

ATTACHMENT LL



Bad River Band of Lake Superior Chippewa
Mashkiiziibii Natural Resources Department
72682 Maple Street
Odanah, WI 54861
715-682-7123

TRIBAL HISTORIC PRESERVATION REPORT

Edith S. Leoso, Bad River Tribal Historic Preservation Officer (THPO)
Bad River Tribal Historic Preservation Office

March 22, 2022

I. INTRODUCTION

The U.S. Army Corps of Engineers (“Corps”) and the Band have not concluded consultation for the Line 5 Segment Relocation in compliance with Section 106 of the National Historic Preservation Act (“NHPA”). The Bad River Tribal Historic Preservation Officer (“THPO”) provides this report on the Corps’ Public Notice – but this report does not conclude and does not constitute consultation. There must be meaningful consultation on the Band’s Historic and Cultural Properties. Further, the Corps must coordinate with the Band to mitigate any impact to such properties, which may include avoiding or removing historic properties, revising the project route, or, other measures, including permit denial. Until those measures have concluded, only non-construction project planning may take place on this project. This report does not constitute comprehensive or meaningful consultation with the THPO, and the Corps and other agencies should not construe it as such.

II. RELEVANT DATA

The Corps and the Band have not developed appropriate data and cannot do so without adequate and meaningful consultation. As it stands, the Corps has only the limited and inadequate findings of Enbridge’s “Tribal Cultural Resources Survey: Enbridge Line 5 Wisconsin Segment Relocation” (July 23, 2020) (hereinafter “Dirt Divers Report”) in the administrative record. The Corps should undertake an appropriate data collection and analysis process that satisfies the requirements of NHPA. The THPO believes that the statement of work submitted in the Band’s July 8th letter will produce the appropriate data necessary for the THPO’s analysis. The THPO could more comprehensively comment on the Project’s impacts once the Statement of Work is completed and a report on the cultural and historical properties within the appropriate area of effect is finished.

Consultation cannot conclude until the THPO has had a reasonable opportunity to identify historic properties of significance. The THPO has not had this opportunity because there is no adequate cultural properties survey in the record for the THPO to assess. This means that consultation cannot yet conclude until the Corps, in consultation with the Band, produces the appropriate data. *See* 36 C.F.R. 800.2(c)(ii) (requirements for consultation with Indigenous tribes). In its Public Notice, the Corps acknowledges that consultation is ongoing and has not concluded. Public Notice at 11.

This report also draws on the extensive training of the THPO within traditional Anishinaabe cultural systems. THPOs, elders, traditional practitioners, and others with traditional knowledge specific to a Tribal Nations’ culture are recognized as authorities whose expertise can be relied upon by federal decisionmakers, including as expert witnesses in court. Western researchers would likely refer to this data as traditional ecological knowledge (TEK), oral history, and primary source interviews. These terms do not capture the unique knowledge retained by Anishinaabe elders and spiritual leaders but do provide an incomplete characterization that can be understood by non-Anishinaabe people.

III. REVIEW

It is the THPO’s responsibility to ensure that the Corps is in compliance with Section 106 of the National Historic Preservation Act (NHPA). The THPO reviews available project

information and does not collect data for projects. It is the Corps' responsibility to collect such information in a lawful and adequate manner. 36 C.F.R § 800.2(c)(4) (The Corps "remains legally responsible for all findings and determinations."). Data gathering and production must be coordinated with THPO involvement early in the process. 36 C.F.R. § 800.2(c)(2)(ii)(A). This will allow the Corps to identify if historic or culturally significant properties will be impacted by the federal undertaking – here, permitting the construction of a new pipeline and extending the life of the Line 5 system.

In preparing this report, the THPO reviewed the following:

1. Corps' Public Notice for the Enbridge Line 5 Segment Relocation.
2. Enbridge's Tribal Cultural Resources Survey: Enbridge Line 5 Wisconsin Segment Relocation (hereinafter "Dirt Divers Report").
3. Sections 5.8 and 6.8 of the Enbridge Environmental Impact Report.
4. Sections 5.18 and 6.18 of the Wisconsin Department of Natural Resources Draft Environmental Impact Statement.
5. Confidential and legally protected THPO files concerning cultural heritage sites.

IV. FINDINGS

The Corps has not meaningfully involved the THPO or the Band in key decisions affecting the Band's cultural heritage. As the Corps recognizes in the Public Notice, "any adverse effects on historic properties will be resolved prior to any USACE authorization, or approval, of the work in connection with this Project." Public Notice at 11. Construction may not proceed until the THPO and the Corps can resolve the adverse effects to the Band's historic properties. *See* 36 C.F.R. § 800.6. Now, more than ever, it is integral to ensure that our freshwater resources, forested lands, and cultural spaces are safe and secure. The Band considers the natural world as sacred. Water is Life. Defend the Land.

1. Dirt Divers Report

The report entitled "Tribal Cultural Resources Survey: Enbridge Line 5 Wisconsin Segment Relocation" (Dirt Divers Report) was commissioned and submitted by Enbridge. This report does not meet the documentation standards of the Corps' regulations. 36 C.F.R. § 800.11. While the Corps has indicated to the Band that it is not uncommon for permit applicants to provide this type of information for their own applications, it is the responsibility of the agency to vet and evaluate such reports. 36 C.F.R §800.2(c)(4). Dirt Divers did not seek input from the Bad River Band in creating its report. The Band notified the Corps in a July 8th, 2021, letter about the serious deficiencies in the Corps' approach to § 106 consultation with the Band. That letter also details the problems with the Dirt Divers Report. The Corps did not respond to the Band's letter. Yet, the Dirt Divers report continues to be the only evaluation of the project's impacts to cultural and historic resources in the record. The Corps still has not assessed the project's cultural and historic impacts using appropriate, consultative, and transparent methods.

The THPO finds that the Dirt Divers Report is not acceptable and that documentation standards have not been met. For example, the report relies on an undisclosed number of interviews with unidentified people and the Band was not made aware that Dirt Divers would be conducting

such a study on our citizens. There is no indication that this study complies with the Band's internal standards or with National Register Bulletin # 38, Guidelines for Evaluating Traditional Cultural Properties (*see Attachment 1*). The THPO and Band staff have also had negative interactions with the contractor. The Corps must carry out its own analysis in consultation with the Band.

The THPO's office is an interested party in this matter and its input into how the historical and cultural properties data should be collected and analyzed is necessary. On May 28, 2021, the Band sent the Army Corps a Statement of Work and Activities (**Attachment 2**) for a cultural resource survey that includes interviews, data compilation, a literature review, a field survey, report writing, and an Ojibwe language specialist to assist in the identification of traditional and cultural resources. The submitted Statement of Work and Activities is a mechanism for addressing the identified shortcomings of the Dirt Divers Report. The Band believes that carrying out the THPO's Statement of Work will result in a collaborative cultural resources report that meets the Corps' documentation standards. The THPO recommends that the Corps adopt this Statement of Work (**Attachment 2**) and collaborate with the Band to ensure it is properly carried out.

2. Proper Scope and Analysis of Impacts

Section 106 requires the Corps to take into account the effects of its "undertakings" on historic and culturally significant properties. *See* 36 C.F.R § 800.16(y). The Corps cannot limit the scope of its NHPA review by too narrowly defining its federal undertaking. To carry out an adequate NHPA assessment the Corps has to evaluate the Project's impacts on any district, site, building, structure, or object of historical or cultural significance to the Band. The Corps considers its undertaking here to be the ministerial permitting of Enbridge's plan to fill a small section of wetlands and waterways. This definition is too narrow because it fails to include the consequences resulting from the federal undertaking in this matter. When the Project is considered this narrowly, it becomes much more likely that the Corps will not find any effects to the Band's cultural resources; but that does not mean the Project will have no impacts to the Band's historic or cultural property. Construction *and* operation of Line 5 will have severe impacts to traditional cultural properties important to the Band. Moreover, the Project will contribute to cumulative impacts to cultural resources. While the Corps does not regulate pipeline operation, the consequence of its undertaking here will allow the construction of a pipeline and the extension of Line 5's operation well into the future. As a result, all impacts to cultural and historic properties must be assessed.

First, the Corps should look at impacts that removing and destroying existing natural habitat has on the survival of our culture. The Corps considers the construction impacts of the project as temporary in nature. However, construction and the creation of a utility corridor will result in permanent changes to the landscape of our homeland (aki). For example, a forested wetland intersected by a utility corridor will be converted permanently to "emergent wetland." *See* Public Notice at 7. This will interfere with access to cultural sites and diminish a habitat that supports our way of life. MNRD Wetlands Report (Letter Attachment N), at 9. The permanent conversion of the utility corridor could also affect cultural sites yet to be uncovered. Without a cultural resources report that complies with documentation standards, these discoveries may be made too late.

Second, the Corps must consider the operational impacts that the Project will have on cultural resources. These impacts include extending the emission of climate warming greenhouse gasses that will contribute to climate change and diminish cultural sites and habitats central to the Band's way of life. The Corps should also evaluate the cultural and historic impacts of potential hazardous liquid spills. The possibility of such a spill is not remote. Enbridge's Line 5 has already leaked over a million gallons of oil and hazardous liquids along its route (**see Attachment 3**).

Finally, the Corps must consider this project's cumulative long-term impacts to traditional and cultural properties and resources on the reservation and in the ceded territory. The extractive industry is already causing harm to Tribal lands, ceded territories, animals, birds, fish, insects, plants, trees, air, water, and soils. For example, the Wisconsin Public Service Commission is currently considering a permit that would enable the construction of the Xcel Transmission Line which will also degrade habitat around the perimeter of the Reservation (**see Attachment 4**). Such degradation will impact cultural and historic properties important and necessary to the Ojibwe culture. Further, the area is still reeling from the impacts of a crude oil storage tanker explosion in Superior, WI in 2018.¹ In addition, Lake Superior and other waters are facing environmental degradation from the numerous operating and abandoned Mines in northern Minnesota, Wisconsin, and Michigan. *Great Lakes Mining*, Center for Biological Diversity (**Attachment 5**); *see also Metallic Mineral Mining: The Process and the Price*, Great Lakes Indian Fish and Wildlife Comm'n (GLIFWC, 2016) (**Attachment 6**); *see also* Attachments for Project Descriptions and Maps (**Attachment 7**). The cultural and historic impacts of the Project will accumulate on top of these other projects. In all we are witnessing a mass degradation of our historical homelands, disruption of our traditional lifeways, and diminished access to cultural sites. The Corps must acknowledge and assess these cumulative impacts in detail.

The proposed Statement of Work and Activities for a cultural resource survey will enable the Band and the Corps to appropriately analyze all of these important impacts and produce a report that complies with the documentation standards of the Corps' NHPA regulations.

3. Area of Potential Effect

The area of potential effect ("APE") comprises the geographic area in which the Project may directly or indirectly impact historic properties and cultural resources. 36 C.F.R. §800.16(d). The Corps has determined that the APE is limited to the fill and construction activities on either side of the proposed pipeline. The APE in this matter is too small given the scale and nature of the Project. 36 C.F.R § 800.16(d). The Corps miscalculated the APE because it did not conduct appropriate consultation with the THPO. 36 C.F.R § 800.4(a). The THPO was not consulted when the Corps determined the APE. The APE must incorporate all of the area affected by the federal undertaking. The issuance of a permit for this project will have the effect of initiating new pipeline installation that will change the character and use of the Bad River Watershed. Currently, Enbridge is operating a pipeline through the Reservation that the Band has worked tirelessly to remove. If this new project is constructed, it will create a new, dangerous pipeline corridor around the perimeter of the Reservation and through the Bad River Watershed. The very reason the Band has sought to remove Line 5 from its Reservation was to protect historic, cultural, and environmental

¹ See Chemical Safety and Hazard Investigations Board, Husky Energy Refinery Explosion and Fire 2018, available at <https://www.csb.gov/husky-energy-refinery-explosion-and-fire/> (last accessed March 22, 2022) (**Attachment 8**).

resources. By allowing this project to move forward, the Corps frustrates the Band's efforts to preserve these resources for future generations. This project will also facilitate the continued transport of millions of gallons of oil through the Bad River and connected watersheds. This construction, and operation, places new areas of this sensitive watershed at risk and the APE should reflect that. The Corps should consult with the Band to establish a suitable APE. At minimum it should encompass the entire Bad River Watershed. At present, the Corps still has not consulted with the Band at all and has sought no specific input on the APE. Meaningful consultation necessitates implementation of the cultural resources Statement of Work and Activities.

4. Consultation to Identify Cultural Property

The Corps must identify properties with historical, architectural, archeological, or cultural value located within the APE in consultation with the THPO. 36 C.F.R. § 800.4. The Corps has failed to do so here.

The THPO considers the entire Reservation and Bad River Watershed a historic district and deems that the area meets the necessary criteria under National Historic Register Bulletin #38. *See* Guidelines for Evaluating and Documenting Traditional Cultural Properties, National Historic Register Bulletin #38 (**Attachment 1**). The Reservation and the Bad River Watershed are “location[s] associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world” and “location[s] where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historical identity.” (**Attachment 1, p. 1**).

In addition to gravesites, numerous sugar bush and hunting, fishing, and gathering sites throughout the watershed, there are also special natural features key to the Band's history and culture. These sites are important culturally because they support rare plant and animal species and other natural objects necessary to the continuance of cultural traditions. The most unique wetland area in the watershed is the Kakagon and Bad River Slough. The Ramsar Convention's implementing body deemed this site a wetland of international importance (**Attachment 8**). Additionally, the Bad River Falls is a traditional site for fishing walleye, sturgeon, and musky. The Madigan and Waverly beaches yield culturally vital stones that are unique to the Bad River Reservation and watershed. Madigan and Elm Hoist have been the site of the Midewewin and Big Drum ceremonies. These are just a few of the areas supporting THPO's determination of the Reservation as a historic district. The proposed project will negatively impact the integrity of the historical, archeological, and cultural character of the area, in addition to changing the integrity of the location, and feeling and association of the area.

The historical significance of the Reservation and the entire Bad River Watershed turns upon the inherent historical and cultural significance of the property. The Corps' failure to recognize and appropriately evaluate impacts to the watershed and Reservation as a traditional cultural property is cultural colonization. These sites are key to the vitality of the Ojibwe culture. That culture has been diminished over time, in large part due to harmful federal policies that dispossessed tribes of their traditional cultural territory by unlawful means. Preserving the natural integrity of the remaining sites of Ojibwe cultural heritage is important not only to Ojibwe people, but to the character of our nation as a whole. The proposed Statement of Work and Activities for a

cultural resource survey can provide a means to ensure that the historical value of this landscape is preserved if this process advances.

Enbridge's application materials do not adequately represent the Band's interests in preserving important cultural properties throughout the watershed. The Dirt Divers Report is not inclusive of our history and was completed using inappropriate and opaque methods. The THPO would like to underscore that Dirt Divers is not affiliated with the Band in any way. The Corps has not vetted the Dirt Diver's review and there is no way to know if it is accurate or reflective of the Band's view of its cultural and historic property. By all indications, the contractor relied on haphazard methods, utilizing interviews with undisclosed "elders," and drawing conclusions from inferences the Band does not endorse. From these inferences the Dirt Divers report identified a total of just eleven cultural sites. Those sites include (1) maple sugar harvest areas, (2) a hunting, fishing, and gathering area, (3) an eagle tree site, and (4) multiple sites identified as "rock overlook." Two were deemed to be not significant by Dirt Divers and five of the locations have had boundary adjustments per recommendation of Dirt Divers. The remaining four identified traditional cultural properties were provided minimal mitigation measures. The Dirt Divers Report also notes that the survey corridor was "thoroughly examined" by Tribal Cultural Resource Survey specialists, without any indication of who is considered a specialist under their criteria. This report discounts the historical significance of the entire reservation and ignores the threats that this project poses to it.

Finally, the Dirt Divers report does not mention the Band's historic allotments along the route. The attached allotment map shows where there may be artifacts, sites, property, and objects of historical significance associated with allotment sites that this project may irreversibly impact.

The Dirt Divers report has not sufficiently delineated properties subject to the Corps' NHPA review. The THPO remains concerned the Corps is not capturing impacts to historic properties important to the Band. *See* Maps of Allotments in Relation to Reservation (March 20, 2022) (**Attachment 10**).

5. Involvement of the Council on Historic Preservation

The Band reserves its right to request the participation of the Advisory Council on Historic Preservation in the THPO consultation process as it advances. 36 C.F.R. § 800.6(a)(1)(ii). If the Band and the THPO are continually sidelined in the Corps' decisions affecting our cultural and historic properties and resources, Council participation may be necessary.

6. Conclusion

This report concludes that the Corps has not conducted adequate consultation with the THPO office of the Bad River Band. This is because the Corps is relying on the Dirt Divers report which does not meet documentation standards. It is also failing to appropriately set its scope of NHPA review. Moreover, the Corps misidentified the potential area of effect that this project may have and as a result is not accounting for all of the impacts this project will have. Finally, the Corps ignores important cultural property that must be included within the review.

V. FURTHER INFORMATION REQUIRED

1. Report on Tribal Cultural Resources in the Bad River Watershed completed in consultation with the Bad River Band THPO following the protocol in the Statement of Work and Activities.
2. Evaluation of the qualifications and methods of the Dirt Divers contractor which should include TPO and SPHO input.
3. Complete analysis carried out with an appropriate scope and area of potential effect.

VI. REFERENCES & ATTACHMENTS

References

- U.S. Army Corps of Engineers, Public Notice MVP-2020-00260-WMS, (Jan. 6, 2022).
- Dirt Divers Cultural Resource Mgmt, LLC, Tribal Cultural Resources Survey: Enbridge Line 5 Wisconsin Segment Relocation, Prepared for Enbridge Energy, LP.
- Enbridge Energy, LP, Line 5 Wisconsin Segment Relocation Project: Environmental Impact Report (March 2020).
- Wisconsin Dep't of Natural Resources, Draft Environmental Impact Statement: Proposed Enbridge Line 5 Relocation Project (Dec. 2021).

Attachments

Attachment 1. National Park Service, National Register Bulletin #38: Guidelines for Evaluating and Documenting Traditional Cultural Properties (1998), available at <https://www.nps.gov/subjects/nationalregister/upload/NRB38-Compleweb.pdf>.

Attachment 2. Letter from Eldred Corbine, Sr., Vice Chair of Bad River Band of Lake Superior Tribe of Chippewa Indians to Nancy Komulainen-Dillenburg, Tribal Liaison, U.S. Army Corps of Engineers (May 28, 2021).

Attachment 3. See Sabrina Shankman, *Spills on Aging Enbridge Pipeline Have Topped 1 Million Gallons, Report Says*, Inside Climate News (Apr. 26, 2017), available at <https://insideclimatenews.org/news/26042017/enbridge-pipeline-mackinac-line-5-michigan-oil-spill-risk/>; Garret Ellison, *Enbridge Line 5 has spilled at least 1.1 million gallons in past 50 years*, MLive (Apr. 26, 2017), available at https://www.mlive.com/news/2017/04/enbridge_line_5_spill_history.html.

Attachment 4. Xcel Energy, Ashland-Ironwood Transmission Line Relocations: Proposed Route Segments (Feb. 2021), available at https://www.transmission.xcelenergy.com/staticfiles/xcel-responsive/Company/Transmission/Ashland_Ironwood_Overview.pdf.

Attachment 5. Center for Biological Diversity, *Great Lakes Mining*, available at https://www.biologicaldiversity.org/programs/public_lands/mining/Minnesota_mining/index.html (last visited March 22, 2022).

Attachment 6. Great Lakes Indian Fish & Wildlife Commission, *Metallic Minerals Mining: The Process & the Price* (2016).

Attachment 7. *Twin Metals*, Sierra Club North Star Chapter, available at <https://www.sierraclub.org/minnesota/mining/twin-metals> (last visited March 17, 2022); *Copperwood Project*, Highland Copper Company, Inc., available at <https://www.highland-copper.com/copperwood-project> (last visited March 17, 2022).

Attachment 8. Chemical Safety and Hazard Investigations Board, Husky Energy Refinery Explosion and Fire 2018, available at <https://www.csb.gov/husky-energy-refinery-explosion-and-fire/> (last accessed March 22, 2022).

Attachment 9. Ramsar Sites Information Service, Kakagon and Bad River Sloughs (2012), available at <https://rsis Ramsar.org/ris/2001> (last accessed March 22, 2022).

Attachment 10. Maps of Allotments in Relation to Bad River Reservation (March 20, 2022).

Attachment 11. Letter from Mike Wiggins, Chairman of Bad River Band of Lake Superior Tribe of Chippewa Indians, to Karl D. Janson, Colonel, U.S. Army Corps of Engineers (July 8, 2021).

ATTACHMENT 1

• NATIONAL REGISTER • BULLETIN

Technical information on comprehensive planning, survey of cultural resources, and registration in the National Register of Historic Places.

U.S. Department of the Interior
National Park Service
Interagency Resources Division

Guidelines for Evaluating and Documenting Traditional Cultural Properties



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our nation parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



Cover photographs:

Many traditional cultural properties are used for practical purposes by those who value them. This sedge preserve in northern California, for example, is tended and harvested by Pomo Indian basketmakers as a vital source of material for making their world famous baskets. The preserve was established at Lake Sonoma by the U.S. Army Corps of Engineers. (Richard Lerner)

This bedrock mortar in central California plays an essential role in processing Black Oak acorns. (Theodoratus Cultural Research)

Guidelines for Evaluating and Documenting Traditional Cultural Properties

By Patricia L. Parker
and Thomas F. King¹

Introduction

What are traditional cultural properties?

The National Register of Historic Places contains a wide range of historic property types, reflecting the diversity of the nation's history and culture. Buildings, structures, and sites; groups of buildings, structures or sites forming historic districts; landscapes; and individual objects are all included in the Register if they meet the criteria specified in the National Register's *Criteria for Evaluation* (36 CFR §60.4). Such properties reflect many kinds of significance—in architecture, history, archeology, engineering, and culture.

There are many definitions of the word "culture," but in the National Register programs the word is understood to mean the traditions, beliefs, practices, lifeways, arts, crafts, and social institutions of any community, be it an Indian tribe, a local ethnic group, or the people of the nation as a whole.²

One kind of cultural significance a property may possess, and that may

make it eligible for inclusion in the Register, is *traditional cultural significance*. "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. Examples of properties possessing such significance include:

- a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
- a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- an urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
- a location where Native American religious practitioners have historically gone, and are known or

thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and

- a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historical identity.

A traditional cultural property, then, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Various kinds of traditional cultural properties will be discussed, illustrated,

¹ Dr. Parker is a cultural anthropologist and archeologist in the National Park Service's Interagency Resources Division. Dr. King was Senior Archeologist and Director of the Office of Program Review and Education in the Advisory Council on Historic Preservation at the time this Bulletin was drafted; he is now in private practice as a consultant in archeology and historic preservation.

² For a detailed definition, see Appendix I.



Numerous black people left the South to migrate to the Midwest. The A.M.E. Church (on the left) and District No. 1 School remain in Nicodemus Historic District in Nicodemus, Kansas, which was declared a National Historic Landmark by the Secretary of the Interior in 1976. (Clayton B. Fraser for the Historic American Buildings Survey)

and related specifically to the National Register Criteria later in this bulletin.

Purpose of this Bulletin

Traditional cultural values are often central to the way a community or group defines itself, and maintaining such values is often vital to maintaining the group's sense of identity and self respect. Properties to which traditional cultural value is ascribed often take on this kind of vital significance, so that any damage to or infringement upon them is perceived to be deeply offensive to, and even destructive of, the group that values them. As a result, it is extremely important that traditional cultural properties be considered carefully in planning; hence it is important that such properties, when they are eligible for inclusion in the National Register, be nominated to the Register or otherwise identified in inventories for planning purposes.

Traditional cultural properties are often hard to recognize, however. A traditional ceremonial location may look like merely a mountaintop, a lake, or a stretch of river; a culturally important neighborhood may look like any other aggregation of houses, and an area where culturally important economic or artistic activities have been carried out may look like any other building, field of grass, or piece of forest in the area. As a result, such places may not necessarily come to light through the conduct of archeological, historical, or architectural surveys. The existence and significance of such locations often can be ascertained only through interviews with knowledgeable users of the area, or through other forms of ethnographic research. The subtlety with which the significance of such locations may be expressed makes it easy to ignore them; on the other hand it makes it difficult to distinguish between properties having real significance and those whose putative significance is spurious. As a result, clear guidelines for evaluation of such properties are needed.

In the 1980 amendments to the National Historic Preservation Act, the Secretary of the Interior, with the American Folklife Center, was directed to study means of:

preserving and conserving the intangible elements of our cultural



The German Village Historic District in Columbus, Ohio, reflects the ethnic heritage of 19th century German immigrants. The neighborhood includes many simple vernacular brick cottages with gable roofs. (Christopher Cline)

heritage such as arts, skills, folk-life, and folkways. . . .

and to recommend ways to:

preserve, conserve, and encourage the continuation of the diverse traditional prehistoric, historic, ethnic, and folk cultural traditions that underlie and are a living expression of our American heritage. (NHPA §502; 16 U.S.C. 470a note)

The report that was prepared in response to §502, entitled *Cultural Conservation*, was submitted to the President and Congress on June 1, 1983, by the Secretary of the Interior. The report recommended in general that traditional cultural resources, both those that are associated with historic properties and those without specific property referents, be more systematically addressed in implementation of the National Historic Preservation Act and other historic preservation authorities. In transmitting the report, the Secretary directed the National Park Service to take several actions to implement its recommendations. Among other actions, the Service was directed to prepare guidelines to assist in the documentation of intangible cultural resources, to coordinate the incorporation of provisions for the consideration of such resources into Departmental planning documents and administrative manuals, and to encourage the identification and documentation of

such resources by States and Federal agencies.

This bulletin has been developed as one aspect of the Service's response to the *Cultural Conservation* report and the Secretary's direction. It is intended to be an aid in determining whether properties thought or alleged to have traditional cultural significance are eligible for inclusion in the National Register. It is meant to assist Federal agencies, State Historic Preservation Officers (SHPOs), Certified Local Governments, Indian Tribes, and other historic preservation practitioners who need to evaluate such properties when nominating them for inclusion in the National Register or when considering their eligibility for the Register as part of the review process prescribed by the Advisory Council on Historic Preservation under Section 106 of the National Historic Preservation Act. It is designed to supplement other National Register guidance, particularly National Register Bulletin 15—*Guidelines for Applying the National Register Criteria for Evaluation*—and National Register Bulletin 16—*Guidelines for Completing National Register of Historic Places Forms*. It should be used in conjunction with these two Bulletins and other applicable guidance available from the National Register, when applying the National Register Criteria and preparing documentation to support nominations or determinations that

a given property is or is not eligible for inclusion in the Register.

This Bulletin is also responsive to the American Indian Religious Freedom Act (AIRFA) of 1978, which requires the National Park Service, like other Federal agencies, to evaluate its policies and procedures with the aim of protecting the religious freedoms of Native Americans (Pub. L. 95341 §2). Examination of the policies and procedures of the National Register suggests that while they are in no way intended to be so interpreted, they can be interpreted by Federal agencies and others in a manner that excludes historic properties of religious significance to Native Americans from eligibility for inclusion in the National Register. This in turn may exclude such properties from the protections afforded by Section 106, which in turn may result in their destruction, infringing upon the rights of Native Americans to use them in the free exercise of their religions. To minimize the likelihood of such misinterpretation, this Bulletin gives special attention to properties of traditional cultural significance to Native American groups, and to discussing the place of religion in the attribution of such significance.

The fact that this Bulletin gives special emphasis to Native American properties should not be taken to imply that only Native Americans ascribe traditional cultural value to

historic properties, or that such ascription is common only to ethnic minority groups in general. Americans of every ethnic origin have properties to which they ascribe traditional cultural value, and if such properties meet the National Register criteria, they can and should be nominated for inclusion in the Register.

This Bulletin does not address cultural resources that are purely "intangible"—i.e. those that have no property referents—except by exclusion. The Service is committed to ensuring that such resources are fully considered in planning and decisionmaking by Federal agencies and others. Historic properties represent only some aspects of culture, and many other aspects, not necessarily reflected in properties as such, may be of vital importance in maintaining the integrity of a social group. However, the National Register is not the appropriate vehicle for recognizing cultural values that are purely intangible, nor is there legal authority to address them under Section 106 unless they are somehow related to a historic property. The National Register lists, and Section 106 requires review of effects on, tangible cultural resources—that is, historic properties. However, the attributes that give such properties significance, such as their association with historical events, often are intangible in nature. Such attributes cannot be ignored in evaluating and

managing historic properties; properties and their intangible attributes of significance must be considered together. This Bulletin is meant to encourage its users to address the intangible cultural values that may make a property historic, and to do so in an evenhanded way that reflects solid research and not ethnocentric bias.

Finally, no one should regard this Bulletin as the only appropriate source of guidance on its subject, or interpret it rigidly. Although traditional cultural properties have been listed and recognized as eligible for inclusion in the National Register since the Register's inception, it is only in recent years that organized attention has been given to them. This Bulletin represents the best guidance the Register can provide as of the late 1980s, and the examples listed in the bibliography include the best known at this time,³ but it is to be expected that approaches to such properties will continue to evolve. This Bulletin also is meant to supplement, not substitute for, more specific guidelines, such as those used by the National Park Service with respect to units of the National Park System and those used by

³ It is notable that most of these examples are unpublished manuscripts. The literature pertaining to the identification and evaluation of traditional cultural properties, to say nothing of their treatment, remains a thin one.



These sandbars in the Rio Grande River are eligible for inclusion in the National Register because they have been used for generations by the people of Sandia Pueblo for rituals involving immersion in the river's waters. (Thomas F. King)

some other agencies, States, local governments, or Indian tribes with respect to their own lands and programs.

Ethnography, ethnohistory, ethnocentrism

Three words beginning with "ethno" will be used repeatedly in this Bulletin, and may not be familiar to all readers. All three are derived from the Greek *ethnos*, meaning "nation;" and are widely used in the study of anthropology and related disciplines.

Ethnography is the descriptive and analytic study of the culture of particular groups or communities. An ethnographer seeks to understand a community through interviews with its members and often through living in and observing it (a practice referred to as "participant observation").

Ethnohistory is the study of historical data, including but not necessarily limited to, documentary data pertaining to a group or community, using an ethnographic perspective.

Ethnographic and ethnohistorical research are usually carried out by specialists in cultural anthropology, and by specialists in folklore and folklife, sociology, history, archeology and related disciplines with appropriate technical training.⁴

Ethnocentrism means viewing the world and the people in it only from the point of view of one's own culture, and being unable to sympathize with the feelings, attitudes, and beliefs of someone who is a member of a different culture. It is particularly important to understand, and seek to avoid, ethnocentrism in the evaluation of traditional cultural properties. For example, Euroamerican society tends to emphasize "objective" observations of the physical world as the basis for making statements about that world. However, it may not be possible to use such observations as the major basis for evaluating a traditional cultural property. For example, there may be nothing observable to the outsider about a place regarded as sacred by a Native American group. Similarly, such a group's belief that its ancestors emerged from the earth at a specific location at the begin-

ning of time may contradict Euroamerican science's belief that the group's ancestors migrated to North America from Siberia. These facts in no way diminish the significance of the locations in question in the eyes of those who value them; indeed they are irrelevant to their significance. It would be ethnocentric in the extreme to say that "whatever the Native American group says about this place, I can't see anything here so it is not significant," or "since I know these people's ancestors came from Siberia, the place where they think they emerged from the earth is of no significance." It is vital to evaluate properties thought to have traditional cultural significance from the standpoint of those who may ascribe such significance to them, whatever one's own perception of them, based on one's own cultural values, may be. This is not to say that a group's assertions about the significance of a place should not be questioned or subjected to critical analysis, but they should not be rejected based on the premise that the beliefs they reflect are inferior to one's own.

Evaluation, consideration, and protection

One more point that should be remembered in evaluating traditional cultural properties—as in evaluating any other kind of properties—is that establishing that a property is eligible for inclusion in the National Register does not necessarily mean that the property must be protected from disturbance or damage. Establishing that a property is eligible means that it must be considered in planning Federal, federally assisted, and federally licensed undertakings, but it does not mean that such an undertaking cannot be allowed to damage or destroy it. Consultation must occur in accordance with the regulations of the Advisory Council (36 CFR Part 800) to identify, and if feasible adopt, measures to protect it, but if in the final analysis the public interest demands that the property be sacrificed to the needs of the project, there is nothing in the National Historic Preservation Act that prohibits this.

This principle is especially important to recognize with respect to traditional cultural properties, because such properties may be valued by a

relatively small segment of a community that, on the whole, favors a project that will damage or destroy it. The fact that the community as a whole may be willing to dispense with the property in order to achieve the goals of the project does not mean that the property is not significant, but the fact that it is significant does not mean that it cannot be disturbed, or that the project must be foregone.

Traditional Cultural Values in Preservation Planning

Traditional cultural properties, and the beliefs and institutions that give them significance, should be systematically addressed in programs of preservation planning and in the historic preservation components of land use plans. One very practical reason for this is to simplify the identification and evaluation of traditional cultural properties that may be threatened by construction and land use projects. Identifying and evaluating such properties can require detailed and extensive consultation, interview programs, and ethnographic fieldwork, as discussed below. Having to conduct such activities may add considerably to the time and expense of compliance with Section 106, the National Environment Policy Act, and other authorities. Such costs can be reduced significantly, however, by early, proactive planning that identifies significant properties or areas likely to contain significant properties before specific projects are planned that may affect them, identifies parties likely to ascribe cultural value to such properties, and establishes routine systems for consultation with such parties.

The *Secretary of the Interior's Standards for Preservation Planning* provide for the establishment of "historic contexts" as a basic step in any preservation planning process—be it planning for the comprehensive survey of a community or planning a construction project. A historic context is an organization of available information about, among other things, the cultural history of the area to be investigated, to identify "the broad patterns of development in an area that may be represented by historic properties." (48 FR 44717) The traditions and traditional lifeways

⁴ For a detailed discussion of the qualifications that a practitioner of ethnography or ethnohistory should possess, see Appendix II.

of a planning area may represent such "broad patterns," so information about them should be used as a basis for historic context development.

The *Secretary of the Interior's Guidelines for Preservation Planning* emphasize the need for organized public participation in context development. (48 FR 44717) The Advisory Council on Historic Preservation's *Guidelines for Public Participation in Historic Preservation Review* (ACHP 1988) provide detailed recommendations regarding such participation. Based on these standards and guidelines, groups that may ascribe traditional cultural values to an area's historic properties should be contacted and asked to assist in organizing information on the area. Historic contexts should be considered that reflect the history and culture of such groups as the groups themselves understand them, as well as their history and culture as defined by Euroamerican scholarship, and processes for consultation with such groups should be integrated into routine planning and project review procedures.

Identifying Traditional Cultural Properties

Some traditional cultural properties are well known to the residents of an area. The San Francisco Peaks in Arizona, for example, are extensively documented and widely recognized as places of extreme cultural importance to the Hopi, Navajo, and other American Indian people of the Southwest, and it requires little study to recognize that Honolulu's Chinatown is a place of cultural importance to the city's oriental community. Most traditional cultural properties, however, must be identified through systematic study, just as most other kinds of historic properties must be identified. This section of this Bulletin will discuss some factors to consider in identifying traditional cultural properties.⁵

⁵ For general guidelines for identification see *The Secretary of the Interior's Standards and Guidelines for Identification* (48 FR 44720-23), *Guidelines for Local Surveys: A Basis for Preservation Planning* (National Register Bulletin 24), and *Identification in Historic Preservation Review: a Decisionmaking Guide* (ACHP/DOI 1988).



Honolulu's Chinatown reflects the cultural values and traditions of its inhabitants not only in its architectural details but also in its organization of space and the activities that go on there. (Ramona K. Mullahey)

Establishing the level of effort

Any comprehensive effort to identify historic properties in an area, be the area a community, a rural area, or the area that may be affected by a construction or land-use project, should include a reasonable effort to identify traditional cultural properties. What constitutes a "reasonable" effort depends in part on the likelihood that such properties may be present. The likelihood that such properties may be present can be reliably assessed only on the basis of background knowledge of the area's history, ethnography, and contemporary society developed through preservation planning. As a general although not invariable rule, however, rural areas are more likely than urban areas to contain properties

of traditional cultural importance to American Indian or other native American communities, while urban areas are more likely to contain properties of significance to ethnic and other traditional neighborhoods.

Where identification is conducted as part of planning for a construction or land-use project, the appropriate level of effort depends in part on whether the project under consideration is the type of project that could affect traditional cultural properties. For example, as a rule the rehabilitation of historic buildings may have relatively little potential for effect on such properties. However, if a rehabilitation project may result in displacement of residents, "gentrification" of a neighborhood, or other sociocultural impacts, the possibility that the buildings to be rehabilitated, or the neighborhood

in which they exist, may be ascribed traditional cultural value by their residents or others should be considered. Similarly, most day-to-day management activities of a land managing agency may have little potential for effect on traditional cultural properties, but if the management activity involves an area or a kind of resource that has high significance to a traditional group—for example, timber harvesting in an area where an Indian tribe's religious practitioners may continue to carry out traditional ceremonies—the potential for effect will be high.

These general rules of thumb aside, the way to determine what constitutes a reasonable effort to identify traditional cultural properties is to consult those who may ascribe cultural significance to locations within the study area. The need for community participation in planning identification, as in other forms of preservation planning, cannot be over-emphasized.

Contacting traditional communities and groups

An early step in any effort to identify historic properties is to consult with groups and individuals who have special knowledge about and interests in the history and culture of the area to be studied. In the case of traditional cultural properties, this means those individuals and groups who may ascribe traditional cultural significance to locations within the study area, and those who may have knowledge of such individuals and groups. Ideally, early planning will have identified these individuals and groups, and established how to consult with them. As a rule, however, the following steps are recommended.

Background research

An important first step in identifying such individuals and groups is to conduct background research into what is already recorded about the area's history, ethnography, sociology, and folklife. Published and unpublished source material on the historic and contemporary composition of the area's social and cultural groups should be consulted; such source material can often be found in the anthropology, sociology, or folklife libraries of local universities or other academic institutions. Pro-

fessional and nonprofessional students of the area's social and cultural groups should also be consulted—for example, professional and avocational anthropologists and folklorists who have studied the area. The SHPO and any other official agency or organization that concerns itself with matters of traditional culture—for example, a State Folklorist or a State Native American Commission—should be contacted for recommendations about sources of information and about groups and individuals to consult.

Making contact

Having reviewed available background data, the next step is to contact knowledgeable groups and individuals directly, particularly those groups that are native to the area or have resided there for a long time. Some such groups have official representatives—the tribal council of an Indian tribe, for example, or an urban neighborhood council. In other cases, leadership may be less officially defined, and establishing

contact may be more complicated. The assistance of ethnographers, sociologists, folklorists, and others who may have conducted research in the area or otherwise worked with its social groups may be necessary in such cases, in order to design ways of contacting and consulting such groups in ways that are both effective and consistent with their systems of leadership and communication.

It should be clearly recognized that expertise in traditional cultural values may not be found, or not found solely, among contemporary community leaders. In some cases, in fact, the current political leadership of a community or neighborhood may be hostile to or embarrassed about traditional matters. As a result, it may be necessary to seek out knowledgeable parties outside the community's official political structure. It is of course best to do this with the full knowledge and cooperation of the community's contemporary leaders; in most cases it is appropriate to ask such leaders to identify members of the community

Federal agencies and others have found a variety of ways to contact knowledgeable parties in order to identify and evaluate traditional cultural properties. Generally speaking, the detail and complexity of the methods employed depend on the nature and complexity of the properties under consideration and the effects the agency's management or other activities may have on them. For example:

- The Black Hills National Forest designated a culturally sensitive engineer to work with local Indian tribes in establishing procedures by which the tribes could review Forest Service projects that might affect traditional cultural properties;
- The Air Force sponsored a conference of local traditional cultural authorities to review plans for deployment of an intercontinental missile system in Wyoming, resulting in guidelines to ensure that effects on traditional cultural properties would be minimized.
- The New Mexico Power Authority employed a professional cultural anthropologist to consult with Native American groups within the area to be affected by the Four Corners Power Project.
- The Ventura County (California) Flood Control Agency consulted with local Native American groups designated by the State Native American Heritage Commission to determine how to handle human remains to be exhumed from a cemetery that had to be relocated to make way for a flood control project.
- The Utah State Historic Preservation Officer entered into an agreement with the American Folklife Center to develop a comprehensive overview of the tangible and intangible historic resources of Grouse Creek, a traditional Mormon cowboy community.
- The Forest Service contracted for a full-scale ethnographic study to determine the significance of the Helkau Historic District on California's Six Rivers National Forest.



The Helkau Historic District, in the Six Rivers National Forest of California, is eligible for inclusion in the National Register because of its association with significant cultural practices of the Tolowa, Yorok, Karuk, and Hoopa Indian tribes of the area, who have used the district for generations to make medicine and communicate with spirits. (Theodoratus Cultural Research)

who are knowledgeable about traditional cultural matters, and use these parties as an initial network of consultants on the group's traditional values. If there is serious hostility between the group's contemporary leadership and its traditional experts, however, such cooperation may not be extended, and efforts to consult with traditional authorities may be actively opposed. Where this occurs, and it is necessary to proceed with the identification and evaluation of properties—for example, where such identification and evaluation are undertaken in connection with review of an undertaking under Section 106—careful negotiation and mediation may be necessary to overcome opposition and establish mutually acceptable ground rules for consultation. Again, the assistance of anthropologists or others with training and experience in work with the community, or with similar communities, may be necessary.

Fieldwork

Fieldwork to identify properties of traditional cultural significance involves consultation with knowledgeable parties, coupled with field inspection and recordation of locations identified as significant by such parties. It is often appropriate

and efficient to combine such fieldwork with surveys to identify other kinds of historic properties, for example archeological sites and properties of architectural significance. If combined fieldwork is conducted, however, the professional standards appropriate to each kind of fieldwork should be adhered to, and appropriate expertise in each relevant discipline should be represented on the study team. The kinds of expertise typically needed for a detailed ethnographic study of traditional cultural properties are outlined in Appendix II. Applicable research standards can be found in *Systematic Fieldwork, Volume 2: Ethnographic Analysis and Data Management*. (Werner and Schoepfle 1986)

Culturally sensitive consultation

Since knowledge of traditional cultural values may not be shared readily with outsiders, knowledgeable parties should be consulted in cultural contexts that are familiar and reasonable to them. It is important to understand the role that the information being solicited may play in the culture of those from whom it is being solicited, and the kinds of rules that may surround its transmittal. In some societies traditional information is regarded as powerful,

even dangerous. It is often believed that such information should be transmitted only under particular circumstances or to particular kinds of people. In some cases information is regarded as a valued commodity for which payment is in order; in other cases offering payment may be offensive. Sometimes information may be regarded as a gift, whose acceptance obligates the receiver to reciprocate in some way, in some cases by carrying out the activity to which the information pertains.

It may not always—or even often—be possible to arrange for information to be sought in precisely the way those being consulted might prefer, but when it is not, the interviewer should clearly understand that to some extent he or she is asking those interviewed to violate their cultural norms. The interviewer should try to keep such violations to a minimum, and should be patient with the reluctance that those interviewed may feel toward sharing information under conditions that are not fully appropriate from their point of view.

Culturally sensitive consultation may require the use of languages other than English, the conduct of community meetings in ways consistent with local traditional practice, and the conduct of studies by trained ethnographers, ethnohistorians, sociologists, or folklorists with the kinds of expertise outlined in Appendix II. Particularly where large projects or large land areas are involved, or where it is likely that particularly sensitive resources may be at issue, formal ethnographic studies should be carried out, by or under the supervision of a professionally qualified cultural anthropologist.

Field inspection and recordation

It is usually important to take knowledgeable consultants into the field to inspect properties that they identify as significant. In some cases such properties may not be discernible as such to anyone but a knowledgeable member of the group that ascribes significance to them; in such cases it may be impossible even to find the relevant properties, or locate them accurately, without the aid of such parties. Even where a property is readily discernible as such to the outside observer, visiting the property may help a consultant

recall information about it that he or she is unlikely to recall during interviews at a remote location, thus making for a richer and more complete record.

Where the property in question has religious significance or supernatural connotations, it is particularly important to ensure that any visit is carried out in accordance with appropriate modes of behavior. In some cases, ritual purification is necessary before a property can be approached, or spirits must be propitiated along the way. Some groups forbid visits to such locations by menstruating women or by people of inappropriate ages. The taking of photographs or the use of electronic recording equipment may not be appropriate. Appropriate ways to approach the property should be discussed with knowledgeable consultants before undertaking a field visit.

To the extent compatible with the cultural norms of the group involved, traditional cultural properties should be recorded on National Register of Historic Places forms or their equivalent.⁶ Where items normally included in a National Register nomination or request for a determination of eligibility cannot be included (for example, if it is culturally inappropriate to photograph the property), the reasons for not including the item should be explained. To the extent possible in the property's cultural context, other aspects of the documentation (for example, verbal descriptions of the property) should be enhanced to make up for the items not included.

If making the location of a property known to the public would be culturally inappropriate, or compromise the integrity of the property or associated cultural values (for example, by encouraging tourists to intrude upon the conduct of traditional practices), the "Not for Publication" box on the National Register form should be checked; this indicates that the reproduction of locational information is prohibited, and that other information contained in the nomination will not be reproduced without the permission of the nominating authority. In the case of

a request for a determination of eligibility in which a National Register form is not used, the fact that the information is not for publication should be clearly specified in the documentation, so that the National Register can apply the same controls to this information as it would to restricted information in a nomination.⁷

Reconciling sources

Sometimes an apparent conflict exists between documentary data on traditional cultural properties and the testimony of contemporary consultants. The most common kind of conflict occurs when ethnographic and ethnohistorical documents do not identify a given place as playing an important role in the tradition and culture of a group, while contemporary members of the group say the property does have such a role. More rarely, documentary sources may indicate that a property does have cultural significance while

contemporary sources say it does not. In some cases, too, contemporary sources may disagree about the significance of a property.

Where available documents fail to identify a property as culturally significant, but contemporary sources identify it as such, several points should be considered.

- (a) Ethnographic and ethnohistorical research has not been conducted uniformly in all parts of the nation; some areas are better documented than others simply because they have been the focus of more research.
- (b) Ethnographic and ethnohistorical documents reflect the research interests of those who prepared them; the fact that one does not identify a property as culturally important may reflect only the fact that the individual who prepared the report had research interests that did not require the identification of such properties.
- (c) Some kinds of traditional cultural properties are regarded by those who value them as the loci of supernatural or other power, or as having other attributes that make people reluctant to talk about them. Such properties are not likely to be recorded unless someone makes a very deliberate effort to do so, or unless those

⁷ Section 304 of the National Historic Preservation Act provides the legal authority to withhold National Register information from the public when release might "create a substantial risk of harm, theft, or destruction." For detailed guidelines concerning restricting access to information see National Register Bulletin 29, *Guidelines for Restricting Information About Historic and Prehistoric Resources*.



Much of the significance of traditional cultural properties can be learned only from the testimony of the traditional people who value them, like this old man being interviewed in Truk. (Micronesia Institute)

⁶ For general instructions on the completion of National Register documentation, see National Register Bulletin 16, *Guidelines for Completing National Register of Historic Places Forms*.

who value them have a special reason for revealing the information—for example, a perception that the property is in some kind of danger.

Particularly because properties of traditional cultural significance are often kept secret, it is not uncommon for them to be “discovered” only when something threatens them—for example, when a change in land-use is proposed in their vicinity. The sudden revelation by representatives of a cultural group—which may also have other economic or political interests in the proposed change—can lead quickly to charges that the cultural significance of a property has been invented only to obstruct or otherwise influence those planning the change. This may be true, and the possibility that traditional cultural significance is attributed to a property only to advance other, unrelated interests should be carefully considered. However, it also may be that until the change was proposed, there simply was no reason for those who value the property to reveal its existence or the significance they ascribe to it.

Where ethnographic, ethnohistorical, historical, or other sources identify a property as having cultural significance, but contemporary sources say that it lacks such significance, the interests of the contemporary sources should be carefully considered. Individuals who have economic interests in the potential development of an area may be strongly motivated to deny its cultural significance. More subtly, individuals who regard traditional practices and beliefs as backward and contrary to the best contemporary interests of the group that once ascribed significance to a property may feel justified in saying that such significance has been lost, or was never ascribed to the property. On the other hand, of course, it may be that the documentary sources are wrong, or that the significance ascribed to the property when the documents were prepared has since been lost.

Similar consideration must be taken into account in attempting to reconcile conflicting contemporary sources. Where one individual or group asserts that a property has traditional cultural significance, and another asserts that it does not, or

where there is disagreement about the nature or extent of a property's significance, the motives and values of the parties, and the cultural constraints operating on each, must be carefully analyzed.

In general, the only reasonably reliable way to resolve conflict among sources is to review a wide enough range of documentary data, and to interview a wide enough range of authorities to minimize the likelihood either of inadvertent bias or of being deliberately misled. Authorities consulted in most cases should include both knowledgeable parties within the group that may attribute cultural value to a property and appropriate specialists in ethnography, sociology, history, and other relevant disciplines.⁸

Determining Eligibility: Step by Step

Whether a property is known in advance or found during an identification effort, it must be evaluated with reference to the National Register Criteria for Evaluation (36 CFR Part 60) in order to determine whether it is eligible for inclusion in the Register. This section discusses the process of evaluation as a series of sequential steps. In real life, of course, these steps are often collapsed into one another or taken together.

Step One: Ensure that the entity under consideration is a property

Because the cultural practices or beliefs that give a traditional cultural property its significance are typically still observed in some form at the time the property is evaluated, it is sometimes perceived that the intangible practices or beliefs themselves, not the property, constitute the subject of evaluation. There is naturally a dynamic relationship between tangible and intangible traditional cultural resources, and the beliefs or practices associated with a traditional cultural property are of central importance in defining its significance. However, it should be clearly

⁸ For excellent examples of studies designed in whole or in part to identify and evaluate traditional cultural properties based on both documentary sources and the testimony of contemporary consultants, see Bean and Vane 1978; Carroll 1983; Johnston and Budy 1983; Stoffle and Dobyms 1982, 1983; Theodoratus 1979.

recognized at the outset that the National Register does not include intangible resources themselves. The entity evaluated must be a tangible property—that is, a district, site, building, structure, or object.⁹ The relationship between the property and the beliefs or practices associated with it should be carefully considered, however, since it is the beliefs and practices that may give the property its significance and make it eligible for inclusion in the National Register.

Construction by human beings is a necessary attribute of buildings and structures, but districts, sites, and objects do not have to be the products of, or contain, the work of human beings in order to be classified as properties. For example, the National Register defines a “site” as “the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.”¹⁰ Thus a property may be defined as a “site” as long as it was the location of a significant event or activity, regardless of whether the event or activity left any evidence of its occurrence. A culturally significant natural landscape may be classified as a site, as may the specific location where significant traditional events, activities, or cultural observances have taken place. A natural object such as a tree or a rock outcrop may be an eligible object if it is associated with a significant tradition or use. A concentration, linkage, or continuity of such sites or objects, or of structures comprising a culturally significant entity, may be classified as a district.

In considering the eligibility of a property that contains no observable evidence of human activity, however, the documentary or oral evidence for the association of the property with traditional events, activities or observances should be carefully weighed and assessed. The National Register discourages the nomination of natural features without sound documentation of their historical or cultural significance.

⁹ See National Register Bulletin 15, *Guidelines for Applying the National Register Criteria*, for discussion of property types.

¹⁰ See National Register Bulletin 16.



Cannonball Island, off Cape Alava on the coast of Washington State, is a traditional cultural property of importance to the Makah Indian people. It was used in the past, and is still used today, as a navigation marker for Makah fishermen, who established locations at sea by triangulation from this and other landmarks. It also was a lookout point for seal and whale hunters and for war parties, a burial site, and a kennel for dogs raised for their fur. (Makah Cultural and Research Center Archives)

Step Two: Consider the property's integrity

In order to be eligible for inclusion in the Register, a property must have "integrity of location, design, setting, materials, workmanship, feeling, and association." (36 CFR Part 60) In the case of a traditional cultural property, there are two fundamental questions to ask about integrity. First, does the property have an integral relationship to traditional cultural practices or beliefs; and second, is the condition of the property such that the relevant relationships survive?

Integrity of relationship

Assessing the integrity of the relationship between a property and the beliefs or practices that may give it significance involves developing some understanding about how the group that holds the beliefs or carries out the practices is likely to view the property. If the property is known or likely to be regarded by a traditional cultural group as important in the retention or transmittal of a belief, or to the performance of a practice, the property can be taken to have an integral relationship with the belief or practice, and vice-versa.

For example, imagine two groups living along the shores of a lake. Each group practices a form of baptism to mark an individual's acceptance into the group. Both carry out

baptism in the lake. One group, however, holds that baptism is appropriate in any body of water that is available; the lake happens to be available, so it is used, but another lake, a river or creek, or a swimming pool would be just as acceptable. The second group regards baptism in this particular lake as essential to its acceptance of an individual as a member. Clearly the lake is integrally related to the second group's practice, but not to that of the first.

Integrity of condition

Like any other kind of historic property, a property that once had traditional cultural significance can lose such significance through physical alteration of its location, setting, design, or materials. For example, an urban neighborhood whose structures, objects, and spaces reflect the historically rooted values of a traditional social group may lose its significance if these aspects of the neighborhood are substantially altered.

In some cases a traditional cultural property can also lose its significance through alteration of its setting or environment. For example, a location used by an American Indian group for traditional spirit questing is unlikely to retain its significance for this purpose if it has come to be surrounded by housing tracts or shopping malls.

A property may retain its traditional cultural significance even though it has been substantially modified, however. Cultural values are dynamic, and can sometimes accommodate a good deal of change. For example, the Karuk Indians of northwestern California continue to carry on world renewal rites, ancient ceremonies featuring elaborate dances, songs, and other ritual activities, along a stretch of the Klamath River that is now the site of a highway, a Forest Service Ranger Station, a number of residences, and a timber cutting operation. Specific locations important in aspects of the ceremony remain intact, and accommodation has been reached between the Karuk and other users of the land. The State Department of Transportation has even erected "Ritual Crossing" signs at locations where the Karuk religious practitioners cross the highway, and built shallow depressions into the roadway which are filled with sand in advance of the ceremony, so the feet of the practitioners need not be profaned by contact with man-made macadam. As this example shows, the integrity of a possible traditional cultural property must be considered with reference to the views of traditional practitioners; if its integrity has not been lost in their eyes, it probably has sufficient integrity to justify further evaluation.

Some kinds of traditional cultural significance also may be retained regardless of how the surroundings of a property may be changed. For example, the First African Baptist Church Cemetery in Philadelphia, rediscovered during archeological work in advance of highway construction in 1985, has considerable cultural significance for the congregation that traces descent from those interred in the Cemetery, and for Philadelphia's Black community in general, even though its graves had been buried under fill and modern construction for many decades.

It should also be recalled that even if a property has lost integrity as a possible traditional cultural property, it may retain integrity with reference to some other aspect of significance. For example, a property whose cultural significance has been lost through disturbance may still retain archeological deposits of significance for their information

content, and a neighborhood whose traditional residents no longer ascribe significance to it may contain buildings of architectural importance.

Step Three: Evaluate the property with reference to the National Register Criteria

Assuming the entity to be evaluated is a property, and that it retains integrity, it is next necessary to evaluate it against the four basic National Register Criteria set forth in the National Register regulations (36 CFR Part 60). If the property meets one or more of the criteria, it may be eligible; if it does not, it is not eligible.¹¹

Criterion (a): Association with events that have made a significant contribution to the broad patterns of our history.

The word "our" in this criterion may be taken to refer to the group to which the property may have traditional cultural significance, and the word "history" may be taken to include traditional oral history as well as recorded history. For example, Mt. Tonaachaw on Moen Island in Truk, Federated States of Micronesia, is in the National Register in part because of association with oral traditions about the establishment of Trukese society.

"Events" can include specific moments in history of a series of events reflecting a broad pattern or theme. For example, the ongoing participation of an ethnic or social group in an area's history, reflected in a neighborhood's buildings, streetscapes, or patterns of social activity, constitutes such a series of events.

The association of a property with significant events, and its existence at the time the events took place, must be documented through accepted means of historical research. The means of research normally employed with respect to traditional cultural properties include ethnographic, ethnohistorical, and folklore studies, as well as historical and archeological research. Sometimes, however, the actual time a traditional event took place may be ambiguous; in such cases it may be impossible, and to some extent

irrelevant, to demonstrate with certainty that the property in question existed at the time the traditional event occurred. For example, events recounted in the traditions of Native American groups may have occurred in a time before the creation of the world as we know it, or at least before the creation of people. It would be fruitless to try to demonstrate, using the techniques of history and science, that a given location did or did not objectively exist in a time whose own existence cannot be demonstrated scientifically. Such a demonstration is unnecessary for purposes of eligibility determination; as long as the tradition itself is rooted in the history of the group, and associates the property with traditional events, the association can be accepted.

Criterion (b): Association with the lives of persons significant in our past.

Again, the word "our" can be interpreted with reference to the people who are thought to regard the property as traditionally important. The word "persons" can be taken to refer both to persons whose tangible, human existence in the past can be inferred on the basis of historical, ethnographic, or other

research, and to "persons" such as gods and demigods who feature in the traditions of a group. For example, Tahquitz Canyon in southern California is included in the National Register in part because of its association with Tahquitz, a Cahuilla Indian demigod who figures importantly in the tribe's traditions and is said to occupy an obsidian cave high in the canyon.

Criterion (c)(1):¹² Embodiment of the distinctive characteristics of a type, period, or method of construction.

This subcriterion applies to properties that have been constructed, or contain constructed entities—that is, buildings, structures, or built objects. For example, a neighborhood that has traditionally been occupied by a particular ethnic group may display particular housing styles, gardens, street furniture or ornamentation distinctive of the group. Honolulu's Chinatown, for example, embodies the distinctive cultural values of the City's oriental community in its architecture, landscaping, signage, and ornamentation.

¹² Note: Criterion (c) is not subdivided into subcriteria (1), (2), etc. in 36 CFR §60.4. The subdivision given here is only for the convenience of the reader.



