COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

June 29, 2022

Jim Harrington
Colorado Legacy Land, LLC
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RE: Schwartzwalder Mine, Permit No. M-1977-300, 112d-2 Designated Mining Reclamation Permit Amendment Application (AM-6), Adequacy Review No. 3

Mr. Harrington:

The Division of Reclamation, Mining and Safety (Division) has completed its 3rd adequacy review of your Amendment Application (AM-6) submitted for the Schwartzwalder Mine. All comment and review periods for the application began on July, 29, 2021, when the application was called complete for filing purposes. The decision date for the application is currently set for July 15, 2022.

The Division has identified adequacy items in the application requiring additional information or clarification. These items are identified below under their respective exhibit heading, and are numbered sequentially.

Exhibit E – Reclamation Plan (Rule 6.4.5):

1) The operator is proposing to leave the cutoff wall, riprap/grouted boulder areas, and bypass pipeline in place for final reclamation. The operator states these structures were previously permitted by the U.S. Army Corps of Engineers (USACE) as permanent features. The operator provided a copy of the Pre-Construction Notification that was prepared by Iris Mitigation and Design, Inc. in February 2016 for submittal to the USACE, titled "Phase 2: Alluvial Fill Area Characterization and Long-term Reclamation Project". However, the operator has not provided proof the plan presented to the USACE in February 2016 was accepted by their office. Additionally, it is not clearly stated in the document provided that the diversion structures will remain as permanent features.

   The Division reviewed Technical Revision No. 18 (TR-18) approved on November 21, 2011 for the installation of these structures to temporarily divert creek flows around the mine site. The objective of this temporary diversion was to protect water quality in Ralston Creek and simultaneously dry out the alluvial fill area in the valley to allow potential sources of contamination to be further investigated and long-term measures to be developed and implemented. Based on the information presented in TR-18 and the associated bond estimate, it appears that removal of these structures after completion of the valley excavation project was anticipated, at least for the upgradient cutoff wall and bypass pipeline. The installation of these structures was also reviewed and approved by the USACE and the U.S. Fish and Wildlife Service (USFWS) through a Nationwide Permit #38: Cleanup of Hazardous and Toxic Waste, USACE File # NOW-2011-1353-DEN (a copy of which could not be found in the permit file).

In order for the Division to approve leaving the upgradient cutoff wall and bypass pipeline in place for final reclamation, the operator will need to provide demonstration this plan is in compliance with the USACE/USFWS permitting for the site. If the operator will not be able to provide this demonstration within the AM-6 review period, the bond estimate for AM-6 must include costs for demolishing, removing, and disposing of these structures.

Please provide details in this exhibit for how the upgradient cutoff wall and bypass pipeline will be reclaimed. For example, the bond estimate for TR-18 indicates the bypass pipeline would need to be cut into 30 foot sections and hauled off site for disposal. The Division is not aware of any remaining disposal locations on site. Therefore, it is assumed that any demolished materials would still need to be hauled off site for disposal.

2) The Division asked the operator to provide a detailed grading plan for the valley floor, showing how it will be reconfigured to establish positive drainage to the creek. The operator stated a detailed grading plan cannot be provided at this time because the full extent of the alluvial valley extraction is not currently known. The Division understands the operator may not fully know at this time how much additional soils will need to be excavated to complete the project. However, the Division does not believe this information is needed in order to develop a grading plan for the site. Furthermore, the operator indicated elsewhere in the application that the excavation project is more than 95% complete. With only ~5% of the project remaining, the operator should have some idea of how the valley floor will be reshaped for final reclamation.

   Please provide the grading plan requested, which describes how the valley floor will be re-contoured, the estimated slope gradients, the estimated volume of fill material needed, the expected source(s) for this material, and how the operator will confirm this material is suitable for reclamation. As noted previously, any changes to the plan approved in AM-6 could be proposed in a subsequent revision.

3) The operator states that no imported fill material will be needed because sufficient volumes of “clean” fill exist on site for use in reclaiming the valley after the excavation project is complete. The operator has not provided sufficient proof that enough “clean” soils are available on site for reclamation. In previous permit revisions, the operator had discussed plans to import inert fill material to the site in order to establish final grades in the valley after the contaminated soils have been removed. The operator had previously estimated that approximately 33,000 to 54,000 cubic yards of fill material may need to be imported (to replace the materials expected to be removed). In Amendment No. 5 (AM-5; approved on January 13, 2021), the operator estimated a total of 58,500 cubic yards would be excavated from the valley during the remediation project.

