Aquifer Storage Recovery IV

Holiday Inn Busch Gardens Tampa, Florida - April 15 -16, 2004

Science, Technology, Management and Policy

An educational program sponsored by

American Ground Water Trust
FDEP/Florida Geological Survey
Florida Hydrogeology Consortium

PROGRAM DETAILS

PRESENTER BIOGRAPHIES

POSTER ABSTRACTS

Co-sponsored by: International Association of Hydrogeologists

Also co-sponsored by:

United States Geological Survey
Florida Ground Water Association
South Florida Water Management District
St Johns River Water Management District
Florida Association of Professional Geologists
South West Florida Water Management District

ASR – SCIENCE AND TECHNOLOGY - April 15

7:00 – 8:00 **Registration** (Continental breakfast, CEU sign-in)

8:00 – 8:15 **Welcome**
Introductions/Recognitions, Review of Schedule, Goals of Forum
Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH

Morning Sessions Moderator: *Albert Muniz, Hazen & Sawyer, Boca Raton, FL*

8:15 – 9:35 **From California to Florida: Plans, Trends and Updates**
ASR Activities in The Western United States
Terry Foreman, Vice President, CH2M Hill, Thousand Oaks, CA
Comprehensive Everglades Restoration Plan (CERP) ASR Pilot Study Update
Pete Kwiatkowski, Lead CERP ASR Project Manager, SFWMD, West Palm Beach, FL
ASR Performance and Recovery in Southern Florida
Ron Reese, Hydrologist, US Geological Survey, Miami, FL
ASR Water Quality Trends in Southern Florida
June Mirecki, Hydrogeochemist, US Army Corps of Engineers, Vicksburg, MS

9:35 – 10:20 **Keynote Speaker –** Peter Dillon
Aquifer Recharge – A Global View and an Australian Perspective
Peter Dillon, CSIRO, Adelaide, Australia

10:20–10:40 **Break** (poster & exhibits)

10:40–12:00 **Zooming in on Water, Rocks and Microorganisms**
Water-Rock Interactions During ASR and Effects on Water Quality
Jon Arthur, Hydrogeology Program Supervisor, Florida Geol. Survey, Tallahassee, FL
Significance of Native Microbial Populations in ASR Storage Zones
John Lisle, Microbiologist, US Geological Survey, St Petersburg, FL
Survival of contaminant microorganisms in model ASR conditions for Florida
David John, Microbiologist, University of South Florida, Tampa, FL
Water Treatment Options for ASR
Don Thompson, Vice President, CDM, Inc., Jacksonville, FL

12:00 – 1:30 **Lunch -** Invited Luncheon Speaker – David Moore
The role of ASR as a water resource alternative in Southwest Florida
David Moore, Executive Director, Southwest Florida Water Management Dist., Brooksville, FL

Afternoon Sessions moderator: *Walter Schmidt, FGS, Tallahassee, FL*

1:30 – 2:30 **Case Studies, Modeling and What's Next…**
Recent ASR Developments in Southwestern Florida
Mark McNeal, Hydrogeologic Sciences Manager, CH2M Hill, Tampa, FL
Improving ASR recovery efficiency using modeling
Mark Pearce, Vice President, Water Resource Solutions, Cape Coral, FL
ASR Dynamics, Issues and Solutions
David Pyne, President, ASR Systems LLC, Gainesville, FL

2:30 – 3:00 **Break** (posters & exhibits)

3:00 – 3:40 **Case Studies, Modeling and What's Next…** (continued)
Modeling ASR Hydraulics and Plume Geometry
Thomas Missimer, Vice President, CDM-Missimer, Fort Myers, FL
Geochemistry, Geophysical Applications and Data Gaps
Sam Upchurch, Vice President, SDII Global, Tampa, FL

3:40– 4:40 **Discussion, Deliberation and Recommendation Session**

Science & Technology - Session Leaders:
Walter Schmidt, State Geologist, Florida Geological Survey, Tallahassee, FL,
and Albert Muniz, Hazen & Sawyer, Boca Raton, FL

This session will include discussion among presenters and attendees. The objective will be to interactively generate (in electronic format) an ASR state-of-the-art summary with where-do-we-go-from-here (?) recommendations. Discussion topics are likely to include:

- ⇨ What have we learned from operational ASR facilities?
- ⇨ Which technologies appear to be most effective?
- ⇨ What are the research gaps and how can they be funded?
- ⇨ What science and engineering issues are of greatest uncertainty?
- ⇨ What are strategies for maximizing ASR performance and recovery?
- ⇨ How water quality issues being addressed and what are are the associated costs?

