

Marvin Glotfelty, PG

Principal Hydrogeologist

Expertise

Hydrogeology/Geology
Water Resources Investigations
Well Assessment, Design, and Installation

Education

M.S., Geology, Northern Arizona University, 1985
B.S., Geology, Northern Arizona University, 1979



Registrations

Registered Geologist: Arizona No. 22744
Registered Geologist: California No. 4988
Licensed Well Driller: Arizona Nos. 160 and 672

Professional Experience

Areas of specialization include groundwater resources investigations, well siting studies, well design and construction management, evaluation and rehabilitation of water wells (including physical, chemical, and microbiological impacts), and water supply studies. Mr. Glotfelty is co-founder and Principal Hydrogeologist of Clear Creek Associates, and has been responsible for managing numerous hydrogeologic and water resources projects. During his career spanning over three decades, Mr. Glotfelty has been involved with almost every aspect of hydrogeology, water supply studies, aquifer testing, well design, well rehabilitation, water rights issues, and water quality assessment. He has been involved with the design, installation, rehabilitation, and abandonment of over 800 water wells in the United States. As detailed below, Mr. Glotfelty has given over 100 presentations on hydrogeologic and water well topics and he has authored over 20 publications, including a Dictionary of Driller's Terms (published by the National Ground Water Association in 2004), and editorial review of a chapter on Water Well Construction & Abandonment for the 3rd ed. *Groundwater & Wells*, which was published by Johnson Screens Co. (2007). In 1995, he received the *City of Phoenix Mayor's Environmental Award* for his work with rehabilitation of municipal wells to improve their water quality, and he was selected as the National Ground Water Association's *Distinguished McElhiney Lecturer* for 2012.

Representative Projects

Well Siting Study Projects

Mr. Glotfelty has been involved with well siting studies and recharge siting studies covering approximately 1,500 square miles in Arizona, including projects for private water purveyors such as Arizona-American Water Company; Foothills Golf Club; Forest Highlands Golf Club; Global Water Company; Kachina Village Utilities; and Tonto Hills Water Company. He has also conducted well or recharge siting studies for municipalities in Arizona such as the Cities of Avondale, Casa Grande, Chandler, Mesa, Peoria, Phoenix, Scottsdale, Show Low, Surprise, and Tempe.



Production Well Design and Installation Projects

Mr. Glotfelty has been involved with hundreds of projects involving the design and construction management of water supply well installations for municipalities, private water companies, mining facilities, power plants, or other industrial facilities.

Municipal Public Supply Well Projects

Includes *two wells* in Avondale, AZ; *one well* in Benson, AZ; *eleven (11) wells* in Buckeye, AZ; *six wells* in Chandler, AZ; *one well* in El Mirage, AZ; *two wells* in Goodyear, AZ; *two wells* in Kingman, AZ; *six wells* in Mesa, AZ; *three wells* in Nogales, AZ; *three wells* in Peoria, AZ; *eight wells* in Phoenix, AZ (of which two were Aquifer Storage & Recovery wells); *two wells* in Prescott, AZ; *seven wells* in Scottsdale, AZ (of which two were Aquifer Storage & Recovery wells); *one well* in Show Low, AZ; *thirteen (13) wells* in Surprise, AZ; *two wells* in Tempe, AZ; *two wells* in Tolleson, AZ; and *one well* in Yuma, AZ.

Non-Municipal Water Well Installation Projects

Examples of *water supply well installations for private water companies* or other private entities include: Arizona-American Water Company (*nine wells* in the west Phoenix, AZ metropolitan area, and *two wells* at Bullhead City, AZ); Litchfield Park Service Company (*one well*); Metro Water Company in the north Tucson, AZ area (*three wells*); Global Water Resources in Buckeye, AZ (*six wells*); and Kachina Village Utilities near Flagstaff, AZ (*two wells*). *Industrial or irrigation well design/installation projects* include: First Solar Alpine Power Plant near Lancaster, CA (*one well*); California Baptist University at Riverside, CA (ongoing project, for one well); Foothills Golf Club in Phoenix, AZ (*two wells*); Harquahala Generating Power Plant in western AZ (*five wells*); and Forest Highlands Golf Association near Flagstaff, Arizona (*one well*). Mr. Glotfelty has also overseen the installation of *water supply wells on Native American lands*, such as: Window Rock High School at Fort Defiance, AZ; Second Mesa Day School at Second Mesa, AZ; and the Salt River Pima-Maricopa Indian Community near Mesa, AZ.

