MOLSON COORS beverage company

PO Box 4030
Golden, CO 80402

February 2, 2022

Mr. Rob Zuber
Division of Reclamation, Mining & Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, Colorado 80203

Re: Adequacy Review Response
Keenesburg Mine Site
Permit C-1981-028

Dear Mr. Zuber

Please find below responses to your Adequacy Review Letter, dated December 21, 2021. Documents have been changed as needed and additional information is provided below.

Comment 1 – Addressed previously, no action

Comment 2 – Addressed previously, no action

Comment 3 – Form modified as follows:

- 60% matches Phase 1 release of 333.36 acres
- 85% matches Phase 2 release of 272.07 acres
- Disturbed & Affected changed to 443.53
- These acreages match the 2021 ARR (for calendar year 2020)

Comment 4 – Hard copy will be sent in

Comment 5 – Table of Contents modified to remove Appendix A-4 (Access Road Easement Sheet 1). This document is no longer needed as this section of the road was granted to Weld County in the past and is now public right of way.

Comment 6a – Section 2.03.4 has been modified several times, including the addition of Page 4b and 4c. These pages are included again in this submission but are separate word documents from 2.03.4 due to formatting limitations, so for Section 2.03.4, there are 3 files Permit 2.03.4 (pages 1-4), Permit 2.03.4 4b (page 4b), and Permit 2.03.4c (page 4c). In the last submittal, Section 2.03.4 included a page 5 & 6 but those are actually 4b and 4c. The confusion is due to formatting limitations. Further, the Division requested additional information on start dates outlined in Page 4c. All start dates are accurate

MOLSON COORS beverage company

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Also requested were end dates of past officers. This was provided previously in an email, but replicated here for record:

- Samuel Walker – Director, Vice President, Secretary – March 1, 2018
- Peter Swinburn – Director, CEO, President – December 31, 2012
- Mauricio Cardenas – Corporate Officer – November 17, 2016
- Steward Glendinning – Chief Financial Officer – December 9, 2017
- William Waters – Vice President, Controller – Unknown
- Sherri Heckel Khulmann – Vice President, Assistant Secretary – Between 2012-2013
- Julio Ramirez – Vice President, Treasurer – Between 2012-2013
- Robert Borland – Corporate Officer – Between 2009-2010
- Lori Ball – Director – September 1, 2018
- Courtney Seely – Secretary – December 23, 2021

Also requested was any parent organization of Coors Brewery Company. Coors Brewing Company is a wholly owned subsidiary of Molson Coors Beverage Company.

Also requested was an explanation to the redundancy of pages and information, please see above for explanation.

Comment 6b – Addressed previously, no action

Comment 6c – Grammatical change made to 2.05.4

Comment 6d – Page numbers for Section 2.05.4 ends on 126, Section 2.05.4(2) is page 127.

Comment 7 – Addressed previously, no action

If you have any other questions or comments, please let me know at 303-810-4231 or via email at ben.moline@molsoncoors.com

Regards,

Benjamin Moline, PE
General Manager, Coors Energy Company
Senior Manager, Molson Coors Beverage Company

COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567

APPLICATION FORM
RENEWAL OF A VALID, EXISTING PERMIT
TO CONDUCT MINING IN COLORADO

This form is an application for successive renewal of a valid, existing permit to conduct surface or underground mining and reclamation activities or other surface coal mining and reclamation operations in Colorado pursuant to C.R.S. 34-33-101, *et seq.* This application form is designed to revise and update the application form currently included in your permit application. The right of successive renewal applies only to lands and activity which were permitted during the previous term. Extensions of the permit area and significant new activity within the permit area are subject to the review procedures applicable to new permit applications, in accordance with Rule 2.08.5(1)(c) and 2.08.4.

For a renewal application to be deemed complete by the Division pursuant to C.R.S. 34-33-109(7), an applicant must submit: (1) all information as specified on this application form; (2) a copy of the newspaper notice; (3) evidence that a liability insurance policy will be provided for the proposed period of renewal; and (4) five reproducible copies of the permit renewal application with original signatures.

For federal mines, a copy of the renewal application must be submitted to all agencies on the federal agency mailing list at the same time the application is submitted to the Division, and proof of distribution must be submitted to the Division. Copies of renewal pages modified during the review process must be distributed in the same manner, along with proof of distribution. Proof of distribution must be submitted prior to implementation of the renewal.

GENERAL OPERATION INFORMATION

Type or print clearly the appropriate information as listed below. Supplemental sheets may be used as necessary. Such sheets must be attached to the form and referenced or keyed to the numbers on the form.

1. Permittee: Coors Energy Company ("CEC" or "Coors")
2. Name of Operation: Keenesburg Strip Mine
3. Permit Number (same as current permit number): C - 1981- 028
4. Type of Revision: R N Renewal Number: 8
5. Application Submittal Date: 5 / 7 / 2021

6. Correspondence Information

APPLICANT/OPERATOR (Name, Address and Phone of Name to be used on Permit)

Individual's Name: Ben Moline
Company Name: Molson Coors Beverage Company
Street: PO Box 4030
City: Golden
State: CO
Telephone: (303) 277-3342

PERMITTING CONTACT (If different from Applicant/Operator above)

Individual's Name: _____
Company Name: _____
Street: _____
City: _____
State: _____
Telephone: (___) _____

INSPECTION CONTACT (If different from Applicant/Operator above)

