

January 31, 2020

Mr. David R. Ohori
Mining Act Reclamation Program (MARP)
New Mexico Mining and Minerals Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Application for Permit Modification 19-1 to Permit No. RA004RE, Rocky Mountain Mine, response to MMD letter of January 6, 2020

Dear Mr. Ohori:

Thank you for sending us your comments of January 6, 2020 on the draft Modification 19-1 document. We appreciate the thoroughness of your review and have formulated the following responses to your comments.

Reclamation Plan

1. The approved reclamation seed mix is found on Table 6, Reclamation Seed Mix for the Rocky Mountain Pumice Mine in Rio Arriba County, New Mexico of the CR Minerals Company Rocky Mountain Mine Mining Permit Application and Close Out Plan, June 1999. Condition 9.1 of Revision 11-1 to Permit No. RA004RE requires that CR Minerals provide an updated reclamation seed mix including two additional shrub species to the seed mix. Please provide an updated seed mix that includes the two additional shrub species.

CR Minerals response:

Attachment 1 is a copy of Table 6, Reclamation Seed Mix from the June 1999 application and close out plan. Attachment 2 is a copy of a letter from Tim Holman (Permits West) to MMD dated July 12, 2012 that addresses the need for an updated reclamation seed mix with two additional shrub species. This letter identifies two suitable shrub species, four-wing saltbush and Douglas rabbitbrush, for the seed mix and we are formally re-submitting it as our response.

Cost Estimate

Please explain how the costs are determined on Tab 2 "Demo".

CR Minerals response:

The costs detailed in Tab 2 "Demo" are from the original costs provided in the Permit Revision Application 11-1. These costs were derived from RS Means Work Cost Data for the demolition of average mixed type materials including the removal and disposal of a metal screen, a trailer, and miscellaneous debris. Based on our review of Tab 2 we believe the costs noted in Tab 2 remain valid and wish to retain them in the worksheet calculations. These costs are associated with: 1) moving the portable screen to the CR Minerals Plant in Espanola; moving the generator and its 1000 gallon fuel tank on a flatbed to the CR Minerals Plant in Espanola; 2) demolishing the wooden shed that houses the generator; and, 3) hauling one load (≤ 1 ton) of demolished wood and mixed debris to the Buckman transfer station (tipping fee of \$50.00/ton, 505/424-1850, extension 150) which accepts this type of waste.

1. In Tab 13 "EarthSum" there is a note stating the cost for a D9 is \$267.50/hour, but the hourly rate used for calculating the cost is \$133.50/hour. This should be changed to \$267.50/hour. In addition, the cost for the 657G scraper should be changed to \$599.41/hour from \$258.43/hour in accordance with the cost currently in Equipment Watch.

CR Minerals response:

The cost for a D9 Cat has been changed to \$267.50/hour in the calculations. The cost for the 657G scraper also has been changed to \$599.41/hour in the calculations on Tab 13. (See Xcel spreadsheet on CD disk).

2. Please explain what components, and their costs, are considered in the unit cost of \$800/acre for revegetation in Tab 14 "Reveg".

CR Minerals response:

The stated cost of \$800/acre for revegetation is from the original cost of reclamation provided in the Permit Revision Application 11-1. Based on the review of CR Minerals' costs of revegetation as shown in Tab 14 "Reveg" of the spreadsheet (see CD), this amount includes the cost of labor, labor overtime, equipment rental, fuel, chain drag harrowing, broadcast seeding with a tractor-mounted seed box, hydromulch, water, hydroseeding, and the cost of seed. A spreadsheet detailing these costs is presented at the bottom of Tab 14 "Reveg".

CR Minerals proposes to increase the cost of revegetation to \$1000/acre (See Xcel spreadsheet on CD disk) to cover additional unforeseen contingencies. (See Xcel spreadsheet on CD disk).

3. In Tab 15 "Other" there is a labor cost for rip rap and check dam channels but there are no costs for the material or equipment. Please explain why the costs are excluded or include them in the cost estimate.