As Project Manager, Principal Hydrogeologist, or Principal-in-Charge for these projects, Mr. Glotfelty was responsible for the design, installation, and testing of the water supply well for the client. He coordinated contractor activities, and supervised preparation of lithologic logs, analyzed geophysical logs and sieve analyses of pilot hole cuttings, coordinated the collection and analysis of depth-specific groundwater samples, and supervised the collection and analysis of hydrologic data (falling-head tests). Based on that data, he supervised or prepared the site-specific well design for each public supply well. He also analyzed aquifer test data, and provided a recommended permanent pump setting and discharge rate for each new well.

Well Evaluation and Rehabilitation Projects

Mr. Glotfelty conducted numerous well evaluation/rehabilitation projects for municipalities and private water companies to improve the pumped water quality through the structural modification of the well. These projects included site-specific well analyses utilizing flow profile analysis (spinner flowmeter logging or dye tracer profiling) under both dynamic (pumping) and static (non-pumping) conditions, along with and depth-specific groundwater sampling to determine the hydrogeologic, chemical, and biological conditions of the well. In addition, conventional aquifer test data were collected and analyzed for each well, and a well video survey of each well was conducted to assess its structural condition. Well evaluation/rehabilitation projects include: *four wells* for Arizona-American Water Company near Surprise, AZ; *four wells* for the City of Chandler, AZ; *twenty (20) wells* for the City of Cottonwood, AZ; *one well* for the Town of Gilbert, AZ; *five wells* for the City of Phoenix, AZ (rehabilitation of Wells No. 211, No. 214, and No. 250 resulted in a 30% to 95% reduction of nitrate concentrations, for which Mr. Glotfelty was awarded the City of Phoenix Mayor's Environmental Award in 1995); *eight wells* for the



City of Mesa, AZ; *fourteen (14) wells* for Global Water Company in Pinal County, AZ; *one well* for the City of Scottsdale, AZ; *Two wells* for the City of Surprise, AZ; *five wells* for the City of Ontario, CA; *two wells* for San Antonio Water Company in Upland, CA; and *one well* for Adaman Water Company near Goodyear, AZ; and *one well* for the Harquahala Power Plant in western Arizona.

The tasks performed as part of these projects included: evaluation of the spinner logs or dye tracer flow profile data, as well as the depth-specific (zonal) groundwater samples under dynamic (pumping) as well as static (non-pumping) conditions; collection and analysis of aquifer test data; and review of well video surveys. When the well evaluation indicated structural modification would improve the well, the well rehabilitation design was based on these analyses. Mr. Glotfelty was responsible for the design and construction administration of the structural modification of each well. He coordinated and supervised the inner-string cementing operations, utilizing a combination of water well and oil well industry techniques.

Water Resources Investigation Projects

Water Resources Study, Salt River Valley, Citizens Utilities Company, AZ

Project Manager and Principal Investigator. Coordinated a comprehensive water resources study that covered almost 2,000 square miles in the west Salt River Valley, and included evaluations of the current and future groundwater and surface-water resources through use of the computer model MODFLOW, as well as comprehensive geologic, hydrogeologic, and water quality assessments. Based on evaluations of potential water distribution systems, groundwater recharge options, population and land use projections, and regulatory constraints, the water resources investigation provided a prioritization of the development options available to the client.

Evaluation of Patterson and Fulton Wells, City of Peoria, AZ

Project Manager. Evaluated two municipal wells to assess the problem of sand invasion in one well and the problem of aerated water in the other well. Specific tasks for this project included review of all documentation from the City's files pertaining to the wells, evaluation of the City's water distribution system model, and a cost-benefit analysis to determine the most cost-effective and feasible alternative for the remediation of the problem at each well. The investigation resulted in the identification and prioritization of several alternatives for addressing each well's problem. The top-ranked solution for each well was recommended, and a detailed discussion of the proper approach and protocol for the design and installation of a public supply well was also provided in the final report.