Individual's Name: _____
Company Name: _____
Street: _____
City: _____
State: _____
Telephone: (___) _____

7. Location Information: The center of the operation lies in -

County: Weld
USGS Quadrangle: Klug Ranch & Tamp
Principal Meridian (check one): ☑ 6th (Colorado) ☐ 10th (New Mexico) ☐ Ute
Township (Write number and check direction): 03 ☑ North ☐ South
Range (Write number and check direction): 64 ☐ East ☑ West
Section: 25 Quarter Section (Check one): ☐ NE ☐ NW ☑ SE ☐ SW
Quarter-Quarter Section (Check one): ☐ NE ☐ NW ☐ SE ☑ SW
Longitude (Write number): 104 Degrees (102-110) 29 Minutes (0-60)
48.0 Seconds (0.00-60.0)
Latitude (Write number): 40 Degrees (37-41) 11 Minutes (0-60)
36.0 Seconds (0.00-60.0)

General Description (Miles and direction from nearest town and approximate elevation):
The Keenesburg Mine is located 7 miles north of the town of Keenesburg and is accessed by Weld County Road 59. Elevation is 4780'

(Not for DP Entry)

	Permitted	Actual	Proposed
8. Mineral ownership: Indicate currently permitted acreage for each			
Federal: 0 acres	0	0	0
State: 192 acres	192	192	0
Private: 420 acres	420	420	0
Indian: 0 acres	0	0	0
9. Surface ownership: Indicate currently permitted acreage for each			
Federal: 0 acres	0	0	0
State: 0 acres	0	0	0
Private: 612 acres	612	612	0
Indian: 0 acres	0	0	0
10. Affected area (in acres)	443.53	443.53	0
11. Disturbed area (in acres)	443.53	443.53	0
12. Acreage of area reclaimed in previous permit term			
A. Backfilled and graded	N/A	170.14	N/A
B. Retopsoiled	N/A	170.14	N/A
C. Reseeded	N/A	107.14	N/A
13. Acreage for which bond has been released			
A. 60 percent	N/A	333.36	N/A
B. 85 percent	N/A	272.07	N/A
C. 100 percent	N/A	263.7	N/A
14. Renewal Term Requested (Years)	N/A	N/A	5

Note: If the application contains proposed (new) acreage, then a permit revision application form must also be completed for those acreages.

15. Type of Mine (Check one): ☐ Underground ☑ Surface
☐ Combined Surface and Underground
☐ Loadout ☐ Other

16. Current Permit Status (Check one): ☐ Active ☐ Temporary Cessation
☑ Permanent Cessation (Reclamation Only) ☐ Inactive/Phase II Bond Release
☐ Suspended

17. Current Estimated Life of Mine (in years): 0

APPLICATION REQUIREMENTS

Type or clearly print the appropriate original or revised page number(s) of the permit application in the spaces below. Where a map has been used to supplement or clarify the narrative, indicate in the space provided where the appropriate map(s) may be found in the application. The asterisk (*) denotes sections where maps are required.

Each application for permit renewal must provide appropriate information which minimally addresses each of the following requirements. The narrative should describe the conditions which have been encountered during the previous permit term, and analyze how those conditions compare with those anticipated in the original permit application. These narratives should be submitted as revised pages.

In cases where any item is not applicable, the applicant should so specify.

		Location in Application	
	INFORMATION CATEGORY	**NARRATIVE**	**MAPS**
2.03.4	Identification of Interests	1-4c	Appeneix A1, A2, A3
2.03.5	Compliance Information	5-6	
2.03.6	Rights of Entry and Operation Information	14-15	
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2.03.8	Permit Term Information	29	
2.03.9	Personal Injury and Property Damage Information	30	
2.08.5	Bonding Information	132	
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2.03.12	Newspaper Advertisement (Submit a copy of the proposed newspaper advertisement)	See attached	See attached
2.04.3	Site Description and Land Use Information	34-37	*Land Use 2.04(2)(a)
2.04.4	Cultural and Historic Resource Information	38	Appendix E
2.04.5	General Description of Hydrology and Geology	39-44	*Geology, surface and ground water systems of the permit, adjacent and general area 2.04.5(1)

		Location in Application	
INFORMATION CATEGORY		**NARRATIVE**	**MAPS**
2.04.6	Geology Description	45-46	*Geology of the permit area 2.04.6(1)(a) or 2.04.6(2)(a)
2.04.7(1)	Ground Water Information	48-63	*Hydrology 2.04.7(4)
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2.04.8	Climatological Information	65-71	
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2.04.10	Vegetation Information	78-88	*Vegetation 2.04.10(1)
2.04.11	Fish and Wildlife Resources Information	92-99	
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2.05.3(2)	Operation Description	102-104	
2.05.3(3)	Mine Facilities	102-103	Appendix N and O
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2.05.3(5)	Topsoil (removal and storage)	114b-114c	
2.05.3(6)	Overburden	114a	
2.05.3(7)	Coal Handling Structures	NA	NA
2.05.3(8)	Coal Processing Waste and Non-Coal Processing Waste	NA	NA
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2.05.4	Reclamation Plan	113-126	Q1

