

JAMES W. RIESTERER, P.G.
Geologist, Glorieta Geoscience, Inc.

EXPERIENCE SUMMARY

17 Years of Experience Encompassing the Following Areas:

- Well design and drilling supervision
- Well and well field evaluation
- Pumping test design supervision and data analysis
- Geologic and Geomorphic mapping
- Groundwater modeling
- Application of GIS to geohydrologic problems
- Water rights transactions
- Water supply development
- Litigation support

SELECTED PROJECT EXPERIENCE

Geomorphologist/Field Team Leader for canyon sediment investigations, Los Alamos National Laboratory: Performed detailed geomorphic mapping, sediment characterization, and sediment sampling in Canyons around Los Alamos National Laboratory. Participated as both field team member and field team leader in mapping various reaches in Los Alamos Canyon, Pajarito Canyon, Rendija Canyon, Sandia Canyon, Mortandad Canyon, Cañada del Buey, Ancho Canyon, Chaquehui Canyon, Potrillo Canyon, Fence Canyon, Water Canyon, Canyon de Valle, and tributary drainages. Responsibilities include geomorphic mapping, completion of soil stratigraphic descriptions, collection and submittal of sediment samples for analysis, completion of surveys for topographic profiles and delineation of control points, and supervision of team members for radiological surveys, sample collection, and geomorphic characterization.

Lead investigator for hydrologic and salt resource analysis to site a Compressed Air Energy Storage (CAES) facility, Texas Panhandle: Analyzed availability of water resources and salt deposits, in conjunction with wind resource and power grid availability to site a CAES facility in the Texas panhandle. Investigation included testing of water wells, analysis of salt core samples, and review of published data.

Municipal supply well design and drilling supervision: Supervised drilling and completion of two 2000+ feet deep municipal supply wells near Taos, NM. Designed and supervised construction of 2000, 2500 and 3000 feet deep municipal supply wells for the City of Rio Rancho. Designed exploratory drilling program for City of Socorro, supervised construction of 1200 feet deep exploratory well and 1000 feet deep production well. Designed and supervised drilling and completion of 300 feet deep and 680 feet deep municipal supply wells for the City of Ruidoso Downs. Designed exploratory drilling program for the Alcalde Mutual Domestic Water Consumer's Association and supervised drilling of 1500 feet deep exploratory well and 1400 ft production well.

In stream flow augmentation wells for NM Interstate Stream Commission: Designed and supervised construction and testing of three production wells used to augment Pecos River flows for endangered species protection. Conducted groundwater modeling in support of water right transfers to the augmentation well field. Prepared and submitted well and water right applications to the NM Office of the State Engineer for approvals. Analyzed general and isotope chemistry samples from the well field to characterize water quality and rates of recharge.



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City of Ruidoso Downs, NM: Conducted geologic mapping, water sampling, geochemical analyses, and climate analyses to determine source(s) of Hale spring and causes of flow decline from spring. Data collected during field work were incorporated into a MODFLOW-based ground water model of the area used to analyze effects of pumping from nearby wells on Hale Spring. Designed and supervised drilling, completion, and testing of 300 and 680 feet deep municipal supply wells. Prepared applications to obtain and to combine/commingle water rights in the City's well field that were approved by OSE. Prepared application to supplement spring flow from the City's well field, that was approved by OSE in 2016. Designed a water right tracking system for the City to allow pumping of water rights to be optimized during periods of low flow on the Rio Ruidoso and track against the Roswell Basin's 5-year accounting period.

City of Rio Rancho well field evaluation, groundwater exploration program, well design and construction supervision, well rehabilitation: Designed groundwater exploration program for the City of Rio Rancho that incorporated geologic, hydrologic, and remote sensing data, combined with data from the City's existing infrastructure. Data were compiled into a GIS database that has been used to prioritize production well drilling locations and a well replacement schedule by identifying target aquifers and geologic controls on aquifer continuity, productivity, and water quality. Three new production wells ranging in depth from 2500 to 3000 ft with production of between 2400 and 3200 gpm have been completed, and additional wells have been rehabilitated and/or targeted for replacement.

