Ground Water Institute for Teachers™

Presented by
AMERICAN GROUND WATER TRUST
In partnership with the US Geological Survey
at
Center for Advanced Research & Technology, 2555 Clovis Avenue, Clovis, California 93612

Monday, June 13 & Tuesday June 14, 2005
Register at www.agwt.org (Teacher Institutes)
Contacts:
US Geological Survey - Ann Tihansky (727) 803-8747 ext. 3075 [mailto:tihansky@usgs.gov]
American Ground Water Trust - Andrew Stone (603) 228-5444 mailto:astone@agwt.org.

INSTITUTE PROGRAM, MONDAY JUNE 13

8:00 -8:30am **Registration**

8:30 -9:15
HYDROLOGIC SYSTEM: BASICS OF HYDROLOGY & ECONOMICS
Andrew Stone, American Ground Water Trust, Concord, NH
- Geology fundamentals (rock types/ geologic structure/ aquifer geometry)
- Concept of water balance (hydrologic accounting at local & regional scales)
- Perceptions of water as a shared resource (who owns it?)
- Global & national economic realities of competing water demands

9:15 - 10:15
WATER WELLS IN CENTRAL VALLEY
Charles Sarabian, Preferred Pump, Fresno, CA
- Review of Water Well Basics video
- Water wells and well construction in the Central Valley
- Designing criteria for achieving maximum yield from water wells
- Equipment and fittings required to bring water from aquifer to tap
- Solar power for raising water

10:15 - 10:30 **Break**

10:30 – 11:30
SAND AND CAMERAS – PROBLEM SOLVING
Randy Delenikos, Claude Laval Corporation, Fresno, CA
Down-hole TV Cameras
- The technology behind the cameras developed for use in water wells
- Applications of down-hole cameras in solving ground water problems

Sand Separators
- Sand separators for irrigation & water well systems – what they are, why they are needed
- Demonstration model of how separators work
- The science and math behind the technology
- Practical applications of the technology in the Central Valley

11:30 – 12:30
William V. Pipes, Geomatrix Consultants, Inc. Fresno, CA
THE WORK OF GROUND WATER CONSULTANTS:
- University training and skills needed for hydrologic science and engineering consulting work:
- California Water Problems and the future need for ground water experts
- Types of ground water work:
    - Water Quality
    - Water Supply Exploration, Production, and Treatment
    - Aquifer Storage and Recovery
    - Saltwater Injection/Disposal
    - Environmental Contamination (Hazardous Substances Releases)
- Case Studies of ground water science and technology in California

12:30 – 1:30 **LUNCH**

1:30 – 2:30
GROUND WATER IN CALIFORNIA'S CENTRAL VALLEY
US Geological Survey
- Geologic framework of California
- Principal aquifers
- Historic water use
- Hydrologic research

2:30: 3:30
GROUND WATER AND THE CITY OF FRESNO
Patrick Wiemiller, City of Fresno Water, Fresno,CA
- Background to evolution of solutions to Fresno's water needs
- Quality and quantity challenges facing City water managers

Field trip to Fresno Water facilities
- Leaky Acres recharge site - furrow building to enhance recharge
- Pump Station 70
Garth Gaddy, Water Division, Fresno Public Utilities
- Blending to lower nitrate levels
- Carbon treatment for DCPB
- Air stripping for TCE

4:30pm **End of day one program**

INSTITUTE PROGRAM, TUESDAY JUNE 14

8:30 – 9:30am
WATER PUMPS
James Edwards, Grundfos Pumps, Clovis, CA
- How do pumps work?
- Evolution of pump technology
- Typical pump design and construction
- How to maximize energy efficiency

9:30 – 10:30
WATER TECHNOLOGY
David Zoldoske, Center for Irrigation Technology, Fresno, CA
- Economic significance of Central Valley Irrigation
- Irrigation Technology
- Purpose of the International Center for Water Technology

10:30 – 10:45 **BREAK**

10:45 – 11:45
GROUNDWATER LEGISLATION - GROUNDWATER IN THE POLITICAL ARENA
Timothy K. Parker, CA Department of Water Resources, Sacramento, CA
[Director - Groundwater Resources Association of California]
- The mission and purpose of GRA
- Science as the basis for water policy
- Ground water related legislation in California
- The role of hydrologic professionals in environmental (policy) education

11:45 – 12:30 **LUNCH**

12:30 – 1:30
GROUND WATER TOPICS AND THEIR CONNECTION TO SCIENCE TEACHING
Andrew Stone, American Ground Water Trust, Concord, NH

- Arsenic in ground water and the impact of the EPA ruling of 10ppb for drinking water
- Water dowsing as a classroom discussion topic
- In-stream flows, wetlands & ground water
- MtBE
- Aquifer tests (interpreting relationships between well pumping and water level changes)

1:30 – 2:30
EDUCATION RESOURCES/ GROUND WATER IN THE CURRICULUM
Ann Tihansky, US Geological Survey, St. Petersburg, FL
- USGS hydrologic research programs
- USGS Education resources for teachers
- Other education resources for teachers (tools, quizzes & lesson plans etc.)
- Real-time USGS data for educators

2:30 – 3:00
- Institute wrap-up
- Completion of CEU paperwork and evaluation sheets

3:00pm **End of Institute**