

Dr. Roger D. Congdon  
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## EDUCATION

Johns Hopkins University  
Baltimore, MD 21218  
Doctorate – May 1991

Major: Geology (magma physics)

Description: The lessons I learned here concerning heat flow and mass transfer served me well in the transition to work in groundwater later. Title of dissertation: The solidification of the Shonkin Sag laccolith; mineralogy, petrology, and experimental phase equilibria.

University of Utah  
Salt Lake City, UT

Master's Degree – December 1987

Major: Geology (igneous petrology)

Description: My MS was a math-intensive program. I was heavily into physics and chemistry as they relate to igneous rocks and the processes that formed them. Thesis title: Petrology of the Honeycomb Hills rhyolite, western Juab county, Utah.

Portland State University  
Portland, OR

Bachelor's Degree – August 1983

Major: Geology

GPA: 3.76 out of 4.00

Honors: Graduated Cum Laude

Description: A well-rounded program in geology. I was into mathematics and chemistry. I loaded my course load with courses such as physical chemistry and differential equations.

## WORK EXPERIENCE

1. U.S. Fish and Wildlife Service July 2005 to Present  
4701 N. Torrey Pines Dr.  
North Las Vegas, NV 89130

### **Hydrologist 1315**

I work as the hydrologist for the Fish and Wildlife Service Southern Nevada Field Office. I also provide support for the rest of the State. I am involved with all water issues as they relate to the well being of Listed Species. This has, to date, included involvement with such projects as Three Lakes-Tikaboo and the Clark, Lincoln and White Pines County Water Development Projects, as well as other water development projects. I review groundwater models and am able to manipulate and run MODFLOW simulations.

2. U.S. Fish and Wildlife Service  
1339 20<sup>th</sup> Street  
Vero Beach, Florida 32960

December 2002 to July 2005

### **Hydrologist 1315**

I work as a support hydrologist for the Ecological Services Field office, mainly on Everglades restoration projects. I am available for virtually any project which has need of hydrologic support. I am and have been working on the following projects:

- A feasibility study of enhancing the Everglades water supply by using Aquifer Storage and Recovery, a process whereby water may be stored in deep, saline aquifers during the wet season when surface water is plentiful. This water will then be extracted and used during the dry season for supply to the Everglades.
- Reviewing and guiding development of complex, integrated ground and surface water models, using the proprietary MIKE SHE/MIKE 11 groundwater/surface water modeling software. These models, such as the Big Cypress Basin model and the Caloosahatchie Basin model are developed by the South Florida Water Management District with consultation and cooperation with the Fish and Wildlife Service. I have become proficient with the MIKE SHE modeling system.
- I am currently involved as the hydrologist member of a team charged with reducing manatee mortality. I have been investigating the canals of south Florida; their water temperature, flow regimes, and hydrology associated with manatee habitat suitability. The goal of this work is to exclude manatees from the south Florida canals, where the animals get trapped and eventually die of starvation and hypothermia.
- I am working on evaluation of the MIKE SHE modeling of the C-43 storage reservoir, proposed in the Caloosahatchie basing as a part of the Comprehensive Everglades Restoration Project.
- I am working as part of an interdisciplinary team on an evaluation of MODFLOW groundwater modeling as part of the C-4 project, which concerns effects resulting from modifying the water control activities in order to conserve water for the Everglades.
- I worked on a project for the Daphne Ecological Services Field Office in Alabama, providing a critical review of the National Oceanic and Atmospheric Administration's SLOSH model, which is used to predict storm surges from hurricanes. They desired to know if the SLOSH model was adequate to predict potential impacts to the Alabama Beach Mouse population.
- I worked with other hydrologic models, such as MODFLOW and the HEC models. I also reviewed documents relating to the use of models unique to the South Florida Water Management District; such as the South Florida Water Management Model, the Regional Simulation Model, and the Everglades Landscape Model (an ecological model). I also investigated the potential use of the new groundwater/surface water model MODHMS.
- I worked on a Model Review Team which was charged with the task of evaluating uncertainty in model input data and its effect on model results. I also commonly review documents related to ground and surface water hydrology and hydrologic modeling reports and work closely with the Army Corps of Engineers and the South Florida Water Management District.