4:40 Day one program ends [CEU sign-out]

5:00 – 6:30 **Reception** (Cash bar, posters, exhibits) (No scheduled evening activities)

ASR – MANAGEMENT AND POLICY – April 16

7:00 – 8:00 **Registration** (Continental Breakfast, posters, exhibits)

8:00 – 8:15 **Welcome**
Introductions/Recognitions, Review of Schedule, Goals of Forum
Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH

8:15 – 8:45 **Summary of Day One Presentations & Discussions**
Consensus Report-back from ASR IV Program Organizers
Albert Muniz, Vice President, Hazen & Sawyer, Boca Raton, FL

8:45 – 9:30 **Keynote speaker:** Charles Pattison
Florida Water Resources in 2020
Charles Pattison, Executive Director, 1000 Friends of Florida, Tallahassee, FL

Morning Sessions Moderator: *Elliott Grosh, Senior VP, PBS&J, West Palm Beach, FL*

9:30 – 10:30 **Florida Regulations: Protecting People and Resources**
Florida Aquifer Protection: The Regulatory View
Judy Richtar, UIC Program Manager, Florida DEP, Southwest District, Tampa, FL
Water Quality and Human Health
Bart Bibler, Water Programs, Florida Department of Health, Tallahassee, FL
Water-Resource Management: The View from Here
Don Ellison ASR Projects Coordinator, SWFWMD, Brooksville, FL

10:30 –11:00 **Break** Posters, Exhibits and room checkout opportunity

11:00–12:00 **Facility Operations, Management and the Law**
A City Utility's Perspective
Pete Mazzella, Deputy Director of Utilities, City of Boynton Beach, FL
The Environmentalists' Perspective
Scott Randolph, Attorney, Legal Environmental Assistance Foundation, Tallahassee, FL
State and Federal Regulations: Is Everything Black and White?
Cynthia Christen, Senior Attorney, Florida Dept. of Environmental Protection, Tallahassee, FL

12:00 – 1:30 **Lunch** Invited Luncheon Speaker – John Mulliken
ASR Issues in South Florida
John Mulliken, Acting Director, Water Supply Department, SFWMD, West Palm Beach, FL

Afternoon session moderator: *Andrew Stone, Executive Director, American Ground Water Trust, Concord, NH*

1:30 – 2:30 **Thoughts from Beyond Florida**
Regulatory Issues and Solutions: The Wisconsin Story
Richard Roth, UIC Program Director, Wisconsin Dept. of Natural Resources, Madison, WI
From the Outside Looking in: Is ASR Right for Georgia?
Bill McLemore, State Geologist, Georgia Geological Survey, Atlanta, GA
The EPA Perspective on a Continually Developing and Needed Technology
John Taylor, Senior Environmental Engineer, US EPA, Region V, Chicago, IL

2:30 – 2:40 **Break**

2:40 – 3:40 **Discussion, Deliberation and Recommendation Session**

Management & Policy - Session Leaders:
Peter Dillon, CSIRO, Adelaide, Australia
and Jon Arthur, Hydrogeology Program Supervisor, Florida Geol. Survey, Tallahassee, FL

This session will include discussion among presenters and attendees. The objective will be to interactively generate (in electronic format) an ASR state-of-the-art summary with where-do-we-go-from-here (?) recommendations. Discussion topics are likely to include:

- ⇨ Is there enough time for research to address the unknowns?
- ⇨ Is the CERP ASR timeline in synch with regulatory requirements?
- ⇨ Cycle-test durations – how long is enough?
- ⇨ What are regulatory interpretations of "point of compliance," and other terms?
- ⇨ How can the permitting process be improved?
- ⇨ Should Class I standards be applied to ASR?

3:40 – 4:00 **Closing Statements from ASR IV Organizers**

4:00 **Adjourn** [CEU sign-out]

Disclaimer: ***The participation of speakers at this program from specific private sector companies, organizations or agencies, does not imply that the ASR IV sponsors or co-sponsors endorse or recommend particular companies, products or commercial applications of technology.***

Florida ASR I, II, III and now ASR IV

The American Ground Water Trust held ASR I on September 10, 2001, in Orlando. This program provided exposure for the whole concept of Aquifer Storage Recovery and was a discussion opportunity for "environmental" and "engineering" perspectives of ASR as a water management strategy. ASR II took place on January 7, 2002 in Orlando and included sessions related to the treatment technology available for recharge water. In 2003, ASR III, also held in Orlando, served to provide a technical and policy update across the spectrum of Florida's ASR issues. This April 15-16 program in Tampa (ASR IV) is taking a different format. The Trust has teamed up with the Florida Department of Environmental Protection (Florida Geological Survey/ Hydrogeology Program) and the Hydrogeology Consortium. The two-day ASR IV program will review the status of current ASR science and technology on day one, and then relate the science to policy and management issues on day two. We hope attendees will be there for both days, but recognizing time and budget constraints, the organizers have framed each day as "stand-alone" to facilitate one day participation. ASR V will be held in Florida in 2005. Your comments on the evaluation sheets will be helpful in guiding the Trust to select content and format.

What is the ASR IV Forum All About?

