

# REFERENCES

- Afseth, D. 1995. *The Development of a Multi-element Toxic Chemical Environmental Factor for a Southwestern New Mexico Target Region*. Master's thesis, University of Texas at El Paso, no. 4733. 120 p., ill. maps.
- Aguillera, J.G. 1888. Fenomenos seismicos del 3 de mayo de 1887. *Anales del Ministerio de Fomento de la Republica Mexicana*. 10:5-56.
- Allen, B.D., S.D. Connell, J.W. Hawley, and B.D. Stone. 1998. Core drilling provides information about Santa Fe Group aquifer beneath Albuquerque's West Mesa. *New Mexico Geology*. 20:8-13.
- Aller, L., T. Bennett, J.H. Lehr, and R.J. Petty. 1985. *DRASTIC: A Standardized System for Evaluating Ground Water Pollution Potential Using Hydrogeologic Settings*. U.S. Environmental Protection Agency, Office of Research and Development, Robert S. Kerr Environmental Research Laboratory, Ada, OK. 163 p.
- Anderholm, S.K. 1994. *Ground-water Recharge Near Santa Fe, North-central New Mexico*. U.S. Geological Survey Water Resources Investigations Report 94-4078. 68 p.
- Anderholm, S.K. 1998. Mountain-front recharge along the eastern side of the Middle Rio Grande Basin, Central New Mexico. In *U.S. Geological Survey Middle Rio Grande Basin Study—Proceedings of the Second Annual Workshop*. Edited by J.L. Slate. Albuquerque, New Mexico, February 10-11, 1998. U.S. Geological Survey Open File Report 98-337. 66-68.
- Anderson, M.P. 1989. Hydrogeologic facies models to delineate large-scale spatial trends in glacial and glaciofluvial sediments. *Geological Society of America Bulletin*. 101:501-511.
- Anderson, T.W., G.W. Freethy, and P. Tucci. 1993. *Geohydrology and Water Resources of Alluvial Basins in Southcentral Arizona and Parts of Adjacent States*. U.S. Geological Survey Professional Paper, 1406-B. 67 p.
- Anderson, O. J., G.E. Jones, and G.N. Green. 1997. *Geologic Map of New Mexico*. U.S. Geological Survey Open File Report 97-52.
- Antevs, E. 1955. Geologic-climate dating in the West. *American Antiquity*. 20:317-335.
- Anthony, E.Y., J.M. Hoffer, W.K. Waggoner, and W. Chen. 1992. Compositional diversity in Late Cenozoic mafic lavas in the Rio Grande Rift and Basin and Range Province, southern New Mexico. *Geologic Society of America Bulletin*. 104:973-979.
- Anthony, E.Y. and J. Poths. 1992. The surface exposure dating and magma dynamics, the Potrillo Volcanic Field, Rio Grande Rift, New Mexico. *Geochimica et Cosmochimica Acta*. 56:4105-4108.
- Axtell, R.W. 1978. Ancient playas and their influence on recent herpetofauna of the northern Chihuahua Desert. In *Transactions, Symposium on the Biological Resources of the Chihuahua Desert Region*. Alpine, Texas, October, 1974. Washington, D.C., U.S. Government Printing Office, U.S. National Park Service Transactions and Proceedings Series No. 3. 493-512.
- Bailey, L.R. 1963. *The A.B. Gray Report; Survey of a Route on the 32<sup>nd</sup> Parallel for the Texas Western Railroad, 1854*. Westernlore Press, Los Angeles. 240 p.
- Bailey, R.A., G.B. Dalrymple, and M.A. Lanphere. 1976. Volcanism, structure, and geochronology of Long Valley caldera, Mono County, California. *Journal of Geophysical Research*. 81:725-744.
- Barbash, J.E. and E.A. Resek. 1996. *Pesticides in Ground Water, Distribution, Trends, and Governing Factors*. Ann Arbor Press, Inc., Chelsea, Michigan. 588 p.
- Barnes, R.L. 1991. *Maps Showing Groundwater Conditions in the San Simon Sub-basin of the Safford Basin; Graham and Cochise Counties, Arizona; Hidalgo County, New Mexico*. State of Arizona, Department of Water Resources, Hydrologic Map Series Report No. 19, 2 sheets, scale 1:250,000.
- Beckner, J.R. and P.S. Mozley. 1998. Origin and spatial distribution of early vadose and phreatic calcite cements in the Zia Formation, Albuquerque Basin, New Mexico, USA. *Special Publications of the International Association of Sedimentology*. 26:27-51.
- Bedinger, M.S., K.A. Sargent, and J.E. Reed. 1984. *Geologic and Hydrologic Characterization of the Basin and Range Province Relative to the Disposal of High-level Radioactive Waste—Part I, Introduction and Guidelines*. U.S. Geological Survey Circular 904-A. 16 p.
- Bedinger, M.S., K.A. Sargent, and W.H. Langer. 1989. *Studies of Geology and Hydrology in the Basin and Range Province, Southwestern United States, for Isolation of High-level Radioactive Waste: Characterization of the Rio Grande Region, New Mexico and Texas*. U.S. Geological Survey Professional Paper 1370-C. 42 p.
- Betancourt, J.L., T.R. Van Devender, and P.S. Martin. 1990. *Packrat Middens: The last 400,000 Years of Biologic Change*. The University of Arizona Press, 1230 N. Park Avenue, Tucson, Arizona 85719. 467 p.
- Blagbrough, J.W. 1994. Late Wisconsin climatic inferences from rock glaciers in south-central and west-central New Mexico, and east-central Arizona. *New Mexico Geology*. 16:4:65-71.
- Blandford, T.N. and J.L. Wilson. 1987. *Large Scale Parameter Estimation through the Inverse Procedure and Uncertainty Propagation in the Columbus Basin, New Mexico*. New Mexico Water Resources Research Institute, Technical Completion Report No. 226, New Mexico State University, Las Cruces, NM. 247 p.
- Blasquez, L. 1959. Hydrogeologica de las regiones desérticas de Mexico. *Annals of the Institute of Geology*. National University of Mexico. 15:172.
- Bohannon, R.G. and T. Parsons. 1995. Tectonic implications of post-30 MA Pacific and North America relative plate motions. *Geological Society of America Bulletin*. 107:8:937-959, 15 figures, 1 table, 1 map insert.
- Border Health Office, New Mexico Department of Health. 1997. *Well-Water Quality Assessment for Southern New Mexico*. Report prepared by INTERA Inc. and Dr. Jim VanDerslice for the New Mexico Department of Health. 76 p.
- Borton, R.L. and E.F. Sorensen. 1967. Settlement, development, and water use - southwestern closed basins, New Mexico. In *Water Resources of New Mexico - Occurrence, Development and Use*. Compiled by New Mexico State Engineer Office, State Planning Office, Santa Fe. 265-276.
- Brady, B.T., M.S. Bedinger, and D.L. Hart. 1984. *Maps Showing Ground-water Units and Withdrawal, Basin and Range Province, New Mexico*. U.S. Geological Survey Water Resources Investigations Report 83-4118-A, 1 map, 1:500,000 scale.
- Brand, D.C. 1937. The natural landscape of northwestern Chihuahua. *University of New Mexico Bulletin, Geological Series*. 5:74.
- Bromfield, C.S. and C.T. Wrucke. 1961. *Reconnaissance geologic map of the Cedar Mountains, Grant and Luna Counties, New Mexico*. U.S. Geological Survey Mineral Investigations Field Studies Map MF-159, scale 1:62,500.
- Brooks, W.E. and J.C. Ratté. 1985. *Geologic map of Bear Mountain Quadrangle, Grant County, New Mexico*. U.S. Geological Survey, Miscellaneous field studies map MF-1782, scale 1:24,000.
- Bryan, C.R. 1988. *Geology and geochemistry of mid-Tertiary volcanic rocks in the eastern Chiricahua Mountains, southeastern Arizona*. Unpublished Master's thesis, University of New Mexico, Albuquerque. 137 p.
- Bryan, C.R. 1995. *Stratigraphy, chemistry and petrogenesis of volcanic rocks of the mid-Tertiary Boot Heel volcanic field, southwestern New Mexico and southeastern Arizona*. Doctoral dissertation, University of New Mexico. 272 p.
- Bryan, K. 1923. *Erosion and sedimentation in the Papago Country, Arizona*. U.S. Geological Survey Bulletin 730-B. 19-90.
- Bryan, K. 1938. Geology and ground-water conditions of the Rio Grande depression in Colorado and New Mexico. In *Rio Grande Joint Investigation in the Upper Rio Grande Basin in Colorado, New Mexico, and Texas*. National Resources Committee, Washington, D.C.; Regional Planning, Part 6. 196-225.
- Bull, W.B. and P.A. Pearthree. 1988. Frequency and size of Quaternary surface ruptures of the Pitaycachi fault, northern Sonora, Mexico. *Bulletin of the Seismological Society of America*. 78:965-978.
- Chapin, C.E. and S.M. Cather. 1994. Tectonic setting of the axial basins of the northern and central Rio Grande Basin, New Mexico. In *Basins of the Rio Grande Rift—Structure, stratigraphy, and tectonic setting*. Edited by G.R. Keller and S.M. Cather. Geological Society of America Special Paper 291. 5-25.
