes in the landscape and ecosystem.*" (*Successful Non-Ferrous Mining: Promise or Reality*, Eger, P. and Ongaro, F., 2014). Sulfide-ore copper mining in the Rainy River Headwaters would require

ongoing maintenance and remediation for 500+ years to mitigate, if even possible, such mining's inevitable pollution of the waters of the Protected Areas.

Federal lands in the Withdrawal Area are managed for a variety of compatible, sustainable, non-exclusive uses. The Withdrawal Order protects lands in the Withdrawal Area and their multiple compatible uses, as well as the Boundary Waters and other Protected Areas, from the greatest threat they have faced. The 2022 Superior National Forest Mineral Withdrawal Environmental Assessment documents both the high risk of long-lasting environmental damage to forests and waters by sulfide-ore copper mining pollution and the impossibility of prevention and mitigation of such pollution in this fabulously water-rich environment. Proposals to develop sulfide-ore copper mines (including four deposits targeted by Antofagasta's Twin Metals) within the Rainy River Headwaters threatened this unique Wilderness, other Protected Areas, other parts of the Superior National Forest, and their enormous ecological, social, cultural, and economic values. The Boundary Waters and the other Protected Areas are highly vulnerable to sulfide-ore mining and acid mine drainage because of the abundance of water, the massively interconnected surface water and groundwater, and the low buffering capacity of the waters. Twenty percent of all freshwater in the entire 193-million-acre National Forest System is in the Superior National Forest. These waters are among the cleanest in America.

The Duluth Complex geological formation underlying northeastern Minnesota contains only trace amounts of copper and other metals (less than one percent). As a result, enormous quantities of sulfide-bearing waste rock, polluted process and contact water, and tailings would be generated if mining were to occur. Peer-reviewed science published in the *Journal of Hydrology* shows that pollution from sulfide-ore copper mining in the Withdrawal Area would enter the waters of the Boundary Waters, which are designated Prohibited Outstanding Resource Value Waters (the highest level of protection afforded in Minnesota's federal-compliant anti-degradation rules). Meyers, *J. Hydrology* 533:277-290. Pollution from sulfide-ore copper mines would cross the international boundary and damage Quetico, one of Canada's premier wilderness parks, and, farther downstream, Voyageurs.

The Boundary Waters and the rest of the Superior National Forest are within the 1854 Treaty Ceded Territory; the Grand Portage, Bois Forte, and Fond du Lac Bands of Lake Superior Chippewa (Bands) have treaty rights to hunt, fish, gather, and conduct cultural practices that depend on protecting the land and existing water quality. All federal agencies share in the federal government's trust responsibility to the Bands to maintain those treaty resources.

Interior Secretary Deb Haaland's Withdrawal Order is an essential first step toward permanent protection. Secretary Haaland's decision to protect the Boundary Waters by prohibiting mining on federal lands upstream from the heart of the Wilderness for 20 years – the maximum allowed under current law – was based on thorough analysis. The Environmental Assessment (EA) released with the Withdrawal Order details the impact of sulfide-ore mining on land, water, and wildlife; the potential harm to Native American communities, treaty rights, and resources; and the climate change implications resulting from the destruction of forest land and the vast consumption of energy by mining operations.

The EA underlying the Public Land Order reflects intense awareness of the value of the public assets at risk; it states "[t]he Boundary Waters Canoe Area Wilderness is a complex and interconnected ecosystem and offers recreational opportunities and other uses such that it is considered an irreplaceable national treasure." The Minnesota Pollution Control Agency is of the same mind; in its 2017 water quality assessment of the Rainy River Headwaters, which includes the Withdrawal Area, the MPCA describes the waters as "immaculate" and states "[t]he majority of the waterbodies . . . had exceptional biological, chemical, and physical characteristics that are worthy of additional protection."

Personal Background.

My name is Becky Rom. I live a few miles north of Ely, Minnesota. I grew up in Ely as the daughter of a wilderness canoe trip outfitter and the granddaughter of an iron ore miner. Now a mother and a grandmother, I serve as the volunteer National Chair of the Campaign to Save the Boundary Waters, a coalition of more than 400 businesses, conservation organizations, and hunting and fishing groups that are united to permanently protect the Boundary Waters from the pollution and destruction that inevitably result from sulfide-ore copper mining. Our organization is headquartered in Ely and is led by people of northeastern Minnesota.

My dad was Bill Rom, who, after serving as a naval officer in the Pacific in World War II, founded a wilderness canoe trip outfitting business (1946-1976) in Ely. For most of that time, Dad, Mom, my three brothers, and I lived in an apartment over the outfitting business, which was open from May 1 to October 1, 7 days a week, 6 am to 10 pm. The business was my family's life and everything revolved around it. Thousands of people came to my dad's business, Canoe Country Outfitters, during the summers. Daily conversations with canoe trip customers led me to appreciate the uniqueness and value of the wilderness. Returning from Boundary Waters trips, they wanted to share their experiences and talk about it all. They viewed the canoe country as an extraordinary gift.

When my parents could escape from work, we ventured into the Boundary Waters. My first canoe trip was at the age of two. My brothers and I were trained as canoe trip guides; we spent many weeks in the canoe country each year. My first guiding trip was at the age of 14, at a time (1963) when girls did not customarily work as wilderness guides.

In April 1967, the last hematite mine in Minnesota, the underground Pioneer Mine in Ely, closed forever and mining ended in our community. Over the past 50+ years, many people have moved to the Ely area because of the canoe country. It is a great place to live, to have the wilderness next door, to be able to venture out into it during all seasons and weather. Most of the people who live in northeastern Minnesota favor protection of the canoe country and are opposed to sulfide-ore copper mining in the Boundary Waters watershed. Polling shows that nearly 70% of Minnesotans support a permanent ban, and within Congressional District 8, my district, residents oppose mining near the Boundary Waters by a ten-point margin.

The Boundary Waters Canoe Area Wilderness.

The Boundary Waters is 1,719 square miles of lakes, streams, forests, and wetlands in Northeastern Minnesota. It is part of the great Quetico-Superior ecosystem, a wild 4.3-million-acre landscape that straddles the border of Minnesota and Ontario. This is the greatest canoe country wilderness on the planet. It is a watery, wildlife-rich paradise. All surface waters from the headwaters of the Boundary Waters flow to Hudson's Bay, coursing through the Boundary Waters, the Quetico, and Minnesota's Voyageurs National Park before turning north at Lake of the Woods. The waters are exceptionally clean – 'immaculate' in the words of the Minnesota Pollution Control Agency. One can safely drink out of the lakes in the Boundary Waters. And the water is abundant. The Boundary Waters sits within the 3-million-acre Superior National Forest; the Superior contains 20% of the freshwater in the entire 193-million-acre National Forest System. The Boundary Waters itself is 24% freshwater. It is wild country - home to wolves, lynx, moose, loons, warblers, eagles, and countless other creatures - it is the only place in the lower 48 states where wolves were never extirpated. The forest of pine, spruce, cedar, and birch sits on a shallow layer of soil atop granite and other igneous rock. Lakes were carved into this Canadian Shield by glaciers. Travel today is by canoe or dogsled, on boots, skis, or snowshoes, much as the Anishinaabe and the fur-trading voyageurs traveled along the border lakes and then north. **Attachment 1** shows a portion of the Boundary Waters and Quetico.

Nothing else in our National Parks or our National Wilderness Preservation System is like the Boundary Waters. It is utterly unique. Nowhere else is there such a seemingly endless network of lakes, streams, and wetlands—all connected by portage trails through a boreal forest landscape. No other Wilderness is so accessible to people of all ages and abilities—babies in diapers can travel with their parents by canoe in the Boundary Waters. My own babies did. Elderly people and others with physical challenges can, with assistance, spend days traveling by canoe and camping in the Boundary Waters. These are among the reasons that the Boundary Waters is the most-visited Wilderness area in America. There is no other place like this. We cannot and will not allow sulfide-ore mining in its watershed.

The Sulfide-ore Copper Mining Threat to the Boundary Waters.

The Duluth Complex is a massive body of sulfide-bearing ore that underlies much of the Superior National Forest, including the Boundary Waters, and extends south to Lake Superior. Trace amounts of copper, nickel, platinum, and palladium (in total less than 1%) are found in this low-grade ore body. Mining of the Duluth Complex, which has never been done, would present massive environmental risks. The sulfide-bearing ore would generate acid mine drainage. Mine infrastructure would destroy thousands of surface acres in the Superior National Forest in one of the most vibrant regions of recreation and economic activity in northern Minnesota.

Sulfide-ore copper mining has never been done in Minnesota – this is not the same as my grandfather’s hematite mining or taconite mining in the Mesabi Iron Range. Sulfide-ore copper mining poses a unique threat because the ore contains metals bound together with sulfur. When exposed to air and water, sulfide-bearing ore discharges acid mine drainage into ground and surface waters (sulfuric acid, heavy metals, and sulfates). Because there are only trace amounts of metals, the volume of waste rock and tailings (crushed ore) would be enormous. The waste rock and tailings would generate acid mine drainage for hundreds of years.

