



2011 GWPC UIC Conference
"Underground Injection Control:
THE National Ground Water Protection Program"
Presentations

To see a presentation, click on the presenters name

Monday, January 24

Class I
Operator
Training
10 AM
4 PM

Hydraulic
Fracturing
Workshop
1 PM
4:30 PM

***Class I UIC Operator Training Session:
Subsurface Technologies (Round
table discussion format)***

This course is designed for technical and operations staff of Class I UIC facilities. Its purpose is to familiarize personal with the regulatory and operational aspects of managing Class I injection wells.

Subsurface Technologies is one of the leading providers of injection services for many major chemical and refining companies. These services encompass all facets of injection well technology from feasibility studies to installation and operation, closure to post-closure.

This course will cover the following:

- History of Injection and Overview of UIC Program
- Permitting
- Petitioning
- Siting Criteria, Geology, and Reservoir Properties
- New Class I Well Construction Well Repair and Workovers
- Operating Procedures
- Fluid Quality
- Inspections
- Mechanical Integrity Testing
- Reservoir Testing
- This is an interactive course. Questions from the participants are encouraged.

***Workshop: Water Issues (And Solutions) Associated with
Hydraulic Fracturing***

Welcome: **Mike Nickolaus**, GWPC

Part 1: Technical Aspects of Hydraulic Fracturing Water Management

Moderator -Viola Schatzinger , PTTC

- GTI Water Management Consortiums, Marcellus & Barnett Shale – **Tom Hayes**, GTI
- Water needs of the oil and gas industry in Texas, **J.P. Nicot**, University of Texas
- Short video - Basics of Hydraulic Fracturing by Chesapeake Energy
- Discussion of shale gas production and water management in the Barnett shale, **John Satterfield**, Chesapeake Energy
- “An Integrated Water Treatment Technology Solution for Sustainable Water Resource Management in the Marcellus Shale” **Mathew Bruff**, Altela
- ALL, Inc. (DOE) Considerations for Water Treatment and Re-Use in Shale Gas Development– **David Alleman**, ALL Consulting
- **Part 2:** Regulatory Aspects of Hydraulic Fracturing Water Management
- Moderator: **Lori Wrotenbery**, Director of Oil and Gas, OCC
- STRONGER Guidelines on Hydraulic Fracturing – **Lori Wrotenbery**, Oklahoma Corporation Commission
- State Regulator Panel – **Shane Khoury**, Arkansas Oil and Gas Commission; **Leslie Savage**, Texas Railroad Commission;

