Climax Mine
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August 2, 2024

Amy Yeldell, Environmental Protection Specialist
Colorado Division of Reclamation, Mining and Safety
1313 Sherman St., Rm. 215
Denver, CO 80203

Re: TR-37 Adequacy Review #3 Response – Climax Mine Permit No. M-1977-493

Dear Ms. Yeldell:

The purpose of this letter is to provide additional information requested in DRMS's June 28, 2024, TR-37 Adequacy Review. The Division's comments are in italics with Climax's response following.

1) *Are there foundations (Floors or footers) that need to be demolished associated with the following structures? If so, provide the foundation dimensions, depth, reinforcements, etc.*
   a) *TAILING DIST HOUSE - SUPERSTRUCTURE (61x40x14)*
   b) *MILL TANK VALVE HSE1 - SUPERSTRUCTURE (21x29x10)*
   c) *MILL TANK VALVE HSE2 - SUPERSTRUCTURE (20x20x10)*
   d) *NEW SCALE HOUSE - SUPERSTRUCTURE (80x16x16)*
   e) *OPEN PIT FUEL PUMP HSE - SUPERSTRUCTURE (40x20x12)*
   f) *TENMILE TUNL OFC - SUPERSTR. (trailer) (50x20x12)*
   g) *TENMILE BARGE - SUPERSTRUCTURE (36x36x10)*
   h) *POND SHOP DOCKS - SUPERSTRUCTURE (200x20x3)*
   i) *Explosives Shed (Powder Storage) (13x8x8)*
   j) *New Mill Building (1105x805x13)*
   k) *Train Shack at Ten Mile North Portal (50x20x14)*
   l) *MAYFLOWER HLDNG TANK - SUPERSTRUCTURE (28x28x18)*
   m) *3 MILL SUBSTATION - SUPERSTRUCTURE (155x30x15)*

Cost to demolish floors and footers for the facilities have been added to the cost model. Dimensions are based the 2019 cost estimate.

2) *Per RS Means a 30% reduction of the demolition volume is allowed for buildings with no interior walls. Previously in 2019, buildings were estimated using a reduction volume of approximately 24%. Does CMC have any sort of rationale as to why a different reduction factor was applied?*

RSMeans 02 41 16 13.0750 states "for buildings with no interior walls, deduct 30%. The source for 24% is unknown.

3) *Previously relatively flat areas were drill seeded and straw mulched while steeper slopes employed hydroseeding and hydro mulch. The revised Reclamation Plan states that all areas will be broadcast or hydroseeded and only the steep slopes will receive hydromulch.*

a) *Will straw mulch be employed on flatter terrain?*

E-6.2 will be revised to state that cover material on level areas will be scarified using an agricultural tractor and disc. The Unit cost has been added to each facility from RSMeans (2024) 32 91 13 23.6000 (tilling topsoil, 2-inch depth, disk harrow).

In the cost model, all level topsoil areas will be revised to include scarifying, applying straw mulch (2,000 pound /acre and drill seeding). Straw mulch and drill seeding rates are from the contractor provided rates for 2023 from the Standard Reclamation cost Estimator model (SRCE 2023).

b) *Furthermore if a tractor is being used to mulch, the Division suggests the area also be drill seeded rather than broadcast.*

Per discussion with DRMS during the July 15 workshop, drill seeding is used in the cost model for flatter terrain.

4) *The planting of trees in select areas is at a rate of 450 trees per acre. Please specify the species of tree(s) to be planted in these select areas.*

The unit cost from RSMeans does not specify species. We anticipate that the species will include subalpine fir and Englemann spruce. A test plot program will help us to make that final determination.

5) *What is the anticipated failure rate associated with the planting of tree bare root stock?*

We could not identify reliable sources to estimate tree planting failure. For the cost model a 20% failure rate is assumed. Future revisions will make a determination on what failure rate to use when we have actual data from our test plot program.

6) *Section E-7.1.4 Hydric Seed Mix. Under table E-8 alternative shrubs are provided however no shrubs are included within the see mix table E-7. Should there be shrubs included within this seed mix?*

Shrubs are not included. We will be refining the optimal seed mix for final reclamation as our test plot programs mature.

7) *If the SDP, PDWTP and MRWTP are anticipated to exist in perpetuity, please include a statement within the reclamation plan clarifying that these are permanent structures and that no bonding needs to be associated with their removal.*

Text will be added to Exhibit L, Section 2.23, stating that the water treatment plant and SDP are permanent structures, and no bonding is included for removal.

a) *If any other structures are to remain post-mining please also explicitly list them out.*

No.

8) *The Load Haul team selected is a 740 Truck with a 938 Loader. A 938 Loader cannot effectively reach/load a 740 Truck. According to CAT a 962, 966 or 972 are the ideal match tool. For the Divisions bonding purposes a 966 High Lift will be employed unless directed otherwise by CMC.*

A CAT 966 will be added to the model and paired with a 740 for the Load/Haul calculations.

