STATE OF COLORADO

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Review AHR 2023

1 message

Reilley - DNR, Robin <robin.reilley@state.co.us> Fri, Dec 13, 2024 at 2:01 PM
To: Graham Roberts <graham.roberts@trappermine.com>, Robin Reilley - DNR <robin.reilley@state.co.us>

Good Afternoon Mr. Roberts

Please find DRMS's review of Trapper Mine's 2023 Annual Hydrology Report. DRMS has no questions regarding the Report.

Thank you

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Review of Annual Hydrology Report

Mine: Trapper Mine Inc,
Permit No: C1981010
Report Year: 2023
Date Received: 14 March 2024

Date Reviewed: 13 December 2024
Reviewed By: R. Reilley
Submitted By: Trapper Mine Inc.

January 2023 through December 2023

Requirement	Requirement Citation	Comment
1. Filing frequency of hydrology report	CDRMS regulation 4.05.13(4)(c)	The Annual Hydrology Report filling was timely.
2. Timely filing of hydrology report	CDRMS regulation 4.05.13(4)(c) and Permit C81010 Sections 4.8.5.1 and 4.8.5.2	The Annual hydrology Report is required to be submitted by 15 March and was received by the Division on 14 March 2024 via electronic submittal.
3. Filing frequency of NPDES Discharge Monitoring Reports	NPDES permit CO-0032115	Filling is monthly and quarterly, and reports were consistently relayed to DRMS in a timely manner.
4. Filing frequency of pond reports	CDRMS regulation 4.05.9(17)	Filing frequency was met.
5. Timely filing of pond reports	CDRMS regulation 4.05.9(17)	Monthly pond inspection reports were consistently submitted and received by the Division in a timely manner.
6. Content of pond reports	CDRMS regulation 4.05.9(15)	Filing of reports was timely and content appeared adequate.
7. Sampling frequency of NPDES outfalls	NPDES permit CO-0032115	It appears that frequency for sampling was complied with. Sampling sites are listed in Trapper Mine Permit Table 4.8-8b.
8. Parameters to be sampled for NPDES reporting	NPDES permit CO-0032115	Field parameters sampled comprise temperature (°C), flow (gpm), pH (std units), conductivity (µmhos), and constituent parameters comprise TSS (mg/l), TDS (mg/l), Fe (mg/l), total Fe (mg/l), total Al (mg/l). Extended sampling parameters are monitored as per list A-3 of Table 4.8-12 of discharge permit. Sampling procedures are discussed in Appendix Q and permit section 4.8.5.
9. NPDES discharge limitations	NPDES permit CO-0032115	Trapper monitors 16 drainage systems. The Trapper Mine discharged from the Johnson (001), No Name (002), East Pyeatt (011), Middle Flume (020), and Deal systems in 2023. Total Fe and Al at 001 were slightly higher than other sites throughout the site for April 2023 (peak flow). Values fell within historic ranges.

Requirement	Requirement Citation	Comment
10. Basic Standards for Surface Water	CWQCC regulations 31.1.11	See section 11 below: Instream Numeric Standards. Two native springs (East Pyeatt and Jeffway Gulch) discharged above the 5gpm flow rate where sampling would be indicated during water year 2023. Increasing TDS concentrations were noted in Pyeatt and Coyote Springs values were similar to historic values.
11. Instream Numeric Standards	CWQCC Regulations 31 and 37	Trapper's discharges from several NPDES outfalls drain to Segment 3b of the Lowe r Yampa River. Trapper's NPDES discharge limitations are based on constituents in Trapper's effluent likely to cause an exceedance of Segment 3b's numeric standards. Discharges in 2023 appeared to comply with discharge limitations set as per the NPDES permit. It is reasonable to conclude that Trapper's discharges did not violate Segment 3b's instream numeric standards.
12. Antidegradation Rule for Surface Water	CWCC regulations 3.1.9(2) and 3.3.0.	Trapper is not subject to the Antidegradation Rule because the receiving waters (Segment 3b of Lower Yampa River) are designated as use protected.
13. Prevention of impacts to surface water adversely impacting the postmining land use	CDRMS regulation 4.05.1(2), CDRMS regulation 4.05.13(2)	Upon completion of mining, Trapper's pond network will be used for watering livestock and wildlife. To evaluate the suitability of Trapper's surface water for those uses, a comparison of surface water data as per the AHR to water quality standards of CWQCC Regulations 31 and 37 for stream segment 3b is made. Regulation 37s classifications for stream segment 3b include Aquatic Life (warm 2), Recreation (P), and Agriculture. The State of Colorado defines the agricultural use classification as water suitable for irrigation and stock watering, assuming that water safe for livestock and aquatic life is also safe for wildlife. Also, certain constituents monitored have effluent limitation standards requirements as per Trapper's NPDES permit. Water quality was measured at downstream discharge points in drainages at northern permit boundary. Water quality at these locations is assumed to be representative of water quality higher in the watersheds. No exceedances of standards occurred in 2023. The current surface water monitoring program continues to adequately protect the hydrologic balance.

