STATE OF COLORADO

Eschberger - DNR, Amy <amy.eschberger@state.co.us>

Schwartzwalder AM-05

Elizabeth Busby <ebusby@ensero.com> Mon, Nov 23, 2020 at 3:51 PM
To: "Cunningham - DNR, Michael" <michaela.cunningham@state.co.us>, "Amy Eschberger - CDRMS (amy.eschberger@state.co.us)" <amy.eschberger@state.co.us>
Cc: CLL- Jim Harrington <Jim@coloradolegacy.land>, "CLL - Eric Williams (Eric@ColoradoLegacy.Land)" <Eric@coloradolegacy.land>, Paul Newman <paul@coloradolegacy.land>, Allan Steckelberg <asteckelberg@ensero.com>, Billy Ray <bray@ensero.com>

Dear Michael and Amy,

Thank you for reviewing and providing comments on AM-05. The revised application amendment is attached. Please note that Exhibit B (USGS Quad Map) is too large to transfer via email & is not included in the attached AM-05 file. Instead it is available for download from this link. Two hard copies of this deliverable has been overnighted to your office (FedEx Tracking No: 7721 6513 7638). Please contact me directly if you require additional means of delivery.

Elizabeth Busby, PE

Project Manager

ENSERO solutions

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3 attachments

Schwartz Tax Statement - Oct 26 2020 - 5-26 PM.pdf
808K

2020-11-23_AM-05_Schwartzwalder_RTC.pdf
336K

2020-11-23_MLR_Permit_M-1977-300_AM-05.pdf
10711K

COLORADO LEGACY LAND
4601 DTC Boulevard, Suite 120, Denver, CO 80237
T. (303) 862-3928

November 23, 2020

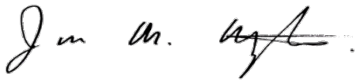
Ms. Amy Eschberger
Division of Reclamation, Mining, and Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

Subject: Response to Preliminary Adequacy Review
Application Amendment #5
Mine Land Reclamation Permit M-1977-300, Schwartzwalder Mine, Golden, Colorado

Dear Ms. Eschberger:

In response to comments received by DRMS and the public comment period, Colorado Legacy Land, LLC (CLL) has revised *Mine Land Reclamation Permit M-1977-300, Application Amendment #5* for the Schwartzwalder Mine, to address the reviewer's comments. Enclosed is a copy of the revised Application Amendment #5 and comment summary table. If you have any questions regarding the subject document, please don't hesitate to contact me.

Sincerely,



Jim Harrington, Managing Director
COLORADO LEGACY LAND
Jim@ColoradoLegacy.Land

cc: Michael Cunningham - DRMS, Senior Environmental Protection Specialist, michaela.cunningham@state.co.us
Paul Newman – CLL, Managing Director, paul@coloradolegacy.land
Eric Williams – CLL, Managing Director, eric@coloradolegacy.land
Billy Ray – Ensero Solutions, Project Manager, bray@ensero.com
Allan Steckelberg – Ensero Solutions, VP of Construction & Risk, asteckelberg@ensero.com
Elizabeth Busby – Ensero Solutions, Project Manager, ebubsy@ensero.com

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M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
1	**Exhibit B- Index Map (Rule 6.4.2):** Please provide an updated index map showing the regional location of the affected land and all roads and other access to the area. A standard U.S. Geological Survey topographic quadrangle or equivalent is acceptable. Scale criteria need not be followed for this map.	Revised as requested. The U.S. Geological Survey topographic quadrangle for Ralston Buttes Colorado has been included in Exhibit B as "Figure B-1. Index Map".
2a	**Exhibit C – Pre-Mining and Mining Plan Map(s) of Affected Lands (Rule 6.4.3):** Please provide an updated Exhibit C-1 map with the following revisions: Per Rule 6.2.1(2)(e), please ensure the map is prepared at a scale that is appropriate to clearly show all elements that are required to be delineated by the Act and Rules. The acceptable range of map scales shall not be larger than 1 inch = 50 feet nor smaller than 1 inch = 660 feet. The scale of the map submitted is 1 inch = slightly more than 750 feet, which is a smaller scale than the required 1 inch = 660 feet. The scale of the map as well as the labels overlapping the permit boundary in places makes it difficult to assess the location of the permit boundary, the proposed expansion areas, and mine features. The Division recommends the map be revised to show less of the property boundary and more of the affected land/permit boundary to meet the scale criteria and to clearly show all elements required to be delineated.	Revised as requested.
2b	**Exhibit C – Pre-Mining and Mining Plan Map(s) of Affected Lands (Rule 6.4.3):** Per Rule 6.4.3(a), please show all immediately adjoining surface owners of record. Since the operator owns the land surrounding the permit area except at its southern and eastern edges, the surface owner information is only required in these areas.	Revised as requested.
2c	**Exhibit C – Pre-Mining and Mining Plan Map(s) of Affected Lands (Rule 6.4.3):** Per Rule 6.4.3(b), please show the name and location of all creeks, roads, buildings, oil and gas wells and lines, and power and communication lines on and within 200 feet of the affected land/permit area. The operator has already labeled most of these features on the map, except for the power and/or communications lines which the Division has observed on site.	Revised as requested. Please note: no oil and gas wells or lines are present, and therefor not shown on the figure.
2d	**Exhibit C – Pre-Mining and Mining Plan Map(s) of Affected Lands (Rule 6.4.3):** Per Rule 6.4.3(g), please show the owner's name, type of structures, and location of all significant, valuable, and permanent	Revised as requested.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
	man-made structures contained on the area of the affected land and within 200 feet of the affected land. This includes structures such as roads, bridges, culverts, gates, communication and power lines, pipelines, cutoff walls in the creek, wells, sumps, diversion channel on NWRP, water treatment plant and associated structures on top of mesa, and any graveled or paved parking areas. Since the operator owns the majority of structures on site, it may be useful to indicate this using the legend to reduce clutter on the map. There is no need to show the location of structures that have been removed from the site (e.g., old water treatment plant, old retention pond). In fact, the Division recommends these references be removed from the map to reduce clutter.	
3a	**Exhibit E – Reclamation Plan (Rule 6.4.5):** Per Rule 6.4.5(2), please describe the type of reclamation proposed to be implemented on the affected lands (for NWRP upland area and Black Forest Mine area), including: A description of any grading (specify maximum anticipated slope gradient), retopsoiling, or revegetation activities required.	No areas will be regraded, retopsoiled, or revegetated. The surface expression of both proposed areas is currently unimpacted and are expected to remain unimpacted. However, the text in Exhibit E has been revised to affirm CLLs commitment to reclamation. If these areas become impacted in the future, they shall be reclaimed consistent with the current approved reclamation plan for the Schwartzwalder Site.
3b	**Exhibit E – Reclamation Plan (Rule 6.4.5):** For areas to be retopsoiled, the approximate acreage to be retopsoiled, the approximate placement depth, and whether the topsoil will be derived from on site (specify location) or will need to be imported.	No areas will be retopsoiled. The surface expression of both proposed areas is currently unimpacted and are expected to remain unimpacted. However, the text in Exhibit E has been revised to affirm CLLs commitment to reclamation. If these areas become impacted in the future, they shall be reclaimed consistent with the current approved reclamation plan for the Schwartzwalder Site.
3c	**Exhibit E – Reclamation Plan (Rule 6.4.5):** For areas requiring revegetation, the seed mixture to be used including the method and rates of seeding/planting, and the proposed time of seeding/planting.	No areas will be revegetated. The surface expression of the both areas is currently unimpacted and are expected to remain unimpacted. However, the text in Exhibit E has been revised to affirm CLLs commitment to reclamation. If these areas become impacted in the future, they shall be reclaimed consistent with the current approved reclamation plan for the Schwartzwalder Site.
3d	**Exhibit E – Reclamation Plan (Rule 6.4.5):** For areas with mine openings, a detailed closure plan including the anticipated design for any proposed bulkheads.	Revised as requested. Section E.4 has been revised to discuss the closure plan for the main entrance and escape portal of the Former Black Forest Mine. The erroneous reference to bulkheads for the Pierce and Steve adits has been removed.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
4a	**Exhibit E – Reclamation Plan (Rule 6.4.5):** An estimate of the periods of time which will be required for the various stages or phases of reclamation.	The surface expression of the proposed areas is currently unimpacted and are expected to remain unimpacted. No revisions have been made in response to this comment.
4b	**Exhibit E – Reclamation Plan (Rule 6.4.5):** A description of the size and location of each area to be reclaimed during each phase.	The surface expression of the proposed areas is currently unimpacted and are expected to remain unimpacted. No revisions have been made in response to this comment.
4c	**Exhibit E – Reclamation Plan (Rule 6.4.5):** An outline of the sequence in which each stage or phase of reclamation will be carried out.	The surface expression of the proposed areas is currently unimpacted and are expected to remain unimpacted. No revisions have been made in response to this comment.
5	**Exhibit E – Reclamation Plan (Rule 6.4.5): Exhibit E – Reclamation Plan (Rule 6.4.5):** According to the operator's estimates, approximately 39,000 cy of impacted soils will need to be excavated from the valley, and the Minnesota Mine "CV Glory Hole" has a remaining capacity of approximately 28,000 cy. The proposed Black Forest Mine disposal location has an estimated capacity of 15,000 cy, which means there should be enough capacity in both of these mines to accommodate the estimated volume of impacted soils remaining to be excavated. However, given the estimated volume has changed during the excavation project, it would seem there is potential for the estimated volume to change again. Therefore, in the situation where the remaining volume of impacted soils in the valley exceeds the combined capacity of the CV Glory Hole and Black Forest Mine, please describe how the operator intends to dispose of any excess material.	Revised as requested. Section E.4 has been revised to include the following text: *"In the event that the Minnesota and Black Forest reach capacity before the excavation is complete, CLL will meet with DRMS and other regulatory agencies as appropriate to attain consensus on the most appropriate option (capped waste rock pile, or offsite repository) or combination of options, for disposal of alluvial fill source term materials from the Schwartzwalder Mine site."*

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
6a	**Exhibit F – Reclamation Plan Map (Rule 6.4.6):** Please provide an updated Exhibit F-1 map with the following revisions: Per Rule 6.2.1(2)(e), please ensure the map is prepared at a scale that is appropriate to clearly show all elements that are required to be delineated by the Act and Rules. The acceptable range of map scales shall not be larger than 1 inch = 50 feet nor smaller than 1 inch = 660 feet. The scale of the map submitted is 1 inch = slightly more than 750 feet, which is a smaller scale than the required 1 inch = 660 feet. The scale of the map makes it difficult to assess the location of the permit boundary, the proposed expansion areas, and the reclamation proposed for affected lands, particularly for the proposed expansion areas. The Division recommends the map be revised to show less of the property boundary and more of the affected land/permit boundary to meet the scale criteria and to clearly show all elements required to be delineated.	Revised as requested.
6b	**Exhibit F – Reclamation Plan Map (Rule 6.4.6):**Per Rule 6.4.6(a), please show the expected physical appearance of the area of the affected land, correlated to the proposed reclamation timetable. The map must show proposed topography of the area with contour lines of sufficient detail to portray the direction and rate of slope of all reclaimed lands. The Division understands the operator is currently developing a final reclamation plan for the site that incorporates analyses of monitoring and testing programs conducted at the site as well as the final topography to exist after conclusion of the valley excavation project, and this plan will be proposed in a subsequent Amendment application (to be submitted in 3rd quarter of 2021). Therefore, please provide as much information on the map as available at this time, including approximate final slope gradients for disturbed areas (e.g., waste rock piles, valley disturbances, mesa disturbances), mine openings to be secured/sealed, structures to remain (including roads), and any areas to be retopsoiled and revegetated for final reclamation. The specific grading plan for the valley, including any changes to the current creek channel alignment, can be provided in a subsequent revision once this information is known.	Revised as requested.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
6c	**Exhibit F – Reclamation Plan Map (Rule 6.4.6):** Per Rule 6.4.6(b), please ensure the map portrays the proposed final land use for each portion of the affected lands.	Revised as requested. A note has been added to Figure F-1 affirming that all affected lands shall be reclaimed for wildlife habitat.
7	**Exhibit G – Water Information (Rule 6.4.7):** Please provide demonstration that disposal of radionuclide-impacted alluvial valley soils into the Black Forest Mine will not directly affect surface or groundwater systems. This demonstration should include, at a minimum, a cross-section showing elevations of the Black Forest Mine with respect to elevations of the Minnesota "CV Glory Hole", the Steve Level, the approved maximum mine pool level (150 feet below Steve Level), and the creek channel, and an explanation of how the material placed inside the Black Forest Mine is not expected to contaminate surface or alluvial groundwater in the Ralston Creek stream shed.	Revised as requested. Exhibit G has been revised to include the requested cross-sectional figure and a discussion on how disposal in the Black Forest is expected to affect the water quality in the shallow alluvium and Ralston Creek.
8	**Exhibit L – Reclamation Costs (Rule 6.4.12):** Please provide a bond estimate that includes costs for completing reclamation in the proposed affected lands (NWRP upland area and Black Forest Mine area). All information necessary to calculate the costs of reclamation must be submitted and broken down into the various major phase of reclamation. The information provided must be sufficient to calculate the cost of reclamation that would be incurred by the state in the event the permit was revoked and the state took over reclamation liability.	Revised as requested. Exhibit L has been updated to include Table L-1 which summarizes the Schwartzwalder Reclamation costs.
9	**Exhibit M – Other Permits and Licenses (Rule 6.4.13):** The operator states "This exhibit has not changed from the September 2016 Environmental Protection Plan". However, the only revisions submitted for this permit in 2016 include Technical Revision No. 23 (TR-23; submitted on 5/4/2016 and approved on 3/17/2017) to change the final disposal location of valley fill and install stormwater management structures for waste rock piles, and Technical Revision No. 24 (TR-24; submitted on 6/20/2016 and approved on 11/2/2016) to relocate the water treatment plant and correct a permit boundary discrepancy. It does not appear that Exhibit M information was included with either of these submittals. Please provide a list of all permits, licenses, and approvals the operator holds or will be seeking for the operation, including effluent discharge permits, air quality emissions permits, radioactive source	Exhibit M has been revised to include an updated list of permits and licenses. This list is updated from the *Environmental Protection Plan* which was prepared by Whetstone Associates and is dated September 2016. This document is Attachment B of Technical Revision 23.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
	material licenses, State Historic Preservation Office clearance, disposal of dredge and fill material (404) permits, USFWS approvals or permits, permit to construct a dam, well permits, EPA approvals or permits, explosives permits, highway access permits, USFS permits, BLM permits, county zoning and land use permits, and city zoning and land use permits. Alternatively, please specify exactly where in the permit file an up-to-date list can be found.	
10	**Exhibit N – Source of Legal Right to Enter (Rule 6.4.14):**The current operator, Colorado Legacy Land, LLC(CLL) took over this permit through the Division's approval of Succession of Operators No. 1 (SO-1) on February 16, 2018. At the time of SO-1 review, the affected lands were still owned by Cotter Corporation (CC), and a notarized statement of right to enter was provided to the Division giving CLL the legal right to enter the property on which the Schwartzwalder Mine is located. Since that time, the ownership of the affected lands has changed. Therefore, per Rule 6.4.14, please provide documentation of the legal right to enter to conduct mining and reclamation for all Owners of Record to the affected lands. This may include a copy of a lease, deed, abstract of title, a current tax receipt, or a signed statement by the landowner(s) and acknowledged by a Notary Public stating that the operator has legal right to enter to conduct mining and reclamation on the affected lands.	Revised as requested. A current tax receipt is included in this submittal.
11	**Exhibit S – Permanent Man-Made Structures (Rule 6.4.19):** Please provide a list of all permanent, man-made structures located on the affected lands and within 200 feet of the affected lands (e.g., roads, bridges, culverts, fences, gates, communication and power lines, pipelines, cutoff walls installed in creek, wells, sumps, diversion channel on NWRP, water treatment plant and associated structures on top of mesa, graveled or paved parking areas).	Revised as requested.
12	**Exhibit U – Designated Mining Operation Environmental Protection Plan (Rule 6.4.21):** The operator states in this section "This information is presented in the September 2016 Environmental Protection Plan and Exhibit E of this document, which provides an updated description of the current environmental monitoring program". Please clarify whether the Environmental Protection Plan referred to in this section is the information	The *Environmental Protection Plan* was prepared by Whetstone Associates and is dated September 2016. This document is Attachment B of Technical Revision 23. The text has been revised for clarity.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
	submitted in Technical Revision No. 23 (TR-23; submitted on 5/4/2016 and approved on 3/17/2017).	
13	**Exhibit U – Designated Mining Operation Environmental Protection Plan (Rule 6.4.21):** Per Rule6.4.21(3), please identify any additional environmental protection measures, monitoring, or permitting required from other agencies or jurisdictions (if any) for the proposed disposal of radionuclide-impacted alluvial valley soils into the Black Forest Mine.	CLL is not proposing additional environmental monitoring. The current monitoring network described in Exhibit E provides upgradient, downgradient, and cross gradient groundwater monitoring stations as well as several surface water monitoring stations on Ralston Creek that are upgradient and downgradient of the Black Forest Mine. No revisions have been made in response to this comment.
14	**Exhibit U – Designated Mining Operation Environmental Protection Plan (Rule 6.4.21):** Per Rule 6.4.21(4)(a), please list any air, water quality, solid and hazardous waste, and other federal, state permits or local licenses, or other formal authorizations which the operator holds or will be seeking for the activities proposed in the expansion areas (NWRP upland area and Black Forest Mine area), if required.	CLL is not seeking any new permits or licenses for the proposed affected areas. A list of current permits and licenses is provided in Exhibit M.
15	**Exhibit U – Designated Mining Operation Environmental Protection Plan (Rule 6.4.21):** Per Rule 6.4.21(8)(c),please describe all geologic media down to and including the upper most aquifer under the proposed disposal site in the Black Forest Mine where such subsurface materials and any associated waters have the potential to be contaminated by materials that are toxic or acid-forming, or that produce acid mine drainage.	This information is provided in Section 8c, Description of Geologic Media, of the *Environmental Protection Plan* (Whetstone Associates, 2016). No revisions have been made in response to this comment. Note: The *Environmental Protection Plan* (Whetstone Associates, 2016) is Attachment B of Technical Revision 23.
16	**Exhibit U – Designated Mining Operation Environmental Protection Plan (Rule 6.4.21):** Per Rule 6.4.21(8)(d), please identify and locate on a map, in Exhibit C, known major fracture systems that affect rock formations under the proposed disposal site in the Black Forest Mine where such fractures and any associated waters have the potential to be contaminated by toxic or acid-forming materials or that produce acid mine drainage.	Figure 8-11 and Figure 8-17 of the *Environmental Protection Plan* (Whetstone Associates, 2016) illustrate the location of the Illinois Fault, East Rodgers Fault, and West Rodgers Breccia Reef. As shown in the figures, these figures do not underlie the Black Forest Mine. As previously described in Technical Revision 14 and references in Section E.4 of this application amendment, the alluvial valley soils are not acid forming materials or have the potential to produce acid mine drainage.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
		No revisions have been made in response to this comment. Note: The *Environmental Protection Plan* (Whetstone Associates, 2016) is Attachment B of Technical Revision 23.
17	**Additional Item(s):** Please see enclosed comment letters received from the Division of Water Resources on September 17, 2020 and from History Colorado on October 2, 2020	CLL thanks the Division of Water Resources and History Colorado for their review and comments on AM-05. If human remains are encountered during reclamation activities CLL shall follow State law CRS 24-80 part 13.
18	**Additional Item(s):** Denver Water requests that CLL demonstrate how the proposed AM-05 activities will be taken into consideration in the development of its conceptual site model (CSM) and requests that CLL provide the following: 1) The hydrogeologic data to demonstrate that the Black Forest Mine will not contact groundwater or surface water and will not develop alternative pathways when the watertight bulkhead is installed. 2) The design of the watertight bulkhead and the associated closure plan. 3) The vertical gradient of groundwater in the vicinity of Ralston Creek and Black Forest Mine. 4) Denver Water agrees with DRMS's adequacy review comment on Exhibit G and requests that CLL also provide the depth to groundwater and potential interactions between the fault fracture zones and Ralston Creek. 5) Evidence of an inward gradient of groundwater into the Schwartzwalder mine and discussion of how that inward gradient influence extends to the Black Forest Mine and whether it will it be maintained.	CLL thanks the Denver Water for their review and comments on AM-05. The proposed activities in AM-05 are consistent with the conceptual site model presented to DRMS and Denver Water in October 2018. 1) Underground mining in the Black Forest occurred at elevations equal to or above 6,604 ft amsl. Therefor the Black Forest Mine is a dry mine and does not have the opportunity to contact surface water or groundwater at the Site. The original construction permit for the black forest mine cites an alluvial water level of 9 feet below ground surface (6,595 ft amsl). Near by groundwater wells in the shallow alluvium and deep bedrock indicate depth to water in this area ranges from 15 to 120 ft bgs (6,489 to 6,484 ft amsl). Surface water and groundwater data from 1998 to 2010 is presented and analyzed in the *Schwartzwalder Environmental Protection Plan* (Whetstone Associates, 2016). This document is Attachment B of Technical Revision #23. The text in Exhibit G has been revised to include this information and a discussion of the dry conditions in the Black Forest. 2) The Black Forest Mine is currently closed with gates. Section E.4 of AM-05 includes a description of how the adits shall be backfilled (voluntarily) for improved aesthetics. The inadvertent reference to a bulkhead closures for the Steve and Peirce adits was removed.