In Trukese tradition, the Tonaachaw Historic District was the location to which Sowukachaw, founder of Trukese society, came and established his meetinghouse at the beginning of Trukese history. The mountain, in what is now the Federated States of Micronesia, is a powerful landmark in the traditions of the area. (Lawrence E. Aten)

¹¹ For general guidelines, see National Register Bulletin 15.

Criterion (c)(2): Representative of the work of a master.

A property identified in tradition or suggested by scholarship to be the work of a traditional master builder or artisan may be regarded as the work of a master, even though the precise identity of the master may not be known.

Criterion (c)(3): Possession of high artistic values.

A property made up of or containing art work valued by a group for traditional cultural reasons, for example a petroglyph or pictograph site venerated by an Indian group, or a building whose decorative elements reflect a local ethnic group's distinctive modes of expression, may be viewed as having high artistic value from the standpoint of the group.

Criterion (c)(4): Representative of a significant and distinguishable entity whose components may lack individual distinction.

A property may be regarded as representative of a significant and distinguishable entity, even though it lacks individual distinction, if it represents or is an integral part of a larger entity of traditional cultural importance. The larger entity may, and usually does, possess both tangible and intangible components. For example, certain locations along the Russian River in California are highly valued by the Pomo Indians, and have been for centuries, as sources of high quality sedge roots needed in the construction of the Pomo's world famous basketry. Although the sedge fields themselves are virtually indistinguishable from the surrounding landscape, and certainly indistinguishable by the untrained observer from other sedge fields that produce lower quality roots, they are representative of, and vital to, the larger entity of Pomo basketmaking. Similarly, some deeply venerated landmarks in Micronesia are natural features, such as rock outcrops and groves of trees; these are indistinguishable visually (at least to the outside observer) from other rocks and trees, but they figure importantly in chants embodying traditional sailing directions and lessons about traditional history. As individual objects



Many traditional cultural properties look like very little on the ground. The small protuberance in the center of this photo, known to residents of the Hanford Nuclear Reservation in Washington State as *Goose Egg Hill*, is regarded by the Yakima Indians of the area as the heart of a goddess who was torn apart by jealous compatriots. They scattered her pieces across the landscape, creating a whole complex of culturally significant landforms. (Thomas F. King)

they lack distinction, but the larger entity of which they are a part—Micronesian navigational and historical tradition—is of prime importance in the area's history.

Criterion (d): History of yielding, or potential to yield, information important in prehistory or history.

Properties that have traditional cultural significance often have already yielded, or have the potential to yield, important information through ethnographic, archeological, sociological, folkloric, or other studies. For example, ethnographic and ethnohistorical studies of Kaho'olawe Island in Hawai'i, conducted in order to clarify its eligibility for inclusion in the National Register, have provided important insights into Hawai'ian traditions and culture and into the history of twentieth century efforts to revitalize traditional Hawai'ian culture. Similarly, many traditional American Indian village sites are also archeological sites, whose study can provide important information about the history and prehistory of the group that lived there. Generally speaking, however, a traditional cultural property's history of yielding, or potential to yield, information, if relevant to its significance at all, is secondary to its association with the traditional history and culture of the group that ascribes significance to it.

Step 4: Determine whether any of the National Register criteria considerations (36 CFR §60.4) make the property ineligible

Generally speaking, a property is not eligible for inclusion in the Register if it represents a class of properties to which one or more of the six "criteria considerations" listed in 36 CFR §60.4 applies, and is not part of a district that is eligible.

In applying the criteria considerations, it is important to be sensitive to the cultural values involved, and to avoid ethnocentric bias, as discussed below.

Consideration A: Ownership by a religious institution or use for religious purposes.

A "religious property," according to National Register guidelines, "requires additional justification (for nomination) because of the necessity to avoid any appearance of judgement by government about the merit of any religion or belief."¹³ Conversely, it is necessary to be careful not to allow a similar judgement to serve as the basis for determining a property to be ineligible for inclusion in the Register. Application of this criteria consideration to traditional cultural properties is

¹³ National Register Bulletin 15.

fraught with the potential for ethnocentrism and discrimination. In many traditional societies, including most American Indian societies, the clear distinction made by Euroamerican society between religion and the rest of culture does not exist. As a result, properties that have traditional cultural significance are regularly discussed by those who value them in terms that have religious connotations. Inyan Karan Mountain, for example, a National Register property in the Black Hills of South Dakota, is significant in part because it is the abode of spirits in the traditions of the Lakota and Cheyenne. Some traditional cultural properties are used for purposes that are definable as religious in Euroamerican terms, and this use is intrinsic to their cultural significance. Kootenai Falls on the Kootenai River in Idaho, part of the National Register-eligible Kootenai Falls Cultural Resource District, has been used for centuries as a vision questing site by the Kootenai tribe. The Helkau Historic District in northern California is a place where traditional religious practitioners go to make medicine and commune with spirits, and Mount Tonaachaw in Truk is an object of spiritual veneration. The fact that such properties have religious connotations does not automatically make them ineligible for inclusion in the Register.

Applying the "religious exclusion" without careful and sympathetic consideration to properties of significance to a traditional cultural group can result in discriminating against the group by effectively denying the legitimacy of its history and culture. The history of a Native American group, as conceived by its indigenous cultural authorities, is likely to reflect a kind of belief in supernatural beings and events that Euroamerican culture categorizes as religious, although the group involved, as is often the case with Native American groups, may not even have a word in its language for "religion." To exclude from the National Register a property of cultural and historical importance to such a group, because its significance tends to be expressed in terms that to the Euroamerican observer appear to be "religious" is ethnocentric in the extreme.

In simplest terms, the fact that a property is used for religious purposes by a traditional group, such as

seeking supernatural visions, collecting or preparing native medicines, or carrying out ceremonies, or is described by the group in terms that are classified by the outside observer as "religious" should not by itself be taken to make the property ineligible, since these activities may be expressions of traditional cultural beliefs and may be intrinsic to the continuation of traditional cultural practices. Similarly, the fact that the group that owns a property—for example, an American Indian tribe—describes it in religious terms, or constitutes a group of traditional religious practitioners, should not automatically be taken to exclude the property from inclusion in the Register. Criteria Consideration A was included in the Criteria for Evaluation in order to avoid allowing historical significance to be determined on the basis of religious doctrine, not in order to exclude arbitrarily any property having religious associations. National Register guidelines stress the fact that properties can be listed in or determined eligible for the Register for their association with religious history, or with persons significant in religion, if such significance has "scholarly, secular recognition."¹⁴ The integral relationship among traditional Native American culture, history, and religion is widely recognized in

secular scholarship.¹⁵ Studies leading to the nomination of traditional cultural properties to the Register should have among their purposes the application of secular scholarship to the association of particular properties with broad patterns of traditional history and culture. The fact that traditional history and culture may be discussed in religious terms does not make it less historical or less significant to culture, nor does it make properties associated with traditional history and culture ineligible for inclusion in the National Register.

Consideration B: Relocated properties.

Properties that have been moved from their historically important locations are not usually eligible for inclusion in the Register, because "the significance of (historic properties) is embodied in their locations and settings as well as in the (properties) themselves" and because "one basic purpose of the National Register is to encourage the preservation of historic properties as living parts of their communities."¹⁶ This

¹⁴ National Register Bulletin 15.

¹⁵ For example see U.S. Commission on Civil Rights 1983; Michaelson 1986.

¹⁶ National Register Bulletin 15.



The fact that a property has religious connotations does not automatically disqualify it for inclusion in the National Register. This Shaker community in Massachusetts, for example, while religious in orientation, is included in the Register because it expresses the cultural values of the Shakers as a society. (Historic American Buildings Survey)



Some traditional cultural properties may be moveable, like this traditional war canoe still in use in the Republic of Palau. (Palau Historic Preservation Office)

consideration is relevant but rarely applied formally to traditional cultural properties; in most cases the property in question is a site or district which cannot be relocated in any event. Even where the property can be relocated, maintaining it on its original site is often crucial to maintaining its importance in traditional culture, and if it has been moved, most traditional authorities would regard its significance as lost.

Where a property is intrinsically portable, however, moving it does not destroy its significance, provided it remains "located in a historically appropriate setting."¹⁷ For example, a traditionally important canoe or other watercraft would continue to be eligible as long as it remained in the water or in an appropriate dry land context (e.g., a boathouse). A property may also retain its significance if it has been moved historically.¹⁸ For example, totem poles moved from one Northwest Coast village to another in early times by those who made or used them would not have lost their significance by virtue of the move. In some cases, actual or putative relocation even contributes to the significance of a property. The top-most peak of Mt. Tonaachaw in Truk, for example, is traditionally thought to have been brought from another island; the stories surrounding this magical relocation are parts of the mountain's cultural significance.

In some cases it may be possible to relocate a traditionally significant

property and still retain its significance, provided the property's "historic and present orientation, immediate setting, and general environment" are carefully considered in planning and executing the move.¹⁹ At Lake Sonoma in California, for example, the U.S. Army Corps of Engineers relocated a number of boulders containing petroglyphs having artistic, archeological, and traditional cultural significance to protect them from inundation. The work was done in consultation with members of the local Pomo Indian tribe, and apparently did not destroy the significance of the boulders in the eyes of the tribe.²⁰

Consideration C: Birthplaces and graves.

Birthplaces and graves of famous persons are not usually eligible for inclusion in the Register as such. If the birthplace or gravesite of a historical person is significant for reasons other than its association with that person, however, the property can of course be eligible.²¹ Thus in the case of a traditional cultural property, if someone's birth or burial within the property's boundaries was incidental to the larger traditional significance of the property, the fact that it occurred does not make the property ineligible. For example, in South Texas, the burial site of Don Pedrito Jaramillo, a well documented folk healer who practiced at the turn of the century, has for more than seventy years been a

culturally significant site for the performance of traditional healing rituals by Mexican American folk healers. Here the cultural significance of the site as a center for healing is related to the intangible belief that Don Pedrito's spirit is stronger there than in other places, rather than to the fact of his burial there.

On the other hand, it is possible for the birth or burial itself to have been ascribed such cultural importance that its association with the property contributes to its significance. Tahquitz Canyon in southern California, for example, is in a sense the traditional "birthplace" of the entire Cahuilla Indian people. Its status as such does not make it ineligible; on the contrary, it is intrinsic to its eligibility. Mt. Tonaachaw in Truk is according to some traditions the birthplace of the culture hero Souwooniras, whose efforts to organize society among the islands of Truk Lagoon are the stuff of Trukese legend. The association of his birth with the mountain does not make the mountain ineligible; rather, it contributes to its eligibility.

Consideration D: Cemeteries.

Cemeteries are not ordinarily eligible for inclusion in the Register unless they "derive (their) primary significance from graves of persons of transcendent importance, from age, from distinctive design values, or from association with historic events."²² Many traditional cultural properties contain cemeteries, however, whose presence contributes to their significance. Tahquitz Canyon, for example, whose major significance lies in its association with Cahuilla traditional history, contains a number of cemeteries that are the subjects of great concern to the Cahuilla people. The fact that they are present does not render the Canyon ineligible; on the contrary, as reflections of the long historical

¹⁷ National Register Bulletin 15.

¹⁸ National Register Bulletin 15.

¹⁹ National Register Bulletin 15.

²⁰ The location to which a property is relocated, and the extent to which it retains its integrity after relocation, must be carefully considered in judging its continued eligibility for inclusion in the National Register. See National Register Bulletin 15 for general guidelines.

²¹ National Register Bulletin 15.

²² National Register Bulletin 15.



Several hundred persons visit this shrine to Don Pedrito Jaramillo, *curandero* (faith healer), yearly to seek his healing spirit. (Curtis Tunnell, Texas Historical Commission)

association between the Cahuilla and the Canyon, the cemeteries reflect and contribute to the Canyon's significance. Thus the fact that a traditional cultural property is or contains a cemetery should not automatically be taken to render it ineligible.

Consideration E: Reconstruction.

A reconstructed property—that is, a new construction that ostensibly reproduces the exact form and detail of a property or portion of a property that has vanished, as it appeared at a specific period in time—is not normally eligible for inclusion in the Register unless it meets strict criteria.²³ The fact that some reconstruction has occurred within the boundaries of a traditional cultural property, however, does not justify regarding the property as ineligible for inclusion in the Register. For example, individuals involved in the revitalization of traditional Hawai'ian culture and religion have reconstructed certain religious structures on the island of Kaho'olawe; while the structures themselves might not be eligible for inclusion in the Register, their con-

struction in no way diminishes the island's eligibility.

Consideration F: Commemoration.

Like other properties, those constructed to commemorate a traditional event or person cannot be found eligible for inclusion in the Register based on association with that event or person alone.²⁴ The mere fact that commemoration is involved in the use or design of a property should not be taken to make the property ineligible, however. For example, traditional meetinghouses in the Republic of Palau, included in the National Register, are typically ornamented with "storyboards" commemorating traditional events; these derive their design from traditional Palauan aesthetic values, and thus contribute to the cultural significance of the structures. They connect the structures with the traditional history of the islands, and in no way diminish their cultural, ethnographic, and architectural significance. Similarly, the murals painted in many local post offices across the United States by artists employed during the 1930s by the Works Progress Administra-

tion (WPA) often commemorate local historical events, but this does not make the murals, or the buildings in which they were painted, ineligible for the Register.

Consideration G: Significance achieved within the past 50 years.

Properties that have achieved significance only within the 50 years preceding their evaluation are not eligible for inclusion in the Register unless "sufficient historical perspective exists to determine that the property is exceptionally important and will continue to retain that distinction in the future."²⁵ This is an extremely important criteria consideration with respect to traditional cultural values. A significance ascribed to a property only in the last 50 years cannot be considered traditional.

As an example, consider a mountain peak used by an Indian tribe for communication with the supernatural. If the peak has been used by members of the tribe for many

²³ National Register Bulletin 15.

²⁴ National Register Bulletin 15.

²⁵ National Register Bulletin 15.



Tahquitz Canyon, in southern California, is included in the National Register because of its association with the traditions of the Cahuilla Indians. The ancestors of the Cahuilla came into this world from a lower one at the beginning of time, and an evil spirit, named Tahquitz, is believed to live in the upper reaches of the canyon. (Thomas F. King)

years, or if it was used by members of the tribe in prehistory or early history, it may be eligible, but if its use has begun only within the last 50 years, it is probably not eligible.

The fact that a property may have gone unused for a lengthy period of time, with use beginning again only recently, does not make the property ineligible for the Register. For example, assume that the Indian tribe referred to above used the mountain peak in prehistory for communication with the supernatural, but was forced to abandon such use when it was confined to a distant reservation, or when its members were converted to Christianity. Assume further that a revitalization of traditional religion has begun in the last decade, and as a result the peak is again being used for vision quests similar to those carried out there in prehistory. The fact that the contemporary use of the peak has little continuous time depth does not make the peak ineligible; the peak's association with the traditional activity reflected in its contemporary use is what must be considered in determining eligibility.

The length of time a property has been used for some kinds of traditional purposes may be difficult to establish objectively. Many cultural uses may have left little or no physical evidence, and may not have been noted by ethnographers or early visitors to the area. Some such uses are explicitly kept from outsiders by members of the group ascribing significance to the property. Indirect evidence and inference must be weighed carefully, by or in consultation with trained ethnographers, ethnohistorians, and other specialists, and professional judgments made that represent one's best, good-faith interpretation of the available data.

Documenting Traditional Cultural Properties: General Considerations

Generally speaking, documentation of a traditional cultural property, on a National Register nomination form or in eligibility documentation, should include a presentation of the results of inter-

views and observations that systematically describe the behavior, beliefs, and knowledge that are germane to understanding the property's cultural significance, and an organized analysis of these results. The data base from which the formal nomination or eligibility determination documents are derived should normally include appropriate tape recordings, photographs, field notes, and primary written records.

Obtaining and presenting such documentation can present special challenges, however. First, those who ascribe significance to the property may be reluctant to allow its description to be committed to paper, or to be filed with a public agency that might release information about it to inappropriate people. Second, documentation necessarily involves addressing not only the physical characteristics of the property as perceived by an outside observer, but culturally significant aspects of the property that may be visible or knowable only to those in whose traditions it is significant. Third, boundaries are often difficult to define. Fourth, in part because of

the difficulty involved in defining boundaries, it is important to address the setting of the property.

The problem of confidentiality

Particularly where a property has supernatural connotations in the minds of those who ascribe significance to it, or where it is used in ongoing cultural activities that are not readily shared with outsiders, it may be strongly desired that both the nature and the precise location of the property be kept secret. Such a desire on the part of those who value a property should of course be respected, but it presents considerable problems for the use of National Register data in planning. In simplest terms, one cannot protect a property if one does not know that it is there.

The need to reveal information about something that one's cultural system demands be kept secret can present agonizing problems for traditional groups and individuals. It is one reason that information on traditional cultural properties is not readily shared with Federal agencies and others during the planning and environmental review of construction and land use projects. However concerned one may be about the impacts of such a project on a traditional cultural property, it may be extremely difficult to express these concerns to an outsider if one's cultural system provides no acceptable mechanism for doing so. These difficulties are sometimes hard for outsiders to understand, but they should not be underrated. In some cultures it is sincerely believed that sharing information inappropriately with outsiders will lead to death or severe injury to one's family or group.

As noted above, information on historic properties, including traditional cultural properties, may be kept confidential under the authority of §304 of the National Historic Preservation Act.²⁶ This may not always be enough to satisfy the concerns of those who value, but fear the results of releasing information on, traditional cultural properties. In some cases these concerns may make it necessary not to nominate

²⁶ For details regarding maintaining confidentiality, see National Register Bulletin 29, *Guidelines for Restricting Information About Historic and Prehistoric Resources*.

such properties formally at all, or not to seek formal determinations of eligibility, but simply to maintain some kind of minimal data in planning files. For example, in planning deployment of the MX missile system in Wyoming, the Air Force became aware that the Lakota Indian tribe in the area had concerns about the project's impacts on traditional cultural properties, but was unwilling to identify and document the precise locations and significance of such properties. To resolve this problem, Air Force representatives met with the tribe's traditional cultural authorities and indicated where they wanted to construct the various facilities required by the deployment; the tribe's authorities indicated which of these locations were likely to present problems, without saying what the nature of the problems might be. The Air Force then designed the project to minimize use of such areas. In a narrow sense, obviously, the Air Force did not go through the process of evaluation recommended by this Bulletin; no specific properties were identified or evaluated to determine their eligibility for inclusion in the National Register. In a broader sense, however, the Air Force's approach represents excellent practice in the identification and treatment of traditional cultural properties. The Air Force consulted carefully and respectfully with those who ascribed traditional cultural significance to properties in the area, and sought to accommodate their concerns. The tribe responded favorably to this approach, and did not take undue advantage of it. Presumably, had the tribe expressed concern about such expansive or strategically located areas as to suggest that it was more interested in impeding the deployment than in protecting its valued properties, the Air Force would have had to use a different approach.

In summary: the need that often exists to keep the location and nature of a traditional cultural property secret can present intractable problems. These must be recognized and dealt with flexibly, with an understanding of the fact that the management problems they may present to Federal agencies or State Historic Preservation Officers may pale into insignificance when compared with the wrenching cultural

conflicts they may present to those who value the properties.

Documenting visible and non-visible characteristics

Documentation of a traditional cultural property should present not only its contemporary physical appearance and, if known, its historical appearance, but also the way it is described in the relevant traditional belief or practice. For example, one of the important cultural locations on Mt. Tonaachaw in Truk is an area called *Neepisaram*, which physically looks like nothing but a grassy slope near the top of the mountain. In tradition, however, it is seen as the ear of *kuus*, a metaphorical octopus identified with the mountain, and as the home of *Saraw*, a warrior spirit/barracuda. Obviously a nomination of *Neepisaram* would be incomplete and largely irrelevant to its significance if it identified it only as a grassy slope near the top of the mountain.

Period of significance

Describing the period of significance for a traditional cultural property can be an intellectual challenge, particularly where the traditions of a Native American or Micronesian group are involved. In such cases there are often two different kinds of "periods." One of these is the period in which, in tradition, the property gained its significance—the period during which the Cahuilla people emerged from the lower world through Tahquitz Canyon, or the period when civilization came to Truk through the magical arrival of the culture-bearer Sowukachaw on Mt. Tonaachaw. Such periods often have no fixed referent in time as it is ordinarily construed by Euroamerican scholarship.²⁷ To the Cahuilla, their ancestors simply emerged from the lower world at the beginning of human life on earth, whenever that may have been. A Trukese traditional authority will typically say simply that Sowukachaw came to Truk "*nóomw nóomw nóomw*" (long, long ago). It is usually fruitless, and of little or no relevance to the eligibility of the property involved for inclusion in the National Register, to

²⁷ Except, perhaps, by some of the more esoteric subfields of cosmology and quantum mechanics.

try to relate this sort of traditional time to time as measured by Euroamerican history. Traditional "periods" should be defined in their own terms. If a traditional group says a property was created at the dawn of time, this should be reported in the nomination or eligibility documentation; for purposes of National Register eligibility there is no need to try to establish whether, according to Euroamerican scholarship or radiocarbon age determination, it really *was* created at the dawn of time.

The second period that is often relevant to a traditional property is its period of use for traditional purposes. Although direct, physical evidence for such use at particular periods in the past may be rare in the case of properties used by Native American groups, it is usually possible to fix a period of use, at least in part, in ordinary chronological time. Establishing the period of use often involves the weighing of indirect evidence and inference.

Interviews with traditional cultural authorities are usually the main sources of data, sometimes supplemented by the study of historical accounts or by archeological investigations. Based on such sources of data it should be possible at least to reach supportable inferences about whether generations before the present one have used a property for traditional purposes, suggesting that it was used for such purposes over fifty years ago. It is seldom possible to determine when the traditional use of property *began*, however—this tends to be lost, as it were, in the mists of antiquity.

Boundaries

Defining the boundaries of a traditional cultural property can present considerable problems. In the case of the Helkau Historic District in northern California, for example, much of the significance of the property in the eyes of its traditional users is related to the fact that

it is quiet, and that it presents extensive views of natural landscape without modern intrusions. These factors are crucial to the medicine making done by traditional religious practitioners in the district. If the boundaries of the district were defined on the basis of these factors, however, the district would take in a substantial portion of California's North Coast Range. Practically speaking, the boundaries of a property like the Helkau District must be defined more narrowly, even though this may involve making some rather arbitrary decisions. In the case of the Helkau District, the boundary was finally drawn along topographic lines that included all the locations at which traditional practitioners carry out medicine-making and similar activities, the travel routes between such locations, and the immediate viewshed surrounding this complex of locations and routes.

In defining boundaries, the traditional uses to which the property is



Individual structures can have traditional cultural significance, like this Yapese men's house, used by Yapese today in the conduct of deliberations on matters of cultural importance. (Yap State Historic Preservation Office)

put must be carefully considered. For example, where a property is used as the Helkau District is used, for contemplative purposes, viewsheds are important and must be considered in boundary definition. In an urban district significant for its association with a given social group, boundaries might be established where residence or use by the group ends, or where such residence or use is no longer reflected in the architecture or spatial organization of the neighborhood. Changes in boundaries through time should also be taken into consideration. For example, archeological evidence may indicate that a particular cultural practice occurred within particular boundaries in the past, but the practice today may occur within different boundaries—perhaps larger, perhaps smaller, perhaps covering different areas. The fact that such changes have taken place, and the reasons they have taken

place, if these can be ascertained, should be documented and considered in developing a rationale for the boundaries identified in the nomination or eligibility documentation.

Describing the setting

The fact that the boundaries of a traditional cultural property may be drawn more narrowly than they would be if they included all significant viewsheds or lands on which noise might be intrusive on the practices that make the property significant does not mean that visual or auditory intrusions occurring outside the boundaries can be ignored. In the context of eligibility determination or nomination, such intrusions if severe enough may compromise the property's integrity. In planning subsequent to nomination or eligibility determination, the Advisory Council's regulations

define "isolation of the property from or alteration of the character of the property's setting" as an adverse effect "when that character contributes to the property's qualification for the National Register." (36 CFR §800.9(b)(2)) Similarly, the Council's regulations define as adverse effects "introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting." (36 CFR §800.9(b)(3)) To assist in determining whether a given activity outside the boundaries of a traditional cultural property may constitute an adverse effect, it is vital that the nomination form or eligibility documentation discuss those qualities of a property's visual, auditory, and atmospheric setting that contribute to its significance, including those qualities whose expression extends beyond the boundaries of the property as such into the surrounding environment.

Documenting Traditional Cultural Properties: Completing Registration Forms

The following discussion is organized with reference to the National Register of Historic Places Registration Form (NPS 10-900), which must be used in nominating properties to the National Register. To the extent feasible, documentation supporting a request for a determination of eligibility should be organized with reference to, and if possible using, the Registration Form as well. Where the instructions given in National Register Bulletin 16, *Guidelines for Completing National Register of Historic Places Forms*, are sufficient without further discussion, this is indicated.

1. Name of Property

The name given a traditional cultural property by its traditional users should be entered as its **historic name**. Names, inventory reference numbers, and other designations ascribed to the property by others should be entered under **other names/site number**.

2. Location

Follow Bulletin 16, but note discussion of the problem of confidentiality above.

3. Classification

Follow Bulletin 16.

4. State/Federal Agency Certification

Follow Bulletin 16.

5. National Park Service Certification

To be completed by National Register.

6. Function or Use

Follow Bulletin 16.

7. Description

Follow Bulletin 16 as applicable. It may be appropriate to address both visible and non-visible aspects of the property here, as discussed under **General Considerations** above; alternatively, non-visible aspects of the property may be discussed in the statement of significance.

8. Statement of Significance

Follow Bulletin 16, being careful to address significance with sensitivity for the viewpoints of those who ascribe traditional cultural significance to the property.

9. Major Bibliographical References

Follow Bulletin 16. Where oral sources have been employed, append a list of those consulted and identify the locations where field notes, audio or video tapes, or other records of interviews are housed, unless consultants have required that this information be kept confidential; if this is the case, it should be so indicated in the documentation.

10. Geographical Data

Follow Bulletin 16 as applicable, but note the discussion of boundaries and setting under **General Considerations** above. If it is necessary to discuss the setting of the property in detail, this discussion should be appended as accompanying documentation and referenced in this section.

11. Form Prepared By

Follow Bulletin 16.

Accompanying Documentation

Follow Bulletin 16, except that if the group that ascribes cultural significance to the property objects to the inclusion of photographs, photographs need not be included. If photographs are not included, provide a statement explaining the reason for their exclusion.

Conclusion

The National Historic Preservation Act, in its introductory section, establishes that "the historical and cultural foundations of the Nation should be preserved as a living part of our community life in order to give a sense of orientation to the American people."²⁸ The cultural foundations of America's ethnic and social groups, be they Native American or historical immigrant, merit recognition and preservation, particularly where the properties that represent them can continue to function as living parts of the communities that ascribe cultural value to them. Many such properties have been included in the National Register, and many others have been formally determined eligible for inclusion, or regarded as such for purposes of review under Section 106 of the Act. Federal agencies, State Historic Preservation Officers, and others who are involved in the inclusion of such properties in the Register, or in their recognition as eligible for inclusion, have raised a number of important questions about how to distinguish between traditional cultural properties that are eligible for inclusion in the Register and those that are not. It is our hope that this Bulletin will help answer such questions.

²⁸ 16 U.S.C. 470(b)(2).

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Appendix I A Definition of "Culture"

Early in this Bulletin a shorthand definition of the word "culture" is used. A longer and somewhat more complex definition is used in the National Park Service's internal cultural resource management guidelines (NPS-28). This definition is consistent with that used in this Bulletin, and may be helpful to those who require further elucidation of the term. The definition reads as follows:

"Culture (is) a system of behaviors, values, ideologies, and social arrangements. These features, in addition to tools and expressive elements such as graphic arts, help humans interpret their universe as well as deal with features of their environments, natural and social. Culture is learned, transmitted in a social context, and modifiable. Synonyms for culture include 'lifeways,' 'customs,' 'traditions,' 'social practices,' and 'folkways.' The terms 'folk culture' and 'folklife' might be used to describe aspects of the system that are unwritten, learned without formal instruction, and deal with expressive elements such as dance, song, music and graphic arts as well as storytelling."

Appendix II Professional Qualifications: Ethnography

When seeking assistance in the identification, evaluation, and management of traditional cultural properties, agencies should normally seek out specialists with ethnographic research training, typically including, but not necessarily limited to:

- I. Language skills: it is usually extremely important to talk in their own language with those who may ascribe value to traditional cultural properties. While ethnographic fieldwork can be done through interpreters, ability in the local language is always preferable.
- II. Interview skills, for example:
 - The ability to approach a potential informant in his or her own cultural environment, explain and if necessary defend one's research, conduct an interview and minimize disruption, elicit required information, and disengage from the interview in an appropriate manner so that further interviews are welcome; and
 - The ability to create and conduct those types of interviews that are appropriate to the study being carried out, ensuring that the questions asked are meaningful to those being interviewed, and that answers are correctly understood through the use of such techniques as

translating and back-translating. Types of interviews normally carried out by ethnographers, one or more of which may be appropriate during evaluation and documentation of a traditional cultural property, include:

- * semi-structured interview on a broad topic;
 - * semi-structured interview on a narrow topic;
 - * structured interview on a well defined specific topic;
 - * open ended life history/life cycle interview; and
 - * genealogical interview.
- III. Skill in making and accurately recording direct observations of human behavior, typically including:
 - The ability to observe and record individual and group behavior in such a way as to discern meaningful patterns; and
 - The ability to observe and record the physical environment in which behavior takes place, via photography, mapmaking, and written description.
 - IV. Skill in recording, coding, and retrieving pertinent data derived from analysis of textural materials, archives, direct observation, and interviews.

Proficiency in such skills is usually obtained through graduate and post-graduate training and supervised experience in cultural anthropology and related disciplines, such as folklore/ folklife.

ATTACHMENT 2

BAD RIVER BAND OF LAKE SUPERIOR TRIBE OF CHIPPEWA INDIANS

CHIEF BLACKBIRD CENTER

P.O. Box 39 • Odanah, Wisconsin 54861

May 28, 2021

Nancy Komulainen – Dillenburg
Tribal Liaison
U.S. Army Corps of Engineers
Bemidjii Regulatory Field Office
4111 Technology Dr NE Suite 295
Bemidjii, MN 56601

Re: Traditional Cultural Resources Surveys Program Name: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act

Dear Ms. Komulainen – Dillenburg,

Under Section 404 of the Clean Water Act, we are sending the costs of services designed to identify and evaluate traditional cultural properties at attachment 3, along with costs to identify and evaluate resources specific to waters of the United States including some navigable waters.

Attached also are a statement of work at Attachment 1, detailed activities at Attachment 2 and partners at Attachment 4.

Weweni sa,



Eldred Corbine Sr
Vice – Chair

Attachments

cc: Tribal Council
Edith Leoso, Historic Preservation Officer

U.S. Army Corps of Engineers – Bemidji Regulatory Field Office
Traditional Cultural Resources Surveys
Program Name: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean
Water Act

Attachment 1 Statement of Work

Project Description:

The project is designed to identify and evaluate traditional cultural properties from a view of Bad River through literature research, field investigations and visits to select – type sites, community outreach to tribal elders and other tribal members and interviews.

Linguistics support involves discussing particular activities, such as fishing methods, and ideas of religion and cultural importance, frequently with no English equivalents for Ojibwe language.

Draft and final report development of the research, field data, and interviews identify eligibility as traditional cultural properties and scientific information needs, data gaps, and resources specific to waters of the United States including some navigable waters.

Activities include:

1. Project coordination and execution of literature research, field investigations and visits to select – type sites, community outreach and interviews, data compilation and draft and final report development including costs related to travel, equipment and supplies.
2. Contractual costs connected with language specialist support, literature review, field investigations, interviews, data compilation and report development.

U.S. Army Corps of Engineers – Bemidji Regulatory Field Office
Traditional Cultural Resources Surveys
Program Name: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean
Water Act

Attachment 2 Detailed Activities

1. Personnel. Project coordination and execution of literature research, field investigations and visits to select – type sites, community outreach and interviews, data compilation and draft and final report development including costs related to travel, equipment and supplies.

a. Full-time Project Coordinator: one full-time Project Coordinator will be hired to plan, coordinate, and execute the Elder interviews.

i. The Project Coordinator will be paid at a rate of \$20.73/hr. The rate reflects the rate that the THPO would receive, if the THPO implemented the project.

ii. The Project Coordinator may receive such standard fringe benefits of a full-time employee to include: health insurance (optional), life insurance, State Unemployment Tax Act (SUTA), Federal Income Tax (FICA), Worker’s Compensation Benefits and Medicare.

b. Travel. Travel for Project Coordinator to train and organize interviewers, travel to sites and/or elder homes to deliver tablets and train in use, travel to interview and record elders. We anticipate about 150 miles a week, for 52 weeks at \$.56/mile.

Equipment. To facilitate the recording of interviews, recording equipment, drives, tablets, a printer, and necessary office furniture to include a desk and chair, will be purchased.

Supplies. To facilitate the recording of interviews, printer paper, ink, consumable office supplies, and a cell phone, will be purchased.

2. Contractual

Interviewers: 10 interviewers will be contracted to conduct interviews. The contractor(s) will be contracted at approximately \$125/interview hr. x 500hrs.

Data compilation: an individual or entity will be contracted to provide data compilation and organization. The contractor will be contracted at approximately \$125/hr. x 500 hrs.

U.S. Army Corps of Engineers – Bemidji Regulatory Field Office
Traditional Cultural Resources Surveys
Program Name: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act

Attachment 2 Detailed Activities
Page 2 of 2

Report development: an individual or entity will be contracted to develop the final report. The contractor will be contracted at approximately \$125/hr. x 40hrs.

Literature review: an individual or entity will be contracted to provide a literature review. The contractor will be contracted at approximately \$125/hr. x 80 hrs.

Field Survey: an individual or entity will be contracted to provide field surveys. The contractor will be contracted at a negotiated rate not to exceed \$200,000.

Language Specialist: an individual or entity will be contracted to provide Ojibwe language specialization to review field surveys and interviews, to identify the cultural connection to plants, animals, birds, trees, and other traditional resources. The contractor will be contracted at a negotiated rate not to exceed \$150,000.

3, Other Direct Costs

To enable and facilitate the recording of interviews, traditional gifts and monetary honorarium will be paid to Elders. The honorarium will be approximately \$150/hr. x 2hrs/Elder for up to 250 Elders. Gifts, including tobacco, will be purchased to give to each elder.

4. Indirect Costs/Administrative Fee

In the absence of an approved indirect cost rate, we will charge a comparable Administrative Fee of 15.41% of direct expenses, less costs of equipment (over \$5,000/item with a usable life of more than one year.) and contractual.

**U.S. Army Corps of Engineers – Bemidji Regulatory Field Office
Traditional Cultural Resources Surveys**

Program Name: Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act

Attachment 3 Costs of Services

Item		Amount
A. Personnel		\$ 43,118
Full-time Project Coordinator		
B. Fringe Benefits		\$ 14,227
C. Travel		\$ 4,368
D. Equipment		\$ 12,500
E. Supplies		\$ 12,500
F. Contractual		
Interviewers		\$ 62,500
Data compilation		\$ 62,500
Report development		\$ 5,000
Literature review		\$ 10,000
Field Survey		\$200,000
Language Specialist		\$150,000
G. Construction		\$ 0
H. Other Direct Costs		
		\$87,500
	Total Direct Costs	\$ 664,213
I. Indirect Costs		\$ 46,867
TOTAL PROJECT COSTS	(projected)	\$711,080

U.S. Army Corps of Engineers—Bemidjii Regulatory Field Office
Traditional Cultural Resources Survey

Attachment 4 Tribal Historic Preservation Officers

Forest County Potawatomi Community

Michael LaRonge
5320 Wensaut Lane
PO Box 340
Crandon, WI 54520

Lac Courte Oreilles Band of Lake

Superior Chippewa

Brian Bisonette
13394 West Trepania Road
Hayward, WI 54543

Lac du Flambeau Band of the Lake

Superior Chippewa

Sarah Schuman
PO Box 67
Lac du Flambeau, WI 54538

Red Cliff Band of Lake Superior

Chippewa

Marvin DeFoe
88455 Pike Road
Bayfield, WI 54814

Sokaogon Chippewa Community

Cassandra Graikowski
3051 Sand Lake Road
Crandon, WI 54520

St. Croix Chippewa Indians of Wisconsin

Wanda McFaggen
24663 Angeline Avenue
Webster, WI 54893

Ho-Chunk Nation

William Quackenbush
PO Box 667
Black River Falls, WI 54615

Menominee Indian Tribe of Wisconsin

David Grignon
PO Box 910
Keshena, WI 54135

**Keweenaw Bay Indian Community of the
Lake Superior Band of Chippewa Indians**
Alden Connor
16429 Bear Town Rd.
Baraga, MI 49908

**Lac Vieux Desert Band of Lake Superior
Chippewa Indians**
Giiweghiizigookway Martin
P.O. Box 249
Watersmeet, MI 49969

Bois Forte Band of Chippewa Indians
Jaylen Strong
1500 Bois Forte Road
Tower, MN 55790

**Fond du Lac Band of Lake Superior
Chippewa**
Jill Hoppe
1720 Big Lake Road
Cloquet, MN 55720

**Grand Portage Band of Lake Superior
Chippewa**
Rob Hull
PO Box 428
Grand Portage, MN 55605

Leech Lake Band of Ojibwe
Amy Burnette
190 Sailstar Drive NE
Cass Lake, MN 56633

Mille Lacs Band of Ojibwe
Terry Kemper
43408 Oodena Drive
Onamia, MN 56359

Red Lake Band of Chippewa Indians
Kade Ferris
PO Box 274
Red Lake, MN 56671

**White Earth Nation of Minnesota
Chippewa**
Jaime Arsenault
PO Box 418
White Earth, MN 56591

ATTACHMENT 3

Fossil Fuels

Spills on Aging Enbridge Pipeline Have Topped 1 Million Gallons, Report Says

The analysis of federal pipeline safety data comes as politicians from both parties raise questions about Line 5 and a tribe has voted not to renew its easement.



By Sabrina Shankman 

April 26, 2017



Workers try to clean up an oil spill in the Kalamazoo River in Battle Creek, Michigan, after a different pipeline owned by Enbridge ruptured and leaked in July 2010. Credit: Bill Pugliano/Getty Images

An aging pipeline that passes through a critical stretch of the Great Lakes region has had at least 29 leaks in its 64-year history—spilling more than 1 million gallons of oil and gas liquids, according to information released this week based on federal data.

The spills along Line 5, which range from 285,600 gallons to 8 gallons and span the years 1968 to 2015, illustrate a steady drumbeat of incidents. Environmentalists and a tribe that lives along the line say this checkered past lends credibility to the fear that accidents do happen—and that should an **oil spill** happen in the wrong place, it could result in catastrophe.

Line 5 carries as much as 540,000 barrels of fossil fuels each day from Superior, Wisconsin, through Michigan to Sarnia, Ontario, and is owned by Canadian pipeline giant Enbridge. It passes under the Straits of Mackinac, where Lake Michigan and Lake Huron meet, which has provoked concerns that if the pipeline were to leak, it could contaminate the Great Lakes. Just last month, Enbridge acknowledged that the outer casing of underwater pipeline in that area had fallen off in 18 places.

“There’s mounting evidence for serious concern for the Great Lakes,” said Mike Shriberg, the executive director of the Great Lakes Region of the National Wildlife Federation, which released the data on Line 5. “The Great Lakes provide water for 40 million people. They are critical to the economy...This is a potentially high-consequence situation here, and what we’re finding—and this is just the newest piece of it—is that there’s increasing cause for concern.”

The data about the pipeline’s spills was pulled from the federal Pipeline and Hazardous Materials Safety Administration, which regulates pipelines.

Enbridge spokesman Michael Barnes took issue with the National Wildlife Federation’s assessment of Line 5’s leak history, stating that the line has had just three leaks in the last 15 years, which spilled 21 barrels of oil (or 882 gallons), all of which was recovered. However, he acknowledged that during that same period, Line 5 had 11 incidents of product released at

Enbridge facilities, like metering and pump stations. He said the majority of what was spilled was recovered, though did not specify how much.

The National Wildlife Federation appears to count all 14 incidents as spills, resulting in a total of 654 barrels (or 27,468 gallons).

Enbridge has been facing political pressure over Line 5. In January, the Bad River Band of the Lake Superior Tribe of Chippewa Indians **voted not to renew easements** that allowed the pipeline to pass through tribal lands

Attachment 3 to MNRD THPO Report

in northern Wisconsin. The easements expired in 2013 and are typically needed for pipelines on native land.

Robert Blanchard, chairman of the Bad River Band, said that he hadn't known there were so many spills along Line 5, but that he wasn't surprised. "A line that's 64 years old, you're going to have some questions about that. Is it really as good as they say it is? I don't think so."

Blanchard said they have no intention of renewing the easement, and that they may end up in court defending their right to do so.

At the same time, state and national officials are pushing legislation to either shut the line down or review whether it is safe enough to continue operating.

On Jan. 12, U.S. Reps. Dave Trott (R-Mich.) and Debbie Dingell (D-Mich.) **introduced legislation** calling for a shutdown of the pipeline if a federal study determines it poses significant threat to the Great Lakes.

"This new data raises significant concerns about the integrity of Line 5 and the safety of the Great Lakes water supply, our economy and way of life," Dingell said in an emailed statement to ICN. "A spill in this area would pose a serious threat to the entire Great Lakes region."

The legislation has been referred to the Energy and Commerce Committee, which Dingell is a member of, and the Transportation and Infrastructure Committee.

At the state level, Republican Sen. Rick Jones introduced legislation in late March to shut down the line.

While politicians from both sides of the aisle raise questions about the pipeline's safety and its potential threat to the Great Lakes, the Trump administration has moved in a different direction. In an executive order issued on Jan. 24, **President Trump ordered an expedited approval process** for high priority infrastructure projects—including pipelines. And the administration's proposed budget would **eliminate funding for the Great Lakes Restoration Initiative**, a program that directs funds to various

state and local environmental projects to protect and restore the lakes.

At a [Michigan Pipeline Safety Advisory Board meeting](#) on March 13, Enbridge acknowledged that where the pipeline crosses under the Straits of Mackinac, there are 18 points that have “delaminated,” meaning an outer casing has fallen off. The company said the pipeline is still functioning safely, and there are no locations where bare pipeline is exposed.

“Right now we are focused on several large safety projects scheduled for this summer,” said Barnes, the Enbridge spokesman. “We will be conducting a hydrotest on Line 5 in the Straits, installing additional anchor supports, and completing a study of the Line 5 coating.”

Under a settlement between the Environmental Protection Agency and Enbridge over its pipeline spill in [Michigan in 2010](#), [Enbridge must spend \\$110 million on](#)

safety upgrades across its North American pipeline network, including on Line 5. The Grand Traverse Band of Ottawa and Chippewa Indians in Michigan **is challenging that deal**.

Carl Weimer, the executive director of the Pipeline Safety Trust, said that the map released by the National Wildlife Federation shows that concerns about pipeline safety and Line 5 should extend beyond the most obviously sensitive areas. “It’s not only where it crosses the Straits,” he said. “There are other concerns.” The spills on the map are found along the entire path of the pipeline.

He also noted that the majority of the spills had been identified by local workers or the public, not by a detection system.

Weimer took heart in one aspect of the data, though. “It appears the size of the spills has decreased dramatically since the late ‘60s, early ‘70s,” he said. “That is what we would hope to see as basic regulations, more inspection requirements, and better materials and technology are employed.”

Sabrina Shankman

Reporter, Maine

Sabrina Shankman is a reporter for InsideClimate News focusing on the Arctic. She joined InsideClimate in the fall of 2013, after helping produce documentaries and interactives for the PBS show “Frontline” since 2010 with 2over10 Media. She worked as a co-producer, field producer or associate producer on the Frontline films League of Denial (2013); Money, Power and Wall Street (2012); A Perfect Terrorist (2011); Dr. Hotspots (2011) and Law and Disorder (2010). In 2012, she produced the online interactive A Perfect Terrorist: David Coleman Headley’s Web of Betrayal, which won an Overseas Press Club of America award. She is the author of Meltdown: Terror at the Top of the World. She has also reported for ProPublica, the Wall Street Journal and the Associated Press. Her work has

been honored by the Society of Professional Journalists and the Society of Environmental Journalists, and she was named a finalist for the Livingston Awards for Young Journalists in 2010 and again in 2015. Shankman has a Masters in Journalism from UC Berkeley's Graduate School of Journalism.



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Attachment 3 to MNRD THPO Report

By Kiley Bense

Fossil Fuels

FERC Says it Will Consider Greenhouse Gas Emissions and ‘Environmental Justice’ Impacts in Approving New Natural Gas Pipelines

Environmentalists applauded the shifts in policy, while one Senate natural gas advocate said the guidelines would make approvals for new pipelines “next to impossible.”

By Zoha Tunio

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News

Enbridge Line 5 has spilled at least 1.1M gallons in past 50 years

Updated: Jan. 19, 2019, 6:06 p.m. | Published: Apr. 26, 2017, 10:35 a.m.



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By [Garret Ellison J.gellison@mlive.com](mailto:Garret.Ellison@mlive.com)

MACKINAC COUNTY, MI -- In 1990, a helicopter patrol spotted a patch of oil on the ground about a mile south of Millecoquins Lake near Engadine. The oil was from [Enbridge Line 5](#), which had spilled 630 gallons through a pinhole leak.

That spill is among almost 30 spills along the pipeline -- many of them previously unknown or largely forgotten incidents -- unearthed in federal records by National Wildlife Federation (NWF) pipeline safety specialist and researcher Beth Wallace.

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The organization released the results of Wallace's research this week, estimating that Line 5, which runs from Superior, Wis., to Sarnia, Ontario by way of Michigan, has spilled at least 1.13 million gallons of oil in 29 incidents since 1968.

The data comes from inspection records obtained by the NWF through the Freedom of Information Act and others put online recently by the Pipeline Hazardous Materials Safety Administration (PHMSA), which Congress has required to make more information accessible to the public.

The NWF considers its estimate conservative because the research identified known spills, like a 1980 spill in Hiawatha National Forest, that weren't in federal records. Regulatory requirements during much of the 1980s stipulated Enbridge only had to report spills to the state, not the federal government.

Many incidents were related to construction mishaps. Others were caused by manufacturing defects in the pipe, such as stress cracking along a seam.

The most common theme was the method of spill discovery.

"Only one spill I could find was discovered by leak detection systems," said Wallace, a Pipeline Safety Trust board member who co-authored the NWF's 2012 "Sunken Hazard" report that helped galvanize scrutiny on the Line 5 section under the Straits of Mackinac.

Many of the spills incident records do not say how the leak was initially detected. The remainder were found by the public or Enbridge staff on the ground.

The NWF says that's a troubling reminder of the colossal failure that caused the Line 6B spill into the Kalamazoo River in 2010, when the company didn't notice the pipeline had ruptured until being alerted by an outside caller 17 hours later.

The NWF has taken an aggressive stance against the pipeline, fighting the government and Enbridge in court to shut down the controversial submerged Line 5 segment. The group says the amount of manufacturing and construction defects and weld failures revealed by Wallace's research call into question the overall integrity of the Line 5 system.

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"This newly-released data shows a worse history of spill and detection systems failing over time," said Mike Shriberg, NWF Great Lakes regional director, who also sits on the state of Michigan's Pipeline Safety Advisory Board.

Enbridge spokesperson Ryan Duffy dismissed the findings.

"This is not new information and we have addressed this issue many times in the past," Duffy said via email. "Over the past fifteen years, there have been three incidents on Line 5 that have resulted in a total of approximately 21 barrels of product being released off the mainline. All of the product released during these three incidents was recovered."

"There has never been an incident on Line 5 at the Straits."

Duffy did not respond to questions about whether Enbridge disputed any of the estimates reached by the NWF or why only the last 15 years of spill history is a relevant benchmark for a pipeline that began operating in 1953.

Although the line is 64 years old, 1968 is the earliest year of data available

The most recent spill is a small one, about 8 gallons, caused by an equipment failure on March 5, 2015 near Marenisco that Enbridge staff discovered while conducting a station review. The cause was recorded as a seal that failed due to "normal wear and tear."

According to the data, the largest spills happened earlier in Line 5's history -- apart from a fairly well known 222,600-gallon oil and natural gas liquid spill near Crystal Falls in 1999, caused by the line lying on a rock, which forced the evacuation of about 500 people after responders ignited a vapor cloud that sparked a 36-hour long fire.

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In 1968 near Lake Gogebic, a 285,600-gallon spill was caused by a weld failure, but PHMSA records lack more detail beyond "equipment rupturing pipe."

In 1972 near Iron River, a 252,000-gallon spill was caused by a longitudinal weld failure. A resulting fire injured two people.

Two people were also injured a few years later in 1976 when another 210,000-gallon spill near Lake Gogebic was caused by a "pipe failure."

The 1990 spill spotted by chopper patrol is actually one of two along the pipeline near Engadine. The other

occurred in 1972 when a defective weld caused a 4,200-gallon spill just south of the Krause Road and Hiawatha Trail intersection, near the headwaters of O'Neil Creek, which flows south a few miles into Lake Michigan.

Wallace's familiarity with the pipeline and regulatory jargon were key in ferreting out Line 5 spills in the PHMSA records, which in some cases required knowing "what kind of mile markers Enbridge uses to read notes in the database."

Wallace said mapping the data reveals incident clusters that may indicate potential chronic problems with certain sections of pipe, which is not "seamless" through most of its path through Michigan -- the exception being under the straits -- but rather rolled like a cigarette and welded together with a seam.

On its 645-mile journey from Wisconsin to Ontario, Line 5 crosses 23 counties and 360 Michigan waterways.

"The Kalamazoo River spill didn't happen in the river," she said. "The oil made its way there through a major tributary."

Wallace said the number of spills caused by stress cracking along the longitudinal pipe seam is a major red flag. That kind of failure caused the Line 6B disaster.

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Such stress cracking along the seam isn't limited to the Upper Peninsula section. The NWF released 2011 inspection photos obtained through FOIA that show stress cracking along the longitudinal seam between Bay City and Sarnia.



A FOIA photo from a March 13, 2011 Enbridge inspection report shows stress corrosion cracking the length of the longitudinal seam on a section of Line 5 located between Bay City and Sarnia.

Advertisement

"That can be very dangerous," she said. "That's a big problem for the overall pipeline if it's system-wide."

"We should be talking about this as we consider long term planning for this pipeline."

The NWF research comes ahead of a pair of state-ordered studies on Line 5 commissioned by the pipeline safety board that are expected out in June.

Meanwhile, Michigan legislators on both sides of the aisle are targeting the pipeline. Sen. Rick Jones, R-Grand Ledge, has reintroduced a bill from last session that would require all existing submerged pipelines undergo a third-party review and be shut down if the risk is too great.

Michigan House Democrats say they are preparing a bill package that would tighten pipeline regulation and give the Michigan Department of Environmental Quality regulatory oversight of pipelines crossing the state.

In March, Enbridge admitted that parts of Line 5 under the straits had lost its outer wrap anticorrosion coating, although there's no bare metal exposed.

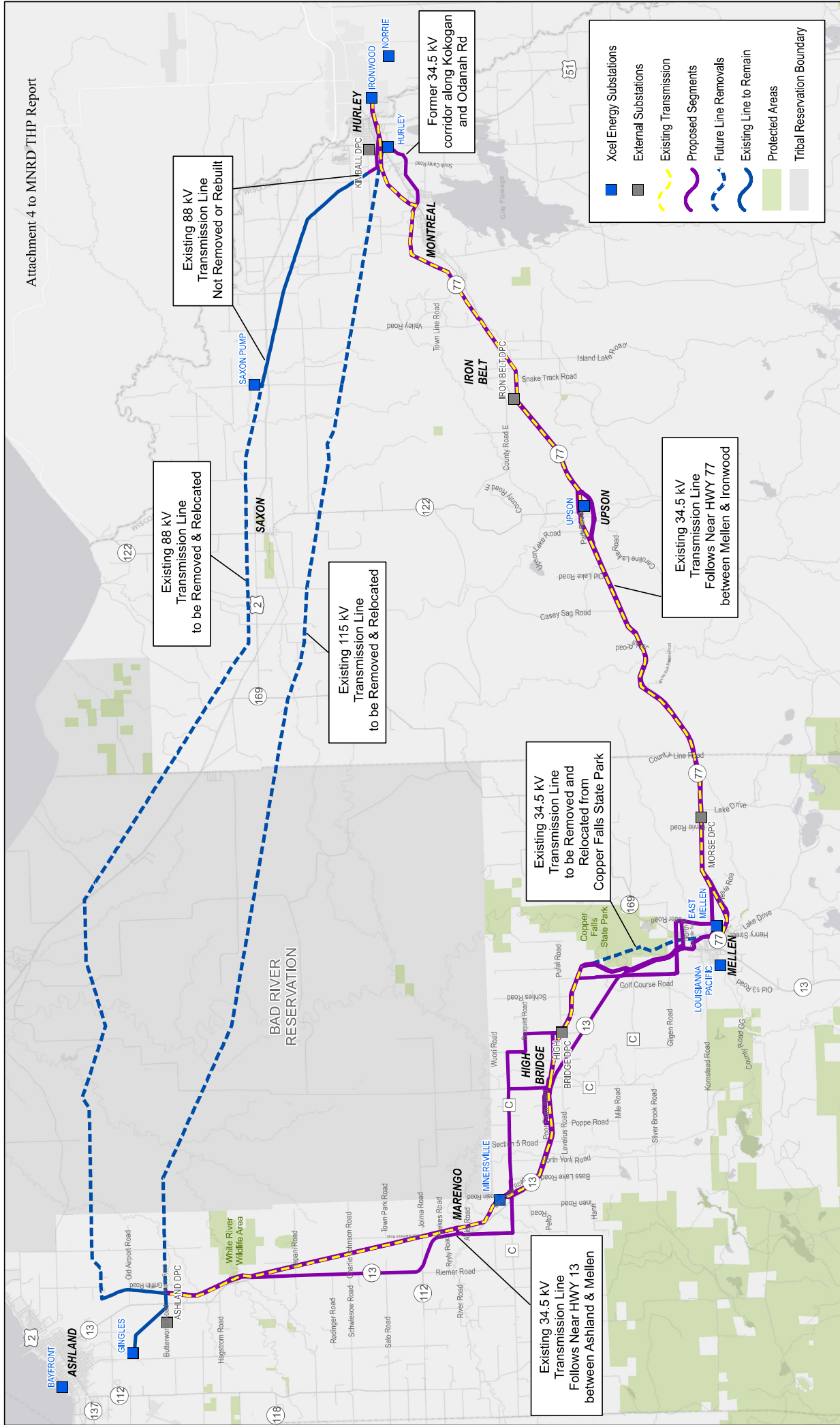
Enbridge says it plans to test Line 5 under the straits at its original 1953 pressure, install more anchor supports and take a closer look at the defective coating.

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Around the Web

Tax forms. Everything about you all in one place. Attachment 3 to MNRD THPO Report
Tax forms can be on-stop shops for ID thieves. Lifelock by Norton works to fix tax-related identity theft and more.

ATTACHMENT 4



Ashland - Ironwood Transmission Line Relocations Proposed Route Segments - February 2021



Disclaimer: This Attachment is for informational purposes only. Xcel Energy does not warrant, represent or carry any warranty. Data courtesy of Xcel Energy, Merjent, Bad River Indian Reservation, USGS PACUS, WDNR, Merjent and ESRI.

ATTACHMENT 5

[\(/\)](#)[\(/\)](#)[\(/\)](#)

GREAT LAKES MINING



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GREAT LAKES MINING

The Great Lakes region contains nearly 85 percent of North America's surface freshwater, and more than 20 percent of the world's supply of surface freshwater. Lake Superior alone holds 10 percent of the world's readily available freshwater, and by surface area is the world's largest freshwater lake. This immense lake, however, is facing a major threat of toxic pollution from numerous large-scale mining proposals. In addition to widespread mining and exploration in Ontario, Canada, major mines are being proposed or already active within the Lake Superior watershed in northern Minnesota, northern Wisconsin and the Upper Peninsula of Michigan. This includes the “Duluth Complex” in Minnesota, which stretches from the Canadian border south to Duluth, and which may contain the world's largest untapped copper deposit — an estimated *4 billion tons* of copper-nickel ores that may be worth more than \$1 trillion.

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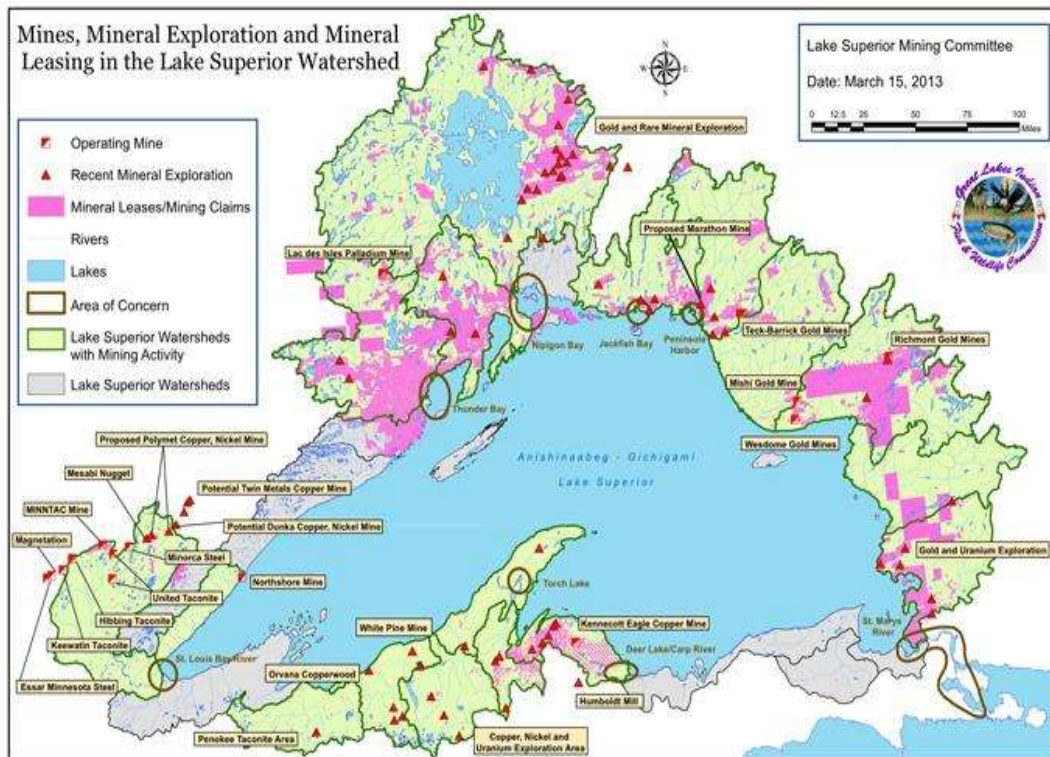
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Contact: Marc Fink (<mailto:mfink@bi>

<mailto:rserraglio@biologicaldiversity>



(map.html)

[Click here or on the map above for a larger version.] (map.html)

The primary concern with the current mining proposals in the Lake Superior watershed can be summed up in one word: water. This region is defined by its lakes, rivers, streams and high-quality wetlands. Mining for copper, nickel and other heavy metals is often referred to as “sulfide mining,” because these metals are found bonded to sulfur in sulfide ores. Mining twin metals proposals in the region would produce millions of tons of waste rock containing sulfides, which when exposed to air and moisture will generate sulfuric acid that can leach into the surrounding streams, wetlands and lakes. This phenomenon is known as “acid mine drainage,” and is responsible for massive water pollution problems at mine sites throughout the western United States. The Center is working with our allies in the region to help ensure that the Lake Superior watershed remains clean and safe for fish, wildlife and future human generations.

