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Technical Memorandum

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Company:	New Mexico Copper Corporation	**From:**	Filiz Toprak
Copy to:	Jeff Parshley, SRK	**Reviewed by:**	Patric Lassiter
Subject:	Copper Flat Life-of-Mine Basis of Reclamation and Closure Cost Estimate	**Project #:**	191000.060

1. Introduction and Scope of Report

SRK Consulting (U.S.), Inc. (SRK) has been retained by New Mexico Copper Corporation (NMCC) to compile an estimate of life-of-mine (LOM) reclamation and closure cost estimate for the Copper Flat mine. This report accompanies the LOM reclamation and closure cost estimate spreadsheet prepared in the Standardized Reclamation Cost Estimator (SRCE) Version 2.0 together with supporting attachments.

2. Estimate Methodology

The below subheadings describe the estimate methodology. Section 3 expands on the use of the methodology used to reflect the reclamation and closure actions as costs.

2.1 General

This report describes the methodology in estimating third party costs of reclamation for the purpose of developing financial assurance for the Copper Flat Mine Operation and Reclamation Plan (MORP) (VEMS, 2017).

2.2 Regulatory Basis

This estimate is prepared in accordance with the requirements of NMAC 19.10.12. NMCC is required to file financial assurance for the new operations (NMAC 19.10.12.1201.A). Costs have been estimated for a third-party contractor to complete reclamation work (NMAC 19.10.12.1201.A and NMAC 19.10.12.1205.A).

The scope of the estimate covers the entire permit area (NMAC 19.10.12.1202.A.1) for the LOM plan and includes costs to reclaim and close facilities as well as mobilization and demobilization, contract administration, engineering redesign, profit and overhead, procurement costs, and contingencies. No credit is taken for salvage of any equipment or materials. (NMAC 19.10.12.1205.A)

The estimate is broken into annual increments that match the reclamation sequence and schedule presented in the Copper Flat MORP.

2.3 Cost Estimation Model

2.3.1 Standardized Reclamation Cost Estimator (SRCE)

Closure costs associated with the project were calculated using SRCE Version 2.0. The SRCE is spreadsheet software that was developed to facilitate accuracy, completeness and consistency in the calculation of costs for mine site reclamation. The model is available in the public domain and hosted on the web site: http://www.nvbond.com.

The costing has been carried out through use of the SRCE model for the following reasons:

- SRCE provides a standardized and systematic methodology for mine closure cost estimates. The routines provided in the model cover different operation units and aspects of mining projects.
- SRCE bases its estimates on accepted first principles basis. Facility dimensions are defined by the user. Equipment and personnel productivities for given tasks are established through widely accepted published statistics. In this regard equipment productivities are taken from Caterpillar Performance Handbook (Edition 47) (CAT, 2017). Personnel as well as other relevant productivities are established through the use of RSMeans Heavy Construction Cost Data (Gordian, 2006). For specific tasks such as well plugging, which are not directly available in any publication, realistic values derived from field experiences in Nevada mine closure studies are utilized in the model.
- SRCE is flexible in cost estimation, allowing utilization of local rates and unit costs.

Given SRCE bases estimates on first principles, it can be used and accepted as a means of estimating reclamation costs in a variety of geographies for different project types. SRCE is a platform suitable for use in any geography or jurisdiction.

As mentioned above, equipment and crew productivities obtained from public sources are used; these are used to estimate the time it takes to complete a task. This time is multiplied by equipment and labor rates and/or equipment, labor, and material unit costs with facility dimensions to estimate the cost of completing a task.

The flexibility of SRCE allows the user to adjust productivities where required, based on site experience and performance. SRCE allows the user to build in the adjustments for the estimate to be in compliance with NMAC 19.10.12.1205.A(1) (“reflect the probable difficulty of reclamation or closure, giving consideration to such factors as topography, geology, hydrology, revegetation potential and approved post-mining land use”) and customize it for any purpose including, but not limited to, accommodating third-party costs for a default scenario per NMAC 19.10.12.1205.B (“The amount of the financial assurance shall be sufficient to assure the completion of the reclamation plan or closeout plan if the work has to be performed by the state of New Mexico or a contractor with the state in the event of forfeiture”). See Attachment A for the model file. Attachment B provides the figures in support of the model.