M-1977-300 APPLICATION AMENDMENT #5, COMMENT AND RESPONSE SUMMARY TABLE		
COMMENT NO.	**COMMENT**	**RESPONSE TO COMMENT**
		3) A discussion of vertical gradients in the vicinity of the Black Forest Mine is presented in Section 8 of the *Schwartzwalder Environmental Protection Plan* (Whetstone Associates, 2016). This document is Attachment B of Technical Revision #23. 4) Please see previous response to DRMS's comment on Exhibit G. Static water levels from the initial Construction Materials 110 Permit (M-2001-036) and current static water levels are discussed in Exhibit G. Additionally, the depth to water for groundwater wells (as completed) is summarized in Table 8-4 of the *Schwartzwalder Environmental Protection Plan* (Whetstone Associates, 2016). This document is Attachment B of Technical Revision #23. Current depth to water for groundwater wells are provided in quarterly reports to DRMS. A discussion of fracture interactions with Ralston Creek is presented in Section 8 of the *Schwartzwalder Environmental Protection Plan* (Whetstone Associates, 2016). This document is Attachment B of Technical Revision #23. A connection between the mine pool and Ralston Creek via the Schwartz Trend was investigated in 2008 – 2009. Water quality monitoring and gamma surveys indicated no evidence of chemical loading from the mine pool via the Schwartz Trend and that the mine pool was not contributing loading to Ralston Creek. 5) The maximum mine pool elevation of the Schwartzwalder Mine pool is 150-feet below the Steve-level adit. This level was agreed to by DRMS and Cotter because it is sufficient to establish a hydraulic gradient away Ralston Creek. The elevation of the Steve Adit (6,602 ft amsl) is approximately the same as the elevation of the Black Forest (6,604 ft amsl). The Black

M-1977-300 Application Amendment #5, Comment and Response Summary Table		
Comment No.	**Comment**	**Response to Comment**
		Forest is a dry mine that is not hydraulically connected to the Schwartzwalder mine pool.

APPLICATION AMENDMENT 5, MINE PERMIT M-1977-300
SCHWARTZWALDER MINE, GOLDEN, COLORADO

NOVEMBER 2020

COLORADO LEGACY LAND

PREPARED FOR:

COLORADO LEGACY LAND, LLC
4601 DTC BOULEVARD, SUITE 120
DENVER, CO 80237

PREPARED BY:

ENSERO SOLUTIONS US, INC.
12150 EAST BRIARWOOD AVE. SUITE 135
CENTENNIAL, CO 80112

APPLICATION AMENDMENT 5, MINE PERMIT M-1977-300, SCHWARTZWALDER MINE, GOLDEN, COLORADO
AUGUST 2020

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EXHIBIT A. LEGAL DESCRIPTION

The current affected area (72.24 acres) for the Schwartzwalder Mine is located in Jefferson County, Colorado, in Section 25 of Township 2 South, Range 71 West, 6th Principal Meridian, Southeast Quarter Section, Northwest Quarter/Quarter Section. The Schwartzwalder mine is approximately six mines northwest of Golden Colorado at approximately 6,600 feet above mean sea level (Latitude: 39.84486 degrees North, Longitude: -105.28024 degrees West). This Amendment proposes expanding the affected or potentially affected areas by 3.98 acres to accommodate anticipated reclamation activities. Approval of this Amendment would result in a total area covered under mine reclamation permit M-1977-300 of 76.22 acres. Exhibit C shows the current affected area (also called the permitted boundary) with respect to the proposed affected areas. Both parcels of land are contained within Colorado Legacy Land, LLC property boundary.

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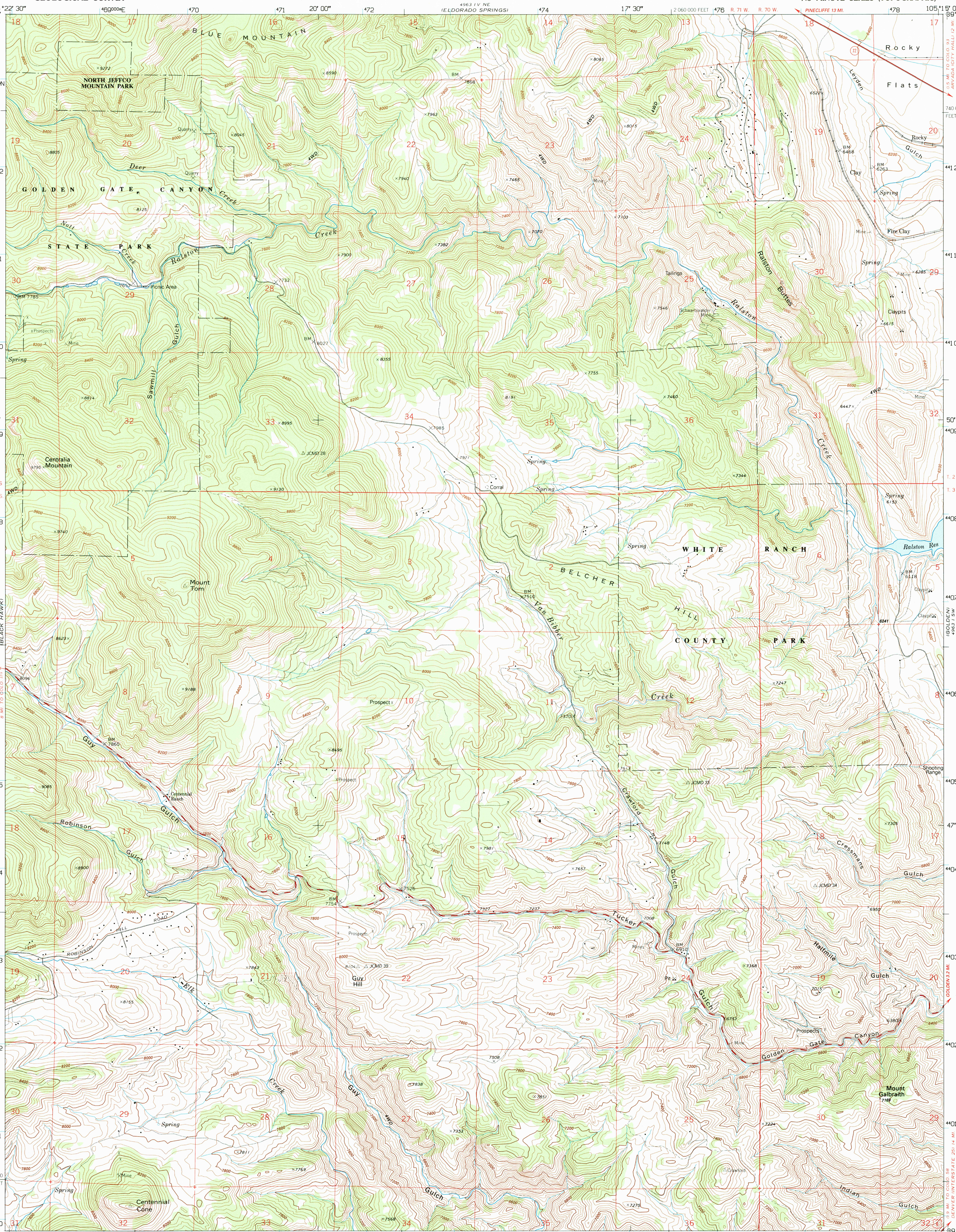
EXHIBIT B. INDEX MAP

The U.S. Geological Survey quadrangle for Ralston Buttes Colorado is included as the index map (Figure B-1) for the Site.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RALSTON BUTTES QUADRANGLE
COLORADO–JEFFERSON CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Produced by the United States Geological Survey

Control by USGS and NOS/NOAA

Compiled from aerial photographs taken 1964. Field checked 1965
Revised from aerial photographs taken 1988 and 1990 and other sources. Map edited 1994. Contours and land elevations have not been revised and may conflict with other content

North American Datum of 1927 (NAD 27). Projection and blue 1000-meter Universal Transverse Mercator ticks, zone 13
10 000-foot ticks: Colorado Coordinate System, central zone

North American Datum of 1983 (NAD 83) is shown by dashed corner ticks. The values of the shift between NAD 27 and NAD 83 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software

There may be private inholdings within the boundaries of the National or State reservations shown on this map

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

GN MN 0°12′ 4 MILS 11° 196 MILS

UTM GRID AND 1994 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION

Heavy-duty	Light-duty
Medium-duty	Unimproved dirt
U.S. Route	State Route

COLORADO
QUADRANGLE LOCATION

RALSTON BUTTES, CO
39105-G3-TF-024

1965
REVISED 1994
DMA 4963 IV SE–SERIES V877

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EXHIBIT C. PRE-MINING AND MINING PLAN MAP(S) OF AFFECTED LANDS

Exhibit C illustrates the location of the current affected or potentially affected areas and the proposed affected or potentially affected areas. Table C-1 lists the proposed affected areas shown in Figure C-1and provides a rational for inclusion.

TABLE C-1: SUMMARY OF AFFECTED LANDS AND PROPOSED AFFECTED LANDS

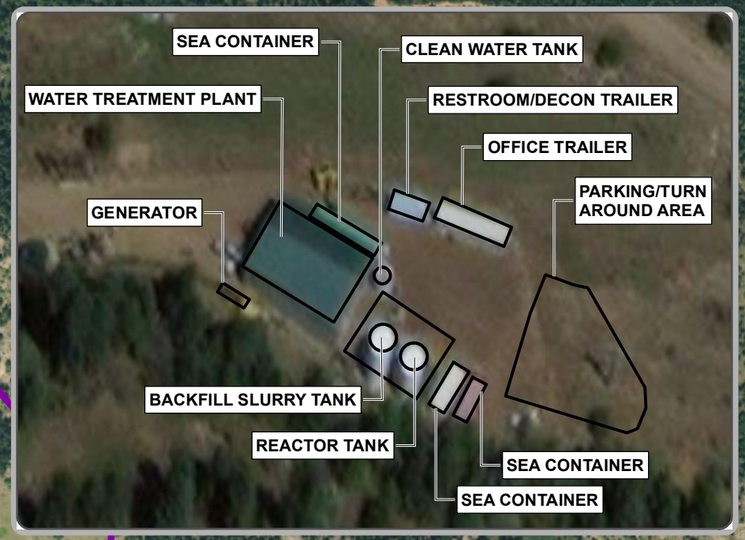
AFFECTED AREA NAME OR PROPOSED AFFECTED AREA NAME	ACRES	RATIONALE
Current Schwartzwalder Mine Affected Area	72.24	Not applicable. Current affected area.
Former Black Forest Mine (Proposed)	0.38	Additional area for disposal of radionuclide-impacted alluvial valley soils. Area shown on Figure C-1 is the former affected area boundary for the Black Forest Mine near the portal.
North Waste Rock Pile – Upland Area (Proposed)	3.60	Additional area for maneuvering equipment to construct diversion channel on North Waste Rock Pile. Area shown on Figure C-1 is defined by a 100-foot buffer around the upgradient boundary of the North Waste Rock Pile.

3058000 3059000 3060000 3061000 3062000 3063000 3064000 3065000

1736000 1735000 1734000 1733000 1732000 1731000

N W E S

WATER TREATMENT PLANT AREA LAYOUT



NORTH WASTE ROCK PILE
MW-00
Ralston Creek
SOUTH WASTE ROCK PILE
BRIDGE AND CUT-OFF WALL
MW-0
MW-20
BRIDGE
MW-19
BLACK FOREST ENTRANCE
DOMESTIC WELL
BLACK FOREST ESCAPE ADIT
WATER TREATMENT PLANT
MW-18
PIERCE ADIT
MW-17
STEVE ADIT
MW-6
MW-7
SUNSHINE DECLINE
MASTER SUMP
MINNESOTA ADIT
MW-12
ADJACENT LAND OWNED BY JEFFERSON COUNTY
WENCH AND CABLE HOUSING FOR DEWATERING PUMP
MW-16
MW-15
Glencoe Valley Road
MW-13
MW-14
ADJACENT LAND OWNED BY JEFFERSON COUNTY
ADJACENT LAND OWNED BY JEFFERSON COUNTY

COLORADO LEGACY LAND FORMER CAÑON CITY MILL REMEDIATION PROJECT

FIGURE C-1
AFFECTED LANDS

NOVEMBER 2020

COLORADO LEGACY LAND

- Mine Opening
- GW Monitoring Well
- Pumpback Sump
- Domestic Well
- Wench and Cable Housing for Dewatering Pump
- Bridge
- Gate
- Existing Mine Feature Footprint
- CLL Property Boundary (559.2 acres)
- Permitted Boundary, Schwartzwalder Mine M-1977-300 (72.24 acres)
- North Waste Rockpile Upland Area (3.6 acres)
- Former Black Forest Mine (0.38 acres)
- Waste Rock Dump
- Diversion Structure
- Underground Workings
- Power Line
- Ralston Creek
- Glencoe Valley Road

Colorado Legacy Land LLC owns all of the structures onsite, except for the power lines which are owned by United Power, Inc.

1 inch = 580 feet

0 250 500 750 1,000 ft

ENSERO solutions

Aerial imagery acquired from King Surveyors on December 10th, 2018

Datum: NAD_1983_StatePlane_Colorado_Central_FIPS_0502_Feet

D:\Projects\All\Projects\Schwartzwalder\Map\01-Overview\04-Special_Topics\Land_Tenure\Affected_Lands_Mont_Wells_20201113.mxd

EXHIBIT D. MINING PLAN

This exhibit has not changed from the 1983 and 2001 Mine Plan Amendments. Mineral extraction ceased in 2000.

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EXHIBIT E. RECLAMATION PLAN

A map showing the horizontal extents of the proposed affected lands is provided Exhibit F as Figure F-1. Figure F-1 identifies two proposed affected land areas:

1. the Former Black Forest Mine and

2. the North Waste Rock Pile – Upland Area.