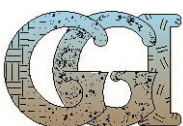
City of Española, NM: Supervised exploratory drilling and testing program at the Carter Ranch site, designed and supervised drilling, construction, and testing of the production well drilled at the site (RG-3067-S-15). Incorporated data from the drilling and testing program into the New Mexico Office of the State Engineer (OSE) Española Basin ground water model to analyze effects of pumping from the well on nearby wells of other ownership. Currently providing ongoing expert support for the City in the ongoing NM v. Abbott adjudication.

Zuni Pueblo:

Nations Draw-Zuni Salt Lake area: Conducted geologic mapping and hydrogeologic analysis of Nations Draw-Zuni Salt Lake area in western New Mexico. Field work included mapping geologic formations and structures controlling ground water flow. Incorporated field data into a MODFLOW-based ground water model used to determine the effects of pumping at a proposed mine site on the lake.

Zuni Well Inventory: Worked in conjunction with the Pueblo Department of Natural Resources to develop a database of wells on Tribal land. Performed video logs on selected wells to determine well condition, screen locations, and potential for rehabilitation and future production. Conducted short term (<8 hour) and longer term (48-hour) pumping tests on selected wells. Collected samples for analysis of drinking water constituents and isotope geochemistry. Compiled data collected in the field into a GIS database.

Zuni Spring Inventory: Worked in conjunction with the Pueblo Department of Natural Resources to develop a database of springs on Tribal land. Performed original geologic mapping and analysis of geomorphic setting, collected GPS site coordinates of springs and related features, conducted flow measurements, collected water samples for isotope and general chemistry to evaluate recharge sources and source aquifers of springs on the Zuni Reservation. Worked with Tribal staff to design and implement long-term monitoring of spring flows.



Compiled field GPS and geologic data into a GIS database used to produce regional and local maps.

Gallup G-22 Application: Providing ongoing expert legal support for the Tribe's protest of the City of Gallup's application for 5000 acre-ft/yr of groundwater pumping. Work has included geologic mapping on the reservation to document lack of discontinuity in the aquifer alleged by the applicant, utilizing field data collected to modify the applicant's model to include surface water features on the Reservation, and (ongoing) preparation of expert reports and exhibits for use at hearing.

Zuni River Basin Adjudication: Currently working with OSE and GGI staff to incorporate data collected in the field and through research of published literature into a groundwater model of the Zuni River Basin to be utilized for adjudication of water rights in the basin.

Environmental Sampling/Remediation (Various times, 2000 – present):

- Hollow stem auger sample logging for Phase II ESA, Old Taos Highway, Santa Fe County, NM
- Oil field pump jack and tank battery site inspections and soil sampling, Lea County, New Mexico
- Site investigation/characterization and supervision of (hydrocarbon) contaminated soil removal, Calle de Comercio, Santa Fe County, New Mexico
- Monitoring well design and installation supervision, Catron County, New Mexico
- Site investigation/characterization and supervision of (hydrocarbon) contaminated soil removal and remediation via land farming, Tano Road, Santa Fe County, New Mexico
- Site investigation/characterization and supervision of (hydrocarbon) contaminated soil removal, Bishops Lodge Road, Santa Fe County, New Mexico

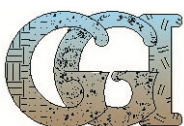
EDUCATION

M.S. Geology, Idaho State University, Pocatello, ID, 1998

B.A. Geology and Economics, Whitman College, Walla Walla, WA, 1996

**PROFESSIONAL
DEVELOPMENT/
TRAINING**

- Wyoming PG #3540, Texas PG #10244, Arizona PG #50912, WA PG #3034
- National Ground Water Association, 'Design and Construction of Wells', short course
- National Ground Water Association, 'Analysis and Design of Aquifer Tests Including Slug Tests and Fracture Flow', short course
- Environmental Simulations Inc., 'Introduction to Groundwater Flow and Transport Modeling Using Groundwater Vistas' short course
- Environmental Simulations Inc., 'Model Calibration with PEST and Groundwater Vistas' short course
- OSHA 40 hour hazardous materials training
- CLE International 'New Mexico Water Law Superconference', 2 day seminar
- Lorman Education Services, 'Water Shortages and Desalination' seminar
- National Ground Water Association, 'Naturally Occurring Contaminants Conference, Arsenic, Radium, Radon, and Uranium', 2 day seminar
- Baroid IDP, 'Use of drilling fluids for Water Well Applications', short course