2.3.2 Cost Data File (CDF)

Labor and equipment rates and unit costs for labor, equipment, and materials are compiled in a separate file called the cost data file (CDF) (see Attachment C). This file is then loaded into the SRCE file to populate the necessary cells to estimate costs. The types of costs are described in Section **Error! Reference source not found.**.

2.4 Site Layout and Facilities Inputs

SRCE utilizes lengths, areas, volumes, flow rates, quantities, etc., provided or estimated by the user (based on the reclamation or closure actions). Some actions require crews and fleets with productivities either provided by the SRCE by default or those provided by the user to estimate the time it takes to perform the work. These times are then multiplied by labor and equipment rates provided by the user.

In order to arrive at the result of this estimate, SRK has obtained the documents described below and used current knowledge of reclamation and closure activities and site layout based on the MORP (VEMS, 2017).

2.5 Productivities

SRCE uses several different sources and methods for calculating equipment productivities. The primary source is the CAT Performance Handbook Edition 47, followed by RSMeans Heavy Construction Costs (Gordian, 2006) published by Gordian Group Inc. Well and borehole abandonment, productivity data was compiled for use in SRCE using historical industry field experience.

3. Cost Basis

The labor and equipment rates and material unit costs used in this estimate consist of the following:

- Labor rates
    - Equipment operators
    - Laborers
    - Project management staff
- Equipment rates
- Material unit costs
- Miscellaneous unit costs

The below subheadings describe how these costs were compiled.

3.1 Labor Rates

The cost data file accounts for labor rates of operators' groups and other labor categories. SRK has used Davis Bacon labor rates for New Mexico's Sierra County to the extent possible. The WDOL (2018) website provides these as basic rates and fringes for different labor categories. These are documented in the SRCE file worksheet "User 07" and included in the CDF. See Attachment D for details on the labor rates.

3.1.1 Equipment Operator Rates

In the CDF, there are categories for the following operators:

- Bulldozers

- Wheeled dozers
- Motor graders
- Track excavators
- Scrapers
- Wheeled loaders
- Shovels/excavators
- Other equipment
- Truck drivers

The key equipment operator labor rates (base rate and fringes) in "User 07" as obtained from WDOL (2018) that were utilized include the following:

- Laborer: Common or General
- Operator: Backhoe
- Operator: Grader/Blade
- Operator: Loader (Front End)
- Operator: Scraper
- Truck Driver: Dump Truck
- Truck Driver: Water Truck

For the purposes of this estimate, the following assumptions have been made:

- Bulldozer operator labor rates are equivalent to motor grader operator labor rates.
- Track excavator operator labor rates are equivalent to those of wheeled loader operator labor rates.
- Crane operator labor rates are equivalent to those for wheeled loader operator labor rates.
- Haul truck operator labor rates are equivalent to those for water truck operator labor rates.

Relevant sheet(s)/file(s): CDF "Labor Rates" (Attachment C); Attachment D; SRCE "User 07" and "Labor Rates."

3.1.2 Other Labor Rates

Other labor rates (base rate and fringes) in the CDF that are relevant to this estimate include the following:

- General Laborer
- Skilled Laborer
- Foreman
- Field Geologist/Engineer

- Field Tech/Sampler
- Range Scientist

The rates for general laborer were obtained from WDOL (2018). The labor rate for skilled laborer was not available through the WDOL (2018). Therefore, SRK developed a skilled labor rate for this estimate by utilizing the proportion of a carpenter's labor rate provided in the WDOL (2018) rates and that of a typical carpenter's rate as found in standard cost data files in the mining context (see NDEP, 2017) and applied this proportion to input a rate for a skilled worker in the cost data file.

3.1.3 Labor Indirects

The labor rates described above are the sum of the base rates and fringes. In addition to these, the following indirects apply:

- Unemployment (%)
- Retirement/SS/Medicare (%)
- Workman's Compensation (%)

Retirement/SS/Medicare and workman's compensation were obtained from RSMeans data (R013113-60) (Gordian, 2018). Unemployment was obtained from DWS (2018).

3.2 Equipment Rates

Equipment rates have been compiled from a local equipment rental company (Wagner Equipment Co.) to the extent possible to reflect local market rates. This has been supplemented by Blue Book rates and/or RSMeans rates (Gordian, 2018) where equipment rates could not be obtained quickly. These are documented in Attachment E.

Relevant sheet(s)/file(s): CDF "Equipment Rates" (Attachment C); Attachment E.

