



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.

MINE NAME: Henderson Mine	MINE/PROSPECTING ID#: M-1977-342	MINERAL: Molybdenum	COUNTY: Clear Creek, Grand
INSPECTION TYPE: Monitoring	INSPECTOR(S): Peter S. Hays	INSP. DATE: August 30, 2018	INSP. TIME: 09:30
OPERATOR: Climax Molybdenum Company	OPERATOR REPRESENTATIVE: Aaron Hilshorst	TYPE OF OPERATION: 112d-3 - Designated Mining Operation	
REASON FOR INSPECTION: Normal I&E Program	BOND CALCULATION TYPE: None	BOND AMOUNT: \$37,993,785.00	
DATE OF COMPLAINT: NA	POST INSP. CONTACTS: None	JOINT INSP. AGENCY: None	
WEATHER: Clear	INSPECTOR'S SIGNATURE: 	SIGNATURE DATE: September 7, 2018	

GENERAL INSPECTION TOPICS

This list identifies the environmental and permit parameters inspected and gives a categorical evaluation of each. No problems or possible violations were noted during the inspection. The mine operation was found to be in full compliance with Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials and/or for Hard Rock, Metal and Designated Mining Operations. Any person engaged in any mining operation shall notify the office of any failure or imminent failure, as soon as reasonably practicable after such person has knowledge of such condition or of any impoundment, embankment, or slope that poses a reasonable potential for danger to any persons or property or to the environment; or any environmental protection facility designed to contain or control chemicals or waste which are acid or toxic-forming, as identified in the permit.

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

OBSERVATIONS

The Henderson Mill was inspected by Peter Hays, Stephanie Mitchell and Tim Cazier with the Division of Reclamation, Mining and Safety (Division/DRMS) as part of the Division's monitoring inspection program. Aaron Hilshorst, Miguel Hamarat, Amber Parmet, Dillon Benbow and Brandon Guite with Climax Molybdenum - Henderson Operations (Henderson) and Lisa Yenne with AECOM were present during the inspection.

Tailings Impoundment:

The purpose of the inspection was to accompany AECOM, the engineer of record, on a typical monthly Tailings Impoundment inspection. The focus of the monthly AECOM inspection is to inspect the tailings impoundment for overall dam safety and water balance. Any tailings impoundment concerns are discussed at the end of the inspection with Henderson staff. A monthly inspection report is generated by AECOM a few weeks following each inspection.

The following aspects of the 3-Dam and 1-Dam Tailings Impoundments were observed and discussed during the inspection; Dam Crests, Downstream Faces, Beaches and Dam Toes/Abutments. The dam crests were observed for crest condition, settlement, cracking, other signs of movement, tailings delivery line and instrumentation readings. The downstream faces were observed for dam condition, settlement, cracking, erosion, other signs of movements and vegetation growth. The beaches were observed for beach condition, estimated beach width, freeboard, signs of movement, deposition, and beach erosion. The dam toes and abutments were observed for toe condition, signs of movement, abutment condition, seepage condition and drain condition.

The Tailings Delivery System (TDL) was observed for the pipe condition, drop tower condition, valve condition, instrumentation readings and instrumentation availability. The Seepage Collection System was observed for amount of seepage flow, diversion of seepage, seepage water properties and seepage pond condition. The Return Water System was observed for pond elevation, barge pumping flow rate and barge condition.

The road adjacent to the TDL was driven to observe the condition of the line and drop towers. No recent problems or repairs of the TDL have been reported by Henderson. Tailings deposition in the 3-Dam cells is scheduled for this fall and will consist of one 1.5 foot deposition. Tailings deposition in the 1-Dam cells have occurred as planned from south to north. The spigot deposition of tailings ended the previous day in Cells 7 and 8 on 1-Dam, which were observed during the inspection. The impoundment water pool location is estimated by Henderson based on monuments located in the impoundment. A minimum 500 foot beach offset from the crest of the impoundment is required by AECOM. A minimum 1,000 foot offset is required by Henderson. The beach distance was reported at 2,800 feet during the inspection.

The toes of 1-Dam and 3-Dam were observed for the flow of water from the foundation and horizontal drains. The foundation drains under the impoundments were discussed and several of the active drains were observed. Henderson reported five (5) new toe drains are planned for installation this fall.

The return water system was observed to verify the pond elevation and the pumping flow rate. The Ultimate Canal was inspected from north to south during the inspection. Henderson chemically treated and mechanically removed several areas of cattails in the canal to maintain the proper function of the canal since the last DRMS inspection of the canal.

Seep Water Collection Road:

Seep Water Collection Road raise project is scheduled to commence in September or October of this year. Henderson has not submitted the technical revision request for the work to the Division to date.

3 Dam Buttress Project – Stage 1:

The 3 Dam Buttress Project– Stage 1 was approved by the Division as TR-29 on April 4, 2018. The placement of filter sand on the north stepback area were observed during the inspection. The filter sand was placed in two (2), nine (9) inches lifts for a total depth of 1.5 feet. The installation of the filter sand on the north and south toe areas and on the north stepback area were complete. The placement and compaction of the tailing sand on the north and south toe areas was complete. The slopes of the toe buttress areas will be finish graded soon. The tailings material was placed and compacted in 1 foot lifts. Compaction was achieved by the haul trucks and verified by a proof roll test. The toe drains affected by the toe buttress were extended 75 feet to daylight at the new toe of slope. Three (3) new piezometers were installed in the stepback area to monitor the phreatic surface during construction of the buttress.

The source of the buttress project tailings sand from the inter-benches between Benches F and G on 1-Dam was observed during the inspection. The removal of the inter-benches will allow Henderson to grade the slope between the F and G benches at a 4H:1V slope. The inter-bench between Benches A and B were regraded by Henderson in the last few months.

Photographs taken during the inspection are attached.

Inspection Contact Address

Mr. Aaron Hilshorst
Climax Molybdenum Company
P.O. Box 68
Empire, CO 80438

Ec: Michael Cunningham, DRMS
Stephanie Mitchell, DRMS

PHOTOGRAPHS



View of 3-Dam crest from south end looking north



View of filter sand placement on the south side of the 3-Dam stepback looking south



View of completed filter sand placement on the north side of the 3-Dam stepback looking north



View of extended toe drains at the south toe of 3-Dam



View of completed tailings sand placement at the north toe of 3-Dam



View of tailings deposition in Cell 8 of 1-Dam looking north



View of the removal of the inter-benches on 1-Dam



View of mechanically removed cattails in the ultimate canal