Requirement	Requirement Citation	Comment
13. Prevention of impacts to surface water adversely impacting the postmining land use	CDRMS regulation 4.05.1(2), CDRMS regulation 4.05.13(2)	Upon completion of mining, Trapper's Pond network will be used for watering livestock and wildlife. To evaluate the suitability of Trapper's surface water for those uses, a comparison of surface water data as per the AHR to water quality standards of CWQCC Regulations 31 and 37 for stream segment 3b is made. Regulation 37s classifications for stream segment 3b include Aquatic Life (warm 2), Recreation (P), and Agriculture. The State of Colorado defines the agricultural use classification as water suitable for irrigation and stock watering, assuming that water safe for livestock and aquatic life is also safe for wildlife. Also, certain constituents monitored have effluent limitation standards requirements as per Trapper's NPDES permit. Water quality was measured at downstream discharge points in drainages at northern permit boundary. Water quality at these locations is assumed to be representative of water quality higher in the watersheds. No exceedances of standards occurred in 2023. The current surface water monitoring program continues to adequately address the protection of the hydrologic balance.
14. Sampling frequency of ground water monitoring wells	Table 4.8-13a of CDRMS mining permit C-81-010	Sampling frequency was adequate. Monitoring of 81-03A was re-initiated beginning the last two quarters of 2020. Monitoring at this location was stopped after June 2006. Data from this well, and CY-3, GC-2, P-8 and GP-9 were used in generating the Potentiometric Surface Map 2-3.
15. Interim Narrative Standard for Ground Water	CWQCC regulation 41	Reviewed
16. Parameters to be analyzed in ground water samples	Appendix Q, Table 4.8-13 and Table 4.8-13a of CDRMS mining permit C81010	Parameters sampled comprise conductivity (umhos/cm), pH (units), temperature (C), dissolved fluoride (mg/I), dissolved iron (mg/I), dissolved manganese (mg/I), dissolved nitrate (mg/I), dissolved nitrite (mg/l), dissolved selenium (ug/l), dissolved sulfate (mg/l) and total dissolved solids (mg/l). At measured sites all parameters were sampled for.

17. Basic Standards for Ground Water	CWQCC regulations 41.4 and 41.5	Six alluvial wells monitor Flume, Coyote, Deacon, Pyeatt and Johnson alluviums (COY, GC3, CYA, GLEV2, P1 and J1 respectively). Well GP-9, Trapper's groundwater point of compliance monitors the Third White Sandstone immediately downgradient from Trapper's L and F pits at a location where a leachate plume can be expected to form, as explained in the PHC (Section 4.8.3 of the permit and page 4-242). 2023 pH values for most of the aquifers registered neutral with the exception of areas of the KLM aquifer where values hovered at a pH of 8. Overall, 2023 monitoring did not detect development of acidic water in the Trapper Mine ground water. TDS in the backfill QR aquifer may be due to leaching from backfill as levels were greater than downgradient. Trapper describes this as possible movement from higher concentration. Concentrations from well GP-5 from September 2021 through 2023 indicate a very abrupt increase. The KLM aquifer exhibits a generally steady trend. Upgradient mining may be responsible for fluctuations in the HI aquifer and trend slightly downward with the exception of the area north of A Pit where TDS trends upwards. Fluctuations in wells GC-1, GLEV-3 AND GP-7 appear natural as per their location. For alluvial wells TDS appears to be slightly increasing or steady within historical values depending on the location. Additional future monitoring will be needed to determine the significance of fluctuations. Fluctuating Sulfate levels in the QR aquifer require further monitoring to establish driving forces. In areas it appears that in some portions of the aquifer Sulfate concentrations in the upgradient QR backfill aquifer has affected the concentration in the QR aquifer. In other areas fluctuations in the backfill aquifer are larger than the native QR aquifer. Future monitoring will define whether sulfate concentrations will increase in the backfill aquifer when water levels rise to a higher level in the backfill material. Monitoring in the HI aquifer indicates a possibility of affects by upgradient mining, the effects are very small. Higher sulfate levels in GP-5 indicate a front of the