3.3 Material Unit Costs

Material unit costs include the following:

- Fuel (Attachment F)
- Power (Attachment G)
- Seed mix (Attachment H)
- Analysis costs (Attachment I)

Fuel cost is for red dyed (Off-Road) diesel delivered to mine as of October 2017 (Attachment F). Power cost is as of November 2017 from the Sierra Electric Cooperative, Inc. (Attachment G).

The seed mix material costs for the seed mix described in the MORP (VEMS, 2017) are an average of costs obtained from two local suppliers (Attachment H).

Laboratory analysis costs were obtained from NMCC and are documented in Attachment I together with the proposed monitoring schedule.

Relevant sheet(s)/file(s): CDF "Reclamation Material Costs" and "Misc. Unit Costs"; SRCE "Material Costs"; Attachments F, G, H, and I.

3.4 Miscellaneous Unit Costs

Miscellaneous unit costs include the following:

- Revegetation labor and equipment unit costs per unit area
- Waste disposal costs
    - solid wastes
    - hazardous wastes
    - hydrocarbon-contaminated soils
- Miscellaneous linear projects:
    - fence installation material unit costs per unit length
    - pipe and drainpipe installation material costs per unit length
    - powerline removal costs per unit length
    - transformer removal costs per unit
- Liner installation material costs

Revegetation labor and equipment unit costs per unit area ($/acre) have been developed by using the set of labor and equipment costs used for the site in the "Labor Rates" and "Equipment Rates" worksheets of the CDF imported into the SRCE (to the extent applicable) based on productivities provided by Kelley Erosion Control (Attachment E). The calculations are documented in SRCE worksheet "User 03" and replicated in the CDF (see CDF worksheet "Misc. Unit Costs" section "Revegetation") and imported into the SRCE (see SRCE worksheet "Misc. Unit Costs" section "Revegetation" and worksheet "Material Costs" section "Revegetation Method").

The remaining activities are miscellaneous unit costs based on RSMeans (Gordian, 2018) (see Attachment J) and documented in SRCE worksheet "User 03":

- Rubbish and Waste Handling, Hazardous Material Handling – Solids, and Hazardous Material Handling
- Fence installation material unit costs per unit length
- Pipe and drainpipe installation material costs per unit length
- Powerline removal costs per unit length
- Liner installation material costs
- Construction management support

Relevant sheet(s)/file(s): CDF "Misc. Unit Costs"; SRCE "Misc. Unit Costs"; Attachment J.

4. SRCE Methodology

The below subheadings describe how costs for the major types of activities are developed. These include, but are not necessarily limited to, regrading, cover placement and backfilling, ripping, revegetation, building demolition, etc. SRCE uses user inputs to estimate quantities (lengths, areas, volumes, etc.) and public-domain data for productivities to estimate time to accomplish a task. All times estimated are multiplied by the equipment hourly operation costs and operator labor rates to obtain total cost to accomplish a task.

4.1 Regrading

Unless the quantities of earth regraded is calculated elsewhere, in the case of waste rock stockpile lifts, the cost of regrading is estimated by considering the original slope grade (typically angle of repose) and the slope to which the lift will have to be regraded for physical stability. Then, using the height and the mid-bench length of the lift, the volume of material moved to reduce the slope is estimated. SRCE uses public-domain productivities of equipment which are then used to estimate the time it takes to accomplish each task.

Relevant SRCE sheet(s): Fleets (Crews).