- Chavez, F.P., P.G. Strutton, R.A. Friederich, R.A., Feely, G.C. Feldman, D.G. Foley, and M.J. McPhaden. 1999. Biological and chemical response of the equatorial Pacific Ocean to the 1997-1998 El Niño. *Science*. 286:2,126-2,131.

- Chebotarev, I.I. 1955. Metamorphism of natural waters in the crust of weathering. *Geochim. Cosmochim. Acta.* 8:22-48, 137-170, 198-212.
- Clemons, R.E. 1979. *Geology of Good Sight Mountains and Uvas Valley, southwest New Mexico.* New Mexico Bureau of Mines and Mineral Resources Circular 169. 31 p.
- Clemons, R.E. 1982. *Geology of Florida Gap quadrangle, Luna County, New Mexico.* New Mexico Bureau of Mines and Mineral Resources Geologic Map 52, scale 1:24,000.
- Clemons, R.E. 1984. *Geology of Capitol Dome quadrangle, Luna County, New Mexico.* New Mexico Bureau of Mines and Mineral Resources Geologic Map 56, scale 1:24,000.
- Clemons, R.E. 1986. Petrography and stratigraphy of Seville-Trident exploration wells near Deming, New Mexico. *New Mexico Geology.* 8:1:5-11.
- Clemons, R.E. 1998. *Geology of the Florida Mountains, southwestern New Mexico.* New Mexico Bureau of Mines and Mineral Resources Memoir 43. 112 p.
- Clemons, R.E. and G.H. Mack. 1988. Geology of southwestern New Mexico. *New Mexico Geological Society, 39th Field Conference.* 45-57.
- Cliett, T. and J.W. Hawley. 1996. General geology and groundwater occurrence in the El Paso area. In *Proceedings of the 40th Annual New Mexico Water Conference, Reaching the Limits: Stretching the Resources of the Lower Rio Grande.* Edited by C. Ortega Klett. New Mexico Water Resources Research Institute, Technical Report No. 297, New Mexico State University, Las Cruces, NM. 51-56.
- Conkling, R.P. and M.B. Conkling. 1947. *The Butterfield Overland Mail, 1857-1869.* The Arthur H. Clark Co., Glendale, CA., 3 volumes.
- Connell, S.D., B.D. Allen, and J.W. Hawley. 1998. Subsurface stratigraphy, structure and hydrogeologic framework of the Santa Fe Group from borehole geophysical logs, northern Albuquerque Basin, New Mexico. In *U.S. Geological Survey Middle Rio Grande Basin Study—Proceedings of the Second Annual Workshop,* Albuquerque, New Mexico, February 10-11, 1998. Edited by J.L. Slate. U.S. Geological Survey Open File Report 98-337. 33-34.
- Connell, S.D., B.D. Allen, and J.W. Hawley. 1998. Subsurface stratigraphy of the Santa Fe Group from borehole geophysical logs, Albuquerque area, New Mexico. *New Mexico Geology.* 20:2-7.
- Connin, S.L., J. Betancourt, and J. Quade. 1998. Late pleistocene C4 plant dominance and summer rainfall in the southwestern United States from isotopic study of herbivore teeth. *Quaternary Research.* 50:179-193.
- Contaldo, G.J. and J.F. Mueller. 1988. Earth fissures in the Deming area. *New Mexico Geological Society, 39th Field Conference.* 3-5.
- Cooley, M.E. 1968. Some notes on the late Cenozoic drainage patterns in southeastern Arizona and southwestern New Mexico. *Arizona Geological Society. Guidebook III.* 75-78.
- Cooley, M.E. 1977. *Map of Arizona Showing Selected Alluvial, Structural, and Geomorphic Features.* U.S. Geological Survey Open File Report 77-343, map scale 1:1,000,000, plus text.
- Cooper, J.R. 1959. *Reconnaissance Geologic Map of Southeastern Cochise County, Arizona.* U.S. Geological Survey Mineral Investigations Field Studies Map MF-213, scale 1:125,000.
- Corbitt, L.L. 1988. Tectonics of thrust and fold belt of northwestern Chihuahua. *New Mexico Geological Society, 39th Field Conference, Guidebook.* 67-70.
- Córdoba, D.A., S.A. Wengerd, and J.W. Shomaker (eds). 1969. Guidebook 20. *The Border Region (Chihuahua, Mexico, and the United States).* 228 p.
- Cox, D. H. 1973. *Soil Survey of Hidalgo County, New Mexico,* with a section on climate by F. E. Houghton (p. 86-88). U.S. Department of Agriculture, Soil Conservation Service and Forest Service, superintendent of documents, U.S. Government Printing Office, Washington D.C. 20402, 90 p. 100 map sheets.
- Creel, B., T. Sammis, J.F. Kennedy, D.O. Sitze, D. Asare, H.C. Monger, and Z.A. Samani. 1998. *Groundwater Aquifer Vulnerability Assessment and Management Practices Evaluation for Pesticides in the Mesilla Valley of New Mexico.* New Mexico Water Resources Research Institute Technical Completion Report No. 305, New Mexico State University, Las Cruces, NM.
- DGGTN, n.d., a. *Agua Prieta H12-3, Cartas Geologica.* Escala 1:250,000. Direccion General de Geografia del Territorio Nacional.
- DGGTN, n.d., b. *Agua Prieta H12-3, Cartas Hidrologica de Aguas.* Escala 1:250,000. Direccion General de Geografia del Territorio Nacional.
- DGGTN, n.d., c. *Agua Prieta H12-3, Cartas Topografica.* Escala 1:250,000. Direccion General de Geografia del Territorio Nacional.
- DGGTN, n.d., d. *CD. Juarez H13-1, Cartas Geologica.* Escala 1:250,000. Direccion General de Geografia del Territorio Nacional.
- DGGTN, n.d., e. *CD. Juarez H13-1, Cartas Hidrologica de Aguas.* Escala 1:250,000. Direccion General de Geografia del Territorio Nacional.
- DGGTN, n.d., f. *CD. Juarez H13-1, Cartas Topografica.* Escala 1:250,000. Direccion General de Geografia del Territorio Nacional.
- D'Arrigo, R.D. and G.C. Jacoby. 1992. A tree-ring reconstruction of New Mexico winter precipitation and its relation to El Niño/southern oscillation events. In *El Niño: Historical and paleoclimatic aspects of the Southern Oscillation.* Edited by H.F. Diaz and V. Markgraf. New York: Cambridge University Press. 476 p.
- Darton, N.H. 1916. *Geology and Underground Water of Luna County, New Mexico.* U.S. Geological Survey Bulletin 618. 188 p.
- Darton, N.H. 1917. *Deming folio: U.S. Geological Survey Geologic Atlas of the United States.* Folio 207. 15 p., 4 maps (scale 1:125,000), 9 Plates.
- Darton, N.H. 1933. *Guidebook of the western United States, Part F, The Southern Pacific Lines, New Orleans to Los Angeles.* U.S. Geological Survey Bulletin 845. 304 p., 29 route maps.
- Davis, J.M., R.C. Lohmann, F.M. Phillips, J.L. Wilson, and D.W. Love. 1993. Architecture of the Sierra Ladrones Formation, central New Mexico: Depositional controls on the permeability correlation structure. *Geological Society of America Bulletin.* 105:998-1007, 9 figs., 1 table.
- Deal, E.G., W.E. Elston, E.E. Erb, S.L. Peterson, D.E. Reiter, P.E. Damon, and M. Shafiqullah. 1978. Cenozoic volcanic geology of the Basin and Range province in Hidalgo County, southwestern New Mexico. *New Mexico Geological Society, 29th Annual Field Conference Guidebook.* 219-229.
- DeAngelo, M.V. and G.R. Keller. 1988. Geophysical anomalies in southwestern New Mexico. *New Mexico Geological Society, 49th Field Conference Guidebook.* 71-75.
- Detmer, D.M. 1995. Permeability, porosity and grain-size distribution of selected Pliocene and Quaternary sediments in the Albuquerque Basin. *New Mexico Geology.* 17:79-87.
- Diaz, H.F. and V. Markgraf (eds). 1992. *El Niño: Historical and Paleoclimatic aspects of the Southern Oscillation.* New York: Cambridge University Press. 476 p.
- Doty, G.C. 1960. *Reconnaissance of Ground Water In Playas Valley, Hidalgo County, New Mexico.* New Mexico State Engineer Office Technical Report No. 15, Santa Fe, NM. 40 p. plus maps.
- Drever, J.I. 1982. *The Geochemistry of Natural Waters.* Englewood Cliffs, N.J.: Prentice-Hall. 388 p.
- Drewes, H. 1980. *Tectonic map of southeast Arizona.* U.S. Geological Survey, Miscellaneous Investigations Map I-1109, scale 1:125,000.
- Drewes, H., B.B. Houser, D.C. Hedlund, D.H. Richter, C.H. Thorman, and T.L. Finnell. 1985. *Geologic map of the Silver City 1°x2° Quadrangle, New Mexico and Arizona.* U.S. Geological Survey Miscellaneous Investigations Series Map, I-1310-C, scale 1:250,000.
