

advanced aquifer testing

TECHNIQUES AND HYDROGEOLOGIC ANALYSIS: NEW CONCEPTS, FIELD METHODS AND DATA ANALYSIS PROCEDURES

WHAT'S IT ALL ABOUT?

Origin, the NCGRT and Sustainable Minerals Institute are working together to present this internationally renowned course on advanced aquifer testing.

This three-day course incorporates all aspects of devising aquifer pumping tests, and emphasises the connection between pumping test design and different hydrogeological scenarios. It will use AQTESOLV software and be based on common Australian hydrogeologic conditions. This course will provide you with the knowledge to master aquifer testing from beginning to end.

WHY IS THIS COURSE IMPORTANT?

Conducting aquifer tests in complex hydrogeologic settings such as heterogeneous or fractured media is a key element to site characterisation, water resources assessment and remediation system design. However poorly planned aquifer testing programs often lead to suspect data or unanswered questions after the field work is complete. Even when you are confident of the geologic conditions, you may have difficulty designing effective aquifer tests, running field equipment or selecting the best available model to analyse the test data. This course will enable you to improve your approach and skills for aquifer testing.

Gain an advantage and feel more confident by learning up-to-date methods and procedures for designing, conducting and analysing aquifer tests.

WHO SHOULD ATTEND?

This course is targeted at professional geologists, hydrogeologists, engineers and field technicians, and in particular those working in CSG. Aquifer pump testing is a crucial skill for consultants, and this course upskills participant in all aspects of theory and practice.

WHO IS PRESENTING?

The course will be delivered by the Midwest GeoSciences Group, a US company which specialises in hydrogeological education and has been made available by Origin.

Ken Bradbury PhD, PG, Applied Hydrogeologist, Senior Scientist at the Wisconsin Geological and Natural History Survey

Glenn Duffield, Hydrogeologist, President of HydroSOLVE, Inc. and developer of AQTESOLV Software

WHAT WILL THE COURSE COVER?

The full schedule for this course is provided on the following page.



National Centre for
Groundwater
Research and Training

COURSE DETAILS

BRISBANE

1–3 May 2013
Sustainable Minerals Institute
University of Queensland
Brisbane, QLD

COURSE FEES

AU \$1980 (incl. GST)

This includes notes, classroom teaching, tutorials, morning and afternoon teas and lunches.

Attendees are required to bring their own laptop, and are to arrange their own travel and accommodation.

HOW TO REGISTER

W: www.groundwater.com.au

E: industrytraining@groundwater.com.au

P: (08) 8201 5632

SUPPORTED BY:



On behalf of



SMI Sustainable
Minerals
Institute

education from the ground up

Schedule

DESCRIPTION

Defining our pre-test conceptual hydrogeological model

- Regional hydrogeological understanding
- Observations and data from drilling of test pumping or monitoring bores (progressive yield, quality, geological logging, geophysical logging, preliminary airlift yield)

Aims and constraints of a pumping test

- Different purposes of test pumping (aquifer characteristics, bore performance, supply reliability, investigating hydrogeological regime (ie influence of delayed yield, fractures, boundaries, determine Kv, etc)
- Testing constraints – max yield determined by bore or pump size, duration determined by disposal etc, bore yield
- Minimum technical requirements – pump long enough to achieve constant temperature, constant delta S, get to steady state, drawdown in observation bore for S, induce delayed yield etc

Selection of appropriate method and test design

- Method alternatives
- Data to collect and frequency
- Duration and recovery period

Practical considerations

- Equipment selection (pump alternatives, and pressure, quality, yield, temperature, shrouding and other monitoring)

Doing the test

- Antecedent conditions
- Prelim and multi-rate tests to refine main test
- 'Other' data – solids, smells, noises, gas, environmental conditions
- Field data management
- Assessing and thinking about progressive results
- Backup plan – what happens when the generator fails, the probe gets stuck, progressive results are significantly different from anticipated etc

Analysing the data – the basics

- Validate your main assumptions – shape of general response to guide analysis method
- Choose an appropriate method
- Variations from type response – what do they mean, what do you do about it
- Do you need to run a couple of methods to analyse what non-perfect responses may mean?
- Compensating for variations from ideal conditions (pumping rate fluctuations, etc)
- Software and non-software analysis
- Oh goody, a number – DOES IT MAKE SENSE?
- Does your conceptual model still hold – what do you need to do about it?

Taking it further

- Corrections – density, temperature, barometric, earth tide
- Skin, derivatives
- Applying the data to achieve your aims