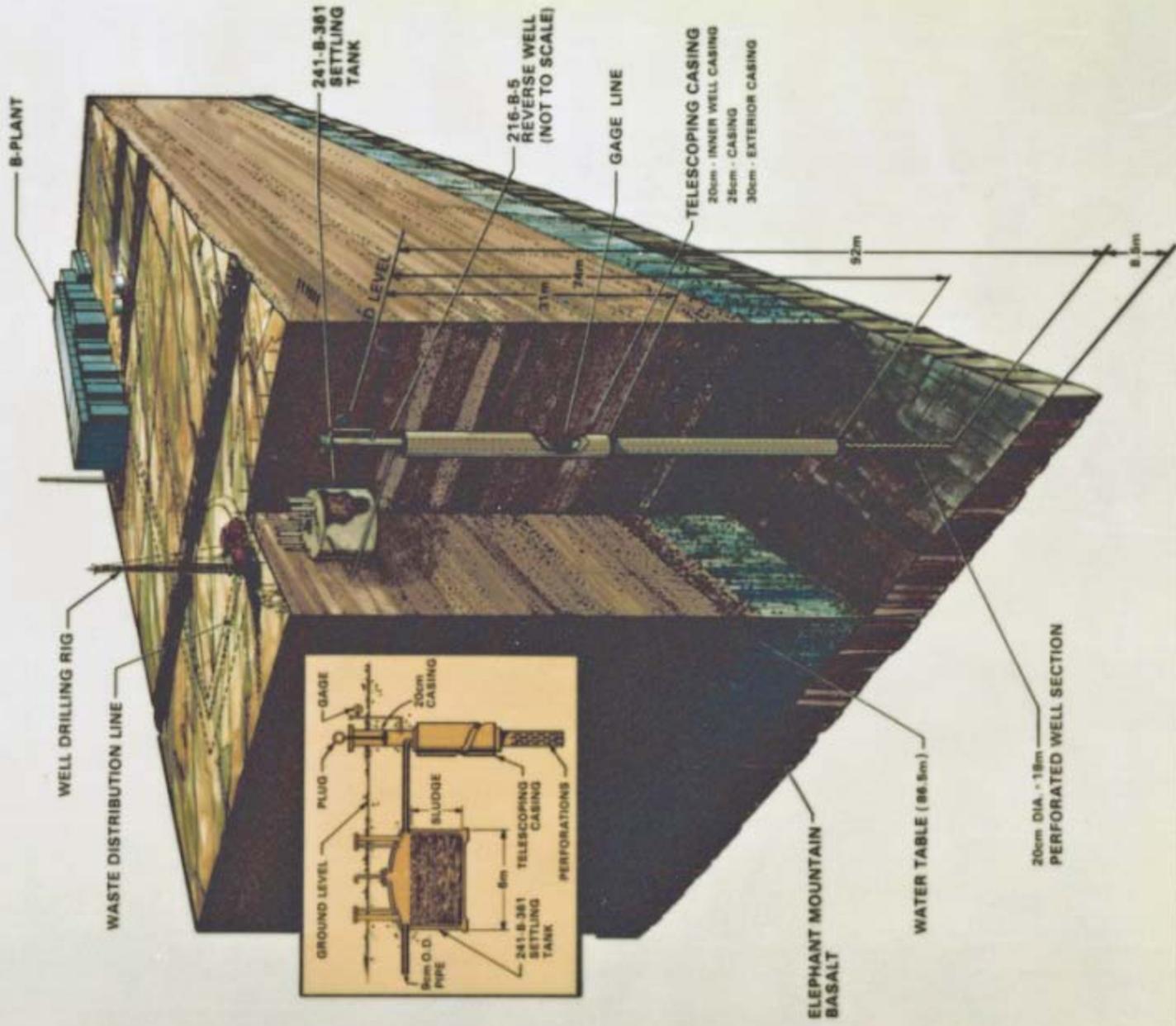


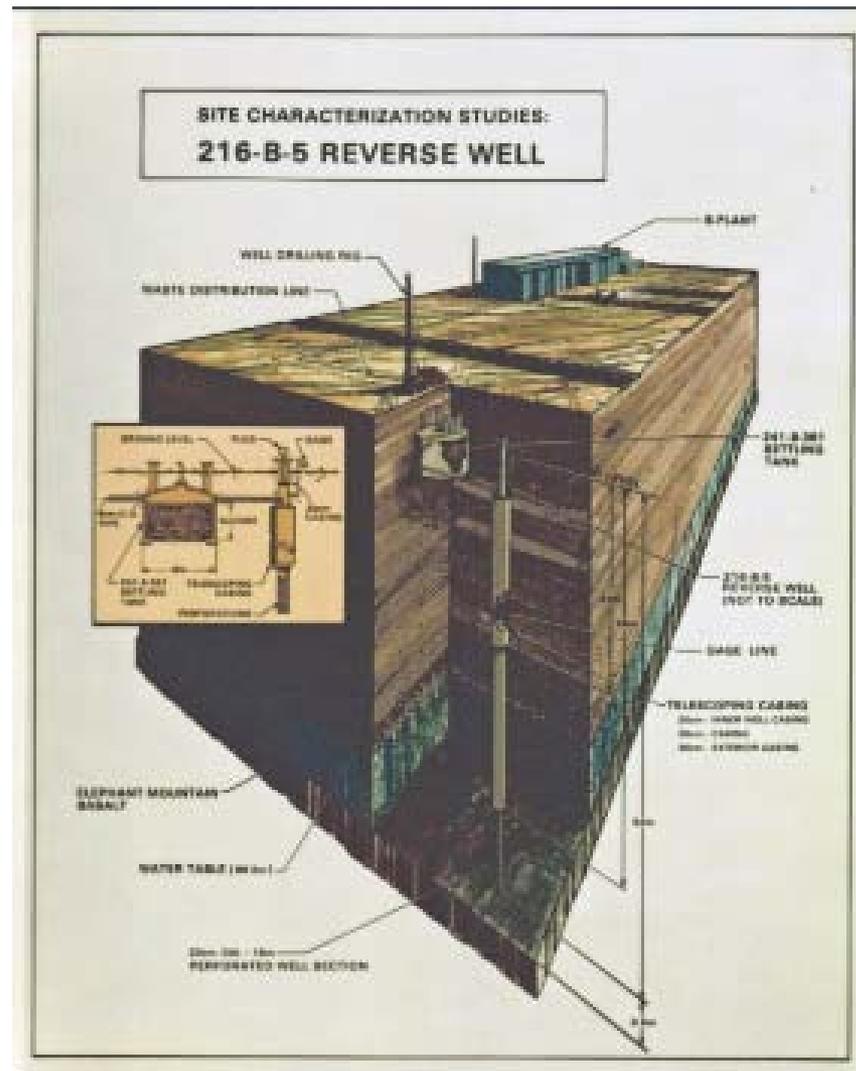
**SITE CHARACTERIZATION STUDIES:
216-B-5 REVERSE WELL**



216-B-5 Reverse Well

RHO-ST-37 216-B-5 Reverse Well Characterization Study, R.M. Smith, 1980

- Reverse well received ~ 30.6M liters effluent
- Well received ~4.3 kg Pu from B-Plant between 1945-1947
- Waste was pumped to a settling tank and subsequently to the well
- Reverse Well is 20-cm diameter, 92m deep well; perforated between 74 and 92 m bgs, ~3m into groundwater
- ~ 50% of the Pu inventory remained in the settling tank and was not discharged to the well
- Pu & Sr-90 exceeding 10 nCi/g were limited to within 6m of the reverse well in 1979
- Pu exceeding 100 nCi/g were limited to a narrow 1m layer, located at the position of the 1948 water table.
- Cs-137 moved laterally in an unsaturated silt zone



