



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

MEMO

DATE: December 2, 2014

FROM: Tom Kaldenbach *Tom Kaldenbach*

TO: Bob Oswald

RE: Revenue Mine, M-2012-032
Review of groundwater standards proposed in the report titled "Water Document",
received October 14, 2014 from Greg Lewicki and Associates, PLLC

I have reviewed the groundwater standards proposed for the Revenue Mine in Table 3 of the above-referenced submittal. With the exception of arsenic and TDS, the proposed standards are acceptable, as discussed below.

1. **Governing Rules.** Hard Rock/Metal Mining Rule 3.1.7(2)(c)(i) requires the use of the Colorado Basic Standards for Ground Water (CBSGW) as a guide in establishing permit conditions regarding ground water quality.
2. **DRMS Implementation of CBSGW.** The Colorado Water Quality Control Commission has recommended that agencies who implement the Colorado Basic Standards for Ground Water use as guidance the groundwater use-classifications and standards of the CBSGW when implementing groundwater protection responsibilities, on a case-by-case basis, consistent with applicable law (CBSGW 41.4H). Accordingly, as set forth below, DRMS has:
 - a. Identified "specified areas" for the Revenue Mine operations ,
 - b. Informally adopted "use-classifications" from section 41.4 of the CBSGW, and
 - c. Identified the groundwater standards applicable to those specified areas.
3. **DRMS Designation of Specified Areas.** A "specified area" is an area where ground water is classified (CBSGW, 41.3,12). The "Water Document" submittal does not explicitly identify a "specified area" in which proposed groundwater standards will apply, but indicates the proposed standards are designed to protect surface water quality in Sneffels Creek. DRMS considers the following area to be the specified area for the Revenue Mine: Bedrock and unconsolidated material in the area that extends from the Revenue Mine operation to the downgradient limit of groundwater flow that is within the influence of that operation.
4. **DRMS Informal Designation of Use-Classifications in Specified Areas.** The report appropriately identifies the use-classification of "Agriculture" of the Basic Standards for Ground Water (CWQCC Reg. 41) as being applicable to the specified area, based on historical and potential future groundwater uses.



5. **Relationship of Numeric Protection Levels to CBSGW.** The groundwater standards proposed in the Water Report can be considered to be “numeric protection levels” as that term is used in the Hard Rock/Metal Mining Rules. Rule 3.1.7(1)(d) explains that the Interim Narrative Standard of the CBSGW supersedes any numeric protection levels established following Hard Rock/Metal Mining Rule 3.1.7(1)(d); therefore, DRMS can accept a proposed value as a numeric protection level only if it is as restrictive as the values specified in the Interim Narrative Standard.
6. **Applicable values in Interim Narrative Standard.** Section 41.5(C)(6)(b)(i)(B) of the Interim Narrative Standard requires that the most stringent criteria of Tables 1 through 4 of the CBSGW be applied to ground water if the ambient quality of ground water as of January 31, 1994 has not been demonstrated. The ambient quality of ground water as of January 31, 1994 has not been demonstrated for the Revenue Mine operations; therefore, the most stringent criteria of CBSGW Tables 1 through 4 are applicable to the specified area of the operation. Of Tables 1 through 4 in the CBSGW, the tables that are applicable to the Revenue Mine specified area are Tables 3 and 4. The applicability of Tables 3 and 4 in the CBSGW is based on the informal designation of the Agriculture use-classification in item 4, above.
7. **Comparison of proposed standards to Interim Narrative Standard.** Excluding arsenic and TDS, the standards proposed in Table 3 of the Water Report are no less stringent than the values in Tables 3 and 4 of the CBSGW; therefore, the standards are acceptable as proposed (with the exception of arsenic and TDS).
8. **Standard for arsenic.** Based on the instream water quality standard, Table 3 of the Water Report proposes 0.34 mg/l as the groundwater standard for arsenic. As explained in item 5, above, the groundwater standards in the specified area must be no less stringent than the Interim Narrative Standard of the CBSGW. As explained in item 6, above, the standards listed in Tables 3 and 4 of the CBSGW are applicable to the specified area. Table 3 of the CBSGW shows 0.1 mg/l would be the appropriate standard for groundwater in the specified area, rather than the proposed value of 0.34 mg/l.
9. **Standard for TDS.** Table 3 of the Water Report proposes no standard for TDS. Section 41.5(B)(4) of the CBSGW explains that the TDS standards in Table 4 of the CBSGW are applicable for groundwater having a use-classification of “Agriculture”. Table 4 of the CBSGW indicates a TDS standard of 1.25 times the background value would be applicable in the specified area. Table 3 of the Water Report indicates that, in the specified area, 1.25 times the background TDS concentration is 186.25 mg/l; therefore, this value is the applicable standard for TDS in groundwater in the specified area.