Aqueous Geochemistry of the Springs and Wells of the Sevilleta National Wildlife Refuge:
Evaluating Hydrochemical Pathways and Microbiology

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Purpose of Study

This study will determine the geochemistry of smaller, less studied springs on the Rio Grande Rift in the Sevilleta National Wildlife refuge. This will help determine where the water in coming from and how it will affect the future water quality of the Rio Grande.

Study Underway

This study will provide the first hydrochemical data on a comprehensive suite of springs and wells in the Sevilleta National Wildlife Refuge, and will test and refine existing models for water quality in the rift using hydrochemistry (major and trace elements, Cl/Br, d18O, dD, and 87Sr/86Sr), DNA extraction and characterization of microbes, and geochemical modeling. A suite of geochemical tracers was used to analyze the geochemistry of 34 surface samples and 14 wells in and near the Sevilleta NWR. Temperature, pH, conductivity, and TDS, were analyzed as well as major ions and stable isotopes. This research will utilize microbial characterization and radiogenic Sr as environmental tracers.

Benefits

Study results will provide a database for waters that are important to the future ecological health of the Rio Grande. The completion of this research will provide a window into the water quality sourcing from central New Mexico, and will be an aid to identifying pollutants and improving water quality for downstream users.

Above: Amy taking samples at San Acacia. Right: Amy in the lab testing water quality samples. Amy is from Charleston, SC and attended Furman University in Greenville for her undergraduate degree. She studied under the advisement of Dr. Brannon Andersen. Amy will complete an M.S. at UNM in the spring of 2009 and will begin a Ph.D. program in the fall of 2009, although she's not sure where yet.