3. U.S. Bureau of Land Management  
3900 Idaho Street  
Elko, NV 89801

February 1994 to December 2002

### **Hydrologist 1301**

I was the hydrogeologist for nonrenewable resources at the Elko Field Office. My many duties included the following:

- I was the project lead for a major Environmental Impact Statement (Newmont's South Operations Area Project). In conjunction with this EIS, I also coordinated a Section 7 consultation for the potential impacts of mine dewatering on the Threatened Lahontan cutthroat trout.
- I reviewed all technical documents related to groundwater issues for mining projects in northeast Nevada. These included groundwater modeling reports, pit water quality studies, monitoring reports, and any other documents related to groundwater.
- I coordinated the review of a proprietary groundwater flow modeling code used by one operator, and then outlined major revisions of the conceptual model. These were then addressed and the model was greatly improved.
- I reviewed and edited all reports concerning surface and ground water issues as they relate to mining in our district.
- I became proficient with the hydrologic flow models MODFLOW, MODPATH, ZONEBUDGET, AquiferWin32 (an aquifer test program) and HELP (Hydraulic Evaluation of Landfill Performance), and I gained a good measure of familiarity with the surface water models HSPF, MMS/PRMS, HEC-RAS and HEC-HMS.
- I developed a MODFLOW model to evaluate the effect of proposed agricultural pumping on a stream being rehabilitated as an environment for Lahontan Cutthroat Trout, an endangered species.
- I developed a working, steady state MODFLOW model for Independence valley, which may be used to evaluate potential effects of mine dewatering in that basin.
- I have been directly involved in several stream flow monitoring and flow measuring projects.
- I gained intimate familiarity with the National Environmental Policy Act (NEPA) and have also conducted many surface management activities under the Federal Land Policy and Management Act (FLPMA).

4. U.S. Geological Survey  
507 National Center  
Reston, VA 20192

April 1991 to February 1994

### **Geologist 1350**

I worked as a support geologist in the Branch of Coal Geology. My primary duties included researching the composition of eruptive magmas that left kaolinized ash beds (tonsteins) in coal. This was accomplished by painstaking isolation of quartz grains and analyzing glass inclusions (10 to 40 micron size) in the electron microscope. I was required to write up my findings, and I was contributing author on 10 papers and abstracts. I was also contributing author on three other papers. I was given the task to extract meaningful data from these clay layers, and was left mostly to my own devices to accomplish the objectives. I was able to greatly exceed initial expectations.

## AFFILIATIONS

Geological Society of America  
American Geophysical Union  
National Ground Water Association  
International Association of Hydrogeologists

## JOB-RELATED TRAINING COURSES

May, 2003: MIKE SHE groundwater/surface water modeling: DHI short course.  
August, 2001: Polishing your groundwater modeling skills: IGWMC short course.  
August, 2000: USGS short course SW2008TC: Watershed modeling I workshop.  
April, 1999: University of Florida 5-day short course: Dewatering Systems.  
Spring, 1998: BLM short course on Ground Water Evaluation Techniques.  
April, 1997: Hydrogeology of Karst Aquifers, a 5 day short course by Environmental Education Enterprises.  
March, 1996: Aquifer Testing, a 5 day short course by National Ground Water Association.  
Spring, 1995: Fundamentals of MODFLOW: 5 day short course by the International Ground Water Modeling Center.  
Spring, 1993: 3 semester hour class in Groundwater Hydrology: University of Maryland.  
I have taken FWS training courses in Ecological Services Basic Training, Wetland Regulatory Program, Negotiation Strategies and Techniques, and USFWS Employee Foundations.  
I have taken BLM training courses in Mining Claim Validity, Reclamation, and Surface Management.

## JOB-RELATED SKILLS

I am capable to proficient with the following software: MODFLOW, MODPATH, MIKE SHE, HELP, Aquifer Win32, ArcView, ArcMap, as well as the usual assortment of word processors, spreadsheets, and other standard software. I also understand, and can modify, programs in FORTRAN and BASIC. With my excellent background in mathematics, I can readily understand computer models in hydrology, and the simplifying assumptions they are based on. I function well with Apple, IBM PCs, and UNIX computers.  
I am able to translate German manuscripts.

## HONORS AND AWARDS

Awarded a Gillman Fellowship at Johns Hopkins University.  
Received McKee award at the Portland State University Geology Department for the outstanding graduate of the year.

## PUBLICATIONS (papers and abstracts)

Congdon, Roger D., and Mayer, Tim, 2006, Water use, the potentiometric surface, and spring discharge relationships at the Muddy River Springs, southern Nevada [abs.]: National Ground Water Association, Ground Water Summit, San Antonio, Texas.

