



WETLANDS AND RIPARIAN RESOURCES VOL 1 BASELINE METHODS AND DATA

TWIN METALS MINNESOTA PROJECT Environmental Review Support Document

Prepared for Twin Metals Minnesota, LLC
Prepared by

Document No. TMM-ES-025-0145-01
Revision 0A
November 20, 2020



**TWIN METALS MINNESOTA PROJECT
WETLANDS AND RIPARIAN RESOURCES VOL 1
BASELINE METHODS AND DATA**

Environmental Review Support Document

REVISION RECORD

Revision	Date	Description	EDMS Download Date	Project Configuration Version
0A	11-20-2020	Submitted for Agency Review – TOC		

REVISION NARRATIVE

DISCLAIMER

This document is a working document. This document may change over time because of new information, or further analysis or deliberation.



**TWIN METALS MINNESOTA PROJECT
WETLANDS AND RIPARIAN RESOURCES VOL 1
BASELINE METHODS AND DATA**

Environmental Review Support Document

TABLE OF CONTENTS

1.0 INTRODUCTION.....1

2.0 SUMMARY.....1

3.0 PROPOSED ACTION AND ALTERNATIVES.....1

3.1 PROPOSED ACTION.....1

3.2 ALTERNATIVES TO THE PROPOSED ACTION.....2

3.3 NO ACTION ALTERNATIVE.....2

4.0 REGULATORY FRAMEWORK.....2

5.0 AFFECTED ENVIRONMENT.....2

5.1 AREAS OF ANALYSIS.....2

 5.1.1 Areas of Analysis for Direct Impacts.....3

 5.1.2 Areas of Analysis for Indirect Effects.....3

5.2 METHODS.....3

 5.2.1 Desktop Review.....3

 5.2.2 Wetland Delineations.....4

 5.2.3 Direct and Indirect Impact Data Acquisition and Analysis.....4

 5.2.4 Quality Control.....4

5.3 EXISTING CONDITIONS.....5

6.0 REFERENCES.....5

TABLES

FIGURES

APPENDICES



**TWIN METALS MINNESOTA PROJECT
WETLANDS AND RIPARIAN RESOURCES VOL 1
BASELINE METHODS AND DATA**

Environmental Review Support Document

LIST OF ABBREVIATIONS, ACRONYMS, AND SYMBOLS

TMM

Twin Metals Minnesota, LLC

1.0 INTRODUCTION

The Twin Metals Minnesota, LLC (TMM) Project (Project) is focused on designing, permitting, constructing, and operating an underground copper, nickel, cobalt, platinum, palladium, gold, and silver mining project. Located approximately nine miles (14 kilometers [km]) southeast of Ely, Minnesota, and 11 miles (18 km) northeast of Babbitt, Minnesota, the Project targets valuable state, federal, and private minerals within the Maturi deposit, which is a part of the Duluth Complex geologic formation.

All potential Project infrastructure locations presented herein are considered preliminary and are undergoing further design and engineering evaluations which will dictate final design and locations. Further information about TMM and the Project is located at <http://www.twin-metals.com/>.

The purpose of this document is to provide necessary information for the environmental review and permitting process. TMM retained [insert Consultant name] (insert abbreviated Consultant name) to complete [insert text].

2.0 SUMMARY

This report will:

- Describe the proposed action and alternatives;
- Establish the area where baseline conditions of wetland and riparian resources need to be assessed;
- Define the methodology used to assess the baseline conditions;
- Include a description of soils, hydrology, and vegetation elements that characterize wetlands and descriptions of riparian area characteristics;
- Describe the quantity and quality of the wetland and riparian resources present in the area of analysis; and
- Reference relevant sections of the FSDD, SEAW, and / or federal documents to remind the reader there is a defined scope that is being followed.

The baseline conditions and delineations will be used define the environmental effects of the proposed action and alternatives which will be presented in the *Wetlands and Riparian Resources Data Package*.

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Proposed Action

- Reference the TMM Project Description and Alternatives document and indicate the proposed action is defined within this document.

3.2 Alternatives to the Proposed Action

- Reference the TMM Project Description and Alternatives document and indicate the alternatives to the proposed action are defined within this document.

3.3 No Action Alternative

- Reference the TMM Project Description and Alternatives document and indicate the no action alternative is defined within this document.

4.0 REGULATORY FRAMEWORK

- Discussion of Clean Water Act applicability to wetland.
 - U.S. Army Corps of Engineers - Waters of the U.S. / Section 404
 - Environmental Protection Agency / Minnesota Pollution Control Agency 401 Certification
 - Antidegradation
- Discussion of Minnesota Wetland Conservation Act.
 - Rare Natural Communities (Minn. Stat § 103G.2242, subd. 1(d) and Minn. R. 8420.0515, subp. 3)
- Discussion of public waters as applicable.
- Shoreland as it relates to riparian areas.
 - Minn. R. 6120.2500 - 6120.3900

5.0 AFFECTED ENVIRONMENT

The affected environment will be deconstructed by features and / or activities of the proposed action and alternatives that would cause the effects to wetlands or riparian resources. For example:

- tailings management site;
- plant site;
- roads;
- construction;
- operation;
- closure; or
- reclamation.