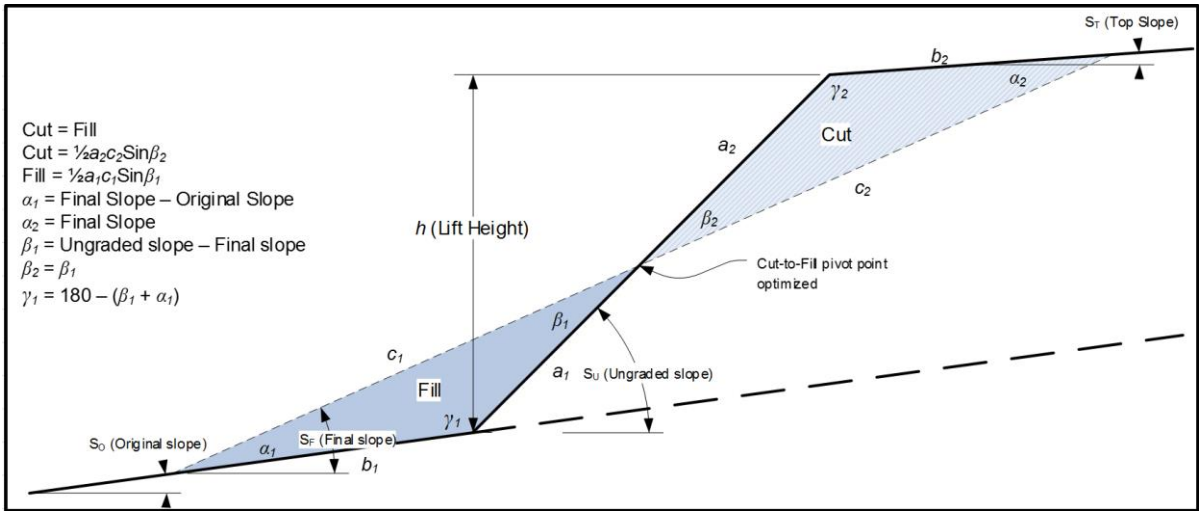

Illustration 1 Slope regrading parameters

4.2 Cover and/or Growth Media Placement

The volume of growth media and/or cover material to be placed is estimated through the input for final regraded area and the thickness of material. Over-rides on fleet components can be made in the "Fleets" and, for example, the "Waste Rock Stockpile" sheets. SRCE estimates the number of trucks required to accomplish a haulage task depending on the distance input with the aim of keeping the loader busy (unless there is a user over-ride for fewer trucks). The loader productivity is the driver in truck fleets and determines the number of hours required to accomplish the task.

Earthworks on tailings storage facilities are treated differently in that the embankment and tailings surface areas are input separately to allow flexibility in designating different reclamation activities for different parts of the facility. For example, there may be an engineered cover on the tailings surface that would not be required on the embankment area. SRCE allows the user to differentiate between the two.

Relevant SRCE sheet(s): Fleets (Crews).

4.3 Revegetation

Revegetation costs are estimated by including seed material and labor and equipment costs per unit area.

Relevant SRCE sheet(s): Reclamation Material Costs; Misc. Unit Costs.

4.4 Demolition

SRCE estimates time to demolish buildings through RSMeans productivities (Gordian, 2006) that focus on building volume, wall area, and slab volume. Fleet hours are estimated and multiplied by crew rates.

SRCE by default also includes two dump trucks to haul the debris for final disposal. This is considered the equivalent time for the trucks to travel 20 miles to final disposal destination while the rest of the demolition crew continues working.

Relevant SRCE sheet(s): Foundations & Buildings; Fleets (Crews).

4.5 Backfill

In the “Process Ponds” module of the SRCE, the primary activities consist of backfilling ponds and placing growth media. In some cases, the same fleets can be assumed used for excavation activities given similar productivities. For other types of backfilling or excavation activities, the user may have to build custom calculations.

Relevant SRCE sheet(s): Process Ponds.

4.6 Excavation

In the “Sediment & Drainage Control” module of the SRCE, the main activities consist of excavating diversion ditches and impacted stormwater impoundment construction or removal. The diversion ditches may also be equipped with liners or riprap.

Relevant SRCE sheet(s): Sediment & Drainage Control.

4.7 Solution Management

Solution management for the project consists of pumping (recirculating) water and active (forced) evaporation. SRCE estimates the cost to pump water from one location to another using Manning’s Equation and standard hydraulic formulae which require the user to input pipeline diameter and material type, static head between locations, flow rate, etc., to estimate the energy required to accomplish the task. This quantity of energy is then multiplied by the electricity price for the site to estimate costs.

Solution management for this project also includes the cost of flushing buildings, which consists of rinsing the plant site.

Relevant SRCE sheet(s): Solution Mgmt.

5. Reclamation and Closure Actions by Facility

5.1 Waste Rock Stockpiles

Waste rock stockpiles on site consist of existing waste rock stockpiles and waste rock stockpiles that are proposed by NMCC. Attachment B provide the waste rock stockpile inputs required for estimating costs to reclaim the waste rock stockpiles. (Golder, 2017a)

5.1.1 Existing Waste Rock Stockpiles

Existing waste rock stockpiles consist of EWRSP-1, EWRSP-2A, EWRSP-2B, EWRSP-3, and EWRSP-4. Reclamation of the existing waste rock stockpiles will consist of regrading all slopes steeper

than 2.75H:1V, placement of suitable cover material where unsuitable growth media exists, and revegetation.

