



GARY E. JOHNSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT
DOE OVERSIGHT BUREAU
P.O. Box 1663, MS/J-993
Los Alamos, New Mexico 87545

MARK E. WEIDLER
SECRETARY

EDGAR T. THORNTON, III
DEPUTY SECRETARY

25 September 1995

Mr. Ivan Trujillo, LAO AIP
Point of Contact
Department of Energy
Los Alamos Area Office
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

RE: Strontium-90 (⁹⁰Sr) in Test Well 3 (TW-3), Los Alamos Canyon,
Los Alamos National Laboratory (LANL)

Dear Mr. Trujillo:

The observations and recommendations of NMED DOE OB concerning ⁹⁰Sr in TW-3 are as follows:

- o TW-3 was not sampled for ⁹⁰Sr from 1981 to 1992. Since 1980, the referenced test well has only been sampled once (1993) for ⁹⁰Sr.
- o Data from two shallow-aquifer (alluvium) monitoring wells indicate that a viable ⁹⁰Sr source exists near TW-3. LAO-2, a shallow-aquifer well located approximately 50 ft northwest of TW-3, was sampled in 1991 and 1992, and showed ⁹⁰Sr concentrations of 42.0 and 23.0 pCi/L (LANL ES Reports, 1991 and 1992) respectively. LAO-3, a shallow-aquifer well located approximately 400 ft east of TW-3, was sampled in 1991 and 1992, and showed ⁹⁰Sr concentrations of 55.0 and 49.9 pCi/L (LANL ES Reports, 1991 and 1992) respectively. It should be noted that TW-3 intersects this zone and an intermediate perched ground-water zone which was encountered during the drilling of O-4; hence, borehole leakage may be occurring. The intermediate zone near TW-3 has not been characterized due to the lack of monitoring wells.
- o Ground-water radionuclide concentrations at LANL vary considerably through time. For example, Plutonium-239/240 (^{239/240}Pu) concentrations in water from TW-2A were less than the limit of detection (0.02 pCi/L) in 1991, but 1.28 pCi/L, or 64 times the limit of detection in 1992. Re-sampling a year later to confirm or verify a previous non-detectible or detectible amount of a radionuclide may not be valid.

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- o Production well O-4 may have a significant hydraulic influence on TW-3. More specifically, pumping O-4 may cause head loss at TW-3. Because of that, a larger than normal (static) volume of ground water may be transmitted through the interval that TW-3 monitors. Such stress could possibly increase the variability of contaminant levels through time.
- o NMED DOE OB submitted an archive sample (duplicate sample) from TW-3 for *Sr analysis on July 7, 1995. *Sr was not detected above 1.5 pCi/L. It should be noted that the sample was collected one year prior to analysis and was neither preserved nor stored at 4° C.
- o NMED DOE OB initiated and performed purge/concentration test at TW-3 on July 7, 1995. Ground-water samples were obtained from the initial (beginning of pumping) and the third-casing volume purge. Results from the initial and third casing volume were less than 1.2 pCi/L and 1.3 pCi/L respectively.
- o The NMED DOE OB recommends quarterly sampling of TW-3 in order to monitor any possible contamination.

The above DOE OB data are being submitted for your thirty-day review as stated in the Agreement-in-Principle Umbrella Protocol. After you have had the opportunity to review and comment on the data, it will be released to applicable agencies within thirty (30) days of receipt of this letter. Please contact Michael Dale at 672-0449 if you have any questions concerning this matter.

Sincerely,



Steve Yanicak, POC LANL, DOE OB
New Mexico Environment Department

SY:mrd

cc: Matt Johansen, DOE LAAO, MS A316
Steve Rae, LANL, ESH-18, MS K490
Allyn Pratt, LANL, EES-13, MS J521
Neil Weber, NMED, Chief, DOE OB