

E. Scott Bair, PhD



E. Scott Bair took his B.A. in geology from the College of Wooster and his M.S. and Ph.D. from Penn State University. Following graduate school he worked six years at Stone & Webster Engineering Corporation. Tired of corporate politics and remembering academe to be devoid of it, Scott joined the faculty at Ohio State University in 1985. Over his career he taught courses in earth science, water resources, environmental geology, speleology, petroleum geology, hydrogeology, field methods in hydrogeology, and groundwater flow modeling. In 1991, he received the Ohio State award for teaching excellence; as penance he served six years as department chair. Scott advised 34 graduate students who worked on projects funded by Ohio DNR, Ohio EPA, NSF, USEPA, USDOE, USDA, USGS, and Ohio State.

Scott likes to talk. He's given seminars at more than 90 colleges and universities in the U.S., Canada, and Japan, at several federal and state agencies, the Ohio Bar Association, Harvard Law School, and the National Research Council. From 1987 to 2015 he co-taught short courses for the National Ground Water Association (NGWA) including Principles of Groundwater Flow, Transport and Remediation; Aquifer Test Design and Analysis; Groundwater Control and Construction Dewatering; Artificial Recharge and Induced Infiltration; and Delineating Capture Zones of Wells for Contaminant Remediation and Wellhead Protection. He is co-author of the semi-successful textbook *Applied Problems in Groundwater Hydrology*.

He is a Fellow of the Geological Society of America (GSA), recipient of its Birdsall-Dreiss Distinguished Lectureship, and former chair of its Hydrogeology Division. Scott was an associate editor of the journal *Ground Water* for 11 years, a member of the Ohio Hazardous Waste Facilities Board for three governors, a technical reviewer for the Centers for Disease Control investigation of male breast cancers at U.S. Marine Corps Base Lejeune, and a member of the USEPA Science Advisory Board on Hydraulic Fracturing. He received the George B. Maxey Award from GSA and the Keith E. Anderson Award from NGWA for his service to those organizations and his contributions to the greater groundwater community. Scott and his wife recently retired to the Outer Banks of North Carolina where they plan to lollygag in the sun and surf until rising sea level carries them away.

Banquet Presentation
15th Sinkhole Conference

E. Scott Bair

Professor Emeritus, Earth Sciences, Ohio State University

**The Science Beneath the Ohio State Geothermal Field Fiasco:
A Cool Story About a Hot Topic**

Abstract.

The geothermal wellfield at Ohio State University was designed to heat and cool five, 11-story dormitories. The estimated cost of the HVAC conversion project, including construction of 480 geothermal wells to a depth of 550 feet, was \$4.5M. An east coast company received the drilling contract based on cost and use of multiple air-rotary drilling rigs to complete the wells with 100 feet of steel casing through 80-90 feet of unconsolidated glacial deposits, with the remaining depth completed as 'open hole' through limestones and dolostones. No problems occurred drilling the first well. However, while drilling the second well at a depth of 280 feet, the first well, located 30 feet away, began spouting water 10-15 feet in the air. Work on the second well was halted as drilling began at a third well about 200 feet away. The first and second wells spouted water as the drilled depth in the third well hit 400 feet. As well construction continued, as many as seven wells often could be seen simultaneously spouting water. Commonly, previously drilled wells that had spouted water did not spout water as new wells were drilled in close proximity. The drillers, who normally worked in crystalline rocks, had not seen anything similar to the number, erratic pattern, and irregular participation of spouting wells. Engineers maintained that the air-rotary rigs pressurized an existing 'fracture zone' at a depth of 250 to 400 feet creating the 'geysers'. Three test wells spaced across the geothermal did not encounter the 'fracture zone,' nor did several of the geothermal wells. Drilling proceeded for several months despite the numerous spouting wells and associated runoff problems. The state and city cited the university with daily fines for violating ordinances limiting drainage to a nearby river and sediment loads to sewers. Shortly thereafter, the driller was fired, lawsuits threatened, a new bid document released, and another company hired, one that proposed a different drilling method and a completion technique that would solve the problems caused by a well-known paleokarst zone. At least it was well known to local hydrogeologists and several faculties in the Earth Sciences Department. Ignorance delayed completion of the geothermal wells by a year and added \$4M to the overall project cost.