

PDR



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AUG 07 1979

WMUR:LWR
Docket No. 40-4492

Federal-American Partners
ATTN: Mr. Ken H. Wright
General Manager
Gas Hills Star Route
Riverton, Wyoming 82501

Gentlemen:

In order for us to proceed with our water quality impacts assessment for your license renewal, we need your responses to the enclosed requests for additional information and clarification of previous submittals.

Please provide us with ten copies of your responses by September 4, 1979. If you wish to discuss this request, please contact Mr. L. Rossbach (301/427-4103) of my staff.

Sincerely,

Ross A. Scarano, Chief
Uranium Recovery Licensing Branch
Division of Waste Management

Enclosure:
As stated

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FEDERAL-AMERICAN PARTNERS
REQUEST FOR ADDITIONAL INFORMATION
ON SEEPAGE EVALUATIONS

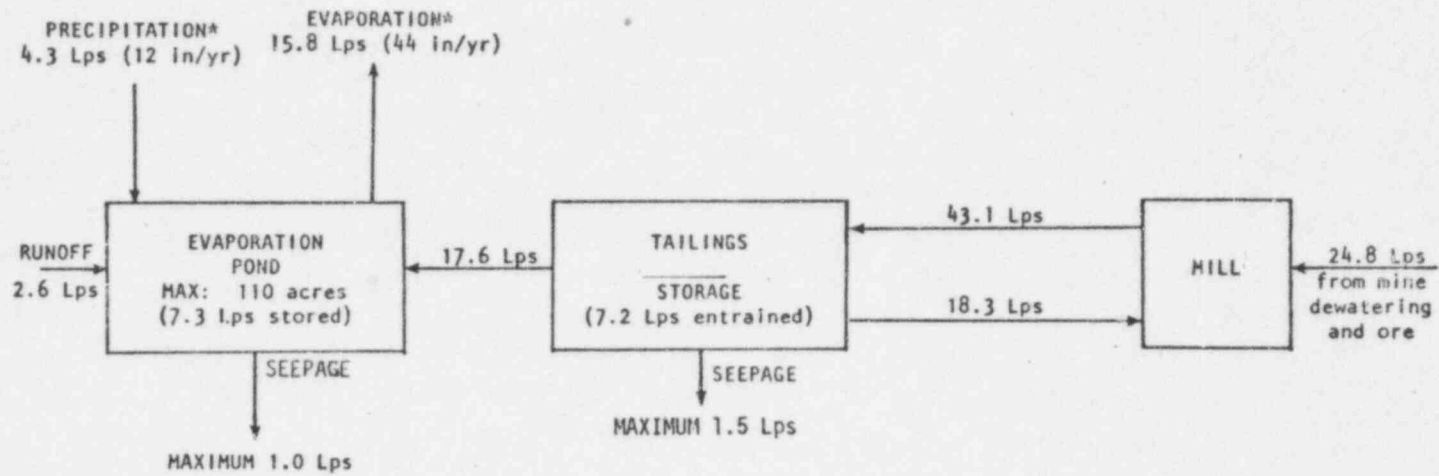
1. The pH values reported in your March 4, 1979 submittal show neutral (pH7) groundwater at a distance about 1200 ft. north of dam no. 1 whereas your July 26, 1978 submittal shows that the groundwater is just reaching pH6 3000 ft. north of dam no. 1. Is there any explanation for this?
2. We haven't received any data beyond water level and pH for the 111 borings reported in your July 26, 1978 submittal. Please provide the results of any additional analyses that were performed on the samples taken from these wells.
3. Additional water samples should be taken in the area north of dam no. 1 between your access road and route 136 to Riverton. Analysis of these samples should be performed and reported for pH gross alpha TDS, conductivity, dissolved selenium, and the dissolved concentrations of the elements and isotopes reported in your March 8, 1979 submittal. These samples should be taken from the hydrostratigraphic units carrying the seepage.
4. We have the following comments on Table 1 of your March 8, 1979 submittal:
 - A. Are the reported values total or dissolved concentrations?
 - B. Are the reported concentrations of uranium in uCi/l?
 - C. Provide the analysis results for TPI-D1 and TPI-D2. Include selenium, conductivity and gross alpha in the analysis for these bore holes.
 - D. Analysis results should not be reported as zero. If the item was not detected then it should be reported as not detected or as less than the minimum detectable limit (MDL). Please verify if Pb-210 in wells 16 and 1-A is less than the MDL.
 - E. Please provide the results of additional analyses of your drinking water supply (before and after treatment), pond no. 2 solution, and the discharge from your seepage recovery wells. These should be analyzed for pH, gross alpha, TDS, conductivity, the dissolved concentration of the elements and isotopes reported in your March 8, 1979 submittal, and the dissolved concentration of the following elements: Barium, Cadmium, Cobalt, Chromium, Mercury, Nickel, Selenium and Silver. The drinking water supply should also be analyzed for the total concentration of these elements and isotopes.