The most immediate threat had been from Antofagasta, a very large mining conglomerate from Santiago, Chile, that owns Twin Metals Minnesota and sought approvals to mine public minerals in the Superior National Forest. Antofagasta purchased Duluth Metals, a Canadian junior mining company, in January 2015, and with that acquisition gained control of Twin Metals and two expired federal mineral leases. The four deposits – two shallow and two deep – are adjacent to the Boundary Waters and along rivers and lakes that flow into the Wilderness.

If the Twin Metals mine plan were ever developed, acid mine drainage would flow from a tailings dump located on a 640-acre site owned by the State of Minnesota on the shores of Birch Lake into the waters that flow into the Boundary Waters. This toxic pollution from the tailings dump and underground pollution from the mine would flow into waters that are clean and very low in alkaline, meaning the waters have little capacity to buffer the acid generated by this type of mining. Scientific evidence of significant and permanent harm to the Boundary Waters is overwhelming and not credibly contradicted. The Forest Service has concluded that the inevitable damage to the Boundary Waters could not be mitigated or fixed. **Attachments 2 & 3 show the flow path of water and the path of pollution in the Rainy River Headwaters.**

The Sulfide-Ore Copper Mining Threat to the Boundary Waters Economy.

Pro-Twin Metals boosters claim that copper mining would bring new jobs – but in fact the cost to the regional economy would far outweigh any alleged economic benefit of copper mining in the watershed of the Boundary Waters. Furthermore, underground mining is rapidly undergoing a major transformation. Anglo American, a large copper mining company that employed 87,000 miners worldwide at the time, said in 2017 that mines of the future will be fully automated and the only local people to be employed would in community relations addressing the lack of local jobs in mining.

The endless mantra that sulfide-ore mines will provide jobs is an attempt to mask the negative long-term economic impact if such mining were allowed to occur next to the Boundary Waters. The vast percentage of the jobs would be temporary construction work lasting a year or two and filled by workers from far-flung places—not local communities. But the destruction of thousands of acres of land for mine infrastructure would be permanent, and it would definitely be local. That destruction and mining’s water pollution would result in irreversible harm to the Boundary Waters watershed ecosystem. The current sustainable outdoors-oriented economy of Northeastern Minnesota would be devastated. The only peer-reviewed study of the economic impact of copper mining in the region was conducted by economists at Harvard University and concluded that over a period of 20 years both jobs and income in the Boundary Waters region would be higher if mining does not occur.

The mineral withdrawal will lead to a far better outcome for the region economically, resulting in more jobs and more income over twenty years. In the peer reviewed and published study “Analysis of proposed 20-year mineral leasing withdrawal in Superior National Forest,” *Ecological Economics*, March 2020, prominent Harvard economics professor James Stock compared the effects of the Forest Service’s proposed 20-year mining ban near with the consequences of sulfide-ore copper mining in the Boundary Waters watershed. The conclusion: protecting public lands near the Boundary Waters from sulfide-ore copper mining generates greater long-term gain for the region (more employment and more income) than copper mining.

The study compared two scenarios: Scenario 1 – The Boundary Waters economy continues to develop during a 20-year mining ban; Scenario 2 – The mining ban does not occur, and a Twin Metals/ Antofagasta mine is developed. The study projected 36 employment and 72 income scenarios representing a range of employment and income effects over a 20-year period. The analysis showed that mining would likely have a negative effect on the regional economy in both employment and income because of the negative impact of mining on the recreational industry and on in-migration. The findings highlighted the important of considering the long-term effects of resource extraction in natural-amenity-rich areas. The preponderance of the scenarios (89%) found fewer jobs and less income resulting from a mining project, meaning that an economy based on copper mining would significantly underperform the existing growing, sustainable economy. This is the only economic study to analyze the longer-term dynamic economic effects of the two options over a 20-year timeframe.

In their 2017 report, “Sulfide-Ore Copper Mining and/or A Sustainable Boundary Waters Economy: The Need to Consider Real Tradeoffs,” Drs. Spencer Phillips and Carolyn Alkire describe the key indicators of transition and economic growth in the diversifying and more stable modern economy that exists in the three-county Arrowhead region (St. Louis, Lake, and Cook Counties), which has developed in the years since the start of mining’s decline in the early 1980s. In the modern Arrowhead (northeastern Minnesota) economy, amenity-based development has taken the place of mining as the engine of development in the region.

In his Feb. 27, 2018 FLPMA comment letter, Dr. Spencer Phillips says that claims of increased mining employment must be viewed in consideration of an accelerating trend of decreasing labor intensity in the mining industry.

- A new wave of automation in mining uses autonomous and remotely controlled machinery monitored by a few persons who may be located far from mining sites.
- This continuing trend means that estimates made now of the number of jobs a mine may have to offer in the future are inflated and are not likely to be local jobs for local people.
- Copper mining giant Anglo America predicts automation will make the future mining industry “unrecognizable” to people who know it now and the human employee of the future will only need to focus on managing the company’s community relations.
- In contrast “...the mining withdrawal could save between 9,556 and 27,281 jobs.”

Despite claims by mining companies to the contrary, the Withdrawal Order economically benefits the communities in and near the Withdrawal Area and the Boundary Waters, both in terms of jobs and income. Thirty businesses operate directly in the path pollution would travel from a sulfide-ore copper mine located in the Rainy River Headwaters. These businesses would not likely be able to survive if a Twin Metals mine were developed. A University of Minnesota survey of property owners in the four townships in the immediate area of the Withdrawal Area showed that 23% said they would move from the area if sulfide-ore copper mining were developed in the Headwaters.

Protecting the Water Quality in the Boundary Waters is an Overriding Principle of Minnesota State Law.

The Boundary Waters is a uniquely valuable place that should be protected from destructive sulfide-ore copper mining proposed on public lands in its headwaters. It is our nation’s premier lake-land National Wilderness Area and the most visited of all such areas. A defining characteristic is water: twenty-four percent of the Boundary Waters is water, and these waters are described by the Minnesota Pollution Control Agency as extremely clean and immaculate. Minnesota has classified the waters of the Boundary Waters as “prohibited outstanding resource

value waters.” Minn. Rule 7050.0335, Subp. 3.A. No degradation of water quality is allowed. See **Attachment 4**. In addition, Minnesota state law mandates that water be managed from a watershed perspective.

Sparkling Clean Water—the Rainy River Headwaters. In addition to being highly valuable because of its exceptional water quality, the Headwaters, including the Boundary Waters, is uniquely vulnerable. The waters of the Boundary Waters and the surrounding Superior National Forest are vastly interconnected – lakes, rivers, streams, wetlands, and groundwater – and the extensive interconnectedness is poorly understood, meaning that water pollution could travel undetected for some indeterminate time and the route by which pollution moves – particularly through fractured bedrock – may not be decipherable. The water chemistry of the Boundary Waters and the surrounding Superior National Forest lands is poorly-buffered, i.e., low in alkaline or base compounds, meaning that newly introduced acid mine drainage would cause the pH of the waters to become acidic; alkalinity is necessary to counteract acidity. Mine drainage and deposition of air pollution from mines in the Headwaters would cause mercury contamination in fish and all who eat fish, both downstream and downwind. Acid mine drainage would cause the loss of aquatic life. Because the degraded waters would be in a vast lake-land national Wilderness Area, the damage could never be remediated, mitigated, or fixed without doing further extreme damage to the Wilderness.

Sulfide-ore copper mining has a history of pollution. The EPA has determined that the Duluth Complex, which underlies the withdrawal area, is acid-generating. It also contains very low-grade ore. Waste from mines in the Duluth Complex will be vast – roughly 99% of the ore body. Mine waste would be a source of water degradation for hundreds of years. Leachate from mines in the Boundary Waters Headwaters would include sulfates, sulfides, and heavy metals such as arsenic, copper, zinc, and other toxic metals.

The Withdrawal Order is thus essential to protecting the Boundary Waters from the ravages of sulfide-ore mining in its watershed. Half-measures will not do. The mining industry claims that modern technology will contain its toxic wastes and protect water from pollution, but every objective observer knows that is highly unlikely to be true. A peer-reviewed report on 14 modern sulfide-ore copper mines representing 89% of current US copper production showed all 14 experienced accidental releases of pollution, and 13 of 14 (92%) copper mines experienced water collection or treatment system failures that resulted in significant water pollution. [US Copper Porphyry Mines Report](#), Bonnie Gestring; *Earthworks*. 2012. In an update to the 2012 report, Earthworks reviewed available records reflecting the performance of 15 copper mines in the United States, the combined output of which represented essentially all (99%) of copper production in 2015 and found that 14 of the 15 top U.S. copper mines (93%) failed to capture and control wastewater, resulting in significant water quality impacts. U.S. Operating Copper Mines: Failure to Capture & Treat Wastewater, *Earthworks*. 2019.

Experts agree: Dave Chambers, a registered professional geophysicist has been reviewing the potential for mine proposals within the Duluth Complex to produce pollution, including but not only acid mine drainage (AMD), since 2009. According to Dr. Chambers:

“...the Duluth Complex contains disseminated metal sulfides proven to generate acid. If built, sulfide-ore mines in the Complex have the potential to generate AMD.