The surface expression of both proposed areas is currently unimpacted and is expected to remain unimpacted. Therefor no grading, topsoiling, or revegetation is required. Colorado Legacy Land, LLC is committed to reclaiming all affected lands and proposed affected lands in Figure F-1 for wildlife habitat use. If any surficial areas are disturbed, they shall be reclaimed consistent with the current topography (approximately 15-30% slopes, as shown in Figure F-1), reseeded (seed mix shown below in Table E-1) and re-topsoiled consistent with Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016).

TABLE E-1. WASTE ROCK PILE SEED MIX

Species	Scientific Name	Season	% in Mix	Seed / lb	lbs PLS*/AC
Native Grasses**					
Sand dropseed	Sporobolus cryptandrus	Warm	15	5,298,000	0.1
Sideoats grama	Bouteloua curtipendula	Warm	15	191,000	3.1
Streambank wheatgrass	Elymus lanceolatus spp. Psammophilus	Cool	15	156,000	3.8
Needle and thread	Hesperostipa comate spp. Comate	Cool	15	115,000	5.2
Thickspike wheatgrass	Elymus laneolatus spp. Lanceolatus	Cool	10	154,000	2.6
Blue grama	Bouteloua gracilis	Warm	10	825,000	0.5
Canada wildrye	Elymus Canadensis	Cool	10	115,000	3.5
Native Wildflowers***					
Black-eyed susan	Rudbeckia hirta	Native	1.5	1,710,000	0.04
Sulfur flower	Eriogonum umbellatum	Native	1.5	209,000	0.3
Prairie aster	Maceranthera tanacetifolia	Native	1.5	408,000	0.2
Purple prairie clover	Dalea purpureum	Native	1.5	210,000	0.3
Western yarrow	Achillea millefolium var. occidentalis	Native	1	2,770,000	0.02
Planic coreopsis	Coreopsis tinctoria	Native	1	1,400,000	0.04
Blanket flower	Gaillardia aristata	Native	1	132,000	0.3
Purple coneflower	Echinacea purpurea	Native	1	117,000	0.3
Total			**100**	**20.3 lbs PLS*/AC**	

Source:

Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan*, Table 7-2 (Whetstone Associates Inc., 2016).

Notes:

This upland seed mix is also included in the mitigation description portion of the USACE Section 404 Permit application and associated Biological Assessment for USFWS.

*PLS/AC = Pure Live Seed per pound, per acre. If broadcast seeding, double the rate applied.

** Colorado native grasses and wildflowers may be substituted with project ecologist approval only

*** Wildflowers may be eliminated based on availability

Section 7(b)(ii) of the *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016) provides the following description of seed and topsoil placement:

> *"Topsoil Placement: Topsoil will be end-dumped on the crest of the slope and graded by dozers. Slopes will be graded to avoid concentrated water flow and subsequent erosion. Soil surfaces will be moderately roughened to allow the seeds to hold and some moisture to collect. Roughening can simply be the tracks of heavy equipment that has been used at the site for regrading.*
>
> *Seeding: Seeding will be accomplished by broadcast seeding followed by hydromulching. Hydroseeding is not recommended as it is not typically successful in an arid climate. Table E-1 presents the seed mix to be used for the waste rock piles.*
>
> *Mulching: For 2H:1V and steeper slopes, mulch is necessary to keep the seed and topsoil in place. Mulch can also provide shade to the seedlings and help the soil to retain moisture. Mulching will be accomplished by hydromulching with addition of a tackifier. Tackifier (Ecology Control MBinder) is a botanical glue made from Plantago insularis that can also be applied to the slope to prevent erosion. The hydromulch and tackifier should effectively stabilize the surface of the slope.*
>
> *Soil Amendments: Soil amendments may be required to improve the performance of the vegetation. This could include composted biosolids or manufactured amendments such as Biosol."*

E.1. CONCEPTUAL CONSIDERATION

This section has not changed from the 2012 Mine Plan Amendment 4.

E.2. INTERCEPTION AND TREATMENT OF ALLUVIAL GROUNDWATER

This section has not changed from the 2012 Mine Plan Amendment 4.

E.3. ISOLATION OF RALSTON CREEK FROM SOURCES OF IMPACTS

This section has not changed from the 2012 Mine Plan Amendment 4.

E.4. MITIGATION PLAN FOR SOLID SOURCE TERM MATERIALS

The alluvial valley excavation project began in the spring of 2018. Technical Revision 14 initial estimated 33,000 to 54,0000 cubic yards (CY) of soil were impacted by historical uranium mining practices. As of January 2020, approximately 19,500 CY of impacted soils have been excavated and disposed of onsite in the CV Glory Hole of the Schwartzwalder Mine. These materials were excavated form approximately 50% of the contaminated areas identified in Technical Revision 14, indicating that an additional (estimated) 39,000 CY of impacted soils will need to be excavated. The capacity of the CV Glory Hole was estimated in Technical Revision 14 to be approximately 56,000 CY. However, as of January 2020, the CV Glory Hole is approximately 50 % full, with an estimated 28,000 CY of capacity remaining. In order to accommodate the additional volume of excavated materials, this amendment expands the affected permit area to include the former Black Forest Mine.

The former Black Forest Mine is a dry underground aggregate mine wholly owned by Colorado Legacy Land, LLC (CLL) and within CLL's property boundary. It has an estimated capacity of 15,000 CY. The former Black Forest Mine permit (Permit No. M-2001-036) was formally closed in 2019. In accordance with Colorado Hard Rock Mining Rule 6.4.21.(19), CLL proposes disposing of excavated materials from the alluvial valley in either the former Black Forest Mine or the CV Glory Hole of the Schwartzwalder Mine. Technical Revision 14 documents the *de minimums* impact of alluvial soils disposed of in the CV Glory Hole. The former Black Forest Mine is a dry mine and is not connected to the adjacent Schwartzwalder mine workings. Dry mines do not have the opportunity to contact surface water or groundwater, therefore the impacts to water quality onsite are *de minimis*. Furthermore, as stated in Technical Revision 14, "…waste rock within the alluvial fill has demonstrated no propensity to acidify groundwater. This is based on sampling of several small seeps and the fact that pH of deep bedrock groundwater in the vicinity of the CV Glory Hole is approximately neutral or slightly basic." The floor of the main entrance and escape portal for the Black Forest Mine are included in the current Schwartzwalder Mine affected area boundary. These entrances are currently closed with gates. Once alluvial valley excavation and disposal in the Black Forest is complete, the main entrance and escape portal gates shall be backfilled either with rockfill or soil cement for aesthetic purposes:

- **Adit Backfilling – Rockfill:** Prior to backfilling adits, all wood, garbage, cribbing, or other vegetative materials shall be removed. Adits shall be backfilled to a minimum depth of fifteen feet (15') from the inner top of the fill to the outer top of the fill. There shall be no spaces between the top of the fill and the roof of the adit that exceed three inches (3") and there shall be no space between the top of the fill and the roof of the adit at the entrance of the adit. The innermost three feet (3') of the backfill shall consist entirely of large diameter rock (<1') sourced from onsite. The remainder of the fill with the exception of the outermost one foot (1') shall consist of Rockfill mixed with Common Fill to minimize visible void space between the rocks. The outermost one foot (1') of backfill shall consist of suitable plant-growth medium.

- **Adit Backfilling – Soil Cement Backfill**: Alternatively, if acceptable rock is not available, a soil cement mixture may be used. The soil cement will consist of on-site soil mixed with Portland cement in a ratio of 20:1 by volume (20 units of soil to 1 unit of cement). The on-site materials shall be well graded, with less than 5% passing the No. 200 Sieve, contain sufficient water to feel moist. The soil shall not be acidic or toxic in nature. Soil materials and Portland cement shall be thoroughly blended by mechanical means prior to placement. This may be done by machine or by hand. The entire length of the backfill except for the outermost three feet (3') feet shall be composed of soil cement. The outermost three feet (3') shall be composed of backfill material suitable for plant growth.

These adit backfilling closure specifications (above) are summarized from the Colorado Inactive Mine Reclamation Program's General Bid Specifications (Division of Reclamation, Mining & Safety, March 2009). This voluntary backfilling shall be completed consistent with the surrounding topography (approximately 15-30% slopes, as shown in Figure F-1) for a more "natural looking" closure. Backfilling shall be conducted along with the alluvial valley restoration and regrading once excavation is complete. It is anticipated that this work will be completed in the 2021 calendar year.

This reclamation strategy is consistent with the current disposal strategy and regulatory principles for maximizing the long-term protection of human health and the environment. Disposal inside underground mine workings provides complete / permanent isolation from active surface environment, no impact or *de minimis* impact to onsite water quality, no long-term maintenance, and no additional engineering design. This strategy

is also preferable to disturbing the onsite Waste Rock Piles or trucking source-term material through a residential community and along State Highway 93 for offsite disposal. In the event that the Minnesota and Black Forest reach capacity before the excavation is complete, CLL will meet with DRMS and other regulatory agencies as appropriate to attain consensus on the most appropriate option (capped waste rock pile, or offsite repository) or combination of options, for disposal of alluvial fill source term materials from the Schwartzwalder Mine site.

E.5. MINE POOL MITIGATION

The mine pool mitigation plan listed in this section of the 2012 Mine Permit Amendment 4was revised per Technical Revision #27. A summary of the revisions are provided below for reference.

In 2019, a new submersible pump (60HP Goulds Model 7CSL) was lowered down the Jeffery Air shaft to approximately 400-feet below the Steve Adit on a custom fabricated housing sled via a wench system. The housing sled was designed to protect and support the pump during installation and operation. The dedicated winch system was installed adjacent to the vent shaft on a concrete footer. The new winch system allows above-ground access to the pump for maintenance and repair, which supports the long-term health and safety goal of eliminating all underground work onsite. The only change to the mine pool mitigation strategy was the upgrade and relocation of the submersible pump, no other treatment process changes were implemented. Figure E-1 shows the process flow diagram for the onsite water treatment plant.

E.6. WATER QUALITY MONITORING PLAN

The water quality monitoring plan listed in this section of the 2012 Mine Permit Amendment 4 was reviser per Technical Revision #27. A summary of the current water quality monitoring plan is provided below.

The sampling rationale for the Schwartzwalder Mine is dictated by two permits: Colorado Mining Permit # M-1977-300 and Colorado Discharge Permit #CO-0001244. Quarterly water quality monitoring is conducted in accordance with Colorado Mining Permit # M-1977-300 and two monthly water quality monitoring programs conducted in accordance with Colorado Discharge Permit #CO-0001244. All three water quality monitoring programs are descried below.

E.6.1 Colorado Mining Permit #M-1977-300

The mine permit (M-1977-300) was issued by the State of Colorado in 1977 and is currently overseen by the Colorado Division of Reclamation and Mining Safety (CDRMS). Since the 2012 Mine Permit Amendment 4 there have been two Technical Revisions to Permit #M-1977-300, which define the quarterly water quality monitoring program:

- **Technical Revision 27** solidified the environmental monitoring requirements for surface water, groundwater, and the mine pool. Samples are collected and reported to CDRMS on a quarterly basis.

- **Technical Revision 29** updated the groundwater monitoring network identified in Technical Revision 27. Four shallow alluvial monitoring wells MW-1, MW-2, MW-3A, and MW-9 were removed in

December 2019 as part of the alluvial valley exaction work to removed radiologically contaminated soils from the soils adjacent to Ralston Creek.

Water quality samples are collected quarterly from thirteen surface water sample locations and sixteen groundwater sample locations. Table E-2 summarizes the surface water monitoring stations, which are shown in Figure E-2. Table E-3 summarizes the groundwater monitoring wells, which are shown in Figure E-3. Table E-4 summarizes the required quarterly surface water and groundwater sample analytes and field parameters. For reference, Table E-3 summarizes all the CDPHE acute and chronic surface water quality criteria for Ralston Creek and the CDPHE domestic water supply standard for groundwater.

The CDPHE water Quality Control Commission has published in-stream water quality standards for this reach (Clear Creek Basin, Reach 17b – Mainstem of Ralston Creek to the outlet of the Arvada Reservoir, including Ralston Reservoir and Upper Long Lake") of Ralston Creek. Colorado Regulation Number 38 (5CCR 1002-38) lists the specific numeric standards for Stream Segment 17b, and Colorado Regulation Number 31 (5CCR 1002-31) gives the basic stream standards and methodologies applicable to all Colorado state waters.

TABLE E-2. SURFACE WATER SAMPLE LOCATIONS

Location ID / Sample ID	Northing[1] (feet)	Easting [1] (feet)	Elevation [2] (feet amsl)	Location Description
SW-AWD	3,059,695.20	1,734,877.69	6,639.9	Upstream sample location. Above waste dump (AWD). Onsite.
SW-NWRP	3,060,173.49	1,734,321.88	unlisted	North waste rock pile (NWRP). Onsite. In between north and south waste rock piles, upstream of the cut-off wall.
SW-A001	3,060,998.25	1,733,658.14	6,590.57	Above former discharge. Onsite. Directly below the west waste rock pile.
SW-BDIS	3,061,324.70	1,733,354.68	6,577.34	Below former discharge (BDIS). Onsite. Below former concrete containment structure.
SW-PL	3,061,512.01	1,733,151.24	6,563.94	Former parking lot (PL). Onsite.
SW-OS	3,061,876.50	1,732,942.97	6,552.91	Former ore sorter (OS). Onsite.
SW-BOS	3,062,101.72	1,732,741.06	6,543.60	Below former ore sorter (BOS). Onsite.
SW-GS	3,062,364.54	1,732,484.87	6,533.43	Former guard shack (GS). Onsite.
SW-BPL	3,062,913.97	1,732,112.92	6,508.97	Below property line (BPL). Offsite. Downstream sample location, just below entrance gate.
SW-FBRG	3,063,726.64	1,731,653.13	6,460.0	First bridge (FBRG) after leaving site. Offsite.
SW-ARH	3,064,025.21	1,729,697.69	6,358.0	Above red hill (ARH). Offsite. Near the large red boulders in the creek bed.

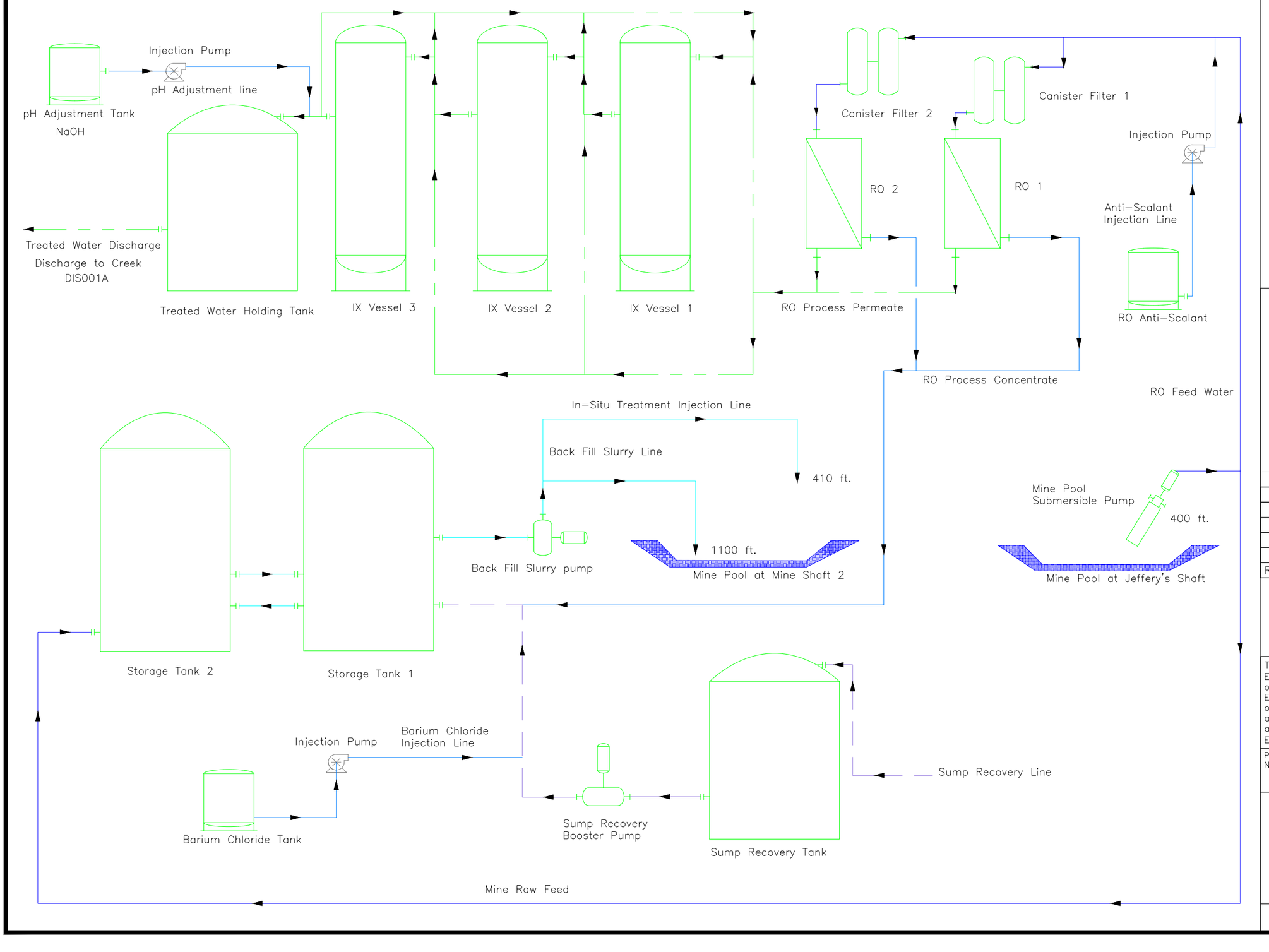
TABLE E-2. SURFACE WATER SAMPLE LOCATIONS				
Location ID / Sample ID	**Northing[1] (feet)**	**Easting [1] (feet)**	**Elevation [2] (feet amsl)**	**Location Description**
SW-LLHG	3,065,585.20	1,726,947.69	6,358.0	Long lake head gate (LLHG). Offsite. Sample collected upstream of concreate head gate.
SW-WEIR	3,066,960.31	1,724,127.45	unlisted	V-notch weir. Offsite. Sample collected upstream of Denver Water's flow control structure.