MINNESOTA'S COPPER RUSH

The untapped potential of the Duluth Complex has triggered exploratory drilling for copper, nickel and other heavy metals across northeastern Minnesota. In the past few years, mining companies have applied for many more than 100 permits to conduct exploratory drilling on the Superior National Forest of northeast Minnesota. The state of Minnesota owns the mineral rights of much of this region, and has leased many more than 100,000 acres of state mineral rights for exploration. Any new heavy-metals mines in northeastern Minnesota would be in addition to the many open-pit iron-ore and taconite mines in the region, which have already left behind a legacy of toxic pollution and significant harm to water quality and wild rice endurance.

POLYMET'S NORTHMET MINE in minnesota

The first proposed copper mine in Minnesota to have reached the environmental review stage is PolyMet's proposed NorthMet mine, to be located on the Superior National Forest. According to the draft environmental impact statement, this open-pit mine would generate 400 million tons of waste rock over 20 years, directly affect more than 800 acres of high-quality wetlands, and destroy 2 square miles of lynx (http://www.biologicaldiversity.org/species/mammals/Canada_lynx/index.html) and wolf (http://www.biologicaldiversity.org/species/mammals/Great_Lakes_gray_wolf/index.html) habitat. Major

Attachment 5 to MNRD THPO Report

environmental concerns triggered critical comments from the Environmental Protection Agency and other agencies and organizations, which resulted in the need for changes to the project and a new environmental impact statement.

TWIN METALS MINE IN MINNESOTA

The second copper-nickel mine proposal likely to reach the environmental review stage in Minnesota is the proposed Twin Metals mine, located near the Boundary Waters Canoe Area Wilderness. With a potential mining area covering more than 25,000 acres, Twin Metals would be the largest underground mine in Minnesota's history — and in fact one of the largest mines in the world. As stated by its proponent mining company, “It will be a lot like an underground city.”

GOGEBIC'S IRON ORE MINE IN THE PENOKEE HILLS OF WISCONSIN

Gogebic Taconite LLC (GTAC) is a Florida-based mining company aggressively promoting a four-mile-long open-pit iron-ore mine in the Penokee Range in northern Wisconsin. GTAC has already pushed through a new bill to significantly weaken Wisconsin's mining laws, and the company is actively exploring for further mining opportunities in the region. The currently proposed iron-ore mine is planned for the headwaters of Tyler Forks River, which flows into Bad River and then Lake Superior. The wild rice and wetlands ecosystem in the lower reaches of the Bad River near Lake Superior are of global ecological significance, and would likely be polluted by the proposed mine.

KENNECOTT'S EAGLE MINE AND ORVANA'S COPPERWOOD MINE IN THE UPPER PENINSULA

In addition to the proposed new mines and mineral exploration in northern Minnesota and Wisconsin, there are two new copper mines in the Upper Peninsula of Michigan that are both located close to Lake Superior. The first is the Eagle copper-nickel mine proposed by Kennecott Minerals, a subsidiary of Rio Tinto, located in the Yellow Dog Plains. The second is Orvana's proposed Copperwood mine, located near the Porcupine Mountains.

Photo by sawmillsergio/Flickr

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SUBJECT=Website%20Recommendation%3A%20Great%20Lakes%20Mining&BODY=View%20the%20page%20here%3A%20https%3A//www.biologicaldiversity.o

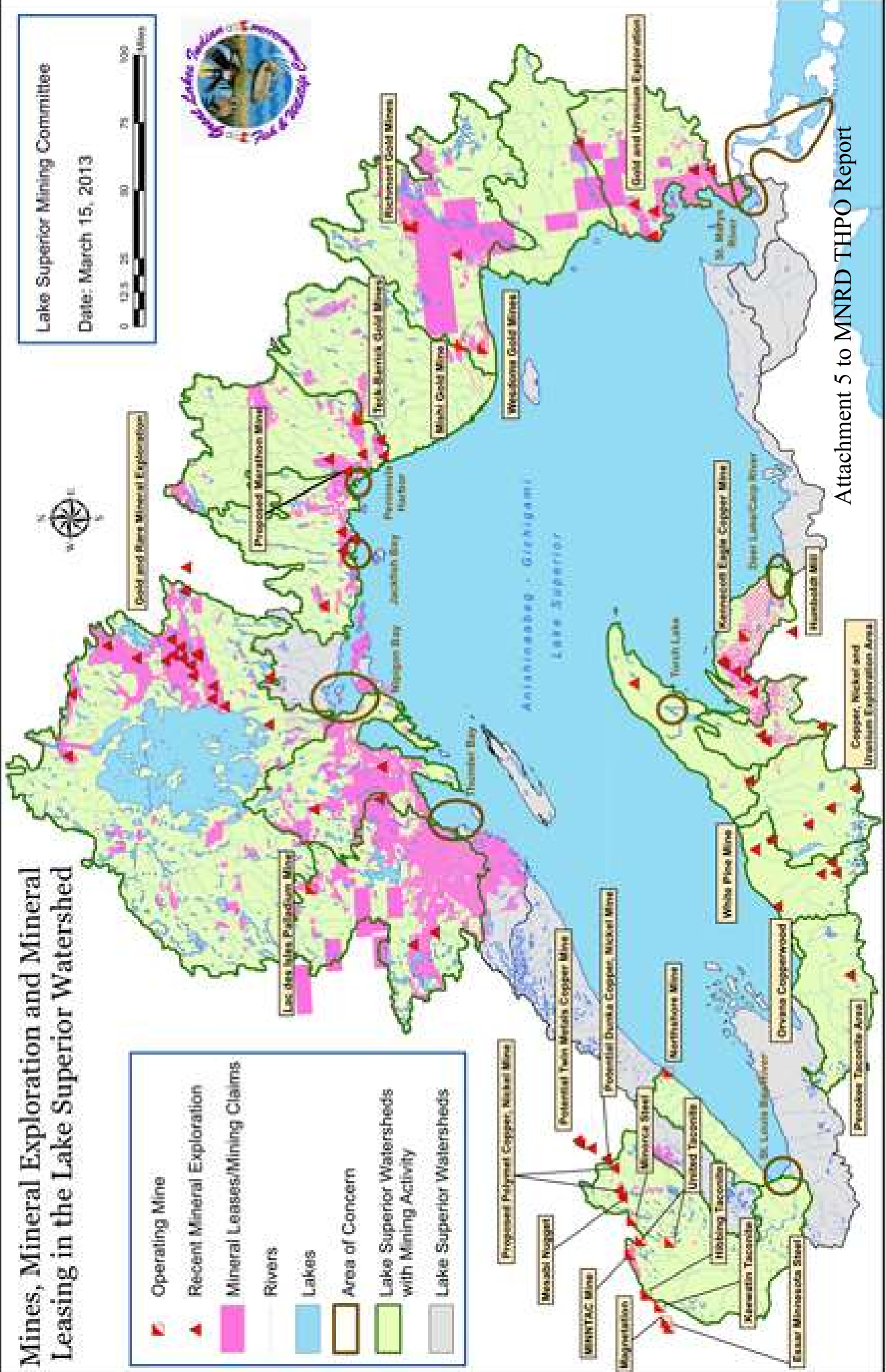
Mines, Mineral Exploration and Mineral Leasing in the Lake Superior Watershed

Lake Superior Mining Committee

Date: March 15, 2013



- Operating Mine
- Recent Mineral Exploration
- Mineral Leases/Mining Claims
- Rivers
- Lakes
- Area of Concern
- Lake Superior Watersheds with Mining Activity
- Lake Superior Watersheds



Attachment 5 to MNRD THPO Report

STATE OF MINNESOTA

DISTRICT COURT - CIVIL DIV.

COUNTY OF ST. LOUIS

SIXTH JUDICIAL DISTRICT

Case Type: Other Civil

CASE TITLE:

Court File # _____

Center for Biological Diversity,
Minnesota Center for Environmental Advocacy,
Save Lake Superior Association,
Friends of the Boundary Waters Wilderness,
and Indigenous Environmental Network,

BY: _____
4
COURT CLERK

Plaintiffs,

**COMPLAINT FOR
DECLARATORY
AND INJUNCTIVE RELIEF**

v.

Iron Range Resources and Rehabilitation,
an agency of the State of Minnesota; and
Iron Range Resources and Rehabilitation Board,

Defendants.

INTRODUCTION

1. This is a civil action for declaratory and injunctive relief under the Minnesota Environmental Policy Act (“MEPA”), Minn. Stat. Ch. 116D. Plaintiffs challenge Defendants Iron Range Resources and Rehabilitation, and the Iron Range Resources and Rehabilitation Board’s (collectively “Iron Range Resources”) December 16, 2010 approval and authorization of a four million dollar loan to PolyMet Mining Company prior to the completion of the required environmental review process for PolyMet’s proposed NorthMet mine in northeastern Minnesota. The Iron Range Resources’ approval and authorization of this loan, which would be used by PolyMet to purchase lands necessary for a proposed land exchange with the United States Forest Service in furtherance of its NorthMet mine proposal, violates MEPA’s prohibition

on taking action to further proposed projects prior to completion of the environmental review process. Plaintiffs seek injunctive relief to enjoin Iron Range Resources from proceeding with this loan, and a declaration that the decision approving the loan is void as a matter of law.

PARTIES

2. Plaintiff Center for Biological Diversity is a nonprofit corporation organized under the laws of the State of New Mexico, with over 40,000 members including hundreds of members in Minnesota. The Center has an office in Duluth, Minnesota.

3. Plaintiff Minnesota Center for Environmental Advocacy (“MCEA”) is a Minnesota-based non-profit environmental organization whose mission is to use law, science, and research to preserve and protect Minnesota’s wildlife, natural resources, and the health of its people. MCEA is incorporated under Minnesota law and is located at 26 E. Exchange Street, Suite 206, St. Paul, Minnesota 55101.

4. Plaintiff Save Lake Superior Association is a nonprofit corporation organized under the laws of the State of Minnesota. The Association began in 1969, and is the oldest citizen group working exclusively to preserve and protect Lake Superior. Save Lake Superior Association’s principal office is located in Two Harbors, Minnesota.

5. The Friends of the Boundary Waters Wilderness is a nonprofit corporation with approximately 2,400 members. The Friends mission is to protect, preserve and restore the wilderness character of the Boundary Waters Canoe Area Wilderness and the Quetico-Superior Ecosystem. The organization was founded in 1976 and is located at 401 North Third Street, Suite 290, in Minneapolis, Minnesota, 55401.

6. Plaintiff Indigenous Environmental Network is a nonprofit corporation organized under the laws of the State of Minnesota. Indigenous Environmental Network's principal office is located in Bemidji, Minnesota.

7. Defendant Iron Range Resources and Rehabilitation is a state agency located in Eveleth, Minnesota. *See* Minn. Stat. § 298.22; <http://www.ironrangeresources.org>. Defendant Iron Range Resources and Rehabilitation Board consists of 13 members, five of whom are state senators appointed by the Subcommittee on Committees of the Rules Committee of the senate, and five of whom are representatives, appointed by the speaker of the house. Minn. Stat. § 298.22, Subd. 2. The remaining members are appointed by the senate majority leader, the speaker of the house, and the Governor and must be non-legislators who reside in a taconite assistance area as defined by statute. *Id.*

8. Defendants are referred to collectively herein as "Iron Range Resources."

JURISDICTION AND VENUE

9. This Court has jurisdiction pursuant to Minnesota Statutes, Sec. 116D.04, which allows a party to bring an action for injunctive or declaratory relief concerning the requirements and provisions of the environmental review process under Minn. Stat. Ch. 116D and Minnesota Rules, Ch. 4410., Minn. Stat. § 116D.04, subd. 13. This case is properly venued in St. Louis County because the Iron Range Resources and PolyMet's proposed NorthMet mine project are located within St. Louis County. *Id.*

FACTUAL BACKGROUND

10. PolyMet Mining Corporation is incorporated in British Columbia, Canada. PolyMet proposes to construct and operate the NorthMet mine project ("NorthMet mine" or

“Project”), which includes an open pit copper mine and processing facility in St. Louis County, approximately six miles south of Babbitt, Minnesota.

11. PolyMet’s proposed NorthMet mine would be the first nonferrous sulfide mine permitted in the state, and the proposal has generated substantial attention from the public and state and federal agencies. The proposed mine site is located near the headwaters of the Partridge and Embarrass river watersheds, tributaries of the St. Louis River that flows into Lake Superior.

12. PolyMet’s proposed NorthMet mine site is located within the Superior National Forest, on land with surface rights currently held by the United States. In order to implement its project as proposed, PolyMet must acquire the title to the proposed mine site. Thus, as part of its project, PolyMet is pursuing a “land exchange” with the United States Forest Service. PolyMet proposes to purchase private parcels within or adjacent to the Superior National Forest and exchange those lands for the parcels it seeks to mine that are currently held by the United States.

13. Polymet’s NorthMet mine is a large and complex undertaking that involves assistance and authorizations from a number of local, state and federal governmental agencies. Because the project will have significant environmental impacts, state and federal law require that a thorough environmental review in the form of an Environmental Impact Statement (“EIS”) be completed and available to government decisionmakers and the public prior to any decision to provide financial assistance or authorize the project.

STATUTORY AND REGULATORY BACKGROUND

14. The Minnesota Environmental Policy Act, Minn. Stat. § 116D.01 *et seq.*, is the state’s “environmental review” law. It is patterned after the National Environmental Policy Act (“NEPA”), 42 U.S.C. § 4321, *et seq.*, and Minnesota courts are guided by federal interpretations

of the federal counterpart. *No Power Line, Inc. v. Minnesota Environmental Quality Council*, 262 N.W.2d 312, 323 (Minn. 1977).

15. The Environmental Quality Board (“EQB”) is the state agency charged with implementing MEPA and has adopted rules under the act. Minn. R. 4410.0001, *et seq.*

16. MEPA requires an environmental impact statement (“EIS”) for any project that has the potential for significant environmental effects. Minn. Stat. § 116D.04, subd. 2a. The EIS is to be “an analytical rather than an encyclopedic document which describes the proposed action in detail, analyzes its significant environmental impacts, discusses appropriate alternatives to the proposed action and their impacts, and explores methods by which adverse environmental impacts of an action could be mitigated.” *Id.*

17. The EIS must be “prepared by the responsible governmental unit.” *Id.* As defined by the EQB rules, the “responsible governmental unit” or RGU for large nonferrous sulfide mining projects, including the PolyMet NorthMet mine, is the Minnesota Department of Natural Resources (“DNR”). Minn. R. 4410.4400, subp. 8. Although one governmental unit, the RGU, conducts the environmental review, the environmental study is used by all local, regional, and state governmental agencies to inform their decisions relative to the proposed project.

18. MEPA and EQB rules allow for cooperation between state and federal agencies when environmental review is also required under the federal law, NEPA. Minn. Stat. § 116D.04, subd. 2a(g); Minn. R. 4410.3900. In such instances, state RGUs must comply with federal requirements so that one environmental review document satisfies both state and federal laws. Minn. R. 4410.3900, subp. 2.

19. For any project that requires environmental review, MEPA prohibits “a final governmental decision . . . to grant a permit, [or] approve a project” until the environmental review is complete. Minn. Stat. § 116D.04, subd. 2b; Minn. R. 4410.3100, subp. 1. A “permit” includes “the commitment to issue or the issuance of a discretionary contract, grant, subsidy, loan, or other form of financial assistance, by a governmental unit.” Minn. R. 4410.0200, subp. 58.

20. As explained by the EQB in its *Guide to Environmental Review in Minnesota*, the prohibition on government decisions that assist or authorize a project prior to the completion of environmental review is at the heart of MEPA’s purpose:

One of the key purposes of environmental review is to provide information about potential environmental effects and how to avoid or minimize those effects to each of the governmental units which will approve or conduct the project. For this information to have utility, the governmental units must have the information in mind when they take their actions about the project. To issue permits or approvals before the information is available undermines the very purpose of the review. That is the reason why all decisions approving the project (or parts of the project) are prohibited until the review has been completed.

IRON RANGE RESOURCES’ PREMATURE FINANCIAL ASSISTANCE TO POLYMET

21. Because the proposed NorthMet mine project has the potential to significantly impact and permanently alter Minnesota’s natural resources and environment, and because both state and federal agencies are involved in assisting and authorizing various aspects of the proposal, it triggers environmental review under both MEPA, Minn. Stat. § 116D, and NEPA, 42 U.S.C. § 4321, *et seq.* The Minnesota DNR has entered into an agreement to conduct a joint EIS with the federal government. The U.S. Army Corps of Engineers and the U.S. Forest Service are the lead federal agencies for the joint EIS.

22. Environmental review for the NorthMet mine project has been on-going since at least June 6, 2005, when the Minnesota DNR and the U. S. Army Corps of Engineers issued a Scoping Environmental Assessment Worksheet and Draft Scoping Decision Document for the project.

23. In October, 2009, the agencies published an initial Draft EIS for the proposed NorthMet project. A number of comments were submitted on the Draft EIS that were highly critical of the proposal. For instance, the United States Environmental Protection Agency rated the Draft EIS as “Environmentally Unsatisfactory-Inadequate,” and “identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed.” The Tribal cooperating agencies determined that the proposed mining project would need to treat wastewater for “hundreds or thousands of years” to avoid contamination of nearby surface waters. Plaintiffs also submitted detailed comments that were critical of PolyMet’s proposal.

24. On June 24, 2010, the Minnesota DNR, the U.S. Army Corps of Engineers, and the U.S. Forest Service, announced that they will prepare a Supplemental Draft EIS for PolyMet’s proposed NorthMet mine. The Supplemental Draft EIS will include an analysis of the proposed land exchange between PolyMet and the U.S. Forest Service, and will also evaluate new information and alternatives.

25. The Minnesota DNR, the U.S. Army Corps of Engineers, and the U.S. Forest Service continue to work on the Supplemental Draft EIS for PolyMet’s proposed NorthMet project. The agencies are not anticipated to issue the Supplemental Draft EIS until at least the summer of 2011, and the Final Supplemental EIS will not be published until at least nine months after the Draft is released.

26. Iron Range Resources is a state agency. Minn. Stat. § 298.22. It is a “governmental unit” for purposes of MEPA. Minn. Stat. § 116D.04, subd. 1a(e). Iron Range Resources’ conduct and decisions must comply with MEPA.

27. On December 15, 2010, the *Duluth News Tribune* and *Minneapolis Star Tribune* reported that Iron Range Resources would be considering a four million dollar loan to PolyMet at its December 16, 2010 Board meeting, which would be used by PolyMet to purchase lands necessary for its proposed land exchange with the U.S. Forest Service.

28. On December 16, 2010, prior to the scheduled Iron Range Resources Board meeting, Plaintiff Center for Biological Diversity sent a letter to the Iron Range Resources Commissioner and Board members, explaining that the Board’s approval of this loan would be in violation of MEPA, because the MEPA environmental review process is currently ongoing.

29. At the December 16, 2010 Iron Range Resources Board meeting in Eveleth, the Iron Range Resources Board unanimously approved the expenditure of four million dollars from the “Taconite Area Environmental Protection Fund” for a requested loan to PolyMet in order to enable the mining company to acquire lands for its proposed NorthMet mining project.

30. The Iron Range Resources Board determined that the approved four million dollar loan would assist PolyMet to undertake the proposed NorthMet mine project.

31. As part of the loan agreement, Iron Range Resources received warrants allowing it to purchase 400,000 shares of PolyMet common stock traded on the Toronto Stock Exchange at an exercise price of \$2.50 per share.

32. The Iron Range Resources’ resolution approves the loan “on terms in the informational materials presented to the Board.” Those materials included a description of the loan and a draft “term sheet.” The term sheet requires that the loan close “in one or more

tranches on or before June 30, 2011.” June 30, 2011, is well before the environmental review for the project will be finalized.

33. The Governor must approve or disapprove expenditures from the Iron Range Resources’ Taconite Environmental Protection Fund. Minn. Stat. § 298.223, subd. 2(c). Iron Range Resources may submit projects to the Governor for approval at any time. *Id.* Plaintiffs made requests to both Governors Pawlenty and Dayton to disapprove the four million dollar loan expenditure because it violates MEPA. Neither Governor responded to Plaintiffs’ requests.

CLAIM FOR RELIEF

DECLARATORY JUDGMENT AND INJUNCTION

34. Plaintiffs incorporate by reference all preceding paragraphs.

35. MEPA provides for enforcement of its provisions by injunction, action to compel performance, or other appropriate action in this Court. Minn. Stat. § 116D.04, subd. 13; *see also* Minn. Stat. Ch. 555 (declaratory judgment act).

36. Iron Range Resources’ December 16, 2010 resolution is a “commitment to issue . . . [a] loan, or other form of financial assistance” to PolyMet for its NorthMet mine project. Minn. R. 4410.0200, subp. 58. Because Iron Range Resources’ final governmental decision was taken before completion of the environmental review for the proposed NorthMet project, it violated MEPA. Minn. Stat. § 116D.04, subd. 2b; Minn. R. 4410.3100, subp. 1.

37. Plaintiffs are entitled to a declaration that Iron Range Resources acted in violation of MEPA, Minn. Stat. § 116D.04, subd. 2b; Minn. R. 4410.3100, when it approved on December 16, 2010, a four million dollar loan to assist PolyMet with its NorthMet mine proposal prior to completion of an environmental review for the project, and that Iron Range Resources’ December 16, 2010 resolution approving the four million dollar loan to PolyMet is null and void.

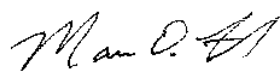
38. Plaintiffs are further entitled to an injunction against any future governmental decision committing to or authorizing the loan to PolyMet unless and until the pending joint EIS for the project is completed and determined adequate under MEPA.

REQUEST FOR RELIEF

Plaintiffs respectfully request the following relief:

- A. An Order
 - a. declaring Iron Range Resources' December 16, 2010 resolution approving the four million loan to PolyMet violates MEPA;
 - b. declaring Iron Range Resources' loan to PolyMet Mining Corporation void by operation of Minnesota law;
 - c. enjoining any further governmental decision committing to or authorizing the four million loan to PolyMet Mining Company unless and until there is an adequacy determination regarding the EIS that is currently being prepared for PolyMet's NorthMet mine proposal.
- B. For such other relief as allowed by MEPA to avoid premature governmental action, loans, permits, or approvals regarding the NorthMet mine proposal prior to the completion of the environmental review process.
- C. For Plaintiffs' costs and disbursements.
- D. For Plaintiffs' reasonable attorneys' fees, pursuant to Minn. Stat. § 15.472
- E. For such other and further relief the Court deems appropriate in the circumstances of this action.

Dated this 14th day of January, 2011.



Marc Fink (#343407)
209 East 7th Street
Duluth, Minnesota 55805
Telephone: (218) 525-3884
Fax: 817-582-3884
mfink@biologicaldiversity.org

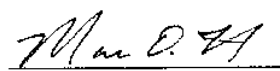
Kevin Reuther (#266255)
26 East Exchange Street, Suite 206
St. Paul, MN 55101
Phone: (651) 223-5969
Fax: (651) 223-5967
kreuther@mncenter.org

Attorneys for Plaintiffs Center for
Biological Diversity, Minnesota Center for
Environmental Advocacy, Save Lake
Superior Association, Friends of the
Boundary Waters Wilderness, and
Indigenous Environmental Network

Acknowledgement

Plaintiffs, by their attorneys, acknowledge that sanctions may be awarded under Minn. Stat. § 549.211 to the opposing party if the parties or their attorneys act in bad faith, assert a frivolous claim, assert an unfounded position to delay or harass, or commit a fraud upon the Court.

Dated this 14th day of January, 2011.



Marc Fink

Law Offices of Charles M. Tebbutt

**P.O. Box 10112, Eugene, OR 97440
470 W. Broadway , Eugene, OR 97401
Ph: 541-344-8312, Fax: 541-344-0188
charlie.tebbuttlaw@gmail.com**

January 25, 2010

CERTIFIED MAIL, RETURN RECEIPT REQUESTED AND
UNITED STATES FIRST-CLASS MAIL

Bruce C. Gerlach, Facility Manager
Cliffs Erie LLC
PO Box 900
County Road 666
Hoyt Lakes, MN 55750

Joseph Carrabba, Chairman, President and CEO
Cleveland Cliffs, Inc., aka Cliffs Natural Resources, Inc.
200 Public Square, Suite 3300
Cleveland, OH 44114-2544

RE: Notice of Intent to Sue Pursuant to Section 505 of the Federal Water Pollution Control Act

Dear Messrs. Gerlach and Carrabba:

This letter is to provide you with notice of intent of the Center For Biological Diversity, Save Lake Superior Association, and the Indigenous Environmental Network (“Notifiers”), to file a citizen suit against Cliffs Erie, LLC, Cleveland Cliffs, Inc., Cliffs Natural Resources, Inc. and any other necessary party or successors in interest for violations of multiple NPDES permits held under the Federal Water Pollution Control Act (“Clean Water Act”), located at three separate locations and described in NPDES permits MN0042536, MN0042579, and MN0054089, pursuant to section 505(a)(1)(A) of the Clean Water Act (CWA), 33 U.S.C. § 1365(a)(1)(A). You are hereby given notice that, upon the expiration of the sixty (60) day statutory waiting period, or sooner based upon violations of 33 U.S.C. § 1317(a), Notifiers will file a civil action in federal district court.

This lawsuit will allege that Cliffs Erie, LLC, a wholly owned subsidiary of Cleveland Cliffs, Inc., also known as Cliffs Natural Resources, Inc., and any successors in interest to the three permits mentioned herein, and collectively referred to hereafter as Cliffs Erie, have violated, continue to violate, and will continue to violate the CWA, and applicable state water pollution control laws, including but not limited to water quality standards.

Section 301 of the CWA, 33 U.S.C. § 1311(a), prohibits the discharge of any pollutant from a point source into waters of the United States unless such discharge is permitted in a National Pollutant Discharge Elimination System (NPDES) permit. Many of Cliffs Erie’s discharges violate the NPDES permits issued pursuant to 33 U.S.C. § 1342, and the state authorized equivalents to the federal law, while other discharges are unpermitted and thus subject to the more general prohibitions of 33 U.S.C. §

1311(a).

I. Cliffs Erie, LLC-Hoyt Lakes Tailings Basin Area- NPDES MN0054089

As described in the permit, drainage from the northern portion of the tailings basin, including outfalls SD005 and SD002, flows to unnamed wetlands to Kaunonen and Trimble Creeks to the Embarrass River. Drainage from the far western portion of the tailings basin, including outfalls SD006, SD001 and SD004, flows to an unnamed creek and wetlands to the Embarrass River. The wetlands are class 2D, 3D, 4C, 5 and 6 waters. The creeks and river are class 2B, 3B, 4A, 4B, 5 and 6 waters. These waters are part of the Lake Superior watershed and eventually reach Lake Superior.

Surface water monitoring station SW003 (Site 3) is located on an unnamed tributary creek/wetland drainage to the Embarrass River, at the former DMIRR railroad grade bridge crossing in Section 36, Waasa Township. Monitoring stations SW004 and SW005 are located on the Embarrass River at the bridge crossings on County Road 620 (Salo Road, upstream of Spring Mine Creek) and Highway 135 in White Township, respectively.

Permit MN0054089 sets forth effluent standards and limitations for numerous pollutant discharges at multiple outfalls. Cliffs Erie is required by its permit to self-monitor and report the monitoring results on Discharge Monitoring Reports. According to its DMRs, Cliffs Erie has violated its permitted effluent standards and limitations for the following pollutants at the following outfalls:

1. Bicarbonates

The permit limit for Bicarbonates for all relevant outfalls is 305 mg/l on a calendar month average for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SD001	2005-Mar	463	mg/L
SD001	2005-Sep	401	mg/L
SD001	2006-Sep	432	mg/L
SD001	2006-Dec	426	mg/L
SD001	2007-Mar	483	mg/L
SD001	2007-Sep	456	mg/L
SD001	2007-Dec	356	mg/L
SD001	2008-Mar	393	mg/L
SD001	2009-Sep	445	mg/L
SD002	2005-Mar	438	mg/L
SD002	2005-Jun	393	mg/L
SD002	2005-Sep	426	mg/L
SD002	2005-Dec	394	mg/L
SD002	2006-Mar	392	mg/L
SD002	2006-Jun	398	mg/L
SD002	2006-Sep	440	mg/L

SD002	2006-Dec	428	mg/L
SD002	2007-Mar	430	mg/L
SD002	2007-Jun	385	mg/L
SD002	2007-Sep	443	mg/L
SD002	2007-Dec	431	mg/L
SD002	2008-Mar	441	mg/L
SD002	2008-Jun	389	mg/L
SD002	2009-Mar	455	mg/L
SD002	2009-Jun	416	mg/L
SD002	2009-Sep	451	mg/L
SD004	2005-Mar	409	mg/L
SD004	2005-Jun	397	mg/L
SD004	2005-Sep	427	mg/L
SD004	2005-Dec	426	mg/L
SD004	2006-Mar	403	mg/L
SD004	2006-Jun	432	mg/L
SD004	2006-Sep	440	mg/L
SD004	2006-Dec	435	mg/L
SD004	2007-Mar	430	mg/L
SD004	2007-Jun	420	mg/L
SD004	2007-Sep	460	mg/L
SD004	2007-Dec	514	mg/L
SD004	2008-Mar	553	mg/L
SD004	2008-Jun	562	mg/L
SD004	2009-Mar	555	mg/L
SD004	2009-Sep	556	mg/L
SD006	2005-Mar	402	mg/L
SD006	2005-Sep	367	mg/L
SD006	2005-Dec	381	mg/L
SD006	2006-Mar	427	mg/L
SD006	2006-Jun	317	mg/L
SD006	2006-Sep	408	mg/L
SD006	2006-Dec	475	mg/L
SD006	2007-Mar	450	mg/L
SD006	2007-Sep	316	mg/L
SD006	2007-Dec	441	mg/L
SD006	2008-Mar	514	mg/L
SD006	2008-Jun	309	mg/L
SD006	2009-Mar	492	mg/L
SD006	2009-Jun	386	mg/L
SD006	2009-Sep	452	mg/L

2. Boron

The permit limit for Boron for outfall 004 is 500 mg/l on a calendar month average for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SD004	2005-Jun	521	ug/L
SD004	2005-Sep	520	ug/L
SD004	2005-Dec	511	ug/L
SD004	2006-Mar	547	ug/L
SD004	2006-Dec	514	ug/L
SD004	2007-Mar	503	ug/L
SD004	2007-Dec	504	ug/L
SD004	2009-Mar	515	ug/L
SD004	2009-Sep	518	ug/L

3. Carbonate Hardness

The permit limit for Carbonate Hardness (as CaCo₃) for all relevant outfalls is 250 mg/l on a calendar month average for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SD001	2005-Mar	626	mg/L
SD001	2005-Jun	367	mg/L
SD001	2005-Sep	485	mg/L
SD001	2005-Dec	408	mg/L
SD001	2006-Mar	463	mg/L
SD001	2006-Jun	400	mg/L
SD001	2006-Sep	499	mg/L
SD001	2006-Dec	584	mg/L
SD001	2007-Mar	818	mg/L
SD001	2007-Jun	292	mg/L
SD001	2007-Sep	495	mg/L
SD001	2007-Dec	548	mg/L
SD001	2008-Mar	597	mg/L
SD001	2008-Jun	303	mg/L
SD001	2009-Jun	304	mg/L
SD001	2009-Sep	445	mg/L
SD002	2005-Mar	422	mg/L
SD002	2005-Jun	417	mg/L
SD002	2005-Sep	443	mg/L
SD002	2005-Dec	379	mg/L
SD002	2006-Mar	357	mg/L
SD002	2006-Jun	456	mg/L
SD002	2006-Sep	425	mg/L
SD002	2006-Dec	441	mg/L

SD002	2007-Mar	439	mg/L
SD002	2007-Jun	401	mg/L
SD002	2007-Sep	429	mg/L
SD002	2007-Dec	433	mg/L
SD002	2008-Mar	475	mg/L
SD002	2008-Jun	404	mg/L
SD002	2009-Mar	455	mg/L
SD002	2009-Jun	416	mg/L
SD002	2009-Sep	451	mg/L
SD004	2005-Jun	494	mg/L
SD004	2005-Sep	637	mg/L
SD004	2005-Dec	692	mg/L
SD004	2006-Sep	671	mg/L
SD004	2006-Dec	650	mg/L
SD004	2007-Mar	703	mg/L
SD004	2007-Jun	651	mg/L
SD004	2007-Sep	717	mg/L
SD004	2007-Dec	828	mg/L
SD004	2008-Mar	838	mg/L
SD004	2008-Jun	871	mg/L
SD004	2009-Mar	555	mg/L
SD004	2009-Sep	556	mg/L
SD006	2005-Mar	494	mg/L
SD006	2005-Jun	340	mg/L
SD006	2005-Sep	488	mg/L
SD006	2005-Dec	476	mg/L
SD006	2006-Mar	520	mg/L
SD006	2006-Jun	371	mg/L
SD006	2006-Sep	514	mg/L
SD006	2006-Dec	629	mg/L
SD006	2007-Mar	617	mg/L
SD006	2007-Jun	323	mg/L
SD006	2007-Sep	375	mg/L
SD006	2007-Dec	585	mg/L
SD006	2008-Mar	670	mg/L
SD006	2008-Jun	408	mg/L
SD006	2009-Mar	492	mg/L
SD006	2009-Jun	386	mg/L
SD006	2009-Sep	465	mg/L

4. Dissolved Iron

The permit limits for Dissolved Iron (as FE) for all relevant outfalls are 1 mg/l on a calendar

month average and 2 mg/l for a calendar month maximum for at least the months of March, June, September and December each year. Cliffs Erie has violated the limits (specified below) as follows:

SD001	2005-Mar	1	2.56	mg/L
SD001	2005-Mar	2	2.56	mg/L
SD001	2005-Dec	1	1.3	mg/L
SD001	2006-Mar	1	1.5	mg/L
SD004	2005-Jun	1	2.82	mg/L
SD004	2005-Jun	2	2.82	mg/L
SD004	2005-Sep	1	3.47	mg/L
SD004	2005-Sep	2	3.47	mg/L
SD004	2005-Dec	1	3.7	mg/L
SD004	2005-Dec	2	3.7	mg/L
SD004	2006-Mar	1	2.87	mg/L
SD004	2006-Mar	2	2.87	mg/L
SD004	2006-Jun	1	2.57	mg/L
SD004	2006-Jun	2	2.57	mg/L
SD004	2006-Sep	1	2.45	mg/L
SD004	2006-Sep	2	2.45	mg/L
SD004	2006-Dec	1	2.92	mg/L
SD004	2006-Dec	2	2.92	mg/L
SD004	2007-Mar	1	2.76	mg/L
SD004	2007-Mar	2	2.76	mg/L
SD004	2007-Jun	1	2.51	mg/L
SD004	2007-Jun	2	2.51	mg/L
SD004	2007-Sep	1	2.68	mg/L
SD004	2007-Sep	2	2.68	mg/L
SD004	2007-Dec	1	2.84	mg/L
SD004	2007-Dec	2	2.84	mg/L
SD004	2008-Mar	1	4.14	mg/L
SD004	2008-Mar	2	4.14	mg/L
SD004	2008-Jun	1	4.61	mg/L
SD004	2008-Jun	2	4.61	mg/L
SD004	2009-Mar	1	6.44	mg/L
SD004	2009-Mar	2	6.44	mg/L
SD004	2009-Sep	1	6.23	mg/L
SD004	2009-Sep	2	6.23	mg/L

5. pH

The permit limit for pH for all relevant outfalls and surface water monitoring stations is no greater than 8.5 standard units and no less than 6.5 standard units as an instantaneous maximum for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SW004 2008-Jun 6.1 SU

6. Specific Conductance

The permit limit for Specific Conductance, Field, for all relevant outfalls is 1000 umh/cm on a calendar month average for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SD001	2005-Mar	1230	umh/cm
SD001	2005-Sep	1018	umh/cm
SD001	2005-Dec	1086	umh/cm
SD001	2006-Mar	1099	umh/cm
SD001	2006-Sep	1121	umh/cm
SD001	2006-Dec	1098	umh/cm
SD001	2007-Mar	1111	umh/cm
SD001	2007-Sep	1098	umh/cm
SD001	2007-Dec	1122	umh/cm
SD001	2008-Mar	1079	umh/cm
SD001	2009-Sep	1181	umh/cm
SD002	2005-Mar	1010	umh/cm
SD002	2005-Sep	1308	umh/cm
SD002	2005-Dec	1122	umh/cm
SD002	2006-Mar	1127	umh/cm
SD002	2006-Jun	1011	umh/cm
SD002	2006-Sep	1222	umh/cm
SD002	2006-Dec	1178	umh/cm
SD002	2007-Mar	1110	umh/cm
SD002	2007-Sep	1167	umh/cm
SD002	2007-Dec	1078	umh/cm
SD002	2008-Mar	1198	umh/cm
SD002	2008-Jun	1209	umh/cm
SD002	2009-Mar	1148	umh/cm
SD002	2009-Jun	1069	umh/cm
SD002	2009-Sep	1158	umh/cm
SD004	2005-Mar	1130	umh/cm
SD004	2005-Jun	1178	umh/cm
SD004	2005-Sep	1283	umh/cm
SD004	2005-Dec	1380	umh/cm
SD004	2006-Mar	1290	umh/cm
SD004	2006-Sep	1376	umh/cm
SD004	2006-Dec	1301	umh/cm
SD004	2007-Mar	1311	umh/cm
SD004	2007-Jun	1325	umh/cm

SD004	2007-Sep	1518	umh/cm
SD004	2007-Dec	1575	umh/cm
SD004	2008-Mar	1487	umh/cm
SD004	2008-Jun	1576	umh/cm
SD004	2009-Mar	1675	umh/cm
SD004	2009-Sep	1751	umh/cm
SD006	2005-Mar	1069	umh/cm
SD006	2005-Sep	1078	umh/cm
SD006	2005-Dec	1092	umh/cm
SD006	2006-Mar	1133	umh/cm
SD006	2006-Sep	1209	umh/cm
SD006	2006-Dec	1148	umh/cm
SD006	2007-Mar	1118	umh/cm
SD006	2007-Sep	1219	umh/cm
SD006	2007-Dec	1420	umh/cm
SD006	2008-Mar	1290	umh/cm
SD006	2009-Mar	1528	umh/cm
SD006	2009-Jun	1169	umh/cm
SD006	2009-Sep	1395	umh/cm

7. Turbidity

The permit limit for Turbidity for all relevant outfalls is 25 NTUs on a calendar month average for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SD001	2005-Mar	28	NTU
SD004	2005-Mar	80	NTU
SD004	2005-Jun	29	NTU
SD004	2005-Sep	33.4	NTU
SD004	2006-Mar	38	NTU
SD004	2006-Dec	56.2	NTU
SD004	2007-Mar	25.9	NTU
SD004	2007-Dec	39.8	NTU
SD004	2008-Mar	49.2	NTU
SD004	2008-Jun	65.1	NTU
SD004	2009-Mar	89.3	NTU
SD004	2009-Sep	88.6	NTU

In addition to the specific limits violated as set forth above, Cliffs Erie has also generally violated the CWA and its permit in numerous other respects. For example, Cliffs Erie is violating the permit requirement that they not discharge toxics, including but not limited to aluminum and mercury. Notifierw believe and allege , based upon Cliffs Erie's own monitoring data that it is discharging toxics

via surface water discharges and ground water discharges that are hydrologically connected to nearby surface waters.

Cliffs Erie is also discharging through unpermitted point sources, including but not limited to seeps such as the “West Side Seep” and from the “emergency basin” identified in its NPDES permit. In addition, the LTVSMC Tailings Basin contributes both groundwater and surface water seepage that ultimately reaches the Embarrass River between monitoring stations PM-12 and PM-13. The LTVSMC Tailings Basin has had and likely continues to have at least 33 locations where tailings water seeps through the embankment to surface waters.

II. Cliffs Erie, LLC-Hoyt Lakes Mining Area-NPDES MN0042536

As described in the permit, the receiving waters for discharges associated with this facility are Second Creek, Wyman Creek, Spring Mine Creek, and unnamed tributaries to Partridge River/Colby Lake. These waters are part of the Lake Superior watershed and eventually reach Lake Superior.

Permit MN0042536 sets forth effluent standards and limitations for numerous pollutant discharges at multiple outfalls. Cliffs Erie is required by its permit to self-monitor and report the monitoring results on Discharge Monitoring Reports. According to its DMRs, Cliffs Erie has violated its permitted effluent standards and limitations for the following pollutants at the following outfalls:

1. pH

The permit limit for pH for all relevant outfalls and surface water monitoring stations is no greater than 8.5 standard units and no less than 6.5 standard units as an instantaneous maximum for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit as follows:

SD012	2005-Jun	8.75
SD012	2005-Dec	8.7
SD012	2006-Sep	8.6
SD012	2008-Dec	8.56

2. Specific Conductance, Field

The permit limit for Specific Conductance, Field, for outfall SD026 is 1000 umh/cm on a calendar month average for each month of each year. Cliffs Erie has violated the limit as follows:

SD026	2005-Feb	1108
SD026	2005-May	1053
SD026	2005-Jul	1075
SD026	2005-Aug	1080
SD026	2005-Sep	1089
SD026	2005-Oct	1039

SD026	2005-Nov	1010
SD026	2005-Dec	1004
SD026	2006-Jan	1012
SD026	2006-Feb	1088
SD026	2006-Mar	1103
SD026	2006-May	1048
SD026	2006-Jun	1097
SD026	2006-Jul	1162
SD026	2006-Aug	1166
SD026	2006-Sep	1183
SD026	2006-Oct	1140
SD026	2006-Nov	1080
SD026	2006-Dec	1011
SD026	2007-Jan	1028
SD026	2007-Feb	1001
SD026	2007-Mar	1018
SD026	2007-May	1011
SD026	2007-Jul	1104
SD026	2007-Aug	1247
SD026	2007-Sep	1227
SD026	2007-Oct	1051
SD026	2007-Nov	1099
SD026	2007-Dec	1169
SD026	2008-Jan	1119
SD026	2008-Feb	1144
SD026	2008-Mar	1197
SD026	2008-Apr	1187
SD026	2008-Jul	1191
SD026	2008-Aug	1243
SD026	2008-Sep	1166
SD026	2008-Oct	1184
SD026	2008-Nov	1160
SD026	2008-Dec	1260
SD026	2009-Jan	1298
SD026	2009-Feb	1322
SD026	2009-Mar	1251
SD026	2009-Apr	1104
SD026	2009-Jun	1140
SD026	2009-Jul	1225
SD026	2009-Aug	1220
SD026	2009-Sep	1249

3. Temperature

The permit limit for Temperature for outfall SD012 is “not materially greater than” the

temperature (in degrees Fahrenheit) of the sample at the outfall compared with the simultaneously recorded temperature at reference point monitoring station SW007 for at least the months of March, June, September and December each year. Cliffs Erie has violated the permit limit as follows (represented in degrees Fahrenheit):

SD012	2005-Mar	0.1
SD012	2005-Jun	2.4
SD012	2005-Sep	2.8
SD012	2005-Dec	0.3
SD012	2006-Mar	0.4
SD012	2006-Jun	0.8
SD012	2006-Sep	0.1
SD012	2006-Dec	0.2
SD012	2007-Mar	0.5
SD012	2007-Jun	0.4
SD012	2007-Sep	0.2
SD012	2007-Dec	1.98
SD012	2007-Dec	1.98
SD012	2008-Mar	2.52
SD012	2008-Jun	1.044
SD012	2008-Sep	9.162
SD012	2008-Dec	3.6
SD012	2009-Mar	0.5
SD012	2009-Jun	4.3
SD012	2009-Sep	8.1

III. Cliffs Erie, LLC- Dunka Mining Area- NPDES MN0042579

As described in the permit, the receiving waters for discharges from the outfalls in this permit are Unnamed Creek, a tributary to Unnamed Creek ('Billiken Creek'), and a tributary to Birch Lake ('Flamingo Creek').

Permit MN0042579 sets forth effluent standards and limitations for numerous pollutant discharges at multiple outfalls. Cliffs Erie is required by its permit to self-monitor and report the monitoring results on Discharge Monitoring Reports. According to its DMRs, Cliffs Erie has violated its permitted effluent standards and limitations for the following pollutants at the following outfalls:

1. Dissolved Iron

The permit limit for Dissolved Iron (as FE) for the relevant outfalls is 1 mg/l on a calendar month average for at least the months of March, June, September and December each year. Cliffs Erie has violated the limit (specified below) as follows:

SD005	2007-Mar	1.24	mg/L
SD005	2009-Mar	1.82	mg/L

SD006	2007-Dec	1.44	mg/L
SD006	2008-Apr	1.05	mg/L
SD006	2008-Dec	1.02	mg/L

2. Toxicity

The permit requires (Chapter 1.3.1, page 15) additive acute toxicity value testing as a surrogate for specified metals copper, nickel and zinc at certain outfalls, including SD008 and SD009. The limits are based a calendar month maximum and are different depending upon the months of the year. Cliffs Erie has violated the permit limitations on at least the following occasions:

SD008	2007-Sep	1.5	4.25	toxunt
SD009	2008-Jun	1	1.08	toxunt
SD009	2008-Jul	1	1.2	toxunt

Notifiers believe and allege that a history of violations, similar in type and nature to the violations listed above, as well as reporting violations, and if different, are all related to improper construction, operation and maintenance of the Cliffs Erie facilities, and have continued from at least January 25, 2005, to the present. Further, Notifiers believe and allege, in part based upon the history of violations, that such discharges will continue or are reasonably likely to continue. Such violations are known to the Dischargers and may be included in future legal actions by Notifiers without further notice. Such discharges or reporting violations may only be known to Dischargers and eyewitnesses to be determined.

Notifiers intend, at the close of the sixty (60) day notice period, or sooner pursuant to violations of 33 U.S.C. § 1317(a), to file a citizen suit under Section 505 of the CWA against Cliffs Erie for the statutory maximum of \$37,500 per day for each violation stated above in addition to those which have occurred of which you are aware and those occurring subsequent to this letter, plus injunctive and remedial relief, costs, attorney and expert witness fees, and such other relief as may be appropriate.

The names, addresses and phone numbers of the persons giving Notice of Intent to Sue under the Clean Water Act are:

Center for Biological Diversity
P.O. Box 710
Tucson, AZ 85702-0710
Tel: 520-623-5252

Save Lake Superior Association
P.O. Box 101
Two Harbors, MN 55616
Tel: 218-834-6137

Indigenous Environmental Network
P.O. Box 485
Bemidji, MN 56619
Tel: 218-751-4967

Counsel for Notifiers are:

Charles M. Tebbutt
Law Offices of Charles M. Tebbutt
P.O. Box 10112
Eugene, OR 97440
Phone: (541) 344-8312
E-mail: charlie.tebbuttlaw@gmail.com

Marc Fink
Center for Biological Diversity
209 East 7th St.
Duluth, Minnesota 55805
Tel: 218-525-3884

Notifiers request that any person receiving this notice direct all inquiries to the undersigned legal counsel.

Sincerely,



Charles M. Tebbutt, Lead Counsel
Law Offices of Charles M. Tebbutt

Via Certified Mail, Return Receipt Requested

cc: Lisa P. Jackson, Administrator
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Bharat Mathur, Acting Regional Administrator
EPA Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3507

Paul Eger, Commissioner
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155-4194

CT Corporations System, Inc.
Registered Agent for Cliffs Erie L.L.C.
100 S 5th Str #1075
Minneapolis, MN 55402

Polymet Mining Corp.
PO Box 475
6500 County Road 666
Hoyt Lakes, MN 55750

ATTACHMENT 6



Metallic Mineral Mining: The Process & the Price



Metallic Mineral Mining: The Process & the Price

Prepared by the Great Lakes Indian Fish and Wildlife Commission
with funding from the Great Lakes Restoration Initiative



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Introduction



Point Abbaye, Michigan on Lake Superior's south shore.

The development of a major mine entails a substantial and long-term alteration of the landscape and the natural environment. Mining, particularly metallic mining, also presents certain unavoidable ecological risks. According to the US Environmental Protection Agency (EPA), the metal mining industry is the largest source of chemicals to the environment in the United States, and history is replete with examples of mine-related pollution. The EPA's Abandoned Mine Lands program currently lists 130 mine sites as having known or threatened releases of hazardous pollutants or contaminants. Mining disasters are not limited to distant history; since 2014, catastrophic collapses of metallic mine tailings ponds have occurred in British Columbia and in Brazil, sending contaminated effluent into waterways and, in the case of Brazil, costing many human lives.

Not all mines will cause the severe harm that some past mines have, and some of the ecological threats can be



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mitigated. Nevertheless, the decision to allow a metallic mineral mine reflects an acceptance of some degree of ecological harm, the extent of which can never be absolutely known or predicted with precision. The true price that will be paid for a mine's anticipated benefits becomes clear only if or when the theoretical risks manifest in environmental degradation. For Indian and Aboriginal people and communities in the Upper Great Lakes region, the price of metallic mining can be particularly devastating. Tribes rely on natural resources like fish, wildlife, and wild plants for subsistence and to support them spiritually, culturally, medicinally, and economically. When mining affects the health and availability of resources that native people depend on for these purposes, their ways of life and their ability to sustain healthy communities is also affected.

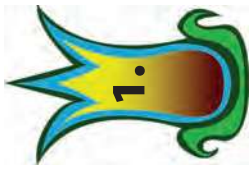
Metallic Mineral Mining: The Process and the Price provides an overview of metallic mining by describing its stages and their associated environmental risks

and illustrating those risks through real-life examples. It provides a brief overview of the laws and regulations related to mine permitting and environmental review, including US federal law and the laws of Minnesota, Wisconsin, Michigan, and the Canadian province of Ontario. It also describes how tribal treaty-reserved rights and an Anishinaabe worldview can intersect those laws. Most importantly, this document explains why the risks associated with mining pose special threats to Indian people who rely on the natural world to sustain their communities and whose culture and lifeways depend on access to clean and healthy natural resources.

Finally, it must be noted that this document has been produced by the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), a natural resource agency representing 11 Ojibwe tribes in Michigan, Minnesota, and Wisconsin as they implement their off-reservation, treaty-reserved hunting, fishing and gathering rights. *Metallic*

Mineral Mining: The Process and the Price is informed by that perspective. While this document uses a variety of terms in reference to Indian people (including tribe, tribal, Indian, Anishinaabe), it is intended only to reflect the beliefs and views that GLIFWC has come to understand in the course of serving its member tribes. In addition, this document refers to Ojibwe tribes in several ways. Ojibwe/Ojibwa tribes have come to be known as Chippewa in English; in Canada, the Ojibwe/Ojibwa are known as First Nations rather than tribes. Anishinaabe or its plural, Anishinaabeg, are the Ojibwe words for Indian(s), or original person (people), which are their names for themselves.

Despite the limits described herein, for other tribes that may be similarly situated or share a skepticism about the potential price they may pay for mineral development in areas they use to exercise their lifeways and sustain their communities, we hope this document may be helpful. 🙏



An Introduction to Metallic Mineral Mining and Tribal Land Interests in the Upper Great Lakes Region

Mining is the process by which target materials are extracted from the earth. Metallic mining refers to the extraction of both ferrous metals (typically iron) and nonferrous metals (including gold, silver, copper, nickel, lead, and zinc). Many of these metals are common elements in the earth's crust but usually exist only as components of other minerals and in minute quantities. Iron, for example, is the most plentiful of these elements but accounts for only about 5% of the world's crust by weight. Copper accounts for only 0.0058%, and lead and zinc account for even less. Because of the rare geological occurrence of these metals, they must be found in relatively high concentrations in order for mining to be economical.

When prices and demand for metal is high, lower-grade deposits become more economically feasible to extract.



Comparison of a disseminated copper ore (left) and a piece of native copper (right). Disseminated ore bodies have a small amount of metallic mineral by volume.

valuable than iron, the definition of ore is different. At the closed Flambeau mine near Ladysmith, Wisconsin, for example, the ore averaged about 9.5% copper, a concentration that was more than sufficient to profitably extract. Sometimes an ore body contains more than one target mineral, and the combination alters the economic equation. While the massive portion of the ore body of the Back Forty site near Stephenson, Michigan contains only 0.44% copper, the ore body also contains an 8% concentration of zinc, increasing the overall economic viability of the deposit.

When prices and demand are high, lower-grade deposits become more economically feasible to extract. The proposed NorthMet mine in Minnesota, for example, has a disseminated ore body containing 0.28% copper, 0.08% nickel, and trace amounts of other precious metals. Despite the relatively low grade of this deposit, the mine operator, PolyMet, has applied for permits to mine at this site.

Understanding of Ore the Definition of Ore

Ore is defined by economics: a geologic formation is considered an ore body if it contains minerals in sufficient quantity to profitably mine. The definition of ore changes depending on the target mineral. High-grade iron ore has an iron concentration of 60%, while lower-grade taconite ore mined in the upper Great Lakes region has a concentration of 25% to 30%. For copper, a metal more



4 Metallic Mineral Mining: The Process & the Price

Metallic mineral mining refers to the extraction of both ferrous and nonferrous metals. *Sulfide mining* is a term often used to describe the mining of nonferrous metals, including copper, lead, zinc, and others, because these metals frequently are bonded to sulfur, forming sulfide compounds. But it is misleading to place only these types of metal mining under the sulfide description because various forms of sulfide also are found in ferrous (iron) mining. In the upper Great Lakes region, for example, iron deposits often exist within and adjacent to geologic formations that contain sulfur and sulfides. Ferrous mining can result in disturbance of the adjacent rock and thus mobilize sulfur. Minnesota's Iron Range is a prominent example of this effect: as the target iron ore is mined, the tailings basins and pit lakes left behind produce sulfur compounds that impact surface and groundwater throughout the Iron Range.

Native and European Metallic Mining in the Upper Great Lakes Region

Metallic mining in the Great Lakes region is not a new phenomenon. As far back as 4,000 B.C., indigenous people throughout the area used copper for jewelry and other articles. Much of this copper was easily accessed from formations found at

the surface and along the shore of Lake Superior. Native people heated the copper and shaped it into jewelry and tools such as knives and spear points; the copper required no further processing because it was pure and not bound to other elements. As with silver and gold found in other areas of the western hemisphere, the copper used in the Great Lakes region by Indian peoples was primarily ceremonial and aesthetic. Great Lakes copper was also traded throughout North America.

The ability of tribes to exercise their treaty-reserved rights, both on and off their reservation land, can be profoundly impacted by mining activities.

Intensive commercial exploitation of native copper and high-grade iron ores began with the arrival of European miners in the second half of the nineteenth century. By the middle of the twentieth century, the high-grade ores of the Great Lakes region had been depleted. Today, the only potential sources of copper and other metals in the area are lower quality ores.

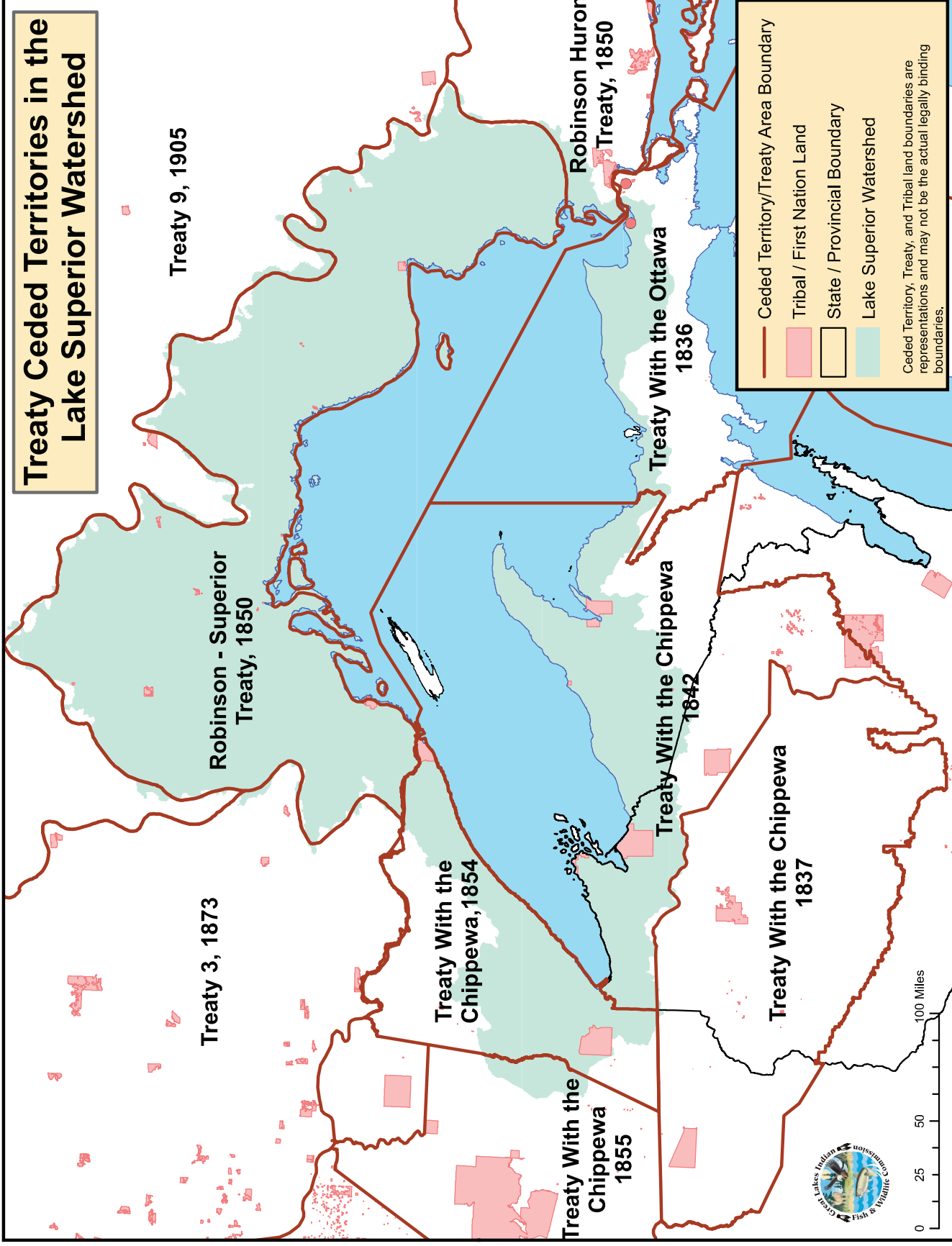
Mining remains an important issue to tribes in the region, some of whom retain legal rights to use the land. The ability of tribes to exercise their treaty-reserved rights, both on and off their reservation land, can be profoundly impacted by mining activities.