- du Bray, E.A. and J.S. Pallister. 1999. Recrystallization and anatexis along the plutonic-volcanic contact of the Turkey Creek, Caldera, Arizona. *Geological Society of America Bulletin.* 111:1:143-153.
- Eakin, T.E., D. Price, and J.R. Harill. 1976. *Summary appraisals of the nation's groundwater resources - Great Basin region.* U.S. Geological Survey Professional Paper 813-G. 37 p.
- Elston, D.P. 1984. Rocks, landforms, and landscape development in central Arizona. In *Landscapes of Arizona: The Geological Story.* Edited by T.L. Smiley, J.D. Nations, T.L. Pewe, and J.P. Shafer. New York: University Press of America. 151-173.
- Elston, W.E., E.G. Deal, and M.J. Logsdon. 1983. *Geology and geothermal waters of the Lightning Dock region, Animas Valley and Pyramid Mountains, Hidalgo County, New Mexico.* New Mexico Bureau of Mines and Mineral Resources Circular 177. 44 p.
- Elston, W.E. 1984. Mid-tertiary ash-flow tuff cauldrons, southwestern New Mexico. *Journal of Geophysical Research.* 89:8733-8750.
- Engelbreton, D.C., A. Cox, and R.G. Gordon. 1985. Relative motions between oceanic and continental plates of the Pacific Basin. *Geological Society of America, Special Paper 206.* 59 p.
- Erb, E.E.. 1979. *Petrologic and Structural Evolution of Ash-flow Tuff Cauldrons and Noncauldron-related Volcanic Rocks in the Animas and Southern Peloncillo Mountains, Hidalgo County, New Mexico.* Doctoral dissertation, University of New Mexico, (map scale 1:62,500). 286 p.
- Fair, C.L. 1961. Geohydrology of the Safford inner valley. *Arizona Geological Society Digest.* IV (Nov., 1961):125-130.
- Faulds, J.E. and R.J. Varga. 1998. The role of accommodation zones and transfer zones in the regional segmentation of extended terranes. In *Accommodation Zones and Transfer Zones: The Regional Segmentation of the Basin and Range Province.* Edited by J.E. Faulds and J.H. Stewart. Boulder,

- Colorado: Geological Society of America Special Paper 323:1-45.
- Fenneman, N.M. 1931. *Physiography of the Western United States*. New York: McGraw-Hill Book Co. 534 p.
- Feth, J.H. 1964. Hidden recharge. *Groundwater*. 2:4:14-17.
- Fitzsimmons, J.P. and C.L. Balk (eds). 1965. *Guidebook 16. Southwestern New Mexico II*. New Mexico Geological Society. 244 p.
- Fleischhauer, H.L., Jr. and W.J. Stone. 1982. *Quaternary Geology of Lake Animas, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources, Circular 174. 25 p.
- Flores M., G. 1970. Informe de Actividades, mayo 1967-septiembre 1970, Anexos 3. *Mapa de Grandes Grupos de Suelos del Edo. de Chihuahua de acuerdo al Sistema de FAO/UNESCO/SRH, [y] Anexos 4. de acuerdo al sistema Americano de la 7a, Aproximación*. Secretaria de Recursos Hidraulicos, Dirección de Agrologia, Serie Estudios Publicacion Num. 1. 33 p.
- Frenzell, P.F. and C.A. Kaehler. 1992. *Geohydrology and simulation of ground-water flow in the Mesilla Basin, Doña Ana County, New Mexico and El Paso County, Texas*. U.S. Geological Survey Professional Paper 1407-C. 105 p.
- Gabin, V.L. and L.E. Lesperance. 1977. *New Mexico Climatic data: precipitation, temperature, evaporation, and winds; monthly and annual means 1850-1975*. W.K. Summers and Associates, Socorro, NM, privately printed. 436 p.
- Galusha, T., N.M. Johnson, E.H. Lindsay, N.D. Opdyke, and R.H. Tedford. 1984. Biostratigraphy and magnetostratigraphy, late Pliocene rocks, 111 Ranch, Arizona. *Geological Society of America Bulletin*. 95:714-722.
- Gilbert, G.K. 1875. Report on the geology of portions of New Mexico and Arizona. *United States Geographic and Geologic Survey West of the 100th Meridian (Wheeler Survey)*. 3:501-567.
- Gile, L.H., F.F. Peterson, and R.B. Grossman. 1966. Morphological and genetic sequences of carbonate accumulation in desert soils. *Soil Science*. 101:5:347-360.
- Gile, L.H. 1975. Holocene soils and soil-geomorphic relations in an arid region of southern New Mexico. *Quaternary Research*. 5:321-360.
- Gile, L.H., J.W. Hawley, and R.B. Grossman. 1981. *Soils and geomorphology in a Basin and Range area of southern New Mexico—Guidebook to the Desert Project*. New Mexico Bureau of Mines and Mineral Resources Memoir 39. 222 p.
- Haase, C.S. and R.P. Lozinsky. 1992. Estimation of hydrologic parameters. In *Hydrogeologic Framework of the Northern Albuquerque Basin*. Compiled by J.W. Hawley and C.S. Haase. New Mexico Bureau of Mines and Mineral Resources Open File Report 387. p. VI-1-VI-3.
- Hale, W.E., L.J. Reiland, and J.P. Beverage. 1965. *Characteristics of the water supply in New Mexico*. New Mexico State Engineer Technical Report 31. 131 p.
- Haneberg, W.C. 1995a. Depth-porosity relationships and virgin specific storage estimates for the upper Santa Fe Group aquifer system, central Albuquerque Basin, New Mexico. *New Mexico Geology*. 17:4:62-71.
- Haneberg, W.C. 1995b. Steady-state groundwater flow across idealized faults. *Water Resources Research*. 31:1815-1820.
- Haneberg, W.C. and R.L. Friesen. 1995. Tilts, strains, and ground-water levels near an earth fissure in the Mimbres Basin, New Mexico. *Geological Society of America Bulletin*. 107:316-326.
- Haneberg, W.C., P. Gomez, A. Gibson, and B. Allred. 1998. Preliminary measurements of stress-dependent hydraulic conductivity of Santa Fe Group aquifer system sediments from the 98th Street core hole, Albuquerque, New Mexico. *New Mexico Geology*. 20:14-20.
- Hanson, R.T., J.S. McLean, and R.S. Miller. 1994. *Hydrogeologic framework and preliminary simulation of ground-water flow in the Mimbres Basin, southwestern New Mexico*. U.S. Geological Survey Water Resources Investigations Report 94-4011. 118 p.
- Harris, A.H. 1985. Preliminary report on the vertebrate fauna of U-bar Cave, Hidalgo County, New Mexico. *New Mexico Geology*. 7:74-77, 84.
- Hawkes, J.M. and J.D. Libbin. 1999. *Irrigation Water Sources and Cropland Acreages in New Mexico, 1997-1998*. New Mexico Agricultural Experiment Station, New Mexico State University, (in press).
- Hawkins, D.B. 1981. *Geohydrology of the Lower Animas Valley, Hidalgo County, New Mexico – A Computer Simulation Study*. New Mexico Institute of Mining and Technology, Socorro, NM. Unpublished Master's thesis. 105 p.
- Hawkins, D.B. and D.B. Stephens. 1983. Ground-water modeling in a southwestern alluvial basin. *Ground Water*. 21:6:733-739.
- Hawley, J.W. 1965. Geomorphic surfaces along the Rio Grande Valley from El Paso, Texas to Caballo Reservoir, New Mexico. *New Mexico Geological Society, 16th Annual Field Conference, Guidebook*. 199-198.
- Hawley, J.W. 1969. Notes on the geomorphology and late Cenozoic geology of northwestern Chihuahua. *New Mexico Geological Society, 20th Annual Field Conference Guidebook*. 131-142.
- Hawley, J.W. 1975. Quaternary history of Dona Ana county regions south-central New Mexico. *New Mexico Geological Society, 26th Annual Field Conference Guidebook*. 138-150.
- Hawley, J.W., G.O. Bachman, and K. Manley. 1976. Quaternary stratigraphy in the Basin and Range and Great Plains provinces, New Mexico and western Texas. In *Quaternary stratigraphy of North America*. Edited by W.C. Mahaney. Stroudsburg, PA: Dowden, Hutchinson, and Ross, Inc. 235-274.
- Hawley, J.W. (compiler). 1978. *Guidebook to the Rio Grande Rift in New Mexico and Colorado*. New Mexico Bureau of Mines and Mineral Resources Circular 163. 241 p.
- Hawley, J.W. 1986. Physiographic provinces (and) landforms of New Mexico. In *New Mexico in Maps*. Edited by J.L. Williams. Albuquerque, NM: University of New Mexico Press. 28-31.
- Hawley, J.W. and C.S. Haase. 1992. *Hydrogeologic framework of the northern Albuquerque Basin*. New Mexico Bureau of Mines and Mineral Resources Open File Report 387. variously paged.