The Tampa ASR IV Forum brings scientists, planners, water-resource managers, concerned citizens, etc… together to share up-to-date information regarding challenges and successes of ASR implementation. There will be

technical presentations and panel discussions. The program is designed for exchange of ideas and opinion. The critical mass of expertise focused on ASR for two days should provide an opportunity for an assessment of technology trends and research needs for future ASR-related activities. The content of the presentations and an edited transcript of the discussions will be prepared as a post forum publication that will be provided to all registered participants in CD format.

ASR IV is a one-stop shop for the latest perspectives on an important emerging and ongoing issue. The program has a Florida focus but the basic science, technology, management and policy issues have direct relevance for ASR programs throughout North America and overseas.

Continuing Education

Employee Development University is a learning partner with the Trust and 1.2 CEU credits are available for conference attendees who complete the sign-in and sign-out sheet at registration and who submit an evaluation form. [Visit **www.eduniv.com** for more information about this CEU program.] Lists will be available at registration. Signatures will be required for both days. One-day attendees will get 0.6 CEU credits.

American Ground Water Trust

The American Ground Water Trust is a member-supported national not-for-profit organization. The Trust was founded in 1986. The educational mission of the Trust is to:

- ⇨ Promote groundwater protection and resource sustainability
- ⇨ Communicate the environmental and economic value of groundwater
- ⇨ Showcase groundwater science and technology solutions
- ⇨ Increase citizen, community and decision-maker awareness of resource issues, and
- ⇨ Facilitate stakeholder participation in water resources decisions.

The Trust's education programs include:

- ☆Organizing specialist conferences & workshops (Such as ASR IV)
- ☆Convening *Ground Water Institutes for Teachers*™ (645 educators trained, 140,000 students impacted since 2001)
- ☆Managing Scholarship programs (over $100,000 awarded since 1987)
- ☆Responding to citizen ground water questions via 800 number and e-mail
- ☆Producing a quarterly publication for well owners *(THE AMERICAN WELL OWNER™)*
- ☆Preparation of information pamphlets on ground water subjects
- ☆Providing citizen and community advice over local ground water issues
- ☆Maintaining an informative web-site on ground water and water well subjects

Florida Geological Survey

The Florida Geological Survey (FGS), established in 1907, is a bureau of the Florida Department of Environmental Protection. The primary FGS mission is to collect, interpret, disseminate, store and maintain geologic data, thereby contributing to the responsible use and understanding of Florida's natural resources. In 2001, the Florida Legislature and the FDEP authorized creation of the FGS Hydrogeology Program, the mission of which is to conduct hydrogeologic research in support of the need for unbiased, scientific knowledge of Florida's groundwater resources with specific emphasis on aquifer systems. The program also administers research through outsourcing. Knowledge gained through these activities can be applied to rule making, regulatory, and policy decisions that facilitate efficient, science-based protection of the quantity and quality of Florida's water resources.

State Geologist and Chief, Florida Geological Survey, Walter Schmidt, Ph.D., P.G.

Hydrogeology Program Staff:

Professional Geologist Supervisor, Jonathan D. Arthur, Ph.D., P.G.

Rick Copeland, Ph.D., Professional Geologist III
Rodney DeHan, PhD., DVM, Senior Scientist
Rick Green, Professional Geologist I
Tom Greenhalgh, Professional Geologist I
Steve Spencer, Professional Geologist I
Alan Baker, OPS Environmental Specialist III
Kristy Baker, OPS Secretary Specialist
Roberto Davila, OPS Environmental Specialist I
Adel Dabous, Ph.D., OPS Research Associate
Jim Cichon, OPS Environmental Specialist III
Cindy Fischler, OPS Environmental Specialist I
Will Evans, OPS Professional Geologist I
Clint Kromhout, OPS Environmental Specialist I
Elizabeth Moulton, OPS Environmental Specialist I
Alex Wood, OPS Environmental Specialist II

Hydrogeological Consortium

The Hydrogeology Consortium is a not-for-profit organization established in 1998. Affiliated with Florida State University, the Consortium mission is to: *"Cooperatively provide scientific knowledge applicable to ground water resource management and protection."* The Consortium is principally a vehicle for encouraging, facilitating and coordinating cooperative interactions across disciplinary and administrative boundaries. Recognizing a need for more accurate models to predict groundwater flow and groundwater-surface water interactions in multi-porosity karst regions, scientists in the fields of hydrogeology, mathematical modeling, and water resource management and protection formed the Hydrogeology Consortium.

The Consortium's 2004 Board:

Tim Hazlett - President - Hazlett-Kincaid, Inc.
Rodney DeHan - Treasurer - Florida Geological Survey
Todd Kincaid - Communications Officer - Hazlett-Kincaid, Inc.
Gary Maddox - At Large - Florida Dept. of Environmental Protection
Angela Chelette - At Large - Northwest Florida Water Management District
Rick Copeland - Vice Pres. - Florida Geological Survey