Understanding the Rights of Tribes and Aboriginal People in the Upper Great Lakes to Use the Land

Prior to contact with European settlers and foreign governments, tribes exercised their sovereignty both internally, by establishing their own governing systems, and externally, by forming alliances with other tribal nations. Anishinaabe tribes in the upper Great Lakes entered into their first treaty with the Spirit of the Universe. This Great Law of Nature holds that the land is a gift from the Creator and the Anishinaabeg are to live in harmony with and take care of that land through ceremonies, teachings, language, and the way they live their lives, or their lifeway.

The United States and Canadian governments, upon their arrival in North America, recognized the sovereignty of the Anishinaabe tribes and dealt with them on a government-to-government basis. In the early and mid-nineteenth century, various treaties were signed between the US and Canadian governments and Anishinaabe tribes in northern Wisconsin, northeastern Minnesota, and northern Michigan as well as in the Canadian province of Ontario.

Courts have ruled that in the treaties, the Ojibwe sold or ceded a considerable amount of land to the federal government Attachment 6 to MNRD THPO Report



Areas ceded by tribes in the western Great Lakes region.



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Land use decisions that put mining interests before native interests may violate legal guarantees and undermine the tribes' abilities to sustain their communities in ways that are consistent with their teachings and worldview.

but did not give up all rights of usage. These lands often are referred to as ceded territory. (See map on page 5.) Within the ceded territories, the signatory tribes reserved the right to continue to hunt, fish, and gather on the land. Modern state and federal court decisions have affirmed these rights as valid and continuing. The Ojibwe rights to hunt, fish, and gather on ceded territory lands are called treaty rights, usufructuary rights, or reserved rights.

Tribes also have reservations within the ceded territory. Tribes have more extensive rights to control activities on their reservation land than in ceded territory, but the establishment of reservations did not limit or curtail their reserved rights to hunt, fish, and gather *off* the reservation on lands within the ceded territory.

Similarly, Canadian Ojibwe First Nations in the Lake Superior region signed treaties with the government of Canada in which they ceded land but retained the right to hunt and fish in the territory ceded. The treaties that created the ceded territory in the Ontario portion of the Lake Superior basin also provided for

reserves (or reservations) for individual First Nations.

For tribes and First Nations in both the US and Canada, their status as sovereigns, recognized in treaties and upheld by courts, provides the basis for their right to maintain themselves as distinct cultural and self-governing entities. Their sovereignty and authority over their reservations and exercise of treaty-reserved rights carries particular responsibilities, including the proper

management of those resources. In carrying out these management responsibilities, tribes work to assure the continued quantity and quality of natural resources. Tribes also coordinate the exercise of sovereignty and managing with other governments exercising concurrent authority in the ceded territories. Land use decisions that put mining interests before native interests may violate these legal guarantees and undermine the tribes' abilities to



Extensive landscape alteration at the Hull-Rust mine in Minnesota.

sustain their communities in ways that are consistent with their teachings and worldview. (Chapter 5 provides a more detailed look at Anishinaabe lifeways.)

Mining’s Potential to Alter the Life Sustaining Resources of the Anishinaabeg

The ability to practice their lifeways on reservation land and in ceded territories is fundamental to Anishinaabeg survival as distinct cultural and political entities. Healthy natural resources sustain the lifeways of Indian people who depend on them for spiritual, cultural, medicinal, subsistence, and economic purposes. Mining puts the land and these natural resources at risk.

All mining activity will affect air, water, soil, and living organisms. Some mining impacts are less severe than others, and some can be prevented or mitigated. But any mining project necessarily involves a degree of environmental disturbance that can never be exactly predicted. And while any type of mining alters the natural landscape and produces mining waste, metallic mining poses environmental risks that are especially acute due to the tremendous scale of some metallic mines and the geochemical characteristics of the target minerals, ore body, and surrounding rock.



Undersized sedimentation basin along a mine haul road. The sediment will need to be removed for the basin to work as intended.

Given these inevitable impacts, state and federal regulators in ceded territories must determine what levels of pollution are acceptable or allowable under various permits. Tribes generally do not set regulatory standards in ceded territories; thus, they may be concerned that other governments will not adequately consider their worldview or reliance on natural resources when setting applicable standards.

Mine operators often attempt to reduce the environmental impact of their projects through mitigation measures including air and water capture and treatment systems, sedimentation basins, and wetland mitigation activities. When mitigation measures are insufficient or fail, however, the resulting destruction of natural resources can profoundly affect the native people who rely on them. For Anishinaabe people, harvesting natural resources is Attachment 6 to MNRD THPO Report



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Anishinaabe people are very cautious when making decisions that may affect the health or availability of natural resources; their worldview holds that decisions must ensure the protection of the resources for the next seven generations. Negative consequences that occur within 250 years would fail this cultural standard.

more than just a means to provide food. Hunting and gathering are cultural and spiritual activities that renew both the person and the harvested resource. Anishinaabe people are very cautious when making decisions that may affect the health or availability of these resources; their worldview holds that decisions must ensure the protection of the resources for the next seven generations. Negative consequences that occur within 250 years would fail this cultural standard.

For tribal communities, reservation lands and land in ceded territories provide the environment needed to practice their culture, traditions, and sustain their ways of life. On these lands, mining can affect fundamental aspects of tribal life and culture in a number of ways. Tribal members may lose opportunities to use and harvest resources due to the destruction of fish, wildlife, and plant habitats, the disruption of wildlife migration patterns, the closure of public



Access portal for the Eagle mine is drilled into the base of Eagle Rock, a sacred site to tribal people. (photo courtesy of Chauncey Moran)

lands, or the contamination of water, air, or soil. In addition, the economic value of resources harvested by tribal members may be lost.

The impact of mining on tribes goes far beyond the ability of tribal members to find appropriate fish and wildlife to serve as meals or ceremonial feasts. Tribal culture itself suffers when natural resource usage patterns are altered, disrupted, or destroyed. Mining can threaten

traditional Anishinaabe ways of life and tribes' existence as a culturally distinct people. This perspective was expressed by Susan J. LaFernier of the Keweenaw Bay Indian Community to help explain the deep concern or opposition many tribal members have toward mining:

...[metallic mining] gains are far outweighed by the potential for permanent and severe damage to the
Attachment 6 to MNRD THPO Report



environment in and around the Tribe's territory along with the human health risks associated from certain mining related contamination for our generation and generations to come. The preservation of our land, our culture, and our way of life require that we act now as guardians for the next seven generations and mining will be the single greatest threat to our water and lands in our lifetime along with all of the other challenges. As Ojibwa (Nature's) people, we are a part of Lake Superior and the land, and our survival depends on both. We all need to share the responsibility and privilege to care for our Earth and not make any more environmental 'mistakes.'

Mining can pose significantly different risks to tribes than to other natural resources users because of tribes' dependence on healthy natural resources. But despite being uniquely affected by mine permitting decisions, tribes are not often the decision makers. In determining where and to what extent mining is allowed in any geographical area, state and federal decision makers bear a special responsibility to ensure tribal lifeways are respected and protected.



Rivers, lakes, and wetlands interconnected by shallow groundwater systems are common in the Great Lakes region. (photo courtesy of Chauncey Moran)

sufficient baseline data and incomplete understanding of local hydrological processes.

Understanding how and why past mining operations failed to protect water quality is particularly important in the Lake Superior basin because of its complex hydrology. Numerous lakes, wetlands, and rivers are interconnected by complex groundwater systems. These groundwater systems in turn connect through different layers of glacial materials in the shallow aquifer, as well as in fractures and faults in the bedrock.

Challenges of Mine Waste in a Complex Hydrologic Setting

The abundance of interconnected water systems in the Lake Superior basin significantly increases the risks associated with metallic mining. Multiple interacting water systems lead to uncertainty in predicting how pollutants will behave within them and the adequacy of pollution control measures. An abundance of water also makes it more likely that pollutants will contaminate the water and less likely that pollution controls will be completely effective. Finally, the Lake Superior region is one of climate extremes. A mine's tailings basins, caps and liners, and stockpiles must be designed to withstand a number of challenges, including temperature changes, heavy rain and snow, freezing and thawing soils, as well as future climate change effects that are not yet fully understood.

Predicting a mine's environmental impacts involves an extensive process of site-specific research and complex data gathering and analysis. For regulators to reach a decision about whether to allow a mining project, the potential environmental consequences of a proposed project must be accurately described and fully understood. Impacts such as the project's effects on water quality can be difficult (although not impossible) to predict; historically, a majority of mine projects have failed to accurately predict the water quality issues that ultimately occurred. Many of these failures were caused by a lack of



10 Metallic Mineral Mining: The Process & the Price

To prevent pollution of ecosystems near mining sites, mining wastes must often be permanently isolated from the environment. This isolation is extremely difficult and efforts to do so have failed at many mines. Two reasons can be cited for these failures. Current technology for managing mine waste is constantly evolving and no method has been in use long enough to completely prove itself. Research on how to prevent or mitigate acid mine drainage and pollutant leaching is ongoing; new metallic mining operations in the western Lake Superior region would only be the testing grounds for these technologies. Second, the effectiveness of any mine's pollution control technology depends on a number of factors, including the unique characteristics of its operation, the characteristics of the ore, and the environmental characteristics of the site. Every mine is unique, and every mine's pollution control plan must be specifically designed for those characteristics. (Chapter 3 and Chapter 4 discuss many of the potential impacts of metallic mineral mining.)



Wild rice winnowing.



Wild rice harvest.

Evaluating a Mine's Potential Social, Economic, and Environmental Impacts

Generally, before mining begins, decision makers must conduct a comprehensive analysis of environmental and other effects of the proposal. Sound public policy can only be made by recognizing the nature of the environmental threats and by understanding that science and technology cannot always predict or repair all of mining's impacts.

Additionally, there are treaties, legislation, and judicial decisions that guarantee tribal rights. Any mine permitting process must give full weight to how the mine would affect Indian tribes. For those impacts to be fully understood, decision makers should explore the traditional ecological knowledge (TEK) held by tribal members. Traditional ecological knowledge stems from centuries of living in close connection to the land. It provides critical information not just about tribes and their relationship to

natural resources but about the resources themselves and their appropriate management. Any permitting process must afford tribes the opportunity to fully participate; only in this way can potential impacts be properly understood and evaluated from a tribal perspective.

The process of predicting, describing, and evaluating potential impacts in the US generally requires the development

When a project affects treaty or trust resources, whether on or off reservation, tribes' concerns must be considered during the environmental review process.

of an Environmental Assessment (EA) or the more comprehensive Environmental Impact Statement (EIS). In Canada, this type of review is required in some but not all cases. The environmental review process in the US involves an analysis of the direct, indirect, and cumulative environmental consequences of the proposed action as well as a discussion



of any alternatives to the action. The EA and EIS processes also examine a mine’s potential socioeconomic impacts on the human environment. (Chapter 4 describes issues related to mining’s socioeconomic impacts; see Chapter 6 for a fuller description of the environmental review and permitting processes.)

When a project affects treaty or trust resources, whether on or off reservation, tribes’ concerns must be considered during the environmental review process. The review process may also trigger various pieces of federal legislation, depending on the project’s expected impacts. Some of the federal acts include the National Historic Preservation Act, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act of 1990.

Predicting a mine’s impacts on the surrounding environment is a complex undertaking. If data is incomplete or insufficient, the environmental review process and the resulting EA or EIS can underestimate or mischaracterize environmental impacts. Accurately estimating the environmental price of mining is essential to meeting environmental review requirements and making informed decisions.

Ensuring a Mine Can Clean Up the Damage

When a decision is made to move forward with mining activities, a mine operator must provide some form of *financial assurance* to ensure the mine site is reclaimed properly when the mine stops operating. The amount of

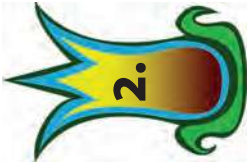
Because closure and reclamation costs are based on a prediction of the mine’s impacts, an accurate cost estimate requires a detailed closure and reclamation plan. High-quality predictions of impacts are critical: if impacts are missed, or their severity is underestimated, the amount of financial assurance will be insufficient to cover the costs.

financial assurance differs for each project and is based on estimated closure and reclamation costs; the primary goal is to ensure taxpayers are not left to pay for them. Unfortunately, financial assurance amounts often are based on *predicted* impacts, meaning they can fail to cover the costs of fixing or remediating those problems that were not predicted.

Several forms of financial assurance can be used for mining projects. The most secure is cash or an equivalent financial instrument that will provide funds even if the mining company declares bankruptcy. Less desirable financial assurance

instruments include surety bonds and insurance. Mining companies might also propose a self-guarantee for financial assurance. If a mining company goes bankrupt, however, a self-guarantee holds little promise because the money can be distributed to other creditors instead of paying for clean-up activities.

Because closure and reclamation costs are based on a prediction of the mine’s impacts, an accurate cost estimate requires a detailed closure and reclamation plan. High-quality predictions of impacts are critical: if impacts are missed, or their severity is underestimated, the amount of financial assurance will be insufficient to cover the costs. Underestimating a mine’s impact on water quality, for example, may mean the financial assurance is insufficient to pay for a water treatment facility after the mine closes. All of these uncertainties combine to make financial assurance a vital topic in planning for mining. 🏞️



From Raw Earth to Refined Metals: The Stages of the Metallic Mining Process and Their Effects on Surrounding Ecosystems

From inception through closure, a mine goes through several stages of development, each with its own impacts on the environment and local ecosystems. The various stages affect ecosystems, habitats, and the quality and quantity of natural resources that live there.

Exploration: The Challenge of Exploring Under the Surface

A mine operator typically explores a potential site to determine whether it wants to move forward with a mining operation. A key question during exploration is whether the deposit contains minerals in a high enough concentration to make it economically viable to extract them. A mine operator weighs many criteria, not only how much target mineral the deposit contains but also the mineral's quality (grade) and the cost of removing it in a manner that safeguards the surrounding ecosystem.



Taconite pellets.

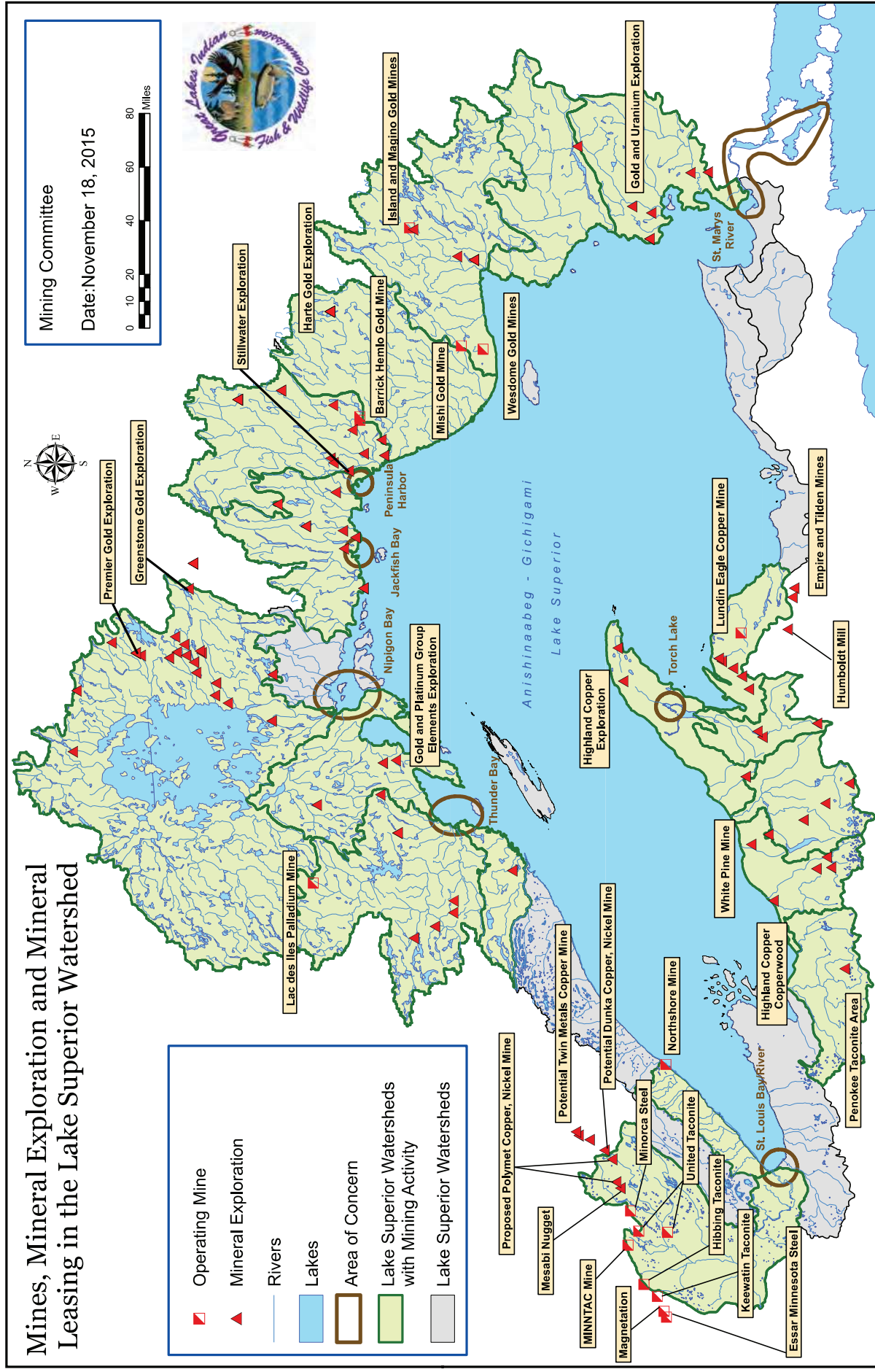
The mine operator also has to consider the costs of returning the mine site to a pre-mine condition after the deposit is exhausted and mining ends.

The map on the next page shows areas of historic and current mineral exploration throughout the Lake Superior basin. The map also depicts areas that have been identified as having potential for mineral development. While it is unlikely that many of these deposits will become operating mines, the fact that exploration is occurring indicates that those areas have the potential to be developed.

Exploratory drilling penetrates different geologic layers and may cause water from different aquifers to mix, thereby changing the water's chemistry. It can also cause water elevations within an aquifer to change, causing wells to go dry.

In the exploration phase a mining company conducts field explorations, core drilling, metallurgical bulk sampling and testing, and other studies. In addition to determining the economic viability of the deposit, one of the goals of the exploration phase is to establish the geometry of the ore body and whether it is amenable to processing. The information also helps determine the economic potential of the ore body and whether it is suitable for underground or open pit mining.

The standards by which an ore body is judged suitable for mining can vary over time. When high-grade iron ore was plentiful, taconite (a low-grade iron ore) was not mined because it was considered a waste rock. But as the supply of high-grade



Locations of operating mines and areas of recent mineral exploration in and around the Lake Superior basin.



Drill rig operator at the PolyMet potential mine site in Minnesota displaying a piece of core.



Drilling operation at the Bend deposit in Wisconsin.

iron ore decreased, the mining industry began to view taconite as a potential resource. This changing attitude is important in the Lake Superior region because taconite is found extensively in the iron ranges of Michigan, Minnesota, and Wisconsin. Once taconite ore is removed from the ground, the mining company concentrates it into pellets slightly smaller than a marble. The pellets (also called taconite) are a concentrated iron product, more economical to transport and process into finished goods.

A mine operator also must consider the potential threats exploration activities pose to the surrounding ecosystem. Exploratory drilling penetrates different geologic layers and may cause water from different aquifers to mix, thereby changing the water's chemistry. It can also cause water elevations within an aquifer to change, causing wells to go dry.

Another potential threat in the exploration phase is drilling sludge, the material brought to the surface during drilling. Drilling sludge, also known as drill cuttings, can contain sulfide ore, heavy metals, and other contaminants, and it can contaminate surface waters when not disposed of properly.

The exploration phase also causes land to be disturbed by road and drill pad building and by heavy equipment use.

These activities can introduce invasive

Attachment 6 to MNRD THPO Report



A mining haul road constructed after the Eagle mine was permitted in Michigan.



(At far left)
Waste rock stockpile at the Humboldt Mill in Michigan.



(Near left)
Satellite image of the U.S. Steel MINNTAC tailings basin. This facility is approximately 16 square miles in size.

species and compact soils, resulting in greater surface run-off.

Development: Ecological Impacts of Constructing a Mine

When a proposed mine has cleared all permitting hurdles, the mining company can begin development and start turning the land into a working mine. Mines are either developed underground or, more commonly, as an open pit, but their purpose is the same: to bring to the surface what was formerly underground.

Developing an open pit or underground metallic mine generates large amounts of waste rock and ore processing byproducts. Waste rock is made up of the soil, rock, and non-target materials a mining company must remove to reach and excavate the ore that lies under the surface. The amount of waste rock a mine generates depends on the location and depth of the ore body. Often a mine can use some of the waste rock in other parts of the mine operation, but rarely can a mine utilize all of it. Thus, when a mine closes, it typically leaves behind large stockpiles of waste rock.

Tailings are the byproducts of processing left over after a mine removes and refines the target minerals. For all mine and ore types, the lower the ore grade, the more tailings are produced.

Tailings are the byproducts of processing left over after a mine removes and refines the target minerals. A typical mining operation generates an extraordinary volume of tailings compared to the amount of usable mineral it extracts, because even ore considered high mineral content has a mineral concentration that is quite low. A taconite facility that mines Attachment 6 to MNRD THPO Report

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24 million tons of ore in a year will typically generate 16 million tons of tailings for every 8 million tons of pellets. In a typical copper mine, the ratio of tailings to usable mineral is far higher: each ton of ore yields only about eight to ten pounds of copper, meaning a copper mine produces about 1,990 pounds of tailings for every 10 pounds of copper it produces. For all mine and ore types, the lower the ore grade, the more tailings are produced.

Mine development affects local ecosystems in a myriad of ways:

Erosion and Sedimentation

Developing a mine necessarily involves a dramatic reshaping of the land, exposing it to erosion by disturbing its natural contours and form. Steep slopes often formed by mining operations may erode when rain washes the soil downhill. When the rain carries those soil fragments into nearby waterways, sedimentation occurs. Sedimentation presents a multitude of ecological risks. In lakes and streams, sedimentation can cover and kill vegetation and invertebrates; it can cover fish spawning grounds as well as introduce contaminants into the environment. When sediments from mine development are acidic or contain heavy metals, they pose threats similar to those caused by acid mine drainage (AMD) and heavy metal



Taconite mine pit and pit lake in the Mesabi Range of Minnesota.

contamination. (Chapter 3 provides a more detailed discussion of acid mine drainage and its effects on ecosystems.)

Hydrologic Changes

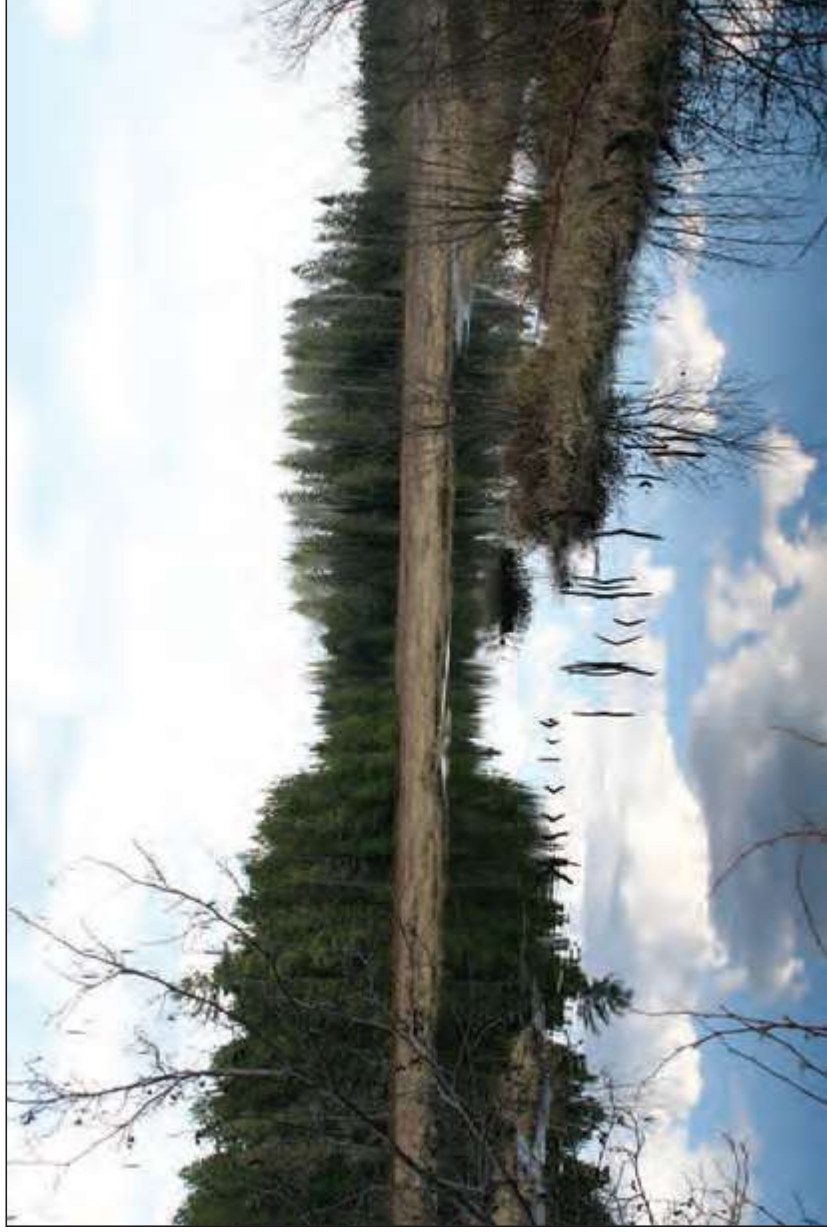
Because any pit or shaft constructed below the water table accumulates groundwater, a mine developer must pump the water out of a mine before it can remove ore. Whether the mine is open pit or underground, it acts as a giant well by

pulling in water from the surrounding area. In a process called *dewatering*, water is pumped out continuously until mining is finished and the mine closes. A consequence of continuously removing this groundwater is that it can lower water levels in the surrounding area, causing what is known as a *cone of depression*. If the groundwater is linked to rivers or lakes, removing it from the mine pit will not only lower water levels in nearby wells

Attachment 6 to MNRD THPO Report



including hydrology changes, aerial deposition of reactive dust, and the fragmentation of animal habitats. The removal of these wetlands to construct mine pits would reduce the habitat of a number of species, including moose who use them in summer as a refuge from hot temperatures. Finally, the surrounding surface waters and groundwater aquifers likely would be affected due to the interconnection between aquifers, surface waters, and the holes that mine pits create in the landscape.



High-quality wetland complex in the ceded territory.

but can also lower surface water levels. The extent of the cone of depression and the extent of its impact on surface water depends greatly on the area's hydrology and geology.

The location of a metallic mine dictates the nature and severity of its hydrologic threats. If an ore body is mined near interconnected lakes, streams, and wetlands, the water itself can transport pollutants throughout the system. The

proposed NorthMet mine in Minnesota provides a good illustration of the ripple effect mining development can have in wetland areas. The NorthMet mine would be located within the Hundred Mile Swamp, an area of high-quality wetlands with excellent biodiversity. The project would fill approximately 1,000 acres in this wetland complex. Thousands more acres could be indirectly impacted by a combination of mine-related effects

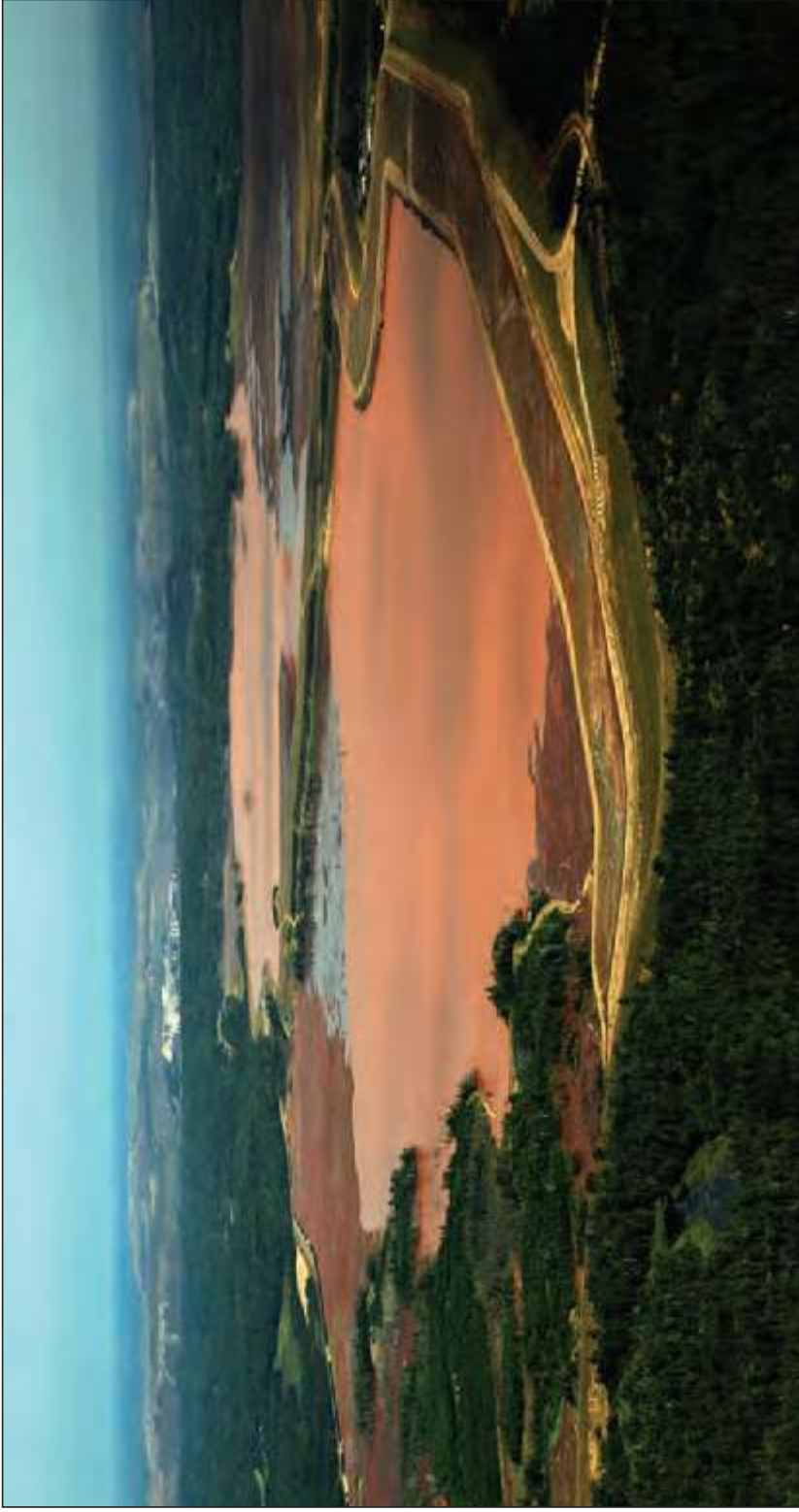
Contaminant Leaching

To get to the subsurface ore, a mine operator must dig open or underground pits. When mining operations end, these large pits are sometimes backfilled to add stability and prevent the remaining rock from being exposed to air and water. When not carried out properly, however, backfilling can cause negative impacts. Backfill often consists of waste rock and tailings made from the ground rock and process effluents used in the concentrating process. If the backfill contacts water and escapes from the mine's underground workings or pits, surface and groundwater can be contaminated.

Some mine projects, however, opt to leave behind a lake that is formed when groundwater re-floods the mine pit. The operators of the NorthMet mine in Attachment 6 to MNRD THPO Report



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Tailings ponds of the Empire Iron mine in Michigan. Lake Superior is visible in the background. (photo courtesy of Chauncey Moran)



Acid rock drainage from the Buck and Dover Iron Mines in Michigan.

Minnesota propose to leave behind such a pit lake. The danger of these lakes is that the water can be contaminated and dangerous to wildlife. Compounding the risk of a contaminated lake is the danger that the water will overflow at the surface or seep into the groundwater, thereby spreading the contaminated water beyond the mine site.

Sulfur-bearing waste rock and tailings that are disposed of above ground present another type of ecological threat. If they

are exposed to air and water, both have the potential to generate acid mine drainage and release metals into the surrounding environment. Tailings can contain heavy metals, chemicals, and acid-generating sulfur compounds, all of which are toxic to the environment in varying degrees, and waste rock may contain radioactive materials. (Chapter 3 provides a more complete discussion of issues surrounding waste rock and tailings.)
Attachment 6 to MNRD THPO Report



Air Quality Impacts

Mine development can also impact air quality. When rock is excavated, crushed, and transported to the surface, it can release contaminants into the air. Dust generated by mining contains particulates that may affect human and animal health if inhaled and contain pollutants which can contaminate soil, water, and vegetation. Gaseous air pollutants may contain sulfur dioxide which irritates the lungs and can damage or kill plants, especially evergreens. Metallic mining operations in the Lake Superior region have disturbed geologic layers containing asbestos-form fibers which, if released into the air, can pose serious health risks.

Dust generated by mining contains particulates that may affect human and animal health if inhaled and contain pollutants which can contaminate soil, water, and vegetation.

Carbon Footprint

Developing and operating a mine requires enormous amounts of electricity to run machinery, process ore, and maintain climate control in the underground tunnels. This energy demand leads to significant releases of greenhouse gases which contribute to global climate change. For example, the Bureau of Mines reported that electric power requirements at most



Ore truck headed to the Eagle mine in Michigan.

taconite operations ranged between 100 and 150-kilowatt hours per ton of pellets produced, meaning a mine that produces 8 million tons of taconite pellets per year uses the amount of electrical energy equal to approximately 110,000 households.

Transportation Effects

During mine development, ore is removed and transported for processing. Blasting materials, heavy equipment, and large ore trucks used to remove and transport the ore can introduce a number of harmful chemicals into nearby waterways. Because a great percentage of the mined ore will be waste, generally the ore cannot be economically transported very far off-site. If the ore is particularly high grade, however, it can be cost-effective to transport it off-site for further processing. At the Flambeau mine in Wisconsin, for example, the high grade of the ore made it

economically feasible to ship it to facilities in Canada for further concentration and smelting.

When new transportation corridors and improvements are constructed to transport ore, they can have significant impacts on the environment through deposition of ore dust that escapes from trucks and rail cars. At the Eagle Mine, for example, the mining company proposed construction of a new road to link the mine to Humboldt Mill, an ore beneficiation plant in rural upper Michigan. The proposed road would have transected a remote area, filled approximately 26 acres of wetlands, and crossed 22 streams. The potential damage was not limited to the road's construction: ore dust from trucks would have impacted the area during mine operation and would have had lasting consequences on water quality along the corridor. In the end, the mining company abandoned that road proposal after the EPA objected based on water quality concerns.

Milling:

Reducing Boulders to Sand

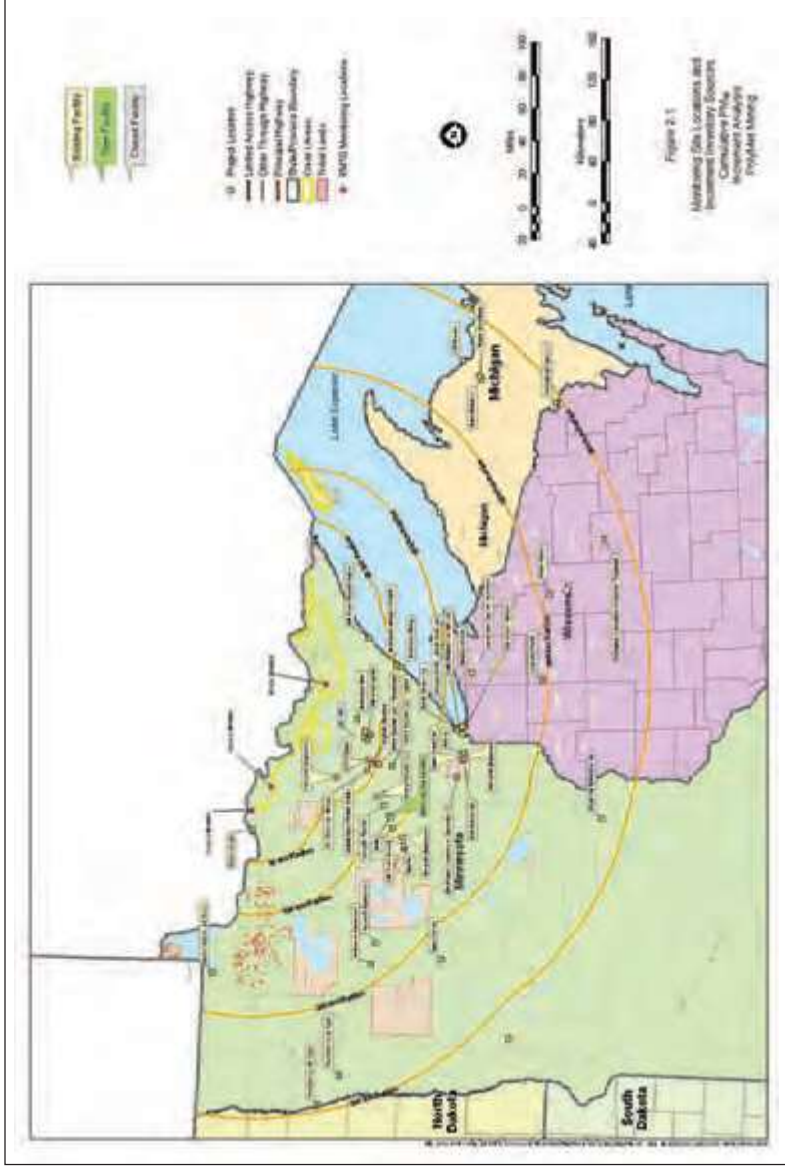
After the ore is removed, milling is generally the next step toward producing a usable metallic mineral product. Milling involves crushing large pieces of ore removed from the mine. Crushing and grinding reduce the ore pieces to a size

Fugitive dust can potentially contaminate soil, surface water, and groundwater because it can carry toxic elements including heavy metals. It also can be deposited on surrounding soils and surface water and taken up in plant tissues.

suitable for mineral extraction, down to fine sand or even a fine powder.

A primary ecosystem threat from milling comes in the form of fugitive dust that escapes during that process. Fugitive dust can potentially contaminate soil, surface water, and groundwater because it can carry toxic elements including heavy metals. It also can be deposited on surrounding soils and surface water and taken up in plant tissues. This particulate dust also can affect regional haze, another type of air pollution.

Techniques for controlling dust are not completely effective. In open pit operations, the sheer size of the exposed area makes dust suppression difficult. In Minnesota, for example, hundreds of miles



Map of area of potential effect for regional haze prepared for the Polymet DEIS.

of perimeter roads around the Minntac facility have been constructed from coarse tailings. For dust control, tanker trucks constantly spray water throughout the facility. Despite these efforts, the mine has not been able to fully control its dust. In 2008, mine owner U.S. Steel agreed to pay a \$120,000 fine for air quality violations related to excessive dust emissions at Minntac. Other taconite facilities along the Iron Range in Minnesota have also been cited for failures in dust control.



Truck spraying water for dust suppression at the Minntac tailings basin.



Beneficiation: Transforming the Milled Ore to Usable Metals

In the Lake Superior region as well as most of the world, high grade ores of iron, copper, gold, silver, and other metals have been mined out. Metal-bearing ores are rarely found in high-grade form but are mixed with gangue, or waste material, and generally as compounds of several elements. This means that even after the milling process has reduced the ore to a powder, a mine operator must further concentrate the target metal to make shipping economical.

Mines use various processes collectively known as beneficiation to accomplish this further separation and concentration of the target metal. The beneficiation method a mine uses depends on the target metal, ore grade, and specific chemical characteristics of the ore. Every mine develops a unique combination of physical and chemical processing techniques in order to maximize recovery of the target mineral.

Concentrating

Generally all types of ore must be concentrated through separation. The most common separation methods are gravity, froth flotation, and magnetic.

Gravity separation, used in nonferrous processing, separates the minerals according to their different densities by suspending them in a fluid. Their different settling rates allow the desired mineral to be collected from the bottom of a tank.

Froth flotation is the most widely used method of beneficiating nonferrous ores. The froth flotation method begins by adding chemicals to the milled ore so that the surface of one or more minerals in the slurry will repel water and attract air bubbles. The air bubbles rise to the surface of the slurry and the resulting froth, containing the minerals, is then skimmed and collected. Froth flotation is the beneficiation method that was proposed by the Crandon Mining Company in Wisconsin and at the NorthMet project in Minnesota.

Magnetic separation is used in some ferrous mine operations. The magnetic separation process mixes the crushed ore with water and grinds it to a fine powder with a rotating mill. Magnets separate the magnetic iron from the gangue, and the resulting iron powder is then mixed with limestone and baked into marble-sized taconite pellets.

The final product of the concentrating process is often called a concentrate.

Metallurgical Beneficiation

Once concentrates are isolated through gravity, chemical, or magnetic processes, metallurgical beneficiation processes can be applied to extract target metals that other methods were unable to recover. Hydrometallurgy uses water-based solutions to extract metals from ores, a process known as leaching. Pyrometallurgy uses high temperature processes to force a chemical reaction to convert the ore to a more extractable form. Electrometallurgy involves the use of electrical current to extract metals from ore. Smelting (a form of pyrometallurgy) is the most common type of metallurgical beneficiation, and involves heating the metal concentrate beyond its melting point to separate out impurities.

Beneficiation Byproducts and Environmental Impacts

The different methods of concentration and beneficiation use a large variety



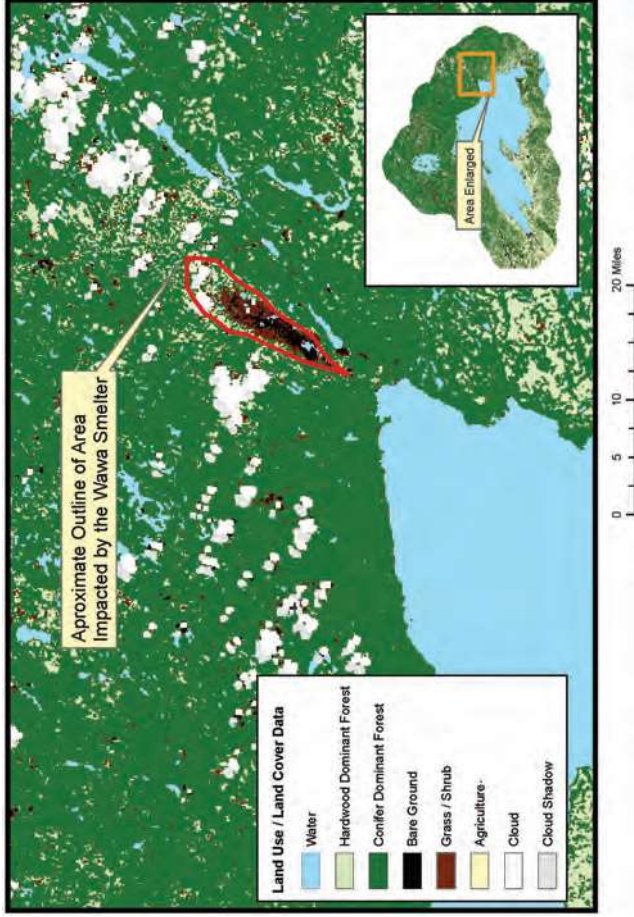
Beneficiation equipment: autoclave for hydrometallurgy. Attachment 6 to MNRD THPO Report

and volume of chemicals. Some of these chemicals are relatively benign but others, like sulfuric acid and cyanide, are highly toxic. They must be transported to and stored at the mine site until used and can harm ecosystems if they leak or spill. Many process chemicals persist in the tailings, where they can contact ground or surface water and be carried away from the mine site.

The smelting process releases large amounts of sulfur dioxide, affecting and sometimes killing trees by acidifying soil and damaging leaves and flowers. The released sulfur dioxide can also react with oxygen and water to form sulfuric acid, a component of acid rain. Acid rain

lowers the pH of water and may increase its sulfate level and the production of hydrogen sulfide, both of which can be toxic to aquatic and terrestrial ecosystems.

The environmental impacts of sulfur dioxide releases can be seen at the iron beneficiation plant that operated in Wawa, Ontario from 1939 to 1998. The plant's sulfur dioxide emissions caused severe damage to the boreal forest throughout a 20-mile kill zone downwind of the plant. Impacts included tree and shrub deaths and a marked decline in species diversity. In addition to these impacts, surface waters downwind of the smelter showed a marked increase in sulfate and acidity when compared to other waters



Satellite image of the zone of dead vegetation downwind of the smelter at Wawa.

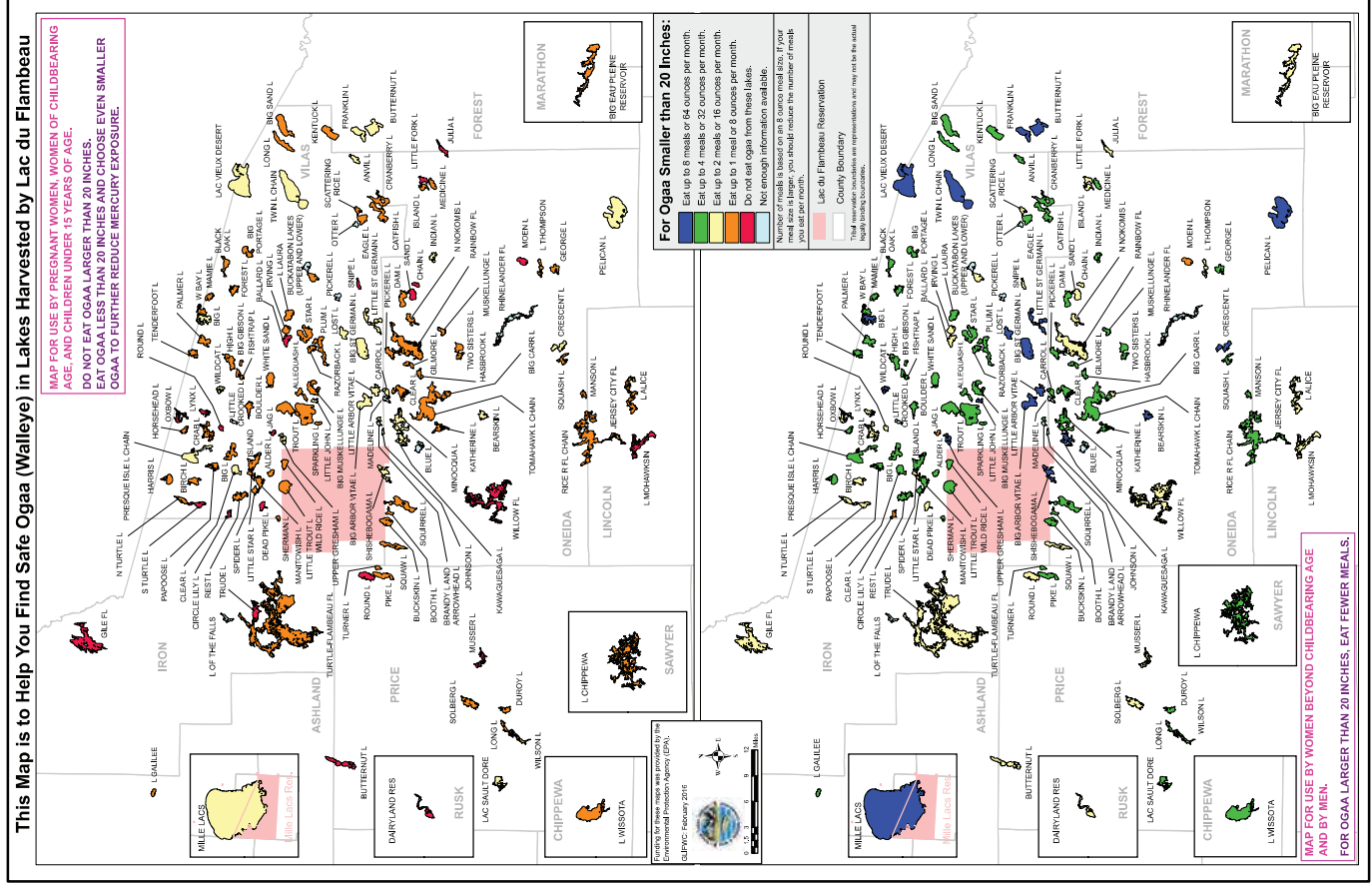
REAGENT	THREAT TO THE ENVIRONMENT
Potassium	Toxic at very high levels, causes salt imbalance
Sodium xanthates	Unknown
Thiocarbonates	Unknown
Kerosene, fuel oil, wood tar, coal-tar oil, pine oil	Toxic, impairs flavor of tissue, decreased dissolved oxygen in water
Aliphatic alcohols	Toxic
Polypropylene glycol methyl ether	Unknown
Methyl isobutyl carbimolol	Unknown
Crylic acid	Toxic, used in disinfectants
Copper sulfate	Highly toxic to aquatic life
Sodium sulfide	May increase hydrogen sulfide
Sulfur dioxide	May decrease pH
Sodium cyanide	Highly toxic to aquatic life
Zinc sulfate	Highly toxic to aquatic life
Starch	Breakdown products can deplete oxygen in water
Sodium dichromate	Highly toxic to aquatic life
Sodium fluoride	Used as insecticide, toxic
Sodium hydroxide	Increases pH
Lime	May increase pH and hardness
Soda ash	Increases pH
Sulfuric acid	Decreases pH
Sodium carbonate	May increase pH
Sodium silicate	May increase pH
Tannin	May decrease pH, reduces metal toxicity
Complex phosphates	May decrease pH, causes excessive aquatic plant growth



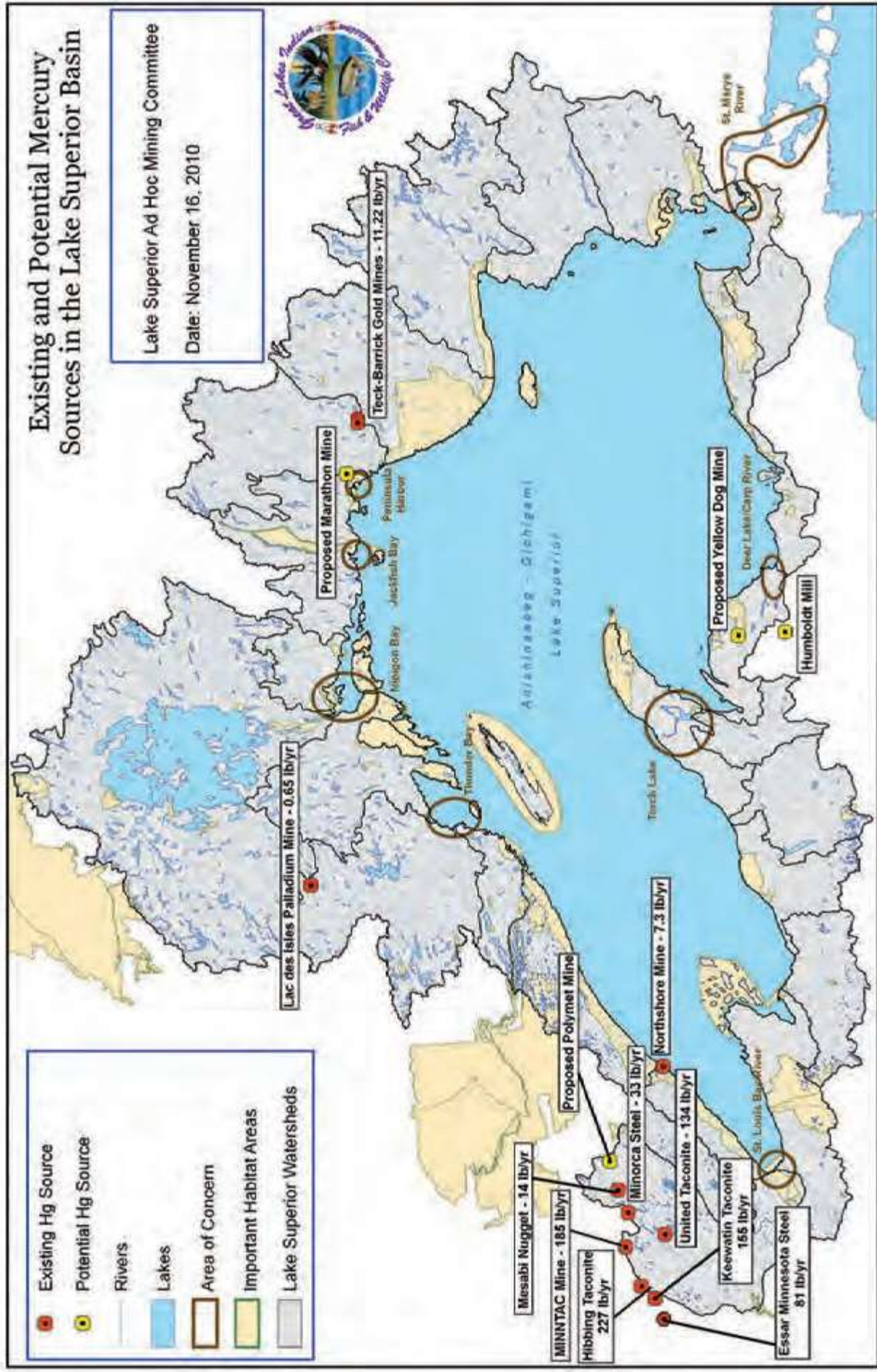
Mercury is another byproduct of beneficiation that is of particular concern in the Lake Superior basin; the negative effects of mercury to human health are well documented.

in the region. Soil samples in this area also contained elevated levels of soluble sulfate and arsenic. Scars from this contamination were evident in satellite imagery taken in 2010 even though the plant had been closed for 12 years.

Mercury is another byproduct of beneficiation that is of particular concern in the Lake Superior basin; the negative effects of mercury to human health are well documented. In most cases mercury is a low concentration component of the ore and is released when the ore is processed with heat, such as during taconite pellet formation and pyrometallurgy. The mercury enters the air and is deposited on the landscape by dry and wet deposition. Fish living in contaminated waterways absorb and concentrate mercury in their bodies. When humans eat the contaminated fish, mercury acts as a neurotoxin, interfering with the brain and nervous system.



Walleye consumption advisory for Mercury for the Lac du Flambeau band.



Major sources of mercury in the Lake Superior basin.



communities. Even when subsidence is not associated with a disaster or accident, planned subsidence can alter drainage patterns and disrupt the natural surface hydrology. The operator of the underground Copperwood mine in Michigan is planning to allow surface subsidence of several feet after mining ends.



Tributary of Lake Superior that could be impacted by subsidence at the proposed Copperwood mine site.

For contaminated sediment within stream banks or lake beds, remediation can be very complicated.

Closing a mine operation involves demolishing mine buildings and facilities, removing pipelines, roads, rail lines, and power lines, re-vegetating disturbed areas, and beginning post-mining water treatment and monitoring. During the closure phase, additional monitoring of surface and groundwater, customized to post-mining conditions, should begin.

Reclamation: Deconstructing Mine Workings and Reclaiming the Mine Site

When the target mineral is depleted or the mining operation is no longer profitable, production ends and the mine project enters the closure and reclamation phase. The process of permanently shutting down mining operations and returning the site

to its natural condition is a long-term, expensive, and time-intensive procedure. In most cases, the goal is to return the mine site as closely as possible to its pre-mining conditions.

One risk that can occur both during and after mining is subsidence, the surface collapse of underground mine workings. Catastrophic collapse of underground mines during mining can be a serious hazard to workers and surrounding

Monitoring is essential at waste rock stockpiles and tailings basins to ensure contaminated water is not seeping into surrounding surface and groundwater. Monitoring should continue until the monitoring data indicates that mine seepage, mixed with naturally occurring rain and groundwater, has reached equilibrium and meets applicable water quality standards.



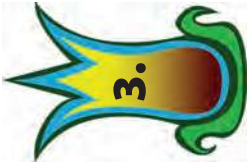
Forested wetland at the Lynne Copper deposit in Wisconsin. Once lost, this type of wetland is difficult to restore.

Post-closure refers to the time that it takes, after surface reclamation, for a mine site to be returned to its pre-mine condition. Post-closure reclamation will be influenced by the climate, physical characteristics of the mine site, applicable law, and the technical and economic feasibility of the reclamation project. The amount of time needed to achieve a pre-mine condition depends on which resources are contaminated and the extent of contamination.

