Environmental Assessment Worksheet

This most recent Environmental Assessment Worksheet (EAW) form and guidance documents are available at the Environmental Quality Board's website at**:** https://www.eqb.state.mn.us**/** The EAW formprovides information about a proposed project's potential environmental effects, and also used as the basis for scoping an Environmental Impact Statement. Guidance documents provide additional detail and links to resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item or can be addressed collectively under EAW Item 21.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for anEIS.

1. **Project title: Big 39 and Little 39 Creek Mitigation, Beaver Bay Township, Lake County, Minnesota**

2. **Proposer: Northshore Mining Company**

Contact person: Nathan Schroeder
Title: Environmental Engineer
Address: 10 Outer Drive
City, State, ZIP: Silver Bay, MN 55614
Phone: (218) 226-4125
Email: Nathaniel.Schroeder@clevelandcliffs.com

3. **RGU: Minnesota DNR**

Contact person: Sara Mielke
Title: EAW Project Manager
Address: 500 Lafayette Rd.
City, State, ZIP: St. Paul, MN 55155
Phone: (651) 259-5723
Email: sara.mielke@state.mn.us

4. **Reason for EAW Preparation: Discretionary: Mandatory EAW**

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):
MR 4410.4300, Subp. 26, Stream Diversion. For a diversion, realignment, or channelization of any designated trout stream, or affecting greater than 500 feet of natural watercourse with a total drainage area of ten or more square miles unless exempted by part 4410.4600, subpart 14, item E, or 17, the local government unit shall be the RGU.

5. Project Location:

- County: Lake County
- City/Township: Beaver Bay
- PLS Location (¼, ¼, Section, Township, Range):

NW ¼	SE ¼	Section 30	Township 56N	Range 8W
NW ¼	NW ¼	Section 31	Township 56N	Range 8W

- Watershed (81 major watershed scale): Lake Superior
- GPS Coordinates: 47.30792, -91.39903
- Tax Parcel Number: 26-5608-30010

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project (Figure 1)
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable) (Figure 2)
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan (Appendix A)
- List of data sources, models, and other resources (from the Item-by-Item Guidance: *Climate Adaptation and Resilience* or other) used for information about current Minnesota climate trends and how climate change is anticipated to affect the general location of the project during the life of the project (as detailed below in item 7. Climate Adaptation and Resilience) (Appendix D)
- TABLE OF CONTENTS
    - Appendix A: Subset of Construction Plan Sheets
    - Appendix B: Big and Little Thirty-nine Creek Restoration Threatened and Endangered Species Review and Letter of Concurrence
    - Appendix C: List of Climate Change data sources

Tables within the EAW

6. Project Description:

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

The proposed project would restore 2,072 linear feet of historically degraded Big 39 Creek and 5,672 linear feet of Little 39 Creek. Once completed, the restoration would reestablish natural stream processes, improve floodplain connectivity, establish a meandered pattern, and provide additional habitat features such as wood and rock structures. The project, located in Beaver Bay Township in Lake County, is proposed by Northshore Mining Company and would mitigate and compensate for the partial loss of function these waterbodies experienced when they were straightened in the 1970s during construction of the Milepost 7 tailings basin.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities

The proposer owns the proposed project parcel. During the 1970s construction of the Milepost 7 tailings basin, Big 39 and Little 39 Creeks were altered and modified through diversions by Reserve Mining Company. Flow of Little 39 Creek was altered by diverting the channel through a ditch system to Big 39 Creek. Big 39 Creek was further altered by diverting it to the main stem of the Beaver River through a diversion/ditch system. Figure 3 shows Big 39 and Little 39 in a 1939 historical aerial photograph. This mitigation project aims to improve stream function by increasing *functional feet* of the stream reach, thereby providing *functional lift* (as defined in the MNSQT User Manual v1.0[1]) on the channelized reaches by creating bedform diversity and access to the floodplain. The design would generally follow the existing alignment and gravel riffles would be utilized to provide habitat, roughness and grade control. Toe wood structures and Log J-hooks would be utilized to replicate a natural streambank, protect the outer meander bends, and create woody habitat.

Existing channel vegetation would be temporarily removed. Existing alder would be excavated and used as transplants in critical areas. Native seed, trees, and shrubs would be planted along the stream banks and within the adjacent riparian corridor. Further back from the channel, a straw type erosion control blanket would be used to hold the soils until the vegetation is established. Plantings would include native forbs and grass seed, shrubs and trees.

Construction of 7,744 feet of stream channel would include grading and stabilizing new stream banks, installing in-stream structures for grade control and fish habitat, and stabilizing and vegetating disturbed areas.

The new stream channel would be excavated to the designed bankfull width as determined by the North Shore Regional Curve and existing stable cross-sections taken upstream and

[1] MNSQT User Manual v1.0
https://bwsr.state.mn.us/minnesota-stream-quantification-tool-and-debit-calculator

downstream from the project site.

Typically, an excavator and other associated heavy equipment would be used to construct the new channel. An excavator with a hydraulic thumb would be used to install the in-stream structures including toe-wood, boulders, logs and rocks.

The stream would be temporarily diverted around the active construction areas using a stream diversion plan (see SWPPP in Appendix A). Any stockpiles would have erosion and perimeter control and other best management practices implemented according to the Storm Water Pollution Prevention Plan, required by the MPCA administered NPDES/SDS permit to ensure that sediment does not enter the stream during construction.

Appendix A provides the engineering plan for the proposed stream mitigation project. The plan shows the existing and proposed channel alignments and dimensions, locations of riffles and pools, typical cross-sections, and typical plan and profile of riffle and pool features. In addition, the plans show erosion control details and access and vegetation restoration details.

Several general goals for the proposed stream mitigation plan would be defined in more detail during the detailed project design. The general goals include:

- Establish natural stream processes within the channelized reaches
- Establish appropriate pattern, profile, and channel dimensions for streams of this type
- Establish a floodplain appropriate for the channel type
- Improve aquatic and floodplain habitat
- Meet all the objectives to provide the maximum functional lift as determined by the MN Stream Quantification Tool (SQT).

Timing: The proposed timing of the project construction is May 2022 to September 2022 (construction would take approximately three months). The project would aim to be complete by September 15, before fall exclusion dates for the trout streams.

c. Project magnitude:

Table 1: Project Magnitude

Description	Value
Total Project Acreage	18.2 Acres
Linear project length	7,744 ft
Number and type of residential units	0
Residential building area (in square feet)	0
Commercial building area (in square feet)	0
Industrial building area (in square feet)	0
Institutional building area (in square feet)	0
Other uses – specify (in square feet)	0
Structure height(s)	NA

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The proposed project would be completed as part of a larger project to mitigate the impacts associated with the progression of the tailings basin, as originally planned and permitted in the 1970s. The Big and Little 39 stream restoration project are being completed in order to meet the functional lift required by the SQT to meet the requirements of the stream debits as calculated by the SQT (see MNSQT Manual v1.0). The designs are intended to provide the maximum functional lift through the creation of a meandered channel appropriate for its channel type, addition of riffles and pools, and addition of both riparian and aquatic habitat.

e. Are future stages of this development including development on any other property planned or likely to happen? ☐ Yes X No
If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

f. Is this project a subsequent stage of an earlier project? ☐ Yes X No
If yes, briefly describe the past development, timeline and any past environmental review.