Congdon, Roger D., 2001, Development of a groundwater model for Independence Valley; northern Elko county, Nevada [abs.]: Geological Society of America Abstracts with Programs, Annual Meeting, Boston, Massachusetts.

Congdon, R.D., 2000, Use of differential rates of change in the potentiometric surface to discern aquifer heterogeneities and preferred paths in the vicinity of dewatering operations [abs.]: Geological Society of America Abstracts with Programs, v. 32, no.7, p. A-361.

Schmidt, T.G., McFarlane, D.N., and Congdon, R.D., 2000, Preliminary study of remediation strategies for historic acid mine drainage in northeast Nevada [abs.]: Geological Society of America Abstracts with Programs, v. 32, no.7, p. A-284.

Congdon, R.D., Project Manager, 2000, Draft Environmental Impact Statement; Newmont Mining Corporation's South Operations Area Project Amendment. Greystone, Inc. prepared the EIS and several reviewers were involved.

Webster, J.D., Congdon, R.D., and Lyons, P.C., 1995, Determining pre-eruptive compositions of late Paleozoic magma from kaolinized volcanic ashes; analysis of glass inclusions in quartz microphenocrysts from tonsteins, 1995, *Geochimica et Cosmochimica Acta*. v. 59, no. 4, p. 711-720.

Finkelman, R.B., Bostick, N.H., and Congdon, R.D., 1994, Inorganic geochemistry of lignite in the lone Formation from the vicinity of the Mother Lode gold deposit, Amador County, California [abs.]: Annual Meeting of the Society for Organic Petrology. Eleventh annual meeting of the Society for Organic Petrology; abstracts and program. (James Pontolillo, editor), v. 11, p. 25-27.

Robbins, E.I., Stanton, M.R., Tilk, J.E., Congdon, R.D., Evans, H.T., Jr., Gullett, C.D., Sanders, M.B., Sato, Motoaki, Schaefer, H.T., and Seal, R.R., 1994, II. MICHIGAN. Association of microbes with authigenic copper-chloride mineral films (atacamite and paratacamite) and petroleum residue at depth in the White Pine copper mine, Michigan [abs.]: Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting, v.19, p. 94.

Congdon, R.D., Lyons, P.C., and Spears, D.A., 1993, Westphalian tonsteins in Western European Coal Measures [abs.]: Geological Society of America Abstracts with Programs, v. 25, no. 6, p. 77.

Lyons, P.C., Congdon, R.D., and Webster, J.D., 1993, Mid-Continent correlation of the fire clay tonstein using Cl and Y/Th data [abs.]: Geological Society of America Abstracts with Programs, v. 25, no. 6, p. 76-77.

Lyons, P.C., Haley, B.R., Congdon, R.D., Outerbridge, W.F., Evans, H.F., Jr., and Dulong, F.T., 1993, A volcanic connection between the Pennsylvanian of the Mid-continent and Appalachian regions [abs.]: Geological Society of America Abstracts with Programs, v. 25, no. 1, p. 37.

Congdon, R.D., and Resmini, R.G., 1993, Differentiation style in the Box Elder and Shonkin Sag laccoliths; Dependence on initial conditions [abs.], Eos, Transactions, American Geophysical Union, v. 74, no. 16, p. 336.

Lyons, P.C., Haley, Boyd, Congdon, R.D., Outerbridge, W.F., Evans, H.F., Jr., and Dulong, F.T., 1993, A volcanic connection between the Pennsylvanian of the Mid-continent and Appalachian regions [abs.]: Geological Society of America Abstracts with Programs, v. 25, no. 5, p. 37.

Lyons, P.C., Spears, D.A., Outerbridge, W.F., Congdon, R.D., and Evans, H.F., Jr., 1993, Euramerican tonsteins; Overview, magmatic origin, and depositional-tectonic implications: Palaeogeology, Palaeoclimatology, and Palaeoecology.

Lyons, P.C., Cross, A.T., Gao, Z., Gillis, K., Calder, J.H., Zodrow, E.L., and Congdon, R.D., 1992, Discovery of in situ carbonate petrifications (coal balls) in the Foord Seam (Westphalian C, Upper Carboniferous), Stellarton, Nova Scotia, Canada; Implications for origin of sulfur in the Foord Seam: 1993 AAPG Eastern Section Meeting.