- Hawley, J.W. and P.A. Longmire. 1992. Site characterization and selection. In *Deserts as Dumps? The Disposal of Hazardous Materials in Arid Ecosystems*. Edited by C.C. Reith and B.M. Thomson. Albuquerque, NM: University of New Mexico Press. 57-99.
- Hawley, J.W. and R.P. Lozinsky. 1992. *Hydrogeologic Framework of the Mesilla Basin in New Mexico and Western Texas*. New Mexico Bureau of Mines and Mineral Resources Open File Report 323. 55 p.
- Hawley, J.W. 1993. *Geomorphologic Setting and Late Quaternary History of Pluvial-lake Basins in the Southwestern New Mexico Region*. New Mexico Bureau of Mines and Mineral Resources Open File Report 391. 28 p.
- Hawley, J.W., C.S. Haase, and R.P. Lozinsky. 1995. Hydrogeologic framework of the northern Albuquerque Basin. In *Proceedings of the 39th Annual New Mexico Water Conference, The water future of Albuquerque and Middle Rio Grande Basin*. Edited by C. Ortega Klett. New Mexico Water Resources Research Institute, Technical Report No. 290, New Mexico State University, Las Cruces, NM. 37-55.
- Hawley, J.W. 1996. Hydrogeologic framework of potential recharge areas in the Albuquerque Basin, central New Mexico. In *Hydrogeology of Potential Recharge Areas and Hydrogeochemical Modeling of Proposed Artificial Recharge Methods in Basin- and Valley-fill Aquifer Systems, Albuquerque Basin, New Mexico*. Edited by J.W. Hawley and T.M. Whitworth. New Mexico Bureau of Mines and Mineral Resources Open File Report 402-D. 1-70.
- Hayes, P.T. 1982. *Geologic map of Bunk Robinson Peak and Whitmire Canyon roadless areas, Coronado National Forest, New Mexico and Arizona*. U.S. Geological Survey Miscellaneous Field Studies Map MF-1425-A, scale 1:62,500.
- Hearne, G.A. 1980. *Mathematical Model of the Tesuque Aquifer System Underlying Pojoaque River Basin and Vicinity, New Mexico*. U.S. Geological Survey Open File Report 80-1023. 181 p.
- Hearne, G.A. and J.D. Dewey. 1988. *Hydrologic Analysis of the Rio Grande Basin North of Embudo, New Mexico, Colorado and New Mexico*. U.S. Geological Survey Water Resources Investigations Report 86-4113. 244 p.
- Hearne, G.A., M. Wireman, A. Campell, S. Turner, and G.P. Ingersall. 1992. *Vulnerability of the Uppermost Ground Water to Contamination in the Greater Denver Area, Colorado*. U.S. Geological Survey Water Resources Investigations Report 92-4143. 241 p.
- Heindl, L.A.. 1962. Should the term "Gila Conglomerate" be abandoned? *Arizona Geological Society Digest*. 5:73-88.
- Heindl, L.A. 1963. Cenozoic geology in the Mammoth area, Pinal County, Arizona. *United States Geological Survey Bulletin*. 1141-E. 40 p.
- Hem, J.D. 1985. *Study and Interpretation of the Chemical Characteristics of Natural Waters*. U.S. Geological Survey Water-Supply Paper 2254. 263 p.
- Heywood, C.E. 1992. *Isostatic Residual Gravity Anomalies of New Mexico*. U.S. Geological Survey Water Resources Investigations Report 91-4065. 27 p.
- Herd, D. and C. McMasters. 1982. Surface faulting in the Sonora, Mexico earthquake of 1887 (abs.). *Geological Society of America*, Abstracts with Programs. 14:172.
- Hibbs, B., B. Creel, R. Boghici, M. Hayes, J. Ashworth, A. Hanson, Z. Samani, J.F. Kennedy, P. Hann, and K. Stevens. 1997. *Transboundary Aquifers of the El Paso/Ciudad Juarez/Las Cruces Region*. U.S. Environmental Protection Agency, Region 6, Dallas, Texas.

- Hibbs, B., B.K. Darling, and I.C. Jones. 1998. Hydrogeologic regimes of arid-zone aquifers beneath low-level radioactive waste and other waste repositories in Trans-Pecos, Texas and northern Chihuahua, Mexico. In *Gambling with Groundwater—Physical, Chemical, and Biological Aspects of Aquifer-stream Relationships*. Edited by J. Van Brahana and others. St. Paul, Minnesota: American Institute of Hydrology. 311-322.
- Izett, G.A. and R.E. Wilcox. 1982. *Map Showing Localities and Inferred Distributions of the Huckleberry Ridge, Mesa Falls, and Lava Creek Ash Beds (Pearlette Family Ash Beds) of Pliocene and Pleistocene Age in the Western United States and Southern Canada*. U.S. Geological Survey Miscellaneous Investigations Map I-1325, scale 1:4,000,000.
- James, H.L. 1969. History of the United States–Mexican boundary survey—1848-1855. *New Mexico Geological Society, 20<sup>th</sup> Field Conference Guidebook*. 40-55.
- Keller, G.R. and S.M. Cather (eds.). 1994. Basins of the Rio Grande rift: Structure, stratigraphy and tectonic setting. *Geological Society of America Special Paper* 291.
- Kempton, P.D., M.A. Dungan, and D.P. Blanchard. 1987. Petrology and geochemistry of xenolith-bearing alkalic basalts from the Geronimo volcanic field, SE Arizona: Evidence for polybaric fractionation and implications for mantle heterogeneity. In *Mantle metasomatism and alkaline magmatism*. Edited by E.M. Morris and J.D. Pasteris. *Geological Society of America Special Paper* 215. 347-370.
- Kempton, P.D. and M.A. Dungan. 1989. Geology and petrology of basalt and included mafic, ultramafic and granulitic xenoliths of the Geronimo volcanic field, southeastern Arizona. In *Field Excursions to Volcanic Terranes in the Western United States, Vol. I: Southern Rocky Mountain Region*. Edited by C.E. Chapin and J. Zidek. New Mexico Bureau of Mines and Mineral Resources Memoir 46. 161-173.
- Kernodle, J.M. 1992a. *Summary of U.S. Geological Survey ground-water-flow models of basin-fill aquifers in the Southwestern Alluvial Basins region, Colorado, New Mexico, and Texas*. U.S. Geological Survey Open File Report 90-361. 81 p.
- Kernodle, J.M. 1992b. *Results of Simulations by a Preliminary Numerical Model of Land Subsidence in the El Paso, Texas Area*. U.S. Geological Survey Water Resources Investigations Report 92-4037. 35 p.
- Kernodle, J.M. 1996. *Simulation of Ground-water Flow in the Albuquerque Basin, Central New Mexico, 1901-95, with Projections to 2020*. U.S. Geological Survey Water Resources Investigations Report. 59 p.
- Kernodle, J.M., D.P. McAda, and C.R. Thorn. 1995. *Simulation of Ground-water Flow in the Albuquerque Basin, Central New Mexico*. U.S. Geological Survey Water Resources Investigations Report 94-4251. 114 p.
- King, W.E., J.W. Hawley, A.M. Taylor, and R.P. Wilson. 1971. *Geology and Ground-water Resources of Central and Western Doña Ana County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 1. 64 p.
- Klein, D.P. 1995. *Structures of the Basins and Ranges, Southwest New Mexico, and Interpretation of Seismic Velocity Sections*. U.S. Geological Survey Open File Report 95-506. 60 p. (with plates by G.A. Adams and P.L. Hill, scale 1:250,000 and 1:500,000).
- Kottlowski, F.E., M.E. Cooley, and R.V. Ruhe. 1965. Quaternary geology of the Southwest. In *The Quaternary of the United States*. Edited by H.E. Wright, Jr. and D.G. Frey.
- Krider, P.R. 1998. Paleoclimatic significance of late Quaternary lacustrine and alluvial stratigraphy, Animas Valley, New Mexico. *Quaternary Research*. 50:283-289.
- Krieger, M.H., H.R. Cornwall, and N.G. Banks. 1973. Big Dome Formation and revised stratigraphy in the Ray-San Manuel area, Arizona. U.S. Geological Survey Bulletin 1394A. 54-62.
- Lansford, R.R., D. Lucero, C. Gore, W.W. Wilken, R. Nedom, A.A. Lucero, and J. Schultz. 1997. Irrigation Water Sources and Cropland Acreages in New Mexico, 1994-1996, Agricultural Experiment Station Technical Report 29. 4-5.
- Lansford, R.R., L. Dominguez, C. Gore, W.W. Wilken, B. Wilson, and T.L. Franz. 1993. *Sources of Irrigation Water and Irrigated and Dry Cropland Acreages in New Mexico, by County, 1990-92*. Agricultural Experiment Station Technical Report 16. 4.
- Lawton, T.F. and P.J. Harrington. 1998. Jurassic Broken Jug Formation—Redefinition of lower part of Bisbee Group, Little Hatchet Mountains, Hidalgo County, New Mexico. *New Mexico Geology*. 20:3:69-77.