CR Minerals response:

The labor costs associated with rip rap and check dam channels are from the Permit Revision Application 11-1. CR Minerals will continue to include the cost of erosion monitoring, and constructing and maintaining erosion control structures in the E-3 Unit under Tab 15 "Other". However, because we have not needed to use these types of "hard" structures to address erosion at the Rocky Mountain Mine, we propose using straw wattles in the E-3 unit rather than rip rap and rock check dams for erosion control. These structures are easy to install and are appropriate for controlling what is mostly minor rill formation and sheet flow on the Rocky Mountain Mine's current reclamation units.

A review of local erosion control companies which sell these products indicates the cost of "soft" erosion control structures such as straw wattles is \$25.50 for a 9" x 25' wattle <http://www.greenglobenm.com/product/straw-wattle/>. We have added the cost of monitoring for erosion each month of the 12 post-reclamation bond period at the E-3 Unit, purchase, delivery, and installation of six wattles to Tab 15, then extended the cost of installation, and materials across the 12 year reclamation bond period as described in Item 5 below (See Xcel spreadsheet on CD disk).

4. Please include Operation and Maintenance costs in the cost estimate (for example: post-reclamation vegetation and erosion monitoring, reseeding, erosion maintenance, etc.).

CR Minerals response:

CR Minerals proposes that the following O & M costs be included in Tab 15 "Other" for the E-3 Unit (See Xcel spreadsheet on CD disk).

- Post-reclamation erosion monitoring (1 hour) on the E-3 Unit would occur once a month each year over the 12-year post reclamation bond period.
- Post-reclamation vegetation monitoring and reporting (24 hours) on the E-3 Unit would occur once a year over the post reclamation bond period of 12 years.
- Erosion control installation and maintenance on the E-3 Unit would occur over 24 hours each year of the 12-year bond period. The cost of straw wattles also has been included in Tab 15 "Other".

Reseeding of entire E-3 unit is addressed in Tab 14 "Reveg". (See Xcel spreadsheet on CD disk).

5. Please include costs for post-reclamation fencing and fence maintenance or explain why these costs are excluded.

CR Minerals response:

Although CR Minerals does not anticipate fencing the E-3 Unit after it is revegetated, we propose to allocate \$1,000/year for post reclamation fence maintenance on a quarter mile of fence during the 12-year bond period of the E-3 Unit. This cost is identified in Tab 15 "Other" and is based on information that suggests the cost of building a half mile of barbed wire fence is \$2000. The following internet website and publication formed the basis of our proposal.

<https://guadalupeountainfencing.com/2018/08/how-much-does-it-cost-to-install-a-new-barbed-wire-fence-in-carlsbad-nm/>

Iowa State University. Ag Decision Maker, Estimated Costs for Livestock Fencing, File B1-75 (Attachment 3)

Again, we appreciate your careful review of our proposal for Modification 19-1 and look forward to working with you in the near future.

Sincerely,



Ed Dvorak

Vice President – Operations
CR Minerals Company, LLC

Cc: Joe Griego, CR Minerals
Robyn Tierney, Permits West, Inc.

TABLE 6. Reclamation seed mix for the Rocky Mountain Pumice Mine in Rio Arriba County, New Mexico.

Scientific Name	Common Name	Rate (pls lbs/acre)
Forbs		
<i>Linum lewisii</i>	Blue flax	0.30
<i>Penstemon strictus</i>	Rock Mtn. penstemon	0.15
<i>Petalostemum purpureum</i>	Purple prairie clover	0.30
<i>Sphaeralcea coccinea</i>	Scarlet globemallow	0.30
Cool Season Grasses		
<i>Agropyron smithii</i>	Western wheatgrass	1.20
<i>Oryzopsis hymenoides</i>	Indian ricegrass	4.00
<i>Sitanion hystrix</i>	Bottlebrush squirrel tail	0.25
Warm Season Grasses		
<i>Bouteloua curtipendula</i>	Side oats grama	1.00
<i>Bouteloua gracillis</i>	Blue grama	1.75
<i>Hilaria jamesii</i>	Galleta	1.50
<i>Schizachyrium scoparium</i>	Little bluestem	1.70
<i>Sporobolus airoides</i>	Alkali sacaton	0.30
<i>Sporobolus cryptandrus</i>	Sand dropseed	0.25
Shrubs		
<i>Artemesia frigida</i>	Fringed sage	0.25
<i>Rhus trilobata</i>	Oakbrush sumac	2.00

