1.0 Henderson Mine

1.1 <u>Disturbance</u>

New disturbance at the Mine in 2018 was limited to incremental caving of the glory hole. No changes were made to any of the mine openings (shafts). A site map of the Henderson Mine indicating affected land boundary and disturbance areas is included in Attachment A.

1.2 Interim Reclamation

Interim reclamation was not carried out at the Henderson Mine in 2018.

1.3 <u>Prospecting</u>

1.3.1 Prospecting Contact

The contact person for the Notice of Intent (NOI) and prospecting activities is:

Miguel Hamarat Environmental Manager Climax Molybdenum Company Henderson Operations

P.O. Box 68 1746 County Rd. 202 Empire, CO 80438 (720) 942-3255

1.3.2 Prospecting Activities

Henderson Mine did not conduct prospecting activities in 2018. However, on August 28, 2018, Henderson Mine was released from obligations related to NOI No. P-1978-011.

1.4 <u>Other Activities</u>

1.4.1 – Weed Control

Habitat Management, Inc., a licensed commercial pesticide applicator, performed weed management activities in June and August 2018.

Canada thistle, common mullein, dalmatian toadflax, mayweed chamomile, musk thistle, oxeye daisy, and yellow toadflax were treated throughout the main mine facilities area, the URAD area, Orica Yard and along County Road 202 between URAD and the Henderson Mine. Herbicide applications were spot-applied to targeted weed species.

The herbicides used for treatment include: Telar XP (Chlorosulfuran), Weedestroy AM40 (2,4-D Amine), Weedar 64 (2,4-D Amine), Milestone (Aminopyralid), Ranger Pro (Glyphosphate), and Viewpoint (Imazapic). Induce was utilized as a surfactant and Hi-Light blue marker dye was added to applications to allow greater visibility of treated areas.

Ranger Pro and Viewpoint were applied to the perimeter of the gas stations, natural gas meter building, compressor building, used oil pump building, bulk oil storage building, and the mine's air vents. The smaller electrical substation was also treated whereas other substations were inspected and found to be in good order.

Similar to past years, the mine property was thoroughly inspected for listed noxious weeds species. Through precision tracking via GPS application monitoring, the weed management contractor applied herbicide to approximately 261 acres (combined Mine and URAD).

1.4.2 – Water Quality Data

Water quality data will be provided in the Annual Water Quality Data Report, due to the DRMS by May 31 annually, per the approved Groundwater Management Plan (TR-16).

2.0 Henderson Mill

2.1 <u>Disturbance</u>

The Mill disturbances for 2018 included only the area inundated by the continuous tailing impoundment rise. A site map of the Henderson Mill indicating affected land boundary and disturbance areas is included in Attachment A.

2.2 Interim Reclamation

Interim reclamation was not carried out at the Henderson Mill in 2018.

2.3 <u>Other Activities</u>

2.3.1 – Weed Control

For 2018, Henderson Mill received weed treatments in July and August, when approximately 510 acres were treated. The two treatments covered the following areas: around all shops and mill parking lots, roadsides around the tailing pond, the northern non-industrial areas, the haul roads, the upper canal road, on and below the dam, and the portal.

These areas were treated for the following noxious weeds: Bull thistle, Canada thistle, Common mullein, Dalmatian toadflax, Houndstongue, Mayweed chamomile, Musk thistle, Plumeless thistle, Oxeye daisy and Yellow toadflax

The herbicides used for treatment include: Escort XP (Metsulfuron), Milestone VM (Aminopyralid), Rodeo (Glyphosate), Telar XP (Chlorsulfuron), Transline (Clopyralid), Vastlan (Triclopyr), Weedestroy (2,4-D Amine), Induce (a nonionic adjuvant) and Blue Hi-Lite indicator dye.

2.3.2 – Water Quality Data

Water quality data will be provided in the Annual Water Quality Report, due to the DRMS by May 31 annually, per the approved Groundwater Management Plan (TR-16).