If the site needs remediation to reach its pre-mine condition, the time required will depend on the extent of contamination and the resources committed to cleaning up that contamination. For contaminated sediment within stream banks or lake beds, remediation can be very complicated. At the closed Flambeau mine in northern Wisconsin, for example, drainage from a parking lot entered a stream, and efforts to remediate the copper-contaminated stream have been ongoing for over a decade beyond mine closure. 



Sediment detention ponds at the closed Flambeau mine in Wisconsin.



Mining and Its Effects on Water

Mining operations impact the environment in a myriad of ways, with varying degrees of consequences and reparability. Metallic mining's most dangerous risk, however, is to water. Metals contamination, chemical pollution, the possibility of acid mine drainage, and other threats to surface and groundwater are risks that must be taken into consideration in both permitting decisions and when operating a mine. Mines and associated facilities must be carefully designed and engineered to contain the wastes produced; the failure to do so has had devastating effects on ecosystems. In 2015, for example, two tailings dams containing iron mining waste collapsed at the Samarco iron ore mine in Brazil. The tailings escaping from the dam mostly destroyed a nearby town and contaminated the water supply to more than 200 other area towns.



Satellite image of the town of Bento Rodrigues in Minas Gerais, Brazil, before the structural failure of the Samarco tailings dam.



Satellite image of the town of Bento Rodrigues after the structural failure of the Samarco tailings dam.

Hydrologic Changes: Acid Mine Drainage, Metals, Chemical Pollution, and Water Quantity

Acid Mine Drainage (AMD)

Among the many environmental risks posed by metallic mineral mining, acid mine drainage (AMD) stands out for its potential to permanently and irreparably damage the surrounding ecosystem. AMD

originates when minerals containing sulfur interact with oxygen and water. The chemical reaction that follows generates the acids and oxides commonly referred to as AMD. Mining can significantly accelerate the acidification process because mining raises the sulfide minerals to the surface and crushes them, thereby exposing more surface area to water and oxygen. While nonferrous minerals are often bound with sulfur, creating a significant potential for the generation of

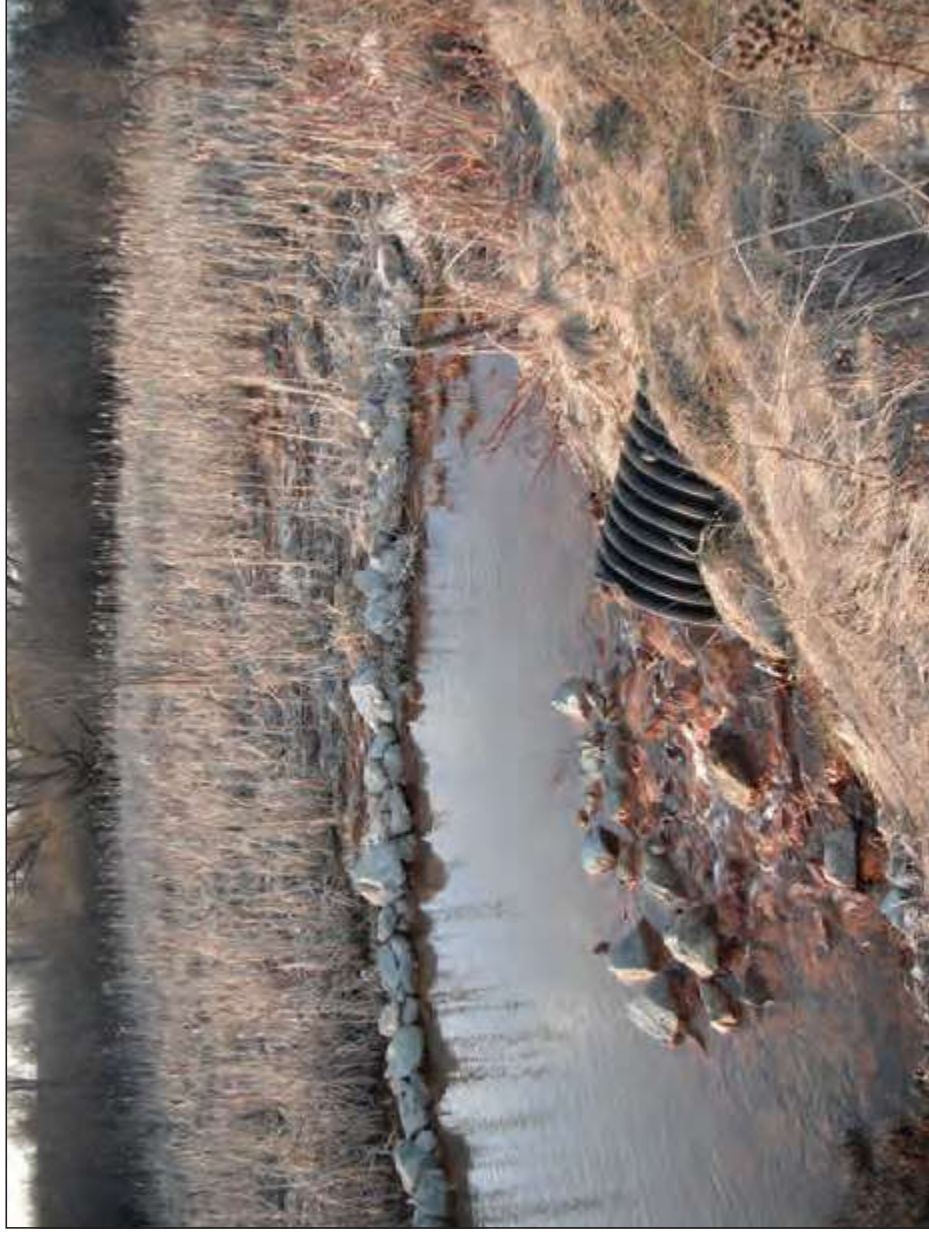


Uncontrolled acid generation from AMD results in an ecosystem with high levels of metals, dissolved solids, sulfates and acidity. A mine draining acid water can devastate rivers, streams, and aquatic life for many years.

AMD, ferrous ores that contain pyrite can also generate AMD.

A mine can generate AMD for hundreds or even thousands of years, until all of the sulfur in its tailings, waste rock stockpiles, and exposed mine pits has been consumed in the acid generation process. AMD can kill fish and other aquatic life and severely contaminate surface and groundwater. Not all mines will have an AMD problem, but it is critically important that the possibility of AMD generation be fully investigated at every mine. Although it can sometimes occur under natural conditions, AMD comes primarily from active and abandoned mines.

In addition to acidifying ground and surface water, AMD accelerates the dissolution of metals such as copper, lead, and mercury into ground or surface water. Uncontrolled acid generation from AMD results in an ecosystem with high levels of metals, dissolved solids, sulfates and acidity. A mine draining acid water can devastate rivers, streams, and aquatic life for many years.



Acid rock drainage at the Buck and Dover mine in Michigan. The water flows into the Iron River.

The waste rock stockpiles at the now-closed Dunka Mine in Minnesota demonstrate how a mine can continue to generate and release AMD. In addition to generating acid, the waste rock still releases sulfate and metals such as copper, nickel, and cobalt at levels that exceed state and federal water quality standards. Efforts to mitigate this contamination by

installing caps on the stockpiles to limit infiltration and by using constructed wetlands to treat the discharged effluent have had limited success. The pH levels in the affected creeks have improved, but the concentrations of some metals, like nickel, have not decreased. The source of acid and metals at the Dunka Pit is the Virginia Formation, a sedimentary layer on top

Attachment 6 to MNRD THPO Report



Safety warnings in the Iron River downstream of the Buck and Dover mines.

of the Biwabik Iron Range in Minnesota.

New mine proposals along the east end of the Mesabi Range, including the proposed NorthMet mine, would intersect this same mineral formation and could create similar AMD issues.

form relatively insoluble compounds in water that will sink and be buried in the sediments. Others, however, are more soluble and will become available to interact with organisms. Although many metals become more soluble in acidic water, including copper, cobalt, cadmium, and nickel, some metals are more soluble at neutral or higher pH. These include selenium, fluoride, aluminum, uranium, and arsenic. In addition, some processing chemicals like cyanide are most soluble at neutral to alkaline conditions.

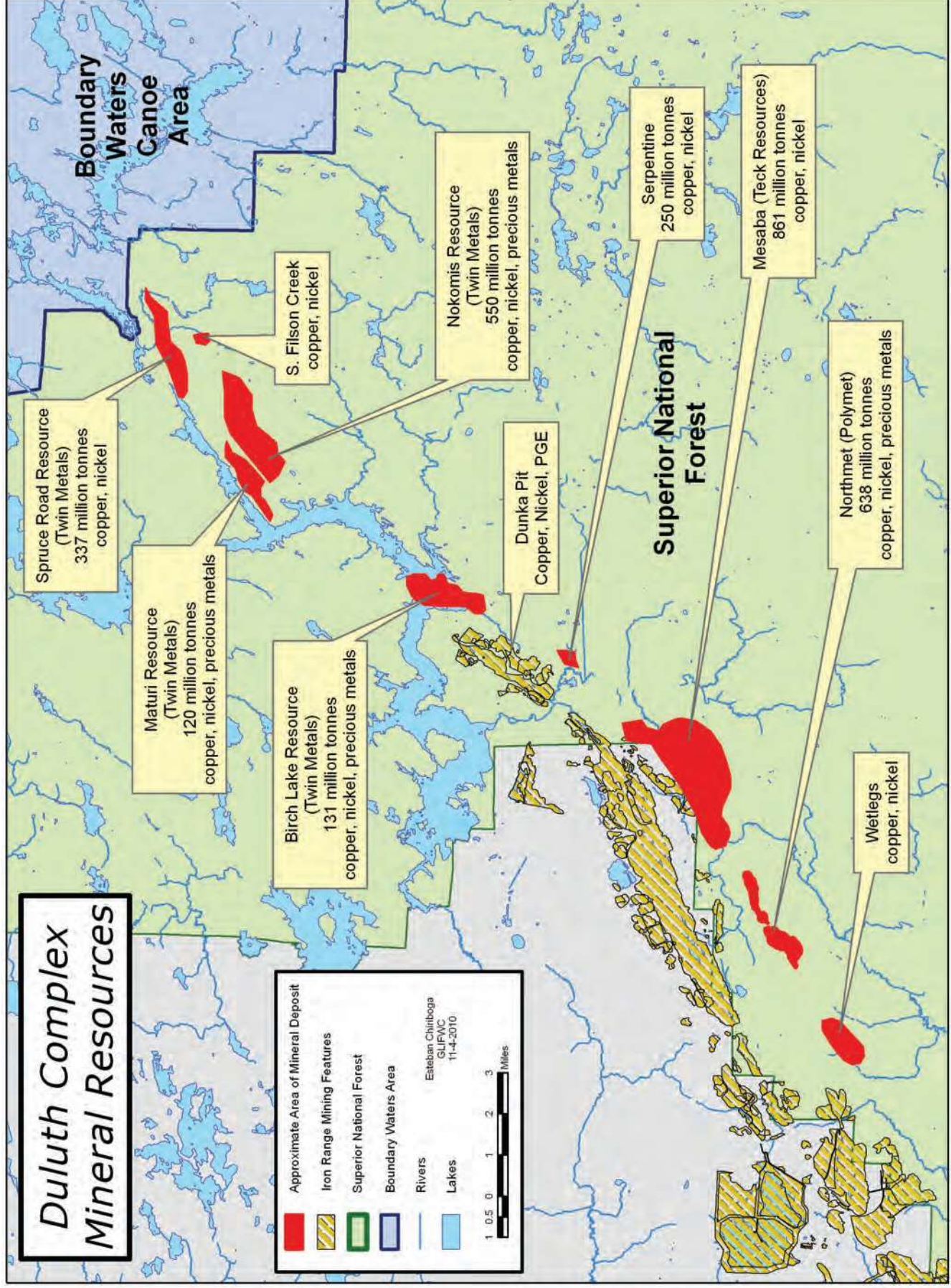
Chemical, Sulfur, and Thermal Pollution

Metals are not the only chemicals released at metallic mine sites. Other forms of chemical pollution can result from spills of ore, concentrate, process chemicals, and other materials used at the mine. Contaminated water seeping out of tailings basins, waste rock stockpiles, and underground mine workings are common causes of chemical pollution.

For example, in 2008, the Michigan Department of Environmental Quality (MDEQ) became concerned about elevated selenium concentrations in effluents from the Empire and Tilden taconite mines. Selenium levels in area waterways exceeded water quality standards considered protective of fish and Attachment 6 to MNRD THPO Report

Metals Contamination

Mining extracts the minerals and metals found in the ore body. These metals—lead, arsenic, antimony, cadmium, cobalt, copper, zinc, mercury, manganese, molybdenum, and many more—may be essential to life but in large quantities cause metal toxicity. Some of these metals



Potential copper nickel mines along the east end of the Biwabik Iron Range.



Fish are an important subsistence food for tribal members.

aquatic life, in some cases by more than tenfold. GLIFWC found that:

[f]ish collected from the Escanaba River, Goose Lake and surrounding streams, including brook trout, northern pike, and white suckers, all exceeded the EPA's suggested threshold values above which there may be impacts on fish reproduction. Selenium levels in these fish were approximately 20 times the national average. The results confirmed that selenium is accumulating in fish at levels that may have adverse impacts on these species.

Because excess selenium exposure can be harmful to humans, these findings



Empire-Tilden mining district in Michigan. Waste rock piles, mine pits, and tailings from over 50 years of mining.

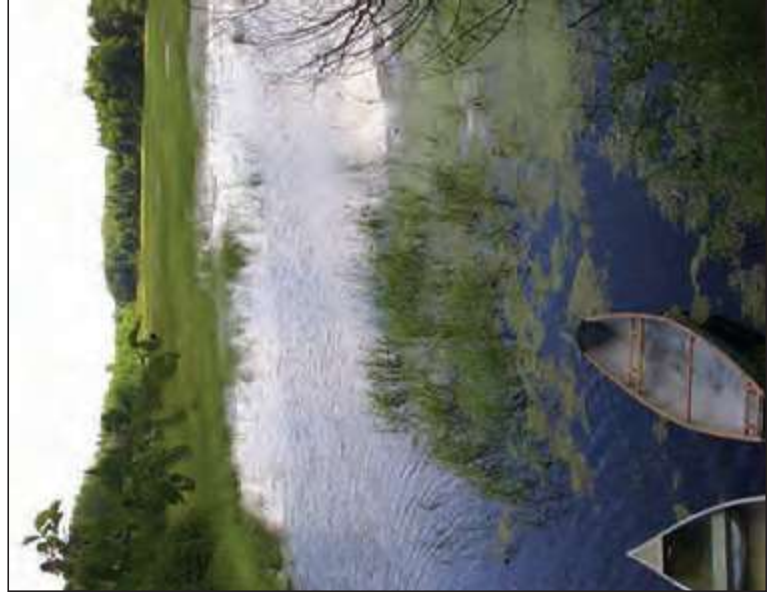
led the MDEQ to issue fish consumption advisories for lakes and streams down gradient of the mine effluent. Efforts to reduce selenium discharges are underway but data collected by GLIFWC in 2015 indicates that the levels still exceed standards.

Another mine-related chemical of concern is sulfate. Sulfur occurs naturally as the pure element and in compounds. When sulfur (in the form of sulfate) is present with mercury, the combination has the potential to have extensive environmental impacts. In the presence of sulfate, mercury

can be transformed into methylmercury, a neurotoxin. Methylmercury becomes increasingly concentrated as it moves up food chains, resulting in greater exposure to humans and wildlife. Because fish is a primary source of mercury in humans, the mercury in fish tissue stemming from mining releases of sulfate is a great concern for tribes.

Sulfate can also suppress the growth of wild rice. Minnesota has limits on the discharge of sulfate into rice waters, although those standards have rarely been enforced. The effects of sulfates on Attachment 6 to MNRD THPO Report

manoomin (or wild rice) are of great concern to the Anishinaabe because of their deep cultural connection with manoomin. In the 1940s, Minnesota Department of Natural Resource scientist Dr. John Moyle conducted extensive field research on the distribution of wild rice in Minnesota. Moyle's data showed that waters with sulfate levels over 10 parts per million (ppm) did not support healthy stands of wild rice. His work is one of the



Wild rice on the Mondeaux Flowage. This area could be impacted by mining in the Chequamegon-Nicolet National Forest.

reasons Minnesota limits sulfate levels to 10 parts per million for water used in wild rice production. The amount of sulfate in mine water can be tens or hundreds of times greater than the amounts naturally found in nature. Recent research has indicated that sulfate released by mines is converted to sulfide in the sediment of a river or lake and it is this sulfide that is highly toxic to wild rice. Controls to limit the discharge of sulfate into waterways

could help limit the generation of toxic sulfide.

The effects of sulfate releases on wild rice beds can be seen in the Sandy River and connecting lakes in Minnesota. While these waterways historically provided abundant manoomin, almost none exists there now. The primary reason for the decline is the high concentrations of sulfate seeping out of the Minntac tailings basin immediately upstream.



Water seeping out of the Minntac tailings basin and moving toward the Sandy Lakes in Minnesota.

Flooded wetlands downgradient of the Minntac tailings basin. Dead spruce trees indicate a change in hydrology.



State regulators have recognized that sulfate emissions in the hundreds of parts per million coupled with increased water levels (see discussion below) are a probable cause of the near disappearance of wild rice in the area.

Another water issue in mine development arises when the discharged wastewater is a different temperature than the receiving water. Warmer water is lethal

Recent research has indicated that sulfate released by mines is converted to sulfide in the sediment of a river or lake and it is this sulfide that is highly toxic to wild rice. Controls to limit the discharge of sulfate into waterways could help limit the generation of toxic sulfide.

to some fish, and elevated temperatures can reduce fish egg viability.

Water Quantity

By its nature, mining consumes and diverts surface and groundwater and can seriously affect its quantity, flow speed, and flow direction in the area around the project. The management of water is an important consideration in both evaluating environmental impacts and in planning mine operations.

The need to manage water begins with the workings used to access the ore body. If nearby lakes and streams are connected to the water table, their levels will drop as well. Wetlands that depend on groundwater for a portion of their



Flooded Minnesota county road CT308, downstream of an iron mine tailings basin.

water may experience a change in species composition; wetlands that are dependent on groundwater may dry out completely.

For fish, lowering the water table can expose spawning grounds, making them unusable. To mitigate the impacts of a lowered water level, mine operators sometimes pump water directly into lakes and streams. But this approach bypasses the natural system and may not adequately replicate the water's flow, temperature, oxygen, and chemistry.

Water pumped out of the mine must be stored or used. Some of the water is used in ore processing and much of it is used to transport tailings to the disposal facilities. From there, the water can re-enter the environment as seepage.

Most modern mines treat wastewater to comply with water quality standards but often dispose of the treated wastewater Attachment 6 to MNRD THPO Report



through drain fields that flow into existing bodies of surface water or shallow groundwater. Introducing this treated water can alter existing hydrology and create excess water in the system. In streams, the additional water can lead to flooding and increased scouring of streambeds and banks. Wetlands that are inundated with excess water can change type, and the ecology of those wetlands can become permanently altered. Although wastewater itself may meet water quality standards, the chemistry of the wastewater

Because mine tailings can be a source of AMD, the goal for sulfur containing tailings is to engineer a facility that isolates tailings from either oxygen or water.

can leach metals from the surrounding geology, causing increases in groundwater concentrations of toxic constituents.

Finally, water level changes caused by pumping water out of mine pits and releasing water through tailings basins can damage wild rice. Wild rice grows in shallow water, and increases in depth may flood wild rice beds. In addition, if a large quantity of water is released all at once, it can uproot and kill the growing plant.

The Challenge of Containing Mine Waste

Mine facilities, especially the tailings management areas and waste rock storage areas, must be carefully designed, operated, and maintained. Only with a high level of care, not only during the life of the mine but often for many years beyond, can a mine avoid the negative impacts described above.

Tailings

Tailings are the main byproduct of the beneficiation process. More specifically, tailings are composed of minerals which could not be recovered or have no commercial value, along with the water and chemicals used in beneficiation processes. Tailings are a combination of solid waste and water, typically in slurry or paste form because the milling process creates very small particles. They must be stored in a reservoir made specifically for tailings storage, often a pond or basin. Because mine tailings can be a source of AMD, the goal for sulfur containing tailings is to engineer a facility that isolates tailings from either oxygen or water. This isolation prevents the acidification reactions from occurring, but, as described below, it can be difficult.

The environmental challenges at tailings facilities are many. Tailings

A very serious risk associated with tailings storage is the long-term structural stability of the storage facilities. Catastrophic failures have occurred throughout time at tailings dams, causing environmental contamination and the deaths of local residents.

ponds and basins typically are very large in size and become permanent features of the landscape. Because tailings contain sulfide compounds, heavy metals, and unrecovered beneficiation chemicals, storage facilities that contain them are a source of contaminants to surrounding waters for centuries or longer. Environmental contamination occurs when tailings escape from management areas or from backfilled mine workings; almost any type of facility for storing these mine wastes eventually will leak contaminants into water.

How a mining company designs a tailings facility depends on the site's specific environment, the conditions, and the type of mineral processing it will utilize. The difficulty is that tailings are not easily kept isolated from the surrounding environment. All liners and cap systems used to isolate tailings and tailings water from the surrounding environment leak, due to imperfections in their installation and general wear over time. In addition, no containment system or engineering Attachment 6 to MNRD THPO Report



A tailings basin at the Minntac mine complex with trunks of trees uprooted.



control will last forever, and the perpetual maintenance and care of these facilities has become an important factor in the assessment of mining impacts. Illustrating this principle is the Grouse Creek mine in Idaho, located adjacent to the largest wilderness complex in the contiguous United States. The Grouse Creek Mine was heralded as a state of the art mine when it opened in 1994. Three years later, the mine closed. Soon thereafter, a tailings impoundment began leaking cyanide into surrounding water. In 2003, the U.S. Forest Service declared the mine site an “imminent and substantial endangerment” to human health; cleanup activities are ongoing.

A very serious risk associated with tailings storage is the long-term structural stability of the storage facilities. Catastrophic failures have occurred throughout time at tailings dams, causing environmental contamination and the deaths of local residents. For example, in 2014, a tailings pond catastrophically collapsed at the Mount Polley gold and copper mine in British Columbia, Canada. The breach sent over 30 million cubic feet of contaminated effluent into waterways, and the formerly pristine Quesnel Lake. About one million sockeye salmon spawn annually in the Quesnel Lake watershed. As mentioned above, the failure of two tailing ponds at the Samarco mine in



Specular hematite ore left behind on a waste rock stockpile in Michigan.

Brazil killed 17 people and contaminated the water supply for many more. Tailings from hydrometallurgical processes are more hazardous than tailings produced during the concentration process discussed in Chapter 2. They contain high levels of metals and chemicals used in the hydrometallurgical beneficiation process and so must be separated from the environment in capped and often double lined facilities for

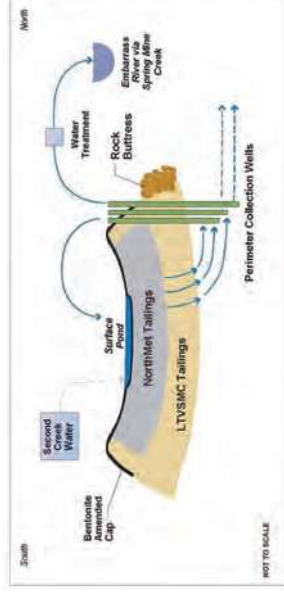
hundreds or thousands of years. Tailings generated by other types of concentration processes, such as froth flotation and gravity separation, can be stored in pits, tailings dams, impoundments, or other types of tailings management areas. Ideally these facilities are lined with impermeable materials, such as clay or synthetic liners, but this is not always the case.

Waste Rock

Rock that is not targeted by the mining operation is called waste rock. Waste rock, like tailings, is a physical byproduct of the mining process that presents an environmental challenge and reclamation responsibility. A mine generates waste rock in the process of stripping the overburden (the rock and soil on the surface) to reach the ore body and access the target mineral. Waste rock may contain some target mineral but it is in amounts insufficient for a mine to economically process.

Waste rock does, however, still contain metals and minerals. These metals may include lead, zinc, arsenic, antimony, silver, cadmium, cobalt, copper, mercury, manganese, aluminum, molybdenum, and nickel. Waste rock also can contain sulfide compounds, and to prevent AMD it should not be exposed to air or water. These substances can escape into the environment through runoff or fugitive dust, and groundwater containing metals can contaminate surface waters.

Waste rock is sometimes stored in lined facilities with leachate collection systems to collect water that escapes, thereby reducing impacts to surface and groundwater. Another common waste rock mitigation measure is the sub-aqueous (under water) disposal of rock if it has a high sulfur or metal content. This disposal method involves placing waste rock



Cross section of a version of the Polymet tailings basin with seepage capture and geotechnical stability features.

underwater, thereby reducing the exposure of sulfur and metals to oxygen to decrease acidification and oxidation. Sub-aqueous disposal generally is an effective mitigation method; however, not all mines have an open pit that can be used as a disposal site, and using natural lakes destroys the existing ecosystem of the lake.

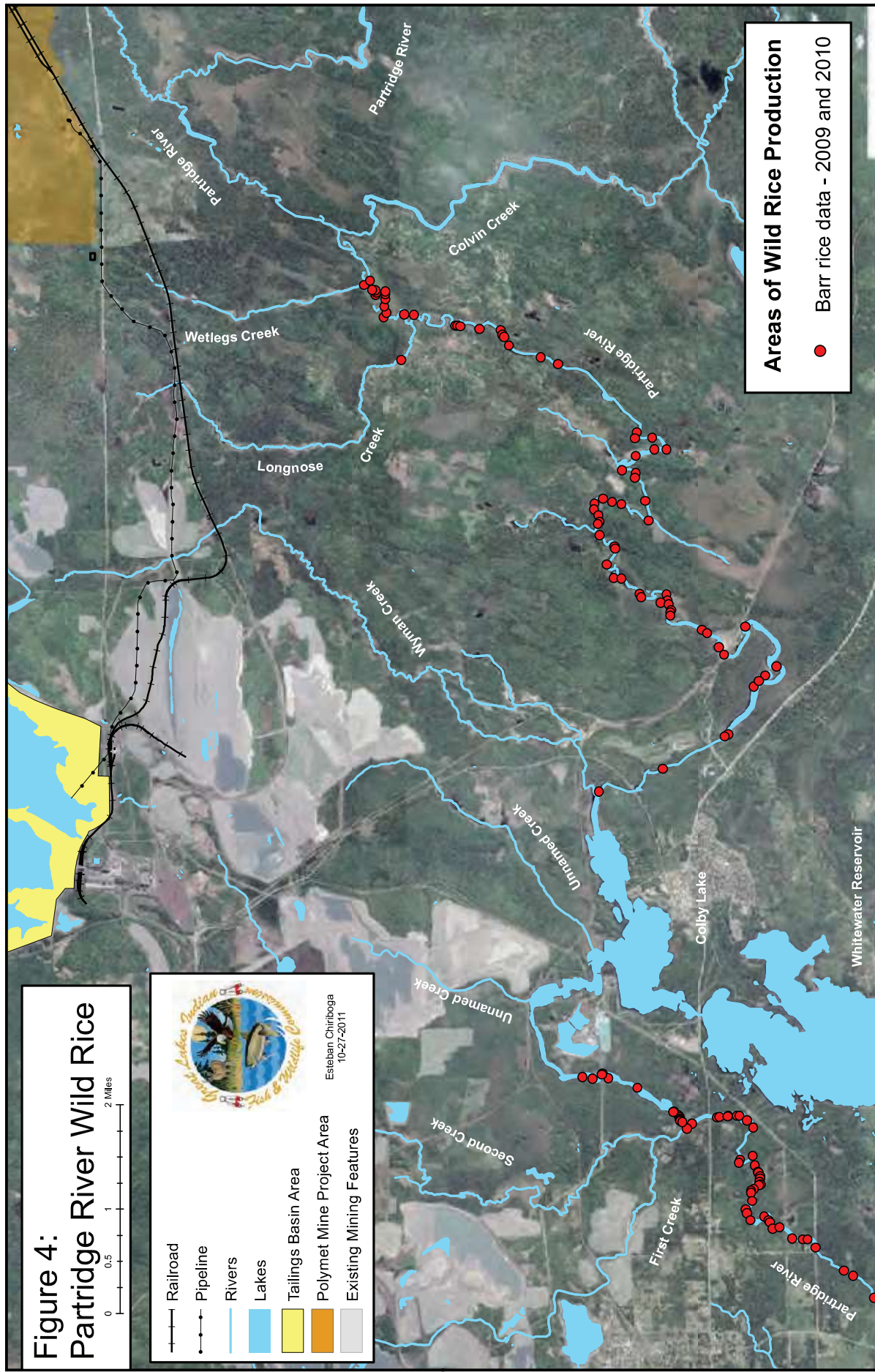
Restoring Hydrology

Water quality and quantity issues can persist after mining ends. The very existence of surface and underground mine features can permanently alter local hydrology by changing water levels in streams and lakes, filling wetlands, and creating backfilled pits and underground workings that alter local groundwater quality and flow. Water treatment is also often needed during and after mining to ensure that discharges meet water quality standards.

Mines sometime send wastewater and leachate (liquids collected from tailings areas and waste rock stockpiles) to a water treatment plant. After treatment, water and useful chemicals may be recycled for use in mine operations such as ore processing, but wastes must be stored in the tailings facilities. Even after a metallic mine closes, water treatment plants may need to operate, sometimes for many years, to prevent contamination of surrounding waters. If well-planned and implemented, a water treatment system can be an effective mitigation tool at operating and closed mines but must be maintained at significant expense.

Some types of wetlands may take decades to restore and may never again become self-sustaining ecosystems or provide the ecosystem benefits that they provided before being altered. The difficulty of the restoration and the time required depend on the type of wetland and the quality of the mitigation work.

Seepage to groundwater from some facilities, such as temporary waste rock stockpiles of non-reactive waste rock, might need water treatment and water quality monitoring for a short time. Other facilities like tailings basins may need groundwater capture and treatment and water quality monitoring for centuries after a mine has closed. The Attachment 6 to MNRD THPO Report



Map of wild rice locations in the Partridge River downstream of the proposed Polymet mine pits. The project must meet the wild rice sulfate standard at these locations.




Wetland restoration projects are complex and don't usually replace all functions of an intact wetland.

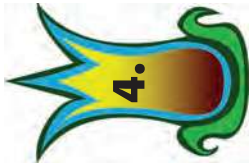
hydrometallurgical tailings basin proposed at the NorthMet mine in Minnesota, for example, would contain hazardous materials that in a water-rich environment could eventually leak to groundwater. The NorthMet basin would be a potential source of contamination in perpetuity. That facility would be constructed in a wetland and over a buried stream that eventually enters the Embarrass River, so long-term containment is essential.

A particularly challenging aspect of groundwater protection is the difficulty of monitoring. Because groundwater moves down gradient much more slowly than surface water, it may take centuries for contamination to be detected at monitoring points. The long-term nature of this threat means that groundwater monitoring must also be long-term, particularly in wet areas like the Great Lakes region.

Wetland restoration is an important part of mine closure, and wetlands can play an important role in the restoration of both water quality and quantity. But the restoration of wetlands is not a straightforward task. Some types of wetlands may take decades to restore and may never again become self-sustaining ecosystems or provide the ecosystem benefits they provided before being altered. The difficulty of the restoration and the time required depend on the type of wetland and the quality of the mitigation work. Many wetland restoration projects also require long-term monitoring and periodic maintenance.

Constructed wetlands are sometimes used to improve water quality. Treatment wetlands use biological processes to remove metals from the water. While they can be successful in removing some metals, each wetland must be individually designed for the specific type of waste stream it will treat. Treatment wetlands, similar to other mining water treatment systems, require long-term maintenance to ensure the proper functioning of the biological processes that remove contaminants from the water.

Given the significant impacts that mining has on water quality and quantity and the potential long-term nature of some of those impacts, careful management is essential. 



Cumulative Impacts of Metallic Mining— Time, Geography, and Community

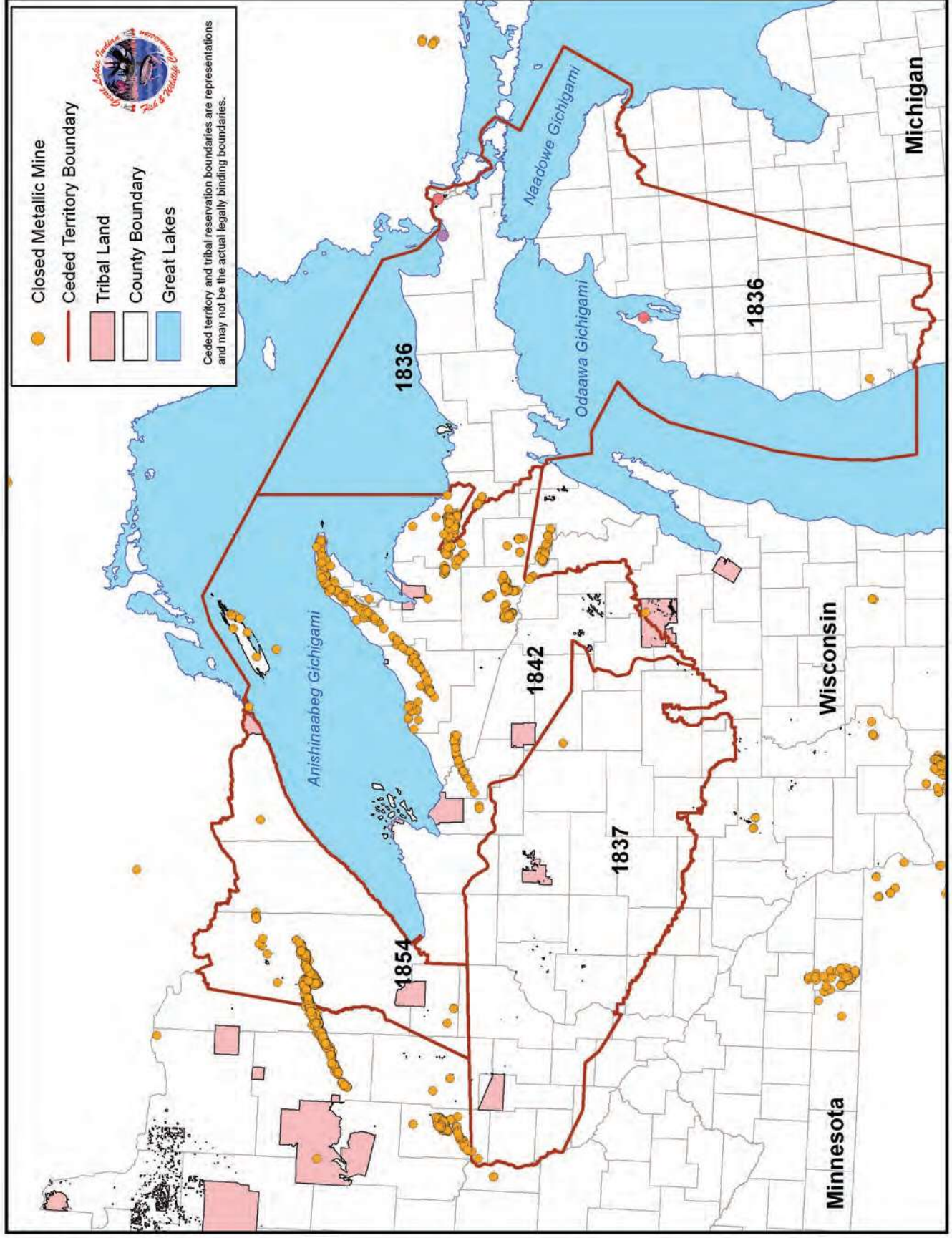


Headframe at the Northshore mine in Silver Bay, which has been operating since 1956.

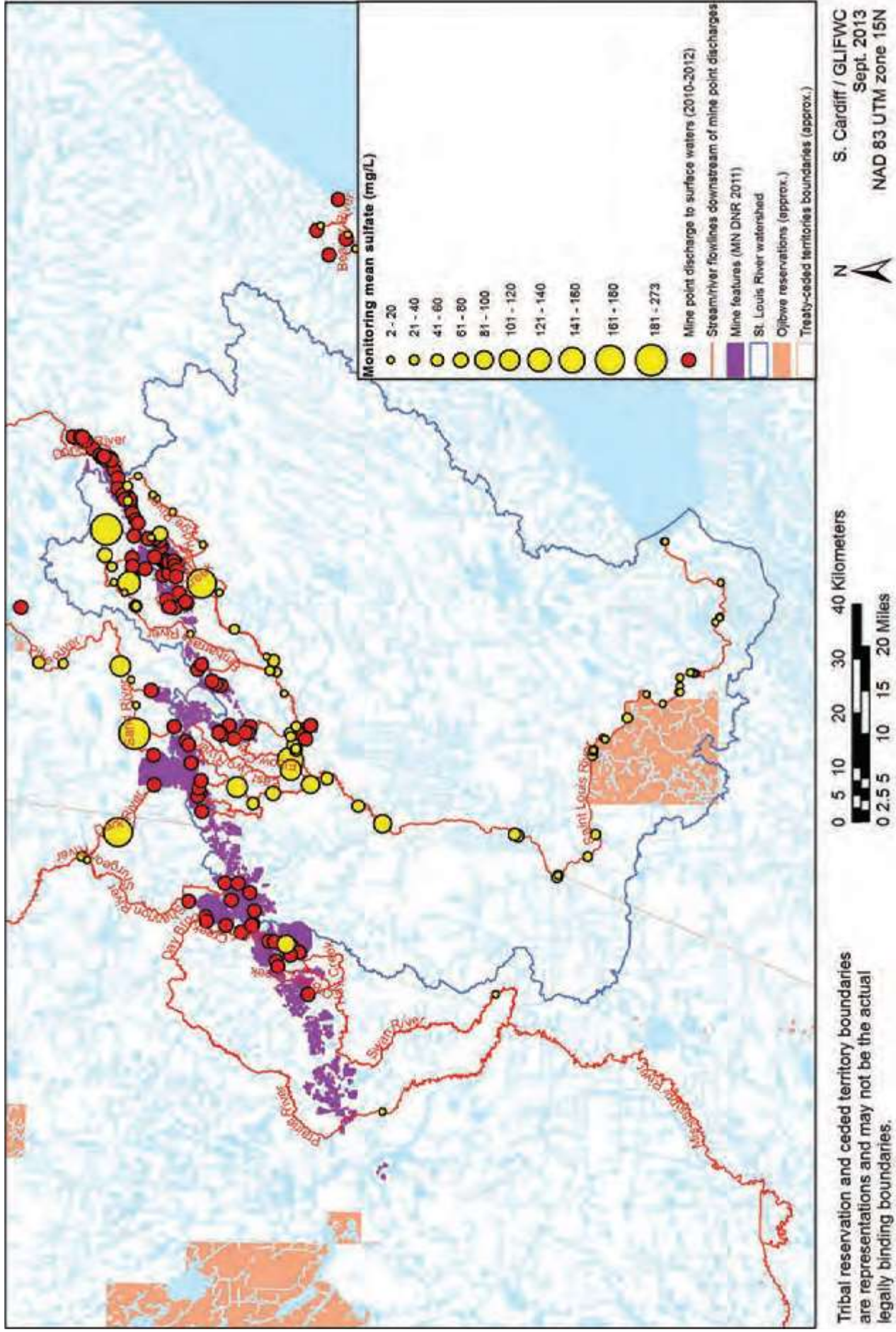
To develop an accurate and complete understanding of mining's impacts, regulatory agencies need to take a big-picture view, taking into account not only the cumulative effects of an area's past and current metallic mines but also mining's potential economic effects over generations.

Environmental Effects of More than One Mine

The Great Lakes region provides a good example of how historical mining operations complicate the monitoring and safety of new mining ventures. Mining has occurred throughout the Great Lakes region for more than 150 years; historical metallic mining operations dot the landscape throughout the 1836, 1837, 1842, and 1854 ceded territories. (See map on page 42.) Because some historical mines operated with little environmental protections, water contaminated with acid and metals often drained away from the



Closed metallic mines in the ceded territory.



Cumulative effects of mine discharges have increased sulfate concentrations in the St. Louis River.

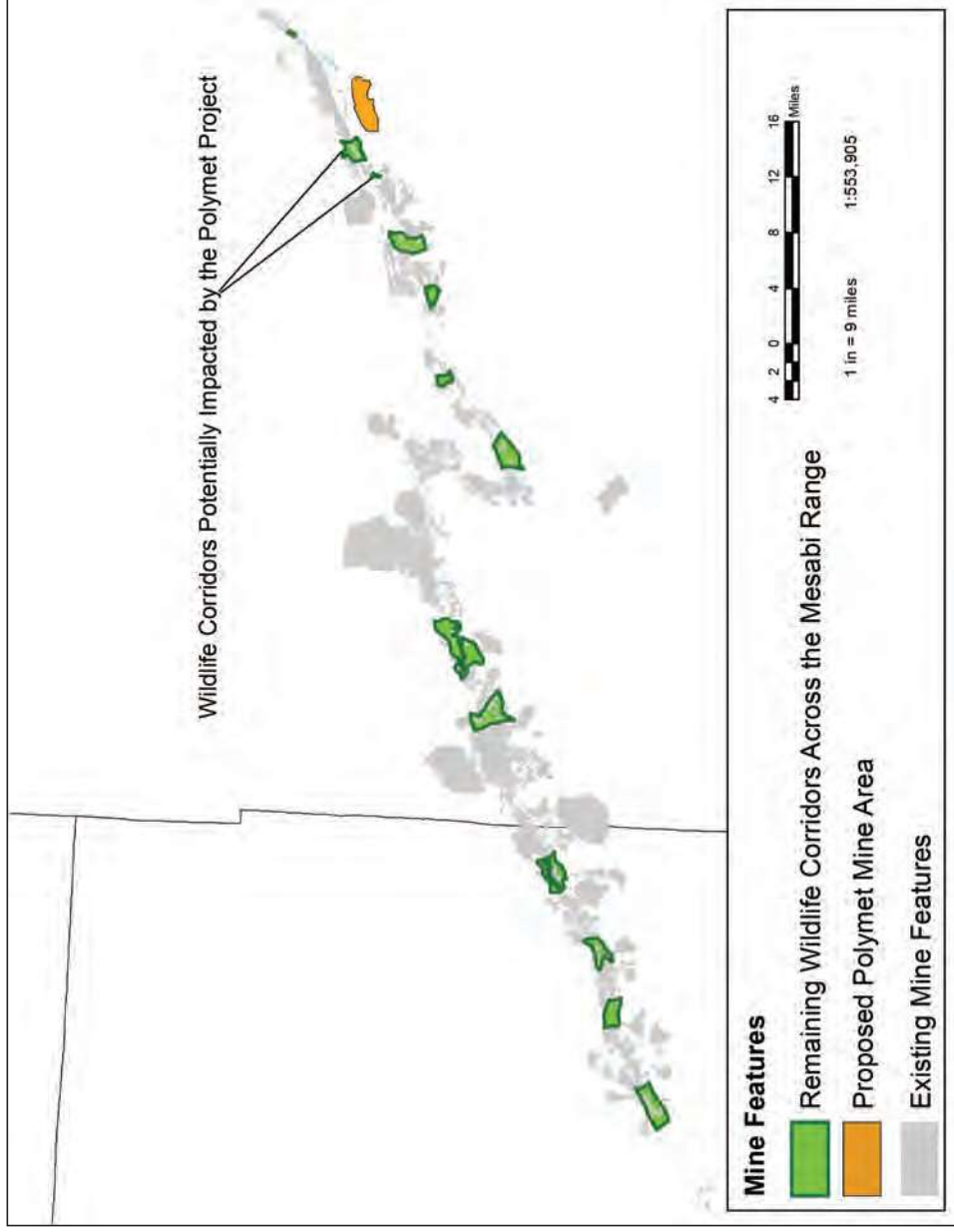
mines and into streams. Some mines were closed without remediation or monitoring activities. The cumulative environmental impact of closed and abandoned mines is relatively unknown; nevertheless, environmental review of a new project should consider these historical facilities and their

Multiple mining operations in the same area can cause simultaneous impacts to the environment.

possible impacts when a new mine project is proposed for the same area.

Mining effects can also accumulate and compound where ore bodies of different grades or different minerals overlap in one geographic area. Multiple mining operations in the same area can cause simultaneous impacts to the environment. For example, water with high concentrations of sulfate seeping out of several different tailings basins in Minnesota flow through different tributaries to the St. Louis River. (See map on page 43.) In that case, the cumulative effect of sulfate on the St. Louis River is greater than the effect of any one mine project.

Regional impacts of multiple mine projects are of particular concern for the Ojibwe tribes whose treaty rights extend throughout much of the Lake Superior basin. For example, if ore from a mine



Few wildlife corridors remain on the Iron Range of Minnesota due to mining impacts.

in Wisconsin were smelted in Michigan, environmental impacts on treaty resources at both locations would have to be addressed. In response to this concern, the US Environmental Protection Agency worked closely with tribes and tribal agencies to develop a protocol for assessing cumulative impacts on tribal lands.

Cumulative effects from numerous mine developments can impact species habitats. And while land use changes accumulated over time can affect a variety of species, they are a particular concern for endangered or threatened species already in decline. Habitats can be fragmented by the large surface areas that mines typically



The US Environmental Protection Agency worked closely with tribes and tribal agencies to develop a protocol for assessing cumulative impacts on tribal lands.

disturb. The combination of new mining activity coupled with existing stressors such as climate change creates concerns for the long-term health of populations of these animals. An analysis of wildlife migration corridors prepared for the proposed NorthMet mine provides an apt demonstration of cumulative impacts. (See map on page 44.) The report concluded that only limited migration corridors remain in the Iron Range of Minnesota, highlighting the fact that the disruption of any one corridor would have a significant impact.

Socioeconomic Issues and Impacts

While the economic evaluation of a potential mine typically focuses on jobs and revenue, a true and accurate picture must also factor in the financial aspects of the environmental degradation. For example, many mine projects may require water treatment activities for decades or centuries. Ideally the costs of water treatment, cleanup, and remediation activities will be paid by the mining company through financial assurance



Recreational value of land, such as camping and trail use, must be accounted for in socioeconomic analysis.

bonds. Historically, however, many mining companies have gone bankrupt and been unable to pay the cost of cleanup. An estimation of a mine's cost to the community must therefore factor in the possibility that mine closure and remediation costs will be left to local residents or taxpayers.

Just as the negative costs of mining have to be considered, so must a community weigh the tangible benefits that

If a wetland is filled, its function as a no-cost, natural water treatment is destroyed, and it might need to be replaced by a costly artificial water treatment system.

a healthy environment provides to the public. Wetlands, so often placed at risk by mining operations, have been called “the kidneys of the world” because they naturally filter and clean the water that Attachment 6 to MNRD THPO Report

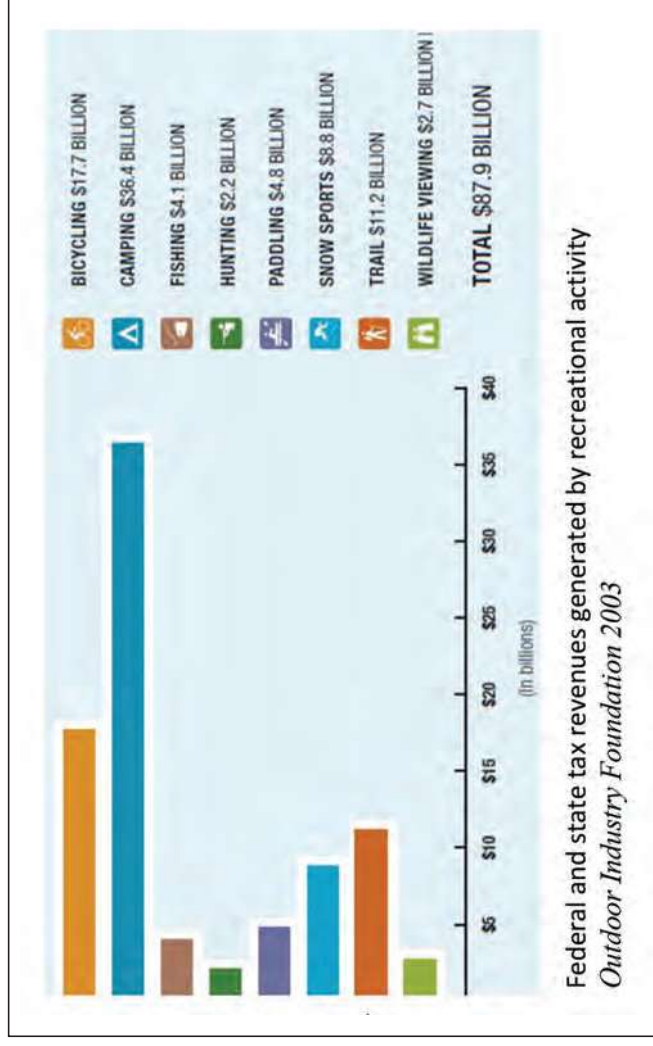
flows through them. If a wetland is filled, its function as a no-cost, natural water treatment is destroyed, and it might need to be replaced by a costly artificial water treatment system.

Other factors complicate the understanding of mining socioeconomic, including the job losses that can result in other sectors of a rural economy. Tourism and outdoor recreation activities like camping and fishing are not always compatible with a large industrial project like mining. If tourists choose other destinations for outdoor recreation, jobs in those sectors of the economy can suffer. Also complicating an understanding of mining socioeconomic are the impacts of rapid population growth which may overextend schools and social services.

While some mines may provide an overall positive economic outcome in a

Areas of the US having the highest levels of long-term poverty tend to be the very places that were the site of thriving extractive industries.

community, economic research indicates that mines do not necessarily result in long-term economic prosperity for the local area. Understanding what a potential mine will and will not do for a community is critical to accurately evaluating its effect on that community.



Because most new mines are proposed in rural areas where economic development is challenging, local communities often view a mine as an economic engine that will allow their town to thrive. Yet the reality is that areas of the US having the highest levels of long-term poverty tend to be the very places that were the site of thriving extractive industries like mining. And while many look at mining as a long-term economic panacea, the social and economic impacts are far more complex. Researchers and economists have found a correlation between mining activity in rural communities and negative economic

outcomes, as well as a connection between geographic areas with concentrated levels of mining and high levels of chronic poverty.

When researchers at the University of Wisconsin-Madison compiled socioeconomic information on incomes, unemployment rates, and poverty rates for 301 mine sites located in rural areas, their findings showed that:

[C]ontrary to the long-established assumptions, but consistent with more recent critiques, roughly half of all published findings indicate negative economic outcomes in mining communities, with the remaining

Attachment 6 to MNRD THPO Report



findings being split roughly evenly between favorable and neutral/indeterminate ones.

The researchers found little scientific basis for the popular assumption that mining always leads to economic improvement.

Mining projects do create a number of high paying jobs, yet past and present mining communities often see high levels of poverty. The reasons underlying this paradox are complex, and a true understanding of mining's impacts on a community can only be reached through consideration of the full range of its economic costs and benefits. One factor is that modern mines employ fewer workers than in the past because much of the work is now mechanized and automated. Research by Dr. Thomas Power, an economics professor at the University of Montana, shows that employment trends in mining operations of the Iron Range in Minnesota reflect an 83% reduction in the number of mining jobs between 1979 and 2005, with increased mechanization being one of the main reasons for this decline. Many mining jobs that remain require a level of education, specialization,

Many of the high paying mining jobs go to nonlocal workers who possess the needed qualifications. New mining jobs may be produced, but local workers may not be able to take advantage of them.

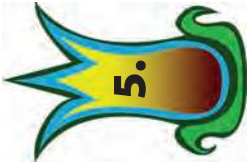
seen more recently in the iron mines of Northern Minnesota, where, starting in 2015, a market glut of foreign steel caused taconite prices to drop. The resulting lower prices caused the shutdown of half of the region's big iron-ore operations, at least temporarily, and the loss of 1,500 area jobs in the “notoriously cyclical” iron mining industry.

Community support for mining typically depends upon an assumption that mining will bring high paying jobs to local citizens and general economic prosperity for the community. But

mining's legacy of environmental damage may be too easily overlooked when a mine project is proposed in a rural community hungry for jobs and lost prosperity. As socioeconomic studies have shown, this view of mining as an economic savior has little basis in long-term economic reality. And for the communities that come to depend on them, mines and mining jobs will always have a limited lifetime. Even if the price of the ore is stable, the resource is finite and the projects will come to an end when the resource is gone. 📢

and technical expertise not typically found in a rural workforce. The result is that many of the high paying mining jobs go to nonlocal workers who possess the needed qualifications. New mining jobs may be produced, but local workers may not be able to take advantage of them.

The boom and bust cycle typical of the mining industry is another factor that can negatively impact a rural community. Metal prices fluctuate drastically on the global market; typically, when prices are high, mines expand and new mines are built. When prices decline, however, mines reduce their output or temporarily close. This ebb and flow in ore prices is particularly relevant in the upper Great Lakes region, where many of the proposed mines have relatively low ore grades. Generally, the lower the grade, the lower the profit margin for a mine. The effects of this sensitivity to price has been



5. Mining's Effects on Anishinaabe Culture



In Anishinaabe culture, environmental decisions are based upon how they will impact the land for seven generations to come.

A mine brings many changes to the surrounding land and to the people who live there. These consequences can feel especially acute to native people whose culture is inextricably tied to that land. In order to appreciate what these changes mean for the Ojibwe tribes in this region, it is important to understand their worldview and orientation toward the natural world.

Ojibwe Spiritual Beliefs and the Moral Dimensions of Land Stewardship

To the Anishinaabe, any environmental destruction has consequences, whether or not it is associated with mining. When hunting, fishing, or gathering, Anishinaabe see their role as part of both the natural and spiritual order. Anishinaabe spiritual beliefs mandate the use of certain plants, animals, and fish in ceremonies attendant to hunting, fishing, and gathering



Makwa (black bear) is a culturally important species to the Anishinaabe. A large percentage of Ojibwe people belong to makwa doodem (bear clan) who traditionally held the role of patrolling village outskirts. Makwa is also viewed as a keeper of medicinal plant knowledge.



(At far left) Frances Van Zile, a Sokaogon Chippewa tribal member gives a ceremonial staff to a visitor.

(At left) Sokaogon Chippewa tribal member using a drum during a ceremony.

(Above) Evaporating the ziinzibaakwadwaaboo (maple sap) at a sugarbush.



Wawaashkeshi (deer) or ayaabe (buck) is a main staple of the traditional and modern diet of many tribal members. The wawaashkeshi will allow itself to be harvested for subsistence as long as Anishinaabeg pays the proper respect to ensure the continuation of the spirit of the wawaashkeshi.



Mai'ingan (wolf), also a clan animal, accompanied the Original Man on his journey to name all of creation. Although they parted ways once the journey was complete, the deep kinship that was formed exists to this day.

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activities. These ceremonies ensure the perpetuation of the resources and the physical, mental, and spiritual well-being of the person.

Three aspects of an Anishinaabe view of nature inextricably link the perpetuation of humans to the perpetuation of the natural world. This belief system holds that the line between human and non-human beings is ambiguous:

- For the Anishinaabe, the difference between humans and non-humans when determining who constitutes a spiritual being is less clearly defined. A spiritual being may manifest as a human, animal, plant, or rock but may also reside in or be associated with certain places such as a mountain or body of water. As such, when an Anishinaabe is interacting with a part of their environment that may be deemed inanimate by some, there may

still be spirits that need to be recognized and honored. All spiritual beings, whether human or non-human, have rights and warrant respect.

- Humans are not the masters of the world but rather weak and pitiable creatures, dependent upon all other non-human beings for survival. The proper attitude towards the natural world is one of care-taking, humility, and gratitude.



Aerial view of Terrace Bay in Ontario.



Many traditional teachings of the Anishinaabeg occur in landscapes such as the sandstone sea caves and the shores of Gichigami (Lake Superior).

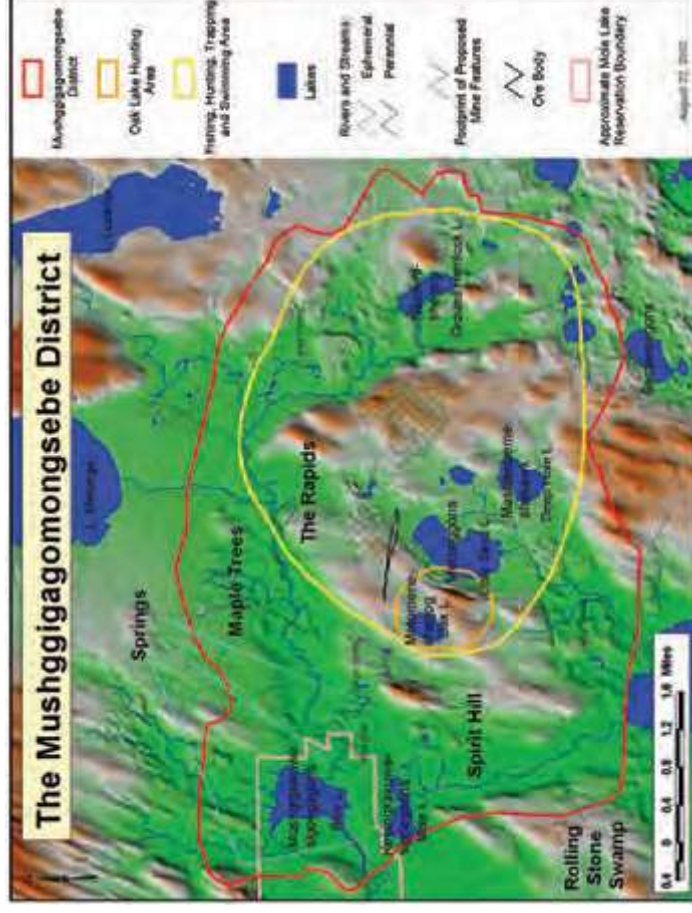
Anishinaabe spiritual beliefs mandate the use of certain plants, animals, and fish in ceremonies attendant to hunting, fishing, and gathering activities. These ceremonies ensure the perpetuation of the resources and the physical, mental, and spiritual well-being of the person.



- The relationship of humans to the rest of nature is one of reciprocity. Animals, for example, will offer themselves to a hunter as an act of pity for his or her weakness. If the hunter does not accept this gift with feelings of respect and gratitude, the natural world will withdraw cooperation. Anishinaabe perpetuate this worldview and their attendant responsibilities to the natural world through stories, ceremonies, and language. These teachings instruct Anishinaabeg about how to care for, manage, and make decisions that affect the land.

