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## **Aquifer Characterization in the Sunny Glen area near Alpine, Texas**

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### **Abstract Text:**

As part of a regional groundwater monitoring project, groundwater levels and meteorological data are being collected in the Sunny Glen area near Alpine, Texas. These data will contribute to an aquifer characteristics study. The Sunny Glen area is located in the arid northern Chihuahuan desert and is the location of the municipal water supply for the city of Alpine and is the water source for a commercial orchard. The groundwater assessment includes three basic components. First, a study of groundwater recharge rates is being conducted. This component includes a topographically controlled catchment surface water redistribution model and requires detailed precipitation data and observation of rare surface water flow in this arid system. The second component includes a hydrogeologic assessment of the aquifer, which is located in volcanic rocks. Pumping tests are underway to determine whether this volcanic stratigraphy behaves as a homogenous aquifer with uniform permeability or as an inhomogeneous fractured rock system. The third component is to determine the storage capacity of this system. A lineament analysis based upon Landsat imagery and aerial photography has been completed as part of this study. The integration of the data collected during this study will be used to assist in the completion of a physical groundwater model, and the techniques developed for this study will then be applied to other similar regional aquifers. This type of research is important to assess the groundwater resources in the arid far west Texas region where municipal and agricultural water sources are strictly groundwater, and the potential for water marketing could result in local water export.

### **Impact Statement:**

This research provides basic information about water supply for municipal and agricultural uses. The techniques developed can be applied to other similar areas for the same purpose.