7. Climate Adaptation and Resilience:

a. Describe the climate trends in the general location of the project (see guidance: *Climate Adaptation and Resilience*) and how climate change is anticipated to affect that location during the life of the project.

The Minnesota Climate Explorer[2] projects the average temperature for Lake Superior – South to increase by approximately 5 degrees Fahrenheit by the Mid-Century and an additional 5- to 7-degree increase by the Late-Century. The model also projected recent and future annual precipitation values for this region and the model mean shows that from the present and Mid-Century (no change in precipitation between the present and Mid-Century) there will be an increase of 4.5 to 8 inches in the Late-Century.

Also, according to the FloodFactor[3] the area has higher flood risk due to the projected increase and frequency in temperatures, evaporation, and precipitation, thus an increase in extreme rain and flood events.

b. For each Resource Category in the table below: Describe how the project's proposed activities and how the project's design will interact with those climate trends. Describe proposed adaptations to address the project effects identified.

Table 2: Proposed Climate Adaptations

Resource Category	**Climate Considerations** (as identified above in 7a)	**Project Information (what features of this resource category addresses vulnerabilities because of/due to climate the climate trend)**	**Adaptations (effect on that feature)**
Project Design	More frequent and intense rain events	The project design would reconnect the floodplain and provide stabilization for banks.	Reduce shear stresses from flood flows. With more floodplain capacity, channel erosion would be reduced and the channel would remain resilient to more frequent flood flows.

[2] Minnesota Department of Natural Resources. *Minnesota Climate Explorer*. https://arcgis.dnr.state.mn.us/climateexplorer. Retrieved October 7, 2021

[3] First Street Foundation. *Flood Factor for Silver Bay, MN.* https://floodfactor.com. Retrieved October 7, 2021 from: https://www.floodfactor.com/city/silver-bay-minnesota/2760250_fsid

Resource Category	**Climate Considerations** (as identified above in 7a)	**Project Information (what features of this resource category addresses vulnerabilities because of/due to climate the climate trend)**	**Adaptations (effect on that feature)**
Land Use	More frequent and intense rain events. Increased temperatures.	The land use change would be from grassland to forested land.	Project grading would promote access to the floodplain, reducing any risk of localized flooding. The vegetation plan increases the Manning's "n"-factor in the floodplain (i.e., roughness), reducing the overland shear stresses. Once established, the trees would provide an overstory, maintaining cool water and air temperatures.
Water Resources	Address in item 12	Address in item 12	Address in item 12
Contamination/ Hazardous Materials/Wastes	Not Applicable	Not Applicable	Not Applicable
Fish, wildlife, plant communities, andsensitive ecological resources (rare features)	Address in item 14.	Address in item 14.	Address in item14.

8. **Cover types:** Estimate the acreage of the site with each of the following cover types before and afterdevelopment:

Table 3: Existing and Proposed Cover Types

Cover Types	Before (acres)	After (acres)
Wetlands and shallow lakes (<2 meters deep)	13	13.0[4]
Deep lakes (>2 meters deep)	0	0
Wooded/forest	0	1.4
Rivers ~~and~~/streams	3.8	3.8
Brush/Grassland	1.4	0
Cropland	0	0
Livestock rangeland/pastureland	0	0
Lawn/landscaping	0	0
Green infrastructure TOTAL (from table below*)	0	0
Impervious surface	0	0
Stormwater Pond (wet sedimentation basin)	0	0
Other (describe)	0	0
TOTAL	18.2	18.2

Table 4: Existing and Proposed Green Infrastructure

Green Infrastructure*	Before (acreage)	After (acreage)
Constructed infiltration systems (infiltration basins/infiltration trenches/ rainwater gardens/bioretention areas without underdrains/swales with impermeable check dams)	0	0
Constructed tree trenches and tree boxes	0	0
Constructed wetlands	0	0
Constructed green roofs	0	0
Constructed permeable pavements	0	0
Other (describe)	0	0
TOTAL*	0	0

[4] Improving floodplain access in Big 39 Creek will create or enhance up to 2.9 acres of wetland. Improving floodplain access in Little 39 Creek will create or enhance up to 4.9 acres of wetland.

Table 5: Proposed and Existing Trees

Trees	Percent	Number
Percent tree canopy removed or number of mature trees removed during development		
Number of new trees (proposed)		3,811

9. **Permits and approvals required:** List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibiteduntil all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Table 6: Summary of Required Permit Status

Unit of Government	Type of Application	Status
MN DNR	Public Waters Permit	Submitted, Permit #2021-3466
Lake County Minnesota[5]	Land use Application for Grade/Fill	Contractor submittal
MPCA	Construction Stormwater Permit	Awaiting contractor decision following bid
US Army Corps of Engineers[6]	Nationwide Permit (NWP) 27	Pre-construction Notification received. Pending as of 11/23/21.

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos.10-20, or the RGU can address all cumulative potential effects in response to EAW Item No.22. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 21.

[5] Landuse Application for Grade and Fill
https://www.co.lake.mn.us/environmental-services/planning-and-zoning/planning-and-zoning-documents/
[6] Nationwide Permit 27 Aquatic Habitat Restoration, Establishment and Enhancement Activities
https://www.nww.usace.army.mil/Portals/28/docs/regulatory/NWPs/NWP27.pdf

10. Land use:

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks and open space, cemeteries, trails, prime or unique farmlands.

The project is located on the proposer's property, upgradient of the tailings basin. The watersheds are primarily forested and in an undisturbed condition. The area surrounding the project is forest or shrubland and is not utilized for mining activities, nor would it be in the future. The project is directly adjacent to the tailings basin.

The Big 39 Diversion site is a 1700-foot-long excavated channel that redirects flow from the original remnant channel southwest to the Beaver River, as part of Reserve Mining Company's Mile Post 7 (MP7) tailings basin construction in the 1970s. The existing channel is an excavated ditch with the remnants of a weir that was used to temporarily divert flow back into the basin via a water supply culvert. The diversion lacks sinuosity, a connection to its floodplain at channel forming flow, large woody debris (LWD), bedform diversity, and habitat diversity. The riparian vegetation is mostly an invasive species (reed canary grass) with stretches of overhanging shrubs.