- Lazarus, J. and P. Drakos. 1995. Geohydrologic characteristics and hydrocarbon contamination of the shallow alluvial Tesuque Formation aquifer, Santa Fe, New Mexico. *New Mexico Geological Society, 46<sup>th</sup> Annual Field Conference, Guidebook*. 307-312.
- Lee, W. T. 1907. *Water Resources of the Rio Grande Valley in New Mexico*. U.S. Geological Survey Water-Supply Paper 188. 59 p.
- Leopoldt, W. 1981. *Neogene Geology of the Central Mangas Graben, Cliff-Gila Area, Grant County, New Mexico*. Master's thesis, University of New Mexico. 160 p.
- Lindsay, E.H. 1984. Windows to the Past: Fossils of the San Pedro Valley. *Arizona Bureau of Geology and Mineral Technology Fieldnotes*. 14:4:1-9.
- Lindsay, E.H., N.D. Opdyke, and N.M. Johnson. 1984. Blancan-Hemphillian land mammal ages and late Cenozoic mammal dispersal events. *Annual Reviews of Earth and Planetary Science*. 12:445-448.
- Lohmann, R.C., J.M. Davis, D.W. Love, and F.M. Phillips. 1991. *Hydrogeologic Investigations of Upper Sierra Ladrones Formation [Albuquerque Basin]*. New Mexico Bureau of Mines and Mineral Resources Bulletin 137. 164-166.
- Long, A. 1966. Late-Pleistocene and Recent Chronologies of Playa Lakes in Arizona and New Mexico. Doctoral dissertation, University of Arizona, Tucson. 141 p.
- Longworth, S.A. 1991. Geohydrology and chemical quality of ground water, San Bernardino National Wildlife Refuge, Arizona. U.S. Geological Survey Water Resources Investigation Report 90-4190. 26p.
- Love, D.W. and W.R. Seager. 1996. Fluvial fans and related basin deposits of the Mimbres drainage. *New Mexico Geology*. 18:4:81-92.
- Lozinsky, R.P. 1986. *Geology of the Late Cenozoic History of the Elephant Butte Area, Sierra County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Circular 187. 40 p.
- Luedke, R.G. and R.L. Smith. 1978. *Map Showing Distribution, Composition, and Age of Late Cenozoic Volcanic Centers in Arizona and New Mexico*. U.S. Geological Survey Miscellaneous Investigations Map I-1091-A, scale 1:1,000,000.
- Lynch, D.J. 1973. *Reconnaissance Geology of the Bernardino Volcanic Field, Cochise County, Arizona*. Master's thesis, University of Arizona, Tucson. 101 p.
- Lynch, D.J. 1978. The San Bernardino volcanic field of southeastern Arizona. *New Mexico Geological Society, 29<sup>th</sup> Annual Field Conference, Guidebook* 29. 261-268.
- Machette, M.N. 1985. Calcic soils of the southwestern United States. In *Quaternary soils and geomorphology of the American Southwest*. Edited by D.L. Weide. Geological Society of America Special Paper 203. 1-21.
- Machette, M.N., S.F. Personius, C.M. Menges, and P.A. Pearthree. 1986. *Map showing Quaternary and Miocene Faults in the Silver City Quadrangle, Southeastern Arizona and Southwestern New Mexico*. U.S. Geological Survey Miscellaneous Field Studies Map MF-1465C, scale 1:250,000. 20 p.
- Machette, M.N., S.F. Personius, K.I. Kelson, K.M. Haller, and R.L. Part. 1998. *Map and Data for Quaternary Faults and Folds in New Mexico*. U.S. Geological Survey Open File Report 98-521. 443 p.
- Mack, G.H. and R.E. Clemons. 1988. Structural and stratigraphic evidence for Laramide (Early Tertiary) Burro Uplift in southwestern New Mexico. *New Mexico Geological Society, 39<sup>th</sup> Field Conference, Guidebook*. 59-66.
- Mack, G.H., W.C. James, and H.C. Monger. 1993. Classification of paleosols. *Geol. Soc. Am. Bull.* 105:129-136.
- Mack, G.H., D.W. Love, and W.R. Seager. 1997. Spillover models for axial rivers in regions of continental extension: The Rio Mimbres and Rio Grande in the southern Rio Grande rift, USA. *Sedimentology*. 44:637-652.
- Mack, G.H., F.E. Kottlowski, and W.R. Seager. 1998. The stratigraphy of south-central New Mexico. *New Mexico Geological Society, 49<sup>th</sup> Field Conference, Guidebook*. 135-153.
- Mack, G.H., T.F. Lawton, and S.G. Lucas (eds.). 1988. Cretaceous and Laramide tectonic evolution of southwestern New Mexico. *New Mexico Geological Society, 49<sup>th</sup> Field Conference, Guidebook*. 216 p.
- Maker, H.J., O.F. Bailey, and J.V. Anderson. 1970a. *Soil Association and Land Classification, Luna County*; with section on climate by F. E. Houghton (p. 6-7). Agriculture Experiment Station Research Report 176, New Mexico State University. 31 p.
- Maker, H.J., D.N. Cox, and J.V. Anderson. 1970b. *Soil Associations and Land Classification for Irrigation, Hidalgo County*, with section on climate by F.E. Houghton (p. 6-7). Agriculture Experiment Station Research Report 177, New Mexico State University. 28 p.
- Maker, H.J., R.E. Neher, P.H. Derr, and J.U. Anderson. 1971. *Soil Associations and Land Classification for Irrigation, Dona Ana County*, with section on climate by F.E. Houghton (p. 5-8). Agriculture Experiment Station Research Report 183, New Mexico State University. 41 p.
- Maker, H.J., R.E. Neher, and J.U. Anderson. 1971. *Soil Associations and Land Classification for Irrigation, Grant County*, with section on climate by F.E. Houghton (p. 8-9). Agriculture Experiment Station Research Report 200, New Mexico State University. 43 p.

- Maker, H.J., R.E. Neher, and J.U. Anderson. 1972. *Soil Associations and Land Classification for Irrigation, Catron County*, with section on climate by F.E. Houghton (p. 6-8). Agriculture Experiment Station Research Report 1229, New Mexico State University.
- Markgraf, V., J.P. Bradbury, R.M. Forester, G. Singh, and R.S. Sternberg. 1984. San Agustin Plains, New Mexico: Age and paleoenvironmental potential reassessed. *Quaternary Research*. 22:336-343.
- Maxey, G.B. 1968. Hydrogeology of desert basins. *Ground Water*. 6:1-22.
- McAda, D.P. and M. Wasiolek. 1988. *Simulation of the Regional Geohydrology of the Tesuque Aquifer System near Santa Fe, New Mexico*. U.S. Geological Survey Water Resources Investigations Report 87-4056. 71 p.
- McCraw, D.J. 1985. *A Phytogeographic History of Larrea in Southwestern New Mexico Illustrating the Historical Expansion of the Chihuahuan Desert*. Unpublished Master's thesis, Department of Geography, University of New Mexico. 137 p.
- McIntosh, W.C., L.L. Kedzie, and J.F. Sutter. 1991. *Paleomagnetism and <sup>40</sup>Ar/<sup>39</sup>Ar Ages of Ignimbrites, Mogollon-Datil Volcanic Field, Southwestern New Mexico*. New Mexico Bureau of Mines and Mineral Resources Bulletin 135. 79 p.
- McLean, J.S. 1977. *Hydrologic Maps and Data in the Mimbres Basin, New Mexico*. U.S. Geological Survey Open File Report 77-314. 531 p.
- Meinzer, O.E. 1911. *Geology and Water Resources of Estancia Valley, New Mexico*. U.S. Geological Survey Water-Supply Paper 275. 89 p.
- Meinzer, O.E. and F.C. Kelton. 1913. *Geology and Water Resources of Sulphur Spring Valley, Arizona*. U.S. Geological Survey Water-Supply Paper 320. 231 p.
- Meinzer, O.E. and R.E. Hare. 1915. *Geology and Water Resources of Tularosa Basin, New Mexico*. U.S. Geological Survey Water-Supply Paper 343. 317 p.
- Meinzer, O.E. 1916. *Ground water in Big Smoky Valley, Nevada*. U.S. Geological Survey Water-Supply Paper 375. 85-116.
- Meinzer, O.E. 1923. *The Occurrence of Ground Water in the United States with a Discussion of Principles*. U.S. Geological Survey Water-Supply Paper 489. 321 p.
- Melton, M.A. 1965. The geomorphic and paleoclimatic significance of alluvial deposits in southern Arizona: *Journal of Geology*. 73:1-38.
- Menges, C.M. and P.A. Pearthree. 1983. *Map of Neotectonic (Latest Pliocene-Quaternary) Deformation in Arizona*. Arizona Bureau of Geology and Mineral Technology Open File Report 83-22. 48 p., scale 1:500,000, 2 sheets.
- Mifflin, M.D. 1968. *Delineation of Groundwater Flow Systems in Nevada*. University of Nevada/Reno, Desert Research Institute, Technical Report Series H-W, Hydrology and Water Resources Publication 4. 109 p.
- Mifflin, M.D. 1988. Region 5, Great Basin. In *Hydrogeology-The Geology of North America*. Edited by W. Back, J.S. Rosenshein, and P.R. Seaber. Geological Society of America DNAG. O-2. 69-78.
