



# 2007 NEW ENGLAND GROUND WATER INSTITUTE PROGRAM

**MONDAY JULY 23, 2007 (CONTINUED)**

**12:15 PM – 1:00 PM**

**Lunch (Provided on Site)**

**1:00 PM – 2:00 PM**

**Class Session**

*John Kastrinos, Senior Hydrogeologist, Haley and Aldrich, Boston, MA*

**Falling Ground Water and Falling Buildings in Boston – What is Happening?**

- What factors control ground water levels and flow beneath urban environments?
- Why have ground water levels changed beneath Boston in the last decade?
- Where are the most significant ground water level changes and why.
- How are Boston's buildings affected by the declining ground water levels?
- Are Boston's historic buildings at risk?

**2:00 PM – 3:00 PM**

**Class Session**

*John Warner, Ph.D. University of Massachusetts – Lowell, Lowell, MA*

**The Chemistry of Ground Water – A Green Chemistry Perspective - PART 1**

- 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?
- How does water effect the processes of adsorption and absorption?

**3:00 PM - 3:15 PM**

**Networking Break**

**3:15 PM – 4:30 PM**

**Class Session**

*John Warner, Ph.D. University of Massachusetts – Lowell, Lowell, MA*

**The Chemistry of Ground Water – A Green Chemistry Perspective - PART 2**

- 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?
- How does water effect the processes of adsorption and absorption?

# 2007 NEW ENGLAND GROUND WATER INSTITUTE PROGRAM

**TUESDAY JULY 24, 2007**

**8:30 AM – 8:45 AM**                      **Second Day Check-in**

**8:45 AM - 9:45 AM**                      **Class Session**

*Roger Skillings, Owner, Skillings and Sons, Inc., Hollis, NH*

**Climate Friendly Clean Energy - Ground Water Sourced Heat Pumps**

- History of using the ground source heat pumps
- The myths of using ground water to heat and cool
- The different types of applications used to transfer energy.
- The future of using the ground water for a source of energy

**9:45 AM – 10:00 AM**                      **Networking Break**

**10:00 AM – 12:00 PM**                      **Class Session**

*Timothy LaVallee, Ph.D., Tsongas Industrial History Center, Lowell, MA*

**Water Sampling and In-situ Testing - Merrimack River**

- Water quality sampling and testing
- Commodification of water resources
- History of the built and natural environments surrounding Lowell's canals and the Merrimack river

**12:00 AM – 1:00 PM**                      **Lunch – (Provided on site)**

**1:00 PM – 2:00 PM**                      **Class Session**

*Timothy LaVallee, Ph.D., Tsongas Industrial History Center, Lowell, MA*

**The Lowell Typhoid Epidemic of 1890 - How and Why**

- Interactively explore the cause of the Lowell Typhoid epidemic of 1890-91
- Trace the scientific research that uncovered the epidemic's cause.
- Concept: unforeseen consequences of urbanization and industrialization on water resources
- Concept: water quality and human health

**2:00 PM – 3:00 PM**                      **Class Session**

*Timothy LaVallee, Ph.D., Tsongas Industrial History Center, Lowell, MA*

**Ground Water Simulation Tank and USGS MODFlow Example**

- How groundwater flows and contaminant transport
- Interconnectedness of ground and surface water
- Computer modeling of water table contours and flow vectors using MODFlow
- Human impacts on water resources

# 2007 NEW ENGLAND GROUND WATER INSTITUTE PROGRAM

**TUESDAY JULY 24, 2007 (CONTINUED)**

**3:00 PM – 3:15 PM**

**Networking Break**

**3:15 PM – 4:15 PM**

**Class Session**

*Timothy LaVallee, Ph.D., Tsongas Industrial History Center, Lowell, MA*

**Ground Water Simulation Tank and USGS MODFlow Example (Continued)**

- How groundwater flows and contaminant transport
- Interconnectedness of ground and surface water
- Computer modeling of water table contours and flow vectors using MODFlow
- Human impacts on water resources

**4:15 PM – 4:30 PM**

**Wrap-up**

*Garret Graaskamp, American Ground Water Trust*

- Where to find additional education materials on ground water and hydrology

**Institute Adjourns**