The Little 39 Diversion Ditch was also excavated during Reserve Mining Company's construction of the MP7 tailings basin. It was designed to redirect flow southwest to the Big 39 Creek, very near the point that the Big 39 Creek was diverted to the Beaver River, from its original course intersecting the footprint of the tailings basin. This 5700-foot-long diversion added approximately 6.5 square miles of new watershed area to the Beaver River main branch. The existing channel is an excavated ditch and downstream diversion berm designed to efficiently move water away from the MP7 tailings basin. The diversion lacks sinuosity, an appropriately sized floodplain, LWD, bedform diversity and habitat diversity. The riparian vegetation is mostly native and functioning.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The Lake County Comprehensive Plan[7] identifies this area as a Forest-Recreational District. This stipulates larger lot sizes and authorizes uses such as Soil and Water Conservation programs, with which the stream restoration project proposed for Big and Little 39 Creeks comply. Aspects of other plans were considered and incorporated into the stream restoration design. The Final Lake Superior South WRAPS Report[8] was referenced to identify appropriate restoration sites and strategies (see pages 55-57). The Lake Superior North One Watershed One Plan[9] was considered, but primarily only to confirm alignment

[7] Comprehensive Plan and Landuse Ordinance #12 Effective June 23, 2017
https://www.co.lake.mn.us/environmental-services/planning-and-zoning/planning-and-zoning-documents/
[8] Final Lake Superior South Watershed Restoration and Protection Strategy Report August 2, 2018
https://www.pca.state.mn.us/water/watersheds/lake-superior-south
[9] Lake Superior North One Watershed One Plan
https://www.co.lake.mn.us/soil-and-water-conservation-district/lake-superior-north/

with watershed plans.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.
This project falls under the Shoreland Classification due to the restoration work proposed in the streams.

iv. If any critical facilities (i.e. facilities necessary for public health and safety, those storing hazardous materials, or those with housing occupants who may be insufficiently mobile) are proposed in floodplain areas and other areas identified as at risk for localized flooding, describe the risk potential considering changing precipitation and event intensity.
Not Applicable

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

As a stream and riparian forest community restoration, the proposed project falls under section 9.02 of the Lake County Comprehensive Plan and Land Use Ordinance (Ordinance #12) as a permitted use for Soil and Water Conservation programs and Forest Management and Utilization, as such the project is compatible with the plan.
This project would include a land use change converting 1.4 acres of grassland to forested land.

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 10b above and any risk potential.
N/A. There are no incompatible uses identified.

11. Geology, soils and topography/land forms:

a. Geology - Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

The area lies in the North Shore Volcanic Group, featuring igneous and metamorphic bedrock geology overlain by areas of glacial till. No sinkholes or karst geology are present in the project area. Unconfined or shallow aquifers would not likely be present as the region generally lacks sedimentary bedrock and aquifers, and instead water sources are often found in bedrock fractures.[10] The project would not have any effect on the geology, and therefore no mitigation measures would be taken.

b. Soils and topography - Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 12.b.ii.

A Custom Soil Resource Report provided by the NRCS identifies the soils in the project area as the following:

Table 7: Summary of NRCS Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
A1-40B	Normanna-Greysolon complex, 2 to 8 percent slopes, very rocky	3.4	7.0%
A3-11A	Twig-Tacoosh-Giese complex, 0 to 1 percent slopes, depressional	0.0	0.0%
A3-12A	Giese muck, depressional, 0 to 1 percent slopes	14.6	30.0%
A3-20A	Canosia loam, 0 to 2 percent slopes	10.4	21.3%
A3-21A	Hermantown silt loam,	0.4	0.8%

[10] Minnesota Groundwater Provinces, 2021. https://files.dnr.state.mn.us/waters/groundwater_section/provinces/2021-provinces.pdf

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
	1 to 3 percent slopes		
A3-30B	Normanna-Canosia-Hermantown complex, 0 to 8 percent slopes	0.7	1.4%
E1-9D	Ahmeek-Udifluvents, frequently flooded-Rock outcrop complex, 1 to 18 percent slopes	4.6	9.4%
F3-41D	Aldenlake-Ahmeek complex, 8 to 18 percent slopes	5.8	12.0%
K2-10A	Bowstring and Fluvaquents soils, 0 to 2 percent slopes, frequently flooded	8.8	18.1%
	Totals for Area Interest	**48.7**	**100.0%**

The soils described for the area in Table 7 are not especially erodible and consist primarily of rocky soils, mucky soils, loamy soils, and fluvial deposits of these soil types. The entirety of the project (aside from material staging) would occur within the existing stream valleys. Since the work is completed within a valley, the topography that would contribute to difficult erosion conditions is the valley slope. The valley slope of Little 39 ranges from 0.12-0.093 (FT/FT) and the valley slope of Big 39 is 0.0019 (FT/FT) – both of which are relatively flat. The soils and topography do not indicate an elevated risk of erosion during project operation. The soils and topography do not require any special considerations during construction, other than being in an area that will discharge to special waters. Approximately 58,000 cubic yards of excavated material would be removed from areas adjacent to current stream alignment in order to allow for the project goal of an accessible floodplain (where greater than bankfull flows can access the stream's floodplain). This allows for natural stream processes to occur, including both erosion and deposition. The excess cut material would be removed from the project area and placed within the permitted footprint of the tailings basin. BMPs will be used during construction to reduce risk of erosion of the temporarily exposed soil. Post-construction, the exact alignment of the streams is expected to adjust slightly due to natural stream processes, but the grade control and stabilization structures are designed to maintain the appropriate hydrology, hydraulics, geomorphology, physiochemical and biological conditions proposed.

12. Water resources:

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water - lakes, streams, wetlands, intermittent channels, and county/judicial ditches.Include any special designations such as public waters, shoreland classification and floodway/floodplain, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include the presence of aquatic invasive species and the water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

- Little 39 Creek, Trout Stream, DNR PWI number, S-035-010-002
- Big 39 Creek, Trout Stream, DNR PWI number, S-035-010

MPCA impaired waters list identifies the Beaver River, which is downstream from the project location, as impaired for Fish Bioassessments, Mercury, Turbidity and pH.

Little 39 Creek is a ditch that was excavated to divert the flow of the upper reaches of Little 39 Creek out of the tailings basin and into the Big 39 Creek watershed. The section is very straight and has a uniform slope of 0.12-0.093 (FT/FT). Both banks of the stream are armored in sections with rock. The stream setting is a mixed forest with shrubs within a ditched area. The downstream end of the Little 39 Creek restoration project has a watershed area of approximately 6.5 square miles.

Big 39 Creek section is a ditch that was excavated to divert the upper reaches of Big 39 flow out of the tailings basin and to the Beaver River. It also received the diverted Little 39 Creek watershed. This section is also very straight and has a uniform slope of 0.0019 (FT/FT). This section runs across a flat meadow of reed canary grass on the east side and has a slight valley slope on the west side that contains shrubs adjacent to the stream and transitions into mixed coniferous/deciduous forest. The watershed area contributing to the lower end of the project site is slightly less than 17.26 square miles (the entire Big 39 Creek watershed area).