July 17, 2012

David Otori
 NM Mining and Minerals Division
 1220 So. St. Francis Drive
 Santa Fe, NM 87505

Dear Mr. Otori:

Under Section 9 (11-1), Part I, Number 4, of Permit Revision 11-1 to Permit No. RA004RE, CR Minerals Company, LLC is required to provide the New Mexico Mining and Minerals Division (MMD) with an updated reclamation seed mix "to include at least two additional shrub species...within 30 days of approval of Permit Revision 11-1." Permit Revision 11-1 was signed on July 6, 2012 by Fernando Martinez, the Director of MMD. The proposed updated seed mix is provided below.

SCIENTIFIC NAME	COMMON NAME	RATE (LBS/ACRE)
Forbs		
<i>Linus lewisii</i>	Blue flax	0.30
<i>Penstemon strictus</i>	Rocky Mountain penstemon	0.15
<i>Petalostemum purpureum</i>	Purple prairie clover	0.30
<i>Sphaeralcea coccinea</i>	Scarlet globemallow	0.30
Cool Season Grasses		
<i>Agropyron smithii</i>	Western Wheatgrass	1.20
<i>Oryzopsis hymenoides</i>	Indian ricegrass	4.00
<i>Sitanion hystrix</i>	Bottlebrush squirrel tail	0.25
Warm Season Grasses		
<i>Bouteloua curtipendula</i>	Side oats grama	1.00
<i>Bouteloua gracillis</i>	Blue grama	1.75
<i>Hilaria jamesii</i>	Galleta	1.50
<i>Schizachyrium scoparium</i>	Little bluestem	1.70
<i>Sporobolus airoides</i>	Alkali sacaton	0.30
<i>Sporobolus cryptandrus</i>	Sand dropseed	0.25
Shrubs		
<i>Artemesia frigida</i>	Fringed sage	0.25
<i>Rhus trilobata</i>	Oakbrush sumac	2.00
<i>Atriplex canescens</i>	Fourwing saltbush	1.00
<i>Chrysothamnus viscidiflorus</i>	Douglas or Low rabbitbrush	1.00

If you have any questions or require additional detail, please contact me at (505) 466-8120, or email me at tim@permitswest.com.

Sincerely,



Tim Holman
 Consultant

Cc: Holland Shepherd (NM MMD), Mark Juszli (CR Minerals)

Estimated Costs for Livestock Fencing

Fencing costs are one of the most expensive aspects of livestock grazing. The type of fence constructed greatly impacts the cost per foot, total cost, and annual ownership cost. In addition, the shape of the paddocks affects the amount of materials needed and labor required for construction of the fence.

This publication compares the costs of building a quarter-mile (1,320 feet) straight perimeter fence with four different types of permanent fencing plus temporary interior fencing. These are: woven wire, barbed wire, high-tensile non-electric, high-tensile electrified and temporary interior fencing.

The type of fencing selected varies by personal choice and the species of livestock to be confined. In general all configurations shown can be used with cattle, woven wire and high-tensile electrified can be used with sheep, and woven wire can be used with hogs.

The list of materials needed for each type of fencing is from *Costs of Cattle Fencing for Grazing Areas* (see references at the end of the article). Costs were adjusted to 2011 prices provided by a number of Iowa retailers, although prices may vary. Labor was valued at \$15.05 per hour for woven wire and \$16.25 per hour for barbed wire, the average fence building custom charges reported in AgDM File A3-10, 2011 Iowa Farm Custom Rate Survey. These charges include the cost of equipment and tools for building fence, as well as labor. Gates are not included in the estimates.

Fencing can be configured in many different ways, using various types of fencing materials. The examples in this publication provide a general comparison between the following five configurations.