216-B-5 Cesium-137 Distribution

RHO-ST-37 216-B-5 Reverse Well Characterization Study, R.M. Smith, 1980

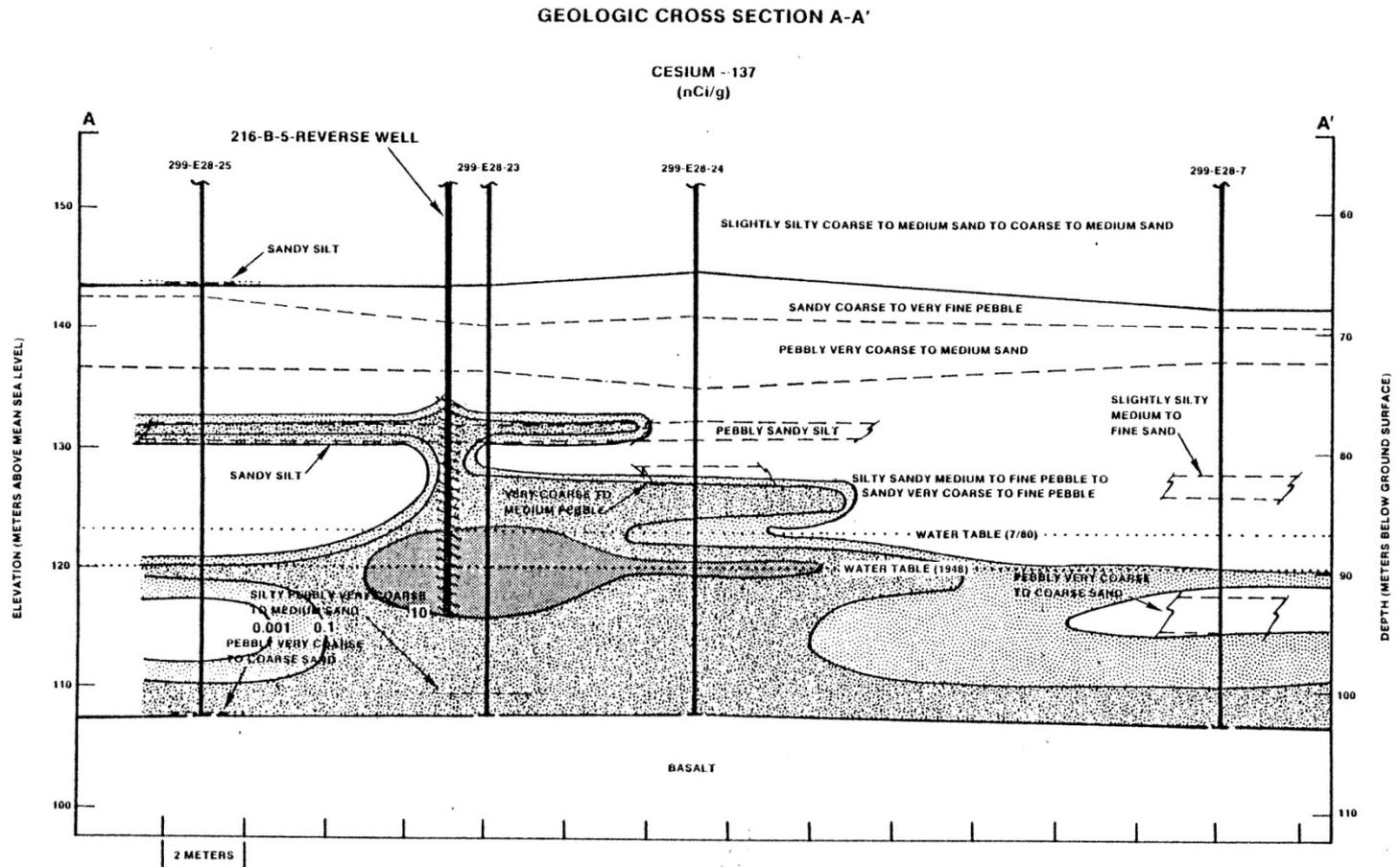


FIGURE 21. ¹³⁷Cs Distribution.

