



Eric J. Harmon, P.E. **Principal**

Education

- Prof. Engr., Hydrogeology, Colorado School of Mines, 1991
- B.Sc., Geophysical Engineering, Colorado School of Mines, 1978

Registrations/Affiliations

- Registered Professional Engineer:
 - Colorado No. 20418
 - Wyoming No. 5030
 - Nebraska No. 8834
 - Arizona No. 38144
- Geological Society of America (Hydrogeology Division)
- International Association of Hydrogeologists (IAH)
- Colorado Ground Water Association (past Board member)
- American Water Resources Association (Colorado Chapter)
- Engineers Without Borders (Professional Mentor)

Contact Information

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Experience Overview

Mr. Harmon is a Principal and Hydrogeologist with HRS Water Consultants, Inc. He has extensive experience in evaluation of ground water resources and ground water/surface water interaction; water rights analysis, hydrogeology, and water well engineering. He is an expert in hydrogeologic evaluations, water-well design and testing, and ground water development. He has substantial project management experience in ground water evaluations and development for potable water supplies, irrigation water, water rights, aquifer sustainability, and water quality. Following are some examples of projects he has supervised or participated in.

Evaluation of ground water supplies, hydrogeology, ground water – surface water interactions, injury analyses, and other hydrogeologic aspects of water rights development and assessment in the Rio Grande Basin, the South Platte River Basin, the Denver Basin bedrock aquifers, the upper Arkansas River Basin, the Yampa River Basin, the Eagle and Colorado River Basins, on the high plains, and in mountainous fractured-rock aquifers, for many clients in over 35 years of private consulting practice. He was a certified well tester from 1997 through 2004.

Mr. Harmon has been qualified as an expert witness and has testified on topics including hydrogeology, water rights, ground water, water quality, hydrology, remote sensing, aqueous geochemistry, geophysics, ground water modeling, and related disciplines. He has testified in the Water Courts in Colorado Water Divisions 1, 2, and 3; in U.S. District Court (District of Arizona), in the Maricopa County, AZ Superior Court, at the Dept. of Water Resources for the State of Idaho; before the Colorado Ground Water Commission, before the Colorado State Engineer, and in District Courts in Adams, Douglas, El Paso, Jefferson, and Weld County, Colorado.

Representative Experience

- Project Manager for the ground water component of the Rio Grande Decision Support System project in the San Luis Valley, Colorado, for the Colorado Water Conservation Board and Colorado Division of Water Resources. This project included the design and implementation of 15 confined aquifer piezometers, 13 extensometers, and 15 aquifer tests.
- Project Manager for ground water resources investigations including assessment, development, testing, and modeling of alluvial and bedrock aquifers in the northeast Denver metropolitan area, for South Adams County Water & Sanitation District. This included site selection, design, and testing of the first multi-lateral horizontal collector well in Colorado: successful in securing over 10 MGD of new municipal supply.
- Project Manager for hydrogeologic investigations and a ground water model to help protect water rights, Great Sand Dunes National Park, San Luis Valley, Colorado, for the National Park Service. Successfully achieved Court approval of the first in-place groundwater right under State law in Colorado.
- Hydrogeologic analysis, site selection, design, and testing of a new alluvial aquifer wellfield for Gering, Nebraska. Successful in securing over 14 MGD of new municipal supply.
- Project Manager for a water supply master plan for the Morrison Creek Metropolitan Water & Sanitation District, Routt County, Colorado.

