



GEOCHEMISTRY VOL 2

MINE WATER LOADING INPUTS TO GOLDSIM MODEL

TWIN METALS MINNESOTA PROJECT

Environmental Review Support Document

Prepared for Twin Metals Minnesota, LLC
Prepared by

Document No. TMM-ES-025-0152-02
Revision 0A
November 20, 2020



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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.



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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

- Provide a high-level summary of what is presented within this report.
- Describe how this report volume relates to the other volume of the *Geochemistry Data Package*.
- Reference relevant sections of the FSDD, SEAW, and / or federal documents to remind the reader there is a defined scope that is being followed.

3.0 PURPOSE AND SCOPE OF MINE WATER LOADING SOURCES

The approach to mine water quality modeling using GoldSim will be described in the *Water Resources Data Package*. This report will describe the approach for the development of mine water loading (i.e. GoldSim inputs) from the following sources during operations and closure (as applicable):

- Surface Facilities:
 - Dry stack facility
 - Temporary rock storage facility
- Underground Mine
 - Damaged rock zone
 - Waste rock backfill
 - Paste tailings backfill
 - Blasting residuals

4.0 MINE WATER QUALITY MODELING LOADING SOURCES

A description of the factors that affect mine water loading (e.g., exposure to oxygen, exposure to water, duration of exposure to oxygen and water)

4.1 Dry Stack Facility

A description of the geochemical conceptual model for the dry stack facility will be provided within this section. The approach for the development of dry stack tailings loading terms will be described.

4.2 Temporary Rock Storage Area

A description of the geochemical conceptual model for the temporary rock storage area will be provided within this section. The approach for the development of dry stack tailings loading terms will be described.

4.3 Underground Workings

A description of the geochemical conceptual model for the underground workings during operations and closure will be provided within this section. The approach for the development of underground workings loading terms will be described.

4.3.1 Damaged Rock Zone

4.3.2 Backfill – Waste Rock and Paste Tailings

4.3.3 Blasting Residuals

5.0 REFERENCES



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FIGURES



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APPENDICES



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APPENDIX [#A, B, C, D]

[APPENDIX TITLE]



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APPENDIX [#A, B, C, D]

[APPENDIX TITLE]

[Insert page break for each additional appendix.]