Citation:

[2] Technical Revision #23, Attachment B. Whetstone Associates. 2016. Schwartzwalder Mine Environmental Protection Plan, Revision 1.0, Table 11-5 Surface Water Monitoring Stations. September.

Notes:

[1] Coordinates: NAD 1983. Colorado State Plane Colorado Central (Feet).
amsl = above mean sea level
ft = feet
SW = Surface Water



STAMP/SEAL

REVISION HISTORY

REV	ISSUE/REVISION	DATE	APP
A	As Built Revision	2/10/20	TF

ENSERO solutions

PROJECT NO.	DESIGNED BY	DRAWN BY	DATE
CLL-2020	TF	NL	2/10/20

Schwartzwalder WTP Existing Conditions

Figure E-1
Process Flow Diagram

DRAWING NO.	REVISION
CLL-2020-D604	A

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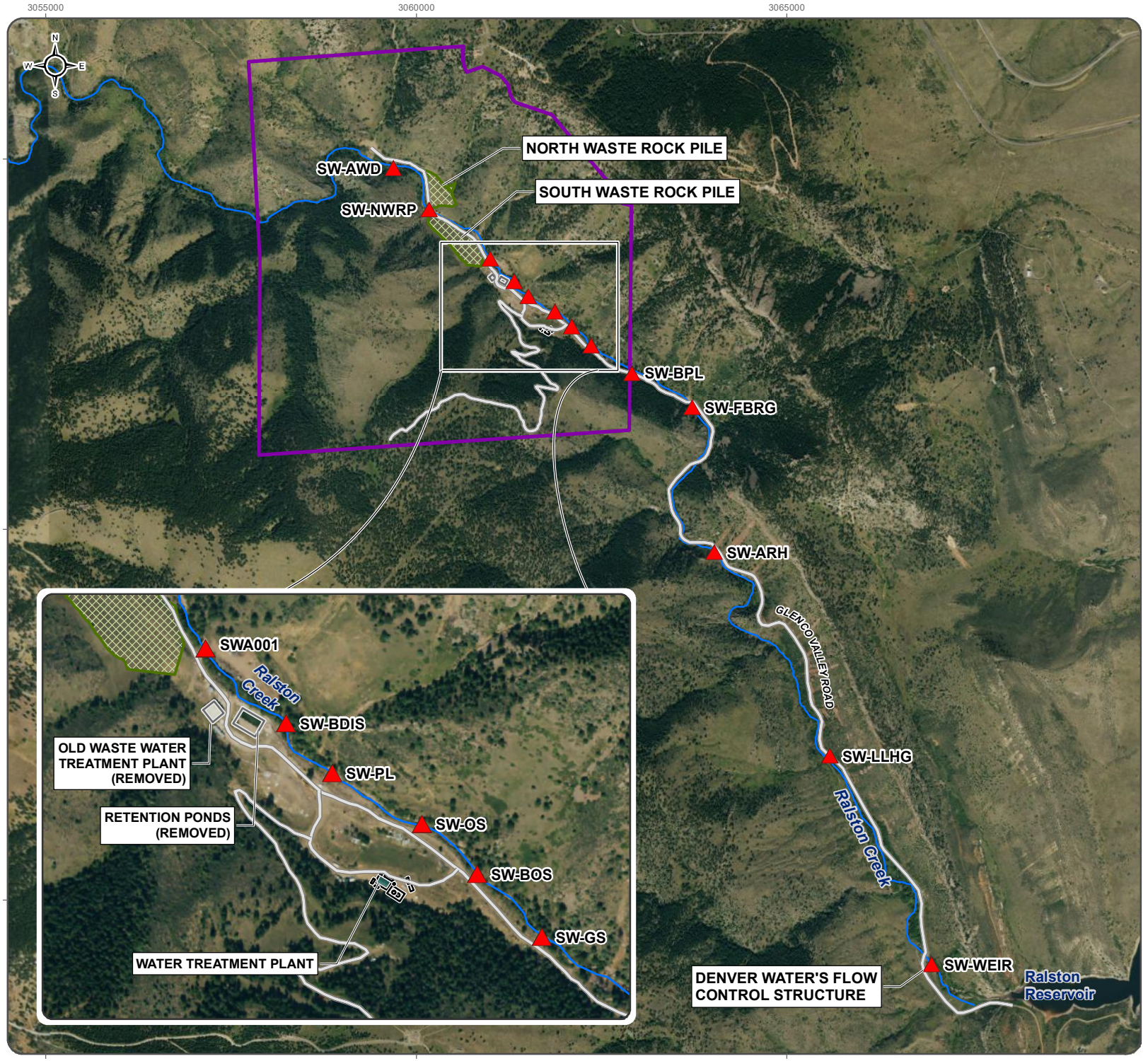

COLORADO LEGACY LAND SCHWARTZWALDER MINE

FIGURE E-2

SURFACE WATER MONITORING LOCATIONS

FEBRUARY 2020

COLORADO LEGACY LAND

- Surface Water Quality Monitoring Station
- CLL Property Boundary
- Building, Existing
- Reclaimed Mine Feature
- Waste Rock Dump
- Road
- Watercourse

1:22,000 *when printed on 8x11 inch paper*

0 500 1,000 1,500 2,000

Feet

ENSERO solutions

Satelite imagery obtained from ArcGIS on services.arcgisonline.com on February 2020

Datum: NAD 1983 (CORS96) StatePlane Colorado Central FIPS 0502 (US Feet)

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TABLE E-3. GROUNDWATER SAMPLE LOCATIONS									
Location ID / Sample ID	**Installation Date**	**Easting (feet)[1]**	**Northing (feet)[1]**	**Ground Surface Elevation (ft amsl)**	**Casing Elevation (ft amsl)**	**Total Depth (ft bgs)**	**Well Construction Details**	**Screened Interval (ft bgs)**	**Notes**
MW-00	10/29/1998	3,059,127.583	1,735,204.515	unknown	Unknown	27.5	4-inch PVC, 0.03-in slot.	16.9-26.9	Screened interval interpreted from field boring log.
MW-0	Unknown, construction paper filed on 11/20/1992	3,060,701.731	1,733,948.156	6,603.08	Unknown	23.0	2.5-inch PVC	15.0-20.0	No information exists for this boring log. Screened interval is taken from MW permit application. 15.0-20.0 is listed as the proposed screened interval.
MW-1	11/12/1981	3,061,101.646	1,733,408.892	6,590.4	6,592.9	25.5	2.5-inch, Sch 40 PVC, 1/8-in slot.	17.0-22.0	Abandoned in December 2019 during alluvial valley excavation.
MW-2	11/21/1981	3,061,335.757	1,733,253.837	6,581.3	6,581.3	15.4	2.5-inch, Sch 40 PVC, 1/8-in slot.	8.4-13.4	Abandoned in December 2019 during alluvial valley excavation.
MW-3A	06/19/1989	3,061,527.525	1,733,004.017	6,576.4	Unknown	14.0	4-in, Sch 40 PVC, 0.03-in slot.	8.5-13.5	Abandoned in December 2019 during alluvial valley excavation.
MW-4	06/16/1989	N/A	N/A	6,596.8	Unknown	38.9	2-in, Sch 40 PVC, 0.03-in slot	25.9-35.9	Removed in 2008.
MW-5	10/30/1998	N/A	N/A	Unknown	Unknown	20.0	4-in PVC, 0.03-in slot.	9.5-19.5	Removed in 2008.

TABLE E-3. GROUNDWATER SAMPLE LOCATIONS									
Location ID / Sample ID	**Installation Date**	**Easting (feet)[1]**	**Northing (feet)[1]**	**Ground Surface Elevation (ft amsl)**	**Casing Elevation (ft amsl)**	**Total Depth (ft bgs)**	**Well Construction Details**	**Screened Interval (ft bgs)**	**Notes**
MW-6	06/20/1989	3,062,101.667	1,732,608.381	6,551.1	Unknown	15.0	2-in Sch 40 PVC, 0.03-in slot	5.0-15.0	
MW-7	06/20/1989	3,062,353.236	1,732,483.253	6,540.3	Unknown	11.0	2-in Sch 40 PVC	5.0-10.0	
MW-8	12/08/1990	N/A	N/A	6532.42	Unknown	12.0	4-in Sch 40 PVC, 0.03-in slot	7.0-12.0	Replaced with well MW-12. TR23 says this well is "always dry" and has never been sampled
MW-9	11/12/2010	3,061,955.864	1,732,775.504	6,573.18	Unknown	19.2	6-in PVC, 0.5-in slot	9.0-19.0	Abandoned in December 2019 during alluvial valley excavation.
MW-10	10/25/1998	3,059,845.367	1,731,377.255	Unknown	Unknown	75.0	4-in PVC, 0.03-in slot	25.0-75.0	Background bedrock well. Replaced with MW-14.
MW-11	10/26/1998	3,059,828.397	1,731,338.764	Unknown	Unknown	200.0	4-in PVC, 0.03-in slot	150.0-200.0	Background bedrock well. Replaced with MW-13.
MW-12	November 2008 (According to EPP)	3,062,719.063	1,732,219.944	Unknown	Unknown	17.0	2-in PVC	12.0-17.0	Missing boring log and construction form. Was drilled to the be "downgradient alluvium compliance well".

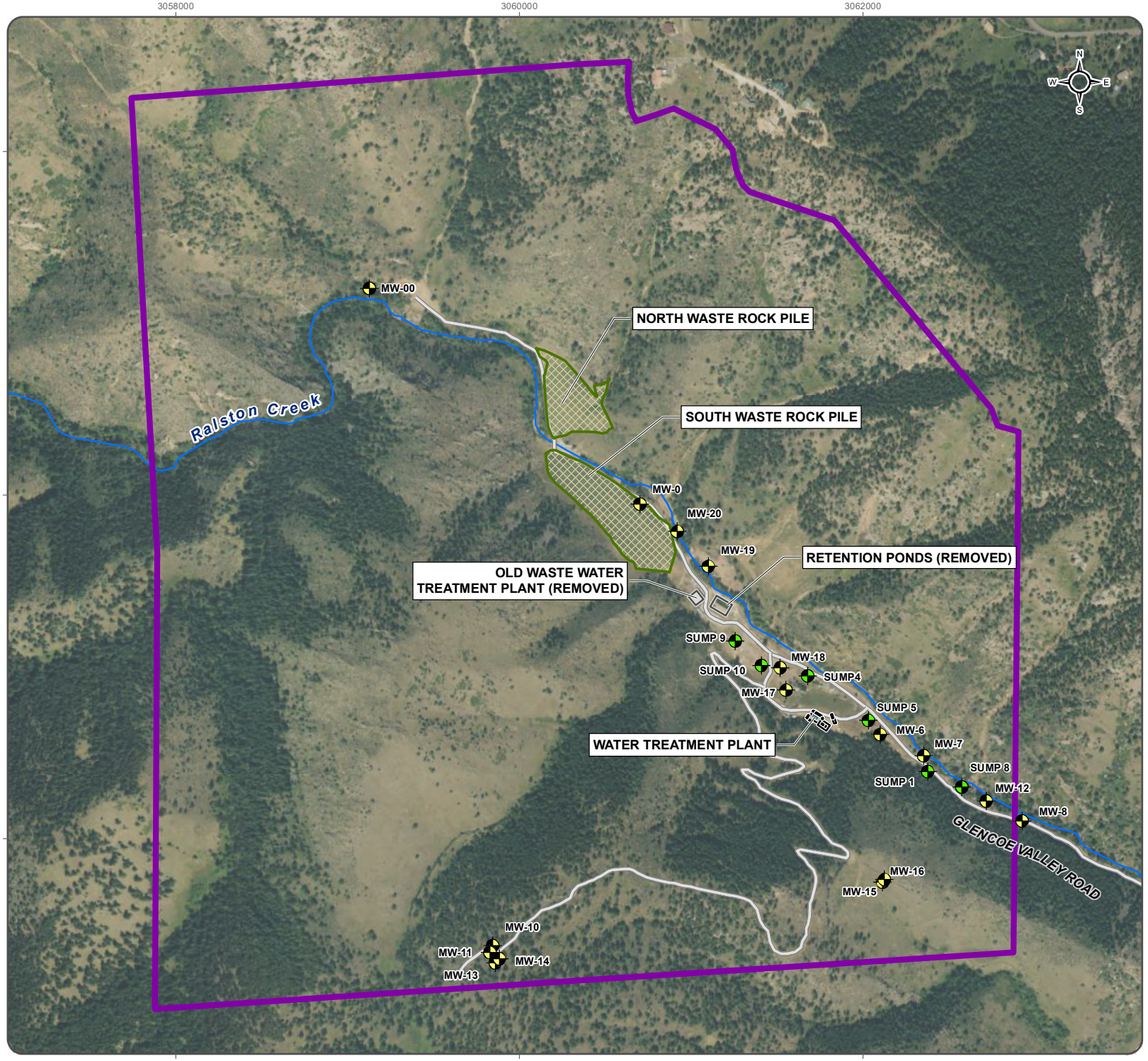
TABLE E-3. GROUNDWATER SAMPLE LOCATIONS									
Location ID / Sample ID	**Installation Date**	**Easting (feet)[1]**	**Northing (feet)[1]**	**Ground Surface Elevation (ft amsl)**	**Casing Elevation (ft amsl)**	**Total Depth (ft bgs)**	**Well Construction Details**	**Screened Interval (ft bgs)**	**Notes**
MW-13	09/06/2012	3,059,692.239	1,731,264.097	7,401.55	7,430	500.8	2-in Sch 40 PVC, 0.04-in slot	459.76-499.76	Nitrogen. Bladder pump in well. Sample Alias = L1.
MW-14	09/04/2012	3,059,746.043	1,731,324.489	7,401.02	7,401.70	154.3	2.375-in Sch 80 PVC, 0.02-in slot	134.34-154.34	Nitrogen. Bladder pump in well. Sample Alias = L2. Installed Dry.
MW-15	11/03/2012	3,061,955.205	1,731,830.06	6,897.12	6,899.04	1,007.13	3-in Sch 40 PVC, 0.04-in slot	960.0-1000.0	Nitrogen. Bladder pump in well. Sample Alias = L3.
MW-16	10/19/2012	3,061,980.403	1,731,873.584	6,898.05	6,899.73	324.7	2.375-in Sch 80 PVC, 0.02-in slot	300.0-320.0	No pump in well. Installed dry. Sample Alias = L4.
MW-17	09/22/2012	3,061,415.842	1,732,877.917	6,600.34	6,601.92	119.0	2.375-in Sch 80 PVC, 0.02-in slot	95.0-115.0	Nitrogen. Sample Alias = L5
MW-18	10/11/2012	3,061,365.467	1,732,989.777	6,574.83	6,576.33	239.9	2.375-in Sch 80 PVC, 0.02-in slot	215.0-235.0	Sample Alias = L6.
MW-19	09/28/2012	3,060,854.913	17,33,641.023	6,603.4	6,605.29	21.6	2.375-in Sch 80 PVC, 0.02-in slot	10.0-20.0	Sample Alias = L7.
MW-20	11/06/2012	3,060,688.113	1,733,813.625	6,644.78	6,646.72	50.0	2.375-in Sch 80 PVC, 0.02-in slot	40.0-50.0	Installed dry.
Domestic Well	08/20/1972	N/A	N/A	Unknown	Unknown	42.0	5.5-in steel	10.00-42.0	Wellhouse demolished fall 2018. Sustained yield at installation 4gpm.

TABLE E-3. GROUNDWATER SAMPLE LOCATIONS									
Location ID / Sample ID	**Installation Date**	**Easting (feet)[1]**	**Northing (feet)[1]**	**Ground Surface Elevation (ft amsl)**	**Casing Elevation (ft amsl)**	**Total Depth (ft bgs)**	**Well Construction Details**	**Screened Interval (ft bgs)**	**Notes**
									Discontinued sampling per TR 27.
Sump 1	10/08/2010	3,062,377.871	1,732,392.198	Unknown	Unknown	6.0	N/A	N/A	Discontinued sampling per TR 27. Maximum pumping rate = 100 gpm
Sump 4	10/08/2010	3,061,679.409	1,732,948.564	Unknown	Unknown	15.0	N/A	N/A	Discontinued sampling per TR 27. Maximum pumping rate = 200 gpm
Sump 5	11/05/2010 and 09/23/11	3,062,033.09	1,732,689.089	6,666.03	Unknown	17.5	48-in steel, 1-in by 6-in slot screen from 10.0-14.0 ft bgs 10.625-in stainless steel wire wrap, 0.035-in slot, from 7.5-17.5 ft bgs		Discontinued sampling per TR 27. Usually dry. Original construction was completed in 2011 to 14 ft bgs. Sump was deepened to 17.5 ft bgs in 2012.
Sump 8	11/11/2010 and 12/21/2011	3,062,576.581	1,732,300.82	6,542.24	Unknown	18.0	48-in steel, 1-in by 6-in slot screen from 10.0-14.0 ft bgs 10.625-in stainless steel wire wrap, 0.035-in slot, from 13.0-20.0 ft bgs		Discontinued sampling per TR 27. Original construction was completed in 2010 to 14 ft bgs. Sump was deepened to 18 ft bgs in 2012.
Sump 9	10/08/2010	3,061,255.234	1,733,152.226	6,573.18	Unknown	11.0	48-in steel, 16 gauge, 0.5-in slot	7.0-11.0	Discontinued sampling per TR 27.

