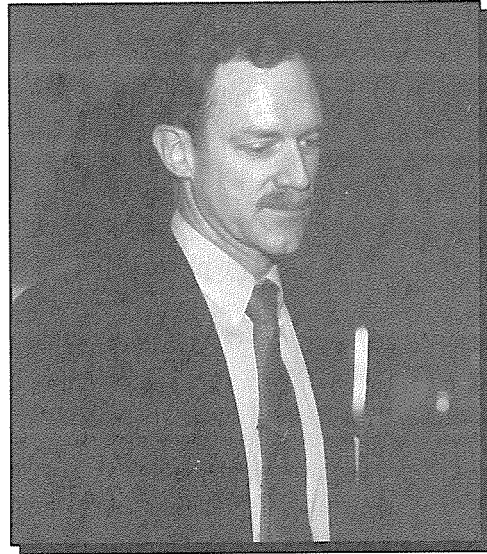


*Doug McAda has been a hydrologist with the U.S. Geological Survey, Water Resources Division in New Mexico since 1978. He has conducted studies on groundwater hydrology in various parts of New Mexico and currently is a member of a project team studying the geohydrology and constructing a groundwater flow model of the Albuquerque Basin. Doug received B.S. and M.S. degrees in Watershed Hydrology from the University of Arizona.*



## SUMMARY OF U.S. GEOLOGICAL SURVEY AND CITY OF ALBUQUERQUE HYDROLOGIC INVESTIGATIONS PROGRAM

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The U.S. Geological Survey and the City of Albuquerque have been cooperating in data-collection programs and interpretive studies since 1982. The following is a list summarizing recent and ongoing projects.

### **Ground-Water-Level Monitoring Network in the Albuquerque Basin, New Mexico**

*Objectives:* Monitor ground-water levels in the Albuquerque Basin and document changes.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Dale Rankin, USGS, Albuquerque, NM

*Period of Project:* Continuous since 1982

*Reports Released:* Kues, G.E., 1987, Ground-water-level Data for the Albuquerque-Belen Basin, New Mexico, through Water Year 1985: USGS Open-File Report 87-116, 51 p.

Rankin, D.R., 1994, Water-level Data for the Albuquerque Basin, New Mexico, October 1, 1986, through September 30, 1990: USGS Open-File Report 94-349, 29 p.

### **Water Budget of the Rio Grande Flood Plain in the Albuquerque Area**

*Objective:* Define the water budget of the Rio Grande flood plain in the Albuquerque area.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Peter Frenzel, USGS, Albuquerque, NM

*Period of Project:* Continuous since 1989

*Reports in Progress:* Thorn, C.R. [in review], Measurements of surface-water discharge and estimates of evapotranspiration rates for grass and bare soil along a reach of the Rio Grande, Albuquerque, New Mexico, 1989-93.

Interpretive report addressing the water budget of the Rio Grande flood plain [in progress].

#### **Modeling of Ground-Water Flow in the Albuquerque Basin**

*Objectives:* 1) Use recently gathered information to quantify the hydrologic conditions in the Albuquerque Basin. 2) Assess the effects of future development on flow in the Rio Grande and ground-water levels in the aquifer.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Mike Kernodle, USGS, Albuquerque, NM

*Period of Project:* 1992-1994

*Reports released:* Thorn, C.R., McAda, D.P., and Kernodle, J.M., 1993, Geohydrologic Framework and Hydrologic Conditions in the Albuquerque Basin, Central New Mexico: USGS Water-Resources Investigations Report 93-4149, 106 p. Kernodle, J.M., McAda, D.P., and Thorn, C.R., 1995, Simulation of Ground-water Flow in the Albuquerque Basin, Central New Mexico, 1901-1994, with Projections to 2020: USGS Water-Resources Investigations Report 94-4251, 114 p.

