Workshop: SEATTLE (Bothell) WA - November 5th, 2014

GET MORE WATER AT LESS COST FROM YOUR EXISTING WELLS

A one-day program for well owners and groundwater professionals on practical, cost-effective solutions that work. The program will explain how to maximize yields and pump performance on existing wells and ensure correct design, construction, pump selection and maintenance on new wells. New or existing, this program will enable groundwater users to reduce energy costs and prolong well life.

Give a technological "kiss of life" to that underperforming well

Workshop Venue: (Northern Seattle **Country Inn & Suites**
Bothell WA 19333 North Creek Pkwy Bothell, Washington, 98011

INTERSTATE 405 **Exit 24 off Interstate 405**

PROGRAMS PRESENTED BY: AMERICAN GROUND WATER TRUST (501(c)(3) non-profit education organization)

CONTINUING EDUCATION

Water Operators: Approved for 6.75 hours Continuing Education Contact hours
Water Well Drillers/Contractors: Approved for 8 Continuing Education Contact hours

The American Ground Water Trust is a national, non-profit 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

MORE WATER LESS COST - BACKGROUND

Inefficient wells cost millions of dollars in increased pumping costs and in unnecessary increments to the nation's carbon footprint. Well efficiency techniques and recent pump, and pump motor technology advances provide ways to reduce operation costs. This workshop program will show how major water users can save energy, manage resources efficiently and reduce infrastructure costs.

More than 2,000 utility managers, well contractors, water industry professionals, regulatory staff, well owners, water users and ground water specialists have attended this program in: AR, AZ, BC, CA, CO, FL, IA, IL, IN, MA, MD, MI, NC, NE, NH, NY, OH, OR, PA, TX, VA, and WA.

"Get smart with your water well assets!"

MORE WATER LESS COST – BOTHELL< WA - PROGRAM

WORKSHOP INTRODUCTION - WELL & PUMP TECHNOLOGIES
American Ground Water Trust, Concord, NH

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

WELL PERFORMANCE DECLINES: CAUSES AND CURES
Neil Mansuy, VP, Subsurface Technologies, Kansas City, MO

- Chemical, microbiological and physical reasons for well problems
- Understanding typical "declining yield" problems
- Case studies of well yield declines attributable to encrustation
- Case studies on cost-effective maintenance for high yield wells
- Preventive maintenance procedures

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

LUNCH

ECONOMIC SIGNIFICANCE OF FLEXIBLE DROP PIPE FOR WATER WELLS
Tanner Tryon, General Manager, 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 maintenance or rehabilitation

WELL PERFORMANCE SOLUTIONS
Norman Howard, Western Sales, Cotey Chemicals, 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

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

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

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a xylem brand

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SHANNON & WILSON, INC.
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