TABLE E-3. GROUNDWATER SAMPLE LOCATIONS									
Location ID / Sample ID	**Installation Date**	**Easting (feet)[1]**	**Northing (feet)[1]**	**Ground Surface Elevation (ft amsl)**	**Casing Elevation (ft amsl)**	**Total Depth (ft bgs)**	**Well Construction Details**	**Screened Interval (ft bgs)**	**Notes**
Sump 10	8/23/2012	3,061,408.98	1,733,008.633	6,542	Unknown	16.9	24-in steel, 0.25-in slot	11.9-16.9	Discontinued sampling per TR 27.
Raw Feed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Spigot – inside water treatment plant. Mine pool water influent to Water Treatment Plant. Raw Feed use to be called "Mine Refill".
Sumps	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Spigot – inside water treatment plant. Combined pump-back water from sumps.

Notes:

[1] Coordinates: NAD 1983. Colorado State Plane Colorado Central (Feet).
N/A = not applicable
amsl = above mean sea level
bgs = below ground surface
ft = feet
in= inch



COLORADO LEGACY LAND SCHWARTZWALDER MINE

FIGURE E-3

GROUNDWATER MONITORING LOCATIONS

FEBRUARY 2020

COLORADO LEGACY LAND

- GW Monitoring Well
- Pumpback Sump
- Existing Mine Feature Footprint
- Reclaimed Mine Feature
- Waste Rock Dump
- Watercourse

Note: MW-1, MW-2, MW-3 and MW-9 were removed in 2019 during alluvial soil excavation.

1:9,500 *when printed on 8x11 inch paper*

0 200 400 600 Feet

ENSERO solutions

Satelite imagery obtained from ArcGIS on services.arcgisonline.com on February 2020

Datum: NAD 1983 (CORS96) StatePlane Colorado Central FIPS 0502 (US Feet)

D:\Project\AllProjects\Schwartzwalder\Map\02-Water_Quality\02-Groundwater\GWQ_Location_Letter_20200212.mxd
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TABLE E-4. MINE PERMIT #M-1977-300, QUARTERLY SURFACE WATER AND GROUNDWATER SAMPLE SUMMARY													
Analyte	CAS No.	Units	Surface Water Quality Standards (CDPHE, 2018) [A]					Surface Water Quality Standard, Segment 17b, Ralston Creek (CDPHE, 2019) [B]		Colorado Groundwater Quality Standards (CDPHE, 2016) [C]	Sample Type	Analytical Method(s)	Detection Limit	Sample Suite Name
			Human Health (Total Concentrations)		Aquatic Life [2] (Dissolved Concentrations)			Aquatic Life [2] (Dissolved Concentrations)						
			Domestic Water Supply	Agriculture	Water + Fish	Acute 1-Day	Chronic 30-Day Average	Acute	Chronic					
General Properties and Field Parameters														
Total Dissolved Solids	TDS	mg/L	-	-	-	-	-	-	-	400 mg/l or 1.25 times the background level, whichever is least restrictive	Grab	SM2540C	20	Sample Suite #3
Total Suspended Solids	-	mg/L	-	-	-	-	-	-	-	-	Grab	SM2540D	5	Sample Suite #3
Field Parameter - Temperature	Temp	°C	-	-	-	-	-	-	-	-	N/A - Field Parameter			Sample Suite #3
Field Parameter - Conductivity	-	µS / cm	-	-	-	-	-	-	-	-				Sample Suite #3
Field Parameter - pH	pH	unitless	-	-	-	-	-	6.5 - 9.0		6.5 - 8.5				Sample Suite #3
Field Parameter - ORP	-	mV	-	-	-	-	-	-	-	-				Sample Suite #3
Field Parameter - Dissolved Oxygen	DO	mg/L	-	3	-	-	-	-	6.0-7.0	-				Sample Suite #3
Major Ions														
Total Alkalinity (as $CaCO_3$)	CASID10001	mg/L	-	-	-	-	-	-	-	-	Grab	SM2320B - Titration	2	Sample Suite #3
Bicarbonate (as $CaCO_3$)	3983-19-5	mg/L	-	-	-	-	-	-	-	-	Grab			Sample Suite #3
Calcium	7440-70-2	mg/L	-	-	-	-	-	-	-	-	Grab	M200.7 ICP	0.1	Sample Suite #3
Chloride	7782-50-5	mg/L	0.25	-	-	-	-	-	250	250	Grab	SM4500	0.5	Sample Suite #3
Fluoride	16984-48-8	mg/L	-	-	-	-	-	-	-	4	Grab	SM4500F	0.11	Sample Suite #3
Magnesium	7439-95-4	mg/L	-	-	-	-	-	-	-	-	Grab	M200.7 ICP	0.2	Sample Suite #3
Potassium	7440-09-7	mg/L	-	-	-	-	-	-	-	-	Grab	M200.7 ICP	0.2	Sample Suite #3
Sodium	7440-23-5	mg/L	-	-	-	-	-	-	-	-	Grab	M200.7 ICP	0.2	Sample Suite #3
Sulfate	14808-79-8	mg/L	0.25	-	-	-	-	-	250	250	Grab	D516-02/-07/-11 Turbidimetric	1	Sample Suite #3
Nutrients / Other														
Boron	7440-42-8	mg/L	-	-	-	-	-	-	0.75	0	Grab	M200.7 ICP	0.02	Sample Suite #3
Nitrate + Nitrite	Total N	mg/L	10	-	-	-	-	-	-	10	Grab	M365.3	2.02	Sample Suite #5
Phosphate	14265-44-2	mg/L	-	-	-	-	-	-	-	-	Grab	Calculation	Calculation	Sample Suite #3
Phosphorus	7723-14-0	mg/L	0.11	-	-	-	-	-	0.11	-	Grab	M365.1	0.01	Sample Suite #3
Cyanide (weak acid dissociable)	57-12-5	mg/L	-	-	-	-	-	0.005	-	0.2	Grab	SM4500	0.003	Sample Suite #3

TABLE E-4. MINE PERMIT #M-1977-300, QUARTERLY SURFACE WATER AND GROUNDWATER SAMPLE SUMMARY

Analyte	CAS No.	Units	Surface Water Quality Standards (CDPHE, 2018) [A]					Surface Water Quality Standard, Segment 17b, Ralston Creek (CDPHE, 2019) [B]		Colorado Groundwater Quality Standards (CDPHE, 2016) [C]	Sample Type	Analytical Method(s)	Detection Limit	Sample Suite Name
			Human Health (Total Concentrations)		Aquatic Life [2] (Dissolved Concentrations)			Aquatic Life [2] (Dissolved Concentrations)						
			Domestic Water Supply	Agriculture	Water + Fish	Acute 1-Day	Chronic 30-Day Average	Acute	Chronic					
Metals														
Aluminum	7429-90-5	mg/L	-	-	-	6.68	0.087	-	-	-	Grab	M200.7 ICP	0.05	Sample Suite #3
Antimony	7440-36-0	mg/L	0.006	-	-	-	-	-	-	0.006	Grab	M200.8 ICP-MS	0.0004	Sample Suite #3
Arsenic	7440-38-2	mg/L	0.00002	0.1	-	0.34	0.15	0.34 Total = n/a	- Total = 0.00002	0.01	Grab	M200.8 ICP-MS	0.0002	Sample Suite #3
Boron	7440-42-8	mg/L	-	-	-	-	-	-	0.75	0	0	0	0	Sample Suite #3
Chromium III	7440-47-3	mg/L	0.05	0.1	-	0.85	0.11	- Total = 0.05	0.11 Total = n/a	0.1				Sample Suite #3
Chromium VI	18540-29-9	mg/L	0.05	0.1	-	0.016	0.011	0.016	0.011	-				Sample Suite #3
Copper	7440-50-8	mg/L	1	0.2	-	0.02	0.0136	0.021	0.014	1	Grab	M200.7 ICP	0.01	Sample Suite #3
Iron	7439-89-6	mg/L	0.3	-	-	-	1	-	1.0	0.3	Grab	M200.7 ICP	0.03	Sample Suite #3
Lead	7439-92-1	mg/L	0.05	0.1	-	0.11	0.0043	0.11 Total = 0.05	0.0043 Total = n/a	0.05	Grab	M200.8 ICP-MS	0.0001	Sample Suite #3
Manganese	7439-96-5	mg/L	0.05	0.2	-	3.51	1.94	3.51	1.94	0.05	Grab	M200.7 ICP	0.01	Sample Suite #3
Mercury	7439-97-6	mg/L	0.21	-	-	-	0.00001	-	0.00001	0.002	Grab	M245.1 CVAA	0.0002	Sample Suite #3
Molybdenum	7439-98-7	mg/L	0.1	0.3	-	-	-	-	0.15	0.21	Grab	M200.8 ICP-MS	0.0002	Sample Suite #3
Selenium[1]	7782-49-2	mg/L	0.1	0.02	-	0.0184	0.0046	0.018	0.0046	0.05	Grab	M200.8 ICP-MS	0.0001	Sample Suite #3
Silver	7440-22-4	mg/L	0.0005	-	-	0.0047	0.00017	0.0047	0.0002	0.05	Grab	M200.8 ICP-MS	0.0001	Sample Suite #3
Thallium	7440-28-0	mg/L	0.0005	-	-	-	0.015	-	-	0.002	Grab	M200.8 ICP-MS	0.0001	Sample Suite #3
Uranium	7440-61-1	mg/L	0.03	-	-	4.12	2.57	-	-	0.03	Grab	M200.8 ICP-MS	0.0001	Sample Suite #3
Zinc	7440-66-6	mg/L	5	2	-	0.25	0.19	0.25	0.19	5	Grab	M200.7 ICP	0.01	Sample Suite #3
Radionuclides														
Gross Alpha	12587-46-1	pCi/L	-	-	-	-	-	-	-	15	Grab	M900.0	2 to 4	Sample Suite #3
Gross Beta	12587-47-2	pCi/L	-	-	-	-	-	-	-	5	Grab	M900.0	2 to 4	Sample Suite #3
Radium - 226, Total	13982-63-3	pCi/L	0.005	-	0.01	-	-	-	-	5	Grab	M903.1	0.4	Sample Suite #3
Radium - 226, Dissolved	13982-63-4	pCi/L	-	-	-	-	-	-	-	-	Grab	M903.1	0.4	Sample Suite #3
Radium 226+228	Ra-226 + Ra-228	pCi/L	-	-	-	-	-	-	-	5	Grab	Calculation	2	Sample Suite #3

Notes:

[1] Analytes not listed in Technical Revision 28. Sample collection, analysis, and reporting are conducted quarterly at the request of the site owner.

[2] Metals standards for aquatic life are stated as dissolved unless otherwise specified

°C = degrees Celsius
µS/cm = micro Siemens per centimeter
µg/L = milligrams per liter
$CaCO_3$ = Calcium carbonate
CDPHE = Colorado Department of Public Health and Environment
ICP = Inductively Coupled Plasma
ICP-MS = Inductively Coupled Plasma Mass Spectrometry
n/a = not provided
mV = millivolts
mg/L = milligrams per liter
pCi/L = picocuries per liter

Standard calculated per Reg-31 using an average hardness value of 163 mg/L as $CaCO_3$
New standard calculated per TVS, Reg-38
New standard provided in Reg-38

Citation:

[A] = CDPHE, 2018. 5 CCR 1002, Regulation 31 - The Basic Standards and Methodologies for Surface Water, Part 31.11: Radionuclide Standards and Basic Standards for Organic Chemicals, Table II – Inorganic Parameters, and Table III – Metal Parameters, January.
[B] = CDPHE. 2019. Regulation 38 - Stream Classification and Water Quality Standards, Clear Creek Basin, Segment 17b. Mainstem of Ralston Creek Including all Tributaries and Wetlands from the Source to the Inlet of Arvada Reservoir. June.

[C] = CDPHE, 2016. CDPHE, 2016. 5 CCR 1002, Regulation 41 - The Basic Standards for Ground Water (Radioactive Materials Standards, Table A Ground Water Organic Chemical Standards, Table 1 Domestic Water Supply – Human Health Standards, Table 2 Domestic Water Supply – Drinking Water Standards, and Table 4 TDS Water Quality Standards), December. (https://www.colorado.gov/pacific/sites/default/files/41_2016%2812%29.pdf)
Note: Whenever CDPHE provided a range of values (i.e., first number is health-based value, second number is the EPA maximum contaminant level), the value listed In this table is the EPA maximum contaminant level.

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E.6.2 Colorado Discharge Permit #CO-0001244, Monthly Discharge Report

Discharge Permit #CO-0001244 was issued in 1981 by the Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Division (WQCD) for the Schwartzwalder water treatment plant. The water treatment plant uses reverse osmosis as ion exchanges technologies to treat mine water and remove uranium and radium prior to discharge into Ralston Creek. Water quality samples are collected from the effluent or discharge of the water treatment plant (Sample Location ID: DIS-001A) in accordance with Discharge Permit #CO-0001244. The discharge sample port is a spigot within the water treatment plant building. Table E-5 summarizes the discharge permit analytical suite, effluent limits, and collection frequency. These data are submitted to the CDPHE WQCD on a monthly basis and published on the CDPHE website as part of the public record: https://environmentalrecords.colorado.gov/HPRMWebDrawer/search.

E.6.3 Colorado Discharge Permit #CO-0001244, Compliance Order on Consent, Number IC-150123-1

On June 1, 2010 2010 CDPHE issued a *Notice of Violation / Cease and Desist Order (NOV/COD), Number IO-100601-1* to the former site owner Cotter Corporation. The NOV/COD was amended three times: July 12, 2010, August 27, 2010, and September 27, 2010.

On January 26, 2015, the CDPHE issued *Compliance Order on Consent, Number IC-150123-1* to Cotter to resolve the NOV/COD. The *Compliance Order on Consent* stipulates:

1. Monthly water quality monitoring of Ralston Creek, when water is flowing, at the downstream (Sample Location ID: SW-BPL, shown on Figure E-2) and upstream (Sample Location ID: SW-AWD, shown on Figure E-2) sample locations,

2. Monthly reporting of these sample results to CDPHE within 7-calendar days of receipt, and

3. Continued operation of the alluvial groundwater capture/and or treatment system at Schwartzwalder (i.e. continued operations of the sumps). Although the *Compliance Order on Consent* was issued when Cotter was the site owner, the stipulations apply to Colorado Legacy Land, LLC.

On April 13, 2017, CDPHE issued *Amendment Number One, Compliance Order on Consent, Number IC-15-123-1* to temporarily set the total recoverable arsenic 30-day average limit in the discharge permit from 0.02µg/L to "report". This amendment expires on December 31, 2021 or on the effective date of renewal and reissuance of the discharge permit.

Although the *Compliance Order on Consent, Number IC-150123-1* was issued when Cotter Corporation was the site owner, the stipulations apply to Colorado Legacy Land, LLC. Table E-6 summarizes the Compliance Order on Consent analytical suite. These data are submitted to the CDPHE WQCD on a monthly basis.

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TABLE E-5. COLORADO DISCHARGE PERMIT #CO-0001244 WATER TREATMENT PLANT DISCHARGE SAMPLING REQUIREMENTS							
		Effluent Limitations Maximum Concentrations				Monitoring Requirements	
Effluent Parameter	Units	30-Day Average	7-Day Average	Daily Maximum	2-Year Average	Frequency	Sample Type
Antimony, Total	µg/L	5.6	-	-	-	2 Days / Month	Composite
Arsenic, Total Recoverable	µg/L	Report	-	-	-	2 Days / Month	Composite
Boron, Total Recoverable	mg/L	0.75	-	-	-	2 Days / Month	Composite
Cadmium, Potentially Dissolved	µg/L	Report	-	Report	-	2 Days / Month	Composite
Chemical Oxygen Demand	mg/L	100	-	200	-	1 Day / Week	Composite
Chromium (Cr[III]), Total	µg/L	-	-	50	0.75	2 Days / Month	Composite
Hexavalent Chromium (Cr[IV]), Dissolved	µg/L	Report	-	Report	-	2 Days / Month	Composite
Copper, Potentially Dissolved	µg/L	12	-	18	1.8	2 Days / Month	Composite
Cyanide, WAD	µg/L	-	-	5	0.85	2 Days / Month	Composite
Chloride	mg/L	250	-	-	54	2 Days / Month	Composite
Effluent Flow	MGD	0.288	-	Report	-	Continuous	Recorder
Fluoride	mg/L	-	-	2	-	2 Days / Month	Composite
Iron, Dissolved	µg/L	300	-	-	45	2 Days / Month	Composite
Iron, Total Recoverable	µg/L	Report	-	-	Report	2 Days / Month	Composite
Manganese, Dissolved	µg/L	50	-	-	7.5	2 Days / Month	Composite
Mercury, Total	µg/L	Report	-	-	-	2 Days / Month	Composite
Nickel, Potentially Dissolved	µg/L	Report	-	Report	Report	2 Days / Month	Composite
Oil and Grease	mg/L	-	-	10	-	5 Days / Week	Visual/ Grab
pH	-	-	-	6.5-9	-	5 Days / Week	Grab
Selenium, Potentially Dissolved	µg/L	Report	-	Report	Report	2 Days / Month	Composite
Silver, Potentially Dissolved	µg/L	0.13	-	3.5	0.02	2 Days / Month	Composite
Sulfate	mg/L	250	-	-	131	2 Days / Month	Composite
Sulfide	mg/L	Report	-	-	Report	2 Days / Month	Composite
Total Radium 226+228	pCi/L	5	-	-	-	2 Days / Month	Composite
Radium 226, Dissolved	pCi/L	3	-	10	-	2 Days / Month	Composite
Radium-226, Total	pCi/L	10	-	30	-	2 Days / Month	Composite
Total Dissolved Solids	mg/L	Report	-	Report	-	Quarterly	Composite