- Miller, R.R. 1981. Coevolution of deserts and pupfishes (Genus *Cyprinodon*) in the American Southwest. In *Fishes in North American deserts*. Edited by R.J. Naiman and D.L. Soltz. New York: John Wiley and Sons. 39-94.
- Morrison, R.B. 1965. *Geologic map of the Duncan and Canador Peak Quadrangles, Arizona and New Mexico*. U.S. Geological Survey Miscellaneous Geologic Investigations Map I-442, scale 1:62,500.
- Morrison, R.B. 1969. Photointerpretive mapping from space photographs of Quaternary geomorphic features and soil associates in northern Chihuahua and adjoining New Mexico and Texas. *New Mexico Geological Society, 20<sup>th</sup> Field Conference, Guidebook*. 116-129.
- Morrison, R.B. 1985. Pliocene/Quaternary geology, geomorphology, and tectonics of Arizona. *Geological Society of America Special paper* 203. 123-146.
- Morrison, R.B. 1991. Quaternary geology of the southern Basin and Range province. In *Quaternary Non-glacial Geology; Conterminous U.S.* Edited by R.B. Morrison. Boulder, Colorado: Geological Society of America, *The Geology of North America*. K-2:353-371.
- Mozley, P. and L. Goodwin. 1995a. Patterns of cementation along a Cenozoic normal fault: a record of paleoflow orientations. *Geology*. 23:539-542.
- Mozley, P. and L. Goodwin. 1995b. Patterns of cementation along the Sand Hill Fault, Albuquerque Basin, NM.: Implications for paleoflow orientation and mechanisms of fault-related cementation. In *Characterization of Hydrogeologic Units in the Northern Albuquerque Basin*. Edited by W.C. Haneberg and J.W. Hawley. New Mexico Bureau of Mines and Mineral Resources Open File Report 402-C. 3-11-3-23.
- Mozley, P. and J.M. Davis. 1996. Relationship between oriented calcite concretions and permeability correlation structure in an alluvial aquifer, Sierra Ladrones Formation, New Mexico. *J. Sediment. Res.* A66:11-16.
- NACOSN-North American Commission on Stratigraphic Nomenclature. 1983. North American Stratigraphic Code. *American Association of Petroleum Geologists Bulletin*. 67:841-875.
- NCDC-U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climate Data Center. 1999. *Cooperative Weather Station Data Files*.
- New Mexico Department of Health. 1998. *1996 New Mexico Selected Health Statistics Annual Report*, Santa Fe, NM.
- New Mexico State Engineer (compiler). 1967. *Water Resources of New Mexico, Occurrence, Development and Use*. New Mexico State Planning Office. 321 p.
- New Mexico Bureau of Mines and Mineral Resources. 1977. *Mineral and Water Resources of New Mexico*. New Mexico Bureau of Mines and Mineral Resources Bulletin 87.
- O'Brien, K.M. and W.J. Stone. 1981. *Water-level Data Compiled for Hydrogeologic Study of Animas Valley, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Open File Report 130. 64 p. plus plates.
- O'Brien, K.M. and W.J. Stone. 1982a. *Water-Quality Data Compiled for Hydrogeologic Study of Animas Valley, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Open File Report 131. 25 p. plus plates.
- O'Brien, K.M. and W.J. Stone. 1982b. *Drill Hole Testing Data Compiled for Hydrogeologic Study of Animas Valley, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Open File Report 132. 79 p. plus plates and logs.
- O'Brien, K.M. and W.J. Stone. 1983. *A Two-dimensional Hydrologic Model of the Animas Valley, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Open File Report 133. 63 p.
- O'Brien, K.M. and W.J. Stone. 1984. Role of geological and geophysical data in modeling a southwestern alluvial basin. *Ground Water*. 22:6:717-727.
- Ordóñez, E. 1936. Physiographic provinces of Mexico. *American Association of Petroleum Geologists Bulletin*. 20:10:1277-1307.
- Orris, G.J., N.J. Page, J-M.G. Staude, K.S. Bolm, M. Carbonaro, F. Gray, and K.R. Long. 1993. *Nonfuel Mineral Resources in the United States-Mexico Border Region - A Progress Report on Information Available from the Center for Inter-American Mineral Resource Investigations (CIMRI)*. U.S. Geological Survey Circular 1098. 19 p.
- Paige, S. 1916. *Descriptions of the Silver City Quadrangle, New Mexico*. United States Geological Survey Atlas Folio.199:10 p.
- Parkhurst, D.L. 1995. *User's Guide to PHREEQC - A Computer Program for Speciation, Reaction-path, Advective-transport, and Inverse Geochemical Calculations*. U.S. Geological Survey Water Resources Investigations Report 95-4227. 143 p.
- Peirce, H.W. 1985. *Arizona's backbone: The Transition Zone*. Arizona Bureau of Geology and Mineral Technology Fieldnotes.15:3:1-6.
- Peterson, D.M., R. Khaleel, and J.W. Hawley. 1984. *Quasi Three-dimensional Modeling of Groundwater Flow in the Mesilla Bolson, New Mexico*. New Mexico Water Resources Research Institute Technical Completion Report No. 178, New Mexico State University, Las Cruces, NM. 185 p.
- Phillips, F.M., A.R. Campbell, C. Kruger, P.S. Johnson, R. Roberts, and E. Keyes. 1992. *A Reconstruction of the Response of the Water Balance in Western United States Lake Basins to Climate Change*. New Mexico Water Resources Research Institute, Technical Completion Report No. 269, New Mexico State University, Las Cruces, NM. 167 p.
- Piper, A.M. 1944. A graphic procedure in the geochemical interpretation of water-analyses. *Trans. Amer. Geophysical Union*. 25:914-928.
- Pool, D.R. 1985. Aquifer geology of alluvial basins of Arizona. In *Regional Aquifer Systems of the United States, Southwest Alluvial Basins of Arizona*. Edited by T.W. Anderson and A.I. Johnson. American Water Resources Association Monograph Series 7. 25-36.
- Powers, W.E. 1939. Basin and shore features of extinct Lake San Agustin, New Mexico. *Journal of Geomorphology*. 2:345-356.
- Quinn, W.H., V.T. Neal, and S.E. Antuñez de Mayo. 1987. El Niño occurrences over the past four and a half centuries. *Journal of Geophysical Research*. 92:(C13): 14,449-14,461.
- Raines, G.L., J.A. Erdman, J.H. McCarthy, and G.M. Reimer. 1985. Remotely sensed limonite anomaly on Lordsburg Mesa, New Mexico: Possible implications for uranium deposits. *Economic Geology*. 80:575-590.
- Ratté, J.R. and D.L. Gaskill. 1975. *Reconnaissance geologic map of the Gila Wilderness Study Area, southwestern New Mexico*. U.S. Geological Survey Miscellaneous Investigations Map I-886, scale 1:62,500.

- Ratté, J.C., D.L. Gaskill, G.P. Eaton, D.L. Peterson, R.B. Stotelmeyer, and H.C. Meeves. 1979. *Mineral Resources of the Gila Primitive Area and Gila Wilderness, Catron and Grant Counties, New Mexico*. United States Geological Survey Bulletin. 1451:229 p.
- Ratté, J.R., R.F. Marvin, C.W. Naeser, and M. Bikerman. 1984. Calderas and ash flow tuffs of the Mogollon Mountains, southwestern New Mexico. *Journal of Geophysical Research*. 89:(B10):8713-8732.
- Reeder, H.O. 1957. *Ground Water in Animas Valley, Hidalgo County, New Mexico*. New Mexico State Engineer Office Technical Report No. 11. 101 p.
- Reeves, C.C., Jr. 1969. Pluvial Lake Palomas, northwestern Chihuahua, Mexico. *New Mexico Geological Society, 20th Annual Field Conference, Guidebook*. 143-154.
- Remick, W.H. 1989. *Maps Showing Groundwater Conditions in the Duncan-Virden Valley Basin, Greenlee and Cochise Counties, Arizona, and Hidalgo and Grant Counties, New Mexico*. State of Arizona, Department of Water Resources, Hydrologic Map Series Report Number 16, Sheets 1 and 2, scale 1:125,000.
- Rich, J.L. 1911. Recent stream trenching in the semi-arid portion of Southwestern New Mexico, a result of the removal of vegetation cover. *American Journal of Science* (4<sup>th</sup> series). XXXII:190:237-245.
- Richards, L.A. (ed). 1954. Diagnosis and improvement of saline and alkali soils. *Agriculture Handbook 60*. U.S. Department of Agriculture, Washington, D.C. 160 p.
- Richter, B.C. and C.W. Kreitler. 1991. *Identification of Sources of Ground-Water Salinization Using Geochemical Techniques*. EPA/600/2-91/064. 259 p.
- Robertson, F.N. 1991. *Geochemistry of Ground Water in Alluvial Basins of Arizona and Adjacent Parts of Nevada, New Mexico, and California; Regional Aquifer-system Analysis—Southwest Alluvial Basins, Arizona and Adjacent States*. U.S. Geological Survey Professional Paper 1406-C. 90 p.
