COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

December 28, 2023

Ben Moline, PE
Senior Manager, Water Resources & Environmental Compliance
Coors Energy Company
P.O. Box 4030
Golden, CO 80402

Re: Keenesburg Strip Mine, Permit C-1981-028
Adequacy Review of 2022 Annual Hydrology Report (AHR)

Dear Mr. Moline:

The Division of Reclamation, Mining and Safety (Division) received the 2022 AHR for the Keenesburg Strip Mine on March 14, 2023. The Division reviewed this AHR in the context of Rules 4.05.1, 4.05.6, 4.05.11, and 4.05.13 (Regulations of the Colorado Mined Land Reclamation Board for Coal Mining).

Table 1 lists important logistical requirements of the Keenesburg Strip Mine water monitoring plan.

Table 1. Requirements of the Keenesburg Strip Mine Water Monitoring Plan

Requirement	Source of Requirement (Rule or Page in PAP)	Requirement met for 2022?
Filing frequency of AHR - annually	Rule 4.05.13(4)(c)	Yes
Timely filing of AHR – submitted by end of February each year	Page 117 of PAP	No[1]
Surface water monitoring	Not required	NA
Groundwater monitoring - sites sampled and sampling frequency	Page 56 of PAP	Yes
Groundwater monitoring - parameters sampled	Page 57 of PAP	Yes

1. An extension was granted by the Division.

Two downgradient wells were assessed for mining impacts:

- PC-6, which is northeast and downgradient of the B Pit area
- DH-96, which is approximately 0.7 mile north of the facilities area.

For an assessment of Total Dissolved Solids (TDS), a comparison was made between these downgradient wells and two upgradient wells, PC-1 and PC-2. This comparison is shown in Table 2.

Table 2. Comparison of Total Dissolved Solids, Downgradient and Upgradient

Sample Location	TDS Concentration April/May 2022 (mg/L)	TDS Concentration September 2022 (mg/L)
PC-6 (downgradient)	2,310	1,760
DH-96 (downgradient)	1,390	1,250
PC-1 (upgradient)	3,310	9,500
PC-2 (upgradient)	10,200	3,540

Concentrations at upgradient wells PC-1 and PC-2 were significantly higher than downgradient concentrations at wells PC-6 and DH-96 in 2022. Regarding TDS, the 2022 data did not reveal that the Keenesburg Strip Mine is causing negative impacts on groundwater quality.

To analyze other possible issues with mining impacts on groundwater quality (for parameters other than TDS), data in the 2022 AHR for the Keenesburg Strip Mine were compared to water quality standards. The groundwater regulations used for this AHR review are Regulation 41 (Colorado Department of Public Health and Environment (CDPHE), revised June 2020). These regulations include domestic supply and agricultural standards. The following table lists parameters and concentrations from these wells that are exceedances of Regulation 41 standards.

Table 3. Exceedances in 2022 Data at Downgradient Wells (concentrations in mg/L)

		Manganese, dissolved	Selenium, dissolved	Sulfate
Regulation 41 Standard:		*0.05*	*0.020*	*250*
Sample Location	**Month of Sampling**			
PC-6	April/May		0.0736	1,270
PC-6	September		0.0720	1,320
DH-96	April/May	0.519		751
DH-96	September	0.592		711

The data from the two down gradient wells were compared to data from two upgradient wells: PC-1 and PC-2. Table 4 lists the data for these upgradient wells.

Table 4. 2022 Data for Upgradient Wells (concentrations in mg/L)

		Manganese, dissolved	Selenium, dissolved	Sulfate
Sample Location	**Month of Sampling**			
PC-1	April/May	ND	0.0913	2,010
PC-1	September	ND	0.0776	2,120
PC-2	April/May	1.90	ND	6,150
PC-2	September	2.27	ND	5,920

Because upgradient values are greater than downgradient values for all three parameters, mining impacts from the Keenesburg Strip Mine do not appear to be causing an issue with any parameters in groundwater at or near the site.

If you have any questions, please do not hesitate to contact me at Rob.Zuber@state.co.us or 720.601.2276.

Regards,

Robert D. Zuber, P.E.
Environmental Protection Specialist