The risks have been well-known for decades, by the U.S. Environmental Protection Agency, Minnesota’s state agencies and by mining companies. AMD is still occurring at the nearby and now-closed Dunka mine, where millions of tons of Duluth Complex rock were blasted and stockpiled and have been leaching AMD since at least the early 1970’s. Despite steps taken to neutralize the acid, the Dunka mine drainage still carries sulfate and dissolved metals at concentrations hundreds of times higher than background levels for northeastern Minnesota.

Water contamination from mining wastes can still be an unanticipated problem, despite all the planning involved, money spent and good intentions. There is no 100% guarantee that AMD won’t cause off-site contamination.

The Twin Metals deposits contain sulfides at higher concentrations than other Duluth Complex deposits and could be expected to produce the same contaminants at higher rates and concentrations, in mine drainage more likely to be acidic. Suggestions that we can guarantee the prevention of AMD do not represent the risks of AMD, and the caution that is needed to protect the Boundary Waters and its

watershed.

Here is a troubling fact: a 2012 review of water-quality impacts from 14 operating U.S. sulfide-ore copper mines found that 100% of the mines experienced pipeline spills or accidental releases and 13 out of 14 mines experienced failures to control contaminated mine seepage, leading to harmful water-quality impacts. Despite assurances to the contrary.

In a 2019 update to the report, records reflecting the performances of 15 U.S. copper mines were examined, and it found that 14 of the top 15 copper mines (93%) failed to capture and control wastewater, resulting in significant water-quality impacts. Recently, a report of five hardrock mines in Alaska, some identified as “model” mines by Twin Metals, documented 8.150 spills from 1995 to 2020.

This is the challenge with mining. Even with the best of designs and best efforts, spills and leaks happen. Mining occurs in the natural environment, not in a controlled factory. The Boundary Waters is too important to risk.”

Letter to the Editor, Star Tribune, June 12, 2022

Technology is indeed a slender reed upon which to rest the welfare of the Boundary Waters given the overall history of industrial accidents and technological failures that regularly beset the world: pipelines, trains, oil refineries, space shuttles, and mines. For example, in August 2014 the tailings dam at the Imperial Metals Mount Polley mine in British Columbia failed, with disastrous consequences. Just one year earlier, Knight-Piesold—the designer of the failed tailings dam—had this to say: “Modern dam design technologies are based on proven scientific/engineering principles, and there is no basis for asserting that they will not stand the test of time.” Speaking after the Mount Polley disaster, Brian Kynoch, President of Imperial Metals, said “I apologize for what happened. If you asked me two weeks ago if this could have happened, I would have said it couldn’t.”

Metals from the Area Covered by the Superior National Forest Mineral Withdrawal Are Insignificant Relative to U.S. Demand and Irrelevant to National Security and the Green Economy.

Sulfide-ore copper mining in the Withdrawal Area would sacrifice the Boundary Waters while producing an insignificant quantity of metals compared to United States demand. In addition to providing only a drop in the bucket in terms of demand, the metals would be shipped out of the United States, most likely to China, for final processing, and sold on the world market. The argument that metals in the Withdrawal Area are needed for the transition to a “green” economy is not credible. So-called critical minerals do not exist there in sufficient quantities to justify irreparably damaging the Wilderness. **The amount of minerals is tiny in terms of current U.S. demand—1.5 percent as to cobalt, 3.6 percent as to nickel, and 2.3 percent as to copper (based on 2019 annual consumption).** The only viable solution for transition to a green economy is to continue to rely on our longtime and secure allies—Canada, Australia, Norway, and others—for cobalt and nickel. Looking to the watershed of the Boundary Waters does next to nothing to help in the transition. Not only is the quantity of metals insignificant in terms of U.S. demand, but also any such metals would be irrelevant because they would be shipped to China for smelting and processing and sold on the world market.

Copper. Copper is abundant throughout the world. United States and world resources are plentiful and growing. The United States is among the top copper producers in the world. The U.S. Geological Survey Materials Flow Analysis section assesses a low disruption potential for copper in the U.S. economy. The United States has only three active copper smelters. They are fully integrated, meaning the companies that own them also own their own copper mines that supply the smelters with enough concentrates to keep them operating at full capacity. Any new mine in the watershed of the Boundary Waters would send its copper (and nickel) concentrates out of the United States for processing. The Mine Plan for a Twin Metals mine, for example, called for transporting its metal concentrates to a port facility. Antofagasta, the owner of Twin Metals, sends its copper-nickel concentrates from its mines in South America to China for smelting and refining.

Nickel. The United States does not have a significant amount of nickel. Its close trading partner, Canada, is a leading supplier of nickel (and other critical minerals) to the United States. Canada has more than 28 times the nickel reserves as the United States and on average its deposits are of double or higher grade than those in the United States. Canada is also eager to supply more metals to the United States. Other major trading partners for nickel include the countries of Norway, Finland, and Australia, all of which are on the Department of Defense’s

Security of Supply countries (USGS OFR-1127, p. 5). The United States has no nickel smelters. As discussed above, any nickel concentrate from mining in the watershed of the Boundary Waters would be shipped overseas, likely to China, for processing.

Cobalt. A Twin Metals mine would produce a very small quantity of cobalt. Cobalt would be a by-product from smelting and refining nickel concentrates, which would be done off-shore, most likely in China. Cobalt grades in Twin Metals deposits are among the lowest of all deposits in the world and production, even if not sent abroad, would be insufficient to dent U.S. demand. At most, a Twin Metals mine might meet 1.5% of the U.S. annual demand for cobalt (based on 2019 annual consumption). As U.S. consumption rises, this percentage would decline. By contrast, the United States currently imports 57% of its cobalt needs from Canada, Norway, Japan (USGS OFR-1127, p. 29) and Finland, all close U.S. allies and trading partners. Australia alone has 83 deposits containing cobalt, 55 of which are of double or higher grade than the Duluth Complex deposits in the Boundary Waters watershed. For example, one of those deposits alone, if mined, has enough contained cobalt to supply the United States at current demand, for more than 270 years. Another Australian deposit, the currently operating Murrin-Murrin mine, has grades five times better than the best a Twin Metals mine could offer and contains 198,000 tons of cobalt, more than 42 times what a Twin Metals mine could produce. With a Twin Metals mine, the United States would sacrifice the Boundary Waters and still need to import more than 98% of its cobalt.

The United States could dramatically reduce demand for minerals by investing in a circular economy – including recycling, reuse, manufacturing improvements and substitution that would create jobs domestically while not putting places such as the Boundary Waters at risk of toxic mining. Many minerals identified as critical are discarded as waste material and are not recovered during smelting and/or refining. Stronger laws, regulations, and standards could compel the recovery of minerals from existing mines, waste, and tailing piles, thus adding to the supply chain. It is estimated, for example, that there is as much cobalt among e-waste landfills in the eastern United States as in all the Democratic Republic of Congo.

A Mine Plan Review is inadequate to protect the Boundary Waters.

The claim that the Withdrawal Order undercuts the regulatory review process and that only a specific mine plan should be studied ignores federal law that plainly establishes a more important process - that is, a process to determine whether any mine at all, no matter its plan of operations, should be allowed on unique, fragile, highly-valued public lands. The question is not whether a specific mine plan is clean enough; the question is whether the landscape at issue should be subjected to the destruction and disruption that are an integral part of mining. No amount of review of a mine plan would change the inevitable impact of a Twin Metals mine: significant degradation of the greater ecosystem and negative alteration of the landscape over many thousands of acres; and pollution of water, land, and air materially greater than existing conditions even if the mine were to comply with federal and state pollution standards. Repair, mitigation, or fixing of a polluted Boundary Waters is not possible. Moreover, industrial accidents happen frequently—too often at catastrophic scale. Neither would the review of a mine plan address the negative impact on the regional economy. The only peer-reviewed study on the topic found that protecting the Boundary Waters from copper mining would result in more jobs and more income over a twenty-year period.

Two peer-reviewed studies by Dr. Ann Maest and Jim Kuipers, P.E., compared predicted and actual water quality at hardrock mines, the reliability of predictions in environmental review, and the state-of-the-art methods and models of predicting water quality at hardrock mines. Among their findings was this: mine projects that are both near groundwater or surface water and possess an elevated potential for AMD or contaminate leaching – all of which is true for sulfide-ore mining in the Headwaters – are so high risk that water quality exceedances are a near certainty. This is true for 85% of mines near surface water and 93% of mines near groundwater. Of the sites that developed AMD, 89% had predicted that they would not. J.R. Kuipers et al, *“Comparison of Predicted and Actual Water Quality at Hardrock Mines: The reliability of predictions in Environmental Impact Statements,”* 2006.