There are no aquatic invasive species in Little 39 Creek, Big 39 Creek or the greater Beaver River watershed, according to the MN DNR List of Infested Waters.[11]

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

The project area is not within a wellhead protection area. The Minnesota Department of Health (MDH) Well Index (map feature) was consulted to confirm the absence of any nearby affected wells. There are wells related to landfill monitoring within the tailings basin

[11] DNR Infested Waters list. Published November 22, 2021. https://www.dnr.state.mn.us/invasives/ais/infested.html

footprint, approximately 2800' to the SE of the nearest point of the project, but they are not in the same watershed as the project. The streams occur where the topography meets the elevation of the groundwater in the area, so depth to groundwater increases from zero at the stream's edges. Work would be conducted at or below the groundwater level/water table to restore the streams.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

iii. Wastewater - For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

Not Applicable. No wastewater would be produced, treated or discharged during the duration of the project. The project would result in reduced peak flows and flooding conditions. This would reduce stress on bridge infrastructure and highway right-of-ways.

iv. Stormwater - Describe changes in surface hydrology resulting from change of land cover. Describe the routes and receiving water bodies for runoff from the project site (major downstream water bodies as well as the immediate receiving waters). Discuss environmental effects from stormwater discharges on receiving waters post construction including how the project will affect runoff volume, discharge rate and change in pollutants. Consider the effects of current Minnesota climate trends and anticipated changes in rainfall frequency, intensity and amount with this discussion. For projects requiring NPDES/SDS Construction Stormwater permit coverage, state the total number of acres that will be disturbed by the project and describe the stormwater pollution prevention plan (SWPPP), including specific best management practices to address soil erosion and sedimentation during and after project construction. Discuss permanent stormwater management plans, including methods of achieving volume reduction to restore or maintain the natural hydrology of the site using green infrastructure practices or other stormwater management practices. Identify any receiving waters that have construction-related water impairments or are classified as special as defined in the Construction Stormwater permit. Describe additional requirements for special and/or impaired waters.

The current site conditions rapidly remove water from the landscape, which exacerbates the downstream effects of more intense and frequent precipitation events. The project is designed to promote natural stream function that attenuates the impact of increased rainfall intensity and spring runoff events.

Construction

This 12.5-acre project would be completed under low-flow conditions. Best management practices would be used during construction to minimize soil erosion, including stabilization of constructed channels prior to the introduction of stream flow, use of erosion-control blankets and mulch, rapid re-vegetation of disturbed areas, and diversion of the streams during construction. Disturbed soils would be seeded with native vegetation and blanketed with erosion control fabric adjacent to the stream. Mulch would be placed in the upland areas to encourage quick re-vegetation and reduce erosion from disturbed areas. A stormwater pollution prevention plan (SWPPP), as regulated by the NPDES/SDS Construction

Stormwater program, has been prepared for the project (Appendix A).

Post-construction

The project's stream areas would retain more water due to the increased access to floodplains. The topography beyond that would be altered only to add sinuosity to the stream reaches. The route of water, runoff destination and receiving waters would not change. The nature of the project would increase the landscape's ability to absorb and reduce the downstream effects of climate change-driven increases in precipitation events. The peak runoff rate would be reduced by retaining water on the landscape, but the overall runoff volume should remain mostly unchanged. The makeup of the surface would include an increase in woody species cover but would not create any new pollutant sources. The quality and quantity of pre- and post-project stormwater runoff would be the same, since no impervious surfaces are created for the project. There are no soil limitations at the project site, so no increase in sedimentation from stormwater runoff would occur.

For further discussion on Minnesota climate trends, see comments in EAW Items 7 and 12.

v. Water appropriation - Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Discuss how the proposed water use is resilient in the event of changes in total precipitation, large precipitation events, drought, increased temperatures, variable surface water flows and elevations, and longer growing seasons. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation. Describe contingency plans should theappropriation volume increase beyond infrastructure capacity or water supply for the project diminish in quantity or quality, such as reuse of water, connections with another water source, or emergency connections.

It is anticipated that work in both Little 39 and Big 39 Creeks would require temporary flow bypassing during construction. Depending on the magnitude of flow and the resultant bypass method, this would be expected to occur only during the construction workday. Longer bypasses could extend beyond 1 day. Longer bypasses would only occur on Big 39 where flows are higher and the landscape allows for a temporary channel realignment bypass. At no time would water be consumed or diverted from its valley course or watershed (basin of origin), only diverted around work area. The proposer would follow all applicable laws and apply for permits as needed.

vi. Surface Waters

Wetlands - Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed,

taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts would occur in the same minor or major watershed and identify those probable locations.

Temporary impacts to wetlands during construction are anticipated. Post-construction, the project would have a very small impact of wetland conversion to open water, while enhancing and creating an estimated 7.8 acres of wetland in riparian areas. The net effect to wetland acreage would be positive. It is anticipated that per WCA no mitigation would be required for the project. The project would increase floodplain capacity (e.g., flood storage) which makes the post-construction project area more capable of mitigating the local climate trends that have projected an increase in frequency and intensity of precipitation events.

c. Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicialditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features, taking into consideration how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The project would establish a meandered stream pattern within a ditched stream system through excavation of a new channel. This channel is being designed to the appropriate bankfull width and cross-sectional area, as determined by reference cross-sections in stable riffles upstream of the project site. Riffle and pool morphology would be created along with habitat features such as toe wood and riffle rock and gravel structures. See details in the site plans (Appendix A). The project as described would be phased and stabilized as it is completed in 500-foot segments. The project would involve pumping and diverting the stream flow to complete the work out of the main flow of the channel. This would limit the turbidity created during the construction of the project, resulting in minor and temporary effects on the dewatered section. The streams are not navigable by typical watercraft, so this use would not be affected. The described work is designed to attenuate effects of increased intensity and frequency of flood flows. The existing condition is effective at moving water downstream and creating higher peak flows. The proposed condition would attenuate flood flows by retaining flows over bankfull in the floodplain and releasing those flows over a greater period of time, improving resilience to changing hydrology related to climate change.