- Evaluated the hydrogeology and ground water – surface water interactions represented in a ground water model of the Eastern Snake River Plain aquifer, southern Idaho, on behalf of Idaho Power and Clear Springs Foods, Inc.
- Evaluated hydrogeology and ground water – surface water interactions; analyzed applicability of different modeling methods, and testified in a hearing on the San Pedro River Basin as part of the Gila River General Water Rights Adjudication, Arizona, for Phelps-Dodge and AZ Public Service Co.
- Supervised testing of 20 irrigation wells for efficiency and power conversion coefficients, lower North Platte River Basin, Wyoming, for the Wyoming Attorney General’s Office.
- Hydrogeologic analysis of changes of use for certain water rights located on the Cache la Poudre River, Colorado, for the New Cache la Poudre Irrigating Company.
- Economic analysis of wellfield development in the Lost Creek Designated Ground Water Basin, Colorado, for South Adams County Water & Sanitation District.
- Project Manager for a feasibility study of Managed Aquifer Recharge in unconfined and confined aquifers in the southern San Luis Valley, Colorado, for the San Luis Valley Irrigation Well Owners Assn.
- Designed and supervised a borehole flow-logging and well rehabilitation program to identify zones of water production and quality differences and improve water quality in a confined aquifer production well for the City of Alamosa, Colorado.
- Project Manager of a hydrogeologic investigation into the feasibility of using the deep confined aquifer in the San Luis Valley as a supplemental irrigation water supply, for the Colorado Water Resources and Power Development Authority.
- Project Manager of a three-year water supply improvement project to upgrade from surface intakes to ground water supplies, to prevent contamination and to mitigate whirling disease at five State fish hatcheries owned and operated by the Colorado Division of Wildlife.
- Project Manager for a National Wildlife Refuge baseline study of ground water, water rights, water quality, wetlands, and land-use for a proposed national wildlife refuge in the South Platte Valley, Colorado, for the U.S. Fish & Wildlife Service.
- Conducted a facilities assessment, including estimation of replacement and rehabilitation cost, of over 30 shallow and deep water wells at the Monte Vista National Wildlife Refuge, San Luis Valley, Colorado, for the U.S. Fish and Wildlife Service.
- Evaluated the hydrogeology of the Conejos River valley, including the San Antonio River valley and Punche Arroyo, Conejos County, Colorado, for the Colorado Division of Water Resources, as part of Rio Grande Decision Support System enhancements to the hydrogeology of the San Luis Valley.
- Water rights historical use analyses and water rights appraisals for over 20 projects in the South Platte River basin, upper Arkansas River basin, San Luis Valley, and elsewhere.
- Designed over 60 unconfined aquifer and confined aquifer production water wells ranging in depth from less than 100 feet to over 2,500 feet, with production rates up to 9,000 gpm, in widely varying formations and drilling conditions.
- Supervised and conducted aquifer tests of unconfined and confined aquifer water wells for over 30 municipalities, special districts, and private firms in Colorado.

VOLUNTEER EXPERIENCE

As a Professional Mentor for Engineers Without Borders - USA, Mr. Harmon led a team of graduate engineering students in assessment, design, and implementation of a solar-powered ground water supply pump and well system for a village in the Chao Valley, northern coastal Peru. Using hydrogeologic mapping and remote sensing imagery analysis, the team successfully located a ground water supply. The test well was successful and is in production, producing in excess of 50 L/sec.

Mr. Harmon aided a team of professionals from the Clinton HIV / Aids Initiative in Malawi, southeast Africa, in assessing the ground water potential and water supply remediation needs of three different districts in the country based on health metrics, remote sensing image analysis, hydrogeologic mapping, and onsite assessments.

Developed and taught United Nations sponsored training programs in water-well design, drilling, and testing for drilling supervisor trainees from Botswana.

Invited lecturer to graduate classes in water well design and testing, Colorado School of Mines Department of Geology and Geological Engineering.

Invited lecturer on hydrogeology and water rights at the University Of Denver College Of Law (1992 – 2012).

PUBLICATIONS and PRESENTATIONS

Harmon, E.J., 2017 (expected publication date), Groundwater Resources of the San Luis Basin. *In* Beeton, J., Editor, San Luis Valley: Geology, Ecology, and Human History. University of Colorado Press, Boulder, CO.

Harmon, E.J., 2016, What is the Confined Aquifer System and How Does It Work? Invited lecture to Colorado Field Institute, Alamosa, Colorado.

Harmon, E.J., Davey, J.A., R.M. Kirkham, 2013, Characteristics of the Conejos Aquifer, the Major Bedrock Aquifer in the San Juan Sag, Eastern San Juan Mountains, Rio Grande County, Colorado – Part 2: Implications for Ground Water Protection and Energy Development. Abstract and presentation, Geological Society of America annual meeting.

Kirkham, R.M., Davey, J.A., Harmon, E.J., 2013, Characteristics of the Conejos Aquifer, the Major Bedrock Aquifer in the San Juan Sag, Eastern San Juan Mountains, Rio Grande County, Colorado – Part 21: Geology, Water Quality, and Heterogeneity. Abstract and presentation, Geological Society of America annual meeting.