Tuesday, January 25 th		
8 AM 9:25 AM	Opening General Session : Welcome: Joe Lee , President GWPC Ann Codrington , Acting Director, USEPA, Office of Ground Water and Drinking Water, Drinking Water Protection Division Susan Jablonski , Director, Radioactive Materials Division, Texas Commission on Environmental Quality Mark Ackiewicz , U.S. Department of Energy	
9:30 AM 10:15 AM	CO ₂ Geosequestration: Updates on the federal rule, state primacy and program needs: Moderator Ben Knape , Texas Commission on Environmental Quality <ul style="list-style-type: none"> • Bruce Kobelski, USEPA Office of Ground Water and Drinking Water • Kevin Frederick- Wyoming DEQ, Leslie Savage- Texas Railroad Commission • Mike Nickolaus, GWPC "Findings of the CO₂ Needs Assessment" study 	
	UIC and Energy	UIC and Water Quality/ Quantity
10:30 AM Noon	Studies related to hydraulic fracturing: Moderator Bruce Kobelski , USEPA <ul style="list-style-type: none"> • Updates on the USEPA study of hydraulic fracturing: Bob Puls, USEPA • Findings of a two state study on GW contamination complaints: Tom Tomastik, Ohio DNR (Invited) and Leslie Savage, Texas Railroad Commission • Using RBDMS Water to track water quality and use related to fracturing operations: Paul Jehn, GWPC 	Meeting Future Water Needs: Moderator, Jamie Crawford , Mississippi DEQ <ul style="list-style-type: none"> • Climate Variability and Water Resources in Texas: Robert Mace, Texas Water Development Board • Innovative Water Technologies and the Subsurface: Jorge Arroyo, Texas Water Development Board • Discussion session (10 Min) Class V UIC: ASR Moderator: Steve Musick , Musick Groundwater Consulting <ul style="list-style-type: none"> • An Assessment of Aquifer Storage and Recovery in Texas: Fred M. Blumberg, Senior Associate, Malcolm Pirnie, Inc. • Hydrogeologic and Regulatory Suitability of ASR in the Edwards Group: A Preliminary Assessment: Brian B. Hunt, Barton Springs/Edwards Aquifer Conservation District
1:30 PM- 3 PM	The GWPC/ IOGCC Chemical Registry, State and Interstate HF Module and Data Portal: Moderator, Mike Paque Stan Belieu , Nebraska Oil and Gas Commission Joe Lee , Pennsylvania Department of Environmental Protection Rebecca Thingelstad , Anadarko Paul Jehn , GWPC Mike Paque , GWPC	Class V UIC: ASR (Continued) Moderator: Steve Musick , Musick Groundwater Consulting <ul style="list-style-type: none"> • Quality of Groundwater at and near an Aquifer Storage and Recovery Site, Bexar, Atascosa, and Wilson Counties, Texas: Cassi Crow and Darwin Ockerman, USGS • Geospatial Database Analysis of the Twin Oaks Plant Aquifer Storage and Recovery Project, South Bexar County, Texas: Andy Teeple, USGS • Discussion: Impediments to the use of ASR
3:30 PM - 4:30 PM	Panel discussion: UIC National Database, The Texas Experience, Carl Reeverts , USEPA, Moderator Trang Le , USEPA Fernando DeLeon , Texas Railroad Commission	Class V UIC: Stormwater Moderator: Joe Tiago , USEPA <ul style="list-style-type: none"> • Antioch Cave: A Successful Class V UIC Stormwater Injection System: Brian A. Smith, Barton Springs/Edwards Aquifer Conservation District • Edwards Aquifer (Southern Segment -

	Bo Slone , Texas Commission on Environmental Quality	Balcones Fault Zone) Recharge Quality Protection Initiatives: John R. Hoyt , Edwards Aquifer Authority <ul style="list-style-type: none"> • Discussion – Class V and Stormwater Management
4:30 PM-5:30 PM	Crosscutting UIC Issues Lindsey Taliaferro , Ohio EPA Moderator Suggested topics: <ul style="list-style-type: none"> • Texas Desalination General Permit • Class I Permit Issues (general discussion) • Aquifer Exemptions • Funding for UIC beyond CO₂ • Other (Suggestions from the audience) 	
Wednesday, January 26th		
8 AM-10:30 AM	“Implementation Approach for Commercial Scale CCS – Technical, Commercial, and Regulatory Considerations”, Subsurface Technologies, Jerry Taylor Workshop related to the development and operation of injection wells for geologic sequestration of CO ₂	8 AM- 9:15 AM Class II Wells, Mark Bohrer , North Dakota Industrial Commission, Moderator (An open forum on Class II UIC Issues) 9:15 AM- 10:30 AM Class III and V Wells Ben Knappe , Texas Commission on Environmental Quality, Moderator Brian Smith , Texas Commission on Environmental Quality “Texas Class V Regulations” (An open forum on Class III and V UIC Issues)
11 AM-12:00 PM	Class I UIC Wells, Bob Van Voorhees , UITC , Moderator (An open forum on issues related to Class I UIC Wells)	
1 PM-3 PM	Chemical Registry – Industry Users FAQ’s, Mike Paque , GWPC , Moderator, Presenters: Mark Layne , ALL Consulting and Stan Belieu , Nebraska Oil and Gas Commission This session will cover: <ul style="list-style-type: none"> • Uploading data into the registry • Extracting data from the registry • Using the educational elements of the registry 	

Hydrogeologic and Regulatory Suitability of ASR in the Edwards Group: A Preliminary Assessment

Brian B. Hunt, P.G., Brian A. Smith, Ph.D., P.G., Joseph A. Beery, and W.F. (Kirk) Holland, P.G.

Aquifer Storage and Recovery (ASR) could be an important groundwater management strategy for existing and future supplies in areas supplied by the Edwards Aquifer of Central Texas. The freshwater Edwards is a karstic aquifer that is the sole-source of freshwater to some two million people, and supports springflow vital to ecological needs. Recent studies demonstrate the need to reduce pumping in the freshwater Edwards during drought. The saline zone of the Edwards Aquifer is located east and south of the interface of the freshwater Edwards Aquifer.

