

American Ground Water Trust

Ground Water Institute for Teachers™

Peace River Watershed



Desoto County
TURNER AGRI-CIVIC CENTER
2250 NE Roan St., Arcadia, FL 34266



To register, go to www.agwt.org

June 19, 20 & 21, 2008

Southwest Florida
Water Management District

Institute Sponsor: Southwest Florida Water Management District

Contacts:

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Background:

The aim of the Ground Water Institute for Teachers program is to increase water awareness of teachers, school students, citizens and communities so they may recognize the connected and integrated nature of the environment and be empowered to play an active role in protecting resources for sustainable use. The Trust believes that teachers who are excited about environmental education and who are provided with training in environmental principles will be more likely to effectively teach environmental concepts to their students. Students made aware of “cause and effect” related to water resources and aquatic habitat are likely to become motivated to protect and conserve resources. Increasing the environmental awareness of citizens and communities is a vital need worldwide and specifically in Florida because of the state’s finite resources and increasing environmental pressures.

Grade Levels:

The Trust’s Ground Water Institute for Teachers program is a content-focused training opportunity with applicability to many grades. The exciting and practical “science” of ground water can be applied to existing curriculum in many traditional subject areas. This training program has applicability way beyond the typical “earth science” perspective. Institute presenters are all top experts with a wealth of expertise. The program provides real-life examples of the applications of science and technology to water issues. Over 50 Institutes have been completed in 17 states involving 1,200+ educators. Past Florida Institute programs have been held in Zephyrhills, St. Petersburg, Crystal River, Tampa, Sarasota, Fort Myers and Arcadia.

Program - Thursday, June 19	4:00pm to 8:00pm
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4:00 – 4:30 REGISTRATION

4:30 – 5:00 INTRODUCTION TO THE INSTITUTE PROGRAM
Garret Graaskamp, American Ground Water Trust, Concord, NH
Ann Tihansky, U.S. Geological Survey, St. Petersburg, FL
Mary Alice Makoid, SWFWMD, Brooksville, FL

- Welcome to the program
- Background to the national Institute program (Trust / USGS partnership)
- Objectives of this Institute
- Expectations of the teacher / educator participants

5:00 – 5:45 HYDROLOGIC SYSTEM: BASICS OF HYDROLOGY AND ECONOMICS

Garret Graaskamp, American Ground Water Trust, Concord, NH

- Things you didn't know about rocks and water (geology – hydrology)
- The hydrologic system in a geologic environment
- Geology fundamentals (rock types, geologic structure and aquifer geometry)
- Concept of water balance (hydrologic accounting at local and regional scales)
- Perceptions of water as a shared resource (who owns it?)
- Global and national economic realities of competing water demands

5:45 – 6:30 FUTURE OF FLORIDA'S WATER SUPPLY

Greg Young, Hydrogeologist, MWH Americas, Cape Coral, FL

- Historical perspective on Florida's water supply
- Resource pressures from population, agriculture and industry
- The potential sources of water available to supply Florida's needs
- The water manager's toolbox (dams, rivers, wells, artificial recharge, conjunctive use, etc.)

6:30 DINNER (presentation while you eat)

6:45 – 7:45 STORM WATER MANAGEMENT: ITS IMPORTANCE IN FLOOD CONTROL AND POLLUTION MINIMIZATION

Hank Higginbotham, P.E., Regulation Performance Management Department, Southwest Florida Water Management District, Tampa, Florida

- Accuracy vs. Precision: How it relates to Storm Water Management
- Flooding – what are the issues?
- Storm water pollution – what are the issues?
- Lesson plans to assist Middle & High School science teachers
- Hydrology versus Hydraulics – what is the difference?
- Storm water ponds – what function do they serve?
- Types of Surface Water Management Systems
- Free GIS information from SWFWMD for Middle & High School science teachers
- Free Web Soil Survey information from NRCS for Middle & High School science teachers
- Extensive web links & free (or low cost) reference materials that will assist Middle & High School science teachers

7:45 – 8:00

How to make classroom use of the information from these presentations

Program - Friday, June 20

8:00am to 4:00pm

8:00 – 8:15 COFFEE, DONUTS and FRUIT (Available at start of river trip)
Canoe Outpost, 2816 NW County Rd. 661, Arcadia, Florida 34266

8:15 – 10:30 CANOE TRIP ON THE PEACE RIVER (by bus up-river then down-river by paddles)

Ann Tihansky, U.S. Geological Survey, Tampa, FL

Thomas M. Scott, Assistant State Geologist, Florida Geological Survey, Tallahassee, FL

Garret Graaskamp, American Ground Water Trust, Concord, NH

- Fluvial features of the river
- Ground water inputs to sustaining flow
- Aquatic fauna and water quality issues
- Fossils and geology

10:30 [Return to Turner Center]

10:45 – 11:30 GEOLOGIC FRAMEWORK OF THE PEACE RIVER WATERSHED

Ann Tihansky, U.S. Geological Survey, St. Petersburg, FL

- Overview of geology and hydrologic system of central Florida
- Special features of karst geology and hydrology
- Specific geologic phenomena in the Peace River watershed.