   Without reviewing a detailed survey of existing soils and a final grading plan for the valley, the Division must assume (for the bond calculation) that inert fill material will need to be imported to the site to complete reclamation of the valley (as was anticipated in previous revisions). If the operator does have information available that proves sufficient fill material is available on site for reclamation, please provide this information (e.g., cut/fill balance, soil survey, final grading plan, approximate source locations) to the Division. Otherwise, the Division will use the operator’s AM-5 estimate of the total volume of material to be excavated from the valley (58,500 cubic yards) for the volume of inert fill to be imported for reclamation.

4) The operator is proposing to use on site materials as a growth medium in reclamation. The Division asked the operator to specify exactly where the growth medium will be derived from on site and how the operator will confirm this material is suitable for reclamation. The operator referred to Technical Revision No. 14 (TR-14; approved on October 6, 2010) for characterizing alluvial source term materials. The operator states that TR-14 authorized the operator to stockpile "clean" alluvial valley soils and use them as fill or growth medium for reclamation. However, the Division reviewed the materials approved in TR-14 and could not find any language regarding the use of excavated valley soils as a growth medium for reclamation. Additionally, the Division has not observed any segregated materials stockpiled on site which have been designated for use as growth medium (and the project is estimated to be > 95% complete).

   The operator also states that soil testing is not required because these soils have been used as fill/growth media on the site previously, specifically on the waste rock piles. First, the Division could find no evidence in the permit file that similar soils were used as a growth medium on the reclaimed waste rock piles. Second, even if similar soils were used previously for reclamation of the waste rock piles, these soils may not necessarily be suitable for the tree and shrub species proposed for revegetation of the valley (compared with the grass/wildflower mixture planted on the waste rock piles).

   Unless the operator can provide demonstration that sufficient growth medium is available on site for completing reclamation, the Division must assume (for the bond calculation) that growth medium will need to be imported.

5) The Division asked the operator to include specific seed/plant mixtures to be used for the areas to be revegetated, including the plant species, the planting rate for each species (in # of pure live seed per acre or # of plants per acre), and the application method. The operator provided a grass and wildflower seed mixture (in Table E-1) to be planted on the entire 12.5 acres of disturbance. This seed mixture includes all the necessary details.

   The operator also provided a tree and shrub mixture (in Table E-2) which includes two subcategory mixtures, one for "Phase one impacts from cutoff wall and bypass pipeline", and the other for "Phase two impacts from alluvial valley excavation". While this table does list particular tree and shrub species, it does not specify the planting rate per acre for each species. For example, under the "Phase one" mixture, the species listed are Ponderosa Pine, Juniper, Cottonwood, Douglas Fir, and Engelmann Spruce, to be planted in 10 gallon pots, with a "mitigation quantity" of 174. It is unclear whether this number (174) represents the total number of all the tree species listed to be planted per acre, or in a particular area that is greater than an acre in size.

   Please provide a revised Table E-2 which specifies the planting rate per acre for each of the tree and shrub species listed. Additionally, please provide the approximate acreage to receive each of the two subcategory tree/shrub mixtures proposed in this table. Please be sure this information correlates with what is shown on the Exhibit F Reclamation Plan Map.

6) The Division asked for a detailed plan for removing the master sump for reclamation, including the anticipated disposal location for the materials demolished/removed. The operator states this information was provided in Section E.6. However, the Division could not find a detailed plan for demolishing,

removing, and disposing of the sump and its associated infrastructure in the section referenced. Please provide the requested information.

7) As previously requested, please provide a detailed reclamation plan for removing the water treatment plant, including a description of all components of the plant and associated infrastructure which would require demolition and/or removal for reclamation, and the anticipated disposal location(s) for these materials. Alternatively, the operator may provide a recent detailed bid from an independent contractor for completing this work.

8) The Division has the following comments on Figure E-6 Schwartzwalder Mine In-Situ Treatment – Uranium Concentrations:

   a. Only one data point is visible on this figure for TDS concentrations prior to 2017 (for approximately July 2015). Is this accurate?

   b. The data presented on this figure shows a marked decrease in uranium concentrations in the mine pool after the in-situ treatments performed in 2013 and possibly in 2018 (the magnitude of the 2018 reduction is difficult to assess given the "suspect data" from late 2017/early 2018), with a subsequent rebound in uranium concentrations. Given the data gap between 2015 and 2016, it is not possible to assess the impact of the 2015 in-situ treatment on the mine pool chemistry. As the operator has acknowledged, the 2020 in-situ treatment had a reduced impact on uranium concentrations in the mine pool. The operator has not yet provided the Division with the results of the September 2021 in-situ treatment. However, based on the available data, it does appear there is an overall trend of increasing uranium concentrations in the mine pool over the past nine years (from approximately 4 mg/L in 2013/2014 to approximately 20 mg/L in 2021).