Lyons, P.C., Outerbridge, W.F., Congdon, R.D., Evans, H.T., Jr., and Capiro, M., 1992, Volcanic source and plate tectonic setting of Carboniferous coal-tonsteins, Appalachian basin: XII International Congress of Carboniferous and Permian Geology and Stratigraphy, Comptes Rendus.

Lyons, P.C., Outerbridge, W.F., Triplehorn, D.M., Evans, H.T., Jr., Congdon, R.D., Capiro, M., Hess, J.C., and Nash, W.P., 1992, An Appalachian isochron; A kaolinized Carboniferous air-fall volcanic ash deposit (tonstein): Geological Society of America Bulletin, v. 104, p. 1515-1527.

Congdon, R.D., Lyons, P.C., and Outerbridge, W.F., 1992, Use of silicate-melt inclusions in determining magmatic source of kaolinized volcanic ash beds (tonsteins) in coal beds in the Appalachian basin [abs.]: Geological Society of America Abstracts with Programs, v. 24, no. 3, p. 13.

Lyons, P.C., Outerbridge, W.F., Congdon, R.D., Evans, H.T., Jr., and Slucher, E.R., 1992, "Fingerprinting" of kaolinized volcanic ash beds (tonsteins) as a tool in the correlation of coal beds in the Appalachian basin [abs.]: Geological Society of America Abstracts with Programs, v. 24, no. 3, p. 60.

Outerbridge, W.F., Lyons, P.C., Congdon, R.D., Evans, H.T., Jr., and Slucher, E.R., 1992, Coal tonsteins in stratigraphic analysis in the Middle Pennsylvanian of the central Appalachian Basin [abs.]: Geological Society of America Abstracts with Programs, v. 24, no. 3, p. 67.

Lyons, P.C., Outerbridge, W.F., Congdon, R.D., and Slucher, E.R., 1992, Stratigraphic implications of Carboniferous coal-tonstein research in the Appalachian basin [abs.]: Geological Society of America Abstracts with Programs, v. 24, no. 3, p.

Congdon, R.D., and Nash, W.P., 1991, Eruptive pegmatite magma- Rhyolite of the Honeycomb Hills, Utah: *American Mineralogist*, v. 76, p. 1261-1278.

Marsh, B.D., Gunnarsson, B., Congdon, R.D., and Carmody, R., 1991, Hawaiian basalt and Icelandic rhyolite: Indicators of differentiation and partial melting: *Geologische Rundschau*, v. 80, no. 2, p. 481-510.

Congdon, R.D., 1991, The solidification of the Shonkin Sag laccolith: Mineralogy, petrology, and experimental phase equilibria: Dissertation.

Congdon, R.D., and Marsh, 1990, Crystal size distributions and differentiation in the Shonkin Sag laccolith, Montana [abs.]: *Eos, Transactions, American Geophysical Union*, v. 71, no. 17, p. 646.

Congdon, R.D., and Marsh, 1989, The Shonkin Sag laccolith, experimental phase equilibria [abs.]: *Geological Society of America Abstracts with Programs*, v. 21, no. 6, p. A262.

Congdon, R.D., and Nash, W.P., 1988, High fluorine rhyolite - An eruptive pegmatite magma at the Honeycomb Hills, Utah: *Geology*, v. 16, no. 11, p. 1018-1021.

Congdon, R.D., and Marsh, 1988, Crystal capture by solidification and differentiation in the Shonkin Sag laccolith, Montana [abs.]: *Geological Society of America Abstracts with Programs*, v. 20, no. 7, p. A157.

Nash, W.P., and Congdon, R.D., 1987, Accessory minerals in high fluorine rhyolite - composition and partition coefficients [abs.]: *Eos, Transactions, American Geophysical Union*, v. 68, no. 44, p. 1513.

Congdon, R.D., 1987, Petrology and geochemistry of the Honeycomb Hills rhyolite, Utah: Salt Lake City, University of Utah, M.S. thesis, 139 p.

Congdon, R.D., and Nash, W.P., 1986, High fluorine rhyolite of the Honeycomb Hills, western Juab county, Utah [abs.]: *Geological Society of America Abstracts with Programs*, v. 18, no. 5, p. 347-348.

Nash, W.P., Petersen, E.U., and Congdon, R.D., 1985, Fluorsiderophyllite in rhyolite - Avoidance of the "Fe-F Avoidance Rule" [abs.]: *Eos, Transactions, American Geophysical Union*, v. 66, no. 46, p. 1112.