Antofagasta’s Twin Metals has no viable mine plan. Twin Metals has no leases to mine federal minerals in the Withdrawal Area; leases issued unlawfully in 2019 without the required Forest Service consent were cancelled in 2022. Although the mining company submitted a mine plan to the Bureau of Land Management (BLM) and the

Minnesota Department of Natural Resources (DNR) in December 2019, the BLM rejected the mine plan and the DNR halted all consideration of the mine plan in February 2022. Twin Metals had failed to substantiate its claim that its waste ore and tailings would not be acid generating; its dry stack storage proposal was rejected by the DNR as inappropriate for northern Minnesota’s wet environment (Finding of Facts and Conclusions of Law for the Northmet Project, 2018); and the proposal to store millions of tons of waste on state land on the shores of Birch Lake exposed the State of Minnesota to financial risk. In conclusion, there is no viable Twin Metals mine plan and nothing to review. See **Attachment 5**.

The Boundary Waters Can Contribute Significantly to Solving the Climate and Extinction Crisis; The Boundary Waters region is vital for carbon sequestration.

The 4.3 million-acre Quetico-Superior region is primarily boreal forest. Boreal forests store more carbon than any other terrestrial ecosystem - almost twice as much per acre as tropical forests. Keeping carbon locked in these forests and out of the atmosphere is a vital part of the fight to keep warming below 2 degrees Celsius. According to a federal government report prepared for members and committees of Congress, each acre of terrestrial boreal forest stores on average about 180 tons of carbon in its vegetation and soils. Destruction of boreal forest for industrial mining is a double whammy - the release of much of that carbon into the atmosphere and the loss of the capacity of the land to take up carbon in the future. The loss is even greater if wetlands are destroyed. Soil carbon levels in wetlands are nearly double the level in the terrestrial boreal forest.

Mechanical destruction of vegetation and soil is not the only harm that would result from permitting copper mining. The carbon storage assets of the Boundary Waters region (surface vegetation, soils, wetlands, and peatlands) are incredibly vulnerable to acid mine drainage – the water pollution that inevitably results from sulfide-ore mining.

Protecting the Boundary Waters is critical for greenhouse gas emission avoidance. An estimate of greenhouse gas emissions, based on a 2014 Prefeasibility Report for the proposed Twin Metals mine, is 23,444,730 metric tons of CO₂ over a 20-year life of the mine. This is equal to greenhouse gas emissions from adding nearly five million passenger vehicles to the roads for one year.

The Boundary Waters is crucial for climate adaptation and resilience. According to climate modeling by The Wilderness Society, the Quetico Superior region is one of the 8 most important regions in the nation for climate adaptation and resiliency. It is the one remaining intact biome in Minnesota – a largescale ecosystem with clean freshwater, clean air, a healthy boreal forest, and a wide range of birds and other wildlife. The Withdrawal Public Order is an equitable outcome that respects the people who live in and visit the region, including the Bands that enjoy hunting, gathering and fishing rights by treaty. Protecting the Headwaters and the Boundary Waters is part of the solution to the climate and extinction crises and an important step on the road to environmental justice.

The climate modeling identified 74 places in the United States that are crucial to our ability to sustain biodiversity in the face of a changing climate. The analysis found that the Quetico-Superior region is one of the top places in the nation. A recent study by [The Nature Conservancy](#) with similar findings underscores the necessity of keeping these areas intact and undeveloped. Consistent with this, The Nature Conservancy, The Conservation Fund, and The Trust for Public Land have acquired large swaths of land across northern Minnesota to keep them protected. Allowing the creation of an industrial mining zone in the Headwaters of the Boundary Waters would undermine the work that these and other organizations are doing to prepare us for the future.

The views of the American People; Increased protection of the Boundary Waters from sulfide-ore copper mining has strong state support.

Most people across the state of Minnesota and across party lines support protecting the Boundary Waters from the risk of sulfide-ore copper mining.

“Minnesotans understand mining and are, in general, not anti-mining. They also understand the role of certain metals, such as cobalt and nickel, in national security and for a clean energy transition. However, Minnesotans reject as a false choice the claim that sulfide-ore copper mining in the Boundary Waters watershed is needed or even relevant. Minnesotans overwhelmingly oppose sulfide-ore copper mining in the watershed of the Boundary

Waters, where it would pose a danger to the Boundary Waters. Opposition to sulfide-ore copper mining in the Boundary Waters watershed cuts across demographic, geographic, and ideological lines, making protection of the watershed a clear winner in Minnesota.” **John Anzalone, IMPACT Research.**

In February 2018 Fabrizio Ward (former President Trump’s pollster) found that by a 48% margin, Minnesotan voters are against sulfide-ore copper mining in areas near the Boundary Waters (70% oppose / 22% favor). Opposition to sulfide-ore copper mining near the Boundary Waters extends to Congressional District 8 (CD-8), the location of the Boundary Waters and its watershed (the Rainy River Headwaters). **Most voters (56%) in CD-8 are opposed to sulfide-ore copper mining in areas near the Boundary Waters.** Voters are aware that outdoor recreation and public lands contribute greatly to Minnesota’s economy. **Nearly nine in ten believe that the outdoor recreation economy, meaning people who come to hunt, fish, camp, and see wildlife, as well as those who manufacture and sell equipment for those activities, are important to Minnesota’s economic future.** Furthermore, four in five voters say that due to the presence of public lands and the state’s lifestyle of outdoor recreation, Minnesota has an advantage over other states in attracting good jobs and innovative companies.

In July 2020, ALG Research found that voters in Minnesota oppose sulfide-ore copper mining on the edge of the Boundary Waters by a 39-point margin (62% oppose / 23% favor). Opposition to sulfide-ore copper mining on the edge of the Boundary Waters is both geographically broad and bipartisan. Democrats oppose by a 69-point margin; Independents by a 48-point margin; and Republicans by a 3-point margin. Voters in CD-8 oppose sulfide-ore copper mining on the edge of the Boundary Waters by a 10-point margin. **ALG Research found that voters overwhelmingly support permanent protection for the Boundary Waters. More than two-thirds of the voters (68%) want the Boundary Waters permanently protected from threats such as sulfide-ore copper mining.** ALG Research found that the Boundary Waters is uniquely popular among Minnesotans. The area gets a 84% favorability rating, with a notable 66% very favorable. **The positivity toward the Boundary Waters crosses geographic, demographic, and ideological lines and is bolstered by the view that outdoor recreation and tourism are significantly more important to Minnesota’s economic future than mining (45% outdoor recreation and tourism / 10% mining / 35% both).**

Finally, a poll conducted by Change Research of Minnesota midterm voters in November 2022 found that 7 in 10 (69%) support legislation to permanently protect the Boundary Waters from the threat of sulfide-ore copper mining.

Boundary Waters Canoe Area Wilderness: For nearly 120 years, the State of Minnesota and the federal government have worked together to protect and preserve the canoe country of Northeastern Minnesota.

In 1902, the U.S. Land Office withdrew 500,000 acres in the future Boundary Waters Canoe Area Wilderness from settlement. In 1905, General C.C. Andrews, Minnesota’s land commissioner, persuaded the U.S. Land Office to withdraw from settlement 659,700 more acres in the future Boundary Waters. In 1909, President Theodore Roosevelt established the Superior National Forest of more than 1.1 million acres. Also in 1909, the Minnesota Legislature created a 1,200,000-acre statutory Superior Game Refuge, similar in area to the Superior National Forest and including most of what is now the Boundary Waters.

In 1926, U.S. Agriculture Secretary W.M. Jardine established a ‘roadless area’ of 640,000 acres in the Superior National Forest to “retain as much as possible of the land which has recreational opportunities of this nature as wilderness.” Federal land acquisitions and boundary changes increased federal ownership to over two million acres. In 1938, the U.S. Forest Service established the Superior Roadless Primitive Area covering most of the current Boundary Waters.

Because of threats for dam building along the U.S.-Canada border, in 1930 Congress passed the Shipstead-Newton-Nolan Act to protect waters levels. Minnesota’s Legislature followed suit by passing the ‘Little Shipstead-Newton-Nolan Act’ to provide similar prohibitions on state lands.

In 1948, Congress passed the Thye-Blatnik Act to buy out private in-holdings in what is now the Boundary Waters. The Act also provided for payments-in-lieu-of-taxes to Cook, Lake, and St. Louis Counties for certain federal lands.

In 1949, President Harry Truman issued an executive order for an air-space reservation, which prohibits airplanes flying below 4,000 feet above-sea-level over the Boundary Waters. The Minnesota Legislature passed a law to regulate aircraft and watercraft modeled after federal regulations.

The Wilderness Act became law in 1964. The Act established the National Wilderness Preservation System and designated 9 million acres of America's national forests to be Wilderness Areas. The Boundary Waters was so designated, representing 1 million of the 9 million acres. The National Wilderness Preservation System now includes 110 million acres of national public lands.

The Minnesota Legislature passed legislation in 1976 to ban mining on state lands located in the Wilderness.