2.3.3 – Flood Storage Capacity

Analysis of flood storage capacity in the Mill tailings impoundment was carried out by W.W. Wheeler, per DRMS requirements stipulated for Technical Revision (TR) 14. This analysis is included as Attachment B.

2.3.4 – 3-Dam Seepwater Line Leak-Down Test

The annual 3-Dam seepwater line leak-down test for 2018, per DRMS requirements stipulated in TR-09, was completed on June 21, 2018. The seepwater lines held static pressures over a 24-hour period, as designed. See test report in Attachment C.

2.3.5 – Extraction Well Installation

No new extraction wells were installed in 2018. All currently installed extraction wells are operational.

2.3.6 – Gravel Pit Operations

There were no crushing or screening activities at the Henderson Mill during calendar year 2018.

2.3.7- 3-Dam Buttress Project

Work started on the 3-Dam Buttress Project submitted as TR-29 in the summer of 2018 consisting of infrastructure improvements, placement of filter material, and placement of buttress material. Infrastructure improvements included channel relocation, drain extensions, and installation of 3 piezometers. Finally, just over 20,000 cubic yards of filter material was placed before being overlain by nearly 40,000 cubic yards of buttress material.

2.3.8 – Seep Water Collection and Return System Improvements

Work began in the summer of 2018 and included upgrading inlet gate operator electronics and communications, culvert extensions, and installation of a seepage cutoff trench as described in TR-30 submitted in September 2018.

3.0 Anticipated 2019 Activities

3.1 <u>Prospecting</u>

No prospecting activities are currently planned for 2019.

3.2 <u>3-Dam Buttress</u>

Phase 1B of the 3-Dam Buttress project will commence once snowmelt has completed. Any erosion on the buttress sections will be repaired before beginning to place the remaining 2,000 cubic yards of sand filter material. Next, 71,300 cubic yards of sand buttress material will be harvested from 1-Dam and compacted on the step back portion of 3-Dam. This will be followed by the installation of two new piezometers and inclinometers. Phase 1 of the 3-Dam Buttress project will be completed in 2019 and engineering will begin for Phase 2.

3.3 Seep Water Collection and Return System Improvements

Improvements to the Seep Water Collection and Return System will continue in 2019. This summer will see the actual raising of the road embankment. While all related infrastructure work was completed in 2018, the road was not raised due to inclement fall weather. The raising of the road will complete this project.

3.4 Gravel Pit

Henderson is currently evaluating whether any continued operations will persist. For 2019, nothing is planned, at present. Areas near the entrance of the gravel pit will continue to be used to stockpile materials delivered for the 3-Dam Buttress Project.

3.5 Aspen Canyon Well

Henderson Mill completed a rehabilitation of the Aspen Canyon Well during late October-early November 2017. Henderson was limited in its evaluation of the data associated with this well to determine the overall impact and effectiveness of the rehabilitation work due to a change in ownership of the Aspen Canyon Ranch property restricting access. However, as of February 12, 2019 an access agreement with the new owners has been reached allowing future sampling to proceed as scheduled.

3.6 <u>Closure Planning</u>

Henderson continues with closure-based planning and investigation work.

3.7 <u>Reclamation</u>

No reclamation is planned for calendar year 2019.

3.8 <u>Amendment</u>

Henderson intends to submit an Amendment to the permit for inclusion of land occupied by URAD water treatment operations, as well as the area associated with Henderson's mining subsidence.

4.0 Financial Warranty

Henderson Operations currently maintains Financial Warranty Corporate Surety in the amount of \$56,142,434. These are held in the form of two surety bonds valued at \$24,730,784 and \$10,133,000. Additionally, an Irrevocable Letter of Credit in the amount of \$3,130,001 and assets valued at \$18,148,649. Henderson continues working to update the valuation for Henderson and Climax water rights, having contracted a third-party to conduct the valuation.