Given this worldview, the alteration or destruction of plant and animal communities without proper respect given to the non-human beings involved invites disaster not only for the environments affected but also for humans. Harm to the rights of non-human beings is equivalent to environmental harm. In a reciprocal world, such a violation is understood to have dire consequences for humans who disregard this relationship. In addition, human beings have a responsibility to be a voice for non-human beings who cannot speak for themselves.

Illustrating this belief system are thoughts shared by the Sokaogon Chippewa Community, in a report prepared during the environmental impact analysis of a proposed mine. The report, titled *The Mushigigamongsebe: A Traditional Cultural Landscape of the*



Map depicting the Traditional Cultural Property of the Sokaogon Chippewa. The proposed Crandon mine would have been located within this TCP.

Sokaogon Indian Community, described how environmental impacts of the mine would have been

visited not only on the waters, wetlands, streams, and hills that make up what we here call the *Mushigigamongsebe* District, but on the Tribe, other Ojibwe groups, and the living cultural environment for whose care Ojibwe people deem themselves to be responsible.

Mining and Its Effect on the Land: The Keweenaw Bay Indian Community and the Eagle Mine

An Anishinaabe view of land focuses on the importance of sustainability and integrity of natural resources and the habitats that support them. Place is particularly important to the general Anishinaabe thought, which is rooted more towards space than time. The importance of a particular geographic spot can no more be moved to a different location than a significant event in Attachment 6 to MNRD THPO Report

American history be moved to a different time. This sense of specific geographic importance and integrity can be at odds with modern mining interests.

The importance of the land and the rights of non-human beings in Anishinaabe culture is at the heart of the Keweenaw Bay Indian Community's concerns about the Eagle mine, located in the 1842 ceded territory. The opening to the mine shaft is adjacent to the base of Migizi Asin (Eagle Rock), a place where the community has conducted fasting, prayer, and other ceremonies for generations. A portion of the mine will

The importance of a particular geographic spot can no more be moved to a different location than a significant event in American history be moved to a different time. This sense of specific geographic importance and integrity can be at odds with modern mining interests.

extend under the rock, and Migizi Asin could be damaged if the mine workings collapse. The rock is also subject to the industrial noise of mining operations, a significant impact considering the ceremonial use of the site relies on its quiet and remote location. Theoretically, Migizi Asin remains accessible, but visitors

are required to obtain permission from the mining company and wear proper safety attire while at the rock.

Since the mining company has conditioned access to Migizi Asin, practicing Ojibwe spirituality at the site has been affected and forced to undergo an inorganic change, at least for the lifetime of the mine. If Migizi Asin does not survive the mining activities, the loss of such a key site would impact the Anishinaabeg ability to practice their spirituality and culture and lead to a corresponding loss of Anishinaabe identity.



Migizi Asin, or Eagle Rock, at the Eagle mine site in Michigan, after the mining company restricted access to this sacred site.



Aerial view of the Eagle mine site.

Mining's Disruptive Effects on Resources and Practices Critical to Anishinaabe Culture

Manoomin (Wild Rice)

Manoomin is central to the Ojibwe migration story and tribes' subsequent settlement in the Great Lakes region: Ojibwe prophecy directed them to journey until they found the "food that grows upon the water." When they reached the shores of Lake Superior and found manoomin growing on the waters, the Anishinaabe understood their 500-year journey was over. Manoomin remains a unifying feature of Ojibwe society and culture. Not only is it an important food source, it is used in ceremonies as a way to honor the Ojibwe prophecy and to show continued respect for this invaluable resource. In fact, the distribution of Anishinaabe corresponds closely to the distribution of manoomin. Wild rice features in the lives of other tribes as well, including the Menominee Tribe of central Wisconsin, whose English name is derived from the Ojibwe word for "wild rice man."

Stories and histories of various Ojibwe bands throughout the Great Lakes region illustrate manoomin's distinct influence on and importance to the Ojibwe people. The manoomin found in the aptly named Rice



(Above) Tribal members seeding manoomin on Rice Bay on Lac Vreux Desert Lake.

(Right) Young tribal members enjoying manoomin.



Lake, on the Mole Lake Reservation in Wisconsin, is one of the main reasons the tribe settled in that area. The tribe waged wars with neighboring Dakota tribes to keep possession of the lake, and these wild rice beds continue to figure prominently in the tribe's cultural practices. In response to the proposed Crandon mine that would have been located less than two miles upstream, Frances Van Zile, a

Manoomin remains a unifying feature of Ojibwe society and culture. Not only is it an important food source, it is used in ceremonies as a way to honor the Ojibwe prophecy and to show continued respect for this invaluable resource.

member of the Sokaogon (Mole Lake) Chippewa, explained the sense of loss that would accompany the destruction of this manoomin: "There is no substitute for wild rice. My whole way of being as an Indian would be destroyed. I can't imagine being without it. And there is no substitute for this lake's rice."

As described in Chapter 3, sulfates and water level changes pose threats to the manoomin resource. Given the integral role manoomin plays in Anishinaabe culture, regulators must give serious consideration to these impacts when considering a potential mine. To adequately understand the



Tribal members harvesting manoomin on Rice Bay on Lac Vieux Desert Lake.

Anishinaabe view of manoomin generally and information about particular beds specifically, regulators should seek out tribal Traditional Ecological Knowledge (TEK). Such knowledge is derived from centuries of living alongside this resource and can shed light on how it may respond to environmental changes and how it should be managed.

Giigoonyag (Fish)

Mining can affect fish in many ways. (See Chapter 3 for a detailed discussion of mining's effects on water.) Impacts to the food chain in lakes and rivers are particularly damaging to Anishinaabe because of the nature of subsistence harvest of fish. Tribal members tend to consume fish in cycles, with peak consumption occurring in spring. When the fish are impacted to the point that

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tribal members must limit their fish intake or avoid it altogether, their ability to consume fish in ways required by their culture, such as in feasts, is significantly affected.

Mercury in fish tissue is the primary source of fish consumption limits in the Great Lakes region, and mines are the largest sources of mercury in the Lake Superior basin. The mercury from mines is emitted to the air via smokestacks. A portion of this mercury returns to the waters in the ceded territories where bacteria can convert it to methylmercury. These bacteria are eaten by bigger organisms, who are eaten by small fish, who in turn are eaten by bigger fish like walleye and northern pike. These fish are important components of the tribal diet and are used in multiple ceremonial feasts throughout the year. When people eat these fish, they also consume all the methylmercury that has been accumulated through the food chain.

Another mine related contributor to this food chain problem is that the sulfate coming from mining increases the rate at which the bacteria converts mercury to the toxic form that allows it to enter the food web. The combination of mercury and sulfate emissions increase the necessity of fish consumption advisories and may ultimately affect the health of individuals who consume those fish.



(Above) Subsistence harvest of ogaa (walleye) during the traditional spring spearing season.

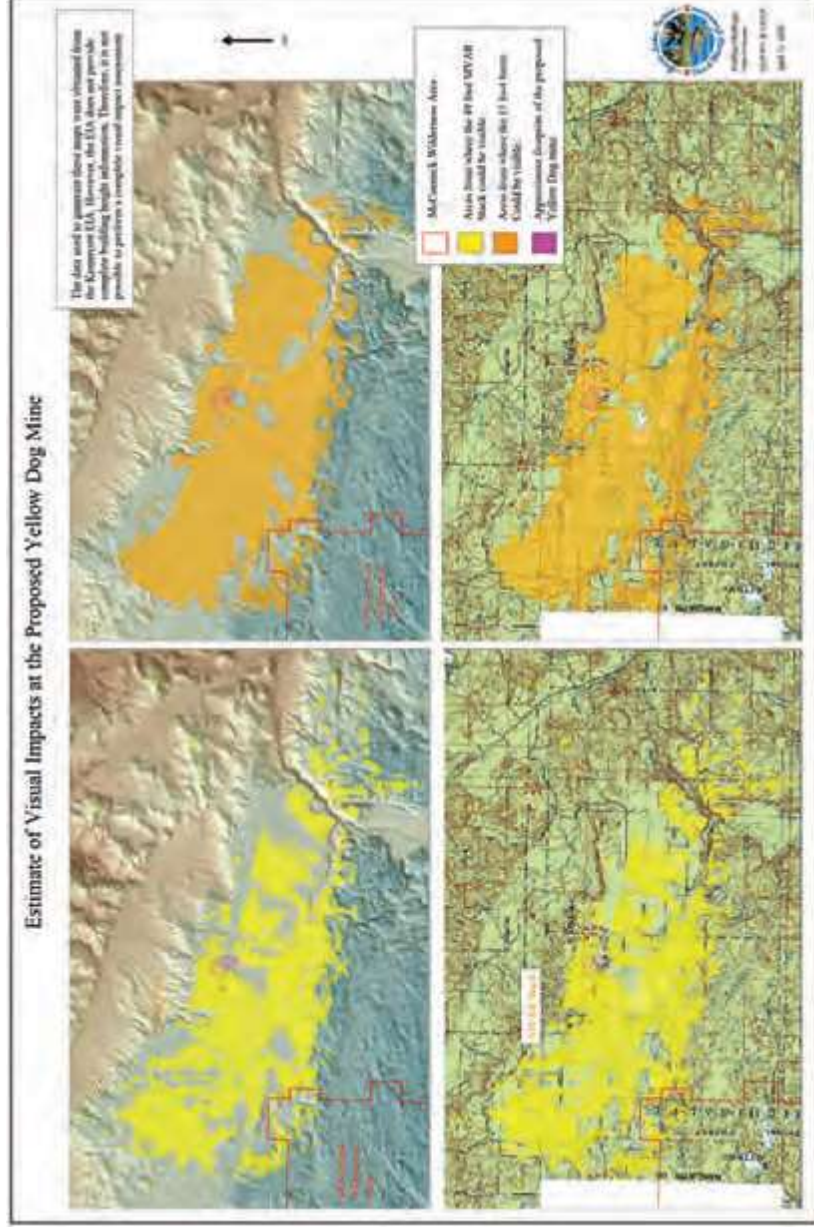
(Left) Mercury in fish tissue can force tribal members to limit the fish they eat or avoid fish altogether. Mines are the largest source of mercury in the Lake Superior basin.



Mercury is not the only element that bioaccumulates in this manner. Like mercury, selenium in fish has created the need for fish consumption advisories intended to protect human health.


Disruption to Sense of Place

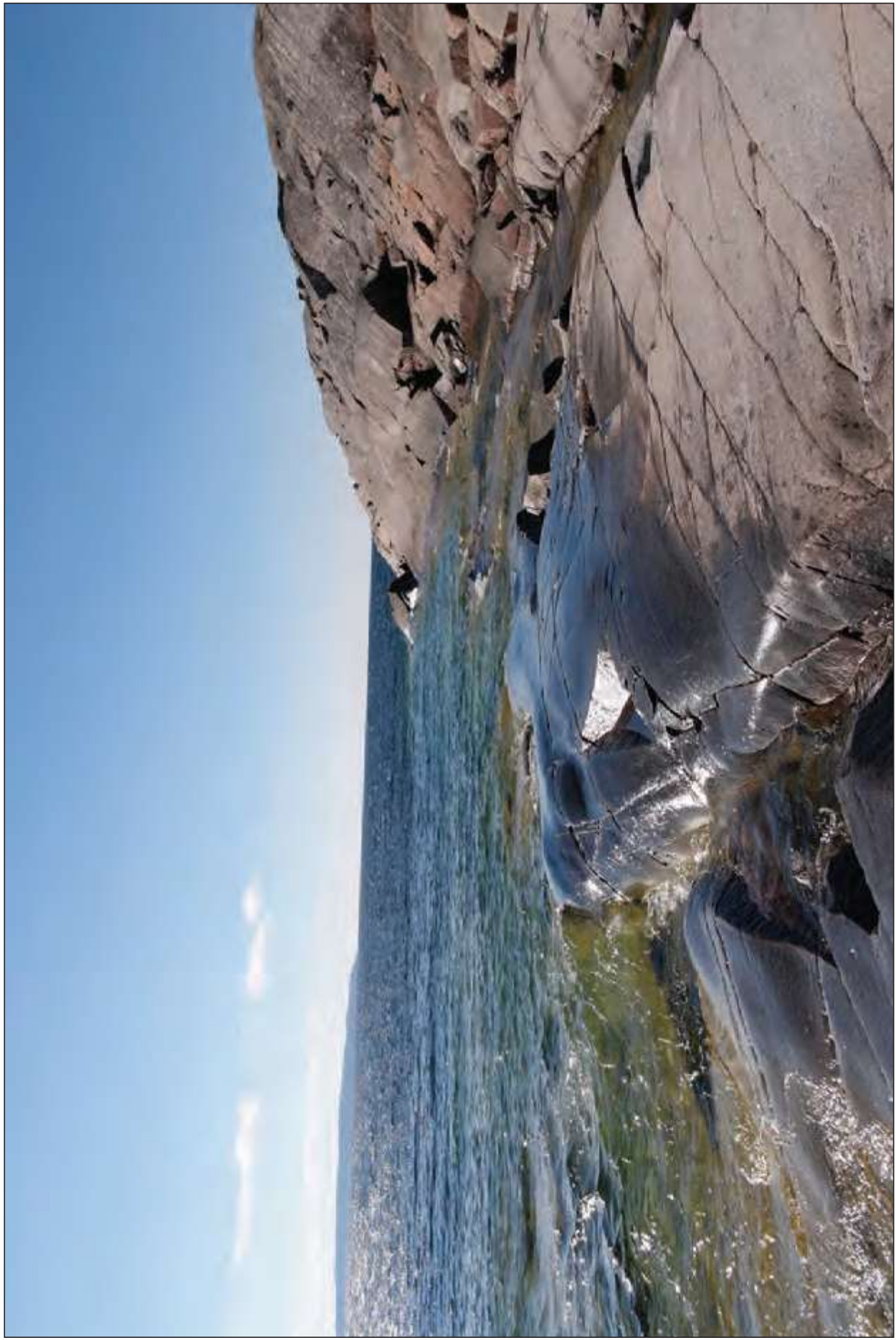
For an Anishinaabe, a mine project can drastically alter a region by changing its aesthetic. Tribal people are particularly sensitive to the visual and acoustic impacts of mining because, as described above, their perspective is focused more on space than time. Geographic locations are not interchangeable, so the loss of a cultural or natural resource in one location cannot simply be replaced with a similar resource in another location. Noise and vibration from blasting and other mining activities can carry for miles and produce decibel levels hazardous to human and animal health. Smokestacks, processing plants, and mine head frames are large structures that can extend well above the tree line and are visible from long distances. Such features, when constructed in a remote area, can significantly change the local landscape and profoundly affect tribes who have important cultural stories relating to their landscape.



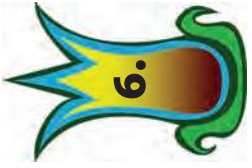
Map illustrating the viewshed of the Eagle mine headframe. This is the area where tribal members exercising treaty rights would be able to see the mine feature.

These are just a few examples of how mining affects the lands and rights of Anishinaabe people. When various activities, including mining, compromise or destroy natural resources, on reservation lands or in the ceded territory, the ability of native people to support their

tribal ways of life is greatly diminished. These impacts in turn can translate into impacts on a tribe's ability to sustain healthy communities that function in harmony with the natural world and are consistent with Anishinaabe worldviews. 



The Anishinaabeg prioritize protection of water and believe that without clean water there would not be life.



Legal Landscape: An Overview of Mining Law and Regulation

Mining in the United States is regulated under a combination of state, federal, and tribal authorities. No single mining agency holds control over all mining operations. Similarly, no one body of law provides a singular regulatory framework for all aspects of mining. Mining operations instead are governed by a patchwork system of interconnected and sometimes overlapping laws, rules, and regulations, some of which date back to the 1960s and 1970s. (While this document discusses the mining laws of Ontario, the national laws of Canada as a whole are not examined.)

Which agencies and regulatory frameworks will govern a mining operation depends on the circumstances and geographic area of the individual mine. If a mine is located on or near reservation lands, tribal air and water quality standards can apply. The situation is similar in the Canadian province of Ontario, where various provincial and federal agencies and laws apply to mining proposals.



Various federal environmental laws and regulations apply to most mining projects.

In the US, the mine permit process generally is done through the state, but various federal permits and agencies also play a role. Two federal agencies in particular—the Environmental Protection Agency (EPA) and the US Army Corps of Engineers (Corps)—are involved in regulating activities that occur in conjunction with mining. The EPA and the Corps can play the role of primary decision maker for the federal permits required for a mine project. These agencies also set environmental standards a mining operation must comply with, often through a program delegated to a state.

The EPA has the ultimate oversight authority to administer laws and regulations formulated through federal legislation such as the Clean Air Act, the Clean Water Act, and the National Environmental Policy Act (NEPA). The Corps of Engineers regulates and issues permits for various types of development projects, including mining activities that impact wetlands and other “waters of the United States.” Particularly under the

Clean Water Act (described more fully below), the Corps' regulatory authority is broadly defined. "Waters of the United States" are defined generally as waterways capable of supporting interstate commerce and including their tributaries and adjacent wetlands. Determining whether the Corps' authority extends to some isolated waters requires a detail-driven analysis. The EPA has oversight authority when the Corps issues permits under the Clean Water Act (described below).

Tribal sovereignty and treaty rights also have implications for mines proposed in treaty ceded territories. Treaties are the law of the land, and state and federal agencies cannot disregard treaty obligations when implementing laws that regulate mineral development. How those rights may affect permitting decisions or permit conditions is not always clear and will depend heavily on the specific facts of a particular proposal. Nevertheless, tribal interests must be taken into account when determining how a mine would impact a tribe, its treaty rights, and its community.

US Federal Laws and Regulations Related to Metallic Mining

The particular circumstances of a mine project dictate which federal environmental laws and regulations

will apply. The Clean Air Act and the Clean Water Act are two of the primary legislative frameworks in the US that pertain to metallic mining.

The Clean Air Act requires the EPA to develop ambient air quality standards

Two federal agencies in particular—the Environmental Protection Agency (EPA) and the US Army Corps of Engineers (Corps)—are involved in regulating activities that occur in conjunction with mining. The EPA and the Corps can play the role of primary decision maker for the federal permits required for a mine project.

as well as standards for hazardous air pollutants. Relevant to mining operations, the Clean Air Act imposes strict standards on new or modified sources of air pollution and a stringent approval process for new sources of pollution.

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters through the control of both point and nonpoint sources of pollution. The Clean Water Act gives states the authority to set their own standards, but if a state chooses not to do so or sets standards the EPA deems inadequate, the EPA will take action and mandate the water quality standards for that state.

An example of how a metallic mining operation might trigger the Clean Water

Act: Section 404 of the Act requires a mine operator to obtain a permit before it can discharge dredged or fill material into waters of the United States, something that might occur in the process of constructing a mine. The Corps of Engineers typically is the agency to issue these permits, but the EPA has the ultimate oversight of the Corps' section 404 permit decisions. The only time the Corps is not involved in a section 404 permit is when a state has been delegated that authority. In these cases, however, the EPA still retains the ultimate oversight. So far only two states, Michigan and New Jersey, have been delegated section 404 permit authority and assumed this permitting role.

A myriad of other federal acts can apply to metallic mining in the US, far more than can be described in this document. Examples include the Endangered Species Act (if the operation may impact plants or animals that are listed as threatened or endangered); the Toxic Substance Control Act (which requires regulation of chemicals that present risks to health or the environment); the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (requiring reporting of hazardous substance releases and inventory of chemicals handled); the Safe Drinking Water Act (which directs standards for quality of drinking water Attachment 6 to MNRD THPO Report



Protestors concerned about the Eagle mine project's effect on water quality demonstrate at the state courthouse in Marquette, Michigan.

supplied to the public, for which states are primary authorities); the Migratory Bird Treaty Act (protecting nearly all bird species); and the Solid Waste Disposal Act (which regulates generation, storage and disposal of hazardous waste and manages solid, non-hazardous waste).

Another federal law, the National Environmental Policy Act (NEPA), is triggered by any major federal action that has the potential to significantly impact the quality of the human environment, including permitting decisions. NEPA requires the federal agencies involved in

the permitting processes to take a hard look at the environmental impacts of each proposed project, thereby ensuring that the environmental costs and benefits are considered in each decision.

NEPA first requires the lead agency to prepare an Environmental Assessment (EA) to get a preliminary feel for whether the proposed project will have a significant impact. If the agency finds that the project may have a significant impact on the environment, it must then prepare an Environmental Impact Statement (EIS). The EIS must provide not only an in-depth

analysis of the environmental impacts of the project as proposed, but it must also describe the impacts of alternative project plans.

The EIS process includes public hearings to allow citizen comments about the proposed action. Federal regulations and guidance require agencies to contact Indian tribes and provide them with opportunities to participate at various stages in the preparation of an EA or EIS.

Another important act that may be considered in the issuance of the mining permit is the Native American Grave Protection and Repatriation Act. If the mine site is on federal or tribal lands and Native American graves or artifacts are found, then the construction may be halted. Similarly, if the mine site is designated as a Traditional Cultural Property (one with significant architecture, history, archeology, engineering, or culture) under the National Historic Preservation Act, and eligible to be listed on the National Register of Historic Places, the federal government must consult with tribes in order to avoid, minimize, or mitigate adverse impacts.



A Brief Overview of Mining Laws and Policies of Minnesota, Wisconsin, Michigan, and Ontario

Whether or not federal environmental laws are triggered, individual states have their own laws, policies, and regulations that apply to mining operations. Minnesota, Michigan, and Wisconsin all require permits before mining operations commence, as does the Canadian province of Ontario.

Wisconsin law and policy



In 2013, the landscape of metallic mining law changed significantly in Wisconsin with the passage of Act 1, which established a separate statutory framework for ferrous (iron) mining. Prior to Act 1, Wisconsin regulated ferrous and nonferrous metallic mining in the same manner. Act 1 created a new statutory framework, setting ferrous mining apart from all other types of metallic mining and creating a separate, expedited process for ferrous permits and approvals. In addition, Act 1 changed state law to incorporate a presumption that significant adverse impacts to wetlands are necessary to accommodate ferrous mining activities.



In 2013, the Wisconsin legislature established a separate legal framework for the regulation of iron mining.

For conflicts that arise between other state laws and the new ferrous mining law, Act 1 declared that the ferrous mining statute controls the outcome (a change from previous law and from the current nonferrous metallic mining law).

Whether a ferrous or nonferrous mine is proposed, Wisconsin's Department of Natural Resources (DNR) is the agency primarily responsible for mine

permitting. The fee for a nonferrous mining application is \$10,000, but the applicant is responsible for the full amount of the Department's cost to review the application. For a ferrous mining application, however, Act 1 capped at \$2 million the amount a mine applicant must reimburse the DNR for application related costs.

The DNR performs an environmental review of the project and advises the applicant on what additional mining-related permits the applicant should seek from the agency. The DNR makes the ultimate decision whether to issue a mining permit. Under Act 1, it must make a decision on a ferrous mining application within 420 days after the mining application is deemed complete. For nonferrous mines, the timelines are longer and depend on the outcomes of several steps built into the application process.

One unique feature of Wisconsin law as it pertains to nonferrous mining (sometimes referred to as sulfide mining) is the 1998 Mining Moratorium Law, also known as the 'Prove It First' law. This law requires an applicant for a nonferrous mining permit to show examples of mining operations in the US or Canada that have not polluted ground or surface water for at least 10 years during operations and after closure. Attachment 6 to MNRD THPO Report

Michigan law and policy



Michigan also has seen changes in its mining laws.

Until 2004, ferrous and nonferrous metallic mining were regulated under the same statutory framework, the Reclamation of Mining Lands law, and Michigan had no specific provisions for the mining of nonferrous metallic minerals. In 2004, however, due to increased interest in metallic mining in the State's Upper

Michigan does not prepare its own Environmental Impact Statement for a proposed metallic mining project but rather uses one prepared and submitted by the mine applicant.

Peninsula, Michigan passed Part 632 of the Natural Resources and Environmental Protection Act (NREPA). Part 632 provided new regulations for the mining of nonferrous metals and set up a permitting system to oversee it. Michigan recognizes in Part 632 that nonferrous mining may be an important contributor to Michigan's economic vitality but that it shall only occur under conditions that assure the environment, natural resources, and public health and welfare are protected.

Michigan's earlier reclamation law, the Reclamation of Mining Lands, still governs ferrous mining under Part 631 of NREPA.

Michigan's Department of Environmental Quality (DEQ) is the agency primarily responsible for mine permitting. The permit fee for a nonferrous mine permit in Michigan is \$5,000; there is no application fee for a ferrous mine permit. The timelines for permit decisions depend on the type of mining permit sought. For ferrous mining, the state has 60 days to approve or deny the permit once it deems the application accurate and complete; for nonferrous mining, the timeline prescribed by statute can range from four to six-and-a-half months depending on various aspects of the application process.

Michigan is unusual in that it is one of only two states to whom the Army Corps of Engineers has delegated authority to administer a section 404 permitting program for discharges of dredged or fill material into waters of the United States. Because of this delegation, a potential mine operation in Michigan is less likely to have active federal participation in its permitting process and may not be subject to the National Historic Preservation Act or the National Environmental Protection Act's requirement for an Environmental Impact Statement.

Minnesota law and policy



In Minnesota, ferrous and nonferrous mining laws are a part of the Minnesota Environmental Policy Act of 1973, although additional

laws relating to nonferrous metallic mining were adopted in 1992. Minnesota's newer laws emphasize financial

In Minnesota, the primary agencies responsible for mine permitting are the Department of Natural Resources and the Pollution Control Agency.

assurances, waste characterization, and a thorough environmental review and permitting process. The state's policy regarding reclamation focuses on both environmental protection and the economic value of mining to the state. As declared by statute, Minnesota recognizes the effects of mining on the environment but aims to provide for the reclamation of mined lands, control possible adverse environmental effects of mining, preserve natural resources, and encourage planning for the future of the land. At the same time, the state aims to further "the orderly development of mining, the encouragement of good mining practices, Attachment 6 to MNRD THPO Report



and the recognition and identification of the beneficial aspects of mining.”

A Minnesota statute enacted in 2011 imposes a goal upon the Minnesota Department of Natural Resources (DNR) and the Minnesota Pollution Control Agency (MPCA) to approve or deny environmental and resource management permits within 150 days of receiving an application. These two agencies oversee most mining activities in Minnesota and are primarily responsible for approving the various permits necessary to mine. A third agency, the Minnesota Environmental Quality Board (EQB), is not as involved in the permitting process but plays a role in overseeing the environmental review process. A mine permit in Minnesota is required for both ferrous and nonferrous metallic mining, although the permitting fee differs: \$25,000 for a ferrous mining operation; and \$50,000 for a nonferrous mine.

Ontario law and policy



Ontario’s laws governing mining remained relatively unchanged throughout much of its history but in

2009, the government promulgated the Mining Act. The Act’s purpose, according

to the Ontario Ministry of Northern Development and Mines (MNDM), is to “encourage prospecting, staking and exploration for the development of mineral resources” in a manner consistent with the recognition and affirmation of existing Aboriginal and treaty rights, including the duty to consult, and to minimize the impact of these activities on public health, safety, and the environment. To implement these requirements, the Mining Act mandates consultations

Ontario’s Mining Act mandates consultations with First Nations at various stages of the process of reviewing a mine proposal.

with First Nations at various stages of the process of reviewing a proposal. The duty to consult lies with the government considering the decision or action that may impact Aboriginal and treaty rights, although Ontario encourages mining companies to establish communications and relationships early on to facilitate the consultation process.

Ontario’s Mining Act outlines the rules and regulations that apply to mining in the province. The MNDM is the government agency that oversees mining, but other agencies also have regulatory roles related to the legislation they administer. For example, the Ministry of the Environment and Climate Change issues permits and

approvals for activities such as the use of water and disposal of waste.

Before a mining project can proceed, the MNDM requires a closure plan prepared by the applicant in which the applicant must certify its compliance with all legislative requirements.

The Role of Tribes and Aboriginal Communities

Tribes have extensive regulatory authority over their reservations and may have regulations that could impact mine development on reservation lands. In addition, US tribes that have *treatment as a state* status under the Clean Water Act or Clean Air Act can enact water or air quality standards for the reservation. When discharges upstream or upwind of a reservation have the potential to exceed those standards, federal statutes prescribe procedures to ensure that the tribe’s standards are not violated.

In the ceded territory, states must take into account tribes’ treaty-reserved rights. States do not have the unfettered discretion to exercise authority over natural resource management in ways that would be detrimental to tribal treaty rights or violate the court cases that reaffirmed those rights. States may not legislate away treaty rights nor may they defeat them through legislation that negatively Attachment 6 to MNRD THPO Report



concerns are not sufficiently addressed by state regulators. Thus, tribes often also pursue consultation with the federal government who, as a treaty signatory, has specific treaty obligations as well as a general trust responsibility to protect treaty rights.

Treaties are the law of the land, and state and federal agencies cannot disregard treaty obligations when implementing laws that regulate mineral development.

As described above, recent amendments to Ontario's Mining Act recognize and affirm the treaty rights of Aboriginal people, and emphasize consultation in order to minimize adverse impacts.

Select Commonalities and Differences in the Mining Laws and Policies of Minnesota, Wisconsin, Michigan, and Ontario

Environmental review

Minnesota, Wisconsin, and Michigan each requires an environmental review process to occur before a mine permit can be issued. Ontario requires an environmental review process in some but not all cases. Attachment 6 to MNRD THPO Report

Native veterans' color guard at the Wisconsin Capitol prior to the State of Tribes address in 2011. In that address, Bad River tribal chairman Mike Wiggins Jr. explained how a proposed iron mine upstream from the Bad River reservation threatened the existence of Ojibwe people and the natural resources they rely on.

affects treaty resources through habitat destruction.

The US federal government and the states of Michigan, Minnesota, and Wisconsin have obligations to consult with tribes when they are considering actions that may impact the tribes and their treaty-reserved rights. For individual states, court cases often prescribe the form of that consultation, but each state,

by Executive Order, has committed to consult with tribes whether or not a court has required it. The extent of these consultations depends on the specific statutes or regulations that prescribe when tribes must be notified or consulted, the willingness of the parties to substantively engage, and the extent of the potential impacts of the proposed action. It is often the case, however, that tribes feel their



Each state process analyzes significant environmental impacts and alternatives to the proposed project. This review process also discusses mitigation techniques as well as the unavoidable economic and sociological effects on the surrounding communities. The names vary slightly between the states: Minnesota has an Environmental Analysis Worksheet (EAW) followed by an Environmental Impact Statement (EIS); Ontario (when required) has an Environmental Assessment (EA); Wisconsin requires an EIS that conforms to federal EIS requirements; and Michigan requires an Environmental Impact Assessment (EIA) for nonferrous mine

Wisconsin, Michigan, Minnesota, and the Canadian province of Ontario all regulate mining in slightly different ways.

proposals but does not require an explicit environmental analysis document for ferrous mining proposals. As noted earlier, environmental review neither approves nor denies a proposed project; rather, its purpose is to analyze and document possible impacts so decision makers have complete information before them when determining whether to permit a mine.

In Minnesota and Wisconsin, the state Departments of Natural Resources perform the environmental review, conducting their own analyses and

in turn trigger a separate environmental review process. The review process for that individual activity, however, may not be as comprehensive as one that considers the mining activity in its entirety.

The environmental review processes for mining permits in Minnesota and Wisconsin are structured to provide opportunities for public participation, and public hearings and informational meetings are required at certain points in the process. In Michigan, the DEQ may hold public hearings but is not required to. For mining projects in Ontario, the project proponent must give public notice of the availability of its closure plan.



producing their own EISs. However, these reviews depend heavily on information supplied by mine applicants. Michigan law differs: the DEQ does not prepare its own EIA for a proposed metallic mining project but rather uses an EIA prepared and submitted by the mine applicant.

In Canada, the province of Ontario does not generally require a separate environmental assessment, but one may be required in some cases under the federal Canadian Environmental Assessment Act. In instances where environmental assessments are required under provincial and federal legislation, the governments have agreed to a harmonized process.

It should be noted that other activities related to mining—such as air or water discharges—can require permits which

Water quality

Under US federal laws such as the Clean Water Act, states may take over the responsibility of promulgating and enforcing regulations. States also have independent authority to regulate water quality and mining. As a result of these combined powers, states often are the primary regulators of water quality (and mining activity more generally) within their borders.

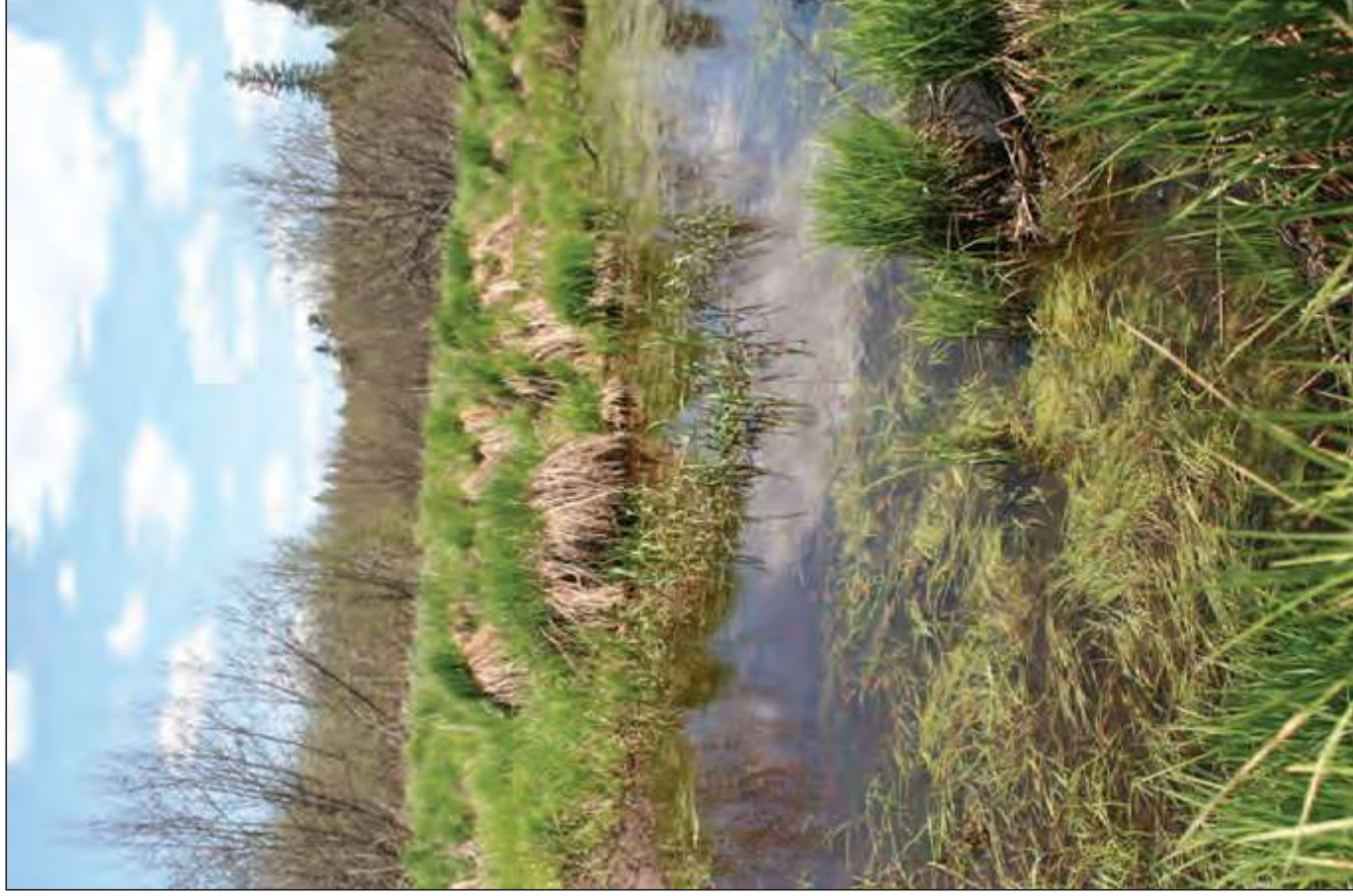
In the case of the Clean Water Act, all three states have assumed the authority to set water quality standards. How a water body is used dictates how it is regulated; for example, Minnesota has enacted a sulfate standard for “waters used Attachment 6 to MNRD THPO Report

in the production of wild rice.” Neither Wisconsin nor Michigan has a comparable standard.

The states also differ in their regulation of groundwater. In Wisconsin, for example, mines apply at a predetermined boundary, which may be up to 1,200 feet from the location of the facilities. Monitoring is required within the compliance boundary and if there is a reasonable probability that standards will be violated at the boundary, the DNR may order the mining operation to take action to remedy the problem. In Minnesota, the location at which groundwater standards apply is determined by the PCA; in general they apply only at the boundary of the mining company’s property. In Michigan, groundwater compliance wells must be located within 150 feet of the mining activity being monitored.

Wetlands

Many states have both federal and state wetlands that can be regulated in different ways. The Army Corps of Engineers typically has authority if “waters of the United States” (which include many wetlands) will be dredged or filled. As noted earlier, however, Michigan issues permits for wetland activities with minimal involvement from the Corps because it is one of two states with



Laws and regulations protecting wetlands and their functions often differ between states, and policies sometimes depend on the type of mining at issue.


delegated permitting authority under the Clean Water Act. If a mine in Michigan is located in a wetland, the state's Wetland Protection Act applies, and a permit may be issued only if the mining activity is "primarily dependent upon being located in the wetland" and an alternative does not exist.

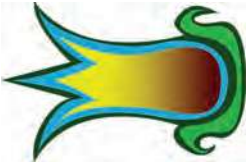
In Wisconsin and Minnesota, both state and federal regulators will determine whether to allow a mining project to impact wetlands, and if so, how those wetland functions should be replaced.

Under federal regulations, a mining company must first avoid and next minimize impacts to wetlands before it can turn to compensatory mitigation (creation or restoration of wetlands). Similarly, Minnesota law requires a mining project to evaluate how to avoid or mitigate wetland impacts before the state will consider allowing it to use compensatory mitigation to replace wetland functions.

Wisconsin's wetland policies vary depending on the type of mining at issue.

For nonferrous mining projects, the use of wetlands is presumed to be unnecessary unless particular showings are made. For ferrous mining operations, the Wisconsin legislature changed state policy in 2013 to direct that significant impacts to wetlands are "presumed to be necessary."

In Ontario, no legislation exists specific to wetlands, but wetlands are indirectly protected under a variety of provincial and federal laws that protect other resources like water, fish and birds. 



Conclusion

Throughout the US, many communities are paying the price of unwise decisions related to metallic mineral mining: acid mine drainage, heavy metals contamination, and other forms of environmental damage. In the Great Lakes region, various projects have left environmental degradation in their wakes. Given its full cost, whether to allow metallic mineral mining must be a decision undertaken thoughtfully and using every available resource. At stake are solemn treaty promises to the Anishinaabe people guaranteeing their rights to use the land.

In light of mining's legacy of environmental damage, it is important that those who make mining laws, those who administer mining regulations, and those who evaluate metallic mineral development proposals employ every effort to fully understand the environmental and societal impacts of those proposals. To carry out their sovereignty as independent nations, tribes must be in a position to exercise their authority and have the capacity to engage in mining decisions. The

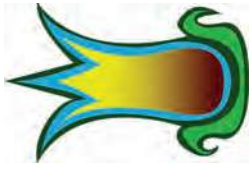
Anishinaabeg would counsel that decisions must ensure the protection of natural resources for the next seven generations. When mining damages the ecosystems and environment of the limited land base remaining for tribes, there are lasting impacts for Anishinaabeg who cannot and would not leave their homeland.

Those who determine whether metallic mining can occur in the Great Lakes region inevitably balance a variety of trade-offs. While new mining technologies are being developed to mitigate or prevent environmental damage, these methods necessarily use the natural environment as their testing grounds. Failures can be irreversible and sometimes catastrophic, and mining disasters continue to occur in modern times and with alarming frequency. For the Great Lakes region, an area so abundant in water resources, the threats of metallic mining are real and potentially devastating.

When mining ventures cause the loss or contamination of natural resources, it affects Anishinaabe culture in ways

far beyond the loss of food sources. It violates the solemn promises made to the Anishinaabeg and goes to the core of what is necessary to sustain them, consistent with what the US has promised. When mining projects damage or destroy treaty resources, treaty promises are broken. Treaty rights are legal protections that cannot be undermined.

Indian tribes with reservations and off-reservation harvest rights in the Great Lakes region are particularly susceptible to the impacts of metallic mineral mining. To the Anishinaabeg, the cost of mining is qualitatively and quantifiably different than the cost to those who make and administer state and federal mining laws and regulations. Anishinaabe culture mandates respect for the earth and humility and gratitude for the resources it provides. Mining laws not written by tribes come from those whose decisions do not reflect this culture. For the Anishinaabeg, the price of the mining process may well be too dear—a price that goes to the core of this nation's treaty and trust obligations. 🌿



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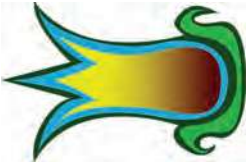
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Maps and Images

All maps were produced at the GLIFWC office in Madison, Wisconsin unless otherwise credited.

Primary Statutes and Rules Governing Metallic Mineral Mining

Michigan: Michigan's Natural Resources and Environmental Protection Act Parts 625 (exploration), 631 (ferrous), 632 (nonferrous). Michigan compiled



Glossary

Acid mine drainage (or acid rock drainage) is produced by the oxidation of sulfide minerals. Many metallic ore bodies contain significant quantities of sulfide minerals—often including the ore minerals themselves. When sulfide minerals are brought to the surface, they react chemically with air and water and produce sulfuric acid. These acidic conditions can cause metals in geologic materials to dissolve, impairing water quality when the discharges enter waters used by terrestrial and aquatic organisms. Once acid mine drainage has started, it is difficult to stop without long-term treatment.

Anishinaabe is an Ojibwemowin word that means person. Other tribes such as the Cree, Menominee, and Potawatomi also call themselves Anishinaabe and speak languages closely related to Ojibwemowin. Anishinaabeg is the plural of Anishinaabe.

Beneficiation refers to the various processes that mines use to separate the valuable target mineral from the extracted ore. The beneficiation method a mine uses depends on the target metal, ore grade, and specific chemical characteristics of the ore.

Bulk sampling means removing material from a potential mine site to obtain site-specific data to assess metallurgical characteristics and the quality and quantity of a deposit.

Ceded Territory/Ceded Territories are lands in Michigan, Wisconsin and Minnesota ceded by Ojibwe (or Chippewa) tribes to the United States in various treaties. In the treaties of 1836, 1837, 1842 and 1854, the signatory tribes reserved the continued right to hunt, fish and gather on the land ceded. First Nations entered into similar land cession treaties with the Canadian government.

Clean Water Act (CWA) is a federal act that forms the basic structure for

regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the CWA it is unlawful to discharge any pollutant from a point source into navigable waters without a permit.

Concentration is the process of increasing the amount of the target mineral in ore by separating it from the crushed and milled rock.

Cone of depression refers to a drop in water levels in the ground resulting from pumping water out of a mine to keep the workings dry. As the cone of depression expands away from the mine, the drawdown can lower the water table in that area, meaning area wells may go dry.

Dewatering refers to the removal of water from the mine pit by pumping or evaporation.

Drill sludge (or drill cuttings) are broken bits of solid material brought to

the surface in the process of drilling holes during metallic mineral exploration.

Effluent is a liquid that is discharged from a mining operation.

Financial assurance is a financial guarantee, ideally in the form of cash or an equivalent financial instrument, meant to ensure the costs of all mine clean-up and remediation activities will be paid. The amount of financial assurance should be based on a prediction of the mine's impacts.

Fragmentation is a decrease in the area of contiguous habitat available to wildlife.

Fugitive dust is particulate matter not emitted from a stack, vent, or hood and includes emissions from haul roads, wind erosion, and exposed surfaces.

Gangue refers to the worthless or unusable material that surrounds or is closely mixed with a desired mineral in an ore deposit.

Groundwater is the water located beneath the ground surface in soil or rock pore spaces or fractures.

Invasive species are organisms that cause or are likely to cause harm to the economy,

environment, or human health due to their tendency to out-compete native species.

Leachate refers to liquid that extracts the soluble or suspended solids of the material through which it has passed; in mining, it typically means liquid that drains from stockpiled material.

Milling refers to the process of grinding or crushing the ore in a mill to create small sized pieces best suited to mineral extraction.

Ojibwe refers to a group of Anishinaabe who speak a distinct language called Ojibwemowin. The US government recognized these tribes as "Chippewa" during the treaty-making era.

Ore is a type of rock containing minerals with economically valuable elements, including metals, that are removed through the mining process.

Overburden refers to all materials that overlie a deposit, including waste rock and other materials, which must be removed to reach the underground ore body. The mine does not process the displaced overburden.

Remediate/remediation are terms that generally refer to the environmental clean-up of land and water contaminated by the mining process.

Reclamation is the process of returning the mine area as close as possible to its pre-mine condition. Reclamation typically involves activities such as removing any hazardous materials, reshaping the land, restoring topsoil, and planting native grasses, trees, or ground cover.

Riparian means relating to or located on the banks of a natural watercourse or a river or stream.

Sintering is the pyrometallurgical process of forming a solid mass of metal by heat or pressure.

Smelting is the process of heating the metal concentrate beyond its melting point, typically the final step in concentrating a metal that can be sold to manufacturers.

Subsidence refers to the downward motion (or sinking) of a land surface; in mining, this is most commonly caused when underground mine workings collapse, leading to subsidence at the surface.

Sulfate: A negatively charged ion that can be produced when metal sulfides are oxidized, consisting of one atom of sulfur and four atoms of oxygen, SO₄. Sulfates are salts of sulfuric acid.
Attachment 6 to MNRD THPO Report



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Sulfide: A form of sulfur that often is found in the environment bound to metals. Under acid conditions, sulfide can convert to hydrogen sulfide (H₂S) and a metal. Oxidation of sulfide produces sulfur or sulfate.

Sulfide mineral: A class of mineral ore containing sulfides, many of which contain metals. Common sulfide minerals are Pyrite (FeS₂) and Chalcocite (Cu₂S).

Surface water includes water in rivers, streams, creeks, lakes, and reservoirs and can be replenished through precipitation or through the movement of groundwater to the surface.

Taconite is low-grade iron ore, found extensively in the iron ranges of Michigan, Minnesota, and Wisconsin. Once the taconite ore is removed from the ground, it is concentrated into pellets slightly smaller than a marble. The pellets (also called taconite) are a concentrated iron

product, more economical to transport and process into finished goods.

Tailings are the main byproducts of the beneficiation process, composed of rock particles and minerals which could not be recovered or have no value along with the water and chemicals used in the beneficiation process. Tailings can be in a slurry, paste or granular form and must be stored in a reservoir, often a pond or basin. Because tailings range in size from coarse sand to fine powder, their stability varies depending on their placement and moisture content.

Tailings basins (also called tailings ponds or impoundments) typically are large facilities or systems used to isolate tailings and tailings water from the surrounding environment. They may contain acidic water and elevated concentrations of toxic elements.

Treaty rights are rights retained in treaties that were negotiated between governments in which tribes sold the land but did not give up the right to use the land. Treaty rights are not individual rights but are held and regulated by the signatory tribes.

Waste rock is the waste produced during mine development, including overburden and gangue, and those parts of an ore deposit that fall below the economic cut-off grade. Waste rock is usually stored at the surface in large piles and may contain sufficient sulfide mineral concentrations to generate long term acid drainage problems.

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs.



ATTACHMENT 7



(<https://www.facebook.com/SierraClubMN>)



(<https://twitter.com/SierraClubMN>)



(<https://www.instagram.com/sierraclubmn>)

Twin Metals

Note: For the most up to date information on the Sierra Club's efforts to stop sulfide mining, please see our [Water, Lands & Wildlife page](https://www.sierraclub.org/minnesota/water-lands-wildlife) (<https://www.sierraclub.org/minnesota/water-lands-wildlife>), and [blog](https://www.sierraclub.org/minnesota/north-star-blog) (<https://www.sierraclub.org/minnesota/north-star-blog>).

The proposed underground sulfide mining project by Twin Metals LLC in northeastern Minnesota includes over 30,000 acres containing disseminated mineralization of copper/nickel and associated trace metals bonded to sulfide ores. Located within the Superior National Forest approximately 10 miles east of Babbitt, 15 miles southeast of Ely, MN, and 2-3 miles from the Boundary Waters Canoe Area Wilderness (BWCA), the project was originally proposed by Franconia Minerals, which has since been absorbed by Twin Metals, a joint venture between Canadian Duluth Metals Ltd and Chilean Antofagasta PLC. The project currently includes the Birch Lake, Maturi, and Spruce Road deposits, with exploration continuing. The close proximity of the deposits to key water bodies such as the South Kawishiwi River, Birch Lake, the White Iron Chain of Lakes, and the BWCA create a potential for environmental destruction on an unprecedented level. In fact, the South Kawishiwi River was named one of America's Most Endangered Rivers of 2013.



Twin Metals' proposed underground mine is referred to as an "underground city" by Twin Metals (**St. Paul Pioneer Press** (http://http://www.twincities.com/localnews/ci_20264298/underground-mine-near-ely-would-be-largest-minnesota)). Miles of tunnels would be blasted out below ground where dump trucks and massive earth moving equipment would extract tremendous amounts of material to be transported to the surface. Portions of the Twin Metals' deposits might be deemed more economically feasible to mine as open pits.

Due to the low grade character of the rock formation, less than 1% of the ore would be produced as copper, nickel and trace metals, with waste rock comprising the remaining 99%. Since the amount of sulfur containing waste rock would be so enormous, the impact to the environment would be significant and long-term.

Although mining companies claim that they can "mitigate" such problems, there is currently no sulfide mine in existence that is not polluting the ground water. Acid Mine Drainage (AMD) and toxic heavy metal release can last for centuries; adversely affect fish and other aquatic life, wildlife dependent on those aquatic lives as food sources, and the quality of watersheds and drinking water. Sulfates (from sulfur) also leach into the environment and become part of a bio-chemical process that converts mercury into methyl mercury, which bio-accumulates in the food chain resulting in fish consumption advisories. Sulfates are particularly harmful to the growth of wild rice. Thus, pollutants from sulfide mining operations could adversely affect food sources and ultimately, human health. In addition, the scope of mining such low grade ores changes the landscape forever.

Advanced mineral exploration, including leasing and exploratory drilling, is now occurring on lands bordering the Boundary Waters and deep into the Superior National Forests and nearby state lands such as Bear Head Lake State Park and into the Cloquet Valley State Forest. Twin Metals is currently developing its mine plans and the company is expected to begin the permit application and environmental review process in 2014.

Learn more

- **American Rivers Take Action!** (<https://www.americanrivers.org/make-an-impact/take-action-for-your-rivers/>)
- **Twin Metals** (<http://www.twin-metals.com/>)
- **Map of Property Interests** (http://www.twin-metals.com/wp-content/uploads/2012/10/TMM_Regional_NEMN.pdf)

Sign up for our action alerts here (https://secure.sierraclub.org/site/SPageNavigator/CHP_NorthStar_Signup.html).

Polymet (<https://www.sierraclub.org/minnesota/mining/polymet>)

(<https://act.sierraclub.org/actions/Minnesota?actionId=AR0345216&id=70131000001hRELAA2>)

Protect the Boundary Waters Canoe Area Wilderness Today!

(<https://act.sierraclub.org/actions/Minnesota?actionId=AR0345216&id=70131000001hRELAA2>)

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Copperwood Project

White Pine North Project



Project Overview

The 100%-owned Copperwood Project is located in Gogebic County in the Upper Peninsula of Michigan, USA within the Porcupine Mountains copper district ([Figure CW 1](#)). In June 2018, Highland Copper published the results of a feasibility study prepared by G Mining Services Inc. ([Link to Feasibility Study Report](#)) Copperwood is a low cost, low capital intensity located in a Tier 1 jurisdiction with a strong history and support of mining., Highland Copper has received the necessary permits to begin construction activities on site, provided certain permit conditions are met, such as the posting of financial assurance.

Design of the processing facility was completed by Lycopodium Minerals Canada of Toronto, an engineering firm well-known for its skills at designing compact and efficient processing plants. Golder Associates designed the tailings dam and water management systems and provided technical support in the domain of mine geotechnics.

A metallurgical test program at SGS Lakefield in Ontario, Canada is complete, and includes more extensive testing being done on samples from all mineralized zones at the project including the one at the eastern edge of the deposit. In 2018, Highland Copper filed applications with the Michigan Department of Environmental Quality ("MDEQ") to either amend, renew, or obtain all permits required to begin mine construction at Copperwood. Highland Copper has since received its Air Discharge, Dam Safety, and Wetland Permits, as well as an approved amendment to the Mining Permit. MDEQ has extended the Wastewater Discharge Permit while renewal of the permit issued to Orvana is being processed. An application to obtain a Lake Superior water intake permit from the US Army Corps of Engineers (COE) is outstanding and a final decision is expected in the near future. To summarize, Highland Copper has received all permits required to break ground.

2018 Feasibility Study Results Highlights:

- ▶ Initial Capital Expenditure of US\$ 275M
- ▶ After tax internal rate of return ("IRR") of 18%
- ▶ 3.2-year payback period
- ▶ After-tax net present value at 8% discount rate: US\$ 116.8M

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- ▶ Mechanized underground room and pillar mining
 - ▶ Ore production of 6,600 tonnes/day
 - ▶ Average Cu grade of 1.43% in reserves mined over a 10.7-year life of mine
 - ▶ Proven & Probable Mineral Reserves: 25.4 Mt
 - ▶ Measured + Indicated Resources: 42.2 Mt in LCBS unit, and 7.1 Mt in UCBS unit
 - ▶ Inferred Resources: 34.4 Mt in LCBS unit, and 15.5 Mt in UCBS unit
 - ▶ High lateral geological continuity within stratigraphic units, with the orebody open to the North and East
- Well-developed local transportation and energy infrastructure

Project Opportunities

Opportunities to increase project value include:

- Copper Price: Significant leverage
- Resources: Upgrade classification of satellite orebodies from inferred to indicated mineral resources (50 M tonnes)
- Continuous Mining technologies: Potential to increase productivity and reduce costs
- Geotech. Optimization: Increase ore recovery and minimize mining dilution
- Metallurgical Recoveries: Possibilities to increase
- Tailings disposal: alternatives offering significant sustaining capital savings

Project Exploration History

Exploration history on Copperwood dates back to 1954 when a United States Geological Survey map of the area was published and led to the discovery of copper mineralization in the Western Syncline in 1956. An extensive drill program delineated four separate deposits comprised of chalcocite-bearing sedimentary units in the lowermost Nonesuch Formation analogous to the mineralization at White Pine. In 1959, AMAX, who controlled the private mineral leases, decided not to proceed with the underground mine. In 2008, Orvana Minerals Corp. began delineation drilling and environmental baseline studies that led to engineering studies and a proposed mine plan.

Several historical resource estimates for the Copperwood deposit have been issued:

- USMR – Covering larger area that included the Copperwood Project area, prepared in 1959;
- AMAX – Covering larger area that included the Copperwood Project area, prepared in 1974;
- Orvana Minerals (AMEC) – Copperwood area, published April 2010, effective date of April 30, 2010;
- Orvana Minerals (AMEC) – Satellite Deposits, published January 2011, effective date of January 24, 2011;
- Orvana Minerals (Marston) – Copperwood areas, published March 2011, effective date of January 25, 2011;
- Highland (GMSI) – Copperwood Deposit, published June 25, 2015, effective date of April 15, 2015;
- Highland (GMSI) – Copperwood Deposit, published December 5, 2017, effective date of October 18, 2017.

Location

The Copperwood deposit is located in Gogebic County in the Upper Peninsula of Michigan, USA within the Porcupine Mountains copper district and about 23 km to the town of Wakefield and 40 km to the town of Ironwood, both in Gogebic County with the benefit of the following characteristics:

- Logging-mining communities of 10,000
- Long history of copper and iron mining: Copper Range Co. operated the White Pine mine (located 35 kilometers west of Copperwood) between 1953-1997 (44 years) extracting over 4.5 billion pounds of copper
- Locally available infrastructure including power lines, natural gas & rails within 15 miles of the property.
- Strong support for the mining industry

Geology

Copperwood was discovered in 1956 and boasts the highest-grade of all known sediment-hosted copper deposits in the Upper Peninsula. It is geologically very similar to the White Pine deposit.

The Copperwood deposit is located on the southwest limb of the Western Syncline and is buried approximately 30 meters of unconsolidated glacial sediments. It is characterized by its geologic simplicity. The ore sequence is a sheet-like, tabular body that is 2.3 meters thick on average and dips gently to the north; mineralization occurs exclusively as fine-grained chalcocite, a copper mineral that contains 79% copper. The deposit is amenable to room-and-pillar.

Chalcocite is the only ore mineral at Copperwood. It is very fine-grained and forms continuous seams parallel to laminations but is also disseminated throughout the LCBS. Chalcocite formed as a replacement of pre-existing pyrite at low temperatures. Thus, the deposit does not contain potentially acid-forming pyrite which not only simplifies beneficiation of copper, but also mitigates the risk of acid-rock drainage. The Copperwood host rocks are in fact acid neutralizing.

Project Economics

Based on the 2018 Feasibility Study, the life-of-mine is projected to be 10.7 years. The production rate of the mine will be 6,600 mtpd of ore, with an average payable copper production of 28,000 mtpy. The project initial CAPEX is \$244.6 M (USD), and the operating cost per lb. of payable copper is \$1.53/lb. Using an annual discount rate of 10%, the after-tax IRR, NPV, and Payback Period are 18%, \$116.8 M (USD), and 3.2 years, respectively.

Mineral Resources and Reserves

The updated Mineral Resource estimate used by Highland Mining in the 2018 Feasibility Report estimates 42.2 M lbs. Measured + Indicated mineral resources in the Lower Copper Bearing Sequence at an average grade of 1.60% Cu and 3.84 g/t Ag. The Measured + Indicated Mineral Resource in the Upper Copper Bearing Sequence is estimated to be 7.1 Mt at an average grade of 1.21% Cu and 3.26 g/t Ag. There remains 1,272 M lbs. Cu and 5.5 M oz. Ag in the Inferred Resource category that Highland intends to explore further and potentially convert to Measured and Indicated Resources.

