

FOUNTAINHEAD

April 2011

Barton Springs/Edwards Aquifer Conservation District uses ground water science to better understand Central Texas aquifers

By BRIAN A. SMITH, Ph.D., P.G., and BRIAN B. HUNT, P.G.,
Barton Springs/Edwards Aquifer Conservation District

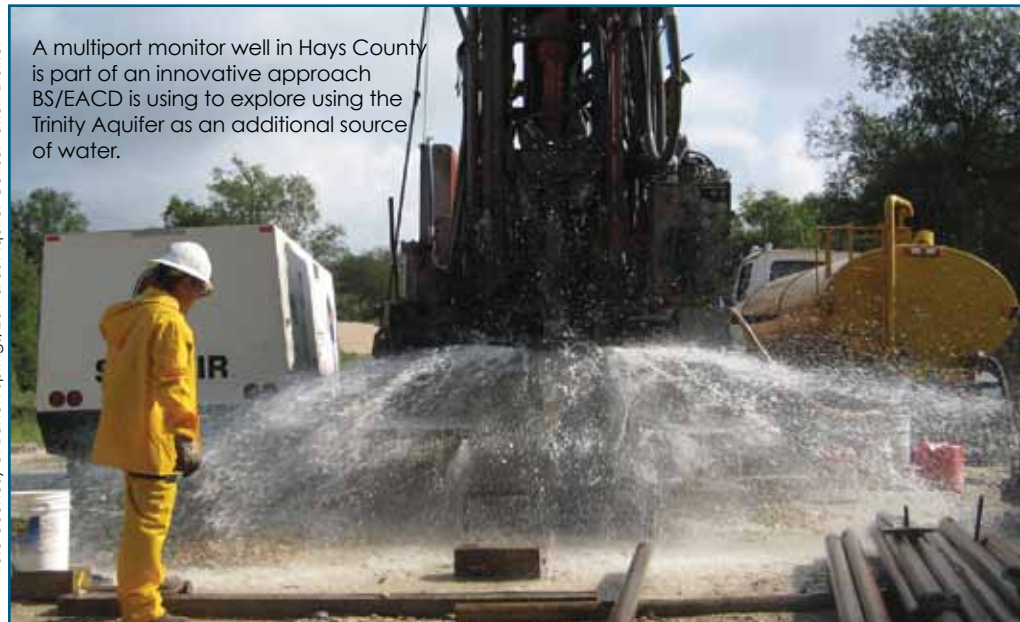


Photo courtesy of Barton Springs/Edwards Aquifer Conservation District

The Barton Springs/Edwards Aquifer Conservation District is located in Central Texas along the Balcones Fault Zone. BSEACD's jurisdiction includes parts of rapidly-growing Hays and southeastern Travis counties, areas which have respectively experienced 57 and 26 percent increases in population growth and which are projected to continue