		Location in Application	
INFORMATION CATEGORY		**NARRATIVE**	**MAPS**
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2.05.4(2)(c)	Backfilling and Grading	113-114b	*Post-mining topography 2.05.4(2)(c)
2.05.4(2)(d)	Topsoil (Redistribution)	113-114b	Appendix Q1
2.05.4(2)(e)	Revegetation	115-116b	Appendix L1
2.05.4(2)(f)	Disposal of Debris, Acid-Forming and Toxic-Forming Materials	113-114	
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2.05.5	Post-Mining Land Uses	124-124a	*Post-Mining Land Use 2.05.5(1)(c) or (2)(c)
2.05.6	Mitigation of the Impacts of Mining Operations	124-126, 129	
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2.05.6(2)	Fish and Wildlife Plan	124-125	
2.05.6(3)	Protection of the Hydrologic Balance	125-126	
2.05.6(4)	Protection of Public Parks and Historic Places	126	
2.05.6(5)	Surface Mining Near Underground Mining	NA	NA
2.05.6(6)	Subsidence Survey, Subsidence Monitoring and Subsidence Control Plan	NA	NA
2.06	Special Categories of Mining	NA	NA
2.06.8	Alluvial Valley Floors (If not applicable, demonstrate why)	130-131	*Reconnaissance Level AVF Investigation 2.06.8(5)(b)
	Additional Information the Applicant May Wish to Submit	NA	NA

To the best of my knowledge, all the information presented in this application is true and correct.

BY: _____

TITLE: General Manager

(Signature by Individual Legally Authorized to Bind the Operator to this Application)

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S	Reclamation Cost Estimates – for Bond Calculation

2.03.4 IDENTIFICATION OF INTERESTS

2.03.4(1)

Coors Energy Company (Coors) is a wholly owned subsidiary company of the Coors Brewing Company, effective as of December 27, 1992. Coors Energy Company and Coors Brewing Company are corporations formed under the laws of the State of Colorado.

2.03.4(2)(a)

Applicant General Office:

Coors Energy Company
P.O. Box 4030
Golden, CO 80402

Phone 303 277-3342

Federal Employer ID No. 84-0829663

Applicant Local Office:

Coors Energy Company
13495 Weld County Road 61
Keenesburg, Colorado 80643

Phone 303 227-3342

2.03.4(2)(b)

Resident Agent:

c/o The Corporation Company ("CT Corp")
1675 Broadway
Suite 1200
Denver, Colorado 80202

2.03.4(2)(c)

Payor of the Abandoned Mine Land Reclamation Fee:

Benjamin Moline
Coors Energy Company
P.O. Box 4030
Golden, Colorado 80402

2.03.4(3)(a) (b) (c)

Coors Energy Company – Directors:
Eric Gunning, Patrick Porter, Preston McGlory
P.O. Box 4030
Golden, Colorado 80402

Coors Energy Company – Officers
Vacant as of 12/21 – President and Secretary
Ben Moline – General Manager & Secretary
Patrick Porter – Vice President & Treasurer
Preston McGlory – Vice President & Tax
Eric Gunning – Asst. Secretary
Lisa Jordan – Asst. Secretary
David Knaff – Asst. Sectary

PO Box 4030
Golden, CO 80402

Additional information concerning the officers and directors of both Coors Energy Company and Coors Brewing Company may be found at the end of this Section (pages 4b and 4c).

2.03.4 (3) (d)

In 1980, Coors Energy Company was in the process of developing the site described in this application for the extraction of coal under the name of Adolph Coors Company.

No partner or principle shareholder of Coors Energy Company owns or controls, or previously owned or controlled a surface mining and reclamation operation in the United States within the five (5) years preceding the date of this application.

2.03.4 (3)(e)

No partner or principle shareholder of Coors Energy Company has any other pending surface coal mining Operation permit filed in any state in the United States.

2.03.4 (4)(a)

The sole property owned and controlled by Coors Energy Company or by a person who owns or controls Coors Energy Company which had been used for a surface coal mining operation is:

Keenesburg Mine
13495 Weld County Road 61
Keenesburg, Colorado 80643

2.03.4 (6)(a)(b)(c) (Surface and Mineral Ownership Map presented in Appendix A-2)

Owners of surface lands under the Permit in Sections 25 and 36:

1. Section 25, Coors Energy Company, Golden, Colorado 80402

2. Section 36, Coors Energy Company, Golden, Colorado 80402

Owners of mineral rights under the Permit in Sections 25 and 36:

1. Section 25, L.F. Ranch Company, [c/o Guttersen & Company, Greeley, Colorado 80631]
   Upland Industries Corp. (Union Pacific Corporation), Omaha, Nebraska 68102

2. Section 36, State of Colorado, Department of Natural Resources, Denver, Colorado 80203

Further reference is made in Section 2.03.6, Right of Entry and Operation Information.

2.03.4 (7)

Contiguous lands – surface and subsurface owners (based on data current as of May, 2004, provided by Weld County Assessors Office, Greeley, Colorado); refer to Adjacent Property Owners map found in Appendix A-3 for owners of surface lands: [Note: The list below does not correlate numerically to the Appendix A-3 map.]

