WATER SUPPLY SYSTEMS WORKSHOP

American Ground Water Trust Program – July 13th, 2016
Meeting Room, State Bar of New Mexico, 5121 Masthead NE, Albuquerque, NM 87109

MAXIMIZE SUPPLY FROM WELLS BY CORRECT DESIGN, OPERATION & MAINTENANCE

A one-day program on practical, cost-effective solutions that work. The workshop will explain how to maximize yields and pump performance on existing wells and ensure correct design, construction, pump and pump control selection, and maintenance on new wells. New or existing, this program will enable groundwater users to reduce energy costs and prolong well life. Hear from experts about technologies and techniques to save money by maximizing efficiency and increasing performance. This program is for well owners, irrigators, consultants, engineers & designers, well operators, pump and well contractors. Just one tip on well & pump operation or problem-solving diagnosis could save thousands of dollars in operation costs and reduce replacement expense by extending the asset value of your wells & pumps.

Continuing Education
New Mexico Drillers - Approved for 6.5 CEUs by the NM Office of the State Engineer

WORKSHOP SPONSORS

COTEY CHEMICAL CORP.

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Preferred Pump

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ROSCOE MOSS COMPANY

Supply Systems – Well & Pump Workshop Program

7:30 – 8:10 REGISTRATION (Coffee & donuts) **(Sign in for continuing education)**

8:10 – 8:20 WORKSHOP INTRODUCTION - WELL & PUMP TECHNOLOGIES

Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH

- The water well as the crucial link between aquifer and end user
- Answering the basic question for declining performance: Is it the well the pump or the aquifer?

8:20 – 9:00 WELL HYDRAULICS – THE BASICS

David Kill, P.E. Training Consultant, Xylem Goulds Water Technology, St. Paul, MN

- Definitions of the key hydraulic terms that are used in well efficiency calculations
- Explanations of the flow of water in aquifers towards wells
- Causes of well performance changes
- Flow dynamics through rock fractures or screens into well bores and into pump intakes

9:00 – 10:00 SELECTION AND MAINTENANCE OF PUMPS FOR MAXIMIZING WELL YIELD/ COST BENEFITS

David Kill, P.E. Training Consultant, Xylem Goulds Water Technology, St. Paul, MN

- Causes of pump capacity changes.
- Pump efficiency principles, horsepower and bowl assembly selection criteria
- Pump efficiency testing, identifying the weak link in your system
- Merits of submersible vs. line-shaft for high yield wells
- Case studies of installation and O & M costs for different types of pump
- Pump replacement criteria, $ return on upgrading motor or bowls
- Information needed for deciding on pump specification for high-yield applications

10:00 - 10:15 BREAK

10:15 – 11:15 **EFFICIENT WELL DESIGN AND CONSTRUCTION PRINCIPLES: MAXIMIZING THE LIFE EXPECTANCY AND PRODUCTIVITY OF YOUR WELL**

Kevin McGillicuddy, Senior Hydrogeologist, Roscoe Moss Company, Los Angeles, CA

- How important is it to engage a hydrogeological expert before drilling a new well?
- Importance of investment in design, casing and screen materials, and construction techniques to maximize yield
- How to calculate performance in wells with constantly declining water levels
- Water well drilling, construction & well development methods to maximize yield
- The importance of monitoring and maintenance
- Case studies of improving well performance

11:15 – 12:00 **TYPICAL NEW MEXICO WATER WELL ISSUES: TROUBLESHOOTING AND SOLUTIONS**

Chance Coats, Hydrogeologist, Coats Pump & Supply, Inc., Dexter, NM

- How hydrogeologists and engineers benefit from up-to-date knowledge of wells, pumps and pump controls
- Value of well yield and water quality data for diagnosing well problems
- Reasons for high yield well performance declines
- Importance for monitoring wells to maintain hydraulic contact with the aquifer
- What aquifer pumping tests reveal about a water well

12:00 – 12:30 **ECONOMIC SIGNIFICANCE OF FLEXIBLE DROP PIPE FOR WATER WELLS**

Nicolas Steverlynck, President, Hose Solutions, Inc

- Physical properties of flexible hose (strength and durability of hose)
- Hydraulic performance capabilities (elasticity, pressure thresholds)
- Pump installation and removal methods (connectors, reels, etc.)
- Cost savings for rapid “pump-in, pump-out” during maintenance or rehabilitation

12:30 – 1:30 LUNCH (Provided)

1:30 – 2:15 **DESIGN & APPLICATIONS OF SOLAR WATER PUMPING SYSTEMS**
Eric Macias, COO, Lorentz, Slaton, TX

- Types of solar pumps and their capabilities
- Basic principles for sizing solar water pumping systems
- Types of photovoltaic panels
- System troubleshooting
- Understanding return on investment vs. a/c powered pumping systems

2:15 – 3:15 **INTELLIGENT PUMP VARIABLE FREQUENCY DRIVES**
Dan Peters, Applications Engineer, Yaskawa America, Inc., Cypress, CA

- Energy consumed by pumps
- Fixed speed with valve control vs. VFD
- AC drive basics (how VFD systems work)
- Water industry and agricultural applications of VFD controlled pumps
- Adding "intelligence" to pump system controls
- Case studies of cost advantages of using VFD to improve pump efficiency
- VFD controls to optimize management of multi-pump systems

3:15 – 3:30 BREAK

3:30– 4:15 WELL PERFORMANCE SOLUTIONS
Kevin McGinnis, President, Cotey Chemical, Lubbock, TX

