TECHNICAL MEMORANDUM

DATE 10 January 2020 **Project No.** 19120487

TO Karyn Lewis
Lupin Mines Inc.

CC Dionne Filiatrault

FROM Ken Bocking **EMAIL kbocking@golder.com**

SUPPORTING INFORMATION TO THE CONCEPTUAL DESIGN FOR THE WASTE ROCK "DOME" AT LUPIN MINE

1.0 INTRODUCTION

Lupin Mines has applied for a renewal and amendment of their existing Type "A" water licence No. 2AM-LUP1520. A Final Closure and Reclamation Plan (FCRP) was filed as part of the application. In connection with the application, a Technical Meeting / Pre-Hearing Conference (TM/PHC) was held in Kugluktuk on June 6 and 7, 2019. The decision from the TM/PHC is provided in Nunavut Water Board (NWB), 2019. Appended to the decision was a list of commitments for additional information to be provided to the NWB.

Commitment 5 requires LMI to submit a Technical Memo providing:

> *Preliminary design level explanation of waste rock storage "Dome" design (including typical cross section, seepage, topography, geochemistry and stormwater drainage estimates, etc.)".*

The original response to the commitment was provided on 15 October 2019. Follow up comments and a meeting with CIRNAC on 7 January 2020 identified that additional information is needed to show a typical cross-section through the "dome". This Technical Memo provides supporting details regarding the typical cross-section. It should be read in conjunction with the original commitment response.

2.0 DOME CROSS-SECTION

Figure 2 attached provides a conceptual cross-section through the proposed waste rock dome. As shown on Figure 1, the cross-section is oriented east-west and passes through the existing main fuel storage pad, across the crown pillar opening and extends to the east of the existing waste rock pad beyond the log cabin.

For clarity, the vertical scale on Figure 2 has been exaggerated 5 times relative to the horizontal scale. The solid red line is the current ground surface. The cross-section shows the placement of imported waste rock (relocated from areas outside of the dome) over the top of existing waste rock in the mine - mill area pad. The top surface of the dome, with its 1.0 m thick esker cover, is graded at a minimum cross-slope of about 1.59% in order to enhance the shedding of clean runoff. The actual elevation of the top surface may vary depending on the actual volume of rock that is relocated.

Golder Associates Ltd.
16820 107 Avenue, Edmonton, Alberta, T5P 4C3, Canada T: +1 780 483 3499 F: +1 780 483 1574

3.0 CLOSURE

We trust that this technical memorandum meets your present requirements. If you have any questions, please do not hesitate to contact the undersigned.

GOLDER ASSOCIATES LTD.

Ken Bocking, Msc, PEng (ON, Sask, Nu/NT)
Principal, Geotechnical Engineer

KAB/md

Attachments: Figure 1: Plan View of Waste Rock Dome Area
Figure 2: Conceptual Cross-section of Waste Rock Dome