13. Contamination/Hazardous Materials/Wastes:

a. Pre-project site conditions - Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.
No such sites exist in close proximity of the project.

b. Project related generation/storage of solid wastes - Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.
No solid wastes would be generated or stored during this project.

c. Project related use/storage of hazardous materials - Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any new above or below ground tanks to store petroleum or other materials. Indicate the number, location, size and age of existing tanks on the property that the project will use. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

It is likely that fuels, lubricants, diesel exhaust fluid (DEF) and hydraulic oil would be stored on site. It is up to the contractor to determine if tanks are required, although any such uses would be temporary in nature. The proposer maintains agreement with all contractors that they follow applicable federal and state rules regarding the storing of such materials, clean up and the reporting of spills. Contractors are required to acquire spill response materials and complete vehicle inspections. The proposer would also periodically inspect site and note spills or leaks if discovered. The proposer requires a copy of all spills reported on site. There are no existing tanks on the project site or in immediate vicinity. The project site falls within the purview of said plan and contractors are informed in preconstruction meetings of the applicable requirements they must follow. The operation of heavy equipment in and near lakes, streams and wetlands obligates the project proposers to develop a plan for managing fuels and lubricants, and the proposer has and maintains a Spill Prevention Control and Countermeasures Plan. The proposer and their contractors would be prepared to respond to spills and to recover and contain spilled material as quickly and thoroughly as possible. For petroleum spills that are five or more gallons, the proposer or their contractors are required to contact the State Duty Officer at (651) 649-5451 or (800) 422-0798. Information on reporting spills and leaks is available on the MCPA website.[12]

[12] MPCA: Incident Response webpage. https://www.pca.state.mn.us/waste/incident-response

d. Project related generation/storage of hazardous wastes - Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling

No hazardous wastes would be generated; therefore no generated hazardous waste would be stored.

14. Fish, wildlife, plant communities, and sensitive ecological resources (rare features):

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.
Native plant communities expected to be present in the area would be those typical of the North Shore Highlands Subsection of the Northern Superior Uplands Section in the Laurentian Mixed Forest Province. Existing riparian vegetation consists of majority of herbaceous plants and woody vegetation less than 20 feet tall, dominated by Speckled Alder, Birch, Reed Canary Grass and other species typical of a disturbed and ditched stream environment. Big 39 and Little 39 Creeks are classified as second and third order perennial streams in the Minnesota PWI and currently listed as Class 2A (cold water) streams. In 2011, the aquatic biota was sampled by the MPCA in both streams to determine fish and macroinvertebrate communities present.[13] The fish community present upstream of the proposed restoration is detailed in Tables 8 and 9.

Table 8. Fish Species in Big 39 Creek

Visit Year	Species	Count	Min length (mm)	Max length (mm)
2011	Blacknose Dace	70	50	101
2011	Brook Stickleback	4	25	57
2011	Brook Trout	6	145	195
2011	Common Shiner	4	48	66
2011	Creek Chub	2	69	73
2011	Finescale Dace	1	53	53
2011	Johnny Darter	1	76	76
2011	Longnose Dace	17	54	111
2011	Mottled Sculpin	21	51	117
2011	Northern Redbelly Dace	1	39	39
2011	Pearl Dace	19	66	119
2011	White Sucker	1	165	165

[13] MPCA Surface water data. Accessed February 2022. https://webapp.pca.state.mn.us/surface-water/search

Table 9: Fish Species in Little 39 Creek

Visit Year	Species	Count	Min length (mm)	Max length (mm)
2011	Blacknose Dace	227	45	78
2011	Brook Stickleback	5	50	52
2011	Brook Trout	1	59	59
2011	Central Mudminnow	1	79	79
2011	Common Shiner	17	34	109
2011	Creek Chub	66	60	164
2011	Finescale Dace	5	61	87
2011	Mottled Sculpin	6	25	89
2011	Northern Redbelly Dace	4	35	64
2011	Pearl Dace	30	27	110
2011	White Sucker	4	85	115

Invertebrates identified at the site include Alderflies, Balloon Flies, Black Flies, Caddisflies, Chiggers, Circular-Seamed Flies, Clubtails, Common Stoneflies, Darners, Finger-Net, Caddisflies, Fingernail Clam, Gastropods, Giant Stoneflies, Long-Horn Caddisflies, Long-Toe Water Beetles, Mayflies, Midges, Net-Spinning Caddisflies, Northern Caddisflies, Oligochaeta, Riffle Beetles, and Small Winter Stoneflies.

The project site is located in a larger complex of scrub-shrub wetlands, forested wetlands, and forested uplands. The area is likely used by commonly occurring species such as migratory songbirds; small mammals such as voles, mice, shrews; and medium to large mammals such as snowshoe hare, moose, white-tailed deer, bear, and gray wolves.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, andother sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-___) and/or correspondence number (ERDB 20220067) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

See Appendix B for NHIS Review and concurrence.

An NHIS database review indicated that no endangered, threatened, or special concern species

have been previously identified within the restoration area. However, two state-listed special concern species have been identified within one mile of the project extents: the Twig rush (Cladium mariscoides) and the Neat spikerush (Eleocharis nitida).

Twig rush occurs mostly in fens, particularly prairie rich fens, northern rich fens, and calcareous fens[14]. Twig rush is found in two locations within one mile of the project extents. Both populations are found within former borrow sites where clay soils had been excavated for basin construction. One location has approximately 50 stems in a single patch covering about 12 square meters. The other nearby location has around 500 stems in a single patch covering about 15 square meters (Barr, 2016). No fen plant communities are located within the project extents. Suitable habitat for twig rush may be present within the creek restoration area. However, the species is listed as special concern and is not legally protected under state endangered species law.

Neat spikerush is a colonizer of small wet localized depressions, such as shallow ditches, pits, trails, and wheel ruts in sand, gravel, or clay[15]. One population of neat spikerush has been found within one mile of the project extents. This population of neat spikerush is located in a ditch next to the railroad, including about 100 stems within a small, less than one square meter patch[16]. Suitable habitat for neat spikerush may be present within the creek restoration area. However, the species is listed as special concern and is not legally protected under state endangered species law. No further action is required.

Review of endangered, threatened or special concern species using the USFWS Information for Planning and Consultation (IPaC) tool[17] identified the following species that could potentially be affected by activities in this location: Canada lynx, Northern long-eared bat, Gray wolf, and Piping plover.

Canada lynx (Lynx canadensis), federally listed as threatened and state-listed as special concern, has been documented in the vicinity of the project. This species is found in large tracks of boreal and mixed conifer-hardwood forest where they are highly dependent on snowshoe hare for prey.

The Northern Long-eared bat (Myotis septentrionalis) is federally listed as threatened. The northern long-eared bat is found across much of the eastern and north central United States. The northern long-eared bat's habitat in the summer is the bark of both live and dead trees, caves and crevasses, and barns and sheds. During the winter, the bat hibernates in small crevasses in caves and mines.

---

[14] Minnesota Department of Natural Resources. 2021. Rare Species Guide: *Cladium mariscoides*. Accessed November 24, 2021, at:
https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP04050

[15] Minnesota Department of Natural Resources. 2021. Rare Species Guide: *Eleocharis nitida*. Accessed November 24, 2021, at Eleocharis nitida:
https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP09180

[16] Barr Engineering. 2016. Endangered, Threatened, and Special Concern Plant Species Survey Report. October 2016.