9) *Most Dozer tasks have a spoil pile correction factor of 1.0 (Dozing over a cliff). The spoil pile factor is based on how the grading is to occur and should vary. Dozing over a cliff was selected for most dozer tasks which is inaccurate. The Division will apply rough grading 0.8 which is more accurate unless additional information is provided.*

Dring the July 15, workshop with DRMS, the following spoil pile factors were agreed. The cost model has been revised to include these factors.

SPOIL PILE FACTOR

Dams 1.0
Tailings surface 0.8
Overburden 0.9

10) *Most Dozer tasks have a material weight correction factor of 1.0. The Weight Correction factor is based on the material description and should vary throughout the tasks based on what is being dozed. What material description is being used to derive this value?*

All stockpiles and cover material are similar material based on experience with earthwork at the mine. Material weight was 1600 lbs/CY, corresponding to topsoil. All stockpiled material consists of a mix of weathered waste rock, alluvium topsoil and subsoil. The topsoil designation is considered appropriate. CAT Handbook Ed. 49 state that dozer production tables assume a material density of 2,300 pounds/CY. Therefore, the weight correction factor for dozing should be 2300/1600 = 1.44. Climax proposes to change the dozer weight correction factor to 1.44.

For the overburden stockpiles, we will use gravel material type (density 2,550 lbs/CY, so the correction factor will be 0.90.

11) *(AR1 #9) Volumes of material have been provided for civil activities however, it is not specified if these volumes are bank, compact or loose. Please clarify the volume units for each task type. No formal update to Exhibit L was provided within the Adequacy 1 responses.*
    a) *If all volumes are LCY then once compacted sufficient topsoil depths may not be applied.*

All earthwork quantities are neat line quantities and do not account for swelling, shrinking, or bulking. All earthwork material is from stockpiles that have been previously excavated and placed in stockpiles. Therefore, no swell is expected in the volumes provided.

Cover material will be placed loose to accommodate vegetation, so will not be compacted.

During the July 15 workshop, the following swell factors were agreed to;

Cover material (topsoil)	1.2
OVERBURDEN (broken granite)	1.3

b) *If CCY or BCY once hauled, the volume is loose and the swollen volume for grading has to be accounted for.*

See response to a) above.

c) *Swell rate varies based on the material type and if it's originally BCY or CCY. Please clarify accordingly or address concerns related to items a and b.*

See response to a) above.

12) For dozing the Open Pit - Overburden (2,354,000 CY) one D6 LPG was selected. That is a tremendous amount of material to be graded for a single small dozer. Please explain the rationale for this when larger (more efficient) equipment could be selected. This is true for several other dozer tasks.

D6 was used for previous estimates, so was not changed. The line item will be revised to select a D9T.

13) (AR2 #27 and #28 Continued) On the CVS Cost Data there is an item "Pre-Excavation Work and Water Management" which costs $519,326 and "Finish Work" which costs $129,000.

a) *How many task hours are associated with this work.*

The costs are lump sum estimates based on previous contractor costs. Detailed designs are not available. The detail requested would require a contractor estimate which is beyond the level of detail for a financial security estimate. Detailed estimates will be prepared prior to final closure.

For the DRMS estimate, we will assume a fleet including a CAT 336 excavator, CAT D8 dozer and CAT 12M grader. Hourly cost for the fleet, including labor, is $477.81. Applying this rate to $519,326 (519,326/477.81), the estimated hours are 1,087. Using the same approach, for Finish Work, the hours required are 270.

b) *What equipment needs to be mobilized?*

See response to a. No other equipment needs to be mobilized.

14) How many task hours are associated with installing the hydrologic protection features? Please list by area the anticipated number of hours.

Hours for hydrologic protection features for each area are calculated using the productivities from the RSMeans line items used for each feature. Hours are:

Open pit		112
Mine Mill Complex		2,552
North 40 OSF		2,416
McNulty OSF		4,690
Tenmile TSF		2,932
Mayflower TSF		3,394
Robinson TSF		2,165
1 Dam		1,118
Robinson Lake	656	
5 Dam		877

14) Please provide the Division with the RSMeans 2024 cost for 30" corrugated HDPE Installed (33 31 11.20 3160). The Division has updated all other material costs to 2024.

No 2024 cost is provided in RS Means for the line item. The 2023 cost has been adjusted for inflation (1.02 times) to $47.47/LF. Note that the SRCE unit cost excludes excavation. The unit cost in the Material tab adds excavation and backfill cost of $30.87/LF, so the estimated 2024 cost would be $78.33/LF.

These responses have been incorporated in Exhibit E, F and L. The revised exhibits are attached. Changes are in track changes.

Please feel free to contact me at (719) 486-7633 or edetmer@fmi.com if you have any questions.

Sincerely,

Eric Detmer

Eric Detmer
Manager, Environmental

Attachments

1) Exhibit E - Reclamation Plan
2) Exhibit L 2024 Reclamation Cost Estimate Update
3) Exhibit F – Maps