

Oasis near Death Valley fed by ancient aquifer under Nevada Test Site

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Every minute, 10,000 gallons of water mysteriously gush out of the desert floor at a place called Ash Meadows, an oasis that is home to 24 plant and animal species found nowhere else in the world.

A new Brigham Young University study indicates that the water arriving at Ash Meadows is completing a 15,000-year journey, flowing slowly underground from what is now the Nevada Test Site.

The U.S. government tested nuclear bombs there for four decades, and a crack in the Earth's crust known as the "Gravity Fault" connects its aquifer with Ash Meadows.

It will presumably be another 15,000 years before [radioactive water](#) surfaces at Ash Meadows, Nelson said. A more pressing issue for wildlife managers at Ash Meadows is the current decline in populations of Devil's Hole Pupfish and three other endangered [fish species](#).

"Since the crust in Western states is being pulled apart east to west, it creates north-south fault lines such as this one that guides groundwater from one geographically closed basin to another," said Stephen Nelson, a BYU geology professor and co-author of the study.

The study appears in the May 28 issue of the *Journal of Hydrology*.

Of the possible sources, only water from the Nevada Test Site matched the profile of dissolved minerals and had comparable hydrogen and

[oxygen isotopes](#). Water from the Spring Mountains near Las Vegas - previously assumed to be the source of Ash Meadows water - carried a different isotopic signature.

The BYU researchers combed through more than 4,000 published water samples from the region, many of those from U.S. Geological Survey wells. From this large data set emerged 246 distinct groundwater sources that they tested against the chemical make-up of water from Ash Meadows.

"The results are parsimonious," Nelson said. "A majority of the water at Ash Meadows flows from the north through fractures in the Gravity Fault."

Provided by Brigham Young University

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