



Cross Shaft Surface Depression Remediation

1 message

Daniel Takami <danieltakami@gmail.com>

Mon, Oct 31, 2022 at 9:15 AM

To: Patrick Lennberg - DNR <patrick.lennberg@state.co.us>, Sergio Rivera <sergio.rivera@novametallix.com>, Richard Mittasch <rmittasch@nedmining.com>

Patrick,

Enclosed is the Cross shaft surface depression remediation report providing details of the remedial activities performed in compliance with DRMS's request. If you have any questions please feel free to contact me.

Respectfully,

Daniel J. Takami

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President, Nederland Mining Consultants Inc.
President, Grand Island Resources, LLC
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Signed Cross Depression Reclamation Letter Report.pdf
2285K



Division of Reclamation, Mining & Safety
c/o Mr. Patrick Lennberg
1001 E 62nd Ave,
Room 215
Denver, CO 80216

October 31, 2022

RE: Cross Gold Mine, Permit No. M-1977-410, Cross Shaft Surface Depression Remediation

Mr. Lennberg,

On June 10, 2022, Grand Island Resources (Operator) requested approval from DRSM to perform reclamation of a surface feature consisting of a land depression that had the potential of increasing surface water influx into the underground workings of the Cross Mine. The Operator discussed remediation details and rationale with DRMS on June 3, 2022, during a Site Inspection. DRMS approved the request on June 23, 2022.

The proposed work consisted of re-establishing the natural surface topography and natural surface drainage via backfilling, slope, topsoil placement, and revegetation, in accordance with Amendment #2.

This Letter Report provides details of the remedial activities performed by the Operator and complies with Per DRMS request ***“Provide the Division photographic documentation of the activities during and post remediation and a brief summary of when activities began and ended, and approximately how much material was used for remediation.”***

Remediation Summary

Start Date Activity: August 1, 2022

End Date Activity: August 12, 2022

Materials and Quantities:

- Waste rock as backfilling material, 1,500 yrd³



- Rocky mountain native seed mix per AM-2 description, 16 lbs. (Table 3)
- Biosolid soil amendment, 100 lbs.
- Triton Environmental Winterstraw™ , erosion control blankets, 7 rolls 112.5'x8'

Activities Narrative

On the 1st of August, the activity began with clearing an equipment access path to the depression (excavator and dump trucks). Sequential backfilling and fill material activities were performed. Upon reaching the lower rim of the depression, compaction was increased via excavator tracking. The final slope of the reclaimed slope was graded to a slope of 2 horizontal to 1 vertical in accordance with Amendment #2.

Revegetation of the filled depression and access path were covered with a layer or screened soil mixed with soil amendments. A native seed mix was broadcasted over the amended soil mix at approximately 1lbs per 1,000 square feet. To prevent erosion while vegetation is established, erosion control blankets were placed over the reclaimed area.



Detailed Activities

AM-2 Section	Depression Backfill narrative per AM-2	Actual Depression backfill activity
Section 1.2.6 (page 5) The Historic Shaft Disturbance:	The historic shaft disturbance, shown in Exhibit E, maps 5 and 8, will be reclaimed using waste rock.	The proposed work consists of re-establishing the natural surface topography and natural surface drainage via backfilling, slope, topsoil placement, and revegetation, in accordance with Amendment #2. Rock was used as backfill material
	The depression in this area will be regraded to 2:1, re-vegetated using local topsoil, and covered with a sub- alpine seed mix.	2:1 slope was achieved. Screened soil + 100 lbs. biosolid forte fertilizer and soil amendment was placed over the rockfill (subgrade)prior to revegetation. Sub-alpine seed mix per AM-2 was broadcasted over the reclaimed surface.
Section 1.9 (page 9) Soil Preparation and Revegetation:	Surfaces for revegetation will be roughed to gain a mechanical bond between the subgrade and the replaced topsoil. Where the subgrade is of acceptable quality, it may include disc plowing the topsoil and subgrade together where there is access and safety is not compromised.	Revegetation surfaces had roughed finish through the backfilling activities and layered with amended soil upon retreat of the construction equipment. Disc plowing was not required and was also not employed for safety reasons.



AM-2 Section	Depression Backfill narrative per AM-2	Actual Depression backfill activity
	The seedbed will be loosened (four to six inches (4" to 6") deep) and smoothed.	After compaction of the backfill area a layer of screened soil was loosely laid over the fill prior to seeding, fertilizing and erosion control.
	GIR will replace topsoil in as even a manner as equipment allows. Topsoil will be sourced locally in Nederland, CO (approximately 264,492 ft ³ (9,796 yd ³). Because of the shallow, cobbly and rocky soil types at this site, there is no available site soil for reclamation.	Amended soil was used for reclamation.
	Soil amendments will be as recommended by the local NRCS. Currently, they recommend that if soil tests are not performed, forty (40) pounds per acre of each of the major nutrients (nitrogen and phosphoric acid [H ₃ PO ₄]) be applied. If phosphoric acid is applied, it will be applied on the overburden prior to plant growth medium replacement. This nutrient is not mobile. Placing it in the root zone prior to plant growth medium replacement will ensure optimal utilization by plant roots.	The seed vendor, Arkansas Valley Seed, which is also used by DRMS and is familiar with the area, recommended the use of 100 lbs Biosol Forte soil amendment and fertilizer for the 0.5 acre of disturbed area. The biosol was mixed with the cover material.
	Soils having been compacted by traffic or other equipment will be tilled (approximately 0.7387 acres) (deep	As loose screened soil layer was place over the compacted fill material, no tilling was requiried.