Central Arizona Project Water Use Feasibility Study, Citizens Utilities, West Salt River Valley, AZ

Project Manager and Project Hydrogeologist. Conducted a water use feasibility investigation in preparation for rate adjustment proceedings before the Arizona Corporation Commission (ACC). The investigation included the evaluation of four water use options related to direct treatment and use of CAP water or alternatives for groundwater recharge projects. The water use feasibility study included consideration of the hydrologic impact of each alternative, as well as the economic benefits or disadvantages of each option. The project was completed within a very tight schedule and in budget, and received a letter of commendation from the client.

City of Surprise Groundwater Recharge Feasibility Study, Surprise, AZ

Project Manager. Hydrogeologic investigation involving the preparation of several hydrogeologic cross sections and determination of aquifer and vadose zone characteristics. The purpose of the recharge feasibility study was to determine appropriate recharge locations and methods for injection of Central Arizona Project water and treated effluent that will result in a long-term reliable water resource for the City of Surprise.



Basin-Wide Hydrologic Investigation, AZ

Project Manager and Principal Investigator, confidential client. Collected and analyzed over 70 years of hydrologic data from the large (300-square-mile) basin. Development of the database for the project included the collection of groundwater elevation and quality data in order to define water rights and prepare for potential litigation relating to the ongoing adjudication of the Gila River System. Analyses included collection of hydrologic data in the field, as well as review of over 60 publications, review of approximately 500 water level measurements, 650 drillers' logs, and 4,000 water quality analyses.

Hydrogeologic Investigation, Double-O Ranch, Seligman, AZ

Project Manager and Principal Investigator. Hydrogeologic study of a large (365 square miles under fence) ranch. The project involved evaluation of the groundwater resources of the ranch, and the physical and economic options for development of a distribution (pipeline) system for delivering water to northern Arizona communities (such as Tusayan, Flagstaff, Williams, and the Navajo Nation). The aerial extent and geology at the ranch necessitated consideration of groundwater flow within fractured Paleozoic sandstone and limestone aquifers, fractured volcanic rock, and also basin-fill alluvial aquifers. The evaluation included the analysis of geologic lineaments on the ranch to determine the most favorable groundwater flow paths through the fracture-dominated aquifer systems. This project included the preparation of numerous geologic cross sections and groundwater elevation maps, as well as an evaluation of the physical and economic requirements to distribute the water to neighboring communities through an existing easement.

Assured/Adequate Water Supply Study Projects

Performed dozens of water adequacy studies and assured water supply studies throughout Arizona from 1984 to present. Projects required the demonstration of an adequate 100-year water supply to the satisfaction of the Arizona Department of Water Resources. Tasks included aquifer testing and analysis, preparation of groundwater elevation contour maps, preparation of hydrogeologic cross sections, water quality analysis, analysis of the volume of groundwater which underlies the property, water demand determination, and evaluation of surface water versus groundwater (as necessary for water rights demonstration). For larger or more complex land areas, groundwater modeling was required, which includes model calibration and verification, and simulation runs for a period of 100 years.

Litigation Support Projects

Water Well Evaluation and Expert Testimony, Arbarca et al v. Merck & Co., Inc., et al, Merced, California

Performed an evaluation of a public supply well alleged to have been a pathway of hexavalent chromium contamination, and provided expert testimony before the United States District Court (Case No. 1:07-CV-0388-OWW-DLB). The well evaluation included the review of well records, video survey analysis, spinner/temperature log analysis, and personal communication with the retired driller who installed the well. Based on this information, an expert report, rebuttal report, and other supplemental reports were prepared. Mr. Glotfelty provided deposition testimony, as well as direct and rebuttal testimony before both the judge and jury.

Well Evaluation and Expert Testimony, Wrenn / Bender, LLLP, in support of Gallade Chemical Company, California Superior Court (Orange County) Irvine, California.

Performed an in-depth assessment of several water supply wells, and reviewed regional hydrogeologic data and other expert reports relating to Orange County Water District v. Sabic Innovative Plastics US, LLC et al (Case No. 30-2008-00078246-CU-TT-CXC). This case involved a dispute regarding alleged impacts to a public supply well in the vicinity of the Gallade facility. The well evaluation included the review of well records, video surveys, and well log analysis. Based on that information, Mr. Glotfelty prepared an expert brief and exhibits, and provided deposition testimony.