1. WJW Properties, LLC
   16350 Weld Co Rd 76
   Eaton, CO 80615

2. Waste Management of Colorado
   P.O. Box 1450
   Chicago, IL 60605-1450

3. Guttersen Ranches, LLC
   13696 Weld Co Rd 74
   Eaton, CO 80615

4. Fredrick G. Heyde
   8649 Cord Road
   Cord, AR 72524
   &
   Teddi L. Heyde
   8739 Cord Road
   Cord, AR 72524

5. Lawrence E. & Carole Gerkin
   23035 Weld Co Rd 59
   Hudson, CO 80642

6. Steven C. & Kathy D. Gray
   9703 Weld Co. Rd 59
   Keenesburg, CO 80643

11. Weld County
    915 10th Street
    Greeley, CO 80631

12. Robert H. Green
    9270 Weld Co Rd 59
    Keenesburg, CO 80643

13. Carolyn N. & Robert D. Koerner
    1207 Raymond Ct.
    Boonville, MO 65233

14. Delbert L. Jr. & Jennifer L. Chockley
    9469 Weld Co Rd 59
    Keenesburg, CO 80643

15. Panenergy Field Services, Inc.
    c/o Panhandle Eastern Corp.
    P.O. Box 1642
    Houston, TX 77251-1642

16. John & Janet Jervis
    P.O. Box 572
    Keenesburg, CO 80643

7. Boyd A. & Helen A. Arnold
   28667 Weld Co Rd 20
   Keenesburg, CO 80643

8. Stahla Homes
   P.O. Box 307
   Brighton, CO 80601

9. Randall M. & Patricia A. Draper
   9378 Weld Co Rd 57
   Keenesburg, CO 80643

10. Elma J. Marolf
    c/o Elma J. Edmiston
    1430 Beatrice Court
    Longmont, CO 80503

17. Charles W. & Kathleen Kovanda
    9718 Weld Co Rd 57
    Keenesburg, CO 80643

18. Alfred P. & Terrie L. Wilder
    28285 Weld Co Rd 20
    Keenesburg, CO 80643

Owners of subsurface lands (mineral rights) in Sections 25 and 36:

1. Upland Industries, Corp (Union Pacific) – [Section 25]
   110 N. 14th Street
   Omaha, Nebraska 68102

   L.F. Ranch Company (c/o Guttersen & Company)
   13696 Weld Co Road
   Eaton, Colorado 80615

2. State of Colorado – [Section 36]
   Department of Natural Resources
   Denver, Colorado 80203

COORS ENERGY COMPANY
PO Box 4030
Golden, CO 80402

Incorporated:
In the State of Colorado, on November 6, 1980

Name	Position	Term Started	Term Expires
Eric Gunning	Director	February 14, 2020	(1)
Patrick Porter	Director	February 14, 2020	(1)
Preston McGlory	Director	October 21, 2020	(1)

Officers

Vacant as of 12/21	President & Secretary	February 14, 2020
Ben Moline	General Manager & Sec.	June 1, 2016
Patrick Porter	Vice President & Treasurer	February 14, 2020
Preston McGlory	Vice President – Tax	October 31, 2020
Eric Gunning	Asst. Secretary	June 1, 2016
Lisa Jordan	Asst. Secretary	February 14, 2020
David Knaff	Asst. Secretary	October 31, 2020

(1) Until the next annual meeting of the Board of Directors at which officers are appointed, or until such officer's earlier death, resignation, or removal.

COORS BREWING COMPANY
PO Box 4030
Golden, CO 80402

Incorporated: State of Colorado on August 7, 1990

Name	Position	Term Started	Term Expires
Peter H. Coors	Director & Chairman	1990	(1)
Eric Gunning	Director and Asst. Secretary	October 2021	(1)
Chris Wensel	President	February 14, 2020	(1)
Pete Marino	President	February 14, 2020	(1)
Patrick Porter	Vice President	February 14, 2020	(1)
Preston McGlory	Vice President	October 31, 2020	(1)
Ryan Homung	Director	August 23, 2019	(1)
Genevieve Prevost	Director	February 14. 2020	(1)
Maurice Loebl	Secretary	February 14, 2020	(1)
Anita Adam	Asst. Secretary	October 2012	(1)
Karin Attar	Asst. Secretary	February 18, 2021	(1)
David Knaff	Asst. Secretary	October 31, 2020	(1)

(1) Until the next annual meeting of the board of directors at which officers are appointed or until such officer's earlier death, resignation, or removal.

2.05.4 RECLAMATION PLAN

The topographic features at the CEC mine site are characterized by low rolling sand hills on a semi-arid plain. Surface elevations range from 4905 feet to 4775 feet, sloping generally down-gradient to the northeast, as shown on the site topographic map presented in Appendix O-1. There has been little or no measurable or observed surface water runoff except during severe thunderstorms when runoff will accumulate in existing pit areas, runoff control structures, or reclaimed topographic low (depression) areas. There has been no observed surface water discharge from the property. All drainage structures located on site to control surface water runoff have been designed (and certified) by a professional civil engineer.

The CEC site is covered with 20 to 40 feet of wind deposited sand (eolian sand). This sand overlies the clay and shale beds of the Laramie Formation (of Cretaceous age). This soil type is highly susceptible to wind erosion, and consequently, ground surface blowouts exist in several areas in the vicinity of the site.

Two soil types of topsand exist locally. The SCS designated Osgood soil series is twenty-eight (28) inches thick and the SCS designated Valent soil series is six (6) inches thick. The soil characteristics of each type are summarized in Section 2.04.9 of this document and discussed in detail in the Berg Report, presented in Appendix L-1.