AM-2 Section	Depression Backfill narrative per AM-2	Actual Depression backfill activity
	chiseled or ripped if necessary) breaking up restrictive or compacted layers, and then harrowed and rolled or packed to produce the required firm seedbed.	
	Seed will be drill seeded. The seedbed will be settled and fairly firm, but left rough enough to catch the seed and allow some coverage by soil when tracked in by equipment or harrowed and packed into the soil surface. Seedbed preparation will be avoided when the soil is wet to prevent seedbed compaction.	Seed was hand-seeder broadcasted over the amended soil. Approximately 30 lbs of seed per acre was used per the vendors recommendations.
	Topsoil will be replaced to a depth of 8 to 12 inches in most areas (approximately 3.5439 acres [Costs in Appendix III reflect soil to 12 inches.]). This includes the Cross-Caribou mine, Potosi Shaft, and Caribou 300 Portal areas. Soil will need to be deep enough to encourage root growth.	Amended soil was placed prior to seeding.
	Because this is an underground mine, no overburden was removed and none will be replaced.	The operation did not conduct backfill activities as would be for an open pit or strip mine.



AM-2 Section	Depression Backfill narrative per AM-2	Actual Depression backfill activity
	The operation will not conduct backfill operations as one would expect for open pit or strip mine.	
	There is always the possibility some minor backfilling may occur (ponds). Where backfilling should occur, it will be done in such a manner that the backfilled material will be appropriately compacted to prevent slippage or settling, provided it can be done in a manner not endangering operators and equipment.	This project is considered to be a minor backfilling activity. The backfilled material was properly layered and sequentially compacted with the excavator in a safe manner.
	No toxic or acid forming material will be backfilled on site. Therefore, leaching of toxic or acid forming materials shall not occur.	The waste rock on site was used, which has undergone ABA testing. The screened soil underwent Soil test analysis. The test results show no toxic or acid forming material were present.
Section 1.10 (page 10) Seed Mixes	The seed and planting mixes suggested below were developed from the vegetation descriptions contained in Exhibit B, recommendations from DRMS, and reports from O'Shea-Stone and Ash (2008). Seeds and plantings may change because of availability at the time of reclamation or if site conditions change. Revegetation will be	The recommended seed mix was presented to Arkansas Valley Seeds, which prepared the mix for Grand Island Resources. No trees or shrubs were planted.



AM-2 Section	Depression Backfill narrative per AM-2	Actual Depression backfill activity
	primarily to restore areas to meadow conditions not to replace all trees and shrubs.	
	The designated seed mixture will be sown uniformly on the prepared areas during the fall to take advantage of winter moisture and cover. Seeding shall not be conducted if the ground is frozen.	The seed was sown uniformly using handheld seed spreaders. This occurred during late summer/early fall while the ground was not frozen.
	The seedbed will be settled and fairly firm, but left rough enough to catch the seed.	The seedbed was firm, but rough enough to accept seeding.
	The seed mix recommended by the DRMS Inactive Mine Lands Program for high elevations will be used for revegetation. The following seed mix (Table 3) is the DRMS recommended reclamation seed mix from Table 20-5 DRMS (2009) and is the suggested seed mix for areas above 9,000 ft. to timberline and contains species currently at the site.	The DRMS recommended seed mix was presented to Arkansas Valley Seeds, which prepared the mix for Grand Island Resources.
	Seed will be drilled. The seeded areas will be hydro mulched and crimped or tacked to control wind and water erosion.	Seed was spread with a seed spreader. Hydro mulching operations were not conducted due to safety constraints and to prevent additional disturbance required by the hydroseeding equipment.



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		Erosion control blankets were used, instead. The blankets secured with stakes and rocks.
	Because these are fertile, mountain soils, we do not intend to routinely take subsoil and topsoil soil samples for analysis. However, where soil amendments are necessary, they will be applied as appropriate (see Exhibit D, Section1.10).	100 lbs. of Biosolid Forte soil amendment and fertilizer for the 0.5 acre of disturbed area, per recommendations of the seed vendor. The Operator will monitor vegetation establishment success on regular basis and will reseed as necessary to achieve project objectives.



Table3			
Subalpine Vegetation Areas {9,000' to tree line}			
The below rates are for drilled seeding. The rates for broadcast seeding are double the drilled rate.			
Species	Scientific Name	Variety	lbs/acre
Yarrow*	<i>Achillea lanulosa</i>	-	0.1
Groundsel	<i>Senecio atratus</i>	-	0.1
Lupine	<i>Lupinus alpestris</i>	-	LO
Slender wheatgrass	<i>Elymus trachycaulus</i>	San Lois	1.4
Nodding brome	<i>Bromus anomalous</i>		2.5
Sheep fescue	<i>Festuca ovina</i>	Cover	0.5
Hard fescue	<i>Festuca ovine duriuscula</i>	Durra	0.5
Red fescue	<i>Festuca rubra</i>	Penn lawn	0.5
Tufted hairgrass	<i>Deschampsia caespitosa</i>		0.5
Species	Scientific Name	Variety	lbs/acre
Redtop	<i>Agrostis alba</i>		0.1
Blue wildrye	<i>Elymus glaucus</i>		1.15
Mutton grass	<i>Poa fendleriana</i>	San Lois	0.5
TOTAL pls lbs./acre (drilled)			9.45

*To be bagged separately from mix. Bag to be attached outside of primary seed bag.



Pre-Remediation Photographs





During Reclamation and Post-Remediation Photographs







GRAND ISLAND RESOURCES

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Nederland CO, 80466



If you have any questions, please contact me.

Respectfully,

Daniel J. Takami

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