Woven Wire Fence

The woven wire fence (see Table 1) employs a brace that uses two 8-inch diameter posts and

Table 1. Construction costs for woven wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	4	\$ 28.00	\$ 112.00
Wood posts (4-in diameter)	57	9.00	513.00
Steel posts (6.5 ft)	55	5.00	275.00
Staples and clips	10 lb	1.80	18.00
Barbed wire (12-gauge)	1,320 ft.	.06	79.20
Woven wire (48 in)	1,320 ft.	.70	924.00
Labor and equipment	42 hr	15.05	632.11
Total			\$ 2,553.31
Total per foot			\$ 1.93

Table 2. Construction costs for barbed wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	4	\$ 28.00	\$ 112.00
Wood posts (4-in diameter)	57	9.00	513.00
Steel posts (6.5 ft)	55	5.00	275.00
Staples and clips	10 lb	1.80	18.00
Barbed wire (12-gauge)	6,600 ft	.06	396.00
Labor and equipment	39 hr	16.25	633.75
Total			\$ 1,947.75
Total per foot			\$ 1.48

a 4-inch diameter cross-brace at each end. Posts between the braces are steel “T” posts alternated with 4-inch diameter pressure-treated wood posts. All posts are spaced 12 feet apart with one strand of barbed wire at the top.

Barbed Wire Fence

Materials for the barbed wire fence (see Table 2) are similar to the woven wire fence except that five strands of 12-gauge barbed wire are substituted for the woven wire and single strand of barbed wire.

High-tensile Non-electric Wire Fence

The high tensile non-electric fence (see Table 3) uses eight strands of 12.5-gauge high-tensile wire on 4-inch diameter pressure-treated wood posts. Posts are 20 feet apart. Bracing uses three 8-inch

diameter posts and two 4-inch diameter cross braces on each end. Wire tension on this fence is maintained with springs and ratchet-type tensioning devices.

An alternative is to set posts 30 feet apart and place two stay rods in the wire between each set of posts. Cost would be reduced about \$85 for every 1,320 feet of fence, or \$0.064 per foot.

High-tensile Electrified Wire Fence

The high tensile electrified fence (see Table 4) uses five strands of 12.5 gauge high tensile wire with three charged and two grounded wires. Bracing uses three 8-inch diameter posts and two 4-inch diameter cross braces on each end. With the exception of brace posts, steel “T” posts spaced 25 feet

Table 3. Construction costs for high-tensile non-electric wire fence

(Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	6	\$ 28.00	\$ 168.00
Wood posts (4-in diameter)	65	9.00	585.00
Staples	10 lb	1.80	18.00
Springs	8	7.00	56.00
Strainers	8	3.50	28.00
High tensile wire	10,560 ft	.025	264.00
Labor and equipment	32 hr	16.25	<u>520.00</u>
Total			\$ 1,639.00
Total per foot			\$ 1.24

Table 4. Construction costs for high-tensile electrified wire fence (Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (8-in diameter)	6	\$ 28.00	\$ 168.00
Wood posts (4-in diameter)	4	9.00	36.00
Steel posts (6.5 ft)	52	5.00	260.00
Insulators	285	35.00	99.75
Springs	5	7.00	35.00
Strainers	5	3.50	17.50
High tensile wire	6,600 ft	.025	165.00
Energizer	.25	110.00	27.50
Cut-out switch	1	7.50	7.50
Ground/lightening rods	4	16.00	64.00
Labor and equipment	18 hr	16.25	<u>292.50</u>
Total			\$ 1,172.75
Total per foot			\$.89

apart are used. One quarter of the cost of an electric energizer is included in the cost of the 1,320 foot fence, assuming that such a unit would be used to energize at least a mile of fence. Wire tension on this fence is maintained with springs and ratchet type tensioning devices.

If substituting polytape for polywire, the total will increase by about \$40 because polytape costs about twice as much as polywire. If substituting high-tensile wire for polywire, the cost will increase by about \$125-\$150 (change includes switching to five-eighths inch diameter fiberglass posts).

Electrified Polywire Fence (for interior use)

The polywire fence (see Table 5) uses one strand of polywire. With the exception of the end posts, fiberglass rod posts are used and spaced 40 feet apart. One-fourth of the cost of an electric energizer is included in the cost of 1,320 feet of fence, assuming that such a unit would be used to energize at least a mile of fence.

Estimating Annual Ownership Costs

Annual ownership costs for each type of fence are shown in Table 6. In addition to the initial material, labor and construction costs, owners need to determine depreciation and maintenance costs required over the useful life of the fencing.