11:30 – 12:15 THE PEACE RIVER AS A WATER SUPPLY SOURCE

Sam Stone, Peace River/Manasota Regional Water Supply Authority, Sarasota, FL

- Description of the treatment process at the Peace River facility
- Method of diverting river water from the Peace River while protecting the downstream estuary
- Challenges in using the Peace River as a source of supply and how we manage those challenges:
 - reliability (dry periods),
 - algal taste and odor problems
 - algal toxins
 - upstream industrial spills and emerging chemical contaminants

12:15 – 12:45 LUNCH

12:45 – 1:45 GEOLOGICAL OVERVIEW OF FLORIDA WITH EMPHASIS ON SOUTHWEST FLORIDA

Thomas M. Scott, Assistant State Geologist, Florida Geological Survey, Tallahassee, FL

- How many springs do we have in Florida?
- Where does spring water come from, and why are springs important?
- Threats to our aquifers are a threat to our springs.
- What can we do to protect our springs?
- Educational resources available on the Florida Geological Survey's website (on-line demonstration)

1:45 – 2:45 COMPUTER MODELS OF GROUND WATER FLOW – HOW ARE THEY USED?

Jill Hood, Hydrogeologist, Hydrologic Evaluation Section, SWFWMD, Brooksville, FL

- The basic concepts of hydrologic models
- What are computer simulation models and how do they work?
- Practical application of models
 1. effects of pumping
 2. changes in aquifer storage
 3. defining recharge and discharge zones
 4. predicting changes due to rainfall variation
- Case studies in west-central Florida - How models have been used as a tool in water resource management

2:45 – 3:00 BREAK

3:00 – 3:45 WATER SCIENCE CLASSROOM EXERCISES (HANDS-ON)

Andrew Stone, American Ground Water Trust, Concord, NH

Ann Tihansky, U.S. Geological Survey, Tampa, FL

- Porosity & permeability measurement
- What factors control infiltration rates?
- Transpiration as a component of water balance calculations
- What's in the water? Calculation of one part per million

3:45 – 4:00

How to make classroom use of the information from these presentations

4:00 (End of Day Two activities)

Program - Saturday June 21 8:30am to 3:00pm

8:00 – 8:30 COFFEE, DONUTS and FRUIT

8:30 – 9:30 HOW THE SUBURBAN LANDSCAPE FUNCTIONS HYDROLOGICALLY

Andrew Stone, American Ground Water Trust, Concord, NH

- Data sets, maps, plans, sections and scale for calculation and interpretation
- Hydrologic budget concept (in – out +/- change in storage)

- Measurement, and calculation of hydrologic budgets
- Fundamentals of land-use and hydrologic response
- Identifying the components of stream flow or culvert flow (where did the water originate?)
- Water quality related to routes of flow

9:30 [Move outside to field site]

9:30 – 10:30 STORM WATER AS AN EDUCATIONAL MEDIUM

(Hands-on activity: Follow the storm water and learn math and environmental science)

- Identify site-specific land-use categories (how are they connected hydrologically?)
- Follow the water drop - where and how storm water flows (direction, speed and destination)
- Calculation of unit area responses to precipitation input (choose a time-frame and do the math)
- How marbles and chalk can show flow direction and watershed boundaries
- Integration of group project results to overall description of site

10:30 – 11:15 ACCESSING GROUND WATER

Garret Graaskamp, American Ground Water Trust, Concord, NH

- Drilling of water wells (a well is much more than a hole in the ground)
- Water quality concerns (microbiological, arsenic, radon, pharmaceutical residuals, etc.)
- Typical water treatment options for homeowners

11:15 – 12:00 DEMONSTRATION OF MODEL CAPABILITIES AS AN ADJUNCT TO LEARNING

Mary Torrusio, Youth Education Specialist, SWFWMD, Brooksville, FL

- Set-up and operation of the ground water model (sand tank)
- What the model can show
- How the model relates to real hydrologic situations
- What students can learn from the model
- Use of the Enviroscope model for teaching

12:00 - 12:30 LUNCH

12:30 – 1:00 TEACHING AND GROUND WATER CONCEPTS

Andrew Stone, American Ground Water Trust, Concord, NH

- The difference between groundwater renewability and sustainability
- Integration of climate change issues in teaching
- Perceptions and misperceptions of ground water in history
- The hydrologic cycle in poetry (Shakespeare's hydrology)

1:00 – 2:00 EDUCATION RESOURCES AND IMPLEMENTATION

Mary Alice Makoid, Youth Education Specialist, SWFWMD, Brooksville, FL

- Trends in Environmental Education
- Sunshine State Standards
- Resources for teachers (tools, quizzes and lesson plans)
- SWFWMD education materials and grants
- Real-time USGS data for educators (On-line demonstration)

2:00– 2:45 WHERE NOW? INTEGRATING INSTITUTE CONTENT INTO THE CLASSROOM

Andrew Stone, American Ground Water Trust, Concord, NH

- The concept of add-in rather than add-on to existing curriculum
- Potential lesson topics based on Institute presentations
- Completion of "Ideas to lessons" form
- Completion of Institute evaluation form

2:45 – 3:00 WRAP-UP AND ANSWERS TO UNANSWERED GROUNDWATER QUESTIONS

Ann Tihansky, U.S. Geological Survey, Tampa, FL

3:00 ADJOURN

