



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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November 8, 1993

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Re: Tank Seam Revision, Co-Op Mining Company ("Co-Op"), Bear Canyon Mine,
ACT/015/025, Folder #2, Emery County, Utah

Dear Gentlemen:

The Division of Oil, Gas and Mining (the "Division") has completed its Cumulative Hydrologic Impact Assessment ("CHIA") for Co-Op's proposed permit amendment to mine the Tank Seam within its permit area. A copy of the Tank Seam Supplement to the CHIA is enclosed for your review. The Supplement was based on the Division's review of the existing CHIA on file with the Division, the Probable Hydrologic Consequence data ("PHC") filed by Co-Op in support of its permit revision, and all comments and information submitted by the Protestants at the informal hearing held on September 9, 1993. The CHIA concludes that mining of the Tank seam will not result in material damage outside the permit area.



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Although the CHIA is now complete, other permitting issues remain outstanding. The Division has therefore not yet approved or disapproved Co-Op's proposed permit revision. Since the Division has not yet acted on the proposed permit revision, there is not yet a final administrative decision upon which an appeal to the Board of Oil, Gas and Mining ("Board") may be based.

Once the Division takes final action on Co-Op's proposed revision, any interested party who disagrees with the Division's decision may appeal to the Board pursuant to Utah Admin. R. 645-300-211. That section provides in relevant part:

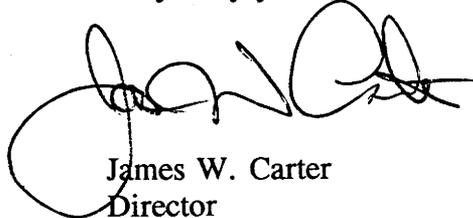
Within 30 days after an applicant or permittee is notified of the decision of the Division concerning a determination made under R645-106, an application for approval of exploration required under R645-200, a permit for coal mining and reclamation operations, a permit change, a permit renewal, or a transfer, assignment, or sale of permit rights, the applicant, permittee, or any person with an interest which is or may be adversely affected may request a hearing on the reasons for the decision, in accordance with R645-300-200.

Accordingly, if you disagree with the Division's final action in either approving or disapproving Co-Op's proposed permit revision, you will have 30 days to appeal that decision to the Board. Once an appeal is filed, the Board will hear the matter formally within 30 days. Utah Admin. R. 645-300-212.100.

I thank you for providing the Division with information concerning the probable hydrologic consequences of Co-Op's proposed mining activities. Comments from interested citizens serve an extremely beneficial purpose by providing the Division with pertinent information and by bringing to the Division's attention concerns of which it may not otherwise become aware.

If you have any questions, please don't hesitate to call.

Very truly yours,



James W. Carter
Director

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Enclosure
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Revised Hydrologic Evaluation of the Bear Canyon Mine

Supplement to Gentry Mountain CHIA

November 5, 1993

Additional information to determine the "Revised Hydrologic Evaluation of the Bear Canyon Mine" was reviewed: 1) The updated PHC (Probable Hydrologic Consequences) data submitted by Co-Op Mining Company on May 6, 1993 and 2) The September 9, 1993 Tank Seam Informal Conference transcripts.

Within the vicinity of the Bear Canyon Mine, two major springs have been identified: Big Bear Springs and Birch Springs. Big Bear Springs (maintained by the Castle Valley Special Services District) discharges from three prominent joints in the Star Point Sandstone. Birch Springs (maintained by the North Emery Water Users) discharges from the normal fault which has approximately 20 feet of vertical displacement in the Star Point Sandstone. Both springs discharge from the lowest sandstone unit of the Star Point Sandstone (Panther Tongue), where the Mancos Shale acts as a barrier to the downward movement of ground water. As a result of the Order issued by the Division of Oil, Gas, and Mining on May 20, 1991, Co-Op Mining Company initiated a drilling program to better define the ground water flow path associated with the Blackhawk-Starpoint aquifer in the area of the mine.

Although a regional aquifer (termed the Star Point-Blackhawk Aquifer by Danielson, et al., 1981) has been designated for the area, in-mine drilling and aquifer testing conducted for this study area indicate that three aquifers within the Star Point Sandstone have individual static water levels. Further, in the southernmost hole (DH-3) shown on Plate 2, PAP, none of the three aquifers are fully saturated. This fact indicates that each of the units have a separate and distinct water levels. The springs issue from the bottom of the Panther Tongue (417-433 feet below the Blackhawk formation contact with the Star Point Sandstone), therefore it can be concluded that Birch Springs and Big Bear Springs are hydrologically isolated from the impacts of mining in the Blackhawk Formation by the presence of two Mancos Tongues in the Star Point Sandstone. These two Mancos Tongues act as barriers to water movement.

Areas of encountered ground water within the mine are fractures, connecting perched aquifers in the Blackhawk Formation which drain over a period of several months as the Bear Canyon Mine advances northward. This indicates a high degree of hydraulic interconnection through fractures in the portion of the Blackhawk Formation which overlies the mine. Inflows in the north end of the North Main and Second East entries in the Bear Canyon Mine are through roof bolt

holes and hairline fractures which are presumed to drain overlying perched aquifers in the Blackhawk Formation. The current rate of mine inflow is approximately 500 GPM (Appendix 7-J, page 2-13, PAP). Of this total, 300 gpm is discharged from the mine and 200 gpm is used in the mining operations.

The review of water source information, the graphical tracking of precipitation versus flow, the testing of the spring water and mine water quality for tritium dating, analysis of water quality chemical data using Stiff and Piper diagrams, and the known presence of three separate piezometric surfaces based on drilling in the Spring Canyon, Storrs, and Panther Tongues of the Star Point Sandstone leads to a conclusion of no significant material damage to the Hydrologic Balance outside the permit area.

Future Mining in the Tank Seam above the Bear Canyon Seam

The Co-Op Mining Company has drilled eight exploratory drill holes into the Tank Seam (page 2-13, Appendix 7-J, PAP). All were dry except one which flows at 0.5 GPM (drilled up from the mine workings in the Bear Canyon Seam). The inflows into the Tank Seam are expected to be much less than those encountered in the Bear Canyon Seam. Stratigraphically, the Tank Seam is 250 feet above the Bear Canyon Seam and, therefore, would tend to be drier and not expected to have the ground water inflows found in lower coal seams (i.e the Bear Canyon and the Hiawatha Seams). There has been no continuous water quality problems associated with mine water discharge at the Bear Canyon Mine and, therefore, it is not expected to change in the future, although it will be closely watched for any long term trends.

(NOTE: Within the Bear Canyon Mine permit area, the Bear Canyon Seam and the Blind Canyon Seam are considered the same seam).