


**COLORADO**Division of Reclamation,  
Mining and Safety

Department of Natural Resources

**MINERALS PROGRAM INSPECTION REPORT****PHONE: (303) 866-3567**

The Division of Reclamation, Mining and Safety has conducted an inspection of the mining operation noted below. This report documents observations concerning compliance with the terms of the permit and applicable rules and regulations of the Mined Land Reclamation Board.

<b>MINE NAME:</b> Schwartzwalder Mine	<b>MINE/PROSPECTING ID#:</b> M-1977-300	<b>MINERAL:</b> Uranium	<b>COUNTY:</b> Jefferson
<b>INSPECTION TYPE:</b> Monitoring	<b>INSPECTOR(S):</b> Amy Eschberger, Michael Cunningham	<b>INSP. DATE:</b> March 22, 2019	<b>INSP. TIME:</b> 10:00
<b>OPERATOR:</b> Colorado Legacy Land, LLC	<b>OPERATOR REPRESENTATIVE:</b> Paul Newman, Cliff Yeckes, Liz Busby	<b>TYPE OF OPERATION:</b> 112d-2 - Designated Mining Operation	

<b>REASON FOR INSPECTION:</b> Normal I&E Program	<b>BOND CALCULATION TYPE:</b> None	<b>BOND AMOUNT:</b> \$8,900,000.00
<b>DATE OF COMPLAINT:</b> NA	<b>POST INSP. CONTACTS:</b> None	<b>JOINT INSP. AGENCY:</b> None
<b>WEATHER:</b> Clear	<b>INSPECTOR'S SIGNATURE:</b> 	<b>SIGNATURE DATE:</b> April 9, 2019

**The following inspection topics were identified as having Problems or Possible Violations. OPERATORS SHOULD READ THE FOLLOWING PAGES CAREFULLY IN ORDER TO ASSURE COMPLIANCE WITH THE TERMS OF THE PERMIT AND APPLICABLE RULES AND REGULATIONS. If a Possible Violation is indicated, you will be notified under separate cover as to when the Mined Land Reclamation Board will consider possible enforcement action.**

**INSPECTION TOPIC:** Hydrologic Balance

**PROBLEM #1:** Failure to minimize disturbance to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quality of water in surface and groundwater systems both during and after the mining operation and during reclamation, as required by Hard Rock Rule 3.1.6(1).

**CORRECTIVE ACTIONS:** By the corrective action date, the operator shall sample the ponded water observed during the inspection between Ralston Creek and the North Waste Rock Pile (detailed in the report) and submit the results to the Division along with any additional relevant monitoring data. This report shall include an analysis of the data, comparing it to data obtained from the upgradient and downgradient monitoring locations, identification and quantification of the contaminant source(s), and a plan of action to prevent contaminated surface and groundwater from leaving the affected lands. If the plan of action involves changes to the approved mining and/or reclamation plans, it should be submitted as a Technical Revision or Amendment application with the appropriate fee.

**CORRECTIVE ACTION DUE DATE:** May 9, 2019

**INSPECTION TOPIC:** Hydrologic Balance

**PROBLEM #2:** A detailed construction schedule has not been provided to the Division as required by Hard Rock Rule 6.4.21(15) for installation of the surface water control structures approved in Technical Revision No. 23 (TR-23) for the waste rock piles, which are designated Environmental Protection Facilities. At the time of this inspection, these structures have not been installed at the site, and no alternative plan for controlling runoff of

these piles has been proposed.

**CORRECTIVE ACTIONS:** By the corrective action date, the operator shall submit a detailed construction schedule for installation of the surface water control structures approved in TR-23 for the waste rock piles. Any proposed revisions to the approved plan must include a detailed construction schedule, and be submitted in the form of a Technical Revision or Amendment application by the corrective action date with the appropriate fee.