Attachment A

Figures







REVISION Developed in ArcGIS for 2010 Annual Report Revised for 2011 Annual Report Revised for 2012 Annual Report	DATE 3/4/11 2/22/12 2/27/13	Climax Molybdenum A Freeport-McMoRan Company HENDERSON OPERATIONS 1746 County Road Empire, Colorado 80438			
Revised for 2013 Annual Report	2/26/14	Empire, Co	lorado 80438		
Revised for 2014 Annual Report	2/24/2015				
Revised for 2015 Annual Report	3/4/2016	HENDERS	SON MINE		
Revised for 2016 Annual Report	3/3/2017	MLRB Permit	No. M-77-342		
Updated dates and imagery	3/4/2019	Annual Recla	mation Report		
		March	4, 2019		
		DESIGNED BY:	SCALE: 1:4,800		
		DRAWN BY: MT (Aquionix)			
		DATE DRAWN: 3/4/11			







REVISION Developed in ArcGIS for	DATE 2/17/12	AUTHOR MT	A Free
2011 Annual Report Revised for 2012 Annual Report	2/28/13	MT	HEND
Revised for 2013 Annual Report	2/26/14	MT	
Revised for 2014 Annual Report	2/24/15	MT	E
Updated dates for 2015 Annual Report	2/29/16	MT	
Jpdated dates for 2016 Annual Report	3/3/17	ТН	HENDE
Updated dates and imagery	3/4/19	AP	MLRB
			Annua
			DESIGNED BY:
			DRAWN BY: MT (Aquionix)
			DATE DRAWN: 2/17/2012



HENDERSON OPERATIONS 1746 County Road Empire, Colorado 80438

HENDERSON MINE - URAD MLRB Permit No. M-77-342 Annual Reclamation Report March 4, 2019

SCALE:1:7,500 DRAWN BY: MT (Aquionix)



Attachment B

Mill Tailing Impoundment Flood Storage Capacity Analysis

WWW.WWWHEELER.COM



February 8, 2019

Mr. Miguel Hamarat Climax Molybdenum Company, Henderson Mine 1746 County Road 202 Empire, CO 80438

Re: #1333.0 - Henderson Mill TSF Flood Storage

Dear Miguel:

As requested, we have evaluated the availability of flood storage capacity in the Henderson tailing storage facility (TSF) using information from the pond surveys. The fall survey of the beach and pool area was performed in October and November. Figure 1 is the pond contour map that was generated by Wheeler from the fall survey point data. The survey shows that the average dam crest elevation of 1 Dam at the end of the spigot deposition season is about 8879.5 feet, which is a 1.4-foot increase from last year. The minimum elevation surveyed along the dam crest was 8878.4 feet. This information, as well as other characteristics of the TSF, is summarized in the table in the upper right-hand corner of the TSF map drawing. Table 1 and Figure 2 is the elevation-capacity data for the impoundment that was generated from the fall 2018 contour map. Note that this data is representative of the TSF at the time of the pool survey and changes continuously as additional tailing is deposited.

One of the primary uses of the survey data is to evaluate the flood storage capacity conditions in the water system. As summarized on Figure 1, at the approximate time of the fall survey there was a total system surcharge storage capacity of about **9,779 acre-feet** in the system. This capacity includes both the TSF and East Branch Reservoir and is based on 0.5 feet of residual freeboard below the minimum dam crest elevation of 8,878.4' and a water level of 8,865.5'. The flood storage requirement for the system is **3,582 acre-feet**. This requirement is based on hydrologic modeling of the probable maximum precipitation (PMP) event. The available flood storage capacity in the system at the time of the survey

3700 S. INCA STREET | ENGLEWOOD, CO 80110-3405 303-761-4130 | FAX 303-761-2802 Mr. Hamarat February 8, 2019 Page 2

significantly exceeds the storage requirement. However, this excess capacity will decrease throughout the coming year as additional inflows to the system occur and a portion of the storage space is filled with deposited tailing.