- Robinson, B.R. and K.F. Clark. 1981. Reconnaissance geology of the Sierra Alta-Boca Grande area, Chihuahua, Mexico. *El Paso Geological Society, Field Trip on the Border region*. 62-63.
- Robson, S.G. and E.R. Banta. 1995. Ground Water Atlas of the United States, Segment 2; Arizona, Colorado, New Mexico, Utah. *U.S. Geological Survey Hydrologic Investigations Atlas 730-C*. 32 p.
- Sami, K. 1992. Recharge mechanisms and geochemical processes in a semi-arid sedimentary basin, Eastern Cape, South Africa. *Journal of Hydrology*. 139:27-48.
- Sandor, J.A. 1983. *Soils at Prehistoric Agricultural Terracing Sites in New Mexico*. Doctoral dissertation, The University of California, Berkeley. Dissertation Abstract 84:13575. 336 p.
- Sandor, J.A., P.L. Gersper, and J.W. Hawley. 1986. Soils at prehistoric agricultural terracing sites in New Mexico: I. Site placement, soil morphology and classification. *Soil Society of America Journal*. 50: 166-173.
- Sandor, J.A., P.L. Gersper, and J.W. Hawley. 1990. Prehistoric agricultural terraces and soils in the Mimbres area, New Mexico. In *Soils and early agriculture: World Archaeology*. Edited by K. Thomas. 22:1:70-86.
- Sawyer, D.A. and J.S. Pallister. 1989. Geologic Framework of the southern Basin and Range. In *Field Excursions to Volcanic Terranes in the Western United States, Vol. I: Southern Rocky Mountain Region*. Edited by C.E. Chapin and J. Zidek. New Mexico Bureau of Mines and Mineral Resources Memoir 46. 121-126.
- Scarborough, R.B., C.M. Menges, and P.A. Pearthree. 1986. *Map of late Pliocene-Quaternary (post 4 m.y.) faults, folds, and volcanic outcrops in Arizona*. Arizona Bureau of Geology and Mineral Technology Map 22, scale 1:1,000,000.
- Schmidt, R.H., Jr. 1973. *A Geographical Survey of Chihuahua: El Paso*. Texas Western Press: University of Texas at El Paso, Southwestern Studies Monograph No. 37. 63 p.
- Schmidt, R.H., Jr. 1986. Chihuahuan climate. In *Invited Papers from the Second Symposium on Resources of the Chihuahuan Desert Region—United States and Mexico*. Alpine, Texas, October, 1983. Chihuahuan Desert Research Institute. 40-63.
- Schreiber, J.F., Jr. 1978. Geology of Wilcox Playa, Cochise County, Arizona. *New Mexico Geological Society, 29<sup>th</sup> Annual Conference, Guidebook*. 277-282.
- Schwab, K. J. 1992. *Maps Showing Groundwater Conditions in the San Bernardino Valley Basin, Cochise County, Arizona, and Hidalgo County, New Mexico*. Department of Water Resources, Hydrologic Map Series Report Number 24, Phoenix, AZ. 1 sheet.
- Schwennesen, A.T. 1918. *Ground water in the Animas, Playas, Hachita, and San Luis Basins, New Mexico*. U.S. Geological Survey Water-Supply Paper 422. 35 p.
- Schwennesen, A.T. and R.F. Hare. 1918. *Ground Water in the Animas, Playas, Hachita, and San Luis Basin, New Mexico with Analyses of Water and Soil*. USGS Water-Supply Papers, U.S. Geological Survey, Washington, D.C. 152 p. plus packet.
- Seaber, P.R. 1988. Hydrostratigraphic units. In *Geology of North America—Hydrogeology*. Edited by W. Back, J.S. Rosenstein and P.R. Seaber. *Geological Society of America*. 0-2:69-78.
- Seager, W.R., R.E. Clemons, J.W. Hawley, and R.E. Kelley. 1971. *Geology of San Diego Mountain Area, Doña Ana County, New Mexico*. NM Bureau of Mines and Mineral Resources Bulletin 97. 38 p.
- Seager, W.R. and P. Morgan. 1979. Rio Grande rift in southern New Mexico, west Texas, and northern Chihuahua. In *Rio Grande Rift: Tectonics and Magnetism*. Edited by R.E. Riecker. American Geophysical Union, Washington, D.C. 87-106.
- Seager, W.R., R.E. Clemons, J.W. Hawley, and R.E. Kelley. 1982. *Geology of the Northwest Part of Las Cruces 1x2 Degree Quadrangle*. New Mexico Bureau of Mines and Mineral Resources Geologic Map GM-53, scale 1:125,000.
- Seager, W.R. 1983. Laramide wrench faults, basement-cored uplifts and complementary basins in southern New Mexico. *New Mexico Geology*. 5: 69-76.
- Seager, W.R., M. Shafiqullah, J.W. Hawley, and R.F. Marvin. 1984. New K-Ar dates from basalts and evolution of the southern Rio Grande Rift. *Geological Society of America Bulletin*. 95:87-99.
- Seager, W.R. and G.H. Mack. 1986. Laramide paleotectonics of southern New Mexico. *American Association of Petroleum Geologists*. Memoir 41. 660-685.
- Seager, W.R., J.W. Hawley, F.E. Kottowski, and S.A. Kelley. 1987. *Geology of the east half of Las Cruces and northeast El Paso*. 1x2 degree sheets, New Mexico, New Mexico Bureau of Mines and Mineral Resources Geologic Map GM-57, scale 1:125,000.
- Seager, W.R. and R.E. Clemons. 1988. *Geology of Hermanas quadrangle, Luna County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources, Socorro, NM, text, scale 1:24000, GM-63.
- Seager, W.R. 1989. Geology beneath and around the West Potrillo Basalts, Doña Ana and Luna Counties, New Mexico. *New Mexico Geology*. 11:3:53-58.
- Seager, W.R. 1995. *Geologic map of the southwest part of Las Cruces and northwest part of El Paso*. 1x2 degree sheets, New Mexico, New Mexico Bureau of Mines and Mineral Resources Geologic Map GM-60, scale 1:125,000.
- Seager, W.R., G.H. Mack, and T.F. Lawton. 1997. Structural kinematics and depositional history of a Laramide uplift-basin pair in southern New Mexico: Implications for development of intraforeland basins. *Geological Society of America Bulletin*. 109:1389-1401.
- Severinghaus, J. and T. Atwater. 1990. Cenozoic geometry and thermal state of the subducting slabs beneath western North America. In *Basin and Range Extensional Tectonics Near the Latitude of Las Vegas, Nevada*. Edited by B.P. Wernicke. Geological Society of America Memoir 176. 1-22.
- Sigda, J.M. 1995. Examining the impacts of faults on aquifer flow systems: implications for regional groundwater flow modeling. In *Proceedings of the 39<sup>th</sup> Annual New Mexico Water Conference: The Water Future of Albuquerque and Middle Rio Grande Basin*. Edited by C. Ortega Klett. New Mexico Water Resources Research Institute Report No. 290, New Mexico State University, Las Cruces, NM. 449 p.
- Smith, G.A. and A.J. Kuhle. 1998. Hydrostratigraphic implications of new geological mapping in the Santo Domingo Basin, New Mexico. *New Mexico Geology*. 20:1:21-27.
- Soil Conservation Service. 1936. Air photomosaic of Animas Valley.
- Stearns, C.E. 1962. *Geology of the North Half of the Pelona Quadrangle, Catron County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Bulletin 78. 46 p.
- Stewart, J.H. 1998. Regional characteristics, tilt domains, and extensional history of the late Cenozoic Basin and Range province, western North America. In *Accommodation Zones and Transfer Zones: The Regional Segmentation of the Basin and Range Province*. Edited by J.E. Faulds and J.H. Stewart. Boulder, Colorado: Geological Society of America Special Paper 323. 47-74.
- Stiff, H.A. Jr. 1951. The interpretation of chemical analysis by means of patterns. *Jour. Petr. Technology*. 3:10:15-17.
- Stone, W.J., N.J. Mizell, and J.W. Hawley. 1979. *Availability of geological and geophysical data for the east half of the U.S. Geological Survey's Southwestern Alluvial Basins Regional Aquifer Study*. New Mexico Bureau of Mines and Mineral Resources Open File Report 109. 80 p.
- Stone, W.J. and K.M. O'Brien. 1990. *Preliminary Work for a Hydrologic Report on Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Open File Report 372, Socorro, NM. 120 p., plus two tables.
- Stone, C. and J.C. Witcher. 1982. *Reconnaissance Assessment of the Geothermal Potential of San Bernardino Valley*. Unpublished consultants reports.

- Sumner, J.R. 1977. The Sonora earthquake of 1887. *Bulletin of the Seismological Society of America*. 67:4:1219-1223.
- Tedford, R.H. 1981. Mammalian biochronology of the late Cenozoic basins of New Mexico. *Geological Society of America Bulletin*. Part 1:92:1008-1022.
- Thorn, C.R., D.P. McAda, and J.M. Kernodle. 1993. *Geohydrologic Framework and Hydrologic Conditions of the Albuquerque Basin, Central New Mexico*. U.S. Geological Survey Water Resources Investigations Report 93-4149. 106 p.