Well Evaluation and Expert Testimony, Hassard Bonnington, LLP, in support of Hanson Aggregates Mid-Pacific, Inc. in California Superior Court (Santa Barbara County) Santa Barbara, California. Performed an in-depth assessment of a water supply well, reviewed regional hydrogeologic data, and records from the driller, hydrogeologist, and cement supplier involved with the well installation. Other expert reports relating to the case were also reviewed. Slippery Rock Ranch, LLC v. Hansen Well-Do Service, Inc. (Case No. 1381827). This case involved a dispute regarding alleged responsibility for problems with the installation of cement seals in the well, during its construction. The well assessment included review of well records, video surveys, field notes. Based on that information, Mr. Glotfelty prepared expert reports and exhibits, and also provided deposition testimony along with direct and rebuttal testimony before a judge and jury.

Hydrologic Investigation and Expert Testimony, NextLight Renewable Power, Arizona Corporation Commission Hearing, Phoenix, Arizona

Performed an in-depth groundwater resources evaluation of the Whitewing Ranch area, near Dateland, Arizona in support of a hearing presented by NextLight Renewable Power before the Line Siting Committee and the Arizona Corporation Commission (ACC). The hearing involved approval of a planned utility-scale solar power plant, which would require approximately 3,000 acre feet of water per year. The hydrogeologic study included aquifer testing and development of a groundwater flow model to simulate future impacts on both availability and quality of groundwater in the future. Mr. Glotfelty provided oversight of the preparation of a technical report, which was submitted to the ACC hearing officer as direct evidence, and he provided direct and rebuttal testimony before both the Line Siting Committee and ACC hearing officer.

Hydrogeologic Investigation and Expert Testimony, Ryley Carlock & Applewhite, Abbott versus Brady, Casa Grande, Arizona

Performed a hydrogeologic evaluation and provided expert testimony before the United States District Court. This case involved a dispute relating to alleged damages resulting from dewatering activities associated with the construction of a basement facility.

Hydrogeologic Investigation and Expert Testimony, Noel Hebets, Esq., Trimble versus Chattman, Cave Creek, Arizona

Performed a water resources evaluation and provided expert testimony before Arizona Superior Court and in a Hearing of the Gila River Adjudication. This case involved a dispute relating to surface water/groundwater rights relating to a small spring emitting from a mine adit in central Arizona.

Hydrologic Investigation and Expert Testimony, Citizens Utilities Company Rate Case, Phoenix, Arizona

Performed a comprehensive water resources evaluation of the West Salt River Valley (based on the previous work of Mr. Glotfelty and others), in support of a Rate Case presented by Citizens Utilities before the Arizona Corporation Commission. The rate case involved the planned annual use and usefulness of over 17,000 acre feet of water from the Central Arizona Project (CAP) aqueduct. This was one of the largest rate cases for a private water company in the history of the state. Specific tasks included submittal of two reports as direct evidence, written rebuttal testimony, written surrebuttal testimony, written rejoinder testimony, and oral expert testimony and response to cross-examination.

Hydrogeologic Evaluation and Review of Reports for the Verde Valley Water Users Association, Cottonwood, Arizona

Project Manager and Principal Hydrogeologist. Reviewed hydrogeologic reports relating to the adjudication of the Gila River System. Complex issues relating to the relationship between surface water and groundwater were evaluated and discussed. The proposed methods to differentiate groundwater and surface water in expert testimony by others was reviewed and assessed.



Hydrologic Evaluation Relating to the Rehabilitation of a Public Supply Well, City of Peoria, Arizona
Project Manager and Principal Hydrogeologist. Performed a hydrologic evaluation and provided technical support relating to a dispute involving potential litigation. A public supply well had been purchased from Sunny Boy Water Company by the City, and had been rehabilitated to improve its water quality. Contractual obligation for payment for the well rehabilitation by the water company was contested. Project issues included groundwater quality, well design and hydraulics, and the local/regional hydrogeologic system. Technical opinion was provided which resulted in a resolution in favor of the City.

Hydrogeologic Report, Grossman, O'Grady & McGoldrick, Arizona
Testified in an arbitration hearing for the case of U.S. West Communications, Inc. versus Adolf DeRoy Mark. Project issues included well design and hydraulics, and the nature of the local hydrogeologic system in the Cave Creek area.

Environmental Hydrogeology Projects

Large-Scale Aquifer Protection Permit Application Program, Mining Company-Confidential Client, Arizona

Principal Hydrogeologist. Prepared five monitor well designs, and coordinated field activities for the installation of the monitor wells. This project required extensive hydrogeologic and hydrochemical analyses to address the complex geology at the site, and meet the requirements of the Arizona Department of Environmental Quality.