All major disturbed areas at the CEC mine site have been returned to their Approximate Original Contour (AOC), including A and B-Pits which have been permitted for ash and mine waste rock (herein abbreviated "A/MWR") disposal. [See Appendix R for technical data relative to the ash and mine waste rock, and for spec. revisions to the coal/A/MWR supplies.] Both pits were previously reclaimed by CEC to five (5) feet above the re-established local ground water table. They have a combined capacity for approximately 35 total years of ash disposal by CEC (ash generated by the Golden, CO facility only). Both A- and B-Pits are "grandfathered" under the State of Colorado Department of Public Health and Environment (CDPHE) Subtitle D regulations governing future ash disposal, dated November 30, 1995 (revised), titled the "Regulations Pertaining to Solid Waste Disposal Sites and Facilities, 6 CCR 1007-2," and are regulated by both CDPHE and Weld County Department of Health (WCDH).

CEC compiled an annual summary of the activities related to ash disposal at the CEC mine site. This summary included; source(s) of ash, quantities of ash received for disposal, ash transportation and disposal activities, and maps indicating the progress of disposal/reclamation activities. This summary information can be found in the Annual Hydrology and Reclamation Report (AHR report). No more ash was accepted in the site after 2016 due to cease of coal usage at the Golden facility.

The CEC operation regarding the dismantling of the on-site coal handling facilities was completed in 1996. CEC disposed of all non-salvageable components of these facilities in A-Pit. The facilities areas were then topsanded and revegetated. In accordance with CDMG Rule 4.11.4, "Disposal of Non-coal Wastes", the coal handling facilities waste debris was buried to between the limits of five (5) feet above the local ground water table and four (4) feet below AOC. The bulk of the waste debris was concrete, metal, rubber, and small amounts of wood; however, no hazardous material or liquid substances were disposed in this manner.

The location of the on-site overburden soils (the long-term spoil stockpile area) was shown on the mine plan maps, specifically those presented annually as part of the AHR report (Appendices M-1, Q-1 and L-5). All areas have been graded to match final contours, mulched, and seeded. No overburden or sand piles remain on-site. B-pit is in final reclamation (vegetation growth) phase.

The final Reclamation Contour and Drainage Plan Map (Appendix Q-1) has been designed to improve and promote positive surface water drainage away from both the A-Pit and B-Pit cell areas. For this reason, the proposed final ground surface contour elevations over the pit cell areas have been modified from those initially shown on the 1986 Reclamation Plan map in order to accommodate the A/MWR disposal and the backfill operations. The proposed final elevation contours are sloped to provide maximum air space volumes for the remaining A/MWR disposal operations in each pit cell, as well as to reduce the potential amount of surface water runoff infiltration into the subsurface and the potential accumulation of infiltrated water within the pits and/or saturation of the disposed A/MWR. The revised design overall serves to improve the final reclamation condition of the two disposal sites. CEC also contends that this is a good business practice now that mining is no longer taking place, and since A/MWR disposal will continue for several years.

A summary of the CEC acreages disturbed, those already reclaimed, and acreage remaining to be reclaimed is presented below. This information is current as of the AHR report for 2020, and is updated annually in that report:

Disturbed areas, remaining to be reclaimed (approximate acreages):

B-Pit/local areas [A-Pit is closed]	0 acres
Long-term spoil area	0 acres
Topsand piles A-1, A-3, B-1 and B-2[1]	0 acres
Main Access Road	0 acres
Sediment Pond 2 & other non-reclaimed areas	0 acres
Facilities area	0 acres
Total area remaining to be reclaimed	0 acres
Total area reclaimed and revegetated	435 acres
Grand Total	435 acres

Also, the following information provides a summary soil balance of both the overburden soils and topsand volumes:

OVERBURDEN SOILS

Quantities Required

B-Pit (6 foot cover) – [A-Pit closed]	0 BCY
B-Pit (A/MWR intermediate cover)	0 BCY
Total	0 BCY

Stockpiled Quantity

Long-term spoil area	0 BCY	
	- 0 BCY	-from above
Total Remaining**	0 BCY	-- surplus

**Total soil materials remaining will be graded (sloped) and revegetated.

[1] Topsand pile B-2 has been incorporated within pile A-3 for reference and mapping purposes.

TOPSAND

Quantities Required

B-Pit (24 inches)	0 BCY
Long-term spoil area (15 inches)	0 BCY
Topsand piles A-1, A-3, B-1 and B-2 (6 inches)	0 BCY
Facilities area (6 inches)	0 BCY
Access Roads (24 inches)	0 BCY
Total	0 BCY

Stockpiled Quantities

Topsand piles A-1, B-1, B-2 and A-3	0 BCY
	- 0 BCY-from above
Total Remaining	0 BCY -- surplus

CEC replaced 24 inches of topsand on the A- and B-Pit disturbed areas, as well as on the temporary access and haul roads. The long-term spoil area recieved 15 inches of topsand, and the facilities area and the topsand piles recieved six (6) inches of topsand over the in-place sub-soils.

Upon completion of the A/MWR disposal operation in either pit area, all waste will be removed or buried to prevent water pollution or adverse visual impacts. Non-salvageable materials will be buried in the pits above the local ground water levels, and at least to four (4) feet below AOC. The final pit highwalls will also be backfilled to AOC. It is noteworthy that there are no acid-forming materials in the coal seam per indications in the sump water data (refer to Section 2.04.7 in this document).

Structures previously used in the CEC mining operation will be removed unless moved to an alternate use designation, and the local ground area will be scarified, topsanded, fertilized and revegetated.

