

Colorado Department of Health**Review and Comment****Technical Memorandum (TM) 8 - Revised Phase II Bedrock Work Plan
Operable Unit 2; March, 1993**

General Comments:

1) The Division would like to commend DOE, EG&G, and the subcontractors who prepared this document on their high quality presentation of OU 2 geology and hydrogeology. The exhibits and explanations in the text are very well done. Thank you.

2) Assumed pre-existing conditions must be clearly delineated for each potential scenario at some point early in this document.

3) The objectives of this revised Phase II Bedrock Work Plan are not clearly stated anywhere in the document. From the Division's perspective, the principle objective of this TM is to gather enough data to confirm assumed conditions and concepts. If this can not be accomplished, then more data will be collected via a contingency plan. Secondary objectives, in support of the principle objective, include:

A) establishing the lateral extent of contamination in the "Type 1" scenario. If contamination is limited to a narrow area of LHSU sand in contact with overlying contaminated alluvium, conditions are probably as assumed in that the contamination is probably entering the LHSU sand where it subcrops beneath contaminated alluvium on the hillside. If clusters 2, 3, and 4 find contamination further away and upgradient from the subcrop, then possibly more information will be necessary.

B) establishing vertical extent of contamination in LHSU units not in direct contact with UHSU units (Type 2 scenario), but under areas of extensive UHSU contamination. If contamination is not found in these deeper units, conditions are as assumed in that no contamination has penetrated the bedrock claystones.

C) establishing LHSU permeabilities.

This comment would directly affect the text in Sections 1.2.1.4 and 2.1.

4) The Division has received correspondence from DOE indicating that work on this TM commenced during the week of April 5, 1993. Therefore, the Division recommends that the contingency plan to be invoked should conditions differ from those assumed to exist be developed as soon as possible.

6) The outlines consistently shown in this document for IHSSs 216.2 and 216.3 are incorrect.

Specific Comments:

Executive Summary: revised Figure ES-1: The Division does not believe the revised version of Figure ES-1 is sufficient. It is already known that there is contamination in the LHSU. Samples are being collected (with detectable amounts of contaminants) from existing wells, so it is reasonable to expect that this will also be the case for at least some of the new wells. Therefore, a likely path for new ground water samples through the revised flowchart is straight down. The problem with the revised flowchart is that it makes no provision for LHSU contamination, but only kicks it into the "contingency plan" which is never defined. (This comment also applies to Figure 1-4.)

The footnote at the bottom of this figure indicates that the additional work required in the contingency plan is not included in the scope of this document even though, as described above, invoking the contingency plan is guaranteed.

Page 1-53: With regard to the potential contamination sources to the LHSU, please explain why cross-flow from upper zones to lower zones via old wells and boreholes has been disregarded. This was a mechanism considered in the original workplan and still seems reasonable.

Page 1-66: The second paragraph on this page should be revised. Only two of the five elements of a completed pathway are probably not present. Since the LHSU ground water is already contaminated in certain areas, the source of contaminants is present. Additionally, to be consistent with other portions of the text, at present, because the pathways are probably not complete, no quantitative risk assessment of the LHSU is planned. However, should the situation change, this will be re-evaluated.

Section 2.2.2.1: WC-5 and WC-6: The location of these well clusters are approximately 300' and 200' distant from Wells 2087 and 02991, respectively. These distances are large when dealing with the subtle and rapid lithologic changes that occur in the bedrock units. If the pilot boreholes at these locations fail to find sufficient sand thickness in the LHSU at the appropriate stratigraphic level, we suggest drilling a second pilot borehole at a different site, possibly closer to the control wells, before

decisions are made on the compliance of this site with the workplan assumptions.

Section 2.2.2.2: Verification that the well clusters for this scenario are truly upgradient of the existing wells is necessary for the well cluster to perform its intended purpose. Please add text explaining how and when gradient will be determined between the new wells and the existing wells.

As mentioned above, the new well clusters are planned at some distance to the control wells. Therefore, finding the same sand in the new pilot boreholes may become problematic. If the new pilot boreholes do not find the equivalent sand that is contaminated in the existing wells, the Division recognizes that an apparent upgradient sand limit could be present which would limit lateral migration. However, one point of control is not enough for a final determination. If the contaminated sand is not found in the new pilot boreholes for WC-2, WC-3, and/or WC-4, please drill at least one additional borehole no more than 200' west of the original pilot borehole (up-dip or along depositional strike) for stratigraphic confirmation purposes. If the second borehole does not encounter the contaminated sand, then we will be more comfortable with the sand body edge limiting contaminant migration from another upgradient source.

Section 2.3.2.2: This section should contain a concise description of how, or if, the pilot boreholes and/or wells at each cluster location will be sampled. Presently, the text is not clear on this point.