Harmon, E.J., September, 2011 “Overview of the Hydrogeology of the San Luis Valley” invited faculty; class taught to Colorado Bar Association Continuing Legal Education Water Court Practice Program.

Harmon, E.J., April, 2011, Hydrology of the Rio Grande Basin. Invited presentation to CLE International: “Law of the Rio Grande” symposium, Santa Fe, NM.

Harmon, E.J., and Mark R. Palumbo, November, 2010 “Ground Water 201” invited faculty; class taught to Colorado Bar Association Continuing Legal Education.

Harmon, E.J., October, 2010, “Hydrogeologic Controls by Depositional and Lithofacies Transitions” poster session, Geological Society of America annual meeting.

Harmon, E.J., April 2010, “Hydrology and Hydrogeology – Basic Concepts” Invited presentation to the Conference of Western Attorneys General, Water Law Conference.

Harmon, E.J., January 2010, “Experiences in Malawi and Peru for Engineers Without Borders USA”. Abstract and presentation for Colorado Ground Water Association.

Harmon, E.J., 2006, “Subsurface Geohydrology of the San Luis Basin”. Abstract and presentation, “Geology for Water: Alamosa Geology Conference” U.S. Geological Survey and Adams State College.

Harmon, E.J. 2002, “Extensometer Data as an Alternative Means of Determining Specific Storage”. Abstract and presentation, Geological Society of America Annual Conference.

Harmon, E.J., 2000, “Arsenic and Old Wells – Mitigation of Arsenic in Confined Water Wells, San Luis Valley, Colorado”. Presented to Colorado Ground Water Association.

- Harmon, E.J., 1998 "Ground Water in the San Luis Valley". In Ground Water Atlas of Colorado, Colorado Ground-Water Association.
- Harmon, E.J., 1994, "Hydrogeology of Sand Creek, Great Sand Dunes National Monument, Colorado." Presented to Geological Society of America Rocky Mountain Section Annual Meeting.
- Harmon, E.J., 1994, "Potential for Land Subsidence Due to Confined Aquifer Pumping in the San Luis Valley, Colorado." Presented to Geological Society of America Rocky Mountain Section Annual Meeting.
- Harmon, E.J., and M. F. Hajicek, 1992, "Schlumberger Soundings and Sand-Column Resistivity Testing for Determining Stream-Aquifer Connection", Great Sand Dunes National Monument, Colorado, in Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems, Society of Engineering and Mineral Exploration Geophysicists, pp. 275-290.
- Harmon, E.J., 1992, "Exporting Ground Water from Colorado's San Luis Valley: AWDI'S Nontributary Claim" in Symposium Proceedings "Uncovering the Hidden Resource: Groundwater Law, Hydrology, and Policy in the 1990's." Natural Resources Law Center, University of Colorado at Boulder.
- Harmon, E.J., 1992, "Liquid Assets and Paper Water: Valuation of Ground Water Under Colorado's Prior-Appropriation System - Traditional Basis and New Issues." Presented to Environmental Protection Agency Conference: Clean Water and the American Economy. Washington, D.C., October, 1992.
- Hanna, T.M., and E.J. Harmon, 1989, "An Overview of the Historical, Stratigraphic, and Structural Setting of the Aquifer System of the San Luis Valley", in Harmon, E.J., ed., Water in the Valley. Colorado Ground Water Association 8th Annual Field Trip Guidebook, p. 1-34.
- Harmon, E.J., 1989, "Ground Water Recharge and Discharge in the Confined Aquifers of the San Luis Valley", in Harmon, E.J., Ed., Water in the Valley. Colorado Ground Water Association 8th Annual Field Trip Guidebook, p.35-48.
- Harmon, E.J., 1989, "Subsidence Potential Due to Confined-Aquifer Pumping in the San Luis Valley", in Harmon, E.J., Ed., Water in the Valley. Colorado Ground Water Association 8th Annual Field Trip Guidebook, p.177-187.
- Harmon, E.J., and T.H. Gilmer, 1989, "San Luis Valley Field Trip Road Log", in Harmon, E.J., Ed., Water in the Valley. Colorado Ground Water Association 8th Annual Field Trip Guidebook, p. 279-292.
- Zimpher, G.L., E.J. Harmon, and, B.C Boyce, 1988, "Disposal of Production Water from Oil and Gas Wells in the Northern San Juan Basin, Colorado", In Geology and Coal-bed Methane Resources of the Northern San Juan Basin, Colorado and New Mexico. James E. Fassett, Editor. Rocky Mountain Association of Geologists.
- Gilmer, T.G., E.J. Harmon, D.M. Kronig, 1986, "Estimation of Alluvial Aquifer Characteristics from Resistivity Soundings", in Surface and Borehole Geophysical Methods and Ground Water Instrumentation Conference Proceedings, National Water Well Association.
- Harmon, E.J., 1984, "Investigation of a Previously Unexplored Basaltic Aquifer Using Complementary Geophysical Methods". In NWWA/EPA Conference: Surface and Borehole Geophysical Methods in Ground Water Investigations.
- Harmon, E.J. (Editor), 1984, Mine, Mountain, and Glacial Geology of the Front Range, Mosquito Range, and South Park. Colorado Ground Water Association Annual Field Trip Guidebook.
- Harmon, E.J., 1984, "Outline of the Geology of South Park", in Harmon, E.J., ed., Mine, Mountain and Glacial Geology of the Front Range, Mosquito Range, and South Park. Colorado Ground Water Association Annual Guidebook, p.32-34.