A relatively accurate determination of the flood storage capacity in the impoundment can be made at the time of the pond surveys. An operations model has been developed to track water levels and estimate the flood storage availability in the system between surveys. This model is updated by Henderson personnel or Wheeler on a monthly basis. One of the reports generated by this model is the attached TSF Water Level Report (Figure 3). This graph shows the actual water level in the TSF as compared to the flood pool level in the pond, which is defined as the level corresponding to 3,582 acre-feet of available capacity. Note that the actual water level did not exceed the flood pool level at any time in 2018. This shows that the required flood storage space was maintained in the system throughout the 2018 calendar year.

If you have any questions regarding the enclosed information, or if you require additional information, please call.

Sincerely, W. W. Wheeler and Associates, Inc.

1. Maly

Steven M. Maly, P.E.

CC: Dillon Benbow, Henderson Mill (via e-mail) Geoff Niggeler, Henderson Mill (via e-mail) Aaron Hilshorst, Henderson Mill (via e-mail) Katie Kruger, Freeport McMoRan (via e-mail)

R:\1300\1333\1333.00\PROJECTS\PONDSRVY\Pond18Fall\Annual Report\19feb08let.Hamarat.TSFReport.docx

TABLE 1 Henderson TSF Elevation-Area-Capacity

Survey Data:

Bathymetric	Oct. 23, 2018
1 Dam Beach	Oct. 23, 2018
3 Dam Beach	Nov. 15, 2018

Water Elevation	Surface A	rea	Storage Capacity
(feet)	(sq. ft.)	(acres)	(ac-ft)
8,837.0	0	0.00	0
8,838.0	409,916	9.41	4
8,839.0	733,192	16.83	17
8,839.0	979,545	22.49	37
8,841.0	1,191,491	27.35	62
		31.81	92
8,842.0	1,385,821		
8,843.0	1,538,697	35.32	125
8,844.0	1,683,094	38.64	162
8,845.0	1,829,871	42.01	202
8,846.0	2,075,036	47.64	247
8,847.0	2,369,767	54.40	298
8,848.0	2,636,050	60.52	356
8,849.0	2,900,665	66.59	419
8,850.0	3,350,477	76.92	491
8,851.0	3,866,948	88.77	574
8,852.0	4,357,497	100.03	668
8,853.0	4,793,104	110.03	773
8,854.0	5,243,775	120.38	889
8,855.0	5,645,591	129.60	1,014
8,856.0	6,047,487	138.83	1,148
8,857.0	6,456,845	148.23	1,291
8,858.0	6,875,932	157.85	1,444
8,859.0	7,379,183	169.40	1,608
8,860.0	8,047,548	184.75	1,785
8,861.0	8,736,354	200.56	1,978
8,862.0	9,454,434	217.04	2,186
8,863.0	10,335,089	237.26	2,414
8,864.0	11,671,910	267.95	2,666
8,865.0	13,665,447	313.72	2,957
8,865.5	15,157,555	347.97	3,119
8,866.0	16,749,867	384.52	3,306
8,867.0	20,165,043	462.93	3,730
8,868.0	23,079,339	529.83	4,226
8,869.0	25,695,084	589.88	4,786
8,870.0	28,581,791	656.15	5,409
8,871.0	31,408,774	721.05	6,097
8,872.0	33,878,490	777.74	6,847
8,873.0	36,552,744	839.14	7,655
8,874.0	38,822,708	891.25	8,521
8,875.0	40,944,307	939.95	9,436
8,876.0	42,947,072	985.93	10,399
8,877.0	44,849,575	1,029.60	11,407
8,878.0	46,765,699	1,073.59	12,458
	48,541,698	1,073.39	12,458
8,879.0			
8,880.0	49,969,780	1,147.15	14,683
8,881.0	50,395,440	1,156.92	15,835

* All other values are interpolated from this table.