The north half of the EWRSP-2A will be hauled to EWRSP-2B to be reclaimed during the pre-production phase of mine development and the remainder will be incorporated into waste material deposited at the proposed WRSP-1 during operations, and reclaimed per the Reclamation Plan (VEMS 2017).

EWRSP-3 will be reclaimed as part of the Plant Area.

EWRSP-4 will be partially reclaimed during the pre-production phase. Slopes that drain to the Grayback Arroyo will be graded and covered per the reclamation plan. The top of the stockpile will be graded and used as a laydown yard during operations and reclaimed at the end of operations.

The reclamation strategy at the Copper Flat mine includes providing a minimum 18-in. root zone for revegetation using a combination of ripping and/or placement of growth media materials as described in the reclamation plan. For the waste rock stockpiles, this will be accomplished by placing growth media at 36-in. thickness and seeding.

Relevant SRCE sheet(s): Waste Rock Dumps; Haul Materials; Yards.

5.1.2 Proposed Waste Rock Stockpiles

Proposed waste rock stockpiles include WRSP-1, WRSP-2, and WRSP-3. Reclamation of WRSP-1 will include reclamation of EWRSP-2A located along northern perimeter of WRSP-1 will get consumed by this stockpile and reclaimed as part of WRSP-1.

Reclamation of the proposed waste rock stockpiles will consist of regrading all slopes steeper than 2.75H:1V, placement of 36 inches of cover material , and revegetation.

Relevant SRCE sheet(s): Waste Rock Dumps.

5.1.3 Slope Armoring

Slope armoring will be placed around specified parts of the facilities for long-term stability. These areas will be first prepared for placement of armoring, and then the locally-sourced riprap material will be placed.

Relevant SRCE sheet(s): Yards; Misc. Costs\Rip-Rap & Rock Lining

5.2 Pit

5.2.1 Pit Perimeter Berm

An earthen berm will be constructed around the perimeter of the open pit to limit public access and ensure that the pit area does not pose a current or future hazard to public health or safety. The berm will be constructed from local rock and soils and will be 15 to 20-foot wide at the base and 5- to 6-feet high with side slopes angled at 1.5H:1V. Disturbed areas around the pit perimeter will be seeded for revegetation.

Furthermore, a barbed wire fence will be installed around the outside perimeter of the pit safety berm to exclude livestock and other large mammals. Signs will be posted at 500-ft intervals along the security fence/earthen berm and at all access points. Costs to replace this fence over the course of the long-term monitoring period are also included.

Relevant SRCE sheet(s): Quarries & Borrow Pits; Yards; Misc. Costs; Other User; User 03.

5.2.2 Pit Rapid Fill

The open pit will remain a hydrologic sink capturing groundwater flowing from all directions during post-closure. NMCC will conduct rapid filling of the mine pit with fresh water provided from the off-site well field as the initial step in commencing reclamation/closure until it reaches an average steady-state condition.

The inputs for rapid filling consist of monthly rapid fill rates for six months. Pipeline length and the static head required to pump the water were estimated based on the topography of the site.

Relevant SRCE sheet(s): Solution Mgmt; User 08.

5.2.3 In-pit Reclamation

A water conveyance channel will be constructed along the existing pit haul road to direct surface water flows to the pit lake. Growth media at 18-in. thickness will be placed on the haul road and benches identified in the reclamation plan to provide a sufficient root zone for vegetation. The narrow catch benches left in pit walls and other areas that cannot be safely accessed will be allowed to revegetate themselves through natural processes. See Attachment K for details on in-pit reclamation. The crest slopes identified for reclamation will be dozed during excavation of the pit. Therefore, costs for this activity are not included here. There will be no additional dozing or reshaping activities during the reclamation and closure period.

Relevant SRCE sheet(s): Quarries & Borrow Pits.

5.3 Tailings Storage Facility

5.3.1 Embankment Reclamation

The TSF embankment will be allowed approximately 2 to 3 years to drain sufficiently to begin reclamation. It is also anticipated that some reclamation of the impoundment can begin within 5 years of cessation of operations as the impoundment continues to drain and dry, allowing covering of the embankment outslopes of the TSF with 36 inches of growth media and seeding. The TSF will be covered by placing growth media at 36-in. thickness and seeding.

