Analytical Methods

- **Carbon-14, uranium series disequilibrium** (4 samples, 12-14k years B.P.):
- **Stable isotopes, isotopic mass spectrometry (10 samples)**:
- **Anions, ion chromatography (5 samples)**:
- **Metals, inductively coupled plasma-optical emission spectrometry (5 samples)** and inductively coupled plasma-mass spectrometry (ICP-MS) (5 samples):
- **Total carbonate alkalinity, titration (5 samples)**:
- **Penchare, liquid chromatography-mass spectrometry (5 samples)**.

Generalized conceptual model of groundwater flow within the Valle Toledo.

**Figure 1**: Generalized cross-section of the Valle Toledo (Griggs, 1946).

### Conclusions

The average age of the artesian aquifer, based on unaltered surficial measurements, ranges from 997 to 1,427 years before present.

The artesian aquifer has not experienced recent recharge since the early 1950s, based on the low detection of tritium (ca. 0.0E5 CPM), or tritium.

Groundwater within the artesian aquifer system is characterized by the presence of carbonate minerals, with concentrations of TDS less than 500 mg/L.

Water-rock interactions (mineral precipitation/dissolution) have not taken place to a significant extent.

Aqueous Diissolution of soluble volcanic-derived glass has resulted in residence times potentially exceeding 6,000 years in the petrographic and compositional microenvironments of the artesian aquifer.

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**Hydrochemistry of the Valle Toledo, Valles Caldera, New Mexico**

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