The hydrogeologic framework of the saline zone of the Edwards Aquifer appears suitable for ASR. The geologic setting of the Edwards Aquifer is similar for both the freshwater and saline zones. However, the likely lack of conduits in the saline zone results in hydrologic separation from the freshwater zone. This compartmentalization concept is supported by the absence of significant flux of saline water into the freshwater zone. In addition, the presence of old saline groundwater indicates very little circulation, therefore injected fresh water would not migrate far. Despite the relatively low permeability in the saline zone, limited well production information indicates yields of more than 1,000 gpm, suggesting potentially large storage values.

The existing freshwater distribution infrastructure is uniquely suited for ASR, and the hydrogeologic framework suggests the Edwards Aquifer would be a suitable candidate for a pilot ASR project. Additional subsurface characterization with test and monitor wells is needed to confirm efficacy. And while the BSEACD has incentivized the use of ASR with its rules, the TCEQ's and other groundwater conservation districts' current rules may prohibit the injection of freshwater into any part of the Edwards Aquifer. Changes to this regulatory landscape need to occur to open the door for ASR as a water management strategy.

Biography

Brian Hunt was born in Austin, Texas, and graduated from the University of Texas at Austin with a B.S. (1996) and M.Sc. (2000) in geological sciences. Brian has worked for more than 10 years with the Barton Springs/Edwards Aquifer Conservation District and is currently a Senior Hydrogeologist. Brian is a Professional Geoscientist in the State of Texas, former president of the Austin Geological Society (AGS), and currently serves as an Associate Editor of the annual AGS Bulletin.

Brian Smith received a B.A. from Rice University in Houston and a Ph.D from UT Austin. He is the Aquifer Science Team Leader at the District and has worked at the District for 10 years.

Joseph Beery has a B.S. in Geological Sciences from UT-Austin. He is a hydrogeologist on the Aquifer Science and Regulatory Compliance Teams and has worked at the District for 13 years.

Kirk Holland has a Masters in Geological Sciences from the University of Texas at Austin, and his research focused on karst hydrogeochemistry. Kirk is the General Manager of the District and a professional geoscientist. Before joining the District, he worked in various technical and management capacities in hydrogeology and environmental management for a relatively large technical services consulting firm for almost 25 years, and then was an independent business management consultant for 7 years.

Antioch Cave: A Successful Class V UIC Stormwater Injection System

Brian A. Smith

Brian B. Hunt

Joseph A. Beery

Antioch Cave, located a few miles west of Buda in Central Texas, is a natural cave opening on Onion Creek that provides a considerable amount of recharge to the Edwards Aquifer. To improve the quality and quantity of water recharging the aquifer, a BMP structure was built over the cave entrance. Two large-diameter valves on the BMP can be closed to prevent entry of contaminated stormwater into the cave. One of the valves is controlled by an automated system that opens and closes the valve depending on turbidity levels in Onion Creek. When the water quality improves within hours or days following a storm, the valves are reopened. A large screen was installed on the automated valve to prevent entry of coarse sediment and organic material. With only minimal amounts of sediment and storm debris entering the cave, the cave passages are less likely to become clogged, and a greater quantity of water can recharge the aquifer. Some of this recharged water enters storage within the aquifer, which will then help maintain springflow at higher rates as the aquifer enters drought conditions. Higher rates of springflow with high quality groundwater, compared to periods of severe drought, are needed to ensure the survival of the endangered salamanders that live in Barton Springs. This additional recharge and increased storage also help maintain water levels in the unconfined portions of the aquifer where some water-supply wells could be susceptible to going dry under extreme drought conditions. The Antioch BMP system is operated under a Class V UIC permit from the Texas Commission on Environmental Quality. The Antioch Cave recharge project is successful at increasing the volume of clean water entering the aquifer and helps sustain springflow and groundwater resources.

Brian A. Smith, Ph.D., P.G., Barton Springs/Edwards Aquifer Conservation District (BSEACD), Aquifer Science Team Leader

Brian B. Hunt, P.G., BSEACD, Senior Scientist

Joseph A. Beery, BSEACD, Hydrogeologist