Ownership costs for polywire and polytape are more difficult to estimate than for other types of

Table 5. Construction costs for electrified polywire fence (for interior use)
(Based on a 1,320 ft. fence)

Item	Amount	Cost per unit	Total cost
Wood posts (4-in diameter)	2	\$ 9.00	\$18.00
Fiberglass posts (3/8-in x 4 ft)	33	1.75	57.75
Insulators	2	.80	1.60
Post clips	42	.30	12.60
Polywire	1,320 ft	.03	39.60
Energizer	.25	110.00	27.50
Cut-out switch	1	7.50	7.50
Ground/lightening rods	4	16.00	64.00
Labor and equipment	2 hr	16.25	<u>32.50</u>
Total			\$ 261.05
Total per foot			\$ 0.20
Cost for adding 1 strand of polywire (wire, clips, insulators)		53.80	53.80 or .04 per ft.

Table 6. Annual average ownership cost by fence type (Based on a 1,320 ft. fence)

Item	Woven Wire	Barbed Wire	Hi Tensile Non-Electric (8-strand)	Hi Tensile Electric (5-strand)	Electrified polywire
Estimated useful life (yr)	20	20	25	25	4
Average annual maintenance (% of initial cost)	8%	8%	5%	5%	5%
Depreciation	\$ 128	\$ 97	\$ 65	\$ 47	\$ 65
Interest on investment (4%)	102	78	65	47	10
Maintenance	<u>204</u>	<u>156</u>	<u>182</u>	<u>59</u>	<u>13</u>
Total cost/year	\$ 434	\$ 331	\$ 214	\$ 150	\$ 88
Total cost/foot/year	\$ 0.33	\$ 0.25	\$ 0.16	\$ 0.12	\$ 0.07

fencing. The non-wire/tape components have an estimated life of 25 years; the polywire and poly-tape will likely last about four to five years. Based on these estimates, the annual ownership cost for a polywire or polytape fence is approximately \$0.06-\$0.07 per foot.

A Lawful Fence

Chapter 359A.18 of the Iowa Code states: A lawful fence in Iowa shall consist of:

1. Three rails of good substantial material fastened in or to good substantial posts not more than ten feet apart.
2. Three boards not less than six inches wide and three-quarters of an inch thick, fastened in or to good substantial posts not more than eight feet apart.
3. Three wires, barbed with not less than thirty-six iron barbs of two points each, or twenty-six iron barbs of four points each, on each rod of wire, or of four wires, two thus barbed and two smooth, the wires to be firmly fastened to posts not more than two rods apart, with not less than two stays between posts, or with posts more than one rod apart without such stays, the top wire to be not more than fifty-four nor less than forty-eight inches in height.
4. Wire either wholly or in part, substantially built and kept in good repair, the lowest or bottom rail, wire, or board not more than twenty nor less than sixteen inches from the ground, the top rail, wire or board to be between forty-eight and fifty-four inches in height and the middle rail, wire, or board not less than twelve nor more than eighteen inches above the bottom rail, wire or board.
5. A fence consisting of four parallel, coated steel, smooth high-tensile wire which meets requirements adopted by ASTM International (formerly, American Society of Testing and Materials) including but not limited to requirements relating to the grade, tensile strength, elongation, dimensions and tolerances of the wire. The wire must be firmly fastened to plastic, metal or wooden posts securely planted in the earth. The posts shall not be more than two rods apart. The top wire shall be at least forty inches in height.
6. Any other kind of fence which the fence viewers consider to be equivalent to a lawful fence or which meets the standards established by the department of agriculture and land stewardship by rule as equivalent to a lawful fence.

References

Gerrish, J., *Fence Systems for Grazing Management*, University of Missouri, Forage Research Center, Linneus, MO

Morriscal, D., Wells, G., & Shouse, S., *Fencing Systems for CRP Land*, Iowa State University Extension, Ames, IA, 1994 (CRP-8)

Turner, L.W.; Absher, C.W.; & Evans, J.K. *Planning Fencing Systems for Intensive Grazing Management*, University of Kentucky Cooperative Extension Service

Wilson, R.K. and Clark, R.T. *Costs of Cattle Fencing for Grazing Areas*, University of Nebraska Cooperative Extension, 2002, (EC 830)

... and justice for all

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former farm management field specialists