Sealing and Managing Drill Holes

All former CEC drill holes completed as part of the 1978 test drilling exploration program, and located within the Permit Area have been changed to ground water monitoring sites, have been mined through, or have been permanently plugged.

All ground water monitoring wells currently used in the CEC site ground water monitoring program (see Appendix I-3 for well documentation) will, at site closure, be sealed by placing a cement grout plug from the bottom of each well to within 10 feet of the final ground surface.

REVEGETATION PLAN

The approved revegetation plan emphasizes native species planting resulting in a diverse, permanent, effective plant community capable of self-regeneration.

Species and Planting Methods

Plant species proposed for use in revegetation were selected considering local environmental features of soils, nutritional value, slope, elevation, and precipitation, as well as the vegetational potential of the site. The current seed mix is entirely composed of native species. Warm season graminoid species predominate in the mix, as they do in the native area adjacent to the mine. CDMG, CDOW and the SCS have all agreed that sand sage (*Artemesia filifolia*) need not be included in the seed mix. The current seed mix is presented below:

Seed Rate

Common Name
Latin Name
Character
#PLS/acre

Sideoats Grama
Bouteloua curtipendula
native warm season
1.5

Prairie Sandreed (Goshen)
Calamovilfa longifolia
native warm season
1.5

Sand Bluestem (Garden City)
Andropogon hallii
native warm season
2.0

Blue Grama (Lovington)
Bouteloua gracilis
native warm season
0.5

Switchgrass (Pathfinder)

Panicum virgatum
native warm season
0.5

Indian Ricegrass (Paloma)
Oryzopsis hymenoides
native cool season
1.0

Yellow Indiangrass (Oto)
Sorghastrum nutans
native warm season
1.5

Thickspike Wheatgrass (Critana)
Agropyron dasystachyum
native cool season
0.3

Little Bluestem
Schizachyrium scoparium
native warm season
0.5

Prairie Coneflower
Ratibida sp.
native forb
0.3

Total # PLS/acre
9.5

After manure spreading, the approved seed mix will be drill seeded through the manure mulch. In small areas requiring reseeding, CEC may employ broadcast seeding methods to stimulate regrowth. Broadcast seeding rates will be twice that of drill seed rates.

Germination of native warm season grasses has proven to be problematic in reclamation. The preeminent factor in successful germination of warm season native grasses appears to be available moisture. The moisture must be in an amount sufficient to allow germination and seedling growth to a stage which will

withstand droughty periods up to several weeks. For this reason, CEC plans to monitor ambient moisture and seed when it is apparent that the warm season grass species will have the best probability of successful germination and growth. This may entail either spring and/or fall seeding. CEC proposes two yearly windows for revegetation seeding, a spring window from March 15 to June 1 and a fall window from September 15 to December 15. Experience at the Keenesburg Mine and other coal mines dominated by warm season grass communities suggest these seeding window dates.

Stubble Mulch

CEC has experienced success in seeding into stubble mulch (such as sorghum). Based on environmental conditions and size of the area to be seeded, CEC may elect to seed a cover crop/stubble mulch in the spring or fall prior to seeding of the permanent seed mix. The cover crop/stubble mulch will provide protection from wind erosion and act as a moisture collector.

Coors Energy Company will consult with the local Soil Conservation Service office, Agricultural Extension office, or other crop management agency to determine stubble mulch strip width, direction, and seeding rate for a specific stubble mulch planting.

Hay/Straw Mulch

In instances where stubble mulch may be deemed to deplete available soil moisture or where additional protection against wind erosion is desired, CEC may employ a hay or straw mulch. Hay or straw mulch will be applied at a rate of approximately two (2) tons per acre, and will be crimped or disked into the surface of the topsand.

Hydromulch and Tackifier

Hydromulch and tackifier will be used, when deemed appropriate, to anchor seed and amendments to the soil surface, increase organic matter content, increase fertilizer proximity to the seed mix, and retain moisture. Hydromulches are inert wood and plant fiber products (cellulose), and acceptable tackifiers would be comprised of plant gums or organic co-polymers. Hydromulch and tackifiers would be applied with a hydromulcher at a manufacturer recommended rate (2500 pounds per acre). Hydromulch and tackifier would be applied after seeding, and any application of other soil amendments.

Soil Amendments

Under certain conditions and in certain locations at the Keenesburg Mine, CEC has observed that additional reclamation measures may be warranted to ensure revegetation success. The goal of these measures would be to increase the organic matter of the replaced topsand, provide a slow release organic fertilizer, and to ensure moisture

retention on the newly revegetated surfaces. CEC would employ any of the following amendments singly or in combination when determined to be warranted, on revegetation parcels which show indications of low soil moisture or insufficient organic material. Applications could be made prior to initial seeding or as a husbandry practice during the extended liability period.

Biosol

Biosol is a commercial organic fertilizer (6-1-3 or 7-2-3) that is manufactured from the penicillium fungus mycelia, and is a byproduct of antibiotic production. The advantage to this product is the slow release of nitrogen for plant fertilization, stimulation of microorganism growth, and high organic content. Biosol would be applied at the manufacturers recommended rate of 1000-2000 pounds per acre, dry weight. When determined to be appropriate, Biosol would be applied at the time of seeding.