ATTACHMENTS

Figure 1: Plan View of Waste Rock Dome Area

Figure 2: Conceptual Cross-Section of Waste Rock Dome

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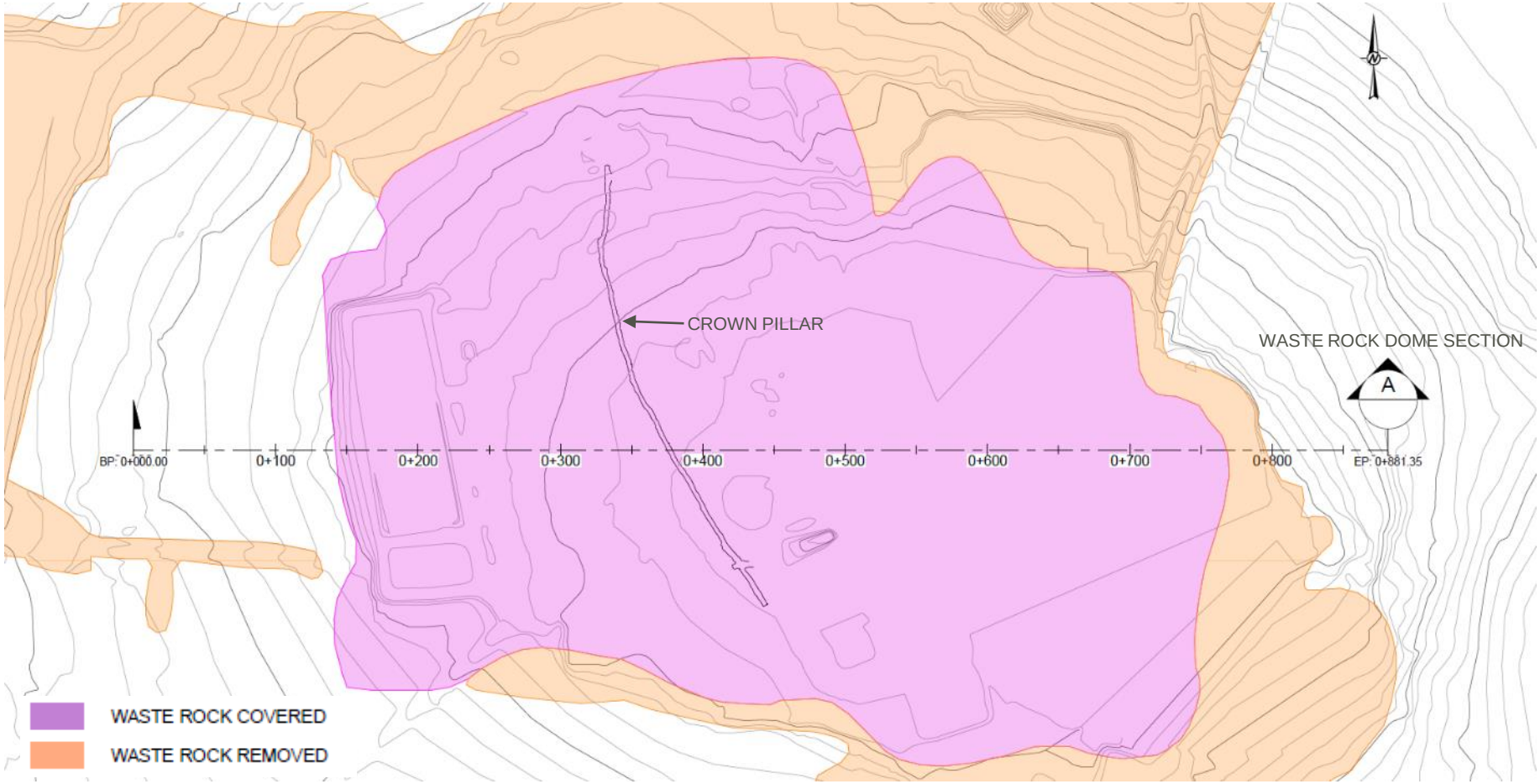
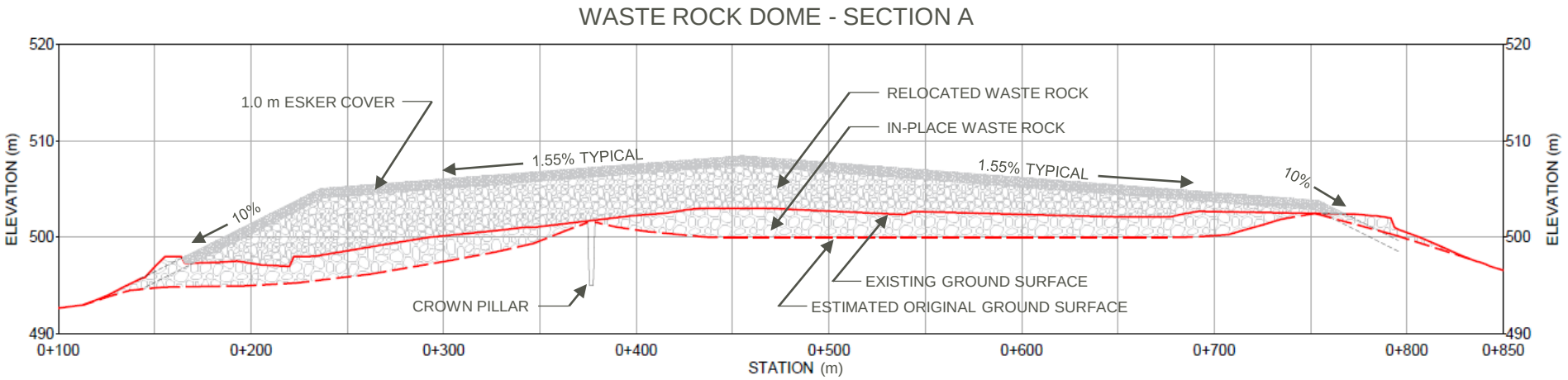


Figure 2: Conceptual Cross-Section of Waste Rock Dome



NOTE: 5X VERTICAL EXAGGERATION