TABLE E-5. COLORADO DISCHARGE PERMIT #CO-0001244 WATER TREATMENT PLANT DISCHARGE SAMPLING REQUIREMENTS							
		Effluent Limitations Maximum Concentrations				Monitoring Requirements	
Effluent Parameter	Units	30-Day Average	7-Day Average	Daily Maximum	2-Year Average	Frequency	Sample Type
Total Suspended Solids	mg/L	20	-	30	-	3 Days / Week	Composite
Thallium, Total	µg/L	0.24	-	-	-	2 Days / Month	Composite
Uranium, Total Recoverable	µg/L	50	-	-	22	2 Days / Month	Composite
Zinc, Potentially Dissolved	µg/L	Report	-	Report	Report	2 Days / Month	Composite
Whole Effluent Toxicity, Chronic							
Pimephales Lethality	-	-	-	Statistical Difference and IC25 ≥IWC	-	Quarterly	3 Composites / Tests
Ceriodaphnia Lethality	-	-	-		-		
Pimephales Toxicity	-	-	-	Report Statistical Difference and IC25	-		
Ceriodaphnia Toxicity	-	-	-		-		

Notes:

µg/L = micrograms per liter (parts per billion, ppb)
IC25 = Effluent Concentration where 25% of the test organisms demonstrate inhibition as reflected by lethality
IWC = Instream Waste Concentration
MGD = Million Gallons per Day
mg/L = milligrams per liter (parts per million, ppm)
N/A = Not Applicable
pCi/L = picocuries per liter
WAD = Weak Acid Dissociable

TABLE E-6. COMPLIANCE ORDER ON CONSENT, NUMBER IC-150123-1, MONTHLY SURFACE WATER SAMPLING REQUIREMENTS												
Analyte	CAS No.	Units	Surface Water Quality Standards (CDPHE, 2018) [A]					CDPHE Stream Standards, Segment 17b, Ralston Creek[1] (CDPHE, 2019)		Sample Tyle	Analytical Method(s)	Detection Limit	Sample Suite Name
			Human Health (Total Concentrations)		Aquatic Life (Dissolved Concentrations)			Aquatic Life (Dissolved Concentrations)					
			Domestic Water Supply	Agriculture	Water + Fish	Acute 1-Day	Chronic 30-Day Average	Acute 1-Day	Chronic 30-Day Average				
Antimony	7440-36-0	mg/L	0.006	-	5.6	-	-	-	-	Grab	M200.8 ICP-MS	0.0004	Sample Suite #2
Arsenic	7440-38-2	mg/L	0.00002	0.1	0.02	0.34	0.15	0.34	Total = 0.00002	Grab	M200.8 ICP-MS	0.0002	Sample Suite #2
Boron	7440-42-8	mg/L	-	-	-	-	-	-	0.75	Grab	M200.7 ICP	0.02	Sample Suite #2
Chromium III	7440-47-3	mg/L	0.05	0.1	-	0.85	0.11	Total = 0.05	0.11	Grab	M200.7 ICP	0.01	Sample Suite #2
Chromium VI	18540-29-9	mg/L	0.05	0.1	100	0.016	0.011	0.016	0.011	Grab			
Copper	7440-50-8	mg/L	1	0.2	1300	0.0213	0.0136	0.021	0.014	Grab	M200.7 ICP	0.01	Sample Suite #2
Cyanide (WAD)	57-12-5	mg/L	-	-	-	-	-	0.005	-	Grab	SM4500	0.03	Sample Suite #2
Fluoride	16984-48-8	mg/L	-	-	-	-	-	-	-	Grab	SM4500	0.11	Sample Suite #2
Gross Alpha Particle Activity	12587-46-1	pCi/L	-	-	-	-	-	-	-	Grab	M900.0	2 to 4	Sample Suite #2
Gross Beta Particle Activity	12587-47-2	pCi/L	-	-	-	-	-	-	-	Grab	M900.0	2 to 4	Sample Suite #2
Molybdenum	7439-98-7	mg/L	0.1	0.3	-	-	-	-	0.15	Grab	M200.7 ICP	0.02	Sample Suite #2
Nitrate + Nitrite	Total N	mg/L	10	-	-	-	-	-	-	Grab	M353.2	0.02	Sample Suite #2
pH	pH	-	-	-	-	-	-	6.5 - 9.0		Grab	N/A - Field Parameter		Sample Suite #2
Phosphorus	7723-14-0	mg/L	0.11	-	-	-	-	-	0.11	Grab	M365.1	0.01	Sample Suite #2
Phosphate	14265-44-2	mg/L	-	-	-	-	-	-	-	Grab	Calculation		Sample Suite #2
Radium 226+228	Ra-226 + Ra-228	pCi/L	-	-	-	-	-	-	-	Grab	Calculation	2	Sample Suite #2
Silver	7440-22-4	mg/L	0.0005	-	-	0.0047	0.0002	0.0047	0.0002	Grab	M200.8 ICP-MS	0.0001	Sample Suite #2
Sulfate	14808-79-8	mg/L	0.25	-	-	-	-	-	250	Grab	D516-02/-07/-11 Turbidimetric	1	Sample Suite #2
Total Dissolved Solids	TDS	mg/L	-	-	-	-	-	-	-	Grab	SM4500	20	Sample Suite #2
Total Suspended Solids	-	mg/L	-	-	-	-	-	-	-	Grab	SM4500	5	Sample Suite #2

TABLE E-6. COMPLIANCE ORDER ON CONSENT, NUMBER IC-150123-1, MONTHLY SURFACE WATER SAMPLING REQUIREMENTS												
Analyte	CAS No.	Units	Surface Water Quality Standards (CDPHE, 2018) [A]					CDPHE Stream Standards, Segment 17b, Ralston Creek[1] (CDPHE, 2019)		Sample Tyle	Analytical Method(s)	Detection Limit	Sample Suite Name
			Human Health (Total Concentrations)		Aquatic Life (Dissolved Concentrations)			Aquatic Life (Dissolved Concentrations)					
			Domestic Water Supply	Agriculture	Water + Fish	Acute 1-Day	Chronic 30-Day Average	Acute 1-Day	Chronic 30-Day Average				
Thallium	7440-28-0	mg/L	0.0005	-	0.24	-	0.015	-	-	Grab	M200.8 ICP-MS	0.0001	Sample Suite #2
Uranium	7440-61-1	mg/L	0.03	-	-	4.12	2.57	-	-	Grab	M200.8 ICP-MS	0.0001	Sample Suite #2
Zinc, Dissolved	7440-66-6	mg/L	5	2	7400	0.25	0.19	0.25	0.19	Grab	M200.7 ICP	0.01	Sample Suite #2

Notes:

[1] Acute and chronic standards for chromium III/VI, copper, lead, manganese, nickel, selenium, silver, and zinc are calculated using an average hardness value of 163 mg/L as $CaCO_3$ per CDPHE, 2019.
[2] Metals standards for aquatic life are stated as disolved unless otherwise specified
µg/L = micrograms per liter
CAS No. = Chemical Abstract Registry Number
$CaCO_3$ = Calcium carbonate
CDPHE = Colorado Department of Public Health and Environment
ICP = Inductively Coupled Plasma
ICP-MS = Inductively Coupled Plasma Mass Spectrometry
mg/L = milligrams per liter
N/A = Not applicable
pCi/L = picocuries per liter
WAD = Weak Acid Dissociable

Standard calculated per Reg-31 using an average hardness value of 163 mg/L as $CaCO_3$
Standard calculated per CDPHE, 2019
Standard provided per CDPHE, 2019

Citation:

[A] = CDPHE, 2018. 5 CCR 1002, Regulation 31 - The Basic Standards and Methodologies for Surface Water, Part 31.11: Radionuclide Standards and Basic Standards for Organic Chemicals, Table II – Inorganic Parameters, and Table III – Metal Parameters, January.

[B] = CDPHE. 2019. Regulation 38 - Stream Classification and Water Quality Standards, Clear Creek Basin, Segment 17b. Mainstem of Ralston Creek Including all Tributaries and Wetlands from the Source to the Inlet of Arvada Reservoir. June.

[C] = CDPHE, 2016. 5 CCR 1002, Regulation 41 - The Basic Standards for Ground Water (Radioactive Materials Standards, Table A Ground Water Organic Chemical Standards, Table 1 Domestic Water Supply – Human Health Standards, Table 2 Domestic Water Supply – Drinking Water Standards, and Table 4 TDS Water Quality Standards), December. (https://www.colorado.gov/pacific/sites/default/files/41_2016%2812%29.pdf)
Note: Whenever CDPHE provided a range of values (i.e., first number is health-based value, second number is the EPA maximum contaminant level), the value listed In this table is the EPA maximum contaminant level.

EXHIBIT F. RECLAMATION PLAN MAP

A map showing the horizontal extents of the proposed affected lands is provided Figure F-1.

COLORADO LEGACY LAND
FORMER CAÑON CITY MILL
REMEDIATION PROJECT

FIGURE F-1
RECLAMATION PLAN MAP

NOVEMBER 2020

COLORADO LEGACY LAND

- CLL Property Boundary (559.2 acres)
- Permitted Boundary, Schwartzwalder Mine M-1977-300 (72.24 acres)
- North Waste Rockpile Upland Area (3.6 acres)
- Former Black Forest Mine (0.38 acres)
- Ralston Creek
- Glencoe Valley Road
- Elevation Contour Lines (10-foot)

The proposed final land use for all affected lands is wildlife habitat

1 inch = 580 feet

0 250 500 750 1,000 ft

ENSERO solutions

Aerial imagery acquired from King Surveyors on December 10th, 2018

Datum: NAD_1983_StatePlane_Colorado_Central_FIPS_0502_Feet

D:\Projects\All\Projects\Schwartzwalder\Map\01-Overview\04-Special_Topics\Land_Tenure\Reclamation_Plan_Map_20201029.mxd

EXHIBIT G. WATER INFORMATION

This information is presented in Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016) and Exhibit E of this document, which provides an updated description of the current environmental monitoring program. Additional information regarding the Black Forest Mine is discussed below:

Disposal of radionuclide impacted alluvial valley soils in the Black Forest Mine is expected to improve the water quality in shallow groundwater and Ralston Creek. This is because Ralston Creek is in direct communication with the shallow alluvial aquifer and the contaminated alluvial soils are the primary source of metals loading to both surface water and groundwater at the Site (Whetstone Associates Inc., 2016). As described in Technical Revision #14, the scope of the alluvial valley excavation project is to remove any soils with the potential to leach uranium to groundwater above 0.03 mg/L (Colorado Groundwater Quality Standard and USEPA Drinking Water Standard). The Black Forest Mine is a dry mine and therefor is not hydraulically connected to the alluvial aquifer, bedrock aquifer, or Ralston Creek. This is because underground mining in the Black Forest occurred at elevations equal to or above 6,604 feet above mean sea level. The original Construction Materials 110 Permit (M-2001-036) for the Black Forest Mine states that the natural (pre-mining) depth to groundwater in the adjacent alluvium to was approximately 9 feet below ground surface (6,595 feet above mean sea level). The current static water level (March 2020) in alluvial groundwater well MW-19 (total depth of 21.6 feet below ground surface) is approximately 15 feet below ground surface (6,625 feet above mean sea level). The current static water level (March 2020) in nearby deep bedrock groundwater well MW-18 (total depth of 239.9 feet below ground surface) is approximately 120 feet below ground surface (6,484 feet above mean sea level). These wells are part of the quarterly groundwater sampling network discussed in Section E.6. Heads in these wells are likely depressed due to the sump capture system, Ralston creek bypass pipeline, and the inward gradient created by dewatering the mine pool (the mine pool is required to be 150 feet below the Steve or 6,452 feet above mean sea level). Following the alluvial valley reclamation, the heads in the shallow groundwater wells (e.g. MW-19) are expected to return to natural elevations. The head in MW-18 is expected to remain depressed, as the deep bedrock well is more indicative of the mine pool elevation. Figure G-1 and Figure G-2 show a cross section of the Schwartzwalder Mine workings. The Steve Adit elevation (6,602 feet above mean sea level) is approximately the same as the Black Forest entrance adit (6,604 feet above mean sea level). The maximum mine pool elevation is 150 feet below the Steve Adit (6,452 feet above mean sea level). Additional surface water and alluvial groundwater data from 1998 to 2010 are presented and summarized in Sections 11 and 9 of the *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016). Removing soils from the alluvial valley and placing them inside the Former Black Forest Mine will prevent these soils from potentially leaching uranium to the surrounding waters.

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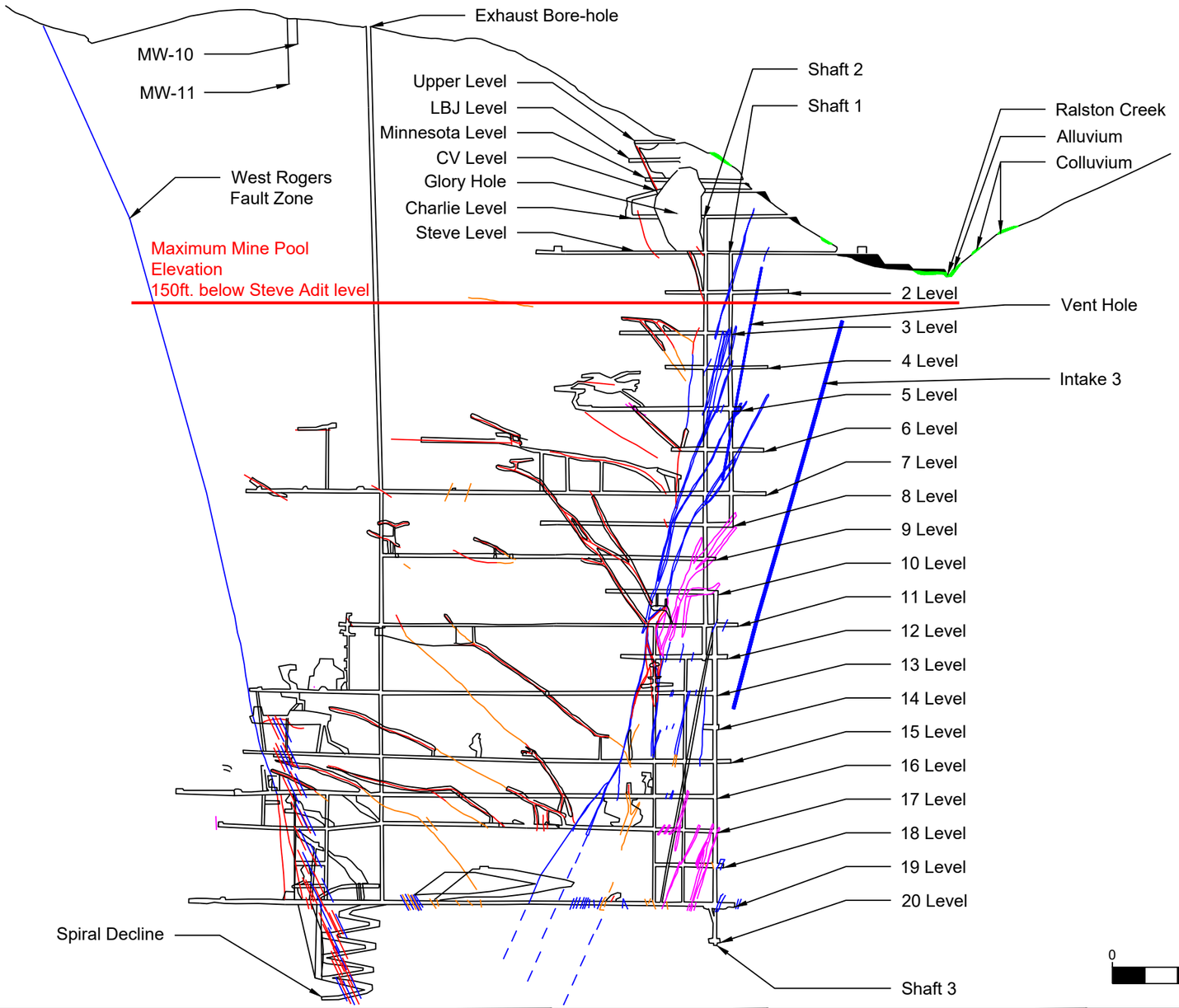

Legend

- Uranium Ore
- Pegmatite
- Fault/ Fault Zone
- Schwartzwalder Trend
- Uranium Sub-ore

The Steve Adit elevation (6,602 ft amsl) is approximately the same as the entrance to the Former Black Forest Mine (6,604 ft amsl)

Revision History		
A	Initial Draft	11/05/2020
Rev.	**Description**	**Date**

Engineer's Seal

	Name	Date
Design		
Drawn	N. Lambert	2020-11-05
Checked	B. LaFlamme	2020-11-05
Approved		

Project/Drawing Information	
Project Name	Former Schwartzwalder Mine
Project Number	EUS20CO00004
Project Location	Golden, Colorado