**CORRECTIVE ACTION DUE DATE:** May 9, 2019

### **OBSERVATIONS**

This was a normal monitoring inspection of the Schwartzwalder Mine (Permit No. M-1977-300) conducted by Amy Eschberger and Michael Cunningham of the Division of Reclamation, Mining and Safety (Division). The operator was represented by Paul Newman, Cliff Yeckes, and Liz Busby during the inspection. The site is located approximately 6 miles northwest from Golden, CO in Jefferson County. Access to the site is from the south off Glencoe Valley Road. This mine is on a quarterly inspection frequency. The 1<sup>st</sup> quarter inspection for 2019 was conducted on January 7<sup>th</sup>. While this inspection could serve as the 2<sup>nd</sup> quarter inspection, the Division may choose to conduct an additional 2<sup>nd</sup> quarter inspection as the active construction season is expected to recommence at the site during this time. **Photos 1-14** taken during the inspection are included with this report.

This is a 112d-2 underground uranium mine with a permit area of 72.24 acres. The site is situated at the bottom of a canyon, adjacent to Ralston Creek. The current operator, Colorado Legacy Land, LLC took over the permit in 2018 to complete reclamation of the site. Since that time, the operator has continued to demolish and remove structures from the site, including the old water treatment plant. A new water treatment plant has been constructed on site further south from where the old plant existed (near the Steve Level Adit). This new location will allow the operation to continue excavating the alluvial fill near the creek per the approved reclamation plan, and to eventually restore the creek to its natural flow path in the canyon.

The primary activities occurring on site at this time consist of surface water and groundwater monitoring and treatment of groundwater. The operation conducts in-situ groundwater treatment through organic carbon injections into the mine pool, and treats excess water pumped from the mine and alluvial groundwater collected from several sumps via the water treatment plant (which operates approximately 6 months during the year). The operation is required to keep the mine pool pumped down to a minimum depth of 150 feet below the Steve Level to reduce the interaction of contaminated mine pool water with the alluvial groundwater system. Technical Revision No. 27 (TR-27; approved on January 17, 2019) authorized an upgrade and relocation of the mine pool dewatering pump. The new 50 HP submersible pump will be lowered to approximately 550 feet below the Sunshine Adit (approximately 410 feet below the Steve Adit) on a custom fabricated housing shed via a winch system. The dedicated winch system will be installed adjacent to the Jeffrey Air Shaft on a concrete footer.

Concrete cutoff walls were installed across the creek channel in 2012 (per Technical Revision No. 18) both upstream and downstream of the mine site in order to isolate the zone of contaminated alluvial groundwater and effectively dewater the alluvial fill to facilitate remedial activities. The operation intercepts "clean" surface flows and alluvial groundwater upgradient of the mine site, diverts the water around the mine via pipeline, and discharges the water into the creek below the downgradient cutoff wall (at SW-BPL). Treated groundwater from the mine site is also discharged at this location. The operator maintains a permit with the CDPHE, WQCD for this discharge point, under which the discharged water must meet specified water quality standards.

The new water treatment plant was online during the inspection. The mine pool was at 192 feet below the Steve Level, or at 42 feet below the required 150-foot depth. The operator sent notification to the Division on March 6, 2019, documenting problems encountered at the water treatment plant in late January of this year (frozen intake pipeline), which prevented pumping from the mine during this time period. This resulted in the mine pool exceeding the required 150-foot depth during January 27-29. Plant operations resumed on January 29<sup>th</sup> after the appropriate repairs/modifications were made, and the operation was able to bring the mine pool back down to the permitted level. The operator's notification outlined a corrective action plan that will be implemented on site to prevent this scenario from re-occurring. While the downgradient surface water monitoring point (SW-BPL) had exceedances of the uranium standard (30 µg/L) during December 2018, no exceedances were observed in the January 2019 monitoring results.

The Division inspected the upgradient cutoff wall and observed that all flows in Ralston Creek were being routed through the by-pass pipeline. The Division inspected the creek and adjacent areas upstream from the cutoff wall, and identified two areas of ponded water outside of the creek channel, between the creek and the North Waste Rock Pile (NWRP). Ponded water was observed in the ditch beside Glencoe Valley Road where the road is located east of the creek along the toe of the NWRP. The water pooled in this ditch was green in color due to extensive algae growth and appeared to be fairly stagnant. The other area of ponded water was observed between the green-colored water and the creek, further west from the road. The water pooled at this location was red in color due to staining of the underlying ground and vegetation. The red-colored water was flowing at an estimated rate of 1-2 gpm, and eventually joined the creek just upstream of the headgate/cutoff wall. The green-colored water appeared to be isolated from the creek. The Division believes the ponded water may be impacted due to its coloration and algae growth.