The Mineral Reserves for the Copperwood Project are estimated at 25.4 Mt, at an average grade of 1.43% copper and 3.83 g/t Ag, as summarized in Table 2. The mine design targets mineralization above a 1% copper grade which generates an NSR near the breakeven cost of US \$48/t of ore which includes provisions for sustaining capital.

[LINK TO CW2017 DRILL RESULTS](#)

[LINK TO CW2018 FEASIBILITY STUDY](#)

NI 43-101 Feasibility Study on the Copperwood Project Michigan, USA 2018

To View

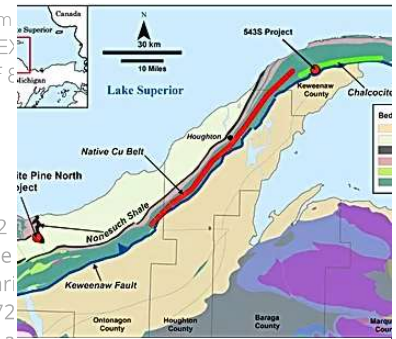


Figure CW 1

Table 1- Copperwood Project
Mineral Resource Estimate - June 14th, 2018

Figure CW 2

Figure CW 3

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Notes on Mineral Resource Estimate

- 1) Mineral Resources are reported using a copper price of US\$ 3.00/lb and a silver price of US\$ 18/oz.
- 2) A payable rate of 96.5% for copper and 90% for silver was assumed.
- 3) The Copperwood Feasibility Study reported metallurgical testing with recovery of 86% for copper and 73.5% for silver.
- 4) Cut-off grade of 1.0% copper was used, based on an underground "room and pillar" mining scenario.
- 5) Operating costs are based on a processing plant located at the Copperwood site.
- 6) Assuming a \$3.00/lb Cu price, a sliding scale 3.0% NSR royalty on the Copperwood Project is payable to leaseholders. Assuming closing of the acquisition of the White Pine Project, a 3% NSR royalty on the Copperwood Project payable to Osisko Gold Royalties Ltd is reduced to a 1.5% NSR royalty.
- 7) Measured, Indicated and Inferred Mineral Resources have a drill hole spacing of 175 m, 250 m and 350 m, respectively.
- 8) No mining dilution and mining loss were considered for the Mineral Resources.
- 9) Rock bulk densities are based on rock types.
- 10) Classification of Mineral Resources conforms to CIM definitions.
- 11) The qualified person for the estimate is Mr. Réjean Sirois, P.Eng., Vice President Geology and Resources for GMSI. The estimate has an effective date of 30th April 2018.
- 12) Mineral Resources that are not mineral reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.
- 13) LCBS: Lower Copper Bearing Sequence.
- 14) UCBS: Upper Copper Bearing Sequence.
- 15) The quantity and grade of reported Inferred Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Resources as Indicated or Measured Mineral Resources.

Figure CW 4

Table 2-Copperwood Project Mineral Reserve Estimate - June 14th, 2018

Notes on Mineral Resource Estimate

- 1) The Mineral Reserves were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards for Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council May 10th, 2014.
- 2) Mineral Reserves are estimated at a cut-off grade of 1% Cu. The cut-off will vary depending on the economic context and the operating parameters.
- 3) Mineral Reserves are estimated using a long-term copper price of US\$ 3.00/lb and a silver price of US\$ 16.00/oz.
- 4) Assuming a \$3.00/lb Cu price, a sliding scale 3.0% NSR royalty on the Copperwood Project is payable to leaseholders. Assuming closing of the acquisition of the White Pine Project, a 3% NSR royalty on the Copperwood Project payable to Osisko Gold Royalties Ltd is reduced to a 1.5% NSR royalty.
- 5) Mineral Reserves are estimated using an ore loss of 3%, a dilution of 0.1 m for the floor and a 0.25 m for the back of the stope and the development.
- 6) The economic viability of the mineral reserve has been demonstrated.
- 7) A minimum mining height of 2.1 m was used.
- 8) The copper recovery was estimated at 86%.
- 9) The qualified person for the estimate is Mr. Carl Michaud, Eng., Underground Engineering Manager for GMSI. The estimate has an effective date of May 25, 2018.
- 10) The number of metric tonnes was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects; rounding followed the recommendations in NI 43-101.

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ATTACHMENT 8

Husky Energy Refinery Explosion and Fire

Home | Investigation Details

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Accident Description

Accident: Husky Energy Refinery Explosion and Fire

Location: Superior, WI

Accident Occurred On: 04/26/2018 | **Final Report Released On:**

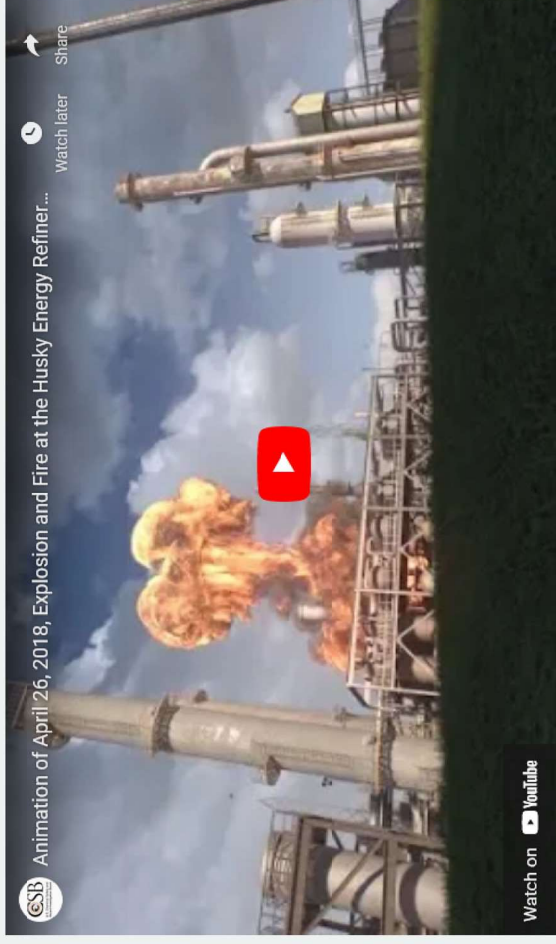
Accident Type: Oil and Refining - Fire and Explosion

Investigation Status: The CSB's investigation is currently ongoing.

The refinery was shutting down in preparation for a five-week turnaround when an explosion occurred, sending several people to area hospitals with injuries.



Related Video



Animation of April 26, 2018, Explosion and Fire at the Husky Energy Refinery in Superior, Wisconsin
12/19/2019 6:14:00 PM

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CSB Calls on EPA to Update HF Study in Wake of the 2017 Husky Refinery Fire
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DEC 12

CSB Public Town Hall Meeting

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Related Documents

September 26, 2018, Congressional Letter to Hold Husky Public Meeting

Husky Factual Update December 2018

Husky Factual Update August 2018

[CSB Letter to EDA re:refinery fire](#)

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ATTACHMENT 9



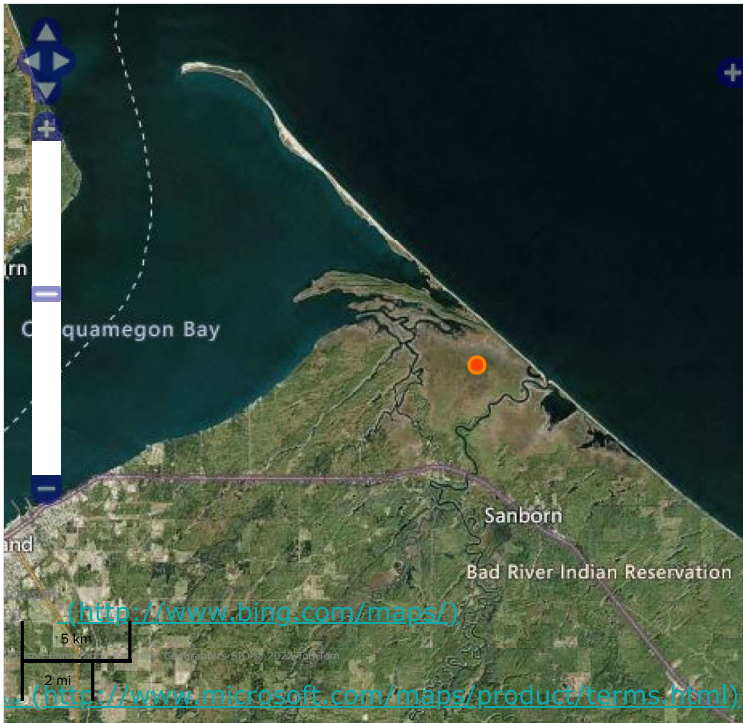
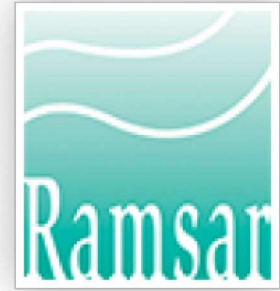
Ramsar Sites Information Service

2,439 Sites covering 254,691,993 ha

| EN FR ES

Kakagon and Bad River Sloughs

Country: United States of America
 Site number: 2001
 Area: 4,355 ha
 Designation date: 02-02-2012
 Coordinates: 46°38'N 90°40'W



[Overview](#)

[Downloads](#)

Kakagon and Bad River Sloughs. 02/02/12; Wisconsin; 4,355 ha; 46°39'N 090°41'W. National Natural Landmark. A largely undeveloped wetland complex composed of sloughs, bogs, and coastal lagoons that harbor the largest natural wild rice bed on the Great Lakes. The area is under tribal management that is protected as a Conservation Area by an Integrated Resource Management Plan under the jurisdiction of the Bad River Band of the Lake Superior Tribe of Chippewa. The endangered Gray Wolf (*Canis lupus*) and threatened Canada Lynx (*Lynx Canadensis*) are two rare and elusive species known to inhabit the site. It provides necessary and rare feeding, resting, and nesting habitat for both migrating and local populations of birds, and one of the two remaining sites for the endangered Piping Plover (*Charadrius melodus*) is located immediately to the north at Long Island. The site also protects wild rice beds that are becoming increasingly fragmented on Lake Superior - as the only remaining extensive coastal wild rice bed in the Great Lakes region, it is critical to ensuring the genetic diversity of Lake Superior wild rice. Tribal members frequent the area primarily for subsistence trapping, hunting, fishing, and to retain historic harvesting techniques; access to the area is strictly limited to Bad River tribal members and Bad River Natural Resources staff. The largest ecological threat to the site is from invasive species and from controversial potential mining activity in the Penokee-Gogebic Range upriver. In the surrounding areas water quality also could potentially be affected by municipal wastewater, failing household septic systems, and agricultural and logging practices within the

Materials presented on this website, particularly maps and territorial information, are as-is and as-available based on available data and do not imply the expression of any opinion whatsoever on the part of the Secretariat of the Ramsar Convention concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

watershed. Ramsar Site no. 2001. Most recent RIS information: 2012.

Administrative region: Wisconsin

National legal designation:

- National Natural Landmark

Last publication date: 02-02-2012

[RSS 2.0](#)

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Wetlands Specialist
Bad River Natural Resources Department
72682 Maple Street
Odanah, WI 54861

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

--	--	--	--	--	--

Site Reference Number

2. Date this sheet was completed/updated:

February 6th, 2012

3. Country:

United States of America

4. Name of the Ramsar site:

“Kakagon and Bad River Sloughs” (Kakagon and Bad River Sloughs of the Bad River Band of Lake Superior Tribe of Chippewa on the south shore of Lake Superior)

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
b) Updated information on an existing Ramsar site
-

6. For RIS updates only, changes to the site since its designation or earlier update:

New site designation.

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a **hard copy** (required for inclusion of site in the Ramsar List): ;
- ii) an **electronic format** (e.g. a JPEG or ArcView image) ;
- iii) a **GIS file providing geo-referenced site boundary vectors and attribute tables** .

b) Describe briefly the type of boundary delineation applied:

The following are excerpts taken from the Bad River Band of Lake Superior Tribe of Chippewa's (Bad River Band) Integrated Resource Management Plan.

"The federal government requires tribes with forested reservation land to develop a Forest Management Plan or a more extensive Integrated Resource Management Plan (IRMP). The Bad River Band of Lake Superior Chippewa Indians adopted a tribal resolution to develop and an IRMP in 1990. An IRMP is a comprehensive, long-term plan that provides for the conservation, preservation, and sustainable use off all the natural resources of the Bad River Reservation. The goal of Bad River's IRMP is to maintain and improve the health of ecosystems within the Bad River Reservation for at least the next seven generations, while providing resources at a sustainable level of harvest."

"The Kakagon and Bad River Sloughs wetland complex, lands on Madeline Island, and major floodplains (approximated by an area ¼ mile wide on both sides of the Bad, White, Marengo, and Potato Rivers) are designated as Conservation Areas. Conservation Areas will be managed primarily for their natural, ecological, and cultural values and will be protected from timber harvest activities as well as future residential, industrial, and recreational development."

The areas delineated to be designated as a Ramsar Wetland of International Importance site are lands under tribal management that are protected by the Bad River Band's IRMP Conservation Area (Figure 1). Only the red shaded areas are part of the site.

8. Geographical coordinates:

46° 38.542' N, 90° 40.957' W

9. General location:

The site is located on the northern border of Wisconsin with Lake Superior on the Bad River Band of Lake Superior Tribe of Chippewa's Reservation. The Bad River Natural Resources Department is located in Odanah, WI (population 254), approximately 3.0 mi/4.8 km South Southeast of the mid-point of the Kakagon/Bad River Sloughs (Figure 2).

From the Bad River Natural Resources Office in Odanah, WI, distances in miles/kilometres to major cities by highway are as follows:

Duluth, MN. 81/130
St. Paul, MN. 227/365
Madison, WI. 291/468

Chicago, IL. 424/ 682
 Detroit, MI. 631/1015

10. Elevation:

Elevation ranges from 184 meters above sea level at the headwaters of the Kakagon River and the up-stream side of the Bad River on the site to the average elevation of Lake Superior of 183 meters above sea level.

11. Area:

4,354.997 hectares

12. General overview of the site:

Where the meandering Kakagon and Bad Rivers empty into the cold waters of Lake Superior, there exists a coastal wetland ecosystem recognized to be among the richest and most extensive of its kind. The associated wetland complex, a mosaic of sloughs, bogs, and coastal lagoons, harbors the largest natural wild rice bed on the Great Lakes. This wild rice bed thrives among a myriad of dynamic and diverse wetland habitats, supporting scores of rare plant and animal species. Here, important fish spawning and nursery sites are found alongside critical stopover habitats for migratory birds.

As they flow north to Lake Superior, the Kakagon and Bad Rivers spread out into diverse wetland complexes including floodplain forests, sedge meadows, and coniferous bogs characterized by stands of tamarack (*Larix laricina*), white cedar (*Thuja occidentalis*) and black ash (*Fraxinus nigra*). In the downstream reaches of the rivers, a series of coastal lagoons support extensive marshes with a vast abundance of aquatic plants. Common plants in the Sloughs complex include wild rice (*Zizania palustris*), cranberry (*Vaccinium* sp.), many sedge species (*Carex* sp.), bur-reed (*Sparganium eurycarpum*), and sweet gale (*Myrica gale*). Even carnivorous plants like sundew (*Drosera rotundifolia*) and pitcher plants (*Sarracenia purpurea*) abound in this unique area.

The Kakagon and Bad River Sloughs are an outstanding migratory stopover habitat in both the spring and fall; these diverse wetlands host tens of thousands of passerines, raptors, shorebirds, and waterbirds. Species that use the site for breeding include the yellow rail (*Coturnicops noveboracensis*), Virginia rail (*Rallus limicola*), northern harrier (*Circus cyaneus*), sedge wren (*Cistothorus platensis*), Le Conte's sparrow (*Ammodramus lecontei*), northern waterthrush (*Seiurus noveboracensis*), blackburnian warbler (*Dendroica fusca*), golden-winged warbler (*Vermivora chrysoptera*) and the piping plover (*Charadrius melodus*), a federally listed endangered species. The forested river corridors flowing into the Sloughs are particularly important for breeding neotropical migrants such as the ovenbird (*Seiurus aurocapilla*), Canada warbler (*Wilsonia Canadensis*), Nashville warbler (*Vermivora ruficapilla*), and mourning warbler (*Oporornis philadelphia*). Bald eagles (*Haliaeetus leucocephalus*) are present year round in the Sloughs with many active nests easily visible from the rivers. The Sloughs also provide spawning and nursery habitat for a rich assemblage of native and sport fishes; including lake sturgeon (*Acipenser fulvescens*), walleye (*Sander vitreus*), and yellow perch (*Perca flavescens*).

This rich landscape is the product of extraordinary geological conditions and a legacy of unwavering environmental stewardship. Receding glaciers and fluctuating lake levels have scoured and tempered the topography over the eons. Lacustrine clay deposits beneath sandy soils have further honed the landscape and directed the gradual movement of ground and surface waters. The result is a wide, flat expanse of rich wetlands sheltered by a long coastal sand barrier and draining miles of forested uplands. So rich and unique is this landscape, that it marked the providential home of the westward-migrating Bad River Band of Lake Superior Chippewa. Centuries later, despite invasion, wars, logging, and industry, the Bad River Band remains as stewards to the Kakagon-Bad River Sloughs; and the Sloughs, in turn, provide for the Tribe.

13. Ramsar Criteria:

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

**14. Justification for the application of each Criterion listed in 13 above:
 (See Figures 3a, 3b, and 3c for this section)**

Criterion 1:

The site is located at the mouth of the Bad River watershed on Lake Superior. This freshwater estuary is the largest and possibly most pristine remaining, intact wetland on Lake Superior. The Nature Conservancy claims that the sloughs system is the largest undeveloped wetland complex in the upper Great Lakes (Chequamegon Bay Watershed Site Conservation Plan). Although small pockets of wild rice can be found throughout Lake Superior, the Kakagon and Bad River Sloughs are unparalleled in the abundance and distribution of natural, wild rice beds. In addition, as the only remaining coastal wild rice wetland of its size on the Great Lakes, it provides exceptional habitat for a diverse host of fish, wildlife, and migratory birds.

Criterion 2:

The site is the only remaining extensive coastal wild rice wetland in the Great Lakes and is the largest and possibly most pristine remaining estuary on Lake Superior.

The gray wolf (*Canis lupis*; federally endangered) and Canada lynx (*Lynx canadensis*; federally threatened) are two rare and illusive species known to inhabit the Kakagon and Bad River Sloughs.

One of only two remaining nesting sites for the federally endangered piping plover (*Charadrius melodus*) is located immediately to the north of the site at Long Island. Similar habitat to that found on Long Island is present within the site. Protection of this habitat is crucial for expanding critical nesting habitat and, thereby, encouraging future population growth of Piping Plover on the south shore of Lake Superior.

Criterion 3:

The Kakagon and Bad River Sloughs support populations of lake sturgeon important to maintaining the biological diversity of the species in this bioregion. The site includes the lower reaches of the Bad River, which is home to the largest spawning area for lake sturgeon on the south shore of Lake Superior. The importance of this habitat as a pristine spawning area has increased over time because of the building of dams, increased sedimentation, and pollution in the other traditional spawning areas on Lake Superior's south shore.

Criterion 4:

The site provides critical aquatic and terrestrial habitats to sustain migrating populations of birds in the Mississippi Flyway during the spring and summer. Flocks of birds moving between Hudson Bay and the Gulf of Mexico are known to use the site as stopover habitat to shorten the open water flight across Lake Superior. The site provides necessary and rare feeding, resting, and nesting habitat for both migrating and local populations of birds. Many species of puddle ducks, Canada geese (*Branta canadensis*), tundra swans (*Cygnus columbianus*), trumpeter swans (*Cygnus buccinator*), sandhill cranes (*Grus canadensis*), great blue herons (*Ardea herodias*), golden eagles (*Aquila chrysaetos*), and bald eagles frequent the site.

The site also protects wild rice beds. Because of fluctuating lake levels, increased wave action from watercraft, nutrient increases, and global warming, wild rice beds are becoming increasingly fragmented on Lake Superior. This fragmentation has, in turn, threatens the genetic diversity of the remaining wild rice beds and raises concerns about the rice's natural ability to evolve and adapt to changing habitat conditions. As the only remaining extensive coastal wild rice bed in the Great Lakes, Kakagon and Bad River Sloughs is critical to ensuring the genetic diversity of Lake Superior wild rice.

Criterion 7:

The importance and quality of the spawning habitat for endemic lake sturgeon (*Acipenser fulvescens*), walleye (*Sander vitreus*), yellow perch (*Perca flavescens*), and northern pike (*Esox lucius*) within the site is unparalleled on the south shore of Lake Superior. The site includes the lower reaches of the Bad River, which is home to the largest spawning area for lake sturgeon on the south shore of Lake Superior. The importance of this habitat as a pristine spawning area has increased over time because of the building of dams, increased sedimentation, and pollution in the other traditional spawning areas on Lake Superior's south shore

Criterion 8:

The shoreline of the river within the reservation remains relatively unaltered by development and dams. Critical feeding stock, spawning ground, nursery and migration paths for Lake Sturgeon remain at this site. Without the vast connectivity of the Bad River to other rivers and streams flowing into Lake Superior there may not be many opportunities for Lake Superior to have a sizable breeding population, particularly as attempts to reintroduce native lake sturgeon in rivers historically used by the fish for spawning have failed because the traditional spawning areas have been made impassable by dams, and polluted by runoff, and have been over harvested by fisherman.

15. Biogeography

a) biogeographic region:

The wetland site is located within an area that covers the northern reaches of Minnesota, Wisconsin, lower Michigan and all of the upper peninsula of Michigan commonly known as the Laurentian Mixed Forest Province. The ecological sub-region known as the "Southwest Lake Superior Clay Plain" (212-Y) section affects the climate of this region resulting in greater precipitation and milder temperature regimes, when compared to areas further inland. The landscape is variously dissected, nearly level lake plain of Lacustrine clays. The sub region encompasses a total of 2,121 miles² representing 2.1% of the larger province.

b) biogeographic regionalisation scheme

McNab, W.H.; Cleland, D.T.; Freeouf, J.A.; Keys, Jr., J.E.; Nowacki, G.J.; and Carpenter, C.A., comps. 2005. Description of ecological subregions: sections of the conterminous United States [CD-ROM]. Washington, D.C: U.S. Department of Agriculture, Forest Service. 80p.

16. Physical features of the site:

The site lies entirely within the Bad River Watershed that drains over 1000 miles²/2590 kilometers² of Wisconsin's Lake Superior shoreline (Figure 4). Watersheds within the site include: Fish Creek-Frontal Chequamegon Bay, Lower Bad River, and Bad River. Within the three watersheds are seven sub watersheds. They are: Lake Superior Tributary 62, Wood Creek Slough 1, and Kakagon River 1 in Fish Creek-Frontal Chequamegon Bay; Bear Trap Creek 1 and Bad River 1 in the Lower Bad River; and Denomie Creek 1 and Denomie Creek 2 in the Bad River.

The wetland complexes at the site formed behind the protection of a coastal barrier sand spit known as Chequamegon Point and Long Island. Although the two are now connected, Chequamegon Point and Long Island remained separate from one another until a large storm on Lake Superior in the November of 1975 (Figure 5). This spit continues southeast from Long Island along the south shore past the mouth of the Bad River, Bad River Slough, and Honest John Lake.

These two major wetland complexes known as the Kakagon Slough and Bad River Slough are separate river systems in terms of hydrology but are ecologically linked. The Kakagon River empties north northwest into the Chequamegon Bay on the west side of Chequamegon Point and Long Island, while the Bad River empties northeast directly into Lake Superior on the east side of the point. Similarly to the way water sways back and forth in a tub after you run your hand through it, water levels in Lake Superior constantly sway back and forth as the result of a phenomenon known as seiche activity. Both wetlands are highly influenced by seiche activity from Lake Superior and water levels can be observed fluctuating in cycles of six high-to-high periods per day. The seiche activity can change the water levels within the Sloughs by as much as 40 cm at each cycle (Meeker, 1993).

The Kakagon and Bad Rivers are not the only rivers influencing these wetlands. Sucker Creek, Bear Trap Creek, and Wood Creek all drain into the Kakagon Slough. Flow inputs from the Bad River likely contribute very little of

the water inputs in to the Bad River Slough. Observing the turbid waters of the Bad River mixing with the far less turbid waters flowing from the Bad River Slough at the mouth of the river just before it empties into Lake Superior make this apparent. Denomie Creek and water draining from Honest John Lake are the major contributing sources of water into the Bad River Slough (Figure 3c).

The Sloughs are similar in that both formed behind the Chequamegon Point barrier spit and have bog areas, sedge meadows, marsh, alder thickets, coniferous bogs, coniferous swamps, and abundant wild rice beds. A view from the air makes their differences quickly apparent (Figure 5). The Kakagon Sloughs make up a greater “collection” of areas known locally as Little Round River, Big Round River, Big Slough, Northeast Slough, Wood Creek Slough, Bear Trap Creek, Sandcut Slough, and Oak Point. These areas make up a weaving system of channels through an inundated river delta. The Bad River Slough and Honest John Lake have larger areas of open water wetlands with soft, irregular shorelines and Riverine influences (Figures 3a, 3b, and 3c).

Wetlands like these resulted from the retreating glaciers of the last ice age (around 12,000 years ago). As a result the earth's crust begins to rise in relief from the absence of the weight of the glaciers, also known as isostatic rebound. Melting ice contributed to the water that now fills Lake Superior. The crushing waves produced by storms helped to shape the barrier spit much in the same way that they connected Long Island to the rest of Chequamegon Point. Interestingly this is the same feature that now protects the Sloughs from the same waves. Today, the Chequamegon Point-Long Island barrier spit is the most intact coastal barrier spit on western Lake Superior.

The succession of sand spit formation since the last glaciers moved through this area can be viewed from the air, looking down over Oak Point at the mouth of the Kakagon River and Chequamegon Point (Figure 3a). Here, a series of ridges extend nearly parallel from a single point on the eastern side of Oak Point, the location at which Oak and Chequamegon Points join. These ridges mirror the northern and southern shore lines of the point and host stands of pine and oak while lower areas lie in between the ridges that play host to obligate wetland plant species.

Glaciers helped flatten what is known as the Red Clay Plain or Lake Superior Clay Plain (discussed in Section 15). The heavy red clay soils are derived from glacial till and lacustrine deposits. This area of red clay parallels the Wisconsin shoreline and can extend inland in places up to 20 miles/31 kilometres. Streams in this area flow north to Lake Superior with their origins based in an ancient mountain range on the south end of the clay plain known as the Gogebic-Penokee Iron Range (Figure 4). These streams have cut through the clay and down to bare rock in many places along their upper reaches, forming many waterfalls and cliffs along their banks.

Soils types vary within the site but most are poorly drained and/or are made up of organic material. The main soil type immediately adjacent to the open water areas of the Sloughs is Sapristis, Aquents, and Aquepts (3114A) with 0-1% slopes. These are organic soils on which water is either ponded or at the surface throughout the year. Between the Kakagon and Bad River Sloughs lies an area of Lupton, Cathro, and Tawas soils (405A) that are also derived from organic parent material. Water tables in these soils are at the surface year round. Closer to the headwaters of the Kakagon River, and adjacent areas of the Bad River, are floodplain soils of loamy alluvium parent material called Moquah fine sandy loam (6A). The sand ridges of Oak Point that were previously discussed are of sandy glacial drift parent material often associated with lake and stream terraces known as Crowell sand (500B) (Figure 6).

Lake Superior greatly affects the climate of the site. In general, summer temperatures remain lower than areas outside the range of lake breezes. Air near the lake remains cool due to the low water temperatures of the lake. During the winter months only the shallow bays on the lake become ice covered, while the main basin of the lake always remains ice free. With open water temperatures in the main basin of the lake remaining near freezing during the winter, local climate is affected inversely as in the summer. During the winter, air over the lake warms to temperatures near freezing keeping near shore areas warmer than surrounding inland areas. The open water also contributes to what is known locally in the Great Lakes Basin as “Lake Affect Snow”. When the warm moist air over the lake moves to areas inland with colder temperatures the moisture in the air falls from the sky in the form of snow. This effect of this causes average seasonal snow fall amounts for this area to reach 58.0 in/147.32 cm with average precipitation amounts totalling 30.02 in/76.25 cm annually. The average temperature for the area is a cool 40.5°F/4.7°C with average high temperatures of 51.3°F/10.7°C and average low temperatures of 29.7°F/-1.3°C.

17. Physical features of the catchment area:

The site lies at the lower end of the Bad River Watershed, an area draining approximately 1000 miles²/2590 kilometers² of the northern Wisconsin coastline. Lands within the Bad River reservation account for roughly 1/3 of the area within the watershed. To the south, the watershed is bordered by the Chequamegon-Nicolette National Forest and the Gobeic-Penochee Range while Lake Superior lies to the north. Major land uses in the watershed include agriculture (10%), forest (79%), and wetlands (16%). The area remains sparsely developed with only small towns spread out throughout the landscape, the largest being Ashland, Wisconsin (population 8,795) (Figure 4).

Historically this area was covered by white pine forests but logging depleted the resource by the early 1900's. Although white pine can still be found in the area, aspen has become the major tree species replacing the old growth conifers. Timber harvests are much less prevalent in the area now, and best management practices for forestry have been developed to help protect the natural resources of the area.

The glacial history described in section 16 applies to the majority of the catchment area. This area of red clay parallels the Wisconsin shoreline and can extend inland in places up to 20 miles/31 kilometres. Streams in this area flow north to Lake Superior with their origins based in an ancient mountain range on the south end of the clay plain know as the Gobeic-Penochee Iron Range. These streams have cut through the clay and down to bare rock in many places along their upper reaches forming many waterfalls and cliffs along their banks.

The site is located in the "Dfa" climate region as described by the Köppen climate classification system. This is a cold region with at least 1.18 inches/30 mm of rain in the driest month with hot summers averaging temperatures greater than 71°F/22°C in the warmest month.

18. Hydrological values:

The wetlands on this site perform the important function of trapping sediment before it reaches Lake Superior and Chequamegon Bay. Since the wetlands on this site are at the lowest reaches of the watershed they play a large part in flood control. The Bad River Band has kept this area from being developed by instituting an Integrated Resources Management Plan and setting the wetlands within the site aside as a conservation area, which greatly aids in shoreline stabilization. It is essential to maintain and, if possible, enhance the wetlands within the Kakagon and Bad River Sloughs in order to encourage the sediment trapping and pollutant filtering functions performed by these wetlands for the benefit of the south shore area of Lake Superior.

19. Wetland Types

a) presence:

Inland: L, M, O, Tp, Ts, U, W, Xf, Xp

b) dominance:

Type	Name	Hectares	Percent of total
U	Non-forested peatlands.	2085.465	47.89%
W	Shrub-dominated wetlands.	1369.366	31.44%
Ts	Seasonal/intermittent freshwater marshes/pools on inorganic soils.	1296.849	29.78%
L	Permanent inland deltas.	307.378	7.06%
Tp	Permanent freshwater marshes/pools.	264.819	6.08%
M	Permanent rivers/streams/creeks.	216.000	4.96%
O	Permanent freshwater lakes.	120.912	2.78%

O	Lagoons.	108.796	2.50%
Xp	Forested peatlands.	15.268	0.35%
Xf	Freshwater, tree-dominated wetlands.	6.139	0.14%
	Upland	1122.556	25.78%

Areas of the above wetland types are interpreted from a wetland vegetation and mapping study completed in 1993 for use in the Bad River Band's Integrated Resource Management Plan. Wetland types have yet to be mapped in the Kakagon and Bad River Sloughs. Due to the fact that the original intent of the data was not to map wetland types, they consequently do not align with the wetland types described in Annex 1 of the RIS. Any given area of that vegetation type may be represented in more than one wetland type, thus the reason why the sum of the hectares for wetlands types listed above is larger than the actual size of the site.

20. General ecological features:

The diversity and uniqueness of this site is unparalleled by other wetland on Lake Superior and possibly in all of the Great Lakes. These wetlands have remained relatively unchanged over at least the last two centuries despite the logging and shipping booms that occurred in the area. Due to the natural protection offered by Chequamegon Bay and Chequamegon Point, the area was once an ideal location for harbouring ships. Physically, Chequamegon Point forced ships entering and leaving the bay to do so on the far west side away from the mouth of the Kakagon River, thus limiting the erosion impacts from passing ships. Since its designation as a reservation in the 1854 Treaty, the Bad River Band has sought to continuously protect the cultural resources (wild rice) of the Kakagon and Bad River Sloughs, in effect also protecting the ecological diversity that they provide.

Sedge meadows make up the vast majority of the non open-water areas of the Sloughs. Within these vast areas, pockets of sphagnum moss (*Sphagnum sp.*) are found associated with wild cranberries (*Vaccinium sp.*), sweet gale (*Myrica gale*), leather leaf (*Chamaedaphne calyculata*), pitcher plants, and sundews. Along the fringes of the open water lie the largest wild rice beds remaining on the Great Lakes. In the Kakagon River system, the wild rice grows in the shallower edges adjacent to the deeper channels in the center. Pickerel weed (*Pontederia cordata*) grows on the deeper edges of the wild rice effectively protecting the rice from boat wakes and lake seiche activity; both have a tendency to rip young wild rice plants out of the sediment.

During spring migration, many species of birds utilize the abundant areas of aquatic vegetation to nest and forage for invertebrates hidden both above and below the water's surface. These insects are an important source of nutrients for young birds. The actual seeds of the wild rice plants are mature by late summer, just in time for the fall migration. By the time migrating waterfowl from parts of Canada arrive, most of the rice has fallen off of the plants into the shallow water where it is searched out by the birds and plucked from the sediment.

Nesting habitat for waterfowl and raptors is abundant in both the Kakagon and Bad River Sloughs. The site was chosen for a Trumpeter Swan re-introduction project in 1996 because of its suitable habitat. 14 swans were released into the Sloughs; four pairs bonded and set up territories in the Sloughs. Swans continue to be observed during the ice free months. In the winter of early 2007, six Bald Eagle nests were monitored on the reservation to determine nesting success and feeding habits. Although there are more than six eagle nests within the site, the exact number of active nests is unknown at this time. Sandhill Cranes also frequent the Sloughs in seemingly increasing numbers.

Habitat also abounds below the surface of the water. Fish young and old find suitable habitat in the submergent and emergent vegetation and feed on the invertebrates found in the Sloughs. There is no shortage of hiding places for small fish and fry seeking refuge from predators among the vegetation. This is especially important in the spring when the fish are most susceptible to predation. By summer when the water temperature in the Sloughs warm and the dissolved oxygen concentrations drop, fish will be larger and more apt to survive in the cooler, more oxygen rich waters of the lake.

Submergent and emergent vegetation in the Sloughs are susceptible to damage from the high waters caused by large seiche events associated with storms when the protection from the pickerel weed is not sufficient. This increased wave action frequently tears the vegetation out of the fine sediments where it is rooted. Years of drought and large storms are considered to be products of global warming and will continue to be threats to the habitat within the Sloughs complex.

Without Lake Superior being immediately adjacent to the Sloughs, none of this diverse landscape would exist. The US Army Corp of Engineers has been monitoring Lake Superior water levels since 1918. In 2007 the lowest ever average annual water level was recorded for Lake Superior at 182.9833 m (all time average = 183.4084 m). Water at these levels limited the amount of suitable habitat for wild rice in the Sloughs. Areas that were thick with rice in previous years became vast mud flats during the summer months. The same year was also the first and only time in the history of the Bad River Reservation that the wild rice Harvest Season was closed by the tribal council. Since then the abundance of wild rice on the site has greatly improved, however many people suggest that wild rice has not reached its former abundance.

21. Noteworthy flora:

The Kakagon and Bad River Sloughs play host to the largest remaining wild rice habitat on the Great Lakes. The rice is harvested annually by members of the Bad River Band for personal use and economic gain. Wild rice harvesters can also choose to sell their freshly harvested rice to the Bad River Natural Resources Department to be re-seeded in areas of the Sloughs where habitat restoration projects are ongoing.

According to Anishinabe tradition, the first prophet said to the people, “In the time of the First Fire, the Anishinabe nation will rise up and follow the Sacred Shell of the Midewiwin Lodge... The Sacred Megis will lead the way to the chosen ground of the Anishinabe... There will be seven stopping places along the way. You will know that the chosen ground has been reached when you come to a land where food grows on water” (Edward Benton-Benai, *The Mishomis Book*).

The “food that grows on water” is, of course, wild rice. It is for this reason that the ancestors of the Bad River Band chose this place for their home. Wild rice has always been regarded by the Ojibwa people as a sacred gift of their chosen ground (Edward Benton-Benai, *The Mishomis Book*). Other species used by the Ojibwa people include small cranberry (*Vaccinium oxycoccos*), highbush cranberry (*Viburnum opulus*), mint species (*Lamiaceae sp.*), and white cedar (*Thuja occidentalis*).

22. Noteworthy fauna:

Immediately adjacent to the north of the Kakagon and Bad River Sloughs is Long Island, which is not technically an island, as it is connected to the south shore of Lake Superior by a sand spit known as Chequamegon Point. Long Island is one of only two known remaining nesting sites of the federally endangered Piping Plover in Wisconsin (Figure 5). Wetlands International’s Waterbird Population Estimates from 2006 indicate that this species declined globally from Vulnerable to Nearly Threatened between 2002 and 2006 (Wetlands International 2006). The same report stated that 110 individuals of the Great Lakes population of this subspecies were found in a 2004 survey. According to the United States Fish and Wildlife Service, only 13 breeding pairs were observed in all of the Great Lakes in 1984. By 2008, the number of breeding pairs was up to 63, with six of those pairs observed on the Wisconsin shore. Although Long Island is not included within the site, habitat similar is located immediately adjacent to it within the site, allowing for the potential future growth of nesting sites in the area.

A recent study by the WDNR found five species of bats on the Bad River and Bad River Slough alone. Of these five species, the northern long-eared myotis (*Myotis septentrionalis*) and little brown myotis (*Myotis lucifugus*) are listed as threatened and hoary bat (*Lasiurus cinereus*), eastern red bat (*Lasiurus borealis*), and silver-haired bat (*Lasiomyotis noctivagans*) are listed as Species of Special Concern by the state of Wisconsin. All five bat species are considered “Species of Greatest Conservation Need” as noted in the “Wildlife Action Plan” put together by the WDNR.

The gray wolf (*Canis lupis*) and Canada lynx (*Lynx canadensis*) are two more examples of federally endangered and threatened, respectively, species that are known to inhabit the Kakagon and Bad River Sloughs.

Nesting habitat for waterfowl and raptors is abundant in both the Kakagon and Bad River Sloughs. The site was chosen for a Trumpeter Swan re-introduction project in 1996 because of its suitable habitat. 14 swans were released into the Sloughs; four pairs bonded and set up territories in the Sloughs. Swans continue to be observed during the ice free months.

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The inherent, intrinsic social and cultural values of the site remain now as they were since before the 1854 Treaty that retained this land as Tribal property. Tribal members continue to fish in the waters of the rivers within the site by netting, spearing and conventional rod and reel. Timber harvesting is prohibited in areas designated as Conservation Areas by the Tribal Integrated Resource Management Plan, including the site.

Many resources are considered sacred within this site by the Anishinabe people. The Nibi (Water) itself is perhaps the most sacred element of religious importance at this site. Without water, no other life can exist. The Manomin (wild rice) is of the most historic and religiously significant resource at the site as well, as it was the resource that determined the final stopping place of the Anishinabe during the tribe's historic migration journey from the east. Nearby Madeline Island was once known as the *Mecca* of the Ojibwe Nation as it is the central place of national congregation for matters of utmost importance to the overall Nation. Its close proximity to this place provides a form of intangible confirmation that this is the final stopping place. Although there were many naturally grown wild rice beds in the Midwest region during European settlement, the Kakagon and Bad River Sloughs is the only site in the region along Lake Superior that has retained its integrity because of minimal ground disturbing activities to the area. The significance of the site's unique marshes was recognized by the Secretary of Interior in 1973 when it designated the site a National Natural Landmark under the National Natural Landmarks program of the National Park Service.

Tribal members continue to frequent this area primarily for subsistence trapping, hunting, fishing, and to retain historic harvesting techniques. Wild rice, cranberries, wild onions, bitterroot, rhubarb, red osier, crab apples, and wild grapes are among the plethora of food plants and traditional medicines available for harvest on or near the site. Many historic trap lines leading to the site are still in use today.

The Tribal Historic Preservation Office has no information concerning previous archaeological expeditions in the area, although a copy of a circa 1870's historic hand-drawn map shows homes along the Kakagon River leading to the site.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) The entire wetland complex is a sacred site for the Bad River Band because it is the area that the Tribe's ancestors decided to call home. The tribe sees the Kakagon and Bad River Sloughs as the reason the Anishinabe were called to this area from the east. To say that the Bad River Band is invested in the preservation of this site would be an understatement. For tribal members to be able to talk about how their ancestors came to call the Kakagon and Bad River Sloughs their home brings great pride to the community here.
 - ii) The Tribe sees the importance of maintaining the scientific, cultural, and intrinsic values of the site and as such has chosen to protect the Kakagon and Bad River Sloughs by implementing regulations that would cause negative impacts to the value of the Sloughs. These rules protect the traditional and cultural values of the Sloughs so that future generations can also appreciate their benefits.
 - iii) Many local Bad River tribal members frequent the Sloughs throughout the year for fishing and in the late summer for the wild rice harvest each year.
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24. Land tenure/ownership:

- a) within the Ramsar site: All lands being proposed for the Ramsar site are controlled by the Bad River Band as either Tribal Trust or Tribal Fee lands being managed as a Conservation Area under the Bad River Band's Integrated Resource Management Plan
 - b) within the Reservation: The exterior boundaries of the reservation surround approximately 50,585 ha of land (including the site). Within the reservation are trust lands, allotments, fee land, and private land.
 - c) Outside of the Reservation boundaries lies a mosaic of private, township, county, state, and federal owned lands. The Chequamegon-Nicolet National Forest covers 607,028 ha to the west and south of the Reservation with land in 11 counties in northern Wisconsin.
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25. Current land (including water) use:

- a) Land uses within the site are strictly recreational and cultural including hunting, fishing, harvesting of wild rice, and wildlife viewing.
 - b) Land uses in the Reservation areas surrounding the site include small residential areas and timber sales. Most of the reservation is undeveloped. A few agriculture sites owned by non tribal members exist on the southern part of the reservation.
 - c) The nearest cities outside of the Reservations boundaries with populations over 6,000 residents include the cities of Ashland, Wisconsin and Ironwood, Michigan. Other scattered residences can be found outside of the towns in the more rural areas. Agricultural land uses are prevalent between the reservation and National Forest borders. Due to the climate, farmers are limited to growing crops that can be grown in cooler temperatures with shorter growing periods including wheat, hay, and beans. Cattle pastures are found infrequently throughout the area. Forest lands are widespread in the area with the inclusion of the National Forest lands, state owned lands, and other private lands managed for forestry and recreation. Lakes in the area are typically managed for recreational fishing, with summer homes common on the shorelines. Lake Superior, to the north, is utilized for shipping, recreational fishing, commercial fishing, recreational boating, and wildlife viewing.
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26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- a) The largest ecological threat to the site at this time is from invasive species. Each summer, the Bad River Natural Resources Department works to control hybrid and narrow leaf cattail (*Typha xglauca* and *Typha angustifolia*, respectively), purple loosestrife (*Lythrum salicaria*), and giant reed grass (*Phragmites australis*) from encroaching on the native vegetation within the Kakagon and Bad River Sloughs. Threats of damage to the vegetation from increased boat traffic are also an issue, but this issue can be monitored and controlled much more efficiently than can threats from invasive species.
 - b) Water quality also has the potential to be affected by municipal wastewater, mining activity, failing household septic systems, and agricultural and logging practices within the watershed, according to the Bad River Watershed Association.
-

27. Conservation measures taken:

- a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

This site is recognized by the National Park Service as a National Natural Landmark. In addition, the Bad River and Kakagon Sloughs have been recognized for their importance by many non-governing entities including, but not limited to, The Nature Conservancy, the Wisconsin Wetlands Association, the Wisconsin Coastal Management Program, the Wisconsin Bird Conservation Initiative, and the Bad River Watershed Association.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Four of the IUCN categories listed for protected areas currently apply, although no formal designations have been made by the Bad River Band using this designation system.

Ia ; Ib ; II ; III ; IV ; V ; VI

c) The areas delineated to be designated as a Ramsar Wetland of International Importance site are lands under tribal management that are protected by as Conservation Areas by the Bad River Band's Integrated Resource Management Plan (IRMP). The following is excerpted from the IRMP:

"The federal government requires tribes with forested reservation land to develop a Forest Management Plan or a more extensive Integrated Resource Management Plan (IRMP). The Bad River Band of Lake Superior Chippewa Indians adopted a tribal resolution to develop and IRMP in 1990. An IRMP is a comprehensive, long-term plan that provides for the conservation, preservation, and sustainable use off all the natural resources of the Bad River Reservation. The goal of Bad River's IRMP is to maintain and improve the health of ecosystems within the Bad River Reservation for at least the next seven generations, while providing resources at a sustainable level of harvest."

"The Kakagon and Bad River Sloughs wetland complex, lands on Madeline Island, and major floodplains (approximated by an area ¼ mile wide on both sides of the Bad, White, Marengo, and Potato Rivers) are designated as Conservation Areas. Conservation Areas will be managed primarily for their natural, ecological, and cultural values and will be protected from timber harvest activities as well as future residential, industrial, and recreational development."

d) Multiple sites within the Kakagon and Bad River Sloughs are monitored annually throughout the ice-free months for water chemistry, vegetation, invasive species, and aquatic macroinvertebrates. Future sampling with increased parameters are planned for the site; however funding is yet to be secured.

28. Conservation measures proposed but not yet implemented:

Monitoring and management strategies are constantly being updated and improved by the Bad River Natural Resources Department.

29. Current scientific research and facilities:

The Bad River Band currently employees staff for its own Natural Resources Department. The department includes the following management programs:

Water Resources

Wetlands

Fisheries

Forestry

Air Quality

Wildlife

Tribal Historic Preservation

Geographic Information Systems

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

Current public outreach and education is limited to members of the Bad River Band of Lake Superior Tribe of Chippewa. Access to the Kakagon and Bad River Sloughs via the Bad River Reservation is strictly limited to Bad River tribal members and Bad River Natural Resources staff. Entry by all others is prohibited without a signed access permit from the Bad River Natural Resources Department.

While the site is not open to the public, several initiatives increase public awareness of the importance. One such initiative is the Wisconsin Wetlands Association's Wetland Gems Program, which recognizes Kakagon and Bad River Sloughs as one of 100 state-wide "Wetland Gems."

31. Current recreation and tourism:

Camps set up for fishing, hunting, and the gathering of wild rice are common during the summer months by Bad River Tribal members. Currently, there is no system in place to monitor the number or amount of resources gathered by the Tribe's members. Access to the Kakagon and Bad River Sloughs via the Bad River Reservation is strictly limited to Bad River tribal members and Bad River Natural Resources staff. Entry by all others is prohibited without a signed access permit from the Bad River Natural Resources Department.

32. Jurisdiction:

All tribal lands within the site and the reservation are under the jurisdiction of the Bad River Band of Lake Superior Tribe of Chippewa and the Bad River Tribal Council. Access to the Kakagon and Bad River Sloughs via the Bad River Reservation is strictly limited to Bad River tribal members and Bad River Natural Resources staff. Entry by all others is prohibited without a signed access permit from the Bad River Natural Resources Department.

33. Management authority:

Bad River Natural Resources Department
Chief Blackbird Center
72682 Maple Street
Odanah, WI 54861

34. Bibliographical references:

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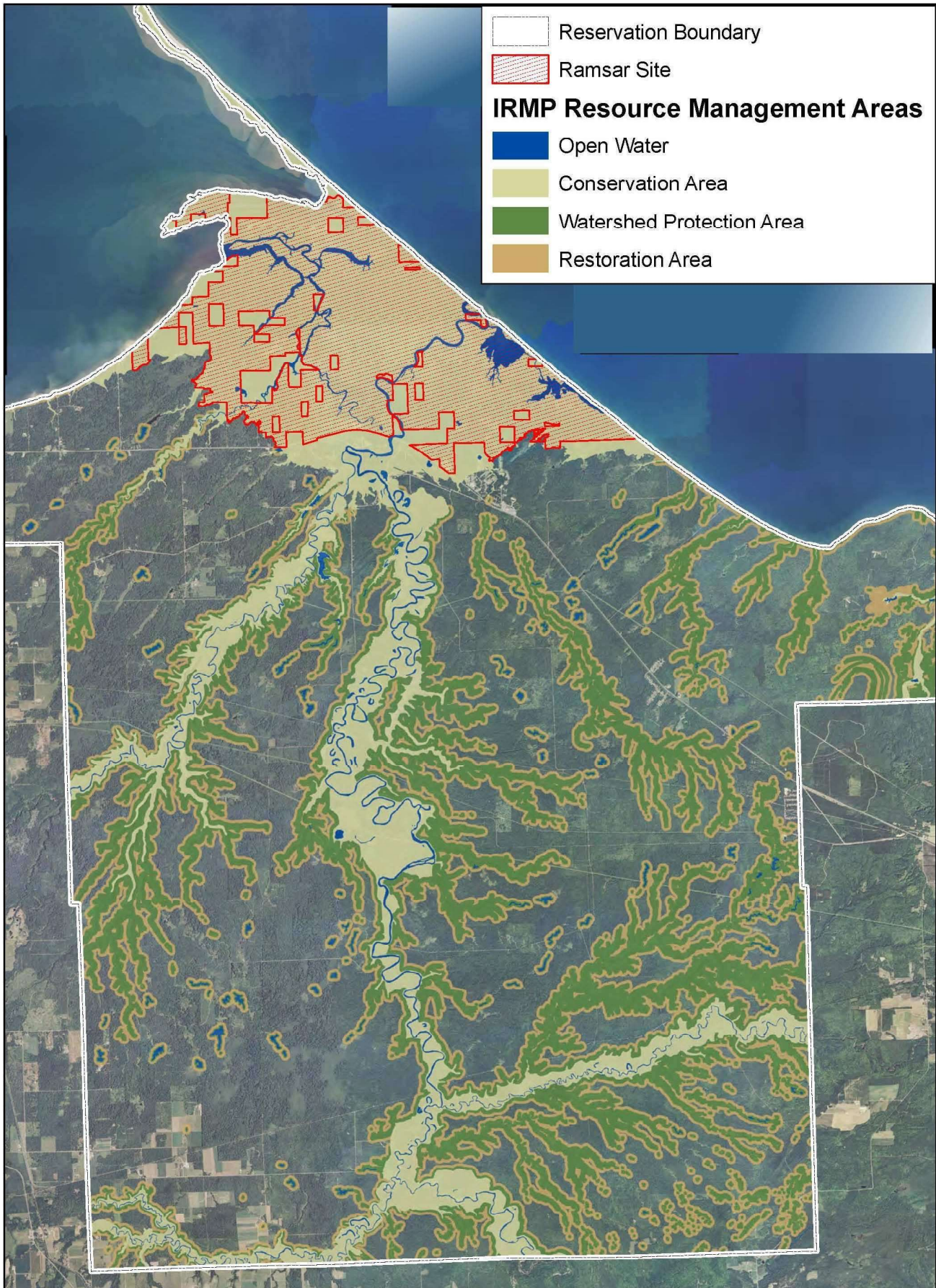
<http://www.wisconsinwetlands.org/>

http://wisconsinwetlands.org/Gems/SU4_Kakagon-Bad_River_Sloughs.pdf

Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org

Figure 1

Ramsar Site "Kakagon and Bad River Sloughs"



February 7th, 2012

Map created by:
Water Resources Staff
Bad River Natural Resources Department



Attachment to MNRD T-193,347

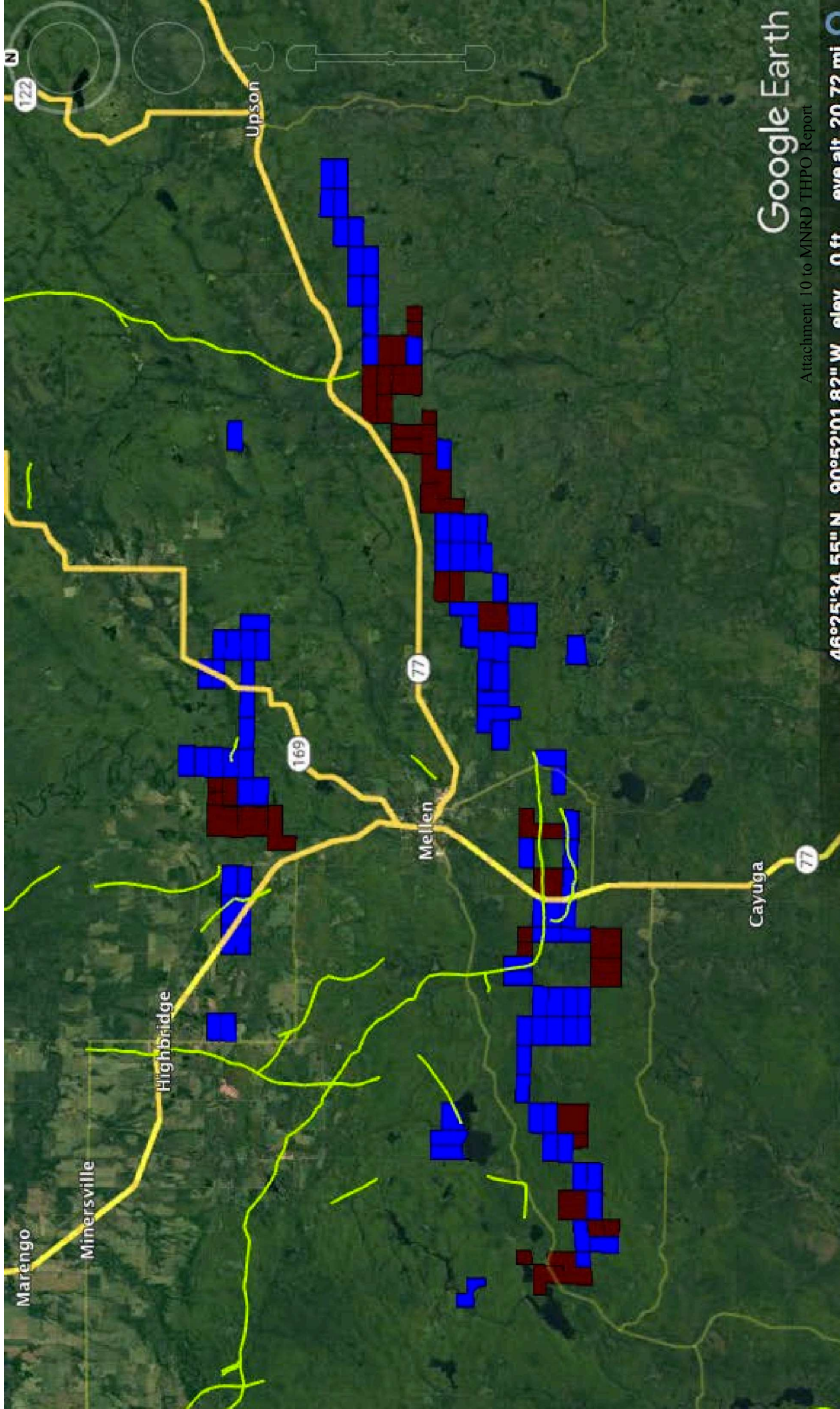
ATTACHMENT 10



Google Earth

Attachment 10 to MNRD THPO Report

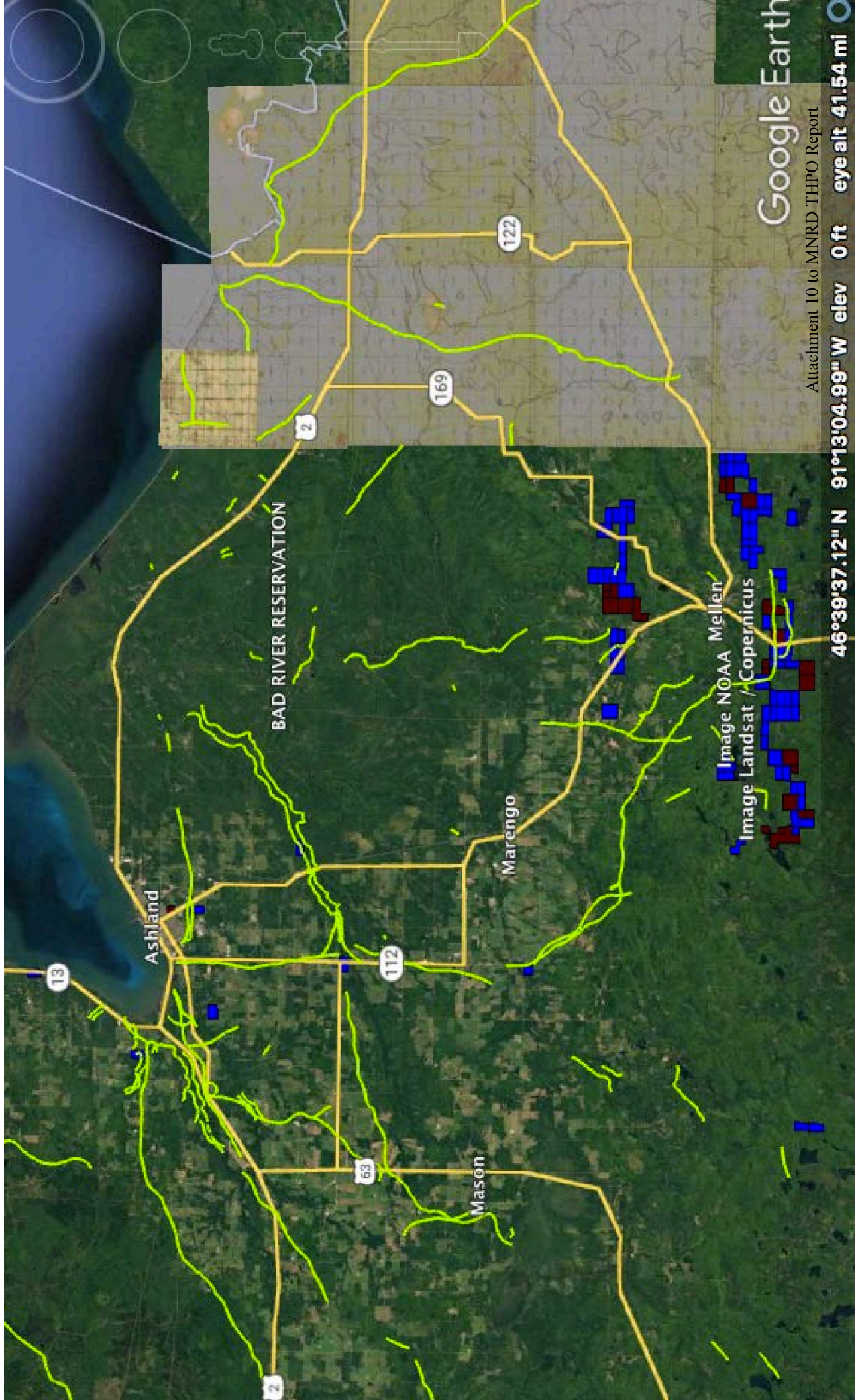
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Google Earth