Owing to the centerline construction method of the TSF, concurrent construction of diversion channels is not possible. Diversion channels on the TSF embankment will be built after the end of operations.

The underdrain systems will continue to operate after cessation of operations for the “active” underdrain water management program (discussed in Section 5.3.3). Utilization of active evaporation will allow the cover to begin to be placed on those areas of the top of the impoundment that become sufficiently “dry” to accept machinery. The goal of the active phase of evaporation is to dry the top of the impoundment as soon as possible to allow as much of the cover to be placed as possible, and eventually placing all of the cover on the impoundment.

Relevant SRCE sheet(s): Tailings; Sediment & Drainage Control.

5.3.2 Tailings Surface Reclamation

The tailings surface will be reclaimed as it dries (estimated to last up to five years). The top surface will be graded to a final grade of between 1 and 5% to direct storm water to the back side of the TSF.

Growth media will be placed at 36 inches thickness, sufficient to provide a root zone for revegetation. Diversion channels on the TSF surface will be built after the surface has dried sufficiently.

Relevant SRCE sheet(s): Tailings; Sediment & Drainage Control.

5.3.3 Draindown Management

The underdrain systems will continue to operate after cessation of mining and processing as drain-down of the TSF will continue to produce water for a number of years thereafter. This estimate assumes that draindown will continue for a total of 25 years, 5 years of active water management and 20 years of passive water management. The actual amount of time required to so is a function of porosity of tailings materials in the long-term and the volume of water remaining in the TSF. An “active” evaporative water management program (short-term AEWMS) will be implemented at the end of operations, followed by “passive” evaporative water management system (PEWMS). During active water management water captured in the TSF underdrain collection pond will be pumped back to the impoundment surface of the TSF where it would be force-evaporated through evaporators. Crews are assumed shared between the operation of the recirculation pumping and the forced evaporation for this phase. Evaporator costs are provided in Attachment E.

Upon completion of placement of the cover on the impoundment, active evaporation through the TSF evaporation pond will no longer be necessary and the passive evaporation water management will begin. The impoundment will continue to drain at an ever-decreasing rate, requiring that it continue to be collected for passive evaporation and not pumped to the tailings surface cover.

Prior to the start of the PEWMS, a new HDPE-lined evaporation pond will be constructed to provide sufficient surface area to passively evaporate the residual drain down waters from the TSF. For planning purposes, this estimate assumed that the passive evaporation phase will last 20 years after cessation of operations. (Golder, 2017b).

Relevant SRCE sheet(s): Solution Mgmt; User 02.

5.3.4 Slope Armoring

Slope armoring will be placed between the TSF and the reclaimed GMSP-1 footprint. This area will be first prepared for placement of armoring, and then the locally-sourced riprap material will be placed.

Relevant SRCE sheet(s): Yards; Misc. Costs\Rip-Rap & Rock Lining

5.4 Impoundments and Ponds

5.4.1 Impoundments

Impoundments built around the waste rock stockpiles and the tailings storage facility will have their HDPE liners be ripped, folded over and buried in place and backfilled with clean fill, surfaces graded to drain and blend into the natural topography. The surface area around the impoundments will be ripped and covered with 6-inches of suitable cover material where unsuitable growth media exists after grading. The productivity of the liner cutting crew is based on past experience of NMCC staff.

Relevant SRCE sheet(s): Process Ponds; User 06.

5.4.2 Expanded Underdrain Collection/Evaporation Pond Reclamation

The underdrain collection pond will be expanded during the transition from AEWMS to PEWMS to construct the the evaporation pond. This will consist of excavating the area around the existing collection pond and lining the excavated area. At reclamation, the liner will be ripped, folded over and buried in place with backfill. The surface will be regraded and covered with 6 inches of suitable cover material.

Relevant SRCE sheet(s): Process Ponds.

5.4.3 Pipeline Ditches Liner Removal

The tailings pipeline conveyance ditch will be lined during operations. At closure, the liner will be cut and the ditch backfilled after pipelines are removed.

Relevant SRCE sheet(s): Process Ponds.

5.5 Foundations and Buildings

5.5.1 Buildings

All fuel tanks, reagent storage facilities, and equipment will be removed from the site and disposed of in an approved manner according to applicable federal and state laws; concrete foundations will be broken, walls toppled, backfilled, and covered with 36" of growth media; remaining disturbed areas will be graded, ripped, and covered with 6" of growth media.

Relevant SRCE sheet(s): Foundations & Buildings.