Aquifer Protection Permit Application Program, Stone Container Corporation, Snowflake, Arizona
Senior Hydrogeologist. Prepared three monitor well designs, and supervised field activities for installation of the monitor wells and a continuous core boring. The well designs utilized state-of-the-art technologies and innovative approaches in order to allow for acceptable data acquisition and resist corrosion in the very saline hydrogeological environment. This project required extensive hydrogeologic and hydrochemical analyses, which have been accepted by the Arizona Department of Environmental Quality. Site Characterization Study, RCRA Hazardous Waste Management Facility
Designed wells, supervised drilling program, and conducted geophysical log interpretation for the installation of 29 monitor wells, observation wells, and exploratory borings. The project included continuous coring of over 1,200 feet of alluvium with a wireline core rig, and collection of over 550 feet of driven samples with a hollow-stem auger. Also utilized mud-rotary and air-rotary drilling techniques.

Professional Memberships and Associations

Northern Arizona University College of Engineering and Natural Sciences Advisory Council.

Northern Arizona University Geology Department Advisory Council.

Arizona Hydrological Society (AHS Board of Directors, 1989 to 1993; AHS Phoenix Chapter Vice President, 1990, 1991; AHS Foundation President-elect, 2010-11).

Arizona Water Well Association (Technical Director, 1990 to present; Legislative Committee, 1993 to present).

Mountain States Groundwater Expo (a symposium and conference of the Water Well Association of five southwestern states) (Symposium Coordinator, 1991, 1994, and 1995).

National Groundwater Association (since 1984).

Honorary Advisory Board of Groundwater Age Magazine (1993 to 1995).



Publications/Presentations

Glotfelty, M.F., 2013 *Life Cycle Economic Analysis of Water Wells – Valid for Smaller Wells Too: “Making Connections”* – The official publication of the Louisiana Ground Water Association, Premier Issue, Summer 2013.

Glotfelty, M.F., 2013 *Life Cycle Economic Analysis of Water Wells – Considerations for Design and Construction*: Presentation as part of the Design and Construction of Economic Wells Workshop at the International Mine Water Association Conference, Golden, Colorado, August 5, 2013.

Glotfelty, M.F. and Becker, A., 2013, *Drilling Fundamentals for Hydrogeologists and Engineers Workshop*: a one-day workshop at the National Ground Water Association Summit, San Antonio, Texas, April 28, 2013.

Glotfelty, M.F., 2012 *Life Cycle Economic Analysis of Water Wells – Considerations for Design and Construction*: Distinguished Lecturer for the National Ground Water Association, 2012. Included 37 lectures to well driller associations; hydrological societies; university students and faculty; engineering groups; and water managers in 17 USA states and Canada, in addition to translated webinar presentations in Bolivia and Columbia.

Glotfelty, M.F., 2012, *Guest Lecturer – Applied Hydrogeology, Geology 451, Northern Arizona University*: Guest lecturer, NAU Geology Dept., Flagstaff, Arizona, November 9, 2012.

Glotfelty, M.F. and Becker, A., 2012, *Drilling Fundamentals for Hydrogeologists and Engineers Workshop*: a one-day workshop at the National Ground Water Association Summit, Garden Grove, California, May 6, 2012.

Glotfelty, M.F., 2011, *Guest Lecturer – Applied Hydrogeology, Geology 451, Northern Arizona University*: Guest lecturer, NAU Geology Dept., Flagstaff, Arizona, November 8, 2011.

Glotfelty, M.F. and Kill, D.L., 2011, *Environmental and High-Capacity Water Well Design Workshop*: a two-day workshop sponsored by the National Centre for Groundwater Education and Training, and the National Ground Water Association, Brisbane, Australia, October 10-11, 2011.

Glotfelty, M.F. and Kill, D.L., 2011, *Environmental and High-Capacity Water Well Design Workshop*: a two-day workshop sponsored by the National Centre for Groundwater Education and Training, and the National Ground Water Association, Perth, Australia, October 6-7, 2011.

Glotfelty, M.F. and Heller, N., 2011, *Well Evaluation and Reconstruction Techniques Workshop*: Full-day workshop for the AZ Dept. of Environmental Quality, Tucson, Arizona, April 26, 2011.