Because surface water upstream of the cutoff wall is being intercepted and discharged at the downstream discharge point untreated, any impacts to this water would result in impacted water being discharged downstream from the mine site. As mentioned above, elevated uranium concentrations were observed at the downgradient monitoring location (SW-BPL) in December 2018. **Therefore, the Division is citing a problem in this report for failure to minimize disturbance to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quality of water in surface and groundwater systems both during and after the mining operation and during reclamation, as required by Hard Rock Rule 3.1.6(1).** The required corrective actions will include sampling the ponded water observed during the inspection between Ralston Creek and the NWRP and submitting the results to the Division along with any additional relevant monitoring data. This report shall include an analysis of the data, comparing it to data obtained from the upgradient and downgradient monitoring locations, identification and quantification of the contaminant source(s), and a plan of action to prevent contaminated surface and groundwater from leaving the affected lands.

In the surface water monitoring report submitted to the Division on February 6, 2019 (identifying the December 2018 uranium exceedances at SW-BPL), the operator stated there was no discharge from the water treatment plant during the month of December, and the only flow in Ralston Creek was localized base flow, potentially including drainage from the NWRP. During the inspection, the Division inquired about the potential issue of seeps occurring from the NWRP. The operator acknowledged that, while water has never been observed seeping from the NWRP, iron staining has been observed on the side of the pile indicating that seeps do occur. The Division identified a small seep at the top of the NWRP during its June 28, 2016 inspection. This seep was described as flowing at an estimated rate of 2 gpm, but appeared to be limited to the top of the pile, and was not flowing down the sides of the pile.

During the current inspection, no standing water was observed on top of the NWRP. However, the Division did observe hydrophytic vegetation (mainly cattails) growing in a few small areas near the center top surface of this

pile. The NWRP was placed in a gulch that is typically dry most of the year, except during high precipitation events and spring runoff. The Division observed a pathway of flattened grass and woody debris where water has flowed from the gulch across the top of the NWRP. No erosion problems were observed on the sides of the pile. It appears that water mostly pools at the top of the pile, particularly in the area where hydrophytic vegetation is present.

Technical Revision No. 23 (TR-23; approved on March 17, 2017) included plans to divert surface water around the waste rock piles, which are designated Environmental Protection Facilities. No detailed construction schedule was submitted for the implementation of these plans. At the time of this inspection, the surface water control plan approved for the waste rock piles in TR-23 has not been implemented, and no alternative plan for controlling runoff of these piles has been proposed. **Therefore, the Division is citing a problem in this report requiring the operator to submit a detailed construction schedule in accordance with Hard Rock Rule 6.4.21(15) for installation of the surface water control structures approved in TR-23. If the operator wishes to revise the approved plan, this proposal must be submitted (along with a detailed construction schedule) in the form of a Technical Revision or Amendment application.**

During the inspection, the Division also observed the South Waste Rock Pile (SWRP) from the top of the NWRP. This pile appeared to be stable with good grass cover. It should be noted, TR-23 authorized the operator to place additional material (excavated alluvial fill) on top of the existing waste rock piles. At this time, excavated alluvial fill is being placed in the other approved on-site disposal location, the CV Glory Hole inside the Minnesota Adit, and not on top of the waste rock piles. According to TR-23, the operation will place material on the SWRP until capacity is reached prior to placing material on the NWRP. **The operator should be advised, no additional material is to be placed on the NWRP until the issues identified in this report regarding potential seeps and insufficient surface water management of this pile have been addressed.** No excavation activities were occurring at the site during the inspection. The operator anticipates recommencing with excavation activities after spring runoff (April/May). During this construction season, the operator will also continue working to install the new submersible pump via the Jeffrey Air Shaft and associated pipelines (as approved in TR-27).