5.5.2 Tanks

This estimate includes costs to cut steel tanks prior to demolition. The costs are calculated using the productivity and crew designation provided in RSMeans (Gordian, 2018) for steel cutting, using the labor and equipment rates input into the cost data file (to the extent applicable). Costs for the demolition of the tanks and hauling of debris are included in the Foundations & Buildings sheet.

Relevant SRCE sheet(s): User 03 Tank cutting; Foundations & Buildings.

5.5.3 Decommissioning

Residual sediments and fluids will be flushed from the pipelines and placed in the TSF prior to reclamation of this facility, or at an approved location. Above-ground pipelines will be disposed of in the TSF prior to reclamation of this facility, or at a nearby approved construction and debris landfill. Buried pipelines will be capped at both ends. Disturbed surfaces will be graded, and covered with 6-inches of suitable cover material where unsuitable growth media exists.

Relevant SRCE sheet(s): Solution Mgmt.

5.6 Roads

Roads not needed for closure and post-closure access will be reclaimed by ripping and revegetating the surfaces. Roads will be ripped and covered with 6-inches of suitable cover material where unsuitable growth media exists. Culverts will be removed if they are not needed for post-closure storm water management and disposed of in an approved manner. Closure and post-closure roads will be reduced to a width suitable for single vehicle access. Existing roads utilized for closure and post-

closure access that are wider than that required for single vehicle access will be narrowed during reclamation by ripping, grading and covering with 6-inches of suitable cover material where unsuitable growth media exists.

This cost estimate includes costs for reclaiming 5 miles of roads across the site.

Relevant SRCE sheet(s): Roads.

5.7 Yards

Surfaces aside from the major facilities such as the waste rock stockpiles, TSF, ponds, pit, roads, and buildings will be graded, ripped, and covered with 6 inches of suitable cover material where unsuitable growth media exists.

5.7.1 Plant Area Pipeline Corridors

Residual sediments and fluids will be flushed from the process pipelines and placed in the TSF prior to reclamation of this facility, or at an approved location. Above-ground pipelines will be placed in the TSF prior to reclamation of this facility (in compliance with applicable federal and state laws), or at a nearby approved construction and debris landfill. Buried pipelines will be capped at both ends. Disturbed surfaces will be graded, and covered with 6-inches of suitable cover material where unsuitable growth media exists. (Golder, 2017a) These areas are accounted for under “Plant area” or “Cyclone station pad.”

Relevant SRCE sheet(s): Yards.

5.7.2 Cyclone Plant Area

All structures and equipment at the cyclone plant will be removed from the site and disposed of in an approved manner according to applicable federal and state laws; concrete foundations will be broken and covered with 36" of growth media; remaining disturbed areas will be graded, ripped, and covered with 6" of growth media.

Relevant SRCE sheet(s): Yards.

5.7.3 Land Bridges

The two land bridges around the plant area will be excavated out. The culverts will be removed. The disturbance will be reclaimed to allow the Grayback Arroyo to flow freely after reclamation. The costs to remove these land bridges assumes excavators operating one to two passes, depending on the thickness of fill of the section. The excavator will be accompanied full-time by a dozer to spread the material around the plant site.

Relevant SRCE sheet(s): Yards; Other User; User 12; Misc. Costs.

5.7.4 Disturbance Around the Pit

It is assumed there will be an approximate 100-foot-wide disturbance area around the pit that will be ripped and revegetated. The 100-foot width is a generalized approximate average width of disturbance around the pit perimeter that occurs during mining operations. The actual width of disturbance will vary by location. In some areas there may be little or no disturbance.

Relevant SRCE sheet(s): Yards; Quarries and Borrow Areas.

5.7.1 Growth Media Stockpiles

Growth media stockpiles consist of GMSP-1, GMSP-2, and GMSP-3. The footprint areas of the growth media stockpiles will be graded to drain and recontoured to blend into the natural topography. It is anticipated that the only area that may require cover is GMSP-3 which is underlain by andesitic bedrock. The other two stockpile areas are underlain by alluvial materials (suitable growth media).

Relevant SRCE sheet(s): Yards.

