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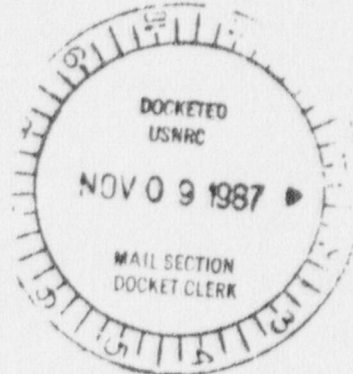
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40-8904

November 6, 1987
RETURN ORIGINAL TO PDR, HQ.

Mr. Scott Grace
U.S. Nuclear Regulatory Commission
730 Simms St., Suite 100A
Golden, CO 80401



RE: Source Material License SUA-1472:
Phase II Environmental Monitoring Program


Dear Mr. Grace:

The attached plan for the Phase II Ground Water Hydrology Investigation is submitted for your review and comments or approval. I believe the plan is consistent with our discussions concerning delineation of offsite and onsite ground water contamination.

The program will commence as soon as possible following NRC approval.

As per our telephone conversation today, a license amendment application fee of \$150 is enclosed.

Yours sincerely,


G.E. Grisak
Vice President

GEG/lac
enclosure

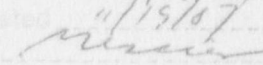
cc: M.B. LaGraff, L-Bar Project Manager, B.P. America
Greg Lewis, New Mexico EID

DESIGNATED ORIGINAL

Certified By Mary C. Hood

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L-BAR

Environmental Monitoring Program

Phase II - Ground Water Hydrology Investigation

November 6, 1987

Purpose

The purpose of this drilling, testing, and well installation program is to evaluate the extent of ground water impacts, due to seepage from the tailings, in the uppermost transmissive zone (UTZ) of the 1st Tres Hermanos sandstone. The drilling program includes both on-site and off-site well installations.

A. Identification of UTZ

The UTZ is the uppermost permeable zone within the 1st Tres Hermanos sandstone. Based on previous boreholes and well installations, the top of the 1st Tres Hermanos is characterized by a well-defined apparent erosional contact with the overlying Mancos Shale. The upper 10 to 20 feet of the 1st Tres Hermanos is a fairly clean whitish sandstone. With depth the amount of sand decreases and the formation grades back into the Mancos Shale.

a). Drilling, Coring, Geophysical Logging, Hydraulic Testing

i) Drilling, Coring, and Laboratory Testing

Two boreholes will be drilled and cored at the approximate locations shown on Figure 1. Continuous coring will start at the top of the 1st Tres Hermanos, following installation of an 8" surface casing to the top of the 1st Tres Hermanos. Coring will

continue until either 10 continuous feet of Mancos Shale core is removed or the total depth of the borehole is 50 feet above the 2nd Tres Hermanos. It is considered imperative that the apparent integrity of the isolation between the 1st Tres Hermanos and 2nd Tres Hermanos provided by the intervening Mancos Shale is not compromised by breaching the zone with the boreholes. The depth of the 2nd Tres Hermanos is approximately 220 feet in the southern cored hole area (estimated from 2nd Tres Hermanos well MW13) and about 275 feet in the northern cored hole area (estimated from the 2nd Tres Hermanos well MW11). Therefore the maximum depth of the cored holes in the southern and northern sites will be approximately 170 feet and 225 feet, respectively.

Cores will be extracted and logged on site, photographed and boxed for shipment to Austin, Texas for laboratory analysis and storage. One foot samples at 5 foot intervals will be extracted and laboratory tests for vertical permeability will be conducted on the cores.

ii) The boreholes will be E-logged (SP and resistivity)

(iii) Hydraulic Testing - Packer Tests

The boreholes will be tested at 5 foot intervals (slug tests) using a double packer system, providing the integrity of the holes is such that the hole remains open to allow the testing. It is anticipated that the hole will remain open, based on recent drilling and well installations. The arbitrary 5 foot interval may be varied, depending on the detailed logging of the core.

iv) UTZ Definition

Based on the hydraulic testing and core permeability testing in i) and iii) above, effective horizontal and vertical hydraulic conductivities will be estimated for individual and combined 5 foot intervals of the 1st Tres Hermanos sandstone (individual thicknesses tested and used in the calculations may vary from the arbitrary 5 foot thickness, depending on the detailed core logging). The UTZ will be considered to be the approximate aggregate thickness where the effective vertical (normal to bedding) hydraulic conductivity is less than .05 of the effective hydraulic conductivity parallel to bedding. In other words, assuming equivalent vertical and horizontal gradients, 95 percent of the flow would be in the horizontal direction and 5 percent would be in the vertical direction. Effective hydraulic conductivity will be calculated for the approximate horizontal and vertical directions as the thickness-weighted arithmetic mean and harmonic mean, respectively.

