

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION  
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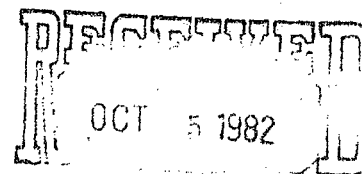
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SEE REPORT #1

September 29, 1982



Ms. Iona Lee  
Lee Ranch  
San Mateo, New Mexico 87050

RADIATION PROTECTION BUREAU

Dear Ms. Lee:

This letter briefly outlines my thinking on what I expect will happen to the water quality of the Westwater aquifer in the vicinity of the Johnny M Mine and the methodology of the proposed Environmental Improvement Division study.

Theoretically, the water quality of the Westwater aquifer should not change significantly and is expected to remain within the ground water standards. The ground water which will come into contact with the backfilled uranium tailings should be anaerobic - it should contain very little dissolved oxygen. Under anaerobic conditions the contaminants which are generally associated with uranium tailings are relatively insoluble and, therefore, should not contaminate the water supply. Although the above theoretical scenario has been verified in the laboratory, and been observed in the "real world" (under different circumstances), there are no actual studies of the water quality effects of backfilled uranium tailings in abandoned mines. If the results of the study agree with the theory, backfilling underground mines with tailings may become an effective tailings management practice.

The proposed study is straightforward. Ranchers has constructed a six inch opening in the north vent hole shaft which is fully cased down to the Westwater aquifer. Therefore, the north vent hole is essentially a well completed in the zone of tailings emplacement. As the mine floods, water passes through the tailings and will rise in the "well" until the Westwater is fully saturated and re-pressurized. When I last tried to sample the north vent hole, I found the hole dry. The resaturation of the Westwater may take a few more months. I would like to sample the north vent hole about every three months for about one year or until the water quality of the samples is below the ground water standard of the State. The sampling program may take as long as 18 months or if the first sample is good quality, as short as 6 months. So if the north vent hole is wet now, the maximum length of the study would be 18 months. The results of the analyses will be reported to the Lee Ranch, Ranchers Exploration and Development Company and the Water Quality Control Commission and will be available to the public.

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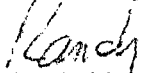
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Road access to the property is not necessary; we can hop the fence with our equipment. We will check in with the Ranch headquarter prior to entering the property. We will abide by any other suggestions you may have. The Environmental Improvement Division (EID) assumes full liability for the acts or omissions of its employees or agents for any damage caused by them while on the property in connection with the proposed study.

During our August meeting you asked if this study would in any way affect the development of the coal fields north of San Mateo. The results of this study may help the coal companies in their planning. If, for some reason the emplaced tailings cause significant degradation of the Westwater aquifer, the companies may choose to omit the Westwater aquifer in their water supply evaluation. I can think of no reason why the State would restrict coal development north of San Mateo due to water contamination at the Johnny M Site. Again, let me emphasize that the EID feels that the water quality of the Westwater should not deteriorate due to the emplacement of uranium tailings.

If you have any questions, please contact me at the above address or telephone number.

Sincerely,



Randall Hicks  
Ground Water Section

RH:dl

cc: EID District I, Albuquerque  
EID District I, Grants  
EID Radiation Section  
Ranchers Exploration and Development Company