- Thompson, S., III. 1982. Oil and Gas exploration wells in southwestern New Mexico. In *Geological Studies in the Cordilleran Thrust Belt*. Edited by R.P. Powers. Rocky Mountain Association of Geologists. 521-536.
- Thunell, R., E. Tappa, C. Pride, and E. Kincaid. 1999. Sea-surface temperature anomalies associated with the 1997-1998 El Niño recorded in oxygen isotope composition of planktonic foraminifera. *Geology*. 27:9:843-846.
- Tolman, C.F. 1909. Erosion and deposition in southern Arizona bolson region. *Journal of Geology*. XVII:II:136-163.
- Tolman, C.F. 1937. *Ground Water*. New York:McGraw-Hill Book Co., Inc. 593 p.
- Tomida, Y. 1985. *Small Mammal Fossils and Correlation of Continental Deposits, Safford and Duncan Basins, Arizona*. Doctoral dissertation, University of Arizona, Tucson. 253 p.
- Trauger, F.D. and E.H. Herrick. 1962. *Ground-Water in Central Hachita Valley Northeast of the Big Hatchet Mountains, Hidalgo County, New Mexico*. State Engineer Technical Reports, New Mexico State Engineer Office Technical Report No. 26, Santa Fe, NM. 21 p.
- Trauger, F.D. and G.C. Doty. 1965. Ground water—its occurrence and relation to the economy and geology of southwestern New Mexico. *New Mexico Geological Society, 16<sup>th</sup> Field Conference, Guidebook*. 215-227.
- Trauger, F.D. 1972. *Water Resources and General Geology of Grant County, New Mexico; Hydrologic Report 2*. New Mexico Bureau of Mines and Mineral Resources, Socorro, NM. 211 p. plus Geologic Map and Well Location and Water Level Contours Map.
- U.S. Department of Agriculture, Soil Conservation Service. 1954. *Upper Gila River Watershed - New Mexico and Arizona, Appendix Survey Report*. June 1954. 85 p.
- U.S. Department of Agriculture, Soil Conservation Service. 1994. *State Soil Geographic Database - Data Use Information*. U.S. Government Printing Office Publication No. 1492.
- U.S. Department of Agriculture, Soil Conservation Service. 1994. *State Soil Geographic Database (STATSGO), Data Users Guide*. U.S. Government Printing Office Miscellaneous Publication Number 1492.
- U.S. Department of Agriculture. 1997. *New Mexico Agricultural Statistics Service, 1997*. USDA, Las Cruces, NM.
- U.S. EPA, Office of Water. 1993. *A Review of Methods for Assessing Aquifer Sensitivity and Ground Water Vulnerability to Pesticide Contamination*. Report 813-R-93-002.
- U.S. Geological Survey. 1965. *Mineral and Water Resources of New Mexico*. United States Geological Survey Bulletin 87. 1965.
- U.S. Geological Survey. 1976. *Summary of Hydrologic Conditions Along the United States-Mexico International Boundary from the Pacific Ocean to El Paso, Texas*. U.S. Geological Survey Administrative Report. 59-61.
- Van Devender, T.R. and R.D. Worthington. 1978. The herpetofauna of Howell's Ridge Cave and the paleoecology of the northwestern Chihuahuan Desert. In *Transactions, Symposium on the Biological Resources of the Chihuahuan Desert Region*. Alpine, Texas, October, 1974. Washington, D.C., U.S. Government Printing Office (U.S. National Park Service Transactions and Proceedings Series No. 3, 1977). 85-106.
- Van Devender, T.R. 1990. Late Quaternary vegetation and climate of the Chihuahuan Desert, United States and Mexico. In *Packrat middens*. Edited by J.L. Bentancourt, T.R. Van Devender, and P.S. Martin. University of Arizona Press, Tucson. 104-133.
- Vincent, K.R. and P.R. Krider. 1998. *Geomorphic Surface Maps of the Southern Animas Valley, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Open File Report OF-429, 14 plates. 60 p.
- Waltemeyer, S.D. 1994. *Methods for Estimating Streamflow at Mountain Fronts in Southern New Mexico*. U.S. Geological Survey Water Resources Investigations Report 93-4213. 17 p.
- Wasiolek, M. 1995. *Subsurface Recharge to the Tesuque Aquifer System from Selected Drainage Basins along the Western Side of the Sangre de Cristo Mountains near Santa Fe, New Mexico*. U.S. Geological Survey, Water Resources Investigations Report 94-4072. 43 p.
- Waters, M.R. 1985. Late Quaternary alluvial stratigraphy of Whitewater Draw, Arizona: Implication for regional correlation of fluvial deposits in the American Southwest. *Geology*. 13:705-708.
- Waters, M.R. 1989. Late Quaternary lacustrine history and paleoclimatic significance of pluvial Lake Cochise, southeastern Arizona. *Quaternary Research*. 32:1-11.
- Weber, R.W. 1980. Geology of the Ake site: Appendix A. In *The Ake site*. Edited by P.H. Beckett P.H. New Mexico State University, Department of Anthropology and Sociology, Report no. 357. 223-238.
- White, W.E. and G.E. Kuess. 1992. *Inventory of Springs in the State of New Mexico*. U.S. Geological Survey Open File Report 92-118. 253 p.
- Whitworth, T.M. 1995. Hydrogeochemical computer modeling of proposed artificial recharge of the upper Santa Fe Group aquifer, Albuquerque, New Mexico. *New Mexico Geology*. 17:4:72-78.
- Wilkins, D.W. 1986. *Geohydrology of the Southwest Alluvial Basins, Regional Aquifer-systems analysis in parts of Colorado, New Mexico, and Texas*. U.S. Geological Survey Water Resources Investigations Reports 84-4224. 61 p., plates.
- Wilkins, D.W. 1998. *Summary of the Southwest Alluvial Basins, Regional Aquifer-systems Analysis in Parts of Colorado, New Mexico, and Texas*. U.S. Geological Survey Professional Paper 1407-A. 49 p.
- Williams, T.R. and M.S. Bedinger. 1984. *Selected Geologic and Hydrologic Characteristics of the Basin and Range Province, Western United States—Pleistocene Lakes and Marshes*. U.S. Geological Survey Miscellaneous Investigations Series Map I-1522-D, scale 1:2,500,000.
- Wilson, B. 1992. *Water Use by Categories in New Mexico Counties and River Basins, and Irrigated Acreages in 1990*. New Mexico State Engineer Office Technical Report 47. 141 p.
- Wilson, B. 1997. *Water Use by Categories in New Mexico Counties and River Basins, and Irrigated Acreages in 1995*. New Mexico State Engineer Office Technical Report 49. 149 p.
- Wilson, C.A., R.R. White, R.B. Orr, and R.G. Roybal. 1981. *Water Resources of the Rincon and Mesilla Valleys and Adjacent Areas*. New Mexico State Engineer Technical Report 43. 514 p.
- Winograd, I.J. and W. Thordarson. 1975. *Hydrogeologic and Hydrogeochemical Framework, South-central Great Basin, Nevada-California, with Special Reference to the Nevada Test Site*. U.S. Geological Survey Professional Paper 712-C. 126 p.
- Wolberg, D. 1980. Pleistocene horse skull discovered. *New Mexico Geology*. 2:29.
- Woodward, D.G. and R.G. Myers. 1997. *Seismic Investigation of the Buried Horst between the Jornada del Muerto and Mesilla Ground-Water Basins near Las Cruces/Dona Ana County, New Mexico*. U.S. Geological Survey Water Resources Investigations Report 97-4147. 45 p.
- Wrucke, C.T. and C.S. Bromfield. 1961. *Reconnaissance Geologic Map of Part of the Southern Peloncillo Mountains, Hidalgo County, New Mexico*. U.S. Geological Survey Miscellaneous Field Studies Map MF-0160.
- Zeller, R.A., Jr. 1958. *Reconnaissance Geology Map of Dog Mountains Quadrangle*. New Mexico Bureau of Mines and Mineral Resources Geologic Map 8, scale 1:62,500.
- Zeller, R.A., Jr. 1959. *Reconnaissance geologic map of Playas 15' quadrangle*. New Mexico Bureau of Mines and Mineral Resources Geologic Map 7, scale 1:62,500.
- Zeller, R.A., Jr. 1962. *Reconnaissance geologic map of the southern Animas Mountains*. New Mexico Bureau of Mines and Mineral Resources Geologic Map 17.
- Zeller, R.A., Jr. 1970. *Geology of the Little Hatchet Mountains, Hidalgo and Grant Counties, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Bulletin 96. 23 p.
- Zeller, R.A., Jr. with commentary by S. Thompson, III. 1975. *Structural geology of Big Hatchet Peak quadrangle, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Circular 146. 23 p., scale 1:48,000.
- Zeller, R.A., Jr. and A.M. Alper. 1965. *Geology of the Walnut Wells Quadrangle, Hidalgo County, New Mexico*. New Mexico Bureau of Mines and Mineral Resources Bulletin 84. 105 p.