[17] United States Fish and Wildlife Service (2020) Information for Planning and Consultation tool.
https://ecos.fws.gov/ipac/location/index

The Gray wolf (Canis lupus) is federally listed as threatened. Wolf packs usually live within a specific territory. Territories range in size from 50 square miles to more than 1,000 square miles depending on how much prey is available and seasonal prey movements. Packs use a traditional area and defend it from strange wolves. Their ability to travel over large areas to seek out vulnerable prey makes wolves good hunters. Wolves may travel as far as 30 miles in a day.

The Piping plover (Charadrius melodus) is federally listed as endangered. It is known to be along the north shore of Lake Superior but not as far north as the project area. Piping plovers use wide, flat, open, sandy beaches with very little grass or other vegetation. Nesting territories often include small creeks or wetlands.

In order to acquire the needed information for the MN SQT, a riparian vegetation Excel Workbook Field Form[18] was completed. This form is brief and concerned primarily with areal cover by strata and wood stem basal area, but is survey work related to habitat and species. This survey was completed for both Big and Little 39 Creek sites.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project including how current Minnesota climate trends and anticipated climate change in the general location of the project may influence the effects. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

The proposed project may have temporary minor impacts on the local wildlife and ecological communities during the construction period. Noise, dust, and construction activity during the project could temporarily dislocate a species sensitive to those activities.

Post construction, the site would be enhanced for fisheries and wildlife. Access trails and staging areas would be restored to a condition that is equal to or better than the existing conditions. The site's ability to resist impacts related to climate trends would be enhanced by the completion of this project. Increased floodplain access, roughness, and woody vegetation increases the streams' ability to handle greater frequency and intensity of storms by reducing peak flows and reducing erosive power of stream flow.

The project would not permanently damage or remove any habitat for Canada lynx, Northern long-eared bat, Gray wolf, or Piping plover. Habitat creation and enhancement are an integral part of the project design and would provide beneficial effects for these species, among others. For fish, pools would provide thermal refuge, cover, feeding and resting and nursery areas; riffles would provide oxygen to the water column and provide spawning areas; and root wads would provide woody cover and habitat and stabilize the stream banks.

d. Identify measures that will be taken to avoid, minimize, or mitigate the adverse effects to fish, wildlife, plant communities, ecosystems, and sensitive ecological resources.

[18] Minnesota Stream Quantification Tool and Debit Calculator | MN Board of Water, Soil Resources (state.mn.us) https://bwsr.state.mn.us/minnesota-stream-quantification-tool-and-debit-calculator

The purpose of the proposed project is to restore the aquatic ecology and terrestrial environment to a condition better than what currently exists within the project area.
Stream restoration may cause some very temporary adverse impacts to fish, wildlife and plant communities. The proposer would take all reasonable measures to avoid impacts to the existing wildlife and ecology including the following:

- Construction would be conducted during non-spawning periods of trout and outside of the Northern long-eared bat hibernation period.
- The channel restoration work would be completed in phases instead of disturbing the entire area at once.
- If recommended by the MN DNR, the proposer would work with the local fisheries office to move fish out of the active construction area prior to diverting water.
- Access to the site would be limited to areas shown on the plans.
- Staging areas would be limited in size and would have perimeter control to reduce sediment runoff.
- Construction would be suspended during rain events at the discretion of the Engineer to limit rutting and excess erosion from the construction equipment.
- The construction timeline would be kept to a practical minimum, and the contractor would be dedicated to the project timing in order to minimize the amount of time that areas are disturbed. Contract timelines would be enforced.
- Only native species that are appropriate to the existing terrestrial ecology would be used to restore the disturbed areas.
- Erosion control blanket would be specified to be natural netting only to ensure that no wildlife is ensnared in the netting.
- Adherence to the erosion and sediment control plan.

All appropriate actions/BMPs to prevent the spread of invasive species would be utilized. Equipment used on the project would be required to be cleaned before entering the site to minimize any introduction of invasive species. Seeding and planting of native species would be completed once grading is finalized on each reach. Invasive species monitoring and prevention is part of the post-project monitoring required by the related 404 permit, 401 certifications and monitoring required to complete the MN SQT functional assessment. Monitoring would be conducted annually for 5 years post construction. Invasive species performance standards and adaptive management measures are included in permit conditions.

Existing channel vegetation would be temporarily removed during construction. Existing alder would be excavated and used as transplants in critical areas. Native seed, trees, and shrubs would be planted along the stream banks and within the adjacent riparian corridor. Further back from the channel, a straw type erosion control blanket would be used to hold the soils until the vegetation is established. Plantings would include native forbs and grass seed, shrubs and trees.

15. Historic properties:

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

In October 2019, the 106 Group, acting as a consultant for the proposer, conducted background research of an area that includes the boundary of the proposed project. There were no previously recorded archaeological sites or historical properties within the construction limits, but three properties met the architectural history survey criteria and were recommended as potentially eligible for listing in the National Register of Historic Places (NRHP). On November 11th, 2019 the architectural history survey was conducted in the vicinity. These properties, LA-SVB-012, LA-XXX-003 and XX-RRD-047 consisted of the Milepost 7 Tailings Basin, Minnesota Power Transmission Line and Reserve Mining Company Mainline Railroad respectively. LA-SVB-012 and XX-RRD-047 were evaluated for significance and both were determined eligible under NRHP Criterion A (national significance within the area of Law). The proposed projects fall within the area "Recommended Individually Eligible," but there are no associated properties/buildings within the proposed project boundaries.

The identified properties and buildings would not be affected by the proposed project. No historic properties would be altered, directly or indirectly, as a result of the restoration of these two stream sites. The proposed action is limited to excavation, fill and installation of rock and wood features in a previously disturbed channel, and staging of material and equipment within a gravel pit in the immediate vicinity of the stream sites. As no disturbance would be made, no mitigation is planned for this site.

A review request was submitted to State Historic Preservation Office (SHPO) on 1/10/2022 and a review is in progress. If additional information or restrictions are made available during the EAW review period, they will be incorporated into the Record of Decision. The Section 106 process provides an ongoing public regulatory authority for these possibly historical resources.

16. Visual:

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

Little and Big 39 Creeks are in valleys. Visibility of the project sites would be limited to hilltops in the surrounding areas. All construction would be conducted during daylight hours, so no lights would be visible at any time. The sites are adjacent to an operating tailings basin with more and bigger equipment operating during daylight hours 7 days a week. The increase in equipment operation that could cause light, dust or noise pollution would be minimal. Most of the work related to this project would be done in the stream or adjacent riparian area. These areas are the lowest elevation within the valley and from many vantage points are hidden from view.

