

TA036 (TA 54)

**Subject:** Preliminary well design for R-20

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Carolyn and John,

Here is a preliminary well design for R-20, which is located near PM-2 in Pajarito Canyon. The purpose of this preliminary design is to identify the general approach we are proposing for this well and to facilitate NMED participation in well design decisions in a timely fashion. The well design will be adjusted once the borehole is completed and geophysical logs from Schlumberger, well cuttings, and drillers observations are evaluated. The attached figure shows the layout of the proposed screens in relation to the geology at R-20 and PM-2 and to water levels in the regional aquifer.

The borehole was completed last night at a total depth of 1365 ft. The static water level for the regional aquifer measured when the borehole was at 913 ft depth was 873 ft.

Three screens are proposed for the regional aquifer. The upper screen will be located at a depth of 903 to 913 ft within basaltic cinder deposits that lie below the Cerros del Rio lavas. A second screen will be located in Puye fanglomerate at a depth of roughly 1100 to 1110 ft. The third screen will be located within Totavi deposits at a depth of 1325 to 1335 ft. A Westbay sampling system will be used to isolate each of the three screen intervals as well as to sample groundwater and measure water pressures. The proposed well design supports the DQOs for regional aquifer which are primarily focused on two areas:

- 1) Serve as a sentry well in the vicinity of PM-2.
- 2) Provide data for evaluating the groundwater capture zone for PM-2.

Screen #1 is located near the top of the aquifer and is the shallow measurement point for vertical gradients. This location is fixed relative to the measured swl (top of sand pack is 20 ft below measured static water level) and must be completely submerged for proper well development. It also provides an opportunity to monitor groundwater quality near the top of the regional zone of saturation

Screen #2 is located approximately half way between screens #1 and #3 for vertical gradient information. Schlumberger geophysical logs will be used to select a "typical" porosity/permeability zone for straddle-packer/ injection tests in the completed well. This screen will also provide an opportunity to determine if water chemistry in this area is vertically stratified, and it provides a potential groundwater monitoring point.

Screen #3 is located as deep as feasible in the completed borehole for vertical gradient information. Schlumberger geophysical logs will be used to select a relatively high porosity/high permeability zone so that the upper end of the permeability distributions for the Totavi sediments can be targeted for straddle-packer/ injection tests in the completed well. The Totavi deposits might act as "fast pathway" in the regional system and this screen provides an opportunity to characterize the groundwaters at this depth.

I will call this afternoon to discuss with you this proposed design.

Dave



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