5.1 Areas of Analysis

The method for defining the area of analysis should match the areas of effects discussed in the other volumes of the *Wetlands and Riparian Resources Data Package*. Baseline conditions should be assessed for anywhere that the proposed

action or alternative could have effects on wetlands and riparian resources. Within this area of effects the baseline conditions will be characterized.

Area of analysis will be developed and described. Area of analysis will be developed accounting for the following:

5.1.1 Areas of Analysis for Direct Impacts

- Areas of analysis of direct effects will be determined using the construction limits of the proposed action and alternatives that could impact the existing conditions of wetlands and riparian resources through drainage, dredging and filling.

5.1.2 Areas of Analysis for Indirect Effects

- Areas of analysis of indirect effects to the baseline conditions will be determined considering areas where changes in regional hydrology, changes in water quality, or changes due to dust deposition from the proposed action and alternatives could occur over time.
 - Changes in hydrology could be a result from water management features resulting in surface water rerouting or groundwater drawdown from underground mining. Changes in water quality could be a result from dust deposition.
 - The indirect effect area of analysis to wetlands and riparian resources will be determined by modeling based on the future scopes of work outlined in the data sources for hydrology and water quality changes: of the *Water Resources Data Package* and the area of analysis for indirect effects from dust deposition will be defined in the *Multimedia Screening Assessment Data Package*.

5.2 Methods

Description of the methods used to identify, quantify, and qualify wetland and riparian resources.

5.2.1 Desktop Review

This will include review of publicly available data and both the spatial extent of wetland in the areas of analysis as well as estimated wetland plant community types. Sources reviewed will include:

- USGS topographic maps and digital elevation models;
- USFS ELT soils data;
- NRCS soils data;
- MDNR NWI update mapping;
- USFWS NWI map;

- SNF USFS stand data;
- USGS National Hydrography Data Set;
- MDNR Protected / Public Waters mapping;
- Farm Service Administration aerial photography; and
- Forest Plan maps.

5.2.2 Wetland Delineations

A field delineation will be conducted to identify wetlands, regulatory boundaries, and functional assessments within the areas of analysis. The presence / absence of wetlands will be identified in the field using routine level two on-site delineation methods and criteria in accordance with the USACE Wetlands Delineation Manual (USACE Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetlands Determination Manual: Northcentral and Northeast Region (Version 2.0) (USACE, 2012).

A Wetland Functional Assessment will also be conducted for the Project area using the Minnesota Routine Assessment Method to assess the following functions and values:

- Vegetative diversity / integrity;
- Maintenance of characteristic hydrologic regime;
- Flood / stormwater / attenuation;
- Downstream water quality;
- Maintenance of wetland water quality;
- Shoreline protection;
- Maintenance of characteristic wildlife habitat structure; and
- Maintenance of characteristic fish habitat.

5.2.3 Direct and Indirect Impact Data Acquisition and Analysis

After delineation and functional assessment of wetlands in the Project area were complete, further work will be done to define indirect impacts to wetlands.

- Installing nested piezometers;
- Collecting and measuring undisturbed peat thicknesses and subsurface structure;
- Characterizing wetland water quality; and
- Characterizing wetland seasonal water level variability.

5.2.4 Quality Control

- Discussion of QA/QC or QAPP.

5.3 Existing Conditions

Using the defined areas of analysis and methods, existing conditions will be described within this section including the following:

Wetland Delineation and Classification

- Multiple figures / tables summarizing wetland acreages and types.

Wetland Hydrology, Wetland Vegetation, and Community Types

- Hydrology and hydrogeologic settings on the wetlands.
 - Discussion of the degree of hydraulic connection between the wetland areas and adjacent unconsolidated deposits and bedrock
- Soils.
- Wetland hydrology monitoring.
 - Water levels / hydrographs
- Descriptions of wetland community types.
 - Discussion of community types, quality and vegetative diversity, plant types
- Rare natural communities.

Wetlands Functional Assessment

- Quality and vegetative diversity / integrity assessment.
- Discussion of past disturbances.

Riparian Areas

- Description of riparian areas by resources (i.e., lakes, rivers).
- Tables and figures.

6.0 REFERENCES



TABLES



**TWIN METALS MINNESOTA PROJECT
WETLANDS AND RIPARIAN RESOURCES VOL 1
BASELINE METHODS AND DATA**

Environmental Review Support Document

FIGURES



APPENDICES



**TWIN METALS MINNESOTA PROJECT
WETLANDS AND RIPARIAN RESOURCES VOL 1
BASELINE METHODS AND DATA**

Environmental Review Support Document

APPENDIX [#A, B, C, D]

[APPENDIX TITLE]



**TWIN METALS MINNESOTA PROJECT
WETLANDS AND RIPARIAN RESOURCES VOL 1
BASELINE METHODS AND DATA**

Environmental Review Support Document

APPENDIX [#A, B, C, D]

[APPENDIX TITLE]

[Insert page break for each additional appendix.]