In 1978, Congress took additional action that provided what was, at the time, a greater level of protection for the Boundary Waters than any other federal Wilderness. The 1978 Boundary Waters Wilderness Act banned mining in the Boundary Waters and on 220,000 acres of Superior National Forest lands along three entry corridors (Echo, Fernberg, and Gunflint) and along the southern edge of the Trout Lake Unit. Finally, the 1978 Act charged the U.S. Forest Service with protecting the Boundary Waters, including for the following purposes: “(1) provide for the protection and management of the fish and wildlife of the wilderness so as to enhance public enjoyment and appreciation of the unique biotic resources of the region, (2) protect and enhance the natural values and environmental quality of the lakes, streams, shorelines and associated forest areas of the wilderness, (3) **maintain high water quality in such areas, (4) minimize to the maximum extent possible, the environmental impacts associated with mineral development affecting such areas...**” (Pub. L. No. 95-495).

In 2003, the Minnesota Legislature designated 18,000 acres of state land within the perimeter of the Boundary Waters as ‘wilderness’ within the statutory classification of the Minnesota Outdoor Recreation Act. This is Minnesota's only state wilderness.

On December 14, 2016, the U.S. Forest Service withheld its consent to two applications for mineral lease renewals (the only two federal mineral leases in the Superior National Forest), finding that sulfide-ore copper mining in the watershed of the Boundary Waters posed an unacceptable risk of harm to the Boundary Waters and that the resulting damage could never be fixed or mitigated. A 2017 Memorandum Opinion by the Interior Solicitor in the Trump Administration bypassed this withholding of consent, but the U.S. Forest Service did not withdraw its decision denying consent. In January 2022, the Interior Deputy Secretary Tommy Beaudreau cancelled the two mineral leases because they had been renewed unlawfully. (NEPA violations; BLM regulation violations; and the lack of the Forest Service consent required by federal law).

On October 20, 2021, the U.S. Departments of Interior and Agriculture announced that the U.S. Forest Service filed an application for a 20-year mineral withdrawal of more than 225,000 acres of Superior National Forest lands located in the watershed of the Boundary Waters. The purpose of the withdrawal, as stated in the application, superbly describes what is at stake: the preservation of the world's greatest canoe country. The application precisely describes why a 20-year mineral withdrawal is not only appropriate, but critically necessary. Portions of the application are attached as **Attachment 6**. The centerpiece of the mineral withdrawal process is a science-driven environmental analysis of potential impacts of mining on important natural and cultural resources of the Rainy River watershed, including the Boundary Waters: water quality, fish and wildlife, Tribal trust and treaty rights, and the local recreation and amenity-based economy, among other things. The result of this analysis informed the Secretary of the Interior's decision as to whether to grant the withdrawal request. The Forest Service prepared, and the BLM reviewed, an Environmental Assessment of the proposed federal mineral withdrawal; its extensive scientific, economic, and cultural analysis concluded that a mineral withdrawal was the best way to protect the unique ecosystem of the Boundary Waters. The potential for irreversible mining-related impacts on the Boundary Waters, the Mining Protection Area and other Protected Areas, and 1854 Ceded Territory, to the extent located within the Rainy River Watershed, warranted a mineral withdrawal for the maximum allowable period of 20 years. In contrast, the Forest Service concluded that a “piecemeal, project-specific” review would be a poor

alternative to provid[ing] a “broader, more comprehensive approach to protect the ecological integrity of this area...” finding that a case-by-case, or mine-by-mine review, is an inefficient and time-consuming approach. Secretary Haaland acted to thwart a dire threat— sulfide-ore copper mining in the headwaters of the Wilderness— that would, without a doubt, have resulted in irreversible environmental and socioeconomic damage to the Headwaters, the Boundary Waters, and the region.

The history of Boundary Waters protection by the State of Minnesota and the federal government reflects the extraordinarily high value that Minnesotans and other Americans place on the Boundary Waters. The great majority of the people have demanded and continue to demand that the canoe country wilderness of northern Minnesota remain intact and ecologically healthy. **From the first public comment period on the issue of sulfide-ore copper mining in the watershed of the Boundary Waters in 2016 until the public comment period on the Mineral Withdrawal in 2021-2, the federal government has received over 675,000 comments from the American people urging protection of the Wilderness from sulfide-ore copper mining. The 120-year history of state and federal protection shows that their governments have listened and acted.**

The Concurrent Resolution is Unconstitutional

The resolution filed with the U.S. House to veto the Withdrawal Order that protects 225,504 acres of federal lands in the headwaters of the Boundary Waters by banning mining for 20 years is not only bad policy, but it is also unconstitutional. The Federal Land Policy & Management Act (FLPMA) explicitly delegates to the Secretary of the Interior the authority to make large-tract withdrawals of 5,000 acres or more of public lands from mineral extraction for up to 20 years. 43 U.S.C. § 1714(c)(1). Among other requirements, the statutory provision provides that such withdrawals “shall terminate and become ineffective at the end of ninety days” if Congress adopts a concurrent resolution of disapproval. This provision is widely understood to be an **unconstitutional legislative veto** under the U.S. Supreme Court’s 1983 *Chadha* case. That case held that similar language in an immigration statute was unconstitutional because it violated the requirement that any congressional invalidation of an agency’s exercise of lawfully delegated authority may only be accomplished through bicameral legislation followed by presentment to the President. *I.N.S. v. Chadha*, 462 U.S. 919, 959 (1983). Section 1130 of the House of Representatives Manual lists FLPMA’s large-tract withdrawal authority as among several dozen unconstitutional legislative veto provisions that Congress has not amended since the *Chadha* decision. In a case challenging Secretary Ken Salazar’s 2012 withdrawal of approximately 1 million acres surrounding Grand Canyon National Park, mining proponents including the National Mining Association claimed, among other things, that the Secretary lacked authority to make the large-tract withdrawal because the legislative veto provision was both unconstitutional (as all parties agreed) and not severable from the statute. In a 2017 decision, the Ninth Circuit resoundingly rejected this claim, finding that the provision is severable from the large-tract withdrawal authority and therefore **the invalid legislative veto provision does not affect the Secretary’s withdrawal authority**. *National Mining Ass’n v. Zinke*, 877 F.3d 845, 861-66 (9th Cir. 2017). As the court noted, Congress has never attempted to override exercise of the Interior Secretary’s large-tract withdrawal authority, which has been used some 90 times since FLPMA’s passage in 1976. Congress of course retains authority to override a large-tract withdrawal through normal legislative procedures.

Conclusion

The Boundary Waters is a priceless asset of the people of Minnesota and the nation; its clean water, healthy forests and wetlands, great array of wildlife, and world-class sport fishery are infinitely more valuable than the relatively small amount of minerals that could be extracted in the Withdrawal Area. The Withdrawal Order is a comprehensive approach to protect and preserve the fragile and vital social and natural resources, ecological integrity, and wilderness values in the Rainy River Headwaters, the Boundary Waters, and downstream Superior National Forest lands, Canada’s Quetico Park, and Minnesota’s Voyageurs National Park.

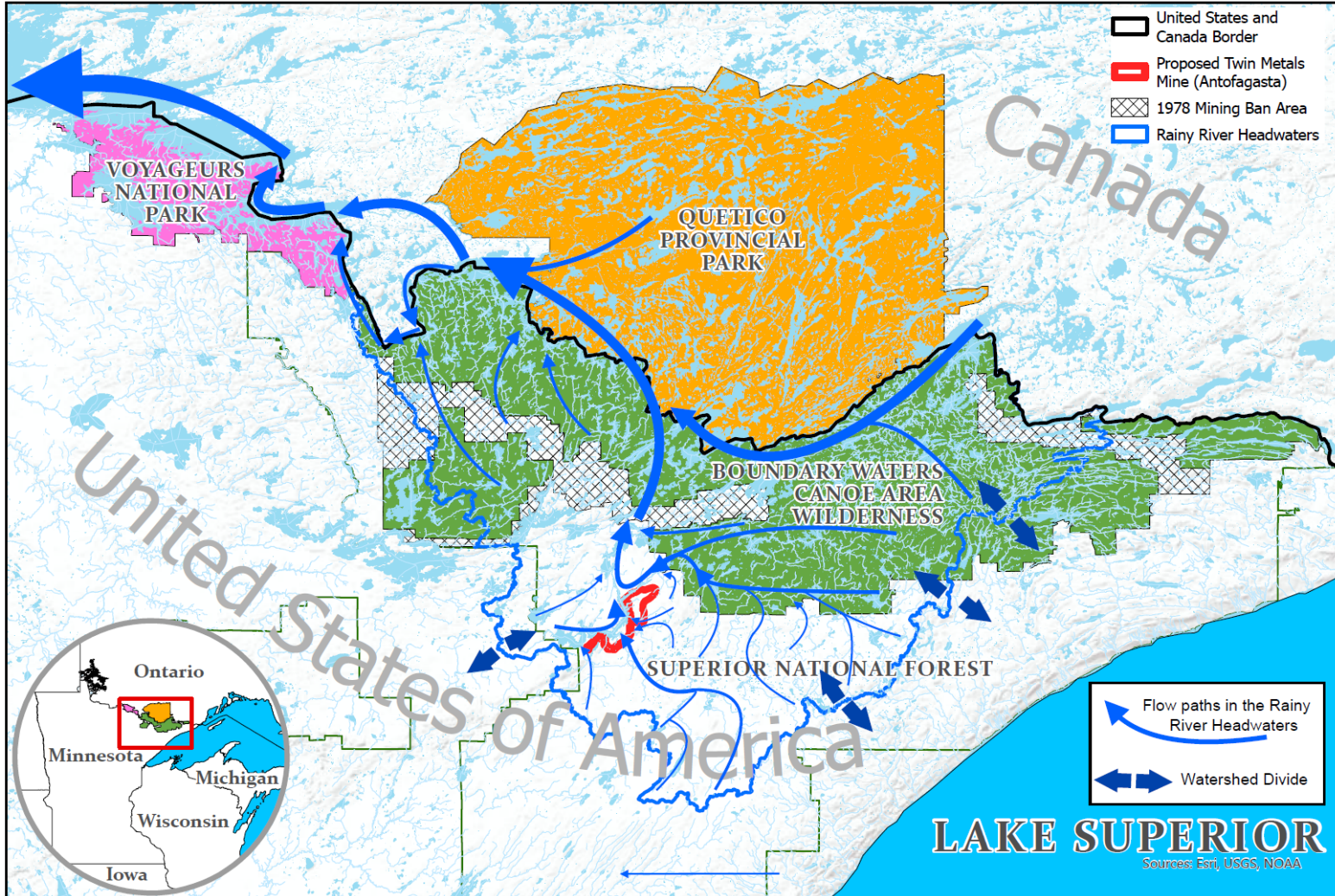
Attachment 1
Aerial photo of the Boundary Waters and Quetico Park