17. Air:

a. Stationary source emissions - Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

No stationary source emissions would be created from this project.

b. Vehicle emissions - Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

The construction equipment required to complete this project would be limited to the project area. This area is approximately 2.9 miles from the nearest residence and approximately 0.5 miles from the nearest public road. The area is remote and is adjacent to the much larger operation of the active tailings basin. The most effective tool to reduce emissions in this area is to limit construction time. Working in streams and using bypasses requires planned and efficient movements to complete tasks in the shortest amount of time possible. This aspect of the project would reduce emissions when compared to similarly sized project without the constraints of working in bypassed or temporarily blocked streams.

c. Dust and odors - Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 17a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

The construction equipment required to complete this project would be limited to the project area. This area is approximately 2.9 miles from the nearest residence and approximately 0.5 miles from the nearest public road. The area is remote and is adjacent to the much larger operation of the active tailings basin. The increase in equipment operation that could cause light, dust or noise pollution would be minimal. The potential for fugitive dust would be minimal due to work in wet conditions. Work in wet conditions, rapid re-vegetation and erosion/sediment control BMPs would minimize potential for lift off.

18. Greenhouse Gas (GHG) Emissions/Carbon Footprint

a. GHG Quantification: For all proposed projects, provide quantification and discussion of project GHG emissions. Include additional rows in the tables as necessary to provide project-specific emission sources. Describe the methods used to quantify emissions. If calculation methods are not readily available to quantify GHG emissions for a source, describe the process used to come to that conclusion and any GHG emission sources not included in the total calculation.

Identified greenhouse gas emissions include direct emissions during the construction of the project. Emissions are from mobile equipment, light truck and construction equipment. There is also a small conversion of wetland to open-water and a creation (e.g., carbon sink) by grassland converted to forested land. Fuel use and vehicle miles were estimated from previous similar projects. Table 10 and Table 11 summarize the Mobile GHG Emissions and the source and sinks resultant of the project, respectively.

Table 10: Summary of Estimated Mobile GHG Emissions

Emission Source	Number of Units[4]	Hours of Operation/year[2]	Vehicle Type	Fuel Type	Fuel Amount (total gallons)	CO_2e (tons/ year)
Operations - gasoline mobile sources On-Road	4	100	Passenger Cars	Gasoline	521	1.68
Construction - diesel mobile sources - On-Road	2	100	Medium- and Heavy-Duty Trucks	Diesel	274	2.05
Operations - diesel mobile sources - On-Road	2	100	Light Trucks	Diesel	511	1.92
Construction - diesel mobile sources - Nonroad	7	500	Construction Equipment[3]	Diesel	4,375	16.43
					Total	22.08

Notes:

1 for Nonroad sources, fuel amount is calculated based on fuel usage estimates per horsepower-hour (0.05 gallons for diesel, 0.12 gallons for gasoline) from Table A9-3E in SCAQMD CEQA Air Quality Handbook (https://www.cvwd.org/ArchiveCenter/ViewFile/Item/608).

2 Based on 10 hrs/day, 5 days/week for 16 weeks for construction and 2 hrs/day, 5 days/week for 16 weeks for operations

3 Includes equipment, such as dumpers, and excavators, as well as fuel consumption from trucks that are used off-road in construction.

4 Numbers are based on a hypothetical assessment and not from a specific source.

Table 11: Summary of GHG Sources and Sinks from Land Use Changes

Emission Source	Area (acres)	Net CO2 Flux for land use conversion (M metric tons CO2e)[1,2]	2019 Total US Land Use Change from Wetland to "other" (thousands of hectares)[3]	2019 Total US Land Use Change from Grassland (thousands of hectares)[3]	CO2e emission factor (metric tons CO2e/acre/year)	CO2e Emissions (tons/year)
Land Use Change - Conversion from wetlands to open water "other"[2]	0.1	1.5	121	--	5.02	0.55
Land Use Change - Conversion from grassland to Forest Land[1]	1.4	(10.5)	--	992	(4.28)	(6.61)
					Total	(6.06)

Notes:

1 Table 6-24: Net CO2 Flux from Forest C Pools in Land Converted to Forest Land by Land Use Change Category, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 - 2019. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019

2 Table 6-66: Net CO2 Flux from C Stock Changes in Vegetated Coastal Wetlands Converted to Unvegetated Open Water Coastal Wetlands, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 - 2019. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019

3 Table 6-5: Land Use and Land-Use Change for the U.S. Managed Land Base for All 50 States, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 - 2019. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019

b. GHG Assessment

i. Describe any mitigation considered to reduce the project's GHG emissions.

This project would include converting grassland to forested land and would ultimately be creating a carbon sink. It was estimated that this land use conversion would result in a negative CO_2^e of 6.1 tons/year. Over the lifetime of this project (50 years), there would be a total carbon sink of 330 tons. Therefore, there would be no proposed CO_2^e mitigation considered for this project; however, adaptive mitigation for the construction site would be considered, including:

- Reduce any unnecessary clearing and grubbing
- Maintain tree canopy when feasible
- Practice vehicle and equipment maintenance

ii. Describe and quantify reductions from selected mitigation, if proposed to reduce the project's GHG emissions. Explain why the selected mitigation was preferred.

Not applicable

iii. Quantify the proposed project's predicted net lifetime GHG emissions (total tons/#of years) and how those predicted emissions may affect achievement of the Minnesota Next Generation Energy Act goals and/or other more stringent state or local GHG reduction goals.

Not applicable

19. Noise

a. Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Additional heavy equipment would be added to the general area related to the construction of the project. Project work would be conducted during daylight hours Monday - Friday. This is approximately the same hours of the adjacent tailings basin equipment operation. At no time would the noise intensity from equipment related to this project exceed the noise intensity from equipment used in daily operation of the tailings basin. There are no sensitive receptors near the project area. This area is approximately 2.9 miles from the nearest residence and approximately 0.5 miles from the nearest public road. The effect of the added noise would be limited and temporary. The construction crew will be required to follow local noise ordinances and restrictions. Post construction, the operation of the project would produce no noise.

20. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Other than mobilizing equipment and personnel onsite, the majority of the materials would be obtained from onsite sources. Therefore, additional traffic on public roads would be minimal. No additional parking spaces would be needed. Equipment staging would occur in areas limited in size and would be restored to a condition that is equal to or better than the existing conditions. Daily traffic generated would be less than 10 vehicles per day. Due to the remote nature of the work, no alternative transportation modes would be applicable.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. *If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW*. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance,

A short period of mobilization would increase semi-truck traffic in area, but the area is an active industrial site that frequently has deliveries on semi-trucks. Increases would be negligible. During construction, crews would report daily during weekdays. This would be an addition of approximately 10 vehicles per day. Most materials required for the project would be acquired on-site, so there would not be many deliveries for the completion of this project. The site frequently sees increases due to maintenance, inspection and other work related to the operation of the tailings basin.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

None, due to the limited traffic effects of the project.