Expert Testimony 2007 - 2017

- State of Colorado, Dept. of Natural Resources, Case No. 15CW3024, Rules Governing the Withdrawal of Groundwater in Water Division 3 (the Rio Grande Basin), deposition testimony, 2017.
- Upper Black Squirrel Groundwater Management District, Booker Trusts, and Farmer Family Objectors, Meridian Ranch Replacement Plan, 15GW14, deposition and trial testimony, 2016 and 2017.
- Timbro Ranch/Noble Energy, Division 1, Timbro Ranch & Cattle LLC , Nontributary Claim, trial testimony, 2015.
- Growing Roots, LLC, Division 2, Case No. 12CW111, Application for Water Storage Rights, deposition and trial testimony, 2014.
- Northern Colorado Water Association, Division 1, Case No. 03CW268, Application for Water Rights and Plan for Augmentation, trial testimony, 2013.
- Ms. Janice Mark, Board of Examiners of Water Well Contractors, Variance Request for a Well Abandonment Procedure, hearing testimony, 2013.
- J. Dwayne and Daphne M. Goodwin, Lakewood, Colorado, Case No. 08CW156, Application for Water Rights and Plan for Augmentation, deposition testimony, 2012.
- Renaissance Enterprise Group, LLC, Denver, Colorado, Case No. 09GW12, Petition for Rulemaking to Make Hay Gulch Overappropriated, deposition and trial testimony, 2010.
- Freeport-McMoRan Corporation, U.S. District Court, District of Arizona, Phoenix, Arizona, Case No. CV 31-0061-TUC-SRB, Applications for Water Rights Transfer in the Upper Gila River Valley, Arizona, deposition and trial testimony, 2009 and 2010.
- NBJ Ranch, Maricopa County Superior Court, Phoenix, Arizona, Salt River Project Request for Injunction of Well Pumping, trial testimony, 2009.
- Charles & Angela Acker, Arapahoe County District Court, Littleton, Colorado, Case No. 208CV183, Dispute between well owner and well contractor, as to whether well construction met standards, deposition testimony, 2009.
- Steven J. Wendell, Douglas County District Court, Castle Rock, Colorado, Case No. 07DR1567, Wendell v. Wendell – Appraised Valuation on Bedrock Water Rights, hearing testimony, 2009.
- NBJ Ranch, Phoenix, Arizona, Salt River Project Request for Injunction of Well Pumping, deposition testimony, 2009.
- National Park Service, Division 3, Case No. 2004CW35, In-place Ground Water Right for Great Sand Dunes National Park, deposition testimony, 2009.
- Kent Mace, Division 2 Referee’s Hearing, Case No. 06CW024, Wet Meadow Drainage Impact on a Nearby Spring, hearing testimony, 2008.
- NBJ Ranch, Phoenix, Arizona, Salt River Project Request for Injunction of Well Pumping, deposition testimony, 2008.
- Clear Springs Foods, Inc., Dept. of Water Resources, Boise, Idaho, Clear Springs Farm and Snake River Farm Delivery Call, deposition and hearing testimony, 2007.