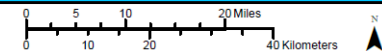
Map of the water flowage from the headwaters into the Boundary Waters, Quetico Park, and Voyageurs National Park

North America's Canoe-country Wilderness

2.5 Million Acres, 3,200 lakes, 0 roads



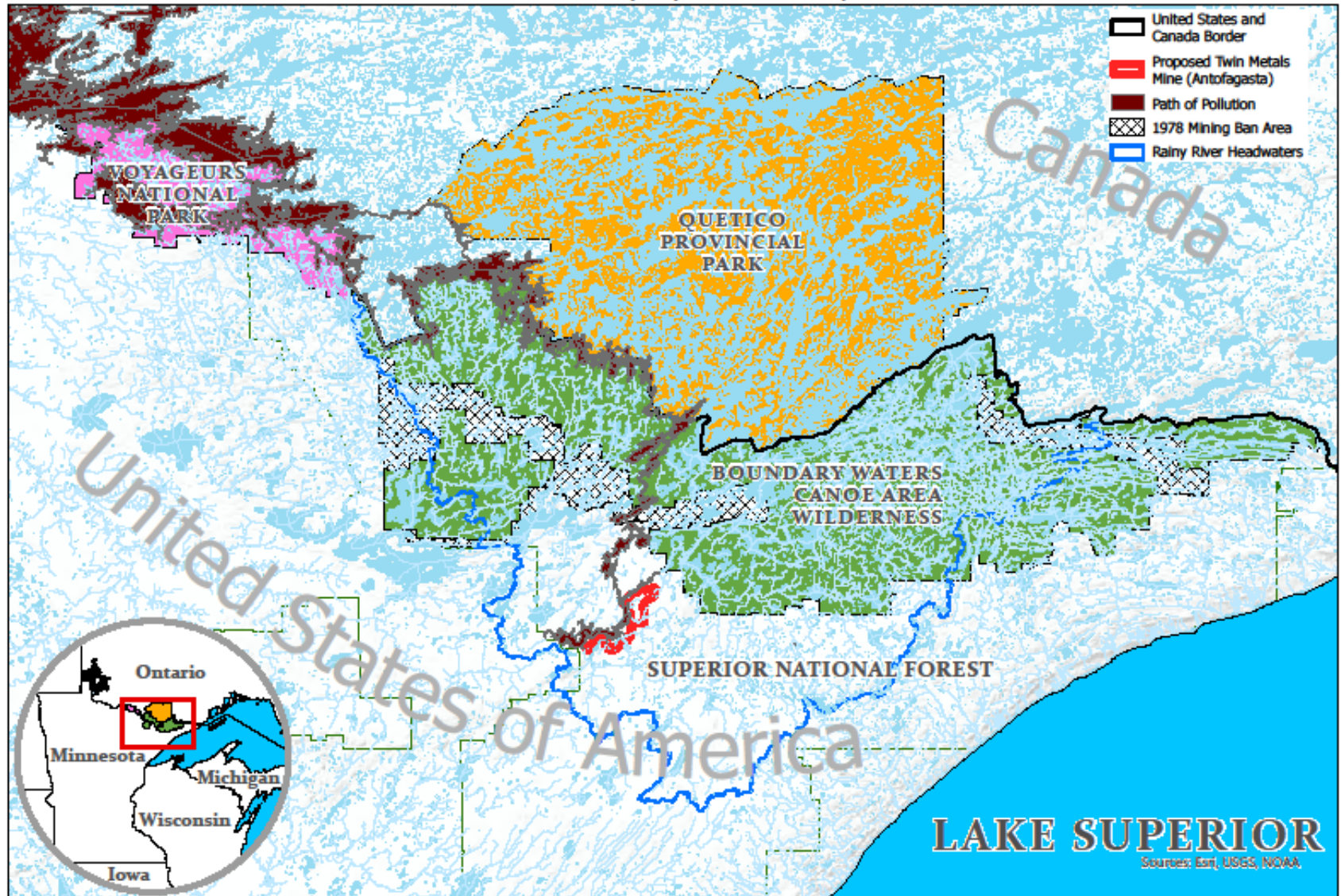
Author: J. Wolfe Northeast Minnesotans for Wilderness
Date: 4/5/2023



Map of the path pollution would flow from a Twin Metals mine; based on peer-reviewed and published hydrology study

North America's Canoe-country Wilderness

2.5 Million Acres, 3,200 lakes, 0 roads



Attachment 4

Minnesota Pollution Control Agency, Water quality and the Boundary Waters and the Rainy River Headwaters

Under Minn. Rule 7050.0335, Subp. 3.A., the waters of the Boundary Waters are “prohibited outstanding resource value waters.” Minn. Rule 7050.0255, Subp. 14 states:

*“Exceptional characteristics of outstanding resource value waters” means characteristics for which an outstanding resource value water is designated, including wilderness, scientific, educational, ecological, recreational, cultural, or aesthetic resource characteristics or other **special qualities that warrant stringent protection from degradation.**”* (emphasis added)

Minn. Rule 7050.0265, Subp.7 is clear about the stringency of that protection: *“The commissioner [of the Minnesota Pollution Control Agency (MPCA)] shall prohibit a proposed activity that results in a net increase in loading or other causes of degradation to prohibited outstanding resource value waters identified under part [7050.0335](#), subparts 3 and 4.”*

The antidegradation provision is designed to achieve and maintain the highest possible water quality: *“[W]ater quality necessary to preserve the exceptional characteristics of outstanding resource value waters shall be maintained and protected.”* MN Rules 7050.0250.C.

During the past 20 years or so, Minnesota has expanded its policy regarding the protection of state lands and waters. In Minn. Stat. Sec. 103A.212 (2018), first adopted in 2010 (2010 Minn. Laws ch. 361, art. 4, Sec. 48), the Legislature set forth the watershed management policy of the state:

“The quality of life of every Minnesotan depends on water. Minnesota’s rivers, lakes, streams, wetlands, and groundwater provide a foundation for drinking water and the state’s recreational, municipal, commercial, industrial, agricultural, environmental, aesthetic, and economic well-being. The legislature finds that it is in the public interest to manage groundwater and surface water resources from the perspective of aquifers, watersheds, and river basins to achieve protection, preservation, enhancement, and restoration of the state’s valuable groundwater and surface water resources.”

Thus, the policy of the State of Minnesota is to manage its waters from a watershed perspective and to preserve and protect those waters.

In 2017, the Minnesota Pollution Control Agency (MPCA) released its water quality assessment of the Headwaters, the Rainy River-Headwaters Watershed Monitoring Assessment Report (Report). The Report describes the excellent quality of the waterbodies within the watershed as having exceptional biological, chemical, and physical characteristics worthy of additional protection:

*“**The immaculate waters found within the watershed** not only produce some of the highest quality fisheries in the state but also offer visitors many scenic and natural views. The most visited Wilderness Area (Boundary Waters Canoe Area) in the United States is located within this watershed, with water as a major focal point. **Today over 99% of the Rainy River-Headwaters Watershed is undeveloped and utilized for timber production, hunting, fishing, hiking, and other recreational opportunities.** Large tracts of public land exist within this watershed, including county land, national and state forests, wildlife management areas, scientific and natural areas, state parks, and a national park. . . . Overall, **water quality conditions are good to excellent** and can be attributed to the forests and wetlands that dominate land cover within the Rainy River-Headwaters Watershed . . . **The majority of the waterbodies within the watershed had exceptional biological, chemical, and physical characteristics that are worthy of additional protection.**”* (emphasis added) Report p.1.

