

## **Relationship Between the Lines of Nasca (Geoglyphs) and Groundwater Resources**

LEVIN, J.M., MABEE, S.B. and JOHNSON, D. Geosciences Department, University of Massachusetts, Amherst, USA.

The ancient Nasca people flourished in southwestern Peru from 100 BC to 600 AD and constructed stone drawings that stretch for kilometers across the desert. A new hypothesis that might simplify explanations for the function of the Nasca Lines suggests that some of the geoglyphs map the groundwater supply distribution system for the ancients. This hypothesis is based on data collected over a 3-year period in the Rio Grande watershed, that suggests a spatial correlation between the location of faults, fresh water, aquifers, archaeological sites and geoglyphs. The purpose of this project is to test this hypothesis through the application of hydrogeological techniques. Geology and faults were mapped and characterized, water samples and water level data collected, and geophysical analyses performed using seismic refraction, an EM34-3 and Sting R1 resistivity equipment at Cerro Aja and Cerro Colorado. Results indicate that: faults cross the valleys; water flows from these faults to the rivers; and the gross chemistry and isotopic composition of the water discharging from the faults suggests a deep-seated regional flow regime. The faults are clearly marked by geoglyphs. This project is unique because (1) the correlation of Nasca Lines with groundwater resources has never been examined, (2) this theory may provide a simpler scientific explanation for some of the Lines, and (3) such data might be used to guide groundwater resource development for the current inhabitants of southern Peru.