

Act 48 Approved: 12.5 Professional Education Contact Hours

AMERICAN GROUND WATER TRUST
PRESENTS
2006 PENNSYLVANIA
GROUND WATER INSTITUTE FOR TEACHERS™

(Allentown, Pennsylvania)

Event Location: Nestlé Waters Deer Park Facility, 405 Nestlé Way, Breinigsville, PA

American Ground Water Trust contact, Garret Graaskamp (603) 228-5444, ggraaskamp@agwt.org

Institute Program Co-sponsor Donors

Nestlé Waters North America, Breinigsville, PA

Schramm, Inc. West Chester, PA

Invited Speakers and Topics

MONDAY OCTOBER 30, 2006

8:00am - 9:00am **Registration (Coffee and Danish)**

9:00am – 10:00am **Class Session**

Garret Graaskamp, Hydrogeologist, American Ground Water Trust, Concord, NH

Ground Water Fundamentals

- Overview of the hydrologic system and the geologic environments that influence the nature and occurrence of ground water

10:00am - 10:15am **Networking Session**

10:15am – 11:15am **Class Session**

Dennis Risser, Hydrologist, United States Geological Survey, New Cumberland, PA

The Geology and Aquifers of Pennsylvania

- Where is the State's ground water?
- How to choose a drilling site for a well
- How do aquifers, springs and natural ground water systems work?
- Summary of potential threats to ground water quality

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MONDAY OCTOBER 30, 2006 (CONTINUED)

11:15am – 12:00 noon Class Session

Joe Judge, Retired and Senior Volunteer Program, Allentown, PA

- Ground Water Model Demonstration

12:00 noon – 1:00pm Lunch – Provided Courtesy of Nestlé Waters

1:00pm - 2:15pm Class Session

Jim Hartmann, Eastern US Sales Director, Franklin Electric, Jamison, PA

How does a Water Pump Work?

- Is a pump different from a “straw?” How a pump works.
- A pump is a pump is a pump: True or False
- What type of pump works best down in a well?
- What is a pressure tank and how does it work?
- Constant Pressure Pumps and the “Laws of Affinity”

2:15 – 2:30pm Networking Break

2:30pm – 4:30pm Class Session, Activities and Demonstrations

Pamela Kistler, Ph.D., Chairman, Chemistry Department, Cedar Crest College, Allentown, PA

The Chemistry of Ground Water - What is Water?

- The basic chemistry of natural ground and surface water – Are they the same?
- Is a “polar molecule” only found at the North Pole?
- How and why do substances dissolve in water?
- Does the chemistry of a water droplet change as the temperature decreases?
- Does water have a role in the processes of adsorption and absorption?
- How can an insoluble compound (gasoline or dry cleaning fluid) be a water contaminant?
- Analysis of selected water samples

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TUESDAY OCTOBER 31, 2006

8:15 AM

Institute Reconvenes

Location: Nestlé Waters Deer Park Facility, 405 Nestlé Way, Breinigsville

8:30am - 9:30am

Class Session

David Farrington, President, Walter B. Satterthwaite Associates Inc., West Chester, PA

Karst Geology and Ground Water Occurrence in Pennsylvania

- What is karst and how does it form?
- The hydrogeology of a karst terrain
- Development concerns in karst areas
- How is ground water contamination investigated in a karst environment?
- Karst investigations - Project work “to ‘dye’ for”

9:30 – 9:45am

Networking Break

9:45am – 11:00am

Class Session

Chris Kocher, President, Wildlands Conservancy, Emmaus, PA

The Lehigh River & the Lausanne Tunnel Abandoned Mine Drainage (AMD) Restoration Project

- Lehigh River Quality – How is the old river doing?
- AMD – A plague on riverine habitat -- Why?
- What should be in an Artificial Wetland and why - Basic Construction Concepts
- Case Study: AMD River Restoration - The Wildlands Conservancy’s Lausanne Tunnel Project

11:00am – 12:00pm

Class Session

Eric Andreus, Natural Resource Manager /Hydrogeologist Nestlé Waters, Breinigsville, PA

From Spring to Bottle – Tour of Nestlé Waters Bottling Plant Process

12:00 noon – 1:00pm

Lunch – Provided Courtesy of Nestlé Waters

1:00pm - 2:00pm

Class Session

Jeff Fulgham, Global Technical Marketing Leader, GE Water & Process Technologies, Trevose, PA

Water Treatment – In with the “good water” out with the “bad water.”

- Why is there water scarcity around the world?
- How do we solve difficult water scarcity and quality problems?
- Water recycling – a “new” source of water
- Reverse Osmosis – What is it?
- Desalination in Saudi Arabia – More oil than water?
- Case History – The 2004 Indian Ocean Tsunami – Mobile Water Treatment Systems

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TUESDAY OCTOBER 31, 2006 (continued)

2:00pm – 5:00pm

**Field Trips – 1) Fogelsville Flooded Quarry Site
2) Nestlé Waters - Hoffman Spring**

- 1) *Liesel Smull, Water Education Specialist, Lehigh County Authority, Allentown, PA*
 - Historical perspective of quarries in Pennsylvania and their impact on groundwater
 - Description of geology and other features of the quarry
 - Is the quarry a discharge or recharge area for ground water?
 - Evaluation of historical groundwater levels in Lehigh County
 - Visual assessment of the effect of the 2002 Drought Emergency

- 2) *Eric Andreus, Natural Resource Manager /Hydrogeologist Nestlé Waters, Breinigsville, PA*
 - What is “Spring Water?”
 - The geology of the Hoffman Spring
 - History of the Hoffman Spring
 - What is the “safe yield” for the spring resource and how is it determined?
 - How is the source area of the spring defined?
 - How is the quality of the spring water protected?

5:00 pm Institute Adjourns at Nestlé Waters Deer Park Facility, 405 Nestlé Way, Breinigsville