21. **Cumulative potential effects:** (Preparers can leave this item blank if cumulative potential effects areaddressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

Potential for erosion

Soil exposed during construction would have the potential to erode by water or wind. This effect would be minor and temporary as the stream sections would only be dewatered during the work day. BMPs would be utilized to minimize erosion. The geographic extent of this effect would be up to 1 mile downstream.

Loss of wetland

Minimal impacts to wetlands during the digging of a new channel would be temporary during the construction period. Post-construction, the connection of the stream to the floodplain would provide conditions needed for the creation of an estimated 7.8 acres of wetland. This impact would be minor and limited to the project footprint.

Potential for spill of hazardous materials

Gasoline to power the construction equipment would be stored on site temporarily during the construction of the project. The potential for a spill would be minor and would be mitigated by a Spill Prevention Control and Countermeasures Plan and by following applicable federal and state rules regarding the storing of such materials, clean up and the reporting of spills. This effect would be limited to the project footprint.

Loss of stream habitat

The streamflow would be pumped around the project area during the workday for each 500-foot section of stream channel that undergoes reconstruction. This would create dry conditions and displace the species that normally occupy that reach. This effect would be temporary and would be mitigated by stopping pumping during the off-hours of construction and limiting the project to non-spawning periods. The geographic extent of this effect would be limited to the 500-foot reach.

Dispersal of wildlife

Wildlife would be temporarily affected by the noise and the presence of construction staff during the project. Some species would be dislocated during this period. This effect would be temporary and limited to a one-mile radius around the project site. The wildlife-friendly erosion control would allow for a safer space upon their return to the site.

Removal of plant communities/vegetative cover

The temporary removal of plant communities and vegetative cover while the stream channel is being relocated would cause temporary effects, limited to the project footprint. The sections would be replanted with native seeds and plantings, including the relocation of alder trees. Effects would be mitigated by performing construction in phases and invasive species monitoring that would continue for five years post-project.

Emissions/Greenhouse Gases

Emissions created by construction vehicles would produce a temporary effect during construction of the project. The magnitude of emissions will be limited and minimized by making intentionally efficient movements to complete tasks in the shortest possible time. Post-construction the project will produce no emissions and will instead be a carbon sink. See EAW item 18 for more details.

Creation of dust

Dust would be created during earth moving activities during the construction of the project. This effect would be limited to a half-mile radius around the project footprint and would be mitigated by working in wet conditions and the use of sediment BMPs. This effect would be minor and temporary.

Noise

Noise from construction activities would create a minor effect during the daylight hours while machines are running. The noise would be minimal with respect to background noise at the active tailings basin site adjacent to the project site. The noise would be limited to a one-mile radius and will comply with all local noise ordinances and restrictions.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

No projects have been identified as reasonably foreseeable for which a basis of expectation has been laid. Below are descriptions of the projects identified, and details that evaluate why they do not fit the definition.

As of the publication of this document, several projects have been identified that are currently in the preliminary planning stages and do not meet the definition of reasonably foreseeable projects for which a basis of expectation has been laid, as is described in Rule 4410.0200 subp. 11a. These projects include:

- Beaver Bay water intake repair/replacement
- Housing development off Golf Course Road in Silver Bay.
- Housing development off Marks Drive in Silver Bay.
- Housing along Penn Avenue in Silver Bay.
- Multimodal trailhead center off Outer Drive in Silver Bay.
- Expansion of East Lakeview Drive in Silver Bay.
- Boathouse Bay Housing and Resort development in Silver Bay Business Park.
- New street between Outer Drive and Bank Boulevard in Silver Bay.
- Water treatment facility upgrades and booster station in Silver Bay.
- Renovation of William Kelley High School and bus garage in Silver Bay.
- Silver Bay City Street Improvement project. (Preliminary Engineering is completed but work has not been scheduled.)

Projects that have been permitted and/or scheduled include the following:

North Shore Camping Company Project

Leisure Hotels and Resorts plans to build the North Shore Camping Company Project, a 49-unit campground, within the city of Beaver Bay at 4595 Highway 61. The project will include the construction of camping sites, 3 staff park homes, a bath house, a maintenance shed, 2 rustic latrines, septic fields, a recreation area, a bike trail, granite paths, gravel parking areas, and drilling two water supply wells. An EAW was written for this project by the RGU, the City of Beaver Bay.[19] Work expected during the summer and fall of 2022 include construction of the bath house. The geographic area of the effects described in the referenced EAW do not overlap with any effects described for the project.

Culvert Replacements on Hockamin Creek, Finland

Culverts will be replaced during the summer of 2022 on Hockamin Creek at Hefflefinger Road and at Breezy Lane. The Hefflefinger Road project will occur between July 1st and September 15th. The Breezy Lane culvert replacement has not yet been scheduled. These streams are about ten miles away and in the Baptism Watershed, so environmental effects would not overlap.

Mile Post 7 Railroad Relocation and Dam Construction

Notification has been given for future operations at the Mile Post 7 Tailings Facility to extend Dams 1 and 2, relocate the materials supply rail line, continue placement of fine tailings into the basin, and develop a new borrow site to supply clay suitable for dam construction. Extension of the dams and relocation of the rail line will allow the placement of tailings in portions of the basin previously inaccessible because of the existing rail line. The schedule presented by Northshore Mining indicates that this work would begin in 2026. This stated timeframe would not overlap with the timeframe for the project, thus no environmental effects would overlap.

MNDOT Bridgework at Silver Creek and Stewart River

Continuing work that began in 2021, road construction will occur on the Silver Creek and Stewart River bridges.[20] At Silver Creek, construction of a new bridge is replacing the box culvert, including a bike and pedestrian crossing on bridge. At the Stewart River Bridge, traffic on Hwy 61 will continue on the temporary bypass at Silver Creek through the fall of 2022. The bypass carries northbound and southbound traffic on 11-foot driving lanes. Because of the limited amount of traffic generated by the project, the environmental effects would not overlap.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

Because no projects were identified as being reasonably foreseeable for which a basis of expectation has been laid and causing effects within an overlapping geographic area and/or timeframe, no potential cumulative effects are anticipated. Since no overlapping effects are

[19] EAW for North Shore Camping Company. Published in the August 3, 2021 EQB Monitor. https://www.beaverbaymn.com/vertical/Sites/%7B62AD44A4-CBA5-4F9A-A046-017EBA9D9274%7D/uploads/North_Shore_Camping_Co_EAW_2021-07-27.pdf

[20] MNDOT Webpage for Silver Creek and Stewart River Bridge Project. https://www.dot.state.mn.us/d1/projects/hwy61-bridges/index.html

identified in regard to the identified projects, all cumulative effects will be as described in item 21a.

22. **Other potential environmental effects:** If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

No additional effects are anticipated.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature Sara R Mielke Digitally signed by Sara R Mielke Date: 2022.03.07 16:14:41 -06'00'

Date _____

Title EAW Project Manager