Drawing Name

Cross Section of Mine Workings
Figure G-1

Drawing Number

EUS20CO0004-C301

ENSERO solutions
131 Lincoln Ave Suite 200
Ft. Collins, CO 80524

Colorado Legacy Land, LLC

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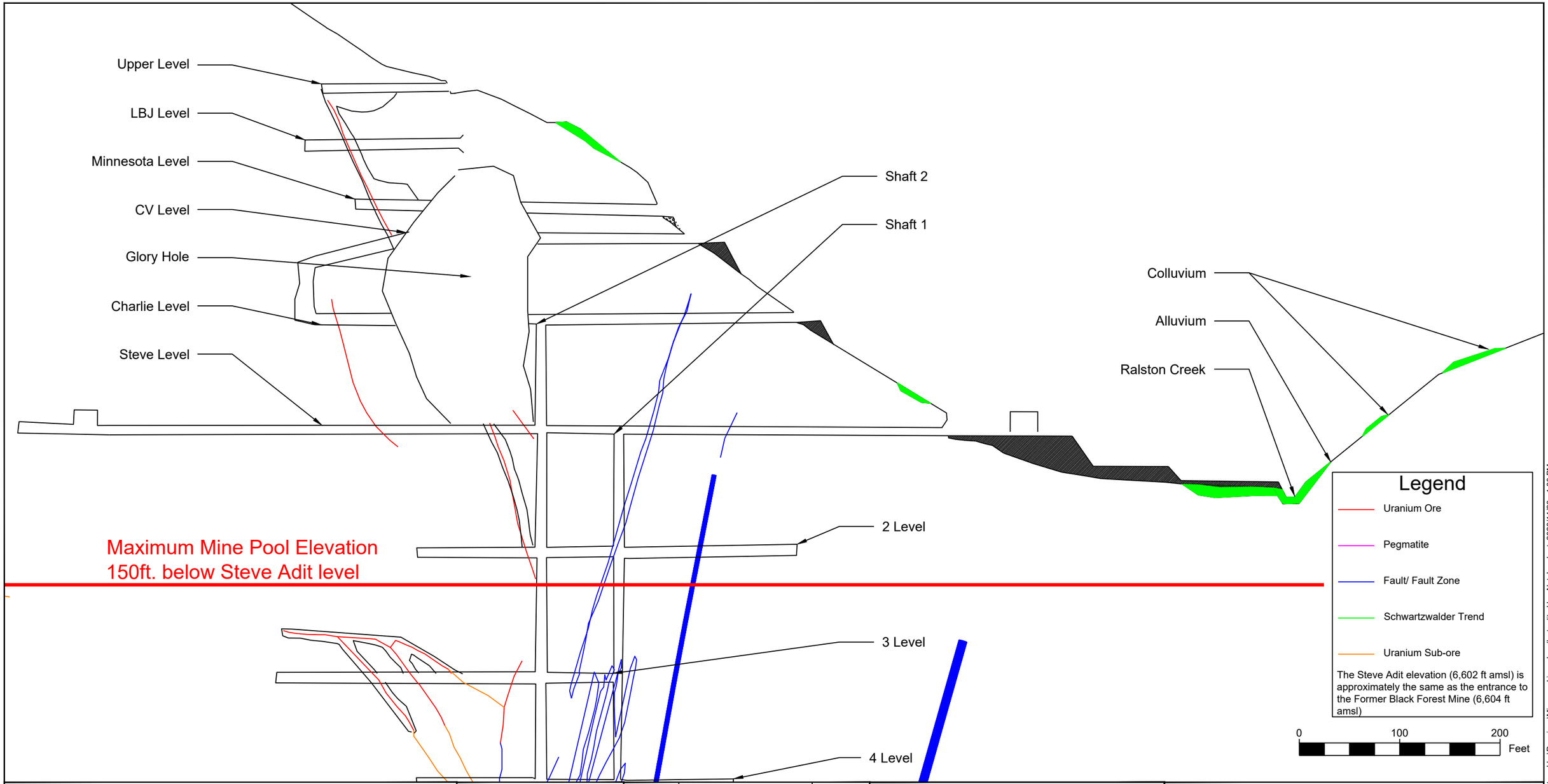

Revision History		
A	Initial Draft	11/20/2020
Rev.	Description	Date

Engineer's Seal

	Name	Date
Design		
Drawn	N. Lambert	2020-11-20
Checked	B. LaFlamme	2020-11-20
Approved		

Project/Drawing Information	
Project Name	Former Schwartzwalder Mine
Project Number	EUS20CO00004
Project Location	Golden, Colorado
Drawing Name	
Cross Section of Mine Workings, Zoomed-In Figure G-2	
Drawing Number	
EUS20CO0004-C302	

ENSERO solutions
131 Lincoln Ave Suite 200
Ft. Collins, CO 80524

Colorado Legacy Land, LLC

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EXHIBIT H. WILDLIFE INFORMATION

This information is presented in Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016). Section 18 of the *Schwartzwalder Mine Environmental Protection Plan* discusses soils.

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EXHIBIT I. SOILS INFORMATION

This information is presented in Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016). Section 17 of the *Schwartzwalder Mine Environmental Protection Plan* discusses soils.

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EXHIBIT J. VEGETATION INFORMATION

This exhibit has not changed from the 2012 Mine Plan Amendment 3.

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EXHIBIT K. CLIMATE INFORMATION

This information is presented in Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016). Section 13 of the *Schwartzwalder Mine Environmental Protection Plan* discusses climate.

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EXHIBIT L. RECLAMATION COSTS

Table L-1 summarizes the current reclamation costs for the Schwartzwalder Mine. These reclamation costs were developed during the Succession of Operators.

TABLE L-1. SCHWARTZWALDER MINE RECLAMATION COSTS

Source	Amount	Description	Notes
	$926,668	**Additional Scope Items (Total Cost)**	
		PreDMO bond for site reclamation	
TR-12	$30,000	200 gpm water treatment plant	Demo of new water treatment plant building
TR-13		50 gpm interim water treatment Sump 1	Completed
TR-15		Construction of Sump 5	Completed
TR-15		Construction of Sump 9	Completed
TR-15		Construction of Sump 8	Completed
TR-15		Construction of Sump 10	Completed
TR-18	$134,526	Cutoff Wall and 18" Creek bypass pipe line	Habitat restoration remaining
TR-19		New monitor well installation	Completed
TR-19		Additional monitor well in South Waste Rock Pile	Completed
	$575,000	Groundwater monitoring	$77,000 for 5 years; $38,000 for an additional 5 years
	$15,000	Adit closure. Minnestota and CV/Charley/Intakes areas	Two mine openings @ $7,500 each
	$26,000	Groundwater well abandonment	Abandon 13 monitor wells @$2,000 per well
	$780,526	*Subtotal (Direct Costs)*	
		Additional Scope Items (DRMS Indirect Costs)	
	$15,767	Liability Insurance	2.02% of Direct Costs
	$8,196	Performance Bond	1.05% of Direct Costs
		Job superintendent	Site personnel covered in RO system operation
	$78,053	Profit	10% of Direct Costs
	$102,015	*Subtotal (Indirect Costs)*	
		Additional Scope Items (Eng/Management)	
		Engineering Word &/or Contract/Bid Prep	4.25% of Direct and Indirect Costs
	$44,127	Reclamation management &/or Admin.	5% of Direct and Indirect Costs
	$44,127	*Subtotal (Eng/Management)*	
AM-04	**$4,943,778**	**Mine Dewatering & InSitu Treatment (Total Cost)**	
		Mine Dewatering & InSitu Treatment (Direct Costs)	
	$350,000	Initial InSitu Treatment	Remaining treatment if needed
	$515,000	Maintain InSitu Mine Pool Treatment	10 yrs. Quarterly treatments for maintenance.

TABLE L-1. SCHWARTZWALDER MINE RECLAMATION COSTS			
Source	**Amount**	**Description**	**Notes**
	$1,546,360	RO System Operation year 1 to 10	Year 1 to 5: RO system runs half-time (at $139,636/yr) and on standby half-time (at $15,000/yr); see attached detail
	$1,546,360	RO system Operation year 11 to 20	Year 6 to 10: Continue to run as in Year 1 to 5
		WebMaster Remote Monitoring System	Included in cost of RO systems
	$22,200	Mine Pool Sampling	Years 1 to 10
	$22,200	Mine Pool Sampling	Years 11 to 20
	$4,002,120	*Subtotal (Direct Costs)*	
Mine Dewatering & InSitu Treatment (DRMS Indirect Costs)			
	$80,843	Liability Insurance	2.02% of Direct Costs
	$42,022	Performance Bond	1.05% of Direct Costs
		Job superintendent	Site personnel covered in RO system operation
	$400,212	Profit	10% of Direct Costs
	$523,077	*Subtotal (Indirect Costs)*	
Mine Dewatering & InSitu Treatment (Engineering/Management)			
	$192,321	Engineering Word &/or Contract/Bid Prep	4.25% of Direct and Indirect Costs
	$226,260	Reclamation management &/or Admin.	5% of Direct and Indirect Costs
	$418,581	*Subtotal (Engineering/Management)*	
AM-04	**$1,842,025**	**Aluvial Fill (Total Cost)**	
Alluvial Fill (Direct Costs)			
	$74,000	Mobilization	Demobe – all heavy equipment already on site
	$246,400	Demo and Debris Removal	Kessler Quote per TR-23, includes old water treatment building and other site structures.
	$287,325	Excavate, Haul and Place	Kessler Quote per TR-23, excavate, haul and place on waste rock piles, 1 construction season.
	$10,000	Lab Analysis Soils	50 verification samples
	$15,000	Lab Analysis Water	100 samples during excavation.
	$48,000	Modify/Demo sumps	Pipes, pumps, electrical modifications.
	$24,000	Modify monitor wells	Possible 3 new/relocated monitor wells at $8,000 each
	$138,600	Purchase Inert Fill	Inert fill to come from site, no credit taken for discount
	$214,500	Haul and Place Fill	Inert fill from site – haul charge reduced to essentially zero.
	$50,750	Purchase Top Soil	Purchase 3,500 cy of top soil
	$112,000	Haul and Place Top Soil	Haul and place 3,500 cy of top soil
	$28,000	Revegetate	Purchase and distribute 3.5 acres
	$133,363	Concrete V-ditch Storm Water Drain	Kessler quote per TR-23, includes construction and materials

TABLE L-1. SCHWARTZWALDER MINE RECLAMATION COSTS			
Source	**Amount**	**Description**	**Notes**
	$88,389	Waste Rock Pile Cap	Kessler quote per TR-23, includes topsoil seed and mulch
	$1,470,327	*Subtotal (Direct Costs)*	
Alluvial Fill (DRMS Indirect Costs)			
	$29,701	Liability Insurance	2.02% of Direct Costs
	$15,438	Performance Bond	1.05% of Direct Costs
	$23,565	Job superintendent	322.59 hrs @$65.41
	$147,033	Profit	10% of Direct Costs
	$215,737	*Subtotal (Indirect Costs)*	
Alluvial Fill(Eng/Management)			
	$71,658	Engineering Word &/or Contract/Bid Prep	4.25% of Direct and Indirect Costs
	$84,303	Reclamation management &/or Admin.	5% of Direct and Indirect Costs
	$155,961	*Subtotal (Eng/Management)*	
Other	**$1,187,529**	**Denver Water, Water Treatment (Contingent cost)**	
Total Bond	**$8,900,000**		

Reclamation costs for the North Waste Rock Pile Upland Area and Former Black Forest Mine are presented in Table L-2. The surface expression of both proposed areas is unimpacted. Therefor no grading, topsoiling, or revegetation for these areas are required. Costs in Table L-2 are specifically for the backfilling of the main portal and escape portal of the Black Forest Mine. These costs are provided as a basis of estimate only. However, it is not recommended that the full bond listed in Table L-1 be amended due to ongoing surety evaluations and bond reductions for completed reclamation work.

TABLE L-2. BLACK FOREST MINE BACKFILL RECLAMATION COSTS				
Item	**Unit Cost**	**Quantity**	**Total Cost**	**Notes**
Backfill Materials				
Fill Soil	$8.00 / CY	60 CY	$480.00	Inert fill from site.
Top Soil	$14.50 / CY	10 CY	$145.00	
Seed Mix	$450 / acre	0.1 acre	$45.00	Seed mix shown in Table E-1
Mulching	$35.00 / CY	10 CY	$350.00	
Rock	$650 / ton	4 tons	$2,600.00	Rock fill from site.
Backfill Equipment				
Excavator	$120.00 / hour	8 hours	$960.00	1 day.
Loader	$120.00 / hour	8 hours	$960.00	1 day.
Truck	$115.00 / hour	8 hours	$920.00	1 day.
Labor	$42.00 / hour	48	$2,016.00	Team of 3 people for 2 days each.
Cost Total				
-	-	-	$8,476.00	Subtotal of direct costs (equipment and materials)
-	-	-	$360.23	Engineering Word &/or Contract/Bid Prep . 4.25% of direct costs
-	-	-	$423.80	Reclamation management &/or Admin. 5% of direct costs
-	-	-	**$9,260.03**	**Grand total**

EXHIBIT M. OTHER PERMITS AND LICENCES

Rule 6.4.20(5) requires a list any air, water quality, solid and hazardous waste, and other federal, state permits or local licenses, or other formal authorizations which the Operator/Applicant holds or will be seeking applicable to the use, handling, storage, or disposal of designated chemicals and acid mine drainage-forming materials within the permit area.

The Schwartzwalder Mine operated under Colorado Mining Permit # M-1977-300, Colorado Discharge Permit #CO-0001244 and Radioactive Materials License CO-369-03.

- **Colorado Mining Permit #M-1977-300:** The mine permit (M-1977-300) was issued by the State of Colorado in 1977 the permit disturbance boundary covered by the permit is shown in Figure C-1.

- **Colorado Discharge Permit #CO-0001244:** Discharge Permit #CO-0001244 was issued in 1981 by the Colorado Department of Public Health and Environment, Water Quality Control Division for the Schwartzwalder water treatment plant. The monitoring requirements associated with the discharge permit and corresponding NOV/Cease and Desist Order (order #IO-100601-1) are described in Exhibit E.

- **Radioactive Materials License number CO-369-06:** A new Radioactive Materials License #CO-369-06 was issued by the CDPHE Hazardous Materials and Waste Management Division in July 2010 and renewed in June 2020. This license authorizes storage, possession and ownership of radioactive materials associated with an ion-exchange water treatment system.

- **Air Quality Permits:** There is one air permit #97JE0037F associated with the Site reclamation activities (dust suppression for grading and earthwork).

- **Storm Water Discharge Permit:** The Colorado stormwater discharge permit #COR-040046 has been in effect since March 19, 1993. The stormwater management plan (updated in May of 2010) identifies potential sources of pollution (including sediment) which may reasonably be expected to affect the quality of stormwater discharges associated with the mine and describes the best management practices (BMPs) used to reduce pollutants in stormwater discharge.

- **Well Permits Water Resource Permit Number 64684**: issued September 22, 1972, by the Office of the State Engineer for the non-industrial domestic water well. All monitoring wells have been permitted through the Colorado Division of Water Resources.

- **U.S. Army Corps of Engineers:** The U.S. Army Corps of Engineers issued a nationwide 404 permit (Corps File No. NOW-2011-013530-DEN) for performing the alluvial fill material excavation along Ralston Creek.

- **U.S. Fish and Wildlife Service:** The U.S. Fish and Wildlife Service issued a biological opinion (February 2016) as part of the aforementioned U.S. Army Corps of Engineers permit. In this biological opinion, the Colorado Ecological Services Field Office finds that the alluvial valley exaction may affect the Preble's meadows jumping mouse and it's critical habitat, but the project is not likely to jeopardize the

continuing existence of the species or result in destruction of adverse modification of the Preble's critical habitat.

- **Cultural Resource Inventory:** The Colorado Cultural Resource Inventory conducted a cultural resource survey as part of the aforementioned U.S. Army Corps of Engineers permit (NOW-2011-01353-DEN, CHS #70986). No properties of historical significance were recorded.

No other air, water quality, or solid and hazardous waste permits are in effect for the reclaimed Schwartzwalder Mine. The Schwartzwalder Mine does not currently use, handle, store, or disposal of designated chemicals. No acid mine drainage-forming materials have been handled or stored within the permit area[1].

[1] All geochemical testing performed on materials from the site indicates that mine rock is classified as having a very low potential to produce acid and a high potential for neutralizing acid. Specifically, the results of the acid-base accounting (ABA) tests indicate that waste rock from the Schwartzwalder Mine is strongly neutralizing with an average net neutralizing (NNP) capacity of 149 t CaCO3/kt and an ANP/AGP ratio of 10. The mined rock has a very low potential to generate acidic drainage, and no acidic drainage has been detected from the mine or waste rock facilities to date.

Of the five seeps and drips described in Section 9(b)(iv).3, of the *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates, 2016) two had low pH (WASH [3.8], ILLRS [2.7]) and three had near neutral to slightly basic pH (Minnesota [7.9], CO [7.9], and 146 [8.2]). The two seeps with the lowest pH values had the lowest flow rates, measured at 0.03 – 0.05 gpm for the WASH and 0.15 gpm for the ILLRS. Two of the seeps with the highest pH had the highest flow rates, measured at 0.8 gpm for the CO and 0.5 gpm for the 146. Therefore, the two low-pH drips were measured at a combined flow rate of less than 0.2 gpm compared to the 1.3 gpm measured at neutral to basic seeps and the unmeasured flow of neutral pH waters near the Minnesota Glory Hole.

Overall, the seeps and drips from the unsaturated zone above the mine represent a small quantity of flow through native, in-situ (non-handled) rock materials. Despite these small drips, the pH of the mine pool remains circum-neutral, with no indication that the mine pool will go acid. Bicarbonate alkalinity exceeds 400 mg/L (as CaCO3), which indicates significant buffering capacity within the mine pool. No trends of decreasing pH or alkalinity have been observed to date in mine pool water (Section 9(b)(iv).2 of the *Schwartzwalder Mine Environmental Protection Plan* [Whetstone Associates, 2016]). The small seeps and drips from the unsaturated workings above the Steve Level contribute significantly less than one gallon per minute annually to the 139 million gallon mine pool, and the alkalinity in the mine pool is sufficient to buffer this small contribution.

EXHIBIT N. SOURCE OF LEGAL RIGHT-TO-ENTER

The current operator, CLL maintains the legal right to enter to conduct mining and reclamation for the affected lands. In accordance with Rule 6.4.14, CLL is including documentation of the legal right to enter to conduct mining and reclamation along with this application amendment.