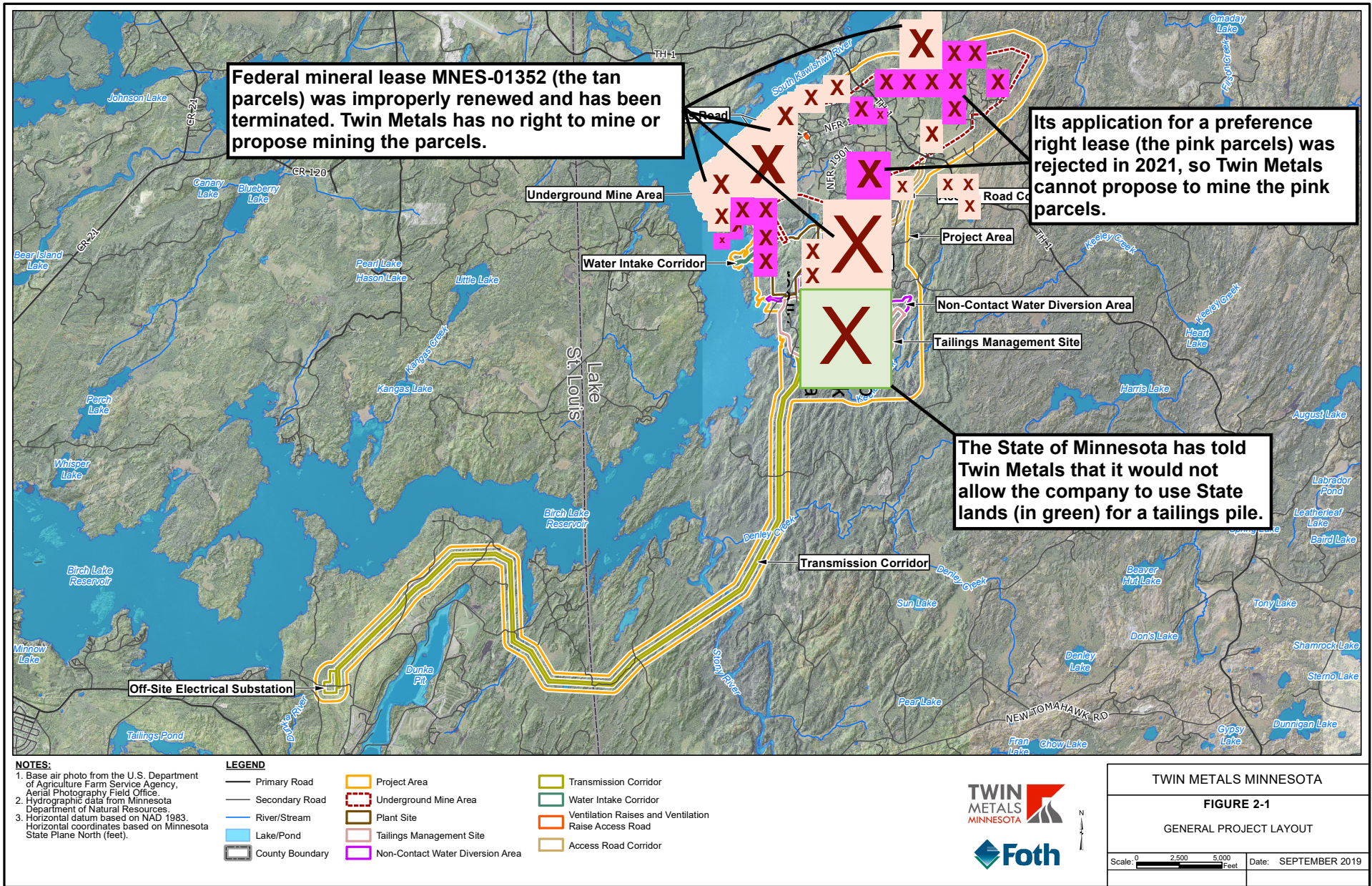
The Report said the 2021 Watershed Restoration and Protection Strategies report (WRAPS) for the Headwaters would focus on protection strategies to ensure that the watershed would remain pristine. As the draft WRAPS

report, the MPCA press release about the report, and the water quality data make clear, the Headwaters deserves and requires complete protection.

“The rivers and lakes in these watersheds are some of the cleanest waters in the state,” says Katrina Kessler, MPCA assistant commissioner for water policy and agriculture. “That’s why it’s so important that we focus not only on restoring waters that don’t meet water quality standards, but also protecting lakes and streams from becoming impaired in the first place. That’s especially true for areas like the Boundary Waters that are enjoyed and treasured by so many residents and visitors.” MPCA reports: Protection rather than restoration is priority for two Boundary Waters watersheds (August 30, 2021 WRAPS press release)

The Headwaters includes 80.1% of the Boundary Waters. The MPCA notes that *“wilderness recreation and national park tourism are the prime economic drivers due to the scenic beauty, camping and fishing opportunities.”* (<https://www.pca.state.mn.us/water/watershed/rainy-river-headwaters>) The extraordinary high water quality in the upstream portion of the Rainy River Headwaters was noted: *“[L]akes and streams in the watersheds **bordering the Boundary Waters Canoe Area in northern Minnesota offer some of the most pristine water quality in the state.**”* (emphasis added) This extraordinary high water quality is attributed to the fact that *“[m]ore than 99 percent of the watershed is undeveloped and used both for timber production, and for hunting, fishing, hiking, and other recreation.”* (<https://www.pca.state.mn.us/water/watershed/rainy-river-headwaters> and WRAPS press release) **This 99% naturally-vegetated landscape generates and delivers exceptionally clean water downstream through and to the non-wilderness portion of the Headwaters to the Boundary Waters and on to the border lakes shared with Ontario in Quetico and Voyageurs.** [emphasis added]

Attachment 5
Map of Twin Metals site plan



Attachment 6

Portions of the 2021 FLPMA Application for Superior National Forest Mineral Withdrawal

“The Federal lands associated with this withdrawal application are located within the Vermillion and Rainy Headwaters sub-watersheds of the Rainy River watershed in the Superior National Forest and are adjacent to the BWCAW and the MPA. The Rainy River watershed in Cook, Lake, and Saint Louis Counties in Minnesota supports outdoor recreation, wilderness, and biota critical to the socioeconomic conditions of the area. The BWCAW is a complex and interconnected ecosystem and offers recreational opportunities and other uses such that it is considered an irreplaceable national treasure. It provides opportunities for true solitude, outstanding primitive recreation in an unconfined and undeveloped natural setting, and a connection with untrammelled nature. Water, especially water quality, is a focal point for this wilderness. Approximately 1175 lakes varying in size from 10 acres to 10,000 acres and several hundred miles of streams comprise about 190,000 acres (20%) of the BWCAW surface area and provide for the opportunity for long distance travel by watercraft. This type of experience is rare within the continental United States and the BWCAW is the only large lake-land wilderness in the National Wilderness Preservation System. Potential impacts from mining could alter water quality and thus degrade key components of the wilderness ecosystem such as habitat for wildlife (lynx, moose, loons), fish (walleye, lake trout, and other game fish), and wild rice, and have negative impacts on the recreation economy and native culture and food systems.

Mining Affects People, Resources, and Wilderness Character

There is interest in the development of hardrock minerals, involving the removal or mining of sulfide-bearing rock, within this portion of the Rainy River watershed. Any development of these mineral resources could ultimately result in the creation of permanently stored waste materials and other conditions upstream of the BWCAW and the MPA with the potential to generate and release fugitive dust, tailings, and effluent with elevated levels of acidity, metals, and other potential contaminants. These impacts, and any potential failure of required mitigation measures, containment facilities, or remediation efforts at mine sites and their related facilities located upstream of the BWCAW and the MPA could lead to irreversible degradation of this key water-based wilderness resource and jeopardize the purposes for the designation of the BWCAW and the MPA specified by Sec. 2 of the BWCAW Act (Pub. L. 95-495, 92 Stat. 1649). These concerns are exacerbated by the fact that perpetual maintenance of waste storage facilities, along with the perpetual treatment of water discharge emanating from the waste storage facilities, will likely be required to mitigate and/or address these adverse effects, yet it is not certain that such maintenance and treatment can be assured in perpetuity. Additionally, increased traffic, noise, light, dust, and other emissions resulting from mining operations could change the character and experience of the wilderness, and would affect recreation experiences and other National Forest uses outside the wilderness, and the amenities-based economy that exists in the area. The Forest Service has reviewed the current circumstances and resulting threats to social, economic, and natural resources and now, as a matter of policy, seeks to pursue a holistic approach to ensure resource protection of this delicate ecosystem. This application is submitted to advance a comprehensive approach to protection of the fragile and vital social and natural resources, ecological integrity, and wilderness values that are threatened by potential future sulfide mining.