Figure 2 - Henderson TSF Elevation Area Capacity

Storage Capacity (acre-feet)



2/8/2019

R:\1300\1333\1333.18 (Water Balance)\OPERATORMODEL\2018-2019\Henderson Operations Model v5.0-2018 (2-yr)-WaterRts.xls

Attachment C

3-Dam Seepwater Line Leak Down Test Results



FREEPORT-NCNORAN ORDER 400008646568

Henderson

Sort Field:	111501	DA03	Equipment:	10000008159	Equipmen Descriptio		TAILINGS DAM	[#3
Cost Center: 2	2402001111	01111 Functional Location: HE-2-MI-C8-TC-1866			Functional Location Description:		TAILINGS DAMS	
Main Work Center:	4600P	Se	rial No.:		PM Activity Type:	PCM	Order Type:	MN03
Start Date:	06/04/2018	End Date	. 06/06/	/2018	Priority: 3	10 D	Originator:	IP1020180513
Description: PM LEAK DOWN TEST - #3 DAM SEEP H2O 364D								
Person Responsible: Person Responsible Description:					2			
Failure Infor	mation		Check		Commer	its		

1 anal C mior mation	CIICK	Comments
Maintenance Rework		The main line is still slow
Incident or Accident		to drain
Exceeding Design Parameters		
Poor Operational Practice		GUIMIPLEILED
Normal Wear and tear		

FOLLOW ALL SAFETY INSTRUCTIONS RELATED TO EACH OPERATION

			Operation Description	on				
Operation	Sub-Op Work Center		Operation Description	Act. No. People	Act. Hrs.	Act. Dur.	Comp Date	
10	*e	4600P	PM LEAK DOWN TEST - #3 DAM SEEP H2O 364	1	24	5	6-20-18	
Long Text								
PM LEAK	DOWN TH	EST - #3 DA	M SEEP H2O 364					
SUPERCE	DES: 12,	/18/2015						
			t Marquardt					
		FE: 10/18/2	016					
MAINT P	LAN: 700	00000912						
=======				===				
PROVIDE COMPLET		TO TIM HAY	NES AND CURTIS BROWN UPON					
=======				====				
			lves and make sure that they do king discharge valves for water					
2	Shut off	f lower bal	l valves east side of road I70	gate.				
the second second second second	3 Close discharge valves for drain line and overflow							
4	Shut pov	ver off to	pumps in lift station.					
5	Close bo	oth valves	at dosing vault.					





	drain line a s for leaks.	nd overflow lin	e and check d	ischarge						
7. Lock disch	7. Lock all valves and read pressure gauge at the discharge valves.									
Drain Line H	Drain Line Pressure 7583 Date/Time 9:30-6-20-18 Dverflow Line Pressure 11 Date/Time									
Overflow Lir)verflow Line Pressure Date/Time									
8. Wait over	: 24 hours an	d read Pressure	gauges:							
Drain Line B	Pressure	25 Date/Ti 5 Date/Ti	me 9:40 -	6-21-1	8					
Overflow Lin	ne Pressure	<u> </u>	me <u>9:'40-</u>	621-1	18					
period you o valves first	can remove th , then the d	drop in pressur e locks. Open t ischarge valves ond operators.	he intake	our			:			
1		op in pressure ossible leaking		sure drop						
open holes a	and are prope	ds are in good rly installed.								
in good orde		PM is done. En	sure nousekee	ping is						
13 Write	e WO for any	problems found								
Completion Comm	ients									
Completed by : Pr Supervisor Review			Signature 2 Signature	7107 Marin	A	Date Completed Date Completed Date Completed				
				mary	×0	101.18				
			MATERIAL							
Operation	Component	Descrip	otion:	Qty	UOM IC	SS Locat	ion			
	<u> </u>	RE	TURN MATER	RIALS	I					
Quantity	St	ock or Part		Description	•	Name				