

Technical Presentations

Elements of Good Well design

Thom Hanna-

Thom Hanna is employed as District Manager for Johnson Screens where he works in areas of well design, construction and development. He is also involved in well cleaning and rehabilitation. He received his Bachelor of Science Degree in Geology from Michigan State University and Master of Science Degree in Geology from Western Michigan University. He is a Registered Professional Geologist in the states of Arizona, Kentucky and Wyoming.

Before working for Johnson Screens he worked over 15 years as a hydrogeologist for several ground-water consulting firms including Hydrologic Consultants, Inc., Papadopulos Associates, and Golder Associates. His experiences include hydrogeologic investigations, design and optimization of well efficiencies for mine dewatering and water supply investigations.

Thom has authored numerous technical papers and is working on sections of the 3rd Edition of Ground Water and wells book due out in the next few months. He has been an instructor and invited lecturer for many ground-water organizations and universities.

Thom's workshop will cover the following topics:

- Collection and identifications of hydrologic materials,
- Use of hydrogeologic information in well design,
- Selection of well materials,
- Sieve analysis
- Selection of slot size and filter pack, and
- Well development.

Understand Your Well Problems

Dave Hanson – Well Design Technologies

This is a hands on experience designed for pump installers, well drillers, and engineers. Finally understand how to diagnose your well problems in the field with some simple tips and local testing. Recognize when the problem is in the well or present in the aquifer through "timed testing".

Dave's workshop will cover the following topics:

- Bacteria
- E.coli
- Opportunistic pathogens
- Odors (rotten egg/musty/oily)
- Slime and iron bacteria
- Discoloration corrosion

The State of the Industry—Where is Geothermal Going?

Stan Marco—GeoSmart Energy

An Overview of Recent Well Performance Research

Jim Bailey – Well Services Director with Kleinfelder Inc.

The long-term operation of a well or well field requires regular performance monitoring and periodic maintenance. This presentation will highlight the findings of some interesting recent studies related to declining well performance and rehabilitation. The studies include several from KIWA water research in the Netherlands that relate to mechanical plugging of aquifers and operational strategies to address this biological fouling problems. Several studies from Germany are discussed including an evaluation of the effectiveness of swabbing as a development tool, the energy penetration ability of various mechanical and impulse generation methods, the ability of acids to dissolve different types of iron oxides, and the differential biologic fouling of well screens. Finally, a study from Australia is presented that looks at impacts of well drilling, and construction on the long-term operation of wells completed in unconsolidated aquifers.

Innovative Well Rehabilitation

Chris Allen – Water Resource Specialist with Kleinfelder Inc.

Typical well rehabilitation strategies often include mechanical and chemical methods such as swabbing, jetting, brushing, and acid treatments. Most often the method selected is the one the rehabilitation contractor has used for years. A more holistic approach to rehabilitation uses a combination of methods to address the particular performance issue of the well. The key to any rehabilitation process is getting enough energy out into the filter pack and surrounding formation to break up biological deposits and loosen mechanical plugging of fine sediments. This presentation will describe several rehabilitation projects that illustrate the advantages of the holistic approach to well rehabilitation and the importance of the process over the method.

Bob Stewart – PFRA

Project Information

Earth materials have been logged and classified to determine carbon and inorganic content and the nature and density of the biological community at time zero.

The water and sediment samples have been analyzed for stable isotopes, oxygen 18, and carbon 13 to assess the status of the in-situ microbial community. Samples will also be subjected to conventional culture-based analyses (plate counts, carbon utilization spectra), and extracted for community DNA.

A combination of culture and molecular monitoring of the groundwater will be conducted to assess the bacteria quantity and type with time and position from the extraction well. Continuous monitoring of the redox environment around both wells using a data logger allows an assessment of geochemical events that can impact and be reflective of the bacterial activity in the well environment.

Monitoring changes in water quality and earth materials with time and space in the aquifer and well capture zone will provide understanding of the biological and chemical mechanisms and rates of reactions occurring in the aquifer during well deterioration.

Welcome to Well Magic, Software for the Water Well Industry

Rick Oberle – Well Magic

Since 2002, Well Magic has been the leading management system for the water industry. It has grown and improved thanks to the many companies that have adopted it and suggested new features.

Well Magic is the only drilling company management system where the driller comes first. It is a single *system* that allows you to manage all aspects of your business including estimate, work orders, invoicing, track maintenance, and file well logs with state and/or county agencies. Since each component uses the others, information is never entered twice. Most activities are done with the push of a button. Well Magic is now serving Canada.

New Generation of Groundwater Maps for Alberta

Kevin Parks – Alberta Geological Survey

A Search for Groundwater Supplies on the Canadian Prairies Using Lineament Analysis

Ken Hugo – Sabatini Earth Technologies Inc.

Baseline Water Well Testing for Coal Bed Methane Developments

Steve Wallace – Alberta Environment

Using High Energy Airburst for Water Well Rehabilitation

Nick Sargent – Golder Associates