      In this application, the operator stated the concentration of uranium in the mine pool is stable with respect to the current reverse osmosis (RO)/ion exchange (IX) treatment system, as this system is currently able to produce water that meets discharge standards. The Division agrees the effectiveness of the water treatment system in producing water that meets discharge standards is perhaps the most important measure of chemical stability of the mine pool. As long as the mine pool can continue to be pumped down below the regulatory limit and the pumped water treated to meet discharge standards, the mine pool can be considered "stable" with respect to the current pump/treat regime. However, given the overall increase in uranium concentrations (and other constituents, as noted in the application) observed in the mine pool over the past nine years, the Division has some questions regarding the long-term effectiveness of the current treatment system.

      i. Please provide an estimate of uranium concentrations over the next 20 year treatment period, based on the increasing trend of uranium between 2013 and present day, and describe any anticipated limitations of the current RO/IX system in effectively treating the mine pool over the next 20 years.

      ii. Please describe the constituents of concern which have the greatest potential to impact the effectiveness of the current treatment system. Are any of these constituents observed

to be increasing with the continued treatment of the mine pool? If so, how is this expected to impact the cost of operating the water treatment system over the next 20 years?

Exhibit F – Reclamation Plan Map (Rule 6.4.6):

9) The Division has the following comments on Figure F-1 Reclamation Plan Map:

   a. Please identify the entire disturbed area to be revegetated. The area currently identified as "Anticipated Planting Area (12.5 acres)" does not appear to include the entire area in the valley that has been disturbed, including the area located north of the creek (currently used for storage). Additionally, the area shown is actually closer to 6-7 acres in size rather than 12.5 acres. Furthermore, this area overlaps the creek in some areas, indicating portions of the creek channel will be revegetated for reclamation. Is this accurate?

   b. Please identify the approximate areas to receive each of the seed/plant mixtures proposed in Tables E-1 and E-2. Please be sure these areas correlate with the acreages provided in Exhibit E.

   c. The final alignment of Glencoe Valley Road between the eastern site access and the upgradient cutoff wall is not visible on this figure. Please show the approximate alignment of this road for final reclamation.

   d. Please remove the upgradient cutoff wall and bypass pipeline from this figure. As mentioned above, the Division cannot approve leaving these structures in place for final reclamation until the operator has demonstrated that leaving these structures is authorized by the USACE/USFWS permitting for the site.

10) As previously requested, please provide a separate reclamation plan map depicting a detailed grading plan for the valley floor. This map should show how the valley floor will be reconfigured to establish positive drainage to the creek, and any structures proposed to remain in the valley for final reclamation.

Exhibit L – Reclamation Costs (Rule 6.4.12):

11) The Division has the following comments specific to the Water Treatment Plant Operations section:

   a. For the Columbia Sanitary task, the total cost was reduced from $19,500.00 to $6,500.00, for pumping the septic tank once per operating year rather than 3 times per operating year, as previously proposed. Please explain why the pumping rate was reduced.

   b. For the Waste Management task, the total cost was reduced from $19,680.00 to $9,840.00, for bimonthly trash service during plant operations (pickup 3 times per year) rather than monthly trash service during plant operations (pickup 6 times per year), as previously proposed. Please explain why the trash pickup rate was reduced.

   c. For the Office Trailer task, there is a lump sum cost of $18,500.00 provided for a "40-foot standard office". Please clarify if the cost provided is for removing the office trailer for reclamation.

d. For the Demolish Water Treatment Plant task, there is a lump sum cost of $55,000.00 provided "to demolish and remove the water treatment plant building and facilities". The operator states this estimate comes from a bid provided by Kessler Reclamation and Construction, which was intended to be included with the operator's recent adequacy response. However, the Division could not find a copy of this bid with the revised application materials. In Exhibit E, the Division is asking the operator to provide a detailed reclamation plan for the water treatment plant, which breaks down the demolition, removal, and disposal tasks for all components of the water treatment plant. The Division will use the information provided to calculate the costs for removing the plant. Alternatively, the operator may provide a recent detailed bid from an independent contractor for completing this work.

   It is the Division's understanding there is no additional capacity available on site for materials disposal. Additionally, at least some of the materials to be removed from the plant would require disposal in a facility that accepts hazardous and/or radioactive materials. Therefore, please be sure the estimate provided for this task includes costs for offsite disposal at the appropriate facility.