5.7.2 Tailings Pipeline Corridor

The approximate 1,000-foot long tailings pipeline corridor that facilitates the tailings pipeline will be partially backfilled to allow for the construction of conveyance channel DCS-5 that will direct stormwater flows from the covered top surface and the northwest slopes of the TSF to Grayback Arroyo. The pipeline corridor will be backfilled with clean fill in lifts, and each lift will be compacted. The remaining exposed slopes of the pipeline corridor will be graded to a slope of 3.0H:1V and covered with 36 inches of growth media. These areas are accounted for under “Plant area” or “Cyclone station pad.”

5.8 Conveyance Channels

Surface water conveyance channels will be constructed on and around the waste rock stockpiles, TSF, yards, and around the north, east, and south perimeter of the pit (immediately upstream of the perimeter berm/security fence) and along the existing haul road to direct surface water around and into the pit. Riprap material for these channels will be sourced on-site from areas including but not limited to the pit or the footprint area of WRD-3 following characterization for rock of sufficient quality. The riprap type selected is “Rip-Rap 450 mm min thick, no grout” and has “0” costs in the CDF because it will be sourced on the site. The average cost of hauling these from the source across the site to various facilities is included in the “Haul Material” sheet. Some of the channels are expected to have high flow velocity. For these sections, instead of riprap, articulated concrete blocks will be used. The costs for these are included in “Other User” and unit costs were obtained from a supplier.

Relevant SRCE sheet(s): Sediment & Drainage Control; Misc. Unit Costs; Other User; Haul Material.

5.9 Slope Armoring

Slope armoring will be necessary on slopes around certain facilities. The costs are calculated through the “Yards” and “Misc. Costs” worksheets as discussed in Sections 5.1.3 and 5.3.4.

5.10 Energy Dissipaters

Energy dissipaters will be constructed at channel outlets to reduce erosive velocities where necessary. The dimensions have been assumed to be such that the length of the basin would be twice the width of the channel and the width of the dissipater would be 1.5 times the width of the channel. The depth of the dissipater would be 1.5 times the depth of the channel.

Relevant SRCE sheet(s): Sediment & Drainage Control.

5.11 Waste Disposal

The estimate includes an allowance for disposal of waste including solid wastes, hazardous wastes, and hydrocarbon-contaminated soils. The quantities of solid and hazardous wastes were assumed

based on project size and experience with similar operations. The hydrocarbon-contaminated soil quantities are estimated based on the size of buildings (such as the mine shop).

Relevant SRCE sheet(s): Waste Disposal.

5.12 Miscellaneous Costs

5.12.1 Powerlines

On-site overhead lines and power poles (owned by Sierra Electric Cooperative, Inc.) will be disconnected from the 115kV line owned by Tri- State Generation and Transmission. The electrical substation and associated on-site transmission lines will be closed and removed once they are no longer needed. Power cables will be removed from the site and recycled and power poles will be disposed onsite in a permitted landfill or recycled offsite. Disturbed surfaces along corridor will be graded, ripped, and covered with 6-inches of suitable cover material where unsuitable growth media exists (included in various disturbances in the “Yards” sheet). This cost estimate includes costs to remove the on-site powerline and a transformer.

Relevant SRCE sheet(s): Misc. Costs.

5.13 Monitoring

A monitoring schedule for the closure and post-closure periods has been developed based on assumptions made with current operations-period monitoring requirements. The actual closure and post-closure monitoring schedule will be finalized in the years preceding closure based on monitoring results. The assumed schedule and costs are based on Attachment I.

Relevant SRCE sheet(s): Monitoring.

5.14 Well Abandonment

Production wells will be left once mine operations cease. The monitoring wells to be used during closure and post-closure will remain until end of the monitoring period and plugged and abandoned per regulatory requirements. The schedule of well abandonment is based on the schedule provided in Attachment I.

Relevant SRCE sheet(s): Well Abandonment.

5.15 Mobilization

This cost estimate includes mobilization and demobilization costs for equipment that will be required for reclamation activities.

Relevant SRCE sheet(s): Mobilization.

6. Results

The total direct costs for the project are $44M. With 26% indirect costs, the grand total cost for the Copper Flat LOM project is $56M. The costs are provided in current US dollars (no discounting) and do not take credit for any salvage of equipment or materials.

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Attachment A: SRCE File

Attachment B: Figures

Attachment C: Cost Data File

Attachment D: Labor Rates

Attachment E: Equipment Rates

Attachment F:Fuel Costs

Attachment G: Power Cost

Attachment H: Seed Cost

Attachment I: Analysis Costs

Attachment J: RSMeans

Attachment K: In-pit Reclamation