Glotfelty, M.F., 2011, *What Do We Know For Sure? Considerations of “Unknown Unknowns” in the Water Well Industry*: Presentation at the Mountain States Groundwater Expo – 2011, Laughlin, Nevada, February 10, 2011.

Glotfelty, M.F., 2010, *Guest Lecturer – Applied Hydrogeology, Geology 451, Northern Arizona University*: Guest lecturer, NAU Geology Dept., Flagstaff, Arizona, November 2010.

Glotfelty, M.F., and Best, M.E., 2010, *Design Versus Constructability - Considerations for Water Supply Wells*: Workshop at the 26th Annual Tri-State Seminar-On-The-River Conference, Primm, Nevada, September 30, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Reconstruction Techniques: Cost Effective Methods and Considerations*: Half-day workshop presented at the Annual Symposium of the Arizona Hydrological Society, Tucson, Arizona, September 1, 2010.



Glotfelty, M.F., 2010, *Well Evaluation and Reconstruction Techniques: Cost Effective Methods and Considerations*: Invited presentation to the City of Pomona, California, August 18, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Reconstruction Techniques: Cost Effective Methods and Considerations*: Invited presentation to the Salt River Project, Phoenix, Arizona, August 3, 2010.

Glotfelty, M.F. and Heller, N., 2010, *Groundwater Production Well Performance Diagnostics, Data Evaluation, and Reconstruction Methods*: Invited presentation at a full-day workshop for the AZ Dept. of Environmental Quality, Flagstaff, Arizona, June 15, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Reconstruction Techniques: Cost Effective Methods to Improve Water Quality*: Invited presentation to the Inland Counties Water Association, Ontario, California, June 9, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Reconstruction Techniques: Cost Effective Methods and Considerations for Water Purveyors*: Invited presentation to the City of Casa Grande, Arizona, May 25, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Rehabilitation, Cost-Effective Methods and Considerations for Water Purveyors*: Invited presentation to the Phoenix Chapter of the Arizona Hydrological Society, April 13, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Rehabilitation, Cost-Effective Methods and Considerations for Water Purveyors*: Invited presentation for the Town of Gilbert, Arizona, April 7, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Rehabilitation, Cost-Effective Methods and Considerations for Water Purveyors*: Invited presentation for the Town of Buckeye, Arizona, March 24, 2010.

Glotfelty, M.F., 2010, *Well Evaluation and Rehabilitation, Cost-Effective Methods and Considerations for Water Purveyors*: Invited presentation for the City of Surprise, Arizona, March 16, 2010.

Glotfelty, M.F., 2009, *Water Well Design and Site Selection*: Invited presentation at the Lorman Seminar: Groundwater Wells, Rights and Uses in Arizona, Phoenix, Arizona, February 3, 2010.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of San Fernando, California, October 8, 2009.

Glotfelty, M.F., 2009, *Guest Lecturer – Applied Hydrogeology, Geology 451, Northern Arizona University*: Guest lecturer, NAU Geology Dept., Flagstaff, Arizona, November 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, Golden Hills Community Services District, Tehachapi, California, October 7, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, Los Angeles Department of Water and Power, Los Angeles, California, October 6, 2009.



Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Paramount, California, September 9, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Southern California Water Utilities Association workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, Glendora, California, July 8, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, Coachella Valley Water District, Coachella, California, June 2, 2009.

Glotfelty, M.F., 2009, *Water Well Rehabilitation – Economic Advantages and Technical Considerations*: Invited presentation at a Lorman Educational Services Teleconference. Phoenix, Arizona, May 28, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Redlands, California, May 27, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Big Bear Lake, California, May 21, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Alhambra, California, May 20, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction City of Glendale, California, May 19, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, Victorville Water District, Victorville, California, May 18, 2009.

Glotfelty, M.F., Heller, N., and Bates, G., 2009, *Production Well Profiling Analysis*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of San Bernardino, California, April 17, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Orange, California, April 9, 2009.



Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Hesperia, California, April 8, 2009.

Glotfelty, M.F., 2009, *El Desarrollo y Aplicacion de Evaluaciones Geohidrologicos* [Designing and Implementing Hydrogeological Assessments]. Invited presentation for the Arizona-Baja California Sur Partnership for Water Sustainability, La Paz, Mexico, March 27, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction, City of Palm Springs, California, March 25, 2009.