#### **Continuation of Ground-Water-Flow Modeling in the Albuquerque Basin**

*Objective:* Update and document changes to the three-dimensional ground-water flow model of the Albuquerque Basin as new information becomes available.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Mike Kernodle, USGS, Albuquerque, NM

*Period of Project:* 1994-1995

#### **Evaluation of Methods to Quantify the Hydrologic Relations between the Rio Grande and the Santa Fe Group Aquifer System, near Albuquerque, New Mexico**

*Objectives:* 1) Identify methods to improve understanding of the hydrologic relations between the Rio Grande and aquifer system. 2) Evaluate and prioritize the methods. 3) Develop plan of study to demonstrate the effects of ground-water withdrawal on flow in the Rio Grande.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Doug McAda, USGS, Albuquerque, NM

*Period of Project:* 1994-1995

#### **Aquifer Compaction and Land Subsidence in the Albuquerque, New Mexico Area**

*Objectives:* 1) Establish and monitor a geodetic network. 2) Install an extensometer to determine aquifer compressibility and vertical hydraulic conductivity of the aquifer system in response to pumping.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Chuck Heywood, USGS, Albuquerque, NM

*Period of Project:* Continuous since 1992

#### **Aquifer Test at the Griegos Well Field, Albuquerque, New Mexico**

*Objectives:* 1) Estimate aquifer transmissivity, storage, and hydraulic conductivity in the vicinity of the test. 2) Estimate the contribution from the Rio Grande to the ground-water system as a result of pumping during the test.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Condé Thorn, USGS, Albuquerque, NM

*Period of Project:* 1994-1996

## Summary of U.S. Geological Survey and City of Albuquerque Hydrologic Investigations Program

### **Quality of Urban Stormwater Runoff**

*Objectives:* 1) Characterize stormwater quantity and quality for representative urban land uses. 2) Estimate storm event mean concentrations and seasonal cumulative pollutant loads. 3) Assist in design of continuous monitoring program.

*Cooperating Agencies:* City of Albuquerque, Hydrology Division; Albuquerque Metropolitan Arroyo Flood Control Authority; New Mexico Highway and Transportation Department

*Principal Investigator:* Jack Veenhuis, USGS, Albuquerque, NM

*Period of Project:* 1992-1997

### **Rio Grande Water Quality**

*Objectives:* 1) Determine dissolved- and total-recoverable concentrations of chemical constituents in water from the Rio Grande, major tributaries of the Rio Grande, wastewater treatment-plant outfalls, and riverside drains. Arsenic, cyanide, silver, and aluminum are of primary interest in water. 2) Determine inorganic and organic forms of arsenic in the tissue of fish from the Rio Grande and Isleta Lake.

*Cooperating Agencies:* U.S. Environmental Protection Agency, Region 6; City of Albuquerque, Wastewater Utility Division; New Mexico Environment Department; Pueblo of Isleta

*Principal Investigator:* Ralph Wilcox, USGS, Albuquerque, NM

*Period of Project:* 1994-1997

### **Determining Accurate Concentrations and Loads of Trace Elements and Other Selected Chemical Constituents in the Rio Grande, Albuquerque, New Mexico**

*Objective:* Obtain accurate concentrations of trace elements and other selected chemical constituents with lower reporting limits than previously available.

*Cooperating Agency:* City of Albuquerque, Wastewater Utility Division

*Principal Investigators:* Howard Taylor, USGS National Research Program, Boulder, CO; Todd Kelly, USGS, Albuquerque, NM

*Period of Project:* 1994-1995

### **Digital Geophysical-Log Data Base**

*Objective:* Develop a data base with digital geophysical logs that have been completed in wells and boreholes in and adjacent to the Albuquerque Basin.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Dave Wilkins, USGS, Albuquerque, NM

*Period of Project:* 1987-1994

*Reports in Progress:* Wilkins, D.W. [in review], Geophysical logs in and adjacent to the Albuquerque Basin, New Mexico

### **Water-Quality Data for the Albuquerque Basin**

*Objectives:* 1) Develop a data base for ground-water quality data that have not or cannot be entered into other data bases. 2) Collect and analyze ground-water samples from wells of selected depths.

*Cooperating Agency:* City of Albuquerque, Water Utility Division

*Principal Investigator:* Dave Wilkins, USGS, Albuquerque, NM

*Period of Project:* 1987-1994

*Reports in Progress:* Wilkins, D.W. [in preparation], Presentation of water-quality data from 36 wells in the Rio Grande Bosque, for 1993-94.