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SELECTED PUBLICATIONS

- Cikoski, C.T., Drakos, P.G., **Riesterer, J.**, 2016, Geologic Map of the Cubero 7.5-Minute Quadrangle, Cibola County, New Mexico, New Mexico Bureau of Geology and Mineral Resources Open File Geologic Map 256, available online at: <https://geoinfo.nmt.edu/publications/maps/geologic/ofgm/details.cfm?volume=256>
- Danielson, T., Mahoney, J.B., **Riesterer, J.**, and Hickson, C.J., 1998, Geochemistry and tectonic setting of the Powell Creek Group, southwestern British Columbia: in Cook, F., and Erdmer, P. (compilers), 1998, Slave-Northern Cordillera Lithospheric Evolution (SNORCLE) Transect and Cordilleran Tectonics Workshop Meeting (March 6-8), Simon Fraser University, Lithoprobe Report No. 64, p. 245-246.
- Drakos, P., Lazarus, J., **Riesterer, J.**, White, B., Banet C., Hodgins, M., and Sandoval, J., 2004, Subsurface stratigraphy in the southern San Luis Basin, New Mexico *in* New Mexico Geological Society, 55th Field Conference Guidebook, p. 374-382.
- Drakos, P., Lazarus, J., White, B., Banet C., Hodgins, M., **Riesterer, J.**, and Sandoval, J., 2004, Hydrologic characteristics of basin-fill aquifers in the southern San Luis Basin, New Mexico *in* New Mexico Geological Society, 55th Field Conference Guidebook, p.391-404.
- Drakos, P., Sims, K., **Riesterer, J.**, Blusztajn, J., and Lazarus, J., 2004, Chemical and isotopic constraints on source-waters and connectivity of basin-fill aquifers in the southern San Luis Basin, New Mexico *in* New Mexico Geological Society, 55th Field Conference Guidebook, p.391-404.
- Drakos, P.G., **Riesterer, J.W.**, and Bemis, K., 2013, Recharge sources and characteristics of springs on the Zuni Reservation, New Mexico: New Mexico Geological Society 64th Annual Field Trip Guidebook, p. 205-213.
- Drakos, P.G. and **Riesterer, J.W.**, 2013, Water Canyon/Timber Canyon fan complex on the southeast flank of Mount Taylor, New Mexico: New Mexico Geological Society 64th Annual Field Trip Guidebook, p. 175-179.
- Drakos, P. G., Reneau, S.L., Schultz-Fellenz, E.S., **Riesterer, J.W.**, Miller, E.D., Goetze, P.R., and Chamberlain, P., 2012, Post-Fire Sediment Transport and Erosion in the Water Canyon and Cañon de Valle Watershed, Jemez Mountains New Mexico:11th Annual Española Basin Workshop, Abstracts and Program, p. 16.
- Geslin, J.K., Gianniny, G.L., Link, P.K., and **Riesterer, J.W.**, 1997, Subsurface sedimentary facies and Pleistocene stratigraphy of the northern Idaho National Engineering Laboratory; controls on hydrogeology, in Sharma, S., and Hardcastle, J.H. eds., Proceedings of the 32nd symposium on Engineering geology and geotechnical engineering, v. 32, p. 15-28.
- Geslin, J.K., Link, P.K., **Riesterer, J.W.**, Kuntz, M.A., and Fanning, C.M., 2002, Pliocene and Quaternary stratigraphic architecture and drainage systems of the Big Lost Trough, northeastern Snake River Plain, Idaho, *in* Link, P.K., and Mink, L.L., eds., Geology, Hydrogeology, and Environmental Remediation: Idaho National Engineering and Environmental Laboratory, Eastern Snake River Plain, Idaho: Geological Society of America Special Paper 353, p. 11-26, Boulder, CO.
- Gianniny, G.L., Geslin, J.K., **Riesterer, J.W.**, Link, P.K., and Thackray, G.D., 1997, Quaternary surficial sediments near Test Area North (TAN), northeastern Snake River Plain; an actualistic guide to aquifer characterization, in Sharma, S., and Hardcastle, J.H. eds., Proceedings of the 32nd symposium on Engineering geology and geotechnical engineering, v. 32, p. 29-44.
- Kellog, K.S., Rodgers, D.W., Hladky, F.R., Kiessling, M.A., and **Riesterer, J.W.**, 1999, The Putnam thrust plate, Idaho—Dismemberment and tilting by Tertiary normal faults, in Hughes, S.S. and Thackray, G.D., eds., Guidebook to the Geology of Eastern Idaho: Pocatello, Idaho Museum of Natural History.
- Mahoney, J.B., Vaughn, J., Link, P.K., **Riesterer, J.W.**, Hickson, C.J., and Friedman, R.M., 1999, Late Cretaceous and Paleocene strata along the Intermontane/Methow terrane boundary, southern Chilcotin Plateau, south-central British Columbia; in Current Research 1999, Geological Survey of Canada Bulletin, 1999A.
- Reneau, S.L., Drakos, P. G., **Riesterer, J.W.**, Goetze, P.R., Schultz-Fellenz, E.S., Miller, E.D., and Katzman, D., 2010, Watershed-scale investigation of sediment contamination – chromium and PCBs in Sandia Canyon, Pajarito Plateau, New Mexico: 9th Annual Española Basin workshop: Watersheds and surface water of the Española Basin, Abstracts and Program, p. 20
- Riesterer, J.W.**, Mahoney, J.B., and Link, P.K., 1998, Re-examination of Late Albian-Cenomanian conglomerate in Churn Creek, Gang Ranch area, southern British Columbia; in Current Research, 1998-A Geological Survey of Canada, p. 165-174.
- Riesterer, J.W.**, Link, P.K., and Rodgers, D.W., 1998, Geology of the Bonneville Peak Quadrangle, Bannock County, SE Idaho; structural and stratigraphic implications in Geological Society of America, Rocky Mountain Section, 50th annual meeting, Abstracts with Programs, v. 30, no. 6, p. 35.
- Riesterer, J.W.**, 1998, Stratigraphy, structure, and geochemistry of the Churn Creek Basin, south central British Columbia: Evidence of a mid-Cretaceous link between the intermontane and insular superterranes, Idaho State University M.S. thesis, 133 p.