The UTZ thickness as calculated from the testing will be compared to the core logs and geophysical logs, and an attempt will be made to determine a final UTZ definition consistent with the available data. This UTZ thickness will be recommended to the regulatory authorities (NRC and NMEID) for approval and subsequent monitoring wells will be screened across this interval.

B. Monitoring Well Installation

On agreement of the thickness of the UTZ and receipt of approval from NRC and NMEID, the monitoring wells shown on Figure 1 will be completed in the UTZ. Completions will be similar to that shown on Figure 2.

The wells will be cleaned by pumping or bailing prior to completion of the well installation program.

C. Sampling and Analysis

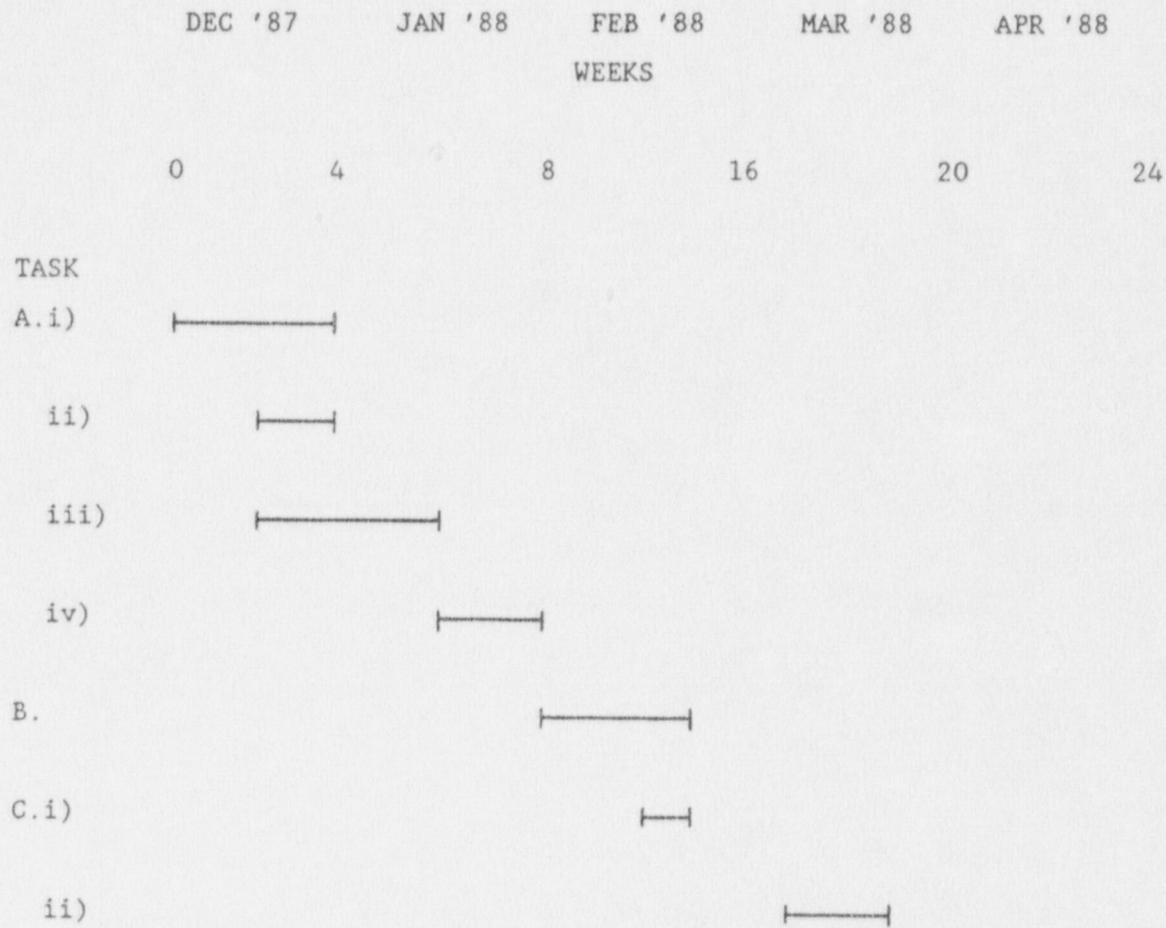
i) Initial Sampling

The new monitoring wells will be sampled immediately after installation and analyzed in the field for Cl, SO₄ and pH.