During the close-out meeting, the following items were discussed:

- Potential seep issue at the NWRP needs to be addressed.
- Stormwater diversion ditch approved in TR-23 for the NWRP needs to be installed or a new plan proposed through submittal of a Technical Revision.
- Per condition no. 2 of the Succession of Operators (SO-1) approval on February 20, 2018, an Amendment application must be submitted to affirm the permanent cessation of mining activities, provide a conceptual model, provide a plan addressing the physical and chemical stabilization of the mine pool and specifically addressing the concentrations of dissolved uranium and other constituents as required under the conditions of the permit, and updating the reclamation and environmental protection plans. While no deadlines were specified for condition no. 2, the Division wants the operator to provide an estimated timeline for submittal, given the amount of time that has passed since SO-01 was approved.

This concludes the report.



## PHOTOGRAPHS



**Photo 1.** View looking southeast across the contaminated alluvial fill material on the canyon floor that is being extracted for reclamation.



**Photo 2.** View looking southeast across the mine site, showing the creek diversion pipeline (indicated) which conveys upgradient "clean" water around the mine to discharge into Ralston Creek downgradient of the mine site.





**Photo 3.** View looking downstream from upgradient cutoff wall in Ralston Creek, showing creek dry during inspection (besides a small pool of snow melt).



**Photo 4.** View looking at upgradient cutoff wall/head gate in Ralston Creek, showing creek flowing at time of inspection.





**Photo 5.** View of standing water observed in ditch adjacent to Glencoe Valley Road (at right) near toe of North Waste Rock Pile (indicated). This water was green in color due to extensive algae growth, and appeared to be fairly stagnant.



**Photo 6.** Closer view of standing water shown in Photo 5. Note green color of water due to extensive algae growth.





**Photo 7.** View of standing water observed in area between creek and green-colored standing water (shown in Photos 5 and 6). This water was bright red in color due to staining of the underlying ground and vegetation.



**Photo 8.** View of Ralston Creek upstream from the cutoff wall. Note water in creek is clear with no significant algae growth or red staining.





**Photo 9.** View looking across southwest side of North Waste Rock Pile. Note pile is stable with good grass cover.



**Photo 10.** View looking across the top of the North Waste Rock Pile, showing the small areas (circled) with hydrophytic vegetation growing (mainly cattails) indicating prolonged saturated conditions.





**Photo 11.** View from top of North Waste Rock Pile looking north up the gulch in which the pile was placed. Note the woody debris piled in the foreground, which appears to have been deposited by a high flow event(s).



**Photo 12.** View looking across top of North Waste Rock Pile, showing pathway of flattened vegetation where stormwater appears to flow from the gulch across the top of the pile (general flow direction indicated with blue arrow).





**Photo 13.** View looking down south side of North Waste Rock Pile from top of pile, showing no erosion problems.



**Photo 14.** View looking southeast from top of North Waste Rock Pile, showing South Waste Rock Pile (in distance) located south of the creek. This pile appeared to be stable with good grass cover.



### GENERAL INSPECTION TOPICS

The following list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each

(AR) RECORDS----- <u>Y</u>	(FN) FINANCIAL WARRANTY----- <u>N</u>	(RD) ROADS----- <u>Y</u>
(HB) HYDROLOGIC BALANCE----- <u>(2)PBs</u>	(BG) BACKFILL & GRADING----- <u>N</u>	(EX) EXPLOSIVES----- <u>N</u>
(PW) PROCESSING WASTE/TAILING---- <u>N</u>	(SF) PROCESSING FACILITIES----- <u>N</u>	(TS) TOPSOIL----- <u>N</u>
(MP) GENL MINE PLAN COMPLIANCE- <u>Y</u>	(FW) FISH & WILDLIFE----- <u>N</u>	(RV) REVEGETATION---- <u>Y</u>
(SM) SIGNS AND MARKERS----- <u>N</u>	(SP) STORM WATER MGT PLAN---- <u>N</u>	(RS) RECL PLAN/COMP-- <u>Y</u>
(ES) OVERBURDEN/DEV. WASTE----- <u>N</u>	(SC) EROSION/SEDIMENTATION--- <u>N</u>	(ST) STIPULATIONS----- <u>N</u>
(AT) ACID OR TOXIC MATERIALS----- <u>N</u>	(OD) OFF-SITE DAMAGE----- <u>N</u>	

Y = Inspected and found in compliance / N = Not inspected / NA = Not applicable to this operation / PB = Problem cited / PV = Possible violation cited

#### Inspection Contact Address

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