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EXHIBIT O. OWNERS OF RECORD TO AFFECTED LAND (SURFACE AREA) AND OWNERS OF SUBSTANCE TO BE MINED

Colorado Legacy Land, LLC is the owner of record of affected land and has the following legal address:

Colorado Legacy Land, LLC
4601 DTC Boulevard, Suite 120
Denver, Colorado 80237

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EXHIBIT P. MUNICIPALITIES WITHIN TWO MILES

No municipalities exist within two miles of the Schwartzwalder Mine.

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EXHIBIT Q. PROOF OF MAILING OF NOTICES TO COUNTY COMMISSIONERS AND CONSERVATION DISTRICT

COLORADO LEGACY LAND
4601 DTC Boulevard, Suite 120, Denver, CO 80237
T. (303) 862-3928

August 18, 2020

Jefferson Conservation District
10799 W. Alameda Ave. #261205
Lakewood, CO 80226

Subject: Notice of Filing an Amendment Application for Colorado Mine Land Reclamation Permit, Schwartzwalder Mine, Golden, Colorado

Colorado Legacy Land, LLC (CLL) has applied for an Amendment application to their 112d Designated Mining Reclamation Permit with the Colorado Mine Land Reclamation Board under provisions of the Colorado Mined Land Reclamation Act. This Amendment application is for the former Schwartzwalder Mine which is located at or near, Section 25, Township 2 South, Range 71 West of the 6th Prime Meridian. The entire application is on file with the Division of Reclamation, Mining and Safety (the "Division") and the Jefferson County Clerk and Recorders Office (100 Jefferson County Pkwy, Golden Colorado 80419).

The applicant/operator proposes to reclaim the affected land to Wildlife Habitat. Pursuant to Section 34-32-116(7)(j), C.R.S., the Board is required to confer with the local Board of County Commissioners before approving of the post-mining land use. Accordingly, the Board would appreciate your comments on the proposed operation. Please note that, in order to preserve your right to a hearing before the Board on this application, you must submit written comments on the application within twenty (20) days after the date of the applicant's newspaper publication.

If you would like to discuss the proposed post-mining land use, or any other issue regarding this application, please contact the Division of Reclamation, Mining and Safety, 1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567.


U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
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For delivery information, visit our website at www.usps.com®.
Denver, CO 80226
OFFICIAL USE
Certified Mail Fee $3.55
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $1.70
☒ Return Receipt (electronic) $0.00
☐ Certified Mail Restricted Delivery $0.00
☐ Adult Signature Required $0.00
☐ Adult Signature Restricted Delivery $
Postage $0.55
Total Postage and Fees $5.80
Sent To: Jefferson Conservation District
Street and Apt. No., or PO Box No.: 10799 W Alameda Ave #261205
City, State, ZIP+4®: Lakewood CO 80226
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions
FORT COLLINS, CO 80521
AUG 18 2020
Postmark Here
USPS
7020 1290 0000 6505 1000
0197 10

COLORADO LEGACY LAND
4601 DTC Boulevard, Suite 120, Denver, CO 80237
T. (303) 862-3928

August 18, 2020

Jefferson County
Board of County Commissioners
100 Jefferson County Pkwy.
Golden CO 80419

Subject: Notice of Filing an Amendment Application for Colorado Mine Land Reclamation Permit, Schwartzwalder Mine, Golden, Colorado

Colorado Legacy Land, LLC (CLL) has applied for an Amendment application to their 112d Designated Mining Reclamation Permit with the Colorado Mine Land Reclamation Board under provisions of the Colorado Mined Land Reclamation Act. This Amendment application is for the former Schwartzwalder Mine which is located at or near, Section 25, Township 2 South, Range 71 West of the 6th Prime Meridian. The entire application is on file with the Division of Reclamation, Mining and Safety (the "Division") and the Jefferson County Clerk and Recorders Office (100 Jefferson County Pkwy, Golden Colorado 80419).

The applicant/operator proposes to reclaim the affected land to Wildlife Habitat. Pursuant to Section 34-32-116(7)(j), C.R.S., the Board is required to confer with the local Board of County Commissioners before approving of the post-mining land use. Accordingly, the Board would appreciate your comments on the proposed operation. Please note that, in order to preserve your right to a hearing before the Board on this application, you must submit written comments on the application within twenty (20) days after the date of the applicant's newspaper publication.

If you would like to discuss the proposed post-mining land use, or any other issue regarding this application, please contact the Division of Reclamation, Mining and Safety, 1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567.

EXHIBIT R. PROOF OF FILING WITH COUNTY CLERK AND RECORDER

On August 19, 2020 (date) the Jefferson County Clerk and Recorder's Office received a copy of:

Application Amendment 5, Mine Permit M-1977-300

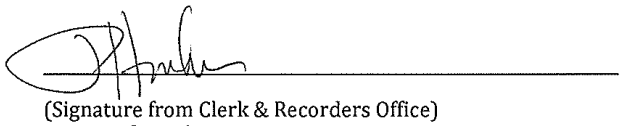
Schwartzwalder Mine, Golden, Colorado

This document is available for public review at:

Jefferson County Clerk & Recorder

100 Jefferson County Pkwy. Suite 2560

Golden, CO 80401



(Signature from Clerk & Recorders Office)

8-19-2020

(Date)

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EXHIBIT S. PERMANENT MAN-MADE STRUCTURES

In order to excavate the alluvial valley soils, the former water treatment plant building and associated structures have been demolished. The remaining man-made structures and building onsite are:

- Glencoe Valley Road, (1) access bridge across Ralston Creek near Black Forest entrance, (1) cut-off wall and bridge across Ralston Creek near North and South Waste Rock Piles, (1) entrance gate across Glencoe Valley Road,(2) overhead power lines (note: these are owned by United Power Inc. all other structures are owned by CLL), (13) monitoring wells, (1) sump and (1) diversion pipeline (Figure C-1),

- (1) wench and cable housing located near the Jeffery Air Shaft which supports the new dewatering pump (Figure S-1),

- (2) mobile office trailers, (1) generator, (1) water treatment plant building, (3) tanks, (3) sea containers for storage of equipment and tools, and (1) gravel parking area located on the Mesa, which support the onsite water treatment plant operations (Figure S-2).

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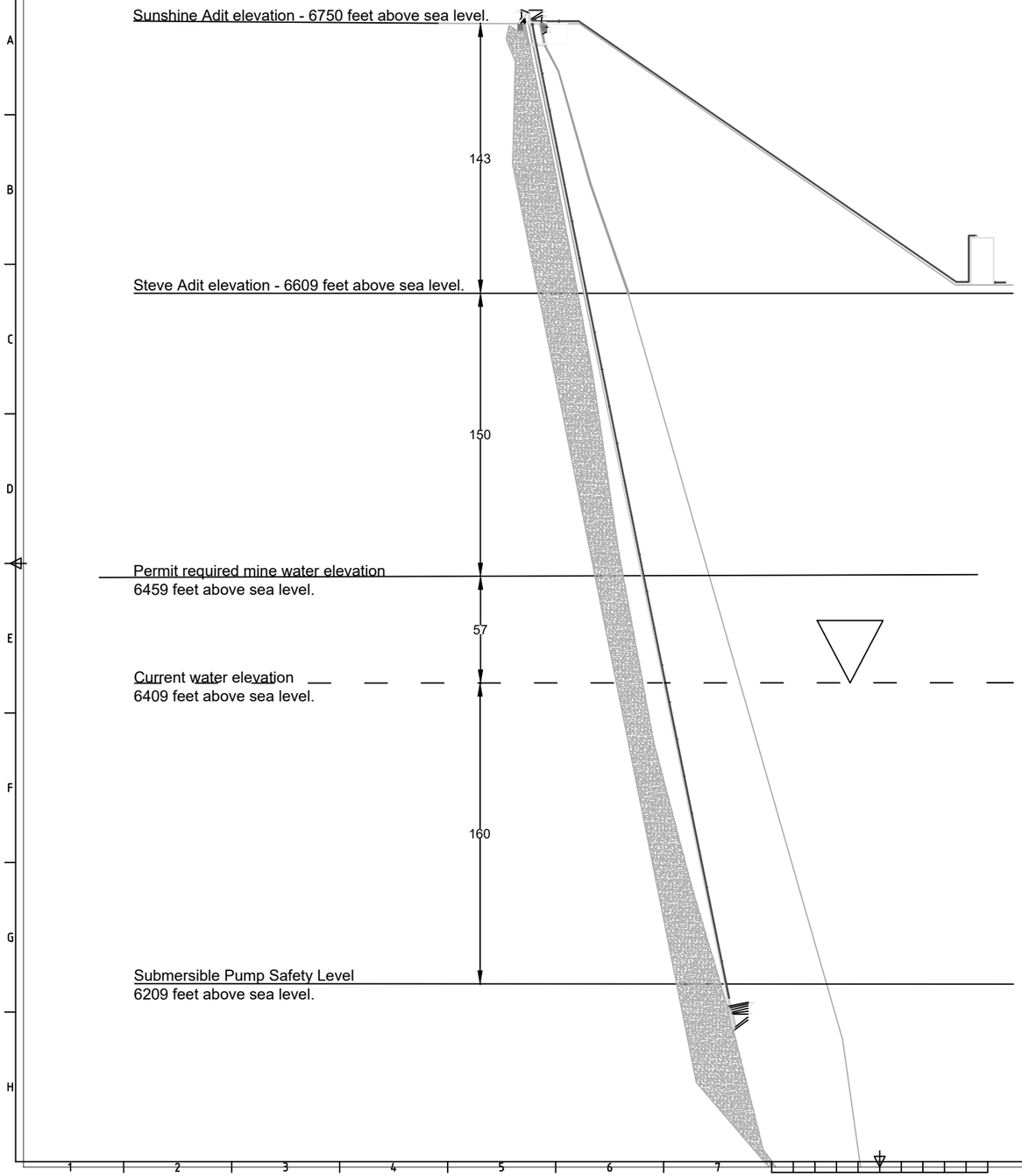
RevNo	Revision note	Date	Signature	Checked



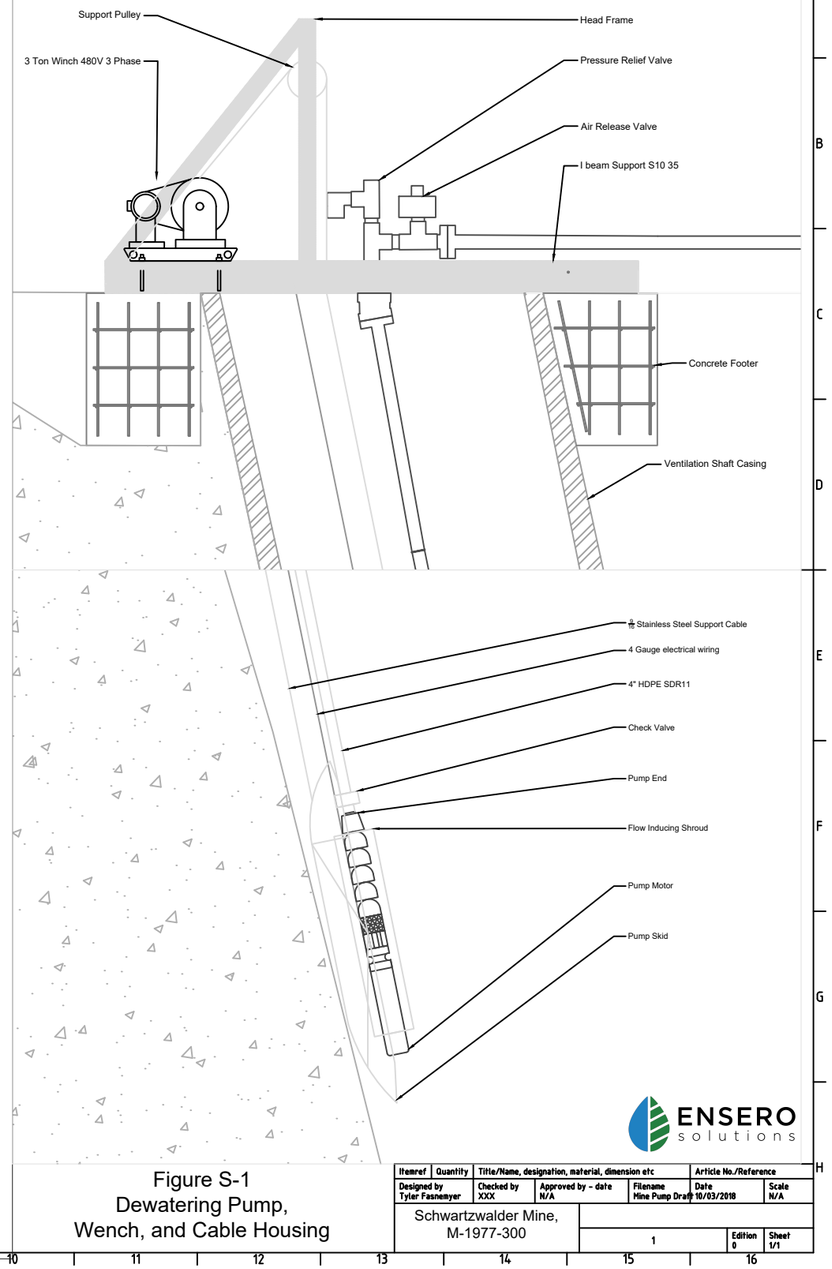


Figure S-1
Dewatering Pump,
Wench, and Cable Housing

ENSERO solutions

Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference	
Designed by Tyler Fasnemyer		Checked by XXX	Approved by – date N/A	Filename Mine Pump Draft	Date 10/03/2018	Scale N/A
Schwartzwalder Mine, M-1977-300						
				1	Edition 0	Sheet 1/1

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COLORADO LEGACY LAND SCHWARTZWALDER MINE

FIGURE S-2

MESA WATER TREATMENT PLANT BUILDING LAYOUT, SCHWARTZWALDER MINE

NOVEMBER 2020

COLORADO LEGACY LAND

Site Feature

Watercourse

1 inch = 58 feet

1:700 *when printed on 8x11 inch paper*

0 25 50 75

Feet

ENSERO solutions

Satelite imagery obtained from ArcGIS on services.arcgisonline.com on November 2020

Datum: NAD 1983 (CORS96) StatePlane Colorado Central FIPS 0502 (US Feet)

D:\Project\AllProjects\Schwartzwalder\Map\01-Overview\03-Overview\WTP_Layout_20201029.mxd

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EXHIBIT U. DESIGNATED MINING OPERATION ENVIRONMENTAL PROTECTION PLAN

This information is presented in Technical Revision 23, Attachment B *Schwartzwalder Mine Environmental Protection Plan* (Whetstone Associates Inc., 2016), Exhibit E of this document, which provides an updated description of the current environmental monitoring program, and Exhibit M which provides an updated list of current permit and licenses for the Schwartzwalder Mine..

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RULE 6.5. GEOTECHNICAL STABILITY EXHIBIT

This exhibit has not changed from 2012 Mine Plan Amendment 3.

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RULE 8. EMERGENCY RESPONSE PLAN

This exhibit has not changed from 2012 Mine Plan Amendment 3.

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ADDENDUM 1. NOTICE REQUIREMENTS [RULE 1.6.2(1)(B)]

NOTICE

This site is the location of a proposed mining operation. Colorado Legacy Land LLC, whose address and phone number is 4601 DTC Boulevard, Suite 120 Denver, CO 80237, ph (303) 521-5805 has applied for a Reclamation Permit with the Colorado Mined Land Reclamation Board. Anyone wishing to comment on the application may view the application at the Jefferson County Clerk and Recorder's Office, 100 Jefferson County Parkway, Suite 2560 Golden, Colorado 80418, and should send comments prior to the end of the public comment period to the Division of Reclamation, Mining and Safety, 1313 Sherman St, Room 215, Denver, Colorado 80203.

CERTIFICATION

I Elizabeth Busby, herby certify that I posted a sign containing the above notice for the proposed permit area known as the Schwartzwalder Mine on 8-19-20.

Signature: Elizabeth Busby

Date: 8-19-20

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JEFFERSON
COUNTY COLORADO

REAL PROPERTY TAX STATEMENT

Tax Year / Payable
2019 2020

Jerry DiTullio
County Treasurer
100 Jefferson County Pkwy 2520
Golden CO 80419-2520
303-271-8330
www.jeffco.us/treasurer

PIN:300038795 TAG: 4832 Mort Code:

Property Address: 8330 GLENCOE VALLEY RD

Current Owner
COLORADO LEGACY LAND LLC

Legal Description
Section 25 Township 02 Range 71 Qtr NW Size: 24899201 Value: 571.607

See reverse side of this form for additional information.
Payments may be made online at
https://treasurerpropertysearch.jeffco.us

Tax Authority/Other Charges	$ per thousand of assessed va lue Tax Mill levy	Original Amount Due
R1 SCHOOL BOND REDEMPTION FUND	6.7410	2227.80
R1 SCHOOL GENERAL FUND	40.3340	13329.78
*COUNTY GENERAL FUND	15.6030	5156.56
*DEPT OF SOCIAL SERVICES	1.1500	380.06
DEVELOPMENTAL DISABLITY FUND	1.0000	330.49
LIBRARY FUND	4.5000	1487.18
*ROAD & BRIDGE FUND	1.0790	356.59
FAIRMOUNT FIRE PROTECTION DIST	11.6840	3861.39
*LAW ENFORCE AUTHORITY	2.5490	842.41
Sub Total	84.6400	27972.26
Total		27972.26

Valuation	Actual	Assessed
Total	1,139,600	330,485

Messages

Complete Legal Description is on file in the Assessor's Office.
If you no longer own this property, please disregard this notice. The new owner is responsible for paying the taxes.

Type	Charge/Adjustment
Original	27972.26
Current Tax Year Amount	27972.26
Payments	0
Current Year Taxes Due	27972.26

THIS IS THE ONLY NOTICE THAT YOU WILL RECEIVE