Salient examples of the potential impact of mining on key BWCAW resource components involve wild rice and fisheries, and the traditional uses and values drawn from them by indigenous peoples. The requested withdrawal area is within the 1854 Ceded Territory for the Chippewa Bands, where their continued exercise of usufructuary rights to hunt, fish, and gather are protected by the 1854 Treaty of LaPointe. Treaty protected resources that are important to the subsistence-based lifestyle of the Bands include fish, wild rice, and other aquatic wildlife, which would be particularly vulnerable to any contamination caused by sulfide ore mining in the watershed. The ability to continue to have access to these food sources

contributes to food security for the Bands. Wild rice, also known as “Manoomin” in Tribal language, is not only Minnesota’s State Grain (MN Stat. Sec. 1.148) but also a key component of the spiritual and physical well-being of the Bands. According to a 2008 Minnesota Department of Natural Resources study (https://files.dnr.state.mn.us/fish_wildlife/wildrice/natural-wild-rice-in-minnesota.pdf):

Nowhere has natural wild rice been more important, nor had a richer history, than in Minnesota. No other native Minnesota plant approaches the level of cultural, ecological, and economic values embodied by this species. Natural wild rice has been hand harvested as a source of food in the Great Lakes region for thousands of years. The Ojibwe people have a special cultural and spiritual tie to natural wild rice. Known to their people as Manoomin, it is revered as a special gift from the Creator. In addition, many immigrants to Minnesota adopted hand harvesting of natural wild rice as an annual ritual.

The potential sulfide ore mining in this area has the potential to elevate sulfate levels in downstream waters (Miller 2002, USEPA 2014) and change the balance of the wilderness ecosystem and its associated subsistence lifestyle forever. If sulfate loading increases, evidence suggests that it would diminish the yield and ability to harvest wild rice and possibly present risks to food security. If sulfate enters wild rice waterbodies, it penetrates the sediment where the plant’s roots grow. In these anaerobic conditions, bacteria transform (or “reduce”) the sulfate into sulfide. Higher concentrations of sulfide can be toxic to roots and inhibit plant growth (Myrbo et. al. 2017a, Ng et. al. 2017, Pastor et. al. 2017, Pollman et. al. 2017). The scientific literature indicates elevated sulfate causes long-term declines in fish abundance, species number, and genetic diversity, and may facilitate the establishment of invasive species (Jennings et. al. 2008, Daniel et al 2014). As a result, the potential downstream effects from mining include sulfide impacts to wild rice production, an important economic and tribal commodity (Johnson et al. 2019).

*Sulfates also result in the production of methylmercury, the toxic form of mercury that bio-accumulates in fish (Coleman et al. 2015, Myrbo et. al. 2017b). Lakes and streams in the area are already listed as impaired waters of the state for methylmercury in fish (MPCA 2007). Minnesota’s State Bird, the Common Loon, an iconic symbol of the wilderness revered for its unusual wailing call, ([https://www.youtube.com/watch?v=WDxtAoUQkSk&t=30s](https://www.youtube.com/watch?v=WDxtAoUQkSk&t=30s;);
<https://www.projectremote.com/blog/loons-in-the-bounary-waters/>) is often spotted by visitors of the BWCAW. The Common Loon is particularly sensitive to methylmercury (Evers et al 2008), a risk potentially exacerbated by mining. The flora and fauna of the BWCAW, as exemplified by the Common Loon and wild rice, are demonstrative of a distinct and irreplaceable wilderness resource. Moreover, the history of both Tribes and others in the region who practice a subsistence lifestyle is interwoven with the BWCAW and its water-based resources.*

Climate change increases the risk of bioaccumulation of toxic mercury in the aquatic food chain (Ghandi et al. 2014). The Fourth National Climate Assessment (USGCRP, 2018) reveals that the average temperature in the contiguous United States has increased by 1.2°F (0.7°C) relative to the beginning of the last century. Temperature is expected to rise over the next few decades, regardless of emissions, by an estimated average annual temperature of 2.5°F (1.4°C). The upper Midwest has experienced the greatest rate of change in rising temperatures across the nation and significant increases in major storm events. Temperature has risen 2.0°F since the beginning of the last century. Since 2000, the number of very heavy rains (6 inches or more in a day) have been 2-3 times more frequent than in the 20th century (Runkle et. al, 2017). Climate change related to rising temperatures is increasing the overall availability and accumulation of forms of mercury in northern Minnesota wetlands (Pierce et al. 2019) which are connected to downstream aquatic food chains (Monson, B.A.).

Breaches or leakage of sulfate rich mine waters can have dramatic impacts on the production of the form of the toxic metal mercury which accumulates in the aquatic food chain, especially in fish. Also, the increased likelihood of larger storms, due to climate change, increases runoff and the potential for

breaches of contaminated water to impact water supplies (Saniewska et al. 2014, Thomson and Rose 2011).

Minnesota Department of Health (MDH) fish consumption advisories for pregnant women, women who could become pregnant, and children under age 15 suggest safe consumption be limited to only one serving per month for many preferred species (lake trout, walleye) and one serving per week for whitefish, herring, and other species (For some lakes in the application area, the MNDNR advises not to eat the fish. For example, White Iron Lake in St. Louis County, MNDNR advises not to eat walleye larger than 23 inches. <https://www.health.state.mn.us/communities/environment/fish/docs/eating/specpoplakes.pdf>; MDH 2021). A 2011 MDH study indicated that 10 percent of Minnesota newborns in the Lake Superior Basin have toxic levels of mercury in their blood, likely from pregnant mothers eating fish (McCann 2011). Mercury in water and food has been shown to have detrimental effects on neural, nervous, and reproductive systems in humans with young children and developing fetuses particularly at risk (Kim et al. 2016, Henriques et al. 2019). Since subsistence users rely on these fish resources for food, increased mercury concentrations likely pose disproportional health risks to this population, raising an environmental justice issue.

Consequently, mining poses risks to perpetuating the health and traditional cultural values of the Chippewa Tribe due to impacts on wild rice, fish and other subsistence livelihood resources that connect the Chippewa to the land, their values, cultural heritage, and to one another. Hunting and gathering are cultural and spiritual activities that are crucial to the identity of the Chippewa (Great Lakes Indian Fish and Wildlife Commission (GLIFWC). 2016. *Metallic Mineral Mining: The Process & the Price*. <https://www.flifwc.org/publications/pdf/2016Process.pdf>; GLIFWC 2016).

As a final example, it is well documented that hardrock mining like that which is proposed adjacent to the BWCAW poses risks to public health from other changes to air and water. Six out of ten of the World Health Organization's identified chemicals of major public health concern are known to be released from hardrock mining. Arsenic, asbestos, cadmium, lead, particulate air pollution, and mercury could pose health risks such as cancer to workers and communities downstream and downwind of mining operations. A loss of a feeling of mental well-being due to the increased economic and emotional burden on families and individuals could arise from compromised health conditions due to toxic pollution of the region's air and water (Onello et. al. 2016).

Thus, the purpose underlying this withdrawal request is to effectuate a policy choice, based on current information concerning resources, uses, and threats, to pursue a holistic approach to protection of National Forest System resources located in the Rainy River Watershed, including the BWCAW, and the MPA, as well as the 1854 Ceded Territory, from the known and potential adverse environmental impacts arising from exploration and development of Federally-owned minerals conducted pursuant to the mineral leasing laws. (emphasis added) Some of these concerns were identified in the Chief of the Forest Service's letter declining to consent to two hardrock mineral leases (MNES-01352 and MNES-01353) in December of 2016, and prompted the filing of an application for a withdrawal of 234,328 acres of National Forest System (NFS) land on the Superior National Forest in January of 2017. Others, such as Tribal and subsistence uses, and the effects of climate change on precipitation regimes were not, however. For the reasons set forth herein, the Regional Forester now believes that this new withdrawal application is a prudent, comprehensive course of action given the potential impacts to the social, cultural, economic, and natural resources described in part above, in light of pending plans for mine operations and pending applications for other hardrock mineral development activities within the withdrawal area."

... "All these considerations, encompassing social, economic, cultural, and natural resource effects and legal implications, support the conclusion that a withdrawal order is a prudent and more comprehensive and efficient means to establish protection of National Forest resources from adverse mining impacts. Mining adjacent to BWCAW and MPA risks irreparable harm to irreplaceable wilderness and ecosystem

integrity, values, and resources. Although the primary footprint of the proposed mines would be outside the BWCAW, there are critical linkages between aquatic and terrestrial ecosystems that are highly dependent on chemistry of water flowing through them. Large scale mining activity at the top of the watershed can cause many effects in the primary and secondary footprint related to water flow and chemistry (including aerial deposition) that will affect everything lower in the watershed. Given the high level of linkages between aquatic and terrestrial components of the ecosystem in the BWCAW, these effects will also extend into terrestrial vegetation and could cause an ecological cascade of effects to vegetation, wildlife, and rare species of plants and animals within the BWCAW wilderness. The expected extremes in precipitation and temperature due to warming climate are likely to exacerbate mining impacts, and reduce the resilience of forests and watersheds to disturbance caused by mining. (Frelich LE. Terrestrial Ecosystem Impacts of Sulfide Mining: Scope of Issues for the Boundary Waters Canoe Area Wilderness, Minnesota. USA. Forests. 2019; 10(9):747. <https://doi.org/10.3390/f10090747>)."