



GROUNDWATER RESOURCES ASSOCIATION
of California

The 4th Symposium in the Series on Tools and Technologies

“Geophysics at the Beach: Course”

May 24, 2010 • Doubletree Club Hotel, Santa Ana, CA

COURSE AGENDA

(as of 5/13/10)

Instructors: John Stowell, Mount Sopris Instrument Company and Ned Clayton, Schlumberger Water Services

Curriculum for the May 24th Borehole Geophysics Short Course

This one-day course will provide groundwater managers, consulting hydrogeologists, and engineers with the background necessary for selecting appropriate geophysical logging technologies for projects and for interpreting and integrating geophysical logs into hydrogeologic investigations, including optimizing new or existing well design and performance, improving conceptual model development, characterizing contaminated site complexity, and characterizing fractured media.. Learn how to use this type of commonly available data as a foundation for groundwater resource evaluation; aquifer storage and recovery design; regional groundwater monitoring; environmental site characterization; seawater intrusion assessment; mine water management; geotechnical analysis; and groundwater production, injection and monitoring well design.

The short course will be divided into two parts: (1) basic borehole geophysics techniques, and (2) advanced borehole geophysics techniques. The basic borehole geophysics part focuses on standard geophysical logging technologies used in the water industry, including e-logs (resistivity), SP, gamma ray, neutron, density, sonic, flow and fluid logging. The advanced borehole geophysics part focuses on oilfield developed logging technologies now being implemented in the water industry for hydrogeologic evaluation, including magnetic resonance for pore size distribution and hydraulic conductivity, electrical and acoustic imaging for geologic structure and fracture evaluation, dipole sonic for geomechanics and fractures, and neutron-gamma spectroscopy for geochemistry. Both parts will introduce the physical principles of the logging technologies, discuss the respective limitations and applications of the logging technologies, and also challenge attendees to work through real-world data interpretation.

Schedule:

The short course will run from 9:30 am to 5:30 pm, with a one hour lunch break during which box lunches will be provided.

The basic borehole geophysics techniques part of the course (approximately 3.5 hours) will include combined lecture/practical sessions on the following techniques: (1) gamma ray, spontaneous potential, and resistivity (e-log); (2) neutron porosity, density, and sonic; and (3)

fluid and flow logging. These sessions will be taught by John Stowell, with additional instruction on dye tracer flow logging.

The advanced borehole geophysics techniques part of the course (approximately 2.5 hours) will include combined lecture/practical sessions on the following techniques: (1) pore size distribution, hydraulic conductivity, and geomechanical property logs (magnetic resonance and dipole sonic); and (2) geochemical and structural (including fracture) characterization logs (electrical and acoustic imaging, neutron-gamma spectroscopy). These sessions will be taught by Ned Clayton.

The course will include an introduction and wrap-up. Handouts will be provided.