216-B-5 Strontium-90 Distribution

RHO-ST-37 216-B-5 Reverse Well Characterization Study, R.M. Smith, 1980

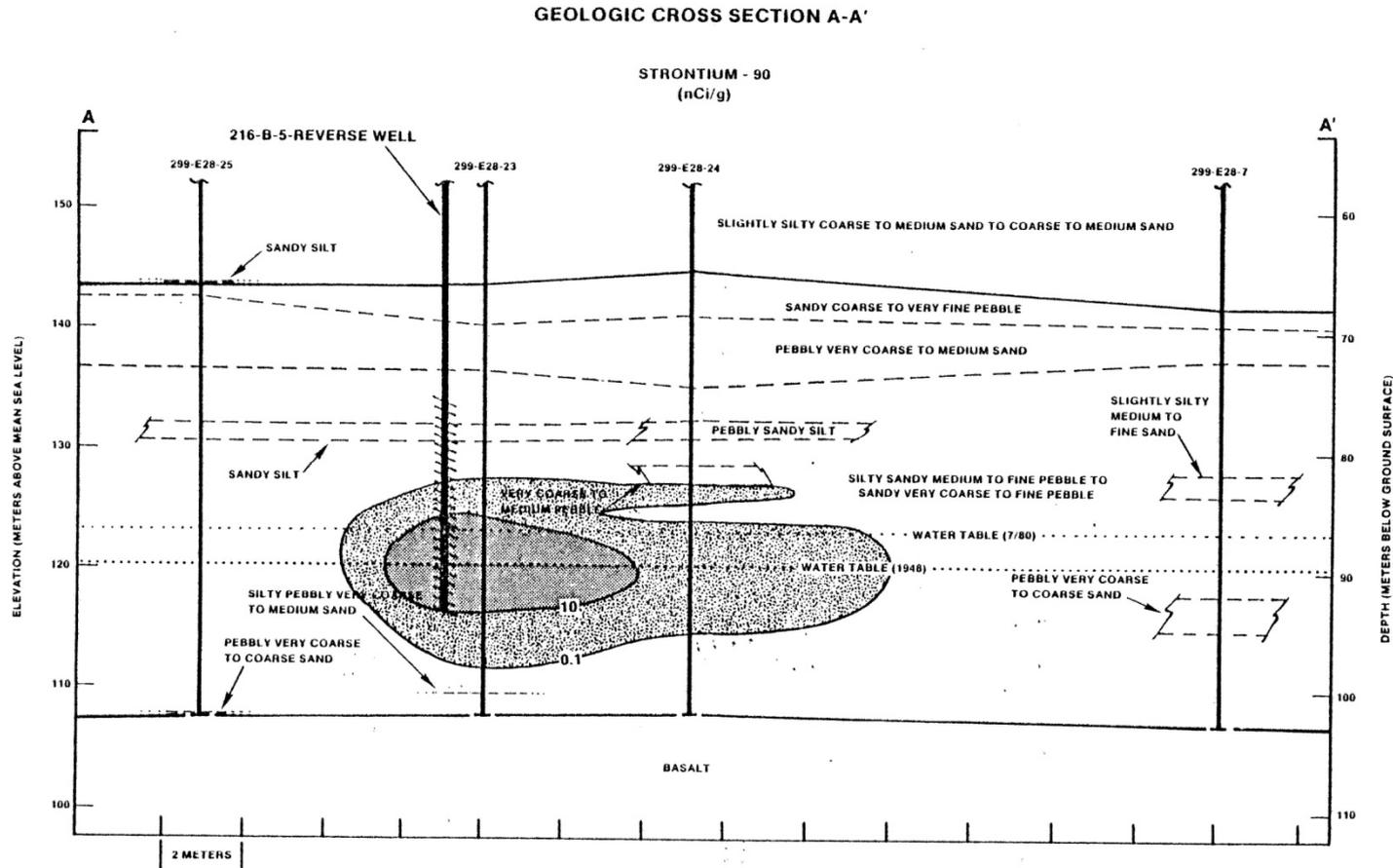


FIGURE 23. ⁹⁰Sr Distribution.

