



WATER WELL AND PUMP PERFORMANCE: THE ECONOMIC BASIS FOR WATER WELL OPERATION, REHABILITATION & MAINTENANCE DECISIONS

A one-day workshop on practical, cost-effective solutions to extend asset value by maximizing well and pump performance

Wednesday February 29, 2012

TRAC Center

**6600 Burden Boulevard,
Pasco, WA 99301**

PROGRAM PRESENTED BY AMERICAN GROUND WATER TRUST

EVENT SPONSORS



Preferred Pump



CONTINUING EDUCATION



WA Water Well Drillers/Pump Installers: 5 CEUs Approved through the WA Well Construction & Licensing Office

Water Operators: Approval for CEU pending

Engineers: 7.25 PDHs

Certificate of Attendance: (Contact Hours: 7.25) will be provided to those attendees who sign-in and sign-out.

These certificates may be used by attendees to obtain continuing education credit from other professional organizations or licensing agencies. Attendance Certificates will be mailed after the event. (Sign-in, sign-out required)

MORE WATER LESS COST - PROGRAM

8:00 WELL & PUMP TECHNOLOGIES TO MAXIMIZE GROUNDWATER POTENTIAL

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

- AGWT programs that showcase groundwater industry technology
- One size does not fit all for well design, construction, operation or maintenance
- The importance of understanding the relationships among aquifer, well & pump in achieving optimum well yield at least cost

8:30 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
- Flow dynamics through rock fractures or screens into well bores and into pump intakes

10:15 BREAK

10:30 METHODS FOR IMPROVING WELL PERFORMANCE

Jim Bailey, National Well Services Director, Shannon & Wilson, Seattle, WA

- A practical approach to managing wells as an asset
- Why rehabilitate - Well inspection technology
- Key well performance indicators
- Prioritizing well condition factors
- How to decide on treatment options

RESEARCH ON THE DYNAMICS OF WATER FLOW AND ENERGY DISSIPATION IN WELLS

- Theory behind particle movement during well development
- Simulations of well-aquifer / aquifer-well flow dynamics during rehabilitation

11:30 ECONOMIC SIGNIFICANCE OF FLEXIBLE DROP PIPE FOR WATER WELLS

Dan Saba, Engineer, Hose Solutions, Inc., Scottsdale, AZ

- 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 pump maintenance or well rehabilitation
- Case studies of flexible pipe installation

12:00 LUNCH (Provided on-site)

1:00 WELL PERFORMANCE SOLUTIONS

Kevin McGinnis, President, Cotey Chemical Corporation, 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

1:45 PROVEN TECHNOLOGY TO REDUCE PUMPING COSTS FOR IRRIGATED AGRICULTURE

Kent Madison, Farmer, and President, 3R Valve, Echo, OR

- Background to development of on-farm innovations in pumping and water management
- How aquifer recharge system can operate with variable flow rates
- Technology and economics of generating electricity in aquifer recharge wells
- How sophisticated on-farm water and energy management impact agricultural profits

2:30 INTELLIGENT PUMP VARIABLE FREQUENCY DRIVES

Danny Peters, West Coast Application Engineering, Yaskawa Electric America, 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

3:30 BREAK

3:45 SELECTION AND MAINTENANCE OF PUMPS FOR MAXIMIZING WELL YIELD/ COST BENEFITS

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

- How pumps work – evolution of the US pump market
- 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 - VFD technology
- 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

4:30 WRAP-UP AND DISCUSSION

4:45 ADJOURN

The American Ground Water Trust is a national, non-profit public education organization that has been providing ground water information, awareness and education since 1986.



The Trust's programs:

- ☺ Promote efficient and effective ground water management
- ☺ Communicate the environmental and economic value of ground water
- ☺ Showcase ground water science and technology solutions
- ☺ Increase citizen, community and decision-maker awareness
- ☺ Facilitate stakeholder participation in water resource decisions