- F. If the samples from the wells reported in Table 1 were analyzed for selenium or any of the other elements mentioned in the preceding item 4E, then please submit the analysis results.
 - G. Table 1 lists "Depth of Water." These same depths appear on Figure 1 as "Total Depth of Boring." Please clarify what these depths are.
 - H. What does "N/S" mean as used in Table 1?
 - I. Were wells 16 and 1-A analyzed for manganese? Is well 1-A the same as the Sagebrush No. 1-A well?
5. Please provide the following for the data reported in your March 8, 1979 submittal, and the additional analyses requested in this enclosure:
 - A. State the minimum detectable limits (MDL).
 - B. Describe the method for determining MDL's.
 - C. Reference the analysis method used.
 - D. Provide the results of any intralaboratory replicate blank, and spiked samples and the results of any interlaboratory split samples.
 6. Were total or soluble concentrations analyzed for the data reported in Table II of your March 8, 1979 submittal? If arsenic and selenium were analyzed for any of these samples then please provide the results of the analysis.
 7. Provide background vegetation analysis for comparison with the data in Table III, March 8, 1979 submittal.
 8. Provide the results of the rerun of the Ra-226 analysis for sample TXR 5C, Table IV, March 8, 1979 submittal.
 9. Are the values reported in Tables IV and V of your March 8, 1979 submittal the total concentrations of these nuclides?
 10. Please explain the statement about soil clean-up in item 5 of the introduction to your March 8, 1979 submittal. It seems that the only possible clean-up would require physical removal of the soil.
 11. Provide a water balance diagram for your existing facility. (See attachment 1 for example.)
 12. No information on thickness, depths or hydrostratigraphic units from which water samples were extracted was included in your seepage investigation report. Therefore, we assume that the data presented are averages of the concentrations contributed to the drill hole by individual hydrostratigraphic units. Under these circumstances, it is probable that the values reported in your seepage

investigations do not reflect maximum concentrations that exist in individual hydrostratigraphic units.

- A. Please describe your sampling procedure and whether or not samples were taken from individual hydrostratigraphic units.
 - B. Provide the drillers logs for the holes listed in Table 1 of your March 8, 1979 submittal, the recovery wells, and any additional wells drilled as a result of this information request.
 - C. Identify the hydrostratigraphic units that are carrying the seepage.
 - D. Identify the low permeability zone separating the shallow perched water table from the deep aquifer. Were your seepage investigation wells bottomed in this low permeability zone?
13. The seepage evaluation report states on page A-1 that blow-out tests were conducted in hole TPI-D1. Blow-out tests are not standard procedures in the analysis of hydraulic properties of aquifers. Describe the tests and techniques used to determine the hydraulic properties of the aquifer. Describe the dimensions of the aquifer tested.
14. The seepage evaluation report contains no information of the fluid potential gradient in the vertical dimension. From the information presented it appears that groundwater at the site is moving downward and northward. The pH of 5.5 in the deep wells when compared to the background pH of 7 shown in Figure 3 of the March 8, 1979 submittal seems to confirm this.
- A. Please provide a cross section showing vertical velocity components of flow lines. This can be accomplished by the installation of piezometers in different hydrostratigraphic units at different depths.
 - B. A pH of 5.5 is most unusual for background water quality. Additional data on the water quality of the deep aquifer should be provided if you maintain that the low pH in the deep aquifer is natural.
15. Based on the existing data from this site, the contaminated groundwater mound will continue to dissipate laterally and possibly vertically. If the contaminated mound is perched above a low permeability layer a properly designed recovery well field should be able to withdraw most of the contaminated water. If the mound is saturated continuously to the water table as deep as 320 feet as the pH data suggests then recovery may be more difficult. It is extremely unlikely that the six recovery wells will prevent the spread of the contamination to the north, east, and west. Recovery wells are needed on the east and west sides as well. In addition, recovery wells should be installed near the downgradient edge of the contaminated mound if its movement northward is to be stopped.
- A. Provide installation details and bore hole logs for the six existing recovery wells.

- B. Describe how the recovery wells have been working and how much solution is being pumped from the recovery wells.
 - C. Describe how the movement of contamination to the north, east, and west will be reversed or alternately what the eventual fate of this contamination will be.
 - D. Have any springs been observed near well TPI-8 or north of TPI-8 between TPI-8 and Route 136 to Riverton?
16. Please submit any additional contamination contour maps that have been prepared beyond those presented in your March 8, 1979 report on seepage investigations.



*Based on a 446,000 m² (110-acre) pond.

Fig. 4.1. Mill Water-Balance Diagram for 1.82×10^6 kg/day (2000 tons/day) Ore Throughput