Humate

Humate is a soil amendment, which provides additional organic matter to soils through incorporation of humic acid, organic matter, and carbon. This product stimulates microbial growth and is commonly used on golf courses and in lawn and nursery applications. As with biosol, humates would be applied dry, at manufacturer recommended rate of 500 pounds per acre. Humates would be applied after seeding, where it is deemed appropriate.

Soilguard

Soilguard is a bonded fiber matrix product, hydraulically applied to the soil surface. The product dries onto the soil surface, coating the surface and reducing soil erosion while retaining moisture for plant germination and growth. The product retains its form even when rewetted. Soilguard would be applied with a hydromulcher during a second pass following initial seeding. The site specific recommended application rate is 3200 pounds per acre, based on soil material and slope at the Keenesburg Mine. This product will be considered for use in only the most xeric problem areas.

Soil Binders (Co-polymers)

Several soil binding products, comprised of organic co-polymers, exist which could be applied (when determined to be appropriate) to soils to control erosion and stabilize soil surfaces. These products can be very effective on sand for both wind and surface water erosion. They are applied by spray from a water truck or hydromulcher. The manufacturers suggested application rate for the conditions experienced at Keenesburg would be approximately 55 gallons per acre.

Compost Products

Two compost products that provide additional organic material and appear suited for use at the Keenesburg site are Biocomp and Premium 3. The Biocomp product is produced from non-hazardous liquid bio-solids and bulking agents with a maximum pH of 7. This product meets EPA requirements (40 CFR 503-13) for unrestricted use and distribution (see sample analysis Appendix R-5). The Premium 3 product is produced from dairy manure and bedding with a maximum pH of 9. Based on conversations with the manufacturers, Biocomp is recommended for use on both currently seeded areas and unseeded areas. For unseeded areas, the manufacturer also recommends the Premium 3 product. These products can be applied with a manure spreader and the recommended application rate is variable for currently seeded areas up to 33 tons per acre for unseeded areas. The recommended application practice for the unseeded areas is a surficial application with subsequent disking into the top six inches of soil prior to seeding. For previously seeded and already established areas the disking step would be eliminated.

Irrigation

No irrigation is proposed for use at the Keenesburg Mine.

Weed, Pest and Disease Control Measures

As an integral part of the revegetation plan, noxious weeds, plant pests and plant diseases will be managed within the revegetated areas. Weed species to be controlled are identified as those plant species identified by current state statute or regulation as noxious. The species are not listed here as the list on noxious species changes regularly. Plant pests are defined as those biological species that significantly predate the desirable vegetation of the project site. Plant diseases are conditions caused by microorganisms that significantly affect growth and development of desirable reclamation vegetation on the project site.

The presence of noxious weeds and plant pests and diseases will be monitored at least annually during the summer. Management measures will be undertaken where a single or combination of noxious weed species, plant pests or disease comprises or shows a deleterious effect to more than ten percent (10%) of the live vegetation. Further, where noxious weed species or plant pests constitute more than twenty-five percent (25%) relative vegetation cover in an area of 500 square feet or such area shows depredation or plant impacts of the same magnitude, such area will be identified as a patch, and subject to management measures, irrespective of the percentage of overall noxious weed cover in the mitigation area.

Noxious weeds, plant pests or diseases may be controlled by any combination of cultural,

mechanical, biological or chemical measures. Weed control measures will be developed specifically for the noxious weed species encountered and in conjunction with the local weed control district and/or the Colorado State Department of Agriculture. Where noxious weed control measures cause disturbance to the remaining vegetation, seeding or planting of desirable replacement vegetation will occur during the first normal planting or seeding season after weed control measures have been implemented. CEC intends to initiate the appropriate pest, weed, and/or disease control measures at the site whenever an identification is made which could significantly impact the success of the reclamation activity at the Keenesburg Mine. Currently, the site is inspected at least quarterly by mine personnel or qualified consultants who are evaluating the revegetation.

Grazing

Grazing will be prohibited during the first two years of vegetation establishment on reclaimed areas. Grazing may be allowed on revegetated areas following the second growing season, based on recommendations of the local SCS office or local soil conservation district, to enhance development of a mature warm season dominated vegetation community. Grazing will not be allowed to interfere with vegetation sampling for monitoring or bond release purposes, and eligible areas will not be grazed during the growing season prior to sampling.

CEC believes that carefully managed grazing will improve the revegetated areas in the following ways:

- Spring grazing will reduce reproductive ability of early annual weeds and annual grasses.

- Grazing will stimulate plant growth and vigor. Additionally, early grazing of the revegetated areas will reduce cool season graminoid representation and enhance development of the warm season grasses in the revegetated community.

- Grazing will physically disburse seed, increasing plant distribution and ultimately the ground cover. Vegetative reproduction (tillering) will also be stimulated through grazing.

The current grazing plan was approved by CDMG in minor revision 17 (10/1990). A two pasture, switchback, deferred grazing schedule was approved with grazing beginning in May (or following the annual reclamation "field sampling") and ending October 31. The initial stocking rate was three (3) acres per Animal Unit Month (AUM).

It should be noted that range management professionals will monitor the approved plan. Grazing will be allowed as long as there is no detriment to the revegetation. Additionally, CEC may temporarily discontinue grazing, based on recommendations of the range management professionals or CEC mine staff in order to protect soil, plant or other resources at the site.

Mowing

CEC may employ mowing as a technique to control annual weed growth on newly seeded reclamation areas and, to break up thatch, disperse seed and discourage annual weed growth on established reclamation plots. When used on new areas, it will be planned to catch a majority of the annual weeds in advance of seed maturation.