12) The Division has the following comments specific to the Alluvial Valley Excavation section:

a. For the Excavate and Place Soil on Site task, the operator estimates that 6,256 cubic yards of contaminated soils in the "South Zone" remain to be excavated. During the Division's recent site inspection, the operator indicated there may be some additional soils to be excavated in the North Zone as well. Therefore, please be sure the estimated volume of material remaining to be excavated is accurate.

b. For the Fill Soil task, no costs are provided because "sufficient quantities of suitable soil have been identified during the alluvial valley excavation" and the operator "intends to regrade the alluvial valley consistent with the surrounding slopes by pushing adjacent fill materials to fill in excavated potholes". As mentioned above, without reviewing a detailed survey of existing soils and a final grading plan for the valley, the Division must assume that inert fill material will need to be imported to the site to complete reclamation of the valley (as was anticipated in previous revisions). Therefore, please include costs for importing inert fill material to the site, and add a separate line item for grading this material to the final configuration.

c. Please re-add the task item for Remove 18-in Bypass Pipeline to this estimate. As mentioned above, the bond estimate must include costs for removing the bypass pipeline until the operator has demonstrated that leaving this structure in place is in compliance with the USACE/USFWS permitting for the site.

d. Please add a task item for Remove Upgradient Cutoff Wall to this estimate. As mentioned above, the bond estimate must include costs for removing the upgradient cutoff wall until the operator has demonstrated that leaving this structure in place is in compliance with the USACE/USFWS permitting for the site.

e. For the Top Soil/Plant Growth Medium task, no costs are provided because "sufficient quantities of suitable soil have been identified during the alluvial valley excavation" and the operator "intends to regrade the alluvial valley consistent with the surrounding slopes by pushing adjacent fill materials to fill in excavated potholes". As mentioned above, the operator has not demonstrated that sufficient growth medium is available on site, and therefore, the bond estimate must include costs for importing growth medium for reclamation. Please include costs for importing 10,083 cubic yards of topsoil to the site (for replacing 6 inches of topsoil on 12.5 acres of disturbed land), and add a separate line item for the application of this material.

f. For each of the five tasks associated with planting trees, willow stakes, and shrubs, please specify the number of plant species to be planted per acre. Additionally, please be sure each task includes an approximate acreage that will receive that particular plant mixture.

Exhibit M – Other Permits and Licenses (Rule 6.4.13):

13) The Division reviewed the updated information provided in AM-5, which was referenced by the operator in this exhibit. The list of permits, licenses, and approvals the operator holds or will be seeking in order to conduct the proposed operations, as provided in AM-5, does not include any permitting required by the Environmental Protection Agency (EPA). Please clarify whether any permits, licenses, or approvals are required by the EPA for this site (e.g., for injection of RO reject into mine workings). If so, please provide an updated list in this exhibit.

Exhibit U – Designated Mining Operation Environmental Protection Plan (Rule 6.4.21):

14) The Division has the following comments on Figure 7-1 - Water Treatment Plant Layout:

    a. This figure is stamped "Draft Not For Construction". Does the operator have access to the final construction drawing for the current water treatment plant? If so, please provide it to the Division.

15) The Division has the following comments on Figure 7-2 - Mesa Water Treatment Plant Building Layout:

    a. It is the Division's understanding that an above-ground pipeline runs from the new dewatering pump in the Jeffrey Air Shaft to the water treatment facility on the mesa. Please be sure this figure shows all components of the facility, including any pipelines.

Additional Item(s):

16) Please remember that, pursuant to Rule 1.6.2(1)(c), any changes or additions to the application on file in our office must also be reflected in the public review copy which was placed with the County Clerk and Recorder. Pursuant to Rule 6.4.18, you must provide our office with an affidavit or receipt indicating the date this was done. This "proof" should be submitted with your adequacy response.

This concludes the Division's 3rd adequacy review of AM-6. Please ensure the Division sufficient time to complete its review process and calculate the associated bond estimate by responding to these adequacy items no later than **July 6, 2022**. If additional time is needed to respond, you must submit an extension

request to our office prior to the decision date. Please be advised, the Division staff will not be able to approve an extension of the application decision date past the 365-day deadline from filing, per Rule 1.4.1(9). For this application, the 365-day deadline will fall on July 29, 2022.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129, or by email at amy.eschberger@state.co.us.

Sincerely,

Amy Eschberger
Environmental Protection Specialist

Cc: Paul Newman, Colorado Legacy Land, LLC
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