Attachment 10 to MINRD THPO Report

46°25'34.55" N 90°52'01.82" W elev 0 ft eye alt 20.72 mi



Google Earth

Attachment 10 to MNRD THPO Report

46°39'37.12" N 91°13'04.99" W elev 0 ft eye alt 41.54 mi

Ashland

BAD RIVER RESERVATION

Mason

Marengo

Image NOAA Mellen
Image Landsat / Copernicus

13

2

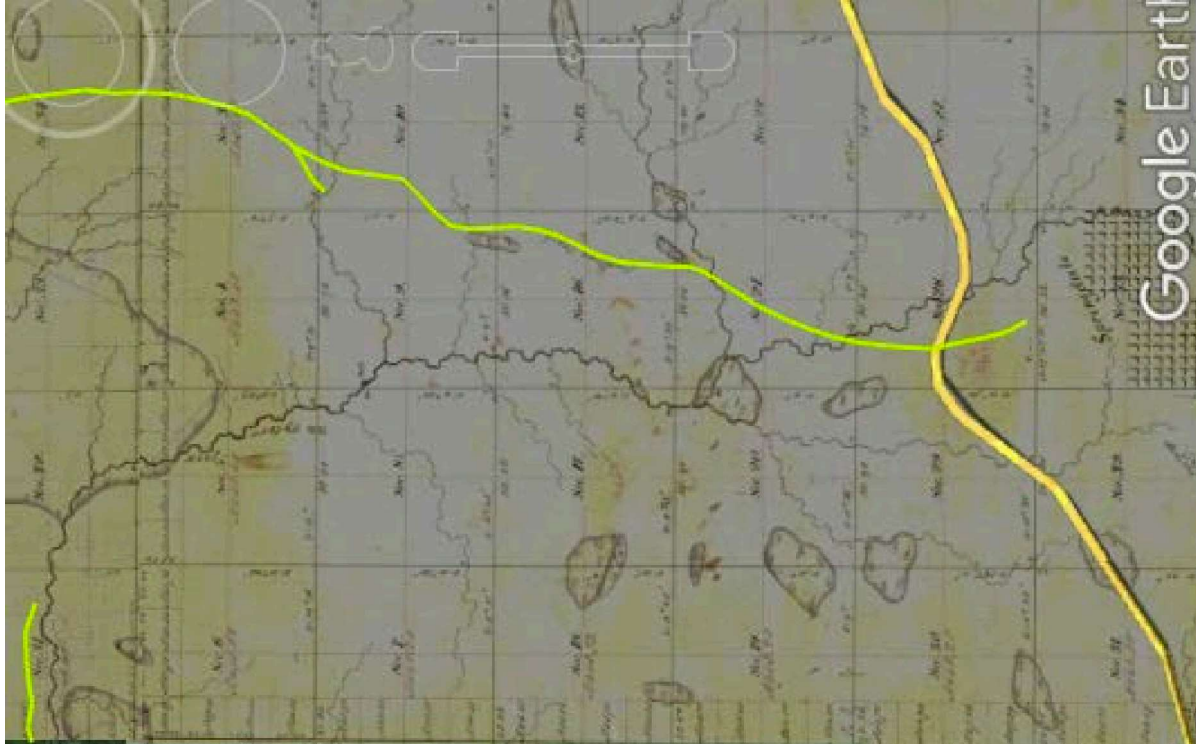
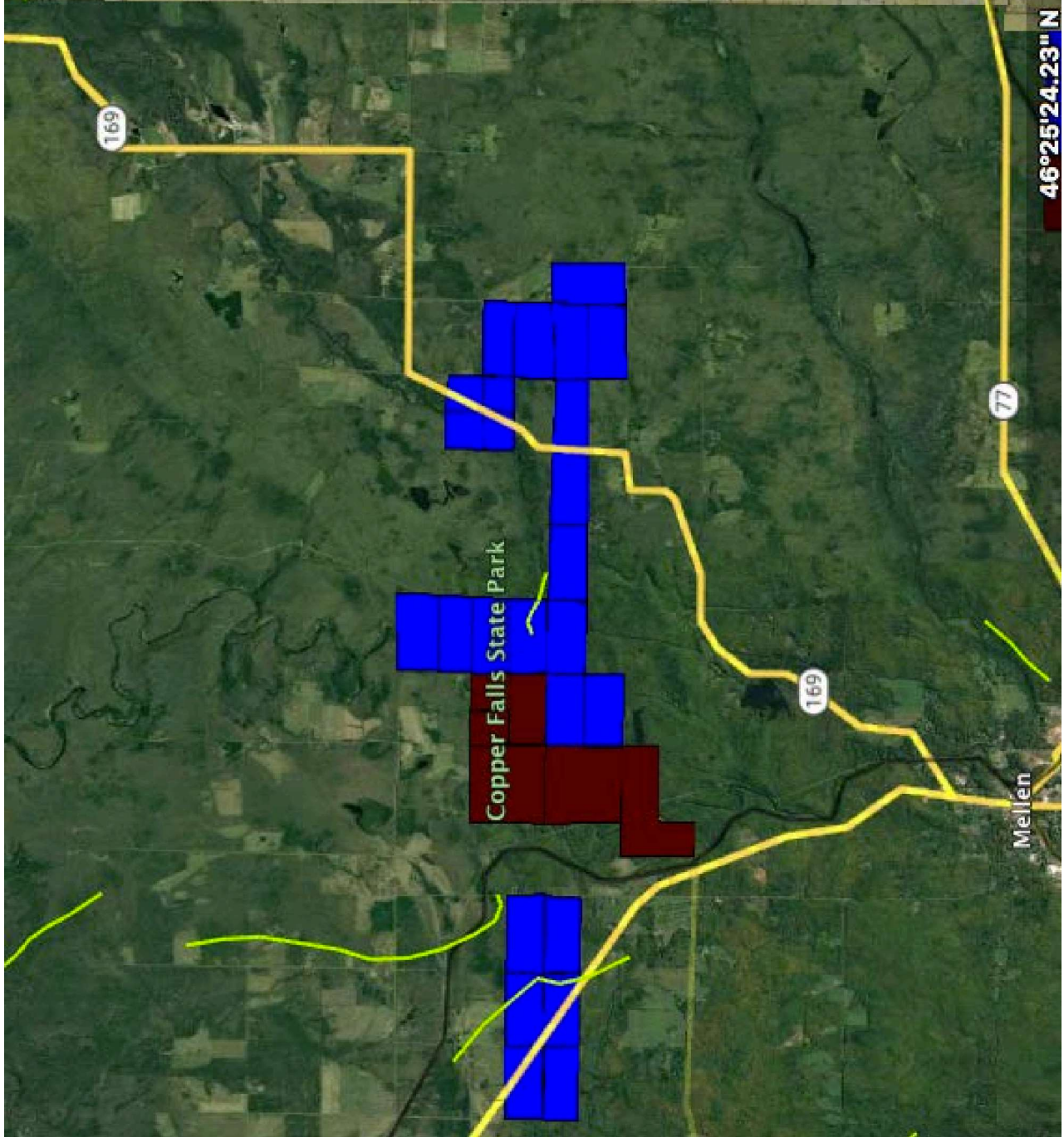
63

112

2

169

122



Attachment 10 to MNRD THPO Report

Google Earth

46°25'24.23" N 90°42'35.14" W elev 0 ft eye alt 10.56 mi

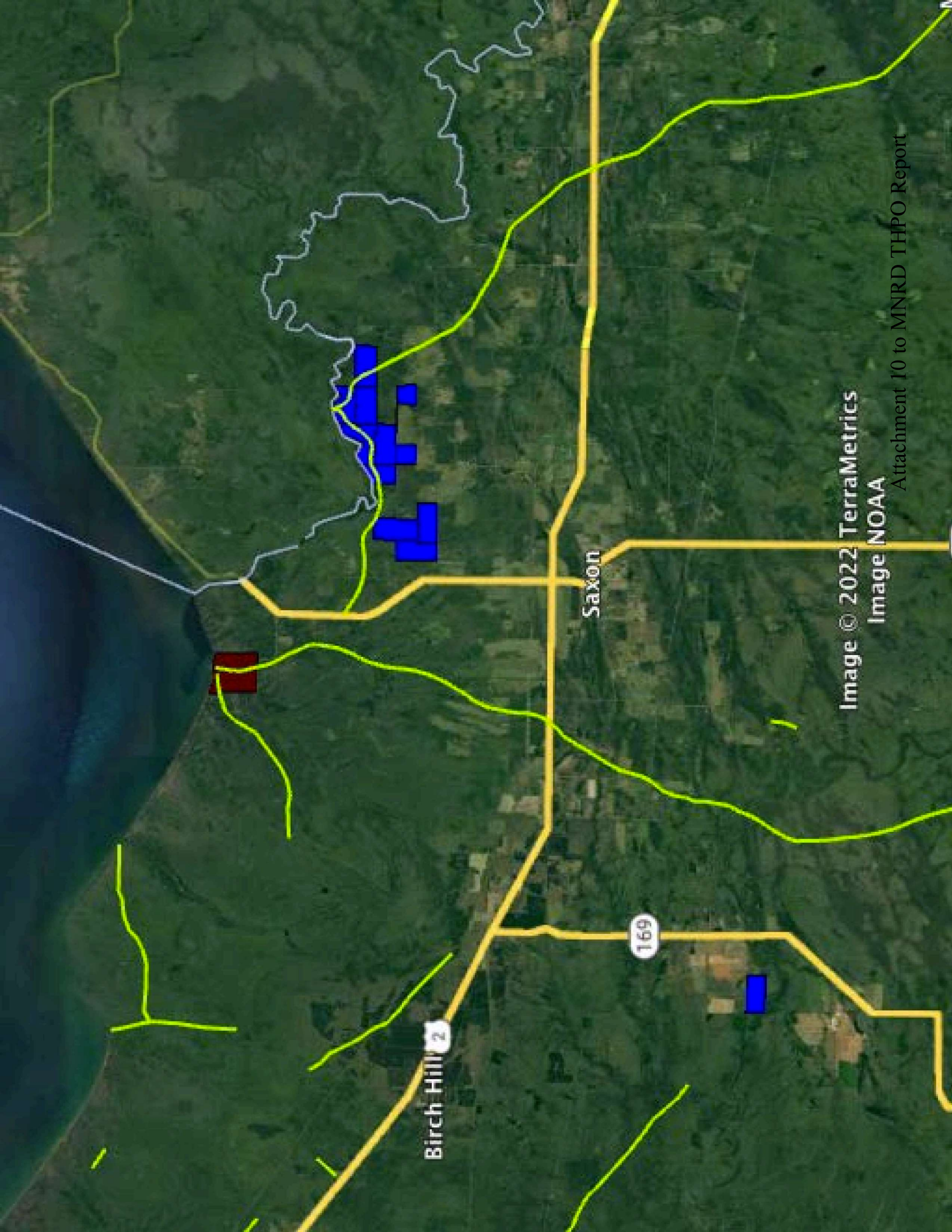


Image © 2022 TerraMetrics
Image NOAA

Attachment 10 to MNRD THPO Report

ATTACHMENT 11

BAD RIVER BAND OF LAKE SUPERIOR TRIBE OF CHIPPEWA INDIANS

CHIEF BLACKBIRD CENTER

P.O. Box 39 • Odanah, Wisconsin 54861

July 8, 2021

Karl D. Jansen
Colonel, Corps of Engineers
District Engineer
St. Paul District
180 Fifth Street East, Suite 700
St. Paul, MN 55101-1678

Re: Bad River Band of Lake Superior Tribe of Chippewa Indians' Opposition to Army Corps' APE determination and the Tribal Cultural Resources Survey and Archeological Report submitted by Enbridge Energy Limited Partnership

Dear Mr. Karl D. Jansen,

As a sovereign nation within our traditional homelands and waterways in the heart of Ojibwe country, and with inherent authority over *Mashki-ziibii* (the Bad River Indian Reservation), and off-Reservation treaty ceded territory that continues to be used by Ojibwe people in the exercise of treaty reserved usufructuary rights, and pursuant to treaties signed with the United States, we submit our comments of opposition to the Tribal Cultural Resources Survey Report performed by Dirt Divers Cultural Resource Management, LLC for Enbridge Energy Limited Partnership ("Enbridge") for the proposed Enbridge Line 5 Reroute project.

The Bad River Band of the Lake Superior Tribe of Chippewa Indians ("Band" or "Tribe") and its members have inherent rights to the reserved waters, lands, and resources for the purposes of a home within the ceded territory. In addition to this authority, the Band also has authority under Section 106 of the National Historic Preservation Act ("NHPA") and associated regulations at 36 C.F.R. 800 that require federal permitting agencies to consult with Tribal Nations to identify and protect cultural and historic properties that may be affected by proposed federal actions. The Band also has Treatment as a State ("TAS") authority under the Clean Water Act ("CWA") and federally-approved water quality standards. Furthermore, the Band has a long history of assertion of rights to water that can be traced back to the treaty negotiations when Ojibwe chiefs advocated to remain in our homelands and the continued use of ceded traditional territory. Finally, the trust responsibility of the federal government is a legal fiduciary obligation of the federal government

and its agencies to protect Tribal treaty rights, lands, assets, and resources, as well as a duty to carry out the mandates of federal law with respect to Tribal Nations.

Under the Band's continuing stewardship, the wetlands of our homeland and the densely interlaced network of the rivers and streams in the watershed that feed and replenish them, are recognized as among the most sensitive freshwater estuarine ecosystems on Earth, a thriving refuge for innumerable flora and fauna including many threatened and endangered species. They support critical treaty fisheries and contain some of the last remaining wild rice beds on the Great Lakes, which Band members continue to protect and harvest pursuant to federally protected treaty rights and using the methods developed by our ancestors.¹

The Mashkiziibii Region has been the subject of aggressive assimilative federal policies that were meant to destroy our way of life and strip of us of our cultural practices and resources that the NHPA has now been enacted to protect. From settlement, to reservationization, to allotment and fraudulent sale of land, to boarding schools, the nature of federal Indian policy and the de facto implementation by state authorities has resulted in the dispossession of culture, territory, and resources. In the face of a diminished land base caused by these policies and accompanying industrial development, access to land embracing our cultural and historic sites and waterways is critical to Ojibwe cultural survival.

I. Project Description

A. Documentation standards.

The NHPA regulations require agency officials ensure that an agency's determination, finding, or agreements are supported by sufficient documentation to enable any reviewing parties to understand its basis. If the THPO determines that documentation standards are not met, the THPO shall notify the agency official and specify the information needed to meet the standard.²

The report entitled "Tribal Cultural Resources Survey: Enbridge Line 5 Wisconsin Segment Location" (hereinafter "Report") was commissioned and submitted by Enbridge contractors. While the Corps has indicated to the Band that it is not uncommon for permit applicants to provide this type of information for their own applications, it is the responsibility of the agency to vet and evaluate the Report. The Report was completed without meaningful input from Tribal Nations and has been the basis of the Corps' evaluation of the project. The Band is concerned over the potential for conflict of the Report³. The THPO has determined that the Report is not acceptable and that documentation standards have not been met. On May 28, 2021, the Band sent the Army Corps a Statement of Work and Activities (Attachment A) for a cultural resource

¹ See <http://rsis Ramsar.org/ris/2001> for RAMSAR webpage talking about the Kakagon Sloughs; See <https://wisconsinwetlands.org/wp-content/uploads/2015/06/Kakagon-Bad-River-Sloughs.pdf> for Wisconsin Wetland Association's fact sheet about the Sloughs when they were designed a Wetland Gem site; See <https://www.nps.gov/subjects/nlandmarks/site.htm?Site=KASL-WI> for National Natural Landmark designation of the Sloughs.

² 300 C.F.R. § 800.1(a) (2004).

³ See <https://www.mlive.com/public-interest/2020/10/possible-ice-age-artifacts-ignored-by-line-5-tunnel-survey-archeologist-says.html> detailing Enbridge subcontractor directed to ignore possible prehistoric cultural artifacts in the Straits of Mackinac and was then removed from Line 5 tunnel site assessment project after asking to consult with experts.

survey that includes interviews, data compilation, a literature review, a field survey, report writing, and an Ojibwe language specialist to assist in the identification of traditional and cultural resources. The submitted Statement of Work and Activities is a mechanism for addressing the identified shortcomings of the Enbridge contracted report in order to meet documentation standards.

In addition to the lack of sufficient documentation in the report, there is the underlying issue of the Army Corps narrowing the scope of review. By the narrowing the scope of review, the Army Corps is undermining the direct effects the project will have on cultural resources and historic cultural properties. The Army Corps asserts that the only activity that will be examined, and thus the only effect that will be considered on cultural resources and historic sites, is the fill and/or construction activity within waters of the United States. A federal agency should not attempt to travel the easy path and hastily label the impact of the development as too speculative and not worthy of agency review.⁴ Moreover, construction outside of a federal agency's jurisdiction may be enjoined "when it has a direct and substantial probability of influencing the agency's decision."⁵ Furthermore, Enbridge has shown a history of pushing through projects.⁶ Federal courts have recognized that both economic pressure and regulatory inertia may substantially and improperly impact the decision-making of a federal agency.⁷ The Army Corps must not attempt to limit its review, either due to "traveling the easy path" or due to economic pressure and regulatory inertia, and, even in the instance that the jurisdiction is limited, the Army Corps does not have sufficient documentation.

B. No historic properties affected finding.

The NHPA regulations require that a finding on the behalf of a federal agency of no historic properties affected requires documentation of: (A) a description of the undertaking, specifying federal involvement, and the area of potential effects; (B) a description of the steps taken to identify historic properties, including efforts to seek information (pursuant to 800.4(b); and (C) the basis for determining that no historic properties are present or affected. 800.11(d)(1)-(3). "Eligible property" means any property that meets the National Register criteria set forth in 36 CFR 60.4. The Army Corps, in consultation with the THPO, must apply the criteria to "all properties that may possess any historical, architectural, archeological, or cultural value located within the area of the undertaking's potential environmental impact."⁸

While the Corps has not made a finding of no historic properties affected, as noted above, because the THPO has determined that documentation standards have not been met, at this point the Army Corps does not have enough information and is prevented from making this finding.

⁴ *Colorado River Indian Tribes v. Corps of Engineers*, 604 F. Supp. 1425, 1434 (1985).

⁵ *Sayler Park Village Council v. U.S. Army Corps of Engineers*, Case No. C-1-02-823, 4 (S.D. Ohio Jan 17, 2003).

⁶ See *Sierra Club, Court of Appeals Allows Enbridge to Rush Forward with Construction of Line 3 Pipeline*, <https://www.sierraclub.org/press-releases/2021/02/court-appeals-allows-enbridge-rush-forward-construction-line-3-pipeline>; and *CNN, As spring thaws the Minnesota ice, a new pipeline battle fires up*, <https://www.cnn.com/2021/03/13/us/minnesota-enbridge-pipeline-protest-go-there-weir-wxc/index.html>.

⁷ *Sayler Park Village Council v. U.S. Army Corps of Engineers*, Case No. C-1-02-823, at 4.

⁸ 36 C.F.R. § 800.4 (2004).

Furthermore, as will be discussed, the Band does not agree with the Corps defined undertaking and area of potential effects.⁹

The Report does not sufficiently identify and delineate properties and lacks an Ojibwe worldview. The Report identified a total of just eleven properties that included eleven potential traditional cultural places—of those identified include multiple maple sugar harvest areas, a hunting, fishing, and gathering area, an eagle tree site, and multiple sites identified as “rock overlook.” Two were deemed to be not significant by the Enbridge contractors and five of the locations have had boundary adjustments per recommendation of the same. The remaining four identified traditional cultural properties were provided minimal mitigation recommendations and conclusions. The Report is not a reliable basis in the Corps’ determination as to whether historic properties are present and/or affected and it does not have the authority of the THPO to determine what properties may possess any historical, architectural, archeological, or cultural value. The Corps will benefit from involvement of Tribal Nations in the identification and delineation of traditional cultural properties.

C. No adverse effect finding.

The NHPA regulations require that a finding of no adverse effect requires documentation that includes: (1) a description of the undertaking, specifying federal involvement, and the area of potential effects; (2) a description of the steps taken to identify historic properties; (3) a description of the affected historic properties; (4) a description of the undertaking’s effects on historic properties; (5) an explanation of why the criteria of adverse effect were found applicable or inapplicable, including any conditions or future actions to avoid, minimize or mitigate adverse effects; and (6) copies or summaries of any views provided by consulting parties and the public.¹⁰

An “adverse effect” can be found where the proposed project “may alter, directly or indirectly, any of the characteristics of a historic property,” including action that “would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.”¹¹ This may include “reasonably foreseeable effects” and the “introduction of visual, atmospheric or audible elements, workmanship, feeling, or association.”¹²

While the Corps has not yet made a finding of no adverse effect, as noted above, because the THPO has determined that documentation standards have not been, at this point the Army Corps does not have enough information and is prevented from making this finding. Furthermore, as will be discussed, the Band does not agree with the Corps defined undertaking and area of potential effects.¹³

⁹ Minutes of the Proposed Line 5 Relocation Project, Iron and Ashland Counties, WI. U.S. Army Corps of Engineers, October 29, 2020, webcast.

¹⁰ 36 C.F.R. § 800.11(e)(1)-(6) (2004).

¹¹ 36 C.F.R. § 800.5(a)(1) (2004).

¹² 36 C.F.R. § 800.5(a)(2)(v) (2004).

¹³ Nancy Komulainen-Dillenburg email to Edith Leoso, *USACE 2020-00260-WMS Line 5 Relocation (LR5) Pipeline Project SHAPEFILES* (June 4, 2021).

Moreover, as presented, the decision as to whether there are adverse effects is limited to the Corp's suggested limited jurisdiction and identification of cultural resources and historic sites. Anything out of this limited area will subsequently not be considered in the Corp's review of the proposed project and will be open and vulnerable to harm from the project. Furthermore, the Enbridge contractor does not have the authority to determine whether a site or resource is eligible for inclusion as a Historic Property under NHPA Section 106. The failure of the Army Corps to consider the effect on the cultural and historical sites of the issuance of the permit is a breach of the trust responsibility and NHPA regulations.

The finding of no historic properties affected, and/or the finding of no adverse effect is not appropriate for consideration where documentation standards have not been met. Despite the finding that the proposed activity crosses into waters of the United States, and thus impacts waters of the United States, and the proposed project involves significant construction activity and consequent pipeline operation, the scope of analysis for Section 106 review has been limited to the fill and/or construction activities only. Using this very confined scope of analysis of the proposed activity under review, and the insufficient information provided for in their report, the Enbridge contractors have concluded the activity as proposed will result in minimal to no direct or indirect effects to traditional cultural properties. The Band is not satisfied with the documentation at present that the Army Corps is utilizing to base its findings and determinations and are of the position that documentation standards have not been met and that the applicant cannot, through its agents, make that determination.

II. Area of Potential Effect

The area of potential effect ("APE") comprises the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.¹⁴

The determination of boundaries of the APE should be made by the agency in consultation with the SHPO/THPO. 36 CFR 800.4(a). The Army Corps, without consultation of the THPO, despite the close proximity to the Reservation and its inclusion in the Bad River Watershed, has determined that the APE is limited to the fill and/or construction activities on either side of the proposed pipeline.¹⁵ The THPO was not consulted when the determination of the APE was made and the THPO has noted its opposition to the Corps' determination.¹⁶

The APE, as defined in the NHPA regulations, must incorporate that area that could be affected by the federal undertaking. The issuance of a permit for this project will have the effect of initiating new pipeline installation that will change the character and use of the area and transport millions of gallons of oil through the Bad River and connecting watersheds. Enbridge's pipeline network experienced 215 hazardous liquids incidents from 2002 to August 2018 – an average of

¹⁴ 300 C.F.R. §800.16(d) (2004).

¹⁵ *Supra* note 11.

¹⁶ *Supra* note 12.

one every twenty-eight days.¹⁷ This construction, and operation, places the sensitive watershed at risk.

The Army Corps cannot unduly narrow the scope of inquiry. The area of potential effect identified by the Corps is insufficient to provide an understanding of how the project will affect the ceded territory and land adjacent to the Reservation. The Army Corps, in limiting jurisdiction, is unduly narrowing the scope of inquiry in contravention of NHPA and its regulations. Significant cultural resources exist within and just beyond the boundary imposed by the Corps. The THPO has repeatedly rejected this limited APE and recommends that the APE should include the Bad River Reservation and further refers to Army Corps to the Statement of Work and Activities for a cultural resource survey to provide a comprehensive understanding of how the project would affect the ceded territory.

The Report used what was referred to as a “survey area” instead of an APE and noted that at the time of the Report, the APE was not yet established. The survey area was defined in the Report as any area where ground disturbing activities were likely to occur. This definition does not correlate with the federal regulations. The entire corridor was only 300 feet wide, and 1,527 acres, including pipeline construction, access roads, pipe yards, and staging areas. It is our concern that the effects to cultural and historic properties outside of the limited survey area were not included in the Report that the Army Corps intends to rely on.

The APE has not been properly delineated and does not include area that will be directly and/or indirectly altered in its both its character and use. The Army Corps’ determination to limit the scope of analysis to the impact of the proposed activity, rather than the proposed APE presented by the Band, drastically and improperly constricts the assessment of the direct and indirect effects to cultural resources and historical sites. Moreover, at present, the Army Corps is in violation of NHPA and its regulations by not consulting with the Band on the APE and has breached its responsibility under the trust doctrine to protect Tribal treaty rights, lands, assets, and resources. Meaningful consultation necessitates the cultural resources Statement of Work and Activities.

III. Undertaking

The NHPA requires an assessment of the effect of an undertaking on any district, site, building, structure, or object that is included in, or eligible for, inclusion in the National Register. An undertaking is defined as a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with Federal financial assistance; and those requiring a federal permit, license, or approval.¹⁸

¹⁷ Complaint, 26, *Bad River Band of the Lake Superior Tribe of Chippewa Indians of the Bad River Reservation v. Enbridge Inc.*, No. 3:19-cv-602, (W.D. Wis.) www.badriver-nsn.gov/wp-content/uploads/2019/11/Pipeline_Govt_Complaint.pdf.

¹⁸ 36 C.R.F. § 800.16(y) (2004).

The Army Corps cannot limit its scope of review in its determination of the undertaking.¹⁹ The Army Corps considers the scope of the project to be limited to the discharge of fill material in waters of the United States to construct the proposed new pipeline project under Section 404 of the Clean Water Act (“CWA”) and the crossing of the White River under Section 10 of the River and Harbors Act. In this determination, the Army Corps is attempting to treat the proposed project as merely a fill and/or construction into a small section of waters of the United States and is ignoring the effects that the construction and subsequent pipeline operation will have on traditional cultural properties. The Corps is proposing to evaluate the potential cultural and historic impact of the project as if the undertaking is limited to the this fill and/or construction. While it is understood that the Army Corps does not regulate pipeline operation, the pipeline and subsequent spills are indeed an effect of that construction.

The Army Corps is attempting to further narrowing its review by considering the construction impacts as temporary in nature, even though the construction and utility corridor will result in permanent changes to the landscape. Without the issued permit from the Army Corps, the approximately 42-mile-long pipeline construction and operation cannot be completed as described and as presented by Enbridge. The Army Corps is failing to consider the reasonable foreseeability of the pipeline construction and operation upon the granting of the permit and the potential effect that the construction and operation poses to the historical and archeological sites. The construction activity will create a pipeline or utility corridors that will result in permanent changes. For example, a forested wetland intersected by a utility corridor will no longer be a forested wetland. Instead of assessing the potential impacts of future development, which is dependent upon the construction, the Corps is proposing to circumscribe the inquiry solely to the limited fill and/or construction activities within the limited APE. The Corps’ argument is plainly inconsistent with the NHPA and its regulations.²⁰

The Army Corps has the duty to assess all aspects of an activity within its jurisdiction. While the fill and/or construction activities will affect cultural and historical resources itself, the operation of the pipeline as a result of the permit poses additional heightened concerning effects because Enbridge pipelines have proven to be prone to spills.²¹ But for the granting of this permit, those effects as a result of the fill and/or construction activities and operation would not occur. The granting of this permit without such consideration forecloses the taking of steps to alleviate any harm.²² This is unacceptable and amounts to a breach of the trust responsibility.²³

The Army Corps cannot ignore the glaring truth that the primary reason Enbridge is seeking a federal permit for the discharges of fill material in waters of the United States and crossing of the waters is to build and operate a pipeline. The Enbridge contractors commissioned for the Report assert that the proposed activity would have minimal direct and indirect effects to traditional cultural resources and historic properties. The only function of the proposed project is to pump

¹⁹ *Preservation Society of Charleston v. Army Corps of Engineers*, 2013 WL 6488282 (D.S.C. Sept. 18, 2013).

²⁰ *Id.*

²¹ Complaint, 25-33, *Bad River Band of the Lake Superior Tribe of Chippewa Indians of the Bad River Reservation v. Enbridge Inc.*, No. 3:19-cv-602, (W.D. Wis.) www.badriver-nsn.gov/wp-content/uploads/2019/11/Pipeline_Govt_Complaint.pdf.

²² *Colorado River Indian Tribes v. Corps of Engineers*, 605 F. Supp. at 1440.

²³ *Seminole Nation v. United States*, 316 U.S. 286 (1942); see also *Loudner v. United States*, 108 F.3d 896 (8th Cir. 1997).

oil, and to do so poorly, as evidenced by its history of spills.²⁴ To say that a pipeline leak, for example, or other associated harm, as a result of that fill and/or construction that was permitted by the Army Corps is not a reasonably foreseeable event, and therefore its impact should not be considered, overlooks the primary motivating force behind the application for the permit, or the purpose of the Army Corps²⁵. The Army Corps is willfully ignoring the realities of the situation.

Furthermore, in the examination of potential effects on historic properties, the agency, must consider both the direct and indirect effects on historic properties by the type of activity proposed, both within and outside the permit area.²⁶ Under NHPA regulations, an “effect” occurs (1) “whenever any condition of the undertaking causes or may cause any change, beneficial or adverse, in the quality of the historical, architectural, archeological, or cultural characteristics that qualify the property to meet the criteria of the National Register,” or (2) when an undertaking “changes the integrity of location, design, setting, materials, workmanship, feeling, or association of the property” that contributes to its historic significance.²⁷ The definition of “eligible property” makes no distinction between determined eligible and property that may qualify.²⁸ Indirect effects include “changes in the pattern of land use, population density or growth rate that may effect on properties of historical, architectural, archeological, or growth rate that may effect on properties of historical, architectural, archeological, or cultural significance.”²⁹

The project as proposed is situated in the ceded territory, also known as the historic territory of the Ojibwe, less than one mile south of the Reservation³⁰, and within the Bad River watershed upstream of the Reservation. 1854 treaty Tribal Nations, including Bad River, have voiced their concern that the placement of the proposed pipeline will adversely impact the purpose of a home, quality of life, and cultural and historic feel and integrity of the area and resources.

The THPO considers the entire reservation a historic district and deems that the area meets the necessary criteria. In addition to gravesites, numerous sugar bush and hunting, fishing, and gathering sites, the Kakagon and Bad River Sloughs, the heart of the Bad River watershed, is deemed a Ramsar site or wetland of international importance³¹. The Bad River Falls is a traditional site for fishing walleye, sturgeon, and musky. The Madigan and Waverly beaches yield culturally vital stones that are unique to the Bad River Reservation and watershed. Madigan and Elm Hoist have been the site of the Midewewin and Big Drum ceremonies. These are just a few of the areas supporting THPO’s determination of the Reservation as a historic district.

The proposed project will negatively impact the integrity of the historical, archeological, and cultural character of the area, in addition to changing the integrity of the location, and feeling and association of the area. Even to reduce the review of the effect to cultural and historic properties

²⁴ *Supra* note 12.

²⁵ See USACE Mission and Vision, <https://www.usace.army.mil/About/Mission-and-Vision/>.

²⁶ 36 C.F.R. § 800.16(d) (2004).

²⁷ 36 C.F.R. § 800.3 (a)-(b) (2004).

²⁸ *Colorado River Indian Tribes v. Corps of Engineers*, 605 F. Supp. at 1437.

²⁹ *Supra* note 27.

³⁰ Approximately 0.76 miles from the proposed center line to SW corner of the Reservation. Next closest is approximately 0.86 miles from the proposed center line to SE corner. Proposed access routes lie closer. One of the proposed access routes into the corridor lies 0.17 miles of the SE corner.

³¹ See <http://rsis.ramsar.org/ris/2001> for RAMSAR webpage talking about the Kakagon Sloughs.

within the Army Corps' limited APE, without the consideration of the THPO's input, the project will result in the explosion of recharge aquifers, and a pipe that is coded in chemicals that is then put in the place of the ground and groundwater. This effect on cultural and historic properties is not known, nor has it been examined. The proposed project as viewed in the limited Corps review, will also result in clearcutting, blasting, and an intemperance of barrels of oil being pumped just south of the reservation through ceded territory and the Bad River watershed. An additional alteration to the integrity of the historical, archeological, and cultural character is the change in wetland types that will have a direct effect on hunting and gathering activities and opportunities. Another such alteration is the movement of *ma'iinganag* (wolves). Wolves have been found to move along pipeline corridors. As a protected species, this change will affect both on-Reservation hunting and gathering and off-Reservation treaty rights. A full examination of the direct effects of the proposed project has not been completed nor have the proposed changes to the landscape been considered or accounted for.

The Army Corps is attempting to define itself into a corner that ignores the ramifications of their actions. The Band and the Army Corps characterize the proposed project in fundamentally different ways. Because the Army Corps is limiting the scope of review to the construction and/or fill activities, its review has not included evaluation or consideration of the direct effects of the proposed project on historic and cultural properties that will occur as a direct result of the permitted activity. The undertaking represents an existential threat to the Band, its Reservation and off-Reservation traditional cultural resources, and its way of life—both past and present. The project as proposed poses dire direct effects to the treaty-protected rights of the Band and its members in the lands and waters of the Reservation to hunt, fish, and gather. The undertaking is not properly identified by the Army Corps.

IV. Traditional Cultural Properties Present

In addition to providing a means to meet documentation standards, the Statement of Work sent to the Army Corps on May 28, 2021, provides a meaningful mechanism to identify traditional and cultural resources. This following is a non-comprehensive, nor exhaustive, list of traditional cultural properties and resources present within the area of the proposed pipeline corridor.

- Nibi (Water)
- Asin (Rock)
- Ininaatig (Sugar Maple; *Acer saccharum*)
 - Used sap for syrup
 - Inner bark used medicinally as a cough syrup or expectorant
- Wapkadak/weekizigun (White Baneberry; *Actaea alba*)
 - Decoction of roots used to treat convulsions
- Bagwaji-zhi/agaagawanzh (Wild Leek; *Allium tricoccum*)
 - Edible; used in cooking
 - Decoction of the root used as a quick-acting emetic
- (Gi)chi-okaadaak/Nezhikewang/Okaadak (Spikenard; *Aralia racemosa*)
 - Compound decoction of the root used as an abortifacient
 - Decoction of the root taken for coughs

- Poultice of the root used to treat boils/fractured bones/sprains and strained muscles
- Zhaashaagomin (Jack-in-the-pulpit; *Arisaema triphyllum*)
 - Root of plant as a wash for sore eyes
- Namepin (Wild Ginger; *Asarum canadense*)
 - Roots cooked with food to aid in digestion
 - Roots in compound poultice used on inflammation, bruises, and contusions
 - Roots combined with other herbs as a strengthening agent and used as an appetite stimulant
- Wiinizik (Yellow Birch; *Betula alleghaniensis*)
 - Crushed twigs are edible and smell and taste of wintergreen
 - Decoction of bark used to treat blood diseases
- Nesoobagak (Moonwort; *Botrychium lunaria*)
 - Applied bruised roots to cuts
- Aemaushtaunishaessiwung (Cut-leaved toothwort; *Cardamine concatenata*)
 - Root eaten as a food source
- Makopin (Large Toothwort; *Cardamine x maxima*)
 - Root eaten as a potato (after first fermenting it to rid it of an acrid taste)
 - Root used as stomach medicine
- Bezhigojibik (Blue Cohosh; *Caulophyllum thalictroides*)
 - Infusions and decoctions of roots used in traditional medicine for a variety of ailments, including menstrual cramps, indigestion, lung trouble, and as an emetic
- Jiibegob (Leatherwood; *Dirca Palustris*)
 - Gray bark used for basket weaving, bow strings, and fish line
 - Infusion of stalk as a physic
 - Compound decoction of the root as a wash to strengthen hair
 - Infusion of roots for pulmonary troubles
 - Infusion of bark as a diuretic
- Numaegbugoneen (Trout Lily; *Erythronium americanum*)
 - Poultice used to reduce swelling
- Aagamaak/Baapaagamaak (White Ash; *Fraxinus americana*)
 - Wood used for snowshoe frames and sleds
- Bine(wi)min (Partridge Berry; *Mitchella repens*)
 - Leaves smoked ceremonially
- Ozagadigom (Sweet Cicely; *Osmorhiza claytonii*)
 - Poultice of moistened, pulverized root used to treat ulcers and sores
 - Decoction or infusion of root was chewed or gargled for sore throats
 - Infusion of root used to ease parturition
- Ozagadigom (Smooth Sweet Cicely; *Osmorhiza longistylis*)
 - Plant used for sore throats and in gynecological ailments
- Maananoons (Ironwood; *Ostrya virginiana*)
 - Compound infusion of the heart wood used for hemorrhages of the lungs and an herbal steam for rheumatism
 - Compound liquid from the wood used for coughs
 - Decoction of the wood used for kidney problems
- Nesoobagak (Dwarf Ginseng; *Panax trifolium*)

- Chewed roots in a poultice used on cuts as a coagulant
- Waia'bishkeno'kok (Lopseed; *Phryma leptostachya*)
 - Decoction of the root was gargled, or the root was chewed for sore throats
 - Decoction of the root was used to treat rheumatic pains
- Naaniibide'oodegin (Small Solomon's Seal; *Polygonatum pubescens*)
 - Burning roots used for fragrance
 - Roots used in making a tea for coughs
- Mashkode-miizhimizh/ mitigomizh/wiisagi-mitigomizh (Northern Red Oak; *Quercus rubra*)
 - Compound decoction of inner bark for heart trouble
 - Decoction of bark for blood diseases and heart and lung trouble
 - Infusion of root for gonorrhea
- Papashkisiganak (Red Elderberry; *Sambucus racemosa*)
 - Edible fruit used in cooking
 - Decoction of inner bark used as an emetic or cathartic (considered dangerous)
- Meskojiiibikak/meskwiijiiibikak/miskojiiibik/miskwiijiiibik (Bloodroot; *Sanguinaria canadensis*)
 - Treatment for fainting and fits; blood medicine; as a cure for sore throats; and as a treatment for gonorrhea
 - Roots were used in making a red dye
- Wiigob/wiigobaatig/wiigobimizh/wiigibiish/wiigobiishaatig (Basswood; *Tilia americana*)
 - Bark used to make rope
 - Flowers were dried and drunk in a tea
 - Inner bark used to treat dysentery
 - A jelly used for consumption
 - Twigs used for lung troubles
 - Leaves used to treat burns and scalds
- Iniwindibigegun/ baushkindjibgwaun (White Trillium; *Trillium grandiflorum*)
 - Decoction of the root was pricked in with needles near sore joints
 - Decoction of the root bark used as ear drops
- Gaagaagimizh/gaagaagiwa/inzh (Hemlock; *Tsuga canadensis*)
 - Bark uses as a source of tannin for leather tanning
 - Infusion of twigs used to treat dysentery
 - Pulverized inner bark used on wounds as a styptic
 - Leaves used to flavor medicinal tea
 - Bark used on cuts and wounds to stop bleeding
- Waabishkijiibik (Large-flowered Bellwort; *Uvularia grandiflora*)
 - Roots used to treat stomach pains (and perhaps pleurisy)
- Aninaandag/ininaandag/bigiswaandag/zhingob/zhingobaandag/zhingob bigiswaandag (Balam Fir; *Abies balsamea*)
 - Used to treat headaches/rheumatic joints/colds/coughs/sores/sore eyes
 - Balsam fir used as hair ointment/wash/and in sweat
- Zhaashaagobiimag (Mountain Maple; *Acer spicatum*)
 - Pith used as a wash for sore eyes
- Ska'agon-mins (Hornbeam/muschlewood *Carpinus caroliniana*)
 - Used as main support posts in wiigwaams or tents

- (G)odotaagaans (Bluebead Lily; *Clintonia borealis*)
 - Decoction of leaves applied to scrofulous sores
 - Infusion of the root to aid parturition
 - Leaves used in decorative arts
- Ode'imijiibik/zhakaagomin/zhaashaagomin/zhaashaagominens (Bunchberry; *Cornus canadensis*)
 - Edible berry-like fruit (eaten raw or cooked in a pudding)
 - Infusion of the root used for infant colic
- Siba'muckun (Woodland Horsetail; *Equisetum sylvaticum*)
 - Infusion of plant used for kidney troubles and dropsy
- Agongosimin (Canada Mayflower; *Maianthemum canadense*)
 - Lily used for headaches/sore throats/kidney problems during pregnancy
- Gaawaandag/gaawaandagwaatig/mina'ig/wadab/zeseгаandag (White Spruce; *Picea glauca*)
 - Compound decoction of the twigs used as an herbal steam for rheumatism
 - Dried leaves used as an inhalant and fumigator
 - Spruce roots used in binding of all types
- Azaadi(i)/ maanzaadi(i) (Balsam Poplar; *Populus balsamifera*)
 - Various parts of the tree used in decoctions/infusions/poultices for ailments such as: back pain/frost-bite/sores
- Bawa'iminaan/gozigwaakomin (Pin Cherry; *Prunus pensylvanica*)
 - Fruit is edible
 - Inner bark used to treat coughs
- Ginebigojiibik (Black Snakeroot; *Sanicula marilandica*)
 - Infusion of the root to cure fevers
 - Poultice of pounded root as a snakebite remedy
- Adjimag (American Mountain Ash; *Sorbus americana*)
 - Infusion of the root bark used to treat gonorrhea
- Agwingosibag/agongosibag (Twisted Stalk; *Streptopus roseus*)
 - Infusion of the plant used as a cough remedy and a physic
 - Poultice of steeped root used to treat eye sties
- Ne'bagandag/pebamabid (Canadian Yew; *Taxus canadensis*)
 - Compound decoction of twigs used as an herbal steam for rheumatism
 - One ingredient of the thirty-two medicine
 - Deer like it (note: needles and seeds contain poisonous alkaloids to humans)
- Nawo'buguk/wunukibugauhn(Starflower; *Trientalis borealis*)
 - Mixed root with roots of other plants to make a smoking scent to attract deer to a hunter
- Wewai'bugug (American Dog Violet; *Viola conspersa*)
 - Infusion of plant used to treat heart troubles

As evidenced above, the report fails to identify the abundance of tribal cultural resources and historic properties within the limited survey area, and in the larger THPO identified APE. The report's identification of just eleven tribal cultural and historical sites, with only two meeting criteria for inclusion on the National Register of Historic Places fails immensely to properly identify the Tribal cultural resources that exist, and the steps needed to protect them. The report

also notes that the survey corridor was “thoroughly examined” by Tribal Cultural Resource Survey specialists, without any indication of who is considered a specialist under their criteria. Furthermore, the Band has been given notice that Enbridge has already completed drilling in one of the areas that their contractor had identified in the report as a potential historic site, despite even the minimal recommendation for protection of its contractor.³² The Bands remains concerned over these actions.

The importance and significance of a property is a reflection of its interest to the general public and scientific community.³³ Under NHPA properties that are a part of the rich heritage of our shared nation are afforded the same guarantees of protection afforded properties already determined eligible.³⁴ What qualifies as an eligible property for purposes of NHPA turns upon the inherent historical and cultural significance of the property and not opinion of its worth by the Army Corps. The Army Corps, in consultation with the THPO, must apply the National Register criteria to all properties that may possess any historical, architectural, archeological, or cultural value located within the area of the undertaking’s potential environmental impact.³⁵ The value is not enhanced because it is in the National Register or determined eligible for inclusion in the National Register.³⁶ Society’s concern to preserve and maintain historic and cultural resources that enrich this nation and enhance our national heritage, which was the driving force behind the enactment of NHPA, should be extended to all significant cultural resources regardless of whether the property is “officially recognized.”³⁷

The multiple sugar bush sites identified by Enbridge contractors is a good example of a distinctive, regionally and culturally important type of historic site within the Ojibwe landscape. Sugar bush sites were once a common element of the northern landscape, but many have been lost, removed, or impacted by development or logging, or simply not-preserved following destructive federal Indian law policies. The proposed fill and/or construction activities will affect the cultural and historic cohesiveness of the area and will result in a destructive change to the area and sites that remain despite harmful policies. The Band has an interest in the cohesiveness and integrity of the area.

Both the Enbridge contractor and the Army Corps appear to dispute the degree of impact the proposed project poses to traditional cultural properties. However, even if no shovels or backhoes will touch a cultural or historic site, damage to the cultural and historic areas can occur in less direct ways.³⁸ The project and activities as presented will exert pressure that threatens the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association of cultural and historical archeological resources. The smallest of endeavors can have enormous consequences if undertaken improvidently.³⁹ The frailty of the resources and the fact that the activities will exert change to cultural and historic sites, which represents the greatest

³² Michael LaRonge email to Nancy Komulainen-Dillenburg and William Sande, *Line-5 Geotechnical drilling at TCP site under General Permit?* (May 5, 2021).

³³ *Colorado River Indian Tribes v. Corps of Engineers*, 605 F. Supp. at 1438.

³⁴ *Id.* at 1437.

³⁵ *Id.* at 1435.

³⁶ *Id.* at 1438.

³⁷ *Id.*

³⁸ *Pye v. U.S. Army Corps of Engineers*, 269 F.3d 459, 469 (4th Cir. 2001).

³⁹ *Id.*

threat to these resources, suggest, at a minimum, the possibility of irreparable harm. The construction, and the subsequent and undisputable operation of that pipeline, will have innumerable effects on traditional cultural resources and historic sites.

Nibi (water) is a traditional cultural property and resource of utmost importance to both the Ojibwe as well as the general public and scientific community. The recognition of water connectivity we rely on for a home is vital to the protection of cultural resources and historic properties, both on and off the Reservation, including the connection between groundwater and surface waters and the connection between wetlands and other surface waters. Water remains a vital element of Ojibwe ceremonial life, and often involves the consumption of water. Groundwater is the primary drinking water source for the region. The proposed project will impact the recharge zone of community system drinking water wells and the quality and quantity of the area's drinking water. The importance of streams and wetlands and the connections to downstream waters, including supporting the functions of downstream waters, is documented in both western science⁴⁰ and Traditional Ecological Knowledge (TEK).

Water remains critical to Ojibwe history, and its future. The watershed cannot support the proposed project. The Bad River people have a persistent and culturally distinctive relationship to the lands and waterways surrounding the Bad River and Lake Superior over the past 300 years despite harmful federal and state policies, non-Indian settlement, dispossession of land, relocation to a reservation a fraction the size of our original territory, and state encroachment on treaty rights. Ojibwe leaders preserved these waters in the treaties because we relied on them for fish and other game and gathering resources. We continue to rely on these waters and consider them to be culturally significant traditional cultural properties. *Nibi* also serves as a physical conduit to historic properties located downstream of Reservation boundaries.

Furthermore, the THPO considers the entire reservation a historic district. In addition to numerous sugar bush and hunting, fishing, gathering sites and gravesites, the Kakagon sloughs, the heart of the Bad River watershed, is deemed a RAMSAR wetland of national importance. The Bad River falls is a traditional site for fishing walleye, sturgeon, and musky. The Madigan and Waverly beaches yield grandfather/thunderbird eggs that are unique to the Bad River Reservation and watershed, which is commonly referred to as the nest of the thunderbird. Madigan has been the site of the Midewewin. Elm Hoist has been the site of Big Drum ceremonies. In addition, the immediate areas to the west, south, and east of the exterior boundaries of the Reservation were originally identified in negotiations of the Treaty of 1854 when delineating boundaries. While not included in the final document that was not shown to translators prior to signing by the Chiefs, the delineation of Reservation boundaries has been an area of contention since the signing of the Treaty of 1854, when it was realized an error had been made. Unfortunately, there is still no resolution to this matter.

The eligibility of the Reservation and watershed and the associated traditional cultural properties for purposes of NHPA turns upon the inherent historical and cultural significance of the property

⁴⁰ U.S. EPA, *Connectivity of Streams and Wetlands To Downstream Waters: A Review and Synthesis of the Scientific Evidence* (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-14/475F, 2015.

and not opinion of its worth by the Army Corps. Continuing to discount the watershed as a traditional cultural property is cultural colonization. The importance of the sites and cultural resources transcends the spiritual value to the Band and, instead, evidences their cultural significance to the general public. They represent a means by which to better understand the history and culture of the Ojibwe in the past, and hopefully to provide some insight and understanding of the present-day Ojibwe people. The proposed Statement of Work and Activities for a cultural resource survey can provide a means to further assist in this understanding.

We value *Giimaamaa'akiinaan*, our Mother the Earth, and as such, landscapes and viewsheds are also significant cultural resources and the degradation of those also inflict lasting negative psychological impacts to tribal members which exacerbates existing historical trauma held by tribal members. The standard method of installing a pipeline is to set explosions that violently assault *Giimaamaa'akiinaan*, which is a degrading and violent act against her. This is a psychological, cultural and economic impact. This needs to be considered as when the permit is issued by the Army Corps to Enbridge, this will initiate full installation of the line and impact cultural landscapes as well as ancient sites that cannot be determined through conventional archeological methodologies. The increased traffic, pollution, noise, impair the use and enjoyment of these cultural and historic sites.

The proposed undertaking and the entirety of the proposed reroute construction as presented will directly affect the Reservation and off-Reservation traditional cultural properties. The report fails to identify and properly delineate traditional cultural properties and lacks an Ojibwe worldview. The Statement of Work and Activities for a cultural resource survey will aid the Corps in the proper identification of traditional and cultural resources.

V. Treaty Rights

In consideration of the living history of the Band, ensuring the preservation of inherent treaty reserved rights for the purposes of a home both on and off-Reservation must be first and foremost. Quantifying the effects to Creation needs to be assessed to identify how the removal and destruction of existing natural habitat that enables the growth and existence of natural resources, such as deer, fish, plants, animals, trees, insects, air, and soils will be affected, such as migratory pathways of animals and birds, nesting and denning locations, and foraging habitat. This enables the Band to understand how implementation of Treaty reserved rights off-reservation, will be affected and how implementation of the undertaking will reciprocally impact the purposes of a home. Identifying this will quantify, among other things, how significant the reduction of resources will be to future generations. The proposed Statement of Work and Activities for a cultural resource survey will enable the Band to determine how many generations would experience resource degradation, and the depth it would affect our economy, traditional cultural practices, and contribute to further historical trauma, which is a socio-economic, as well as physical, psychological and spiritual impact.

VI. Cumulative Impacts

Consideration must be given to the cumulative long-term impacts to traditional and cultural properties and resources in the ceded territory. Existing and proposed impacts to Tribal lands, ceded territories, animals, birds, fish, insects, plants, trees, air, water and soils that are currently occurring within this region due to cumulative operations of extractive industries and other toxic waste operations, functions of society, such as sludge dumping in St. Louis River from US Steele Corp.; toxic run off and residue from an emissions release of a crude oil storage tanker explosion in Superior, WI in 2018, disintegrating barrels of toxic waste dumped in Lake Superior, and; the numerous failing mining tailings basins in northern Minnesota flowing into Lake Superior via the St. Louis River and other waterways, currently seeking Corps expansion permits, not to mention; the current licenses and permits being sought to construct new extractive industries like Twin Metals, Copperwood and Back Forty mines that will leave even further impacts to Creation in the ceded territories must all be considered and quantified to assess the cumulative negative effects in Creation that will reciprocally affect generations of Tribal members and their ability to implement their inherent and Treaty reserved rights to access, take, and use cultural resources.

All cumulative impacts need to be considered, including for those projects being considered for license or permit to project the possibilities of generational impacts to creation and those inherent and reserved rights. Identifying cumulative impacts early on in the planning stages enables the Tribe to approximate the level of cultural and economic impact that will be established due to the issuance of a federal permit.

VII. Alternatives

An objective evaluation of all reasonable alternatives has not been provided to the Band for review or comment. Moreover, in the process of examining mitigating alternatives to preserve and protect historic properties for this federal undertaking, the mitigating factor of abatement, relocation and redesign must also be thoroughly examined.

VIII. Emergency Response Plan

An Emergency Response Plan needs to be examined to determine how historic properties would be affected or addressed in the implementation of the reroute plan, which is a result of this federal undertaking. Written statements that it will be addressed will not suffice. Specific details of how it would be done must be provided.

IX. Purge and Shutdown Protocol

A purge protocol and shutdown process of the existing Line 5 should be considered in the process of evaluating the proposed project, that would result in the installation of approximately 41 miles of a new pipeline and would have the potential to operate at full capacity.

X. Plan of Action

A Plan of Action (POA) should be developed to address the event of inadvertent discoveries of human remains as the corridor will be under federal control as a FHWA/WisDOT transportation

corridor, and the Native American Graves Protection and Repatriation Act (NAGPRA) will be applicable. Tribal interests should be considered in this process and Wisconsin State Statute, 157.70 must be adhered.

Furthermore, the Band remains concerned because the report admits that the survey techniques utilized do not detect buried features with certainty.

XI. Programmatic Agreement

A Programmatic Agreement will need to be executed with the Corps and the Band for the identification of traditional and cultural resources stemming from the proposed Statement of Work and Activities for a cultural resource survey. A tangible effect to historic properties ultimately leads to an intangible effect causing physical and psychological trauma to the Bad River Tribal membership. For this reason, we are concerned that the project will have an adverse impact to the Tribal membership and their abilities to cope with adverse impacts to Tribal Historic Properties, Creation and *Giimaamaa'akiinaan* - our Mother the Earth.

Conclusion

The purpose of NHPA is to remedy the dilemma that “historic properties significant to the Nation’s heritage are being lost or substantially altered, often inadvertently, with increasing frequency.” 16 USC 470(b)(3). To remedy this problem, the NHPA prescribes the section 470(f) process, which requires federal agencies with the authority to license an undertaking “to take into account the effect of the undertaking on any site that is eligible for inclusion in the National Register” prior to issuing a license. 16 USC 470(f).

The Army Corps appears interested less in fulfilling its consultation obligations under the trust responsibility and federal law than in finding a way to shirk its obligation at the earliest possible moment. The Army Corps’ consultation with the THPO, amounts to little more than a meaningless procedural check mark that provides little to no protection to those most directly affected by the failure of the federal government to engage in meaningful government to government consultation. The Army Corps’ reticence only underlines the need to make certain that it will engage in meaningful consultation instead of a “rubber-stamp” review of the proposed project and application of harmful policies.

It is critical that the best information is used. The responsibilities incumbent upon the federal agencies imposed by NHPA and its regulations aid in the preservation and maintenance of the historical and cultural integrity of *all* properties that meet National Register Criteria. The Army Corps is seemingly attempting to avoid its responsibility and the necessity under NHPA and the regulations. While the Army Corps does not have the responsibility to monitor pipelines, it does have the responsibility to evaluate permits on such activities that could not operate but-for the permit, to protect Treaty Rights, the waters of the United States, and to follow statutory and regulatory guidelines.

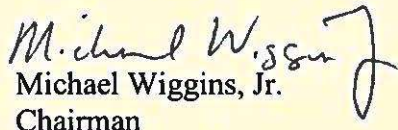
A convenient and invalid limitation of the Army Corps review serves to accomplish an inadequate consideration of the cultural and historical impacts of the activity for which it has

responsibility. Enbridge is attempting to severely limit review and to piece-meal the proposed 42-mile project. It is a mistake for the Army Corps to assess the project with tunnel vision and to fail to acknowledge what its imposed blinders will result in. To do so will result in the Corps failure to take the required measures to protect cultural and historical resources as mandated by the NHPA.

The violation of NHPA poses a possibility of irreparable injury to the historical and archaeological sites and uses and purposes for a home. It must be remembered that the basic thrust of an agency's responsibilities under NHPA is to require federal permitting agencies to consult with Tribal Nations to identify and protect cultural and historic properties that may be affected by proposed federal actions. NHPA requires all federal agencies to examine the effects of their actions on historic properties and cultural resources. The USACE must not shirk its responsibilities. There is a public interest in preserving these resources. We request that the permit be denied, and any archeological and cultural resource surveys are disregarded if derived from Enbridge contractors in favor of those completed by Tribal Nations. We further request the Statement of Work and Activities for a cultural resource survey to assist in the identification of traditional and cultural resources be supported and completed.

I look forward to meeting with you and your staff on this issue and thank you for your time and consideration. Please contact me at mikew@badriver-nsn.gov or 715-682-7111 or Edith Leoso, Tribal Historic Preservation Officer, at thpo@badriver-nsn.gov or 715-682-7123 with any follow-up questions you may have.

Weweni sa,


Michael Wiggins, Jr.
Chairman

cc: Bad River Tribal Council
Edith Leoso, Bad River Tribal Historic Preservation Officer
Naomi Tillison, Mashkiziibing Natural Resources Director
Nancy Komulainen-Dillenburg, USACE, Tribal Liaison, Archaeologist, CRM