

**PRELIMINARY HYDROLOGIC AND GEOLOGIC REPORT
TECHNICAL REVISION AUGUST 2024**

McClane Canyon Mine Permit No. C-1980-004

This report on hydrologic and geologic setting is submitted in compliance with the stipulations of the application for a technical revision for the mine noted above. The technical revision seeks approval to construct an additional sediment drying pile near the sediment pond.

Hydrologic Setting

The hydrologic report shall discuss the effect of McClane Canyon Mine (MCM) on the hydrologic regime, and then give an overview of the surface water system and groundwater monitoring. This report shall conclude with a discussion of the cumulative effect on the hydrology of East Salt Creek.

No water was discharged from the mine during the 2023 calendar year. Flows into the mine are estimated in Table 1.

Precipitation

Precipitation data is shown on Tables 2 & 3 and was acquired from Kevin Hyatt with the BLM (970-244-3030). Available data is included for reference.

Effect of the Mine on the East Salt Creek Regime

Surface Water

Due to the limited disturbance of the mine there is little chance any significant effect on the quantity or quality of the surface waters has occurred. As the Division notes in its approval package for the Munger Canyon Mine, the total area that will be disturbed by both McClane and Munger mine sites amounts to 0.12 percent of the area of the East Salt Creek drainage basin above the mines.

Due to low flow conditions, no samples were taken during the water year. Results are shown in Table 4. Historically, results from the samples collected from East Salt Creek above and below the mine site are generally the same for all parameters.

The McClane Canyon Mine did not discharge to East Salt Creek during the water year or the calendar year.

Groundwater

Table 5 shows the results of groundwater sampling during the water year. Table 5a was created in 2011 for GW-10 to be used to gather a year of baseline data, however, GW-10 was sealed in 2012 since a large coal mine waste pile is no longer planned and therefore GW-10 is no longer required. Baseline data for Table 5 from the 1981 & 1986 monitoring is also shown. Baseline data for GW-9

for the period October 2007 through September 2008 is included. Results of quality sampling are consistent with the results from previous years. GW-4 was in close proximity to a hay field that is irrigated during dry periods and in danger of being eroded with an oxbow was replaced with GW-3. GW-3 is located adjacent to the road south of GW-4 and should be outside of the influence of the irrigation of the hay field. Refer to Figure 4.2-2 of the McClane Canyon Permit. The Division of Reclamation, Mining and Safety has approved this substitution. Ground water wells GW-2, GW-4, GW-7, and GW-8 were sealed during 2007.

Pond Discharges

The pond did not discharge during the 2023 water year.

Discharge monitoring from the sediment ponds and mines are regulated by the Colorado Discharge Permit System Numbers CO-0038342 (McClane). Copies of Quarterly Discharge Monitoring Reports have been provided, under separate cover, to the DRMS at the same schedule required by the CDPS Permit. They are included in this report by reference.

Probable Hydrologic Consequences

As discussed above, and as documented in past annual hydrologic reports, the mines had and will have a negligible effect upon the hydrologic regime of East Salt Creek. The area disturbed is small, sedimentation and surface water systems have functioned well for over ten years. The inherent poor quality of surface water in the area is the result of site-specific environmental factors not from any impact caused by the mines.

Most but not all of the storm events that have exceeded the design criteria required by the DRMS have not been a problem for the system to handle. The effect that the mine has on the groundwater hydrology of East Salt Creek has not been detected.

The mines will not have a detrimental impact upon the groundwater of the East Salt Creek valley. This is based partially on the relative sizes of the operation and the size of the aquifer. It is also based on the fact that the groundwater contained in the alluvium is substandard. East Salt Creek is an accurate name. The water contained in the alluvium is virtually unusable. Field water sampling has shown that the conductivity of the groundwater is extremely high (3,000 to 100,000 uMhos/cm).

Data gathered for SW-1 and GW-3 are presented in the Tables N-1 through N-7 in Appendix N. The Division's 1987 Material Damage guidelines require any measured salinity values over 1,000 umhos/cm be reported as 'suspect' values. Since baseline values for SW-1 and GW-3 far exceed the Division's 'suspect' levels, the Operator compiled data in order to demonstrate mine discharge does not add salinity to the already high values, rather, lowers the salinity in SW-1 and

GW-3 during the irrigation season. By improving the salinity of the waters in East Salt Creek and the East Salt Creek alluvium, downstream farmers will not suffer loss of production due to the addition of mine discharge.

Geologic Setting

The geologic setting is fairly straightforward. The area of the proposed sediment drying area is on top of Quaternary Alluvium, which is comprised of mixed gravels, sands, and silt.

The small hill just south of the proposed sediment area is the Sego Sandstone unit, of the Mount Garfield Formation of the Mesaverde Group. It is comprised of gray fine to medium-medium grained sandstone and gray shale.

There are no known faults in the vicinity of the proposed sediment drying area. And there are no known geo-hazards (landslides, mass wasting areas, debris flows, avalanche paths, etc.) in this area.