Controlled Burning

Under certain conditions, CEC may employ controlled burning as a means to manage thatch buildup, and to control weeds such as cheatgrass that do not respond well to management through grazing, mowing or other accepted means. Controlled burns will be conducted under the direct supervision and following guidelines of the local fire protection district.

Interim Vegetation Monitoring

CEC will monitor revegetation that has been planted for three or more growing seasons. Vegetation monitoring will take place at or near anthesis of the dominant plant species in the revegetated areas. Sampling is dependent on several environmental factors (primarily seasonal moisture), but is anticipated to occur between May 15 and September 30. Monitoring will occur on each planting until such time as success standards for cover, production and diversity have been attained. Monitoring will include quantitative sampling for total vegetation cover and herbaceous production. For vegetation cover, ten (10) transects will be taken per reclaimed area. For herbaceous production, fifteen (15) transects will be taken per reclaimed area. Eligible areas will also be fully sampled in years nine and ten prior to final bond release in accordance with CDRMS requirements.

DETERMINING FINAL REVEGETATION SUCCESS

CEC has elected to use standards developed from vegetation monitoring events between 1994 and 2005 at the Osgood Sand Reference Area, for the evaluation of revegetation success at the Keenesburg Mine site. With the approval of TR-37 (6/15/2006), sampling of the Osgood Reference Area was discontinued. Beginning with the 2006 sampling event, total vegetation cover and total herbaceous production are evaluated through values calculated from predictive equations based on growing season precipitation at the mine. These predictive equations were revised by the approval of TR-43 in 2012. For the parameter of species composition, a quantitative success standard based on relative cover was developed by the Colorado Division of Reclamation, Mining and Safety (CDRMS), and CEC and revised with the approval of TR-47 in 2020. Since there is no requirement for the replanting of woody plants, there are no woody plant density success criteria.

For bond release, all sampling and data analysis will follow current CDRMS published guidelines for Coal Mines.

Sampling Methods. The reclaimed area(s) will be sampled to allow a determination of sample adequacy. The reclaimed area may be treated as a single type or divided into parcels, based on seeding date or other logical criteria. Sample locations within all reclaimed parcels will be randomly selected using randomly generated grid coordinates overlain on a map of the mine prior to the commencement of field work. Extra sample points will be generated and plotted, to be used if a given location is not available for sampling (e.g., the sample point falls on an existing road or other structure).

Total vegetation cover. Vegetation cover transects will be of a length consistent with CDRMS regulations. At this time, transects of 25-50 meters in length are proposed for the reclaimed areas at the mine. A total of fifty points will be collected per transect, using point transect methods. Each transect will serve as a sample unit. Points will be collected using a stationary optical sighting device or laser sighting device to maximize reproducibility and precision. In multiple layers of vegetation, first hits are recorded for total vegetation cover, while subsequent "hits" will be used to calculate relative vegetation species cover.

Herbaceous production. Herbaceous production will be determined by harvesting current growing season above ground herbaceous vegetative biomass from randomly located quadrats. Quadrats will be located in conjunction with cover transects. Quadrat size will be determined based on predominant vegetation characteristics, and will be consistent with requirements of the CDRMS. At this time, previous experience suggests that 0.25 m^2 – 0.5 m^2 quadrats will adequately represent the vegetation present in the reclaimed areas. Harvested material will be separated by life form (perennial grasses, annual grasses, perennial forbs, and annual forbs) and oven dried to a consistent weight in accordance with accepted scientific practice.

Woody plant density. Since there is no revegetation success standard for woody plant

density at the Keenesburg Mine, no woody plant density sampling is proposed.

Species composition. Species composition data will be derived from the total and relative vegetation cover data. All species sampled will have relative cover data tabulated for comparison to the species composition standard.

Sample adequacy. For bond release purposes, a minimum of fifteen cover transects and fifteen production quadrats will be sampled in the reclaimed area. Sample adequacy calculations will be made for both vegetative cover and herbaceous production sampling in any reclaimed area using the formulas presented in the CDRMS Coal Rules.

Final Revegetation Success Standards

Final revegetation success will be judged for vegetative cover and herbaceous production through the use of the approved predictive equations. Species composition will be evaluated using the approved success standard.

Total vegetation cover. Reclaimed areas will be considered successfully reclaimed if the total vegetation cover on the reclaimed area(s) is not less than 90 percent of the total vegetation cover value from the equation: $y = 0.0127x^3 + 0.2115x^2 + 2.1772x$ (where x is the cumulative September - July precipitation at the mine) with 90 percent statistical confidence using a one-tailed Student's t or Confidence Interval test.

Herbaceous production. Reclaimed areas will be considered successfully reclaimed if the total herbaceous production on the reclaimed area(s) is not less than 90 percent of the total herbaceous production value from the equation: $y = 0.4666x^{2.1405}$ (where x is the cumulative September - July precipitation at the mine) with 90 percent statistical confidence using a one tailed Student's t or Confidence Interval test.

Species composition. Reclaimed areas will be considered successfully reclaimed if the species composition on any reclaimed area is such that there are at least four perennial grass species. No one component of the above species should comprise greater than 40% relative cover nor less than 3% relative cover. Any perennial grass species (native or introduced) may be used in the calculation of species composition except for those species defined as noxious by the Colorado Department of Agriculture.