Glotfelty, M.F. and Heller, N., 2009, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction for the City of Newport Beach, California, March 24, 2009.

Glotfelty, M.F., 2009, *Physical Considerations for Well Design and Construction*: Invited Presentation at the Mountain States Groundwater Expo – 2007, Laughlin, Nevada, February 12, 2009.

Glotfelty, M.F., 2009, *Water Well Design and Site Selection*: Invited presentation at the Lorman Seminar: Groundwater Wells, Rights and Uses in Arizona, Phoenix, Arizona, February 3, 2009.

Glotfelty, M.F. and Heller, N., 2008, *Production Well Profiling Analysis and Production Well Reconstruction Methods*. Invited presentation at the Workshop on Groundwater Production Well Performance Diagnostics, Data Evaluation, and Engineered Reconstruction for the Irvine Ranch Water District, Irvine, California, October 23, 2008.

Glotfelty, M.F. and Wrzosek, D., 2008, *Water Well Design and Construction Management*: Workshop presented for the City of Mesa, Mesa, Arizona, April 11, 2008.

Glotfelty, M.F. and Morris, T., 2008, *Installation, Operation, Rehabilitation, and Evaluation of Water Wells – A Comprehensive Workshop for Well System Operators*: Two-Day Workshop presented for the City of Chandler Reverse Osmosis Facility Annual Training, Chandler, Arizona, March 18 & 19, 2008.

Glotfelty, M.F., 2008, *Water Well Design and Site Selection*: Invited presentation at the Lorman Seminar, Groundwater Wells: Use and Shared Use Agreements in Arizona. Phoenix, Arizona, February 28, 2008.

Glotfelty, M.F. and Gin, G., 2008, *Life-Cycle Cost Analysis of Water Well Materials*: Presentation at the American Groundwater Trust Water Well Performance Workshop, Economic Basis for Operation, Well Rehabilitation & Maintenance Decisions – February 7, 2008, Phoenix, Arizona.

Glotfelty, Marvin F., 2007, *Groundwater & Wells*: 3rd Ed., Sterrett, R.J., ed., Johnson Screens, a Weatherford Company, 2007. Technical Reviewer of Chapter 10 - Water Well Construction and Abandonment pp. 439 – 500. Authored Appendix 9-Q – Public Supply Well Installation Flow Chart (in attached CD).

Glotfelty, M.F., 2007, *Guest Lecturer – Applied Hydrogeology, Geology 451, Northern Arizona University*: Guest lecturer, NAU Geology Dept., Flagstaff, Arizona, November 2007.

Glotfelty, M.F., 2007, *Water Well Design, Evaluation, and Site Selection*: An invited presentation for Centex Homes, Scottsdale, Arizona, November 5, 2007.



Glotfelty, M.F., Gin, G., and Tatlow, M., 2007, *Design and Construction Techniques for Recharge and Recovery Wells*: Full-day workshop at ISMAR6 -the International Symposium on Managed Aquifer Recharge – October 28 – November 2, 2007, Tempe, Arizona. October 28, 2007.

Glotfelty, M.F., and Burchard, G.C., 2007, *Well Assessment Technologies, a.k.a. Well Video Interpretation*: Presented as a workshop at the 23rd Annual Tri-State Seminar-On-The-River Conference sponsored by the Arizona Water Pollution Control Association, Primm, Nevada, September 28, 2007.

Glotfelty, M.F., 2007, *Water Well Design and Site Selection*: Invited presentation at the Lorman Seminar, Groundwater Wells in Arizona: Quantity, Quality, Shared Use, Value, and Restrictions. Phoenix, Arizona, February 28, 2007.

Glotfelty, M.F., 2007, *Material Selection For Proper Well Design*: Invited Presentation at the Mountain States Groundwater Expo – 2007, Laughlin, Nevada, February 8, 2007.

Glotfelty, M.F., and Bartlett, R.D., 2007, *Environmental Issues Affecting Groundwater Resources*: Invited presenters for a Lorman National Teleconference, January 25, 2007.

Glotfelty, M.F. and Burchard, G.C., 2006, *Well Video Interpretation*: National Ground Water Association 2006 Ground Water Expo, Las Vegas, Nevada, December 5-8, 2006.

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