- Typical problems (mineral and biological blockage) that reduce well bore inflow
- The arsenal of chemicals available to enhance / restore well performance
- Matching the solution to the problem (How to decide on the "cocktail" to be used)
- The importance of a dual mechanical / chemical approach
- Successful well-yield restoration case-studies

4:15 PROGRAM Q & A

4:30 ADJOURN and continuing education sign-out

WORKSHOP PRESENTER BIOS

Chance Coats, Hydrogeologist, Coats Pump & Supply, Inc., Dexter, NM
Mr. Coats received his Bachelors in Business Administration from New Mexico State University and his Masters in Water Resources from the University of New Mexico. He is a third generation pump installer for his family's company in Southeastern New Mexico. His past experience includes environmental and water resource consulting with John Shomaker & Associates in Albuquerque, NM. Chance has a thorough understanding of both line-shaft turbine and submersible pumping applications. He also deals with a variety of well design applications for both confined (artesian) and unconfined aquifer systems.

David Kill, P.E., Training Consultant, Xylem Goulds Water Technology, St. Paul MN
Mr. Kill is a Registered Professional Engineer and has a BS in Agricultural Engineering from the Univ. of Minnesota. He joined Johnson Screens in 1969 and became Regional Manager in 1974. In 1979 he joined the Fluid Systems Division UOP in the reverse osmosis water treatment business in San Diego, CA as Director of Marketing. He rejoined Johnson Screens in 1981 as Environmental Products Manager. In 1988, he founded Recovery Equipment Supply, a supplier of products for ground water monitoring and remediation. In 1996, he joined Goulds Pumps ITT and was promoted to Regional Commercial Business Manager in and Regional Market Development Manager in 2004. He was the 2005 NGWA McEllhiney Distinguished Lecturer and presented "Well Efficiency Is Not a Myth" to over 20 water well contractor conventions.

Eric Macias, COO, Lorentz, Slaton, TX
Eric grew up on a family farm in Northern Texas. After graduating High School he studied Marketing and Advertising in Amarillo Texas. Eric began his working life for Gicon Pumps, a large distributor of pumps to industry and agriculture in the South and Mid-West. He gained his pumping knowledge working with Franklin Electric and Goulds. Promoted to Director of Marketing for Gicon, Eric focused on promotional activities and training for distributors across the USA. He soon started and headed a new Gicon business unit focused on pumping water using renewable energy named American West Windmill and Solar. Six years on Eric agreed to lead a new LORENTZ company in the USA, LORENTZ US Corp as the Chief Operating Officer. LORENTZ US Corp is a full service distributor serving US and Canadian partners across all business segments.

Kevin McGillicuddy, Senior Hydrogeologist, Roscoe Moss Company, Los Angeles CA
Kevin McGillicuddy is the Senior Hydrogeologist and Director of the Stormwater Treatment Division of Roscoe Moss Company. He joined the Roscoe Moss Company in 1996 and has worked as a technical liaison to municipal water agencies, groundwater consultants, and water well contractors. He has managed and participated in several educational workshops on water well design, testing and rehabilitation. Prior to joining Roscoe Moss Company, he worked as Director of Recharge Operations and as a Senior Hydrogeologist for the Orange County Water District in Fountain Valley, CA. He holds a Bachelor or Science Degree in Geology from Boston College and Masters' of Science Degree in Geology from the University of Southern California. He is a Registered Geologist in the State of California.

Kevin McGinnis, President, Cotey Chemical Corporation, Lubbock TX
Mr. McGinnis graduated from Texas Tech Univ. in 1984 with a BA degree. He has worked in the water well remediation industry for 10 years. He has delivered technical papers to Saudi Arabia's Ministry of Agriculture and Water in Riyadh, and to the Philippine Water Works Assoc. In addition to his experiences in the U.S., Mr. McGinnis has supervised water well rehabilitation projects in several states of the Middle East, Far East and Latin America.

Daniel Peters, Applications Engineer for Yaskawa America, Inc., Cyprus, CA
Dan Peters has over 20 years experience in applying variable frequency drives (VFD's) to a variety of commercial and industrial applications He has 11 years experience developing and or testing custom VFD software for a variety applications including water pumping, elevators, and electronic line shaft.
For the last eight years his work has focused on water pump specific applications for VFD's using custom application software environment. This includes extensive field testing on a variety of water pumping applications including: Vertical Turbines, Centrifugal pumps & Submersible pumps.

Nicolas Steverlynck, President, Hose Solutions, Inc, Scottsdale, AZ
Mr. Steverlynck is the President of Hose Solutions Inc., based in Scottsdale, Arizona. Nicholas' qualifications include a Diploma in Civil Engineering, and B.Comm. and MBA degrees from the University of Cape Town. His 25 years of professional experience include the manufacture, installation and operation of flexible drop pipe in the USA, Asia, Australia, Africa and South America. The company history goes back to the 1800's. Operations in the US began in 2001. Boreline is a flexible drop pipe that has been designed to replace the rigid risers used with submersible pumps.

Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH
Andrew Stone is a hydrogeology graduate from University College, London. He has over thirty five years of ground water experience in Africa and the U.S. as a university professor, ground water consultant and ground water advocate & educator. From 1990 to 2003 he taught an annual course on Groundwater Protection Policy at Antioch New England University. In recognition of his work in promoting ground water resource education in the US, he received the 1998 National Ground Water Association "Oliver Award" for outstanding contributions to the groundwater industry.