216-B-5 Plutonium Distribution

RHO-ST-37 216-B-5 Reverse Well Characterization Study, R.M. Smith, 1980

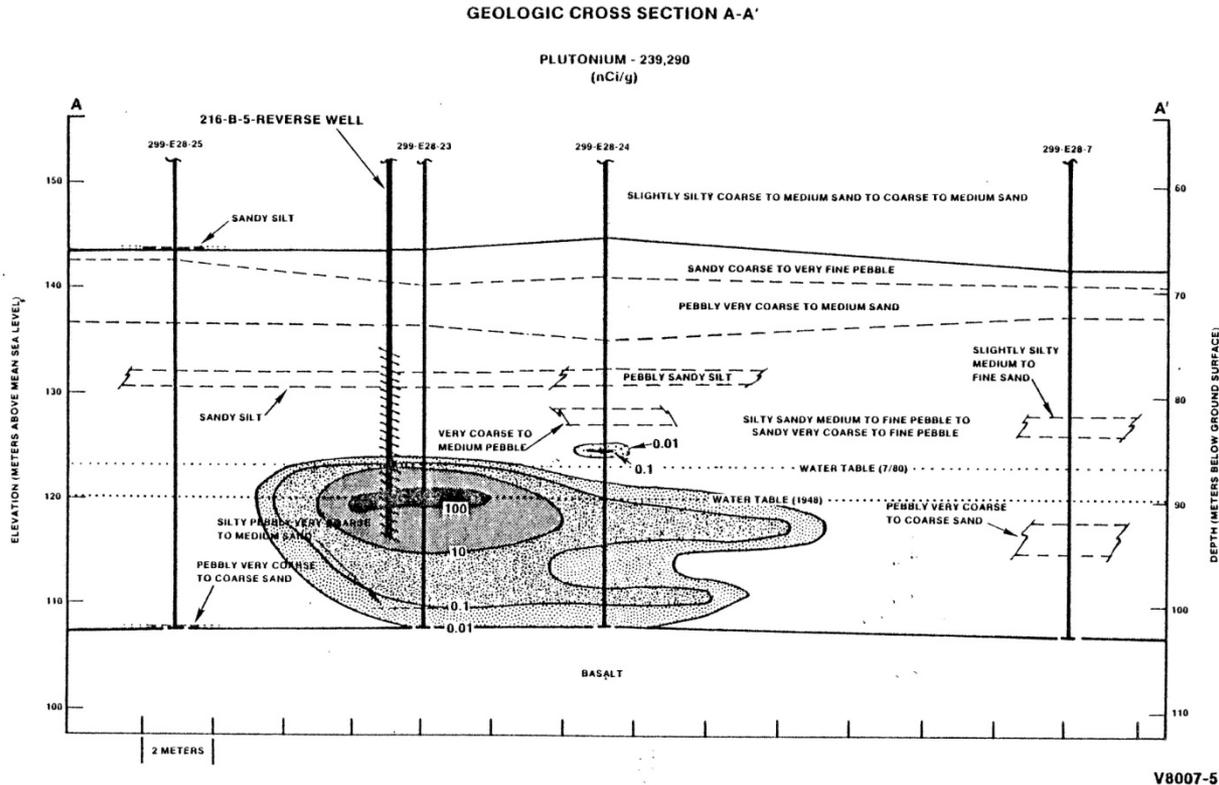


FIGURE 22. $^{239-240}\text{Pu}$ Distribution.

1995 B-5 Reverse Well Pilot Scale Treatability Test (DOE/RL-95-59)

- The initial ion-exchange process system consisted of three ion-exchange columns in a series-flow arrangement:
 - a bone char column
 - clinoptilolite column
 - mixed bed column with 50% bone char, 50% clinoptilolite.
- Primary test performance objective for the pilot-scale treatment systems was to determine the removal efficiency that could be achieved for the primary contaminants ^{137}Cs , $^{239/240}\text{Pu}$, and ^{90}Sr
- Run 1 processed total volume of 2,284,000 L (603,362 gal), Run 2 processed a total volume of 1,448,559 L (382,670 gal)