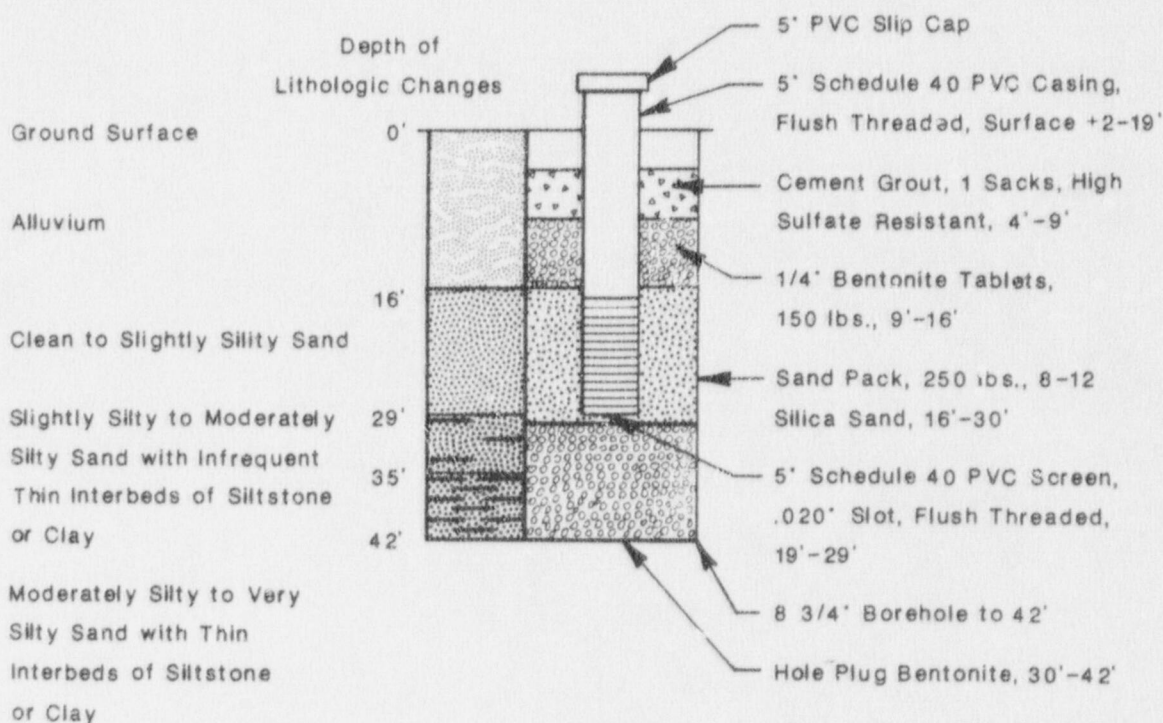
ii) Primary Sampling

The wells will be sampled again during the subsequent quarterly monitoring event and the samples analyzed consistent with NRC Source Material License SUA-1472 and NMEID Discharge Plan DP-150.

On inspection of the analysis results and discussion with NRC and NMEID, recommendations concerning further investigations will be submitted.

D. Schedule

Monitor Well 13-B



Date Installed: Jan. 8, 1987

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|---------------------|------|--------------------------------------|
| Drawn by | Date | Kennecott L-Bar Monitor Well 13-B |
| Checked by | Date | |
| Revisions | Date | |
| | | |
| INTERA Technologies | | Scale: 1"=20' |
| | | Figure 2 |

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