- Riesterer, J.W.**, Link, P.K., and Rodgers, D.W., 2000 Geological map of the Bonneville Peak quadrangle, Bannock and Caribou Counties, Idaho, Idaho Geological Survey
- Riesterer, J.W.**, Mahoney, J Brian, and Link, Paul Karl, 2001, The conglomerate of Churn Creek: Late Cretaceous basin evolution along the Insular/Intermontane superterrane boundary, southern British Columbia, Canadian Journal of Earth Sciences
- Riesterer, J.W.**, Drakos, P., Lazarus, J., and Chudnoff, M., 2006, Hydrogeology of Hale Spring and Evaluation of Declining Spring Discharge, Ruidoso Downs, New Mexico, *in* Land, L., Lueth, V., Raatz, W., Boston, P., and Love, D., eds. Caves and Karst of Southeastern New Mexico, New Mexico Geological Society Fifty-seventh Annual Field Conference Guidebook.
- Riesterer, J.**, Drakos, P., Lazarus, J., and Hawley, J., 2007, Hydrogeologic, Stratigraphic, and Structural Implications of Drilling Data Collected from Two Deep (2500 and 3000 feet) Municipal Supply Wells in the Albuquerque Basin, Rio Rancho, New Mexico, Geological Society of America 2007 Annual Meeting Abstracts with Programs.
- Skotnicki, S.J., Drakos, P.G., Goff, F.E., Goff, C.J., and **Riesterer, J.**, 2012, Geologic map of the Seboyeta 7.5' Quadrangle, Cibola County, NM: NM Bureau of Geology and Mineral Resources Open-file Map 226, 1:24,000 scale. Available on-line at:
<http://geoinfo.nmt.edu/publications/maps/geologic/ofgm/details.cfm?Volume=226>
- Zeigler, K.E., Cikoski, C.T., Drakos, P.G., and **Riesterer, J.**, 2012, Geologic map of the Grants 7.5' Quadrangle, Cibola County, NM: NM Bureau of Geology and Mineral Resources Open-file Map 224, 1:24,000 scale. Available on-line at:
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