		backfill aquifer water has reached this well. The GP-5 well, downgradient of the N Pit in the Middle Pyeatt drainage exhibited high levels of sulfate beginning in 2021, 2000 mg/l up from 300 mg/l in 2020. TDS took a dramatic jump in 2021 and has remained elevated in GP-5. And wells GD-3, GF-7, GMP-1, GF-11 and P-8 appear to exhibit the effects of mining. TDS and Sulfate levels in Well GMP-1 just upstream from GP-5 have been rising since 2005. Active mining is occurring in both N and L pit. Sulfate levels and TDS in P-8 increased dramatically in 1995 and have remained elevated since. This well is also located in the Pyeatt drainage downgradient of N Pit. Active mining is occurring in both N and L pits. Concentrations of ammonia and nitrate vary significantly from year to year. All NH3 concentrations observed in 2023 were within the natural range of this constituent at Trapper Mine except the value from well GD-3 which seems to be an outlier for this well. All of the 2023 NO3 values were below the drinking water standard Sodium appears to trend downward and sodium absorption ratios (SAR) remain similar over time. None of the 2023 SAR values indicate a significant trend in with the exception of an increase in well GP-5 the last three years associated with changing water quality in this well.

Requirement	Requirement Citation	Comment
18. Restoration of ground water recharge to approximate pre-mining rate	CDRMS regulation 4.05.12(3)	Water levels in many of the wells reflect the natural variations in recharge. The water-level changes in the GC wells located within 1100 feet of current mining activities may no longer be reliable indicators of natural recharge. The alluvial aquifer response indicates continuation of recharge and normal seasonal variations. Water levels in the QR aquifer show large seasonal fluctuations. It appears that water levels in the backfill aquifer have fully recovered from mining. Well GP-5 fluctuates with recharge with an approximate one year lag with precipitation. The data suggests QR seam mining increased water levels to above pre mine levels. Levels in the Third White Sandstone depend on the conditions relating to confined and unconfined aquifers in the vicinity. Over time water levels fluctuate with the unconfined aquifer storage greater than the storage coefficient for the confined aquifer, thus dampening responses. The wells near the I and J pit mining (3rd and 2nd White Sandstone and the 1st White Sandstone), indicate water moving upwards into the 1st White Sandstone and the nearby alluvial aquifers. Levels in the HI aquifer appear consistent with historic levels and fairly steady. TMI suggests that recovery from the A pit mining in this area may be completed. GLEV wells exhibit some fluctuations. The alluvium appears dry at the GLEV2 location. The GP wells completed in the HI and KLM aquifers and may provide undisturbed baseline data for these intervals but could be influenced by the mining located over 1900 feet away. Wells downgradient from the A pit appear to have recovered to above pre mine levels indicating that depletion of water from upgradient mining has been replaced by recharge to the HI aquifer. The overall gradual water level rise in well GP-3 in recent years is probably a function of increase in recharge from the upgradient backfill. The water level in well GP-4 has also recovered to pre-mine levels. All alluvial wells displayed seasonal water level fluctuations in response to periods of precipitation

		recharge. All wells were monitored in 2023. Pyeatt alluvium has been registering dry in the third quarter of the past three years. Johnson Gulch does not appear to respond to precipitation. Springs discharging more than 5gpm were monitored. Spoil springs may reduce groundwater recharge by diverting groundwater flow to surface flow. Piezometric maps were updated with levels from 2023 illustrating in more detail directional flows.
19. Prevention of adverse impacts to ground water systems outside permit area	CDRMS regulation 4.05.11(1)	Compliance with the Basic Standards for ground water item 17), indicates the permittee is monitoring to detect adverse impacts to ground water quality outside the permit area. Monitoring data indicate the permittee is aware of possible impacts to water quantity outside the permit area. Continued monitoring is part of the permit. Hydrology reports indicate that water level at all wells are within historic ranges. All alluvial wells showed seasonal water level fluctuations in response to periods of precipitation or, lack thereof. Overburden and coal well water levels are fluctuating in response to precipitation recharge and ground water flow from the reclaimed mine pits.
20. Prevention of impacts to ground water that adversely impact post-mining land use	CDRMS regulation 4.05.11(2)	As discussed in item 19 above, TMI is monitoring for the possibility of material damage.

Requirement	Requirement Citation	Comment
21. Minimize disturbance to hydrologic balance within and adjacent to the permit area	CDRMS regulation 4.05.1(1)	The disturbance to the hydrologic balance within and adjacent to the permit area caused by mining and reclamation at the Trapper Mine Inc, constitute the minimum that can be expected from a reclaimed surface mine at this location. The operators' use of a robust monitoring program and best management practices indicates efforts to minimize disturbance to the hydrologic balance.
22. Agreement of observed hydrologic impacts with PHC projected in the permit	CDRMS reg. 2.05.6(3) and requirement to keep current, CDRMS regulation 2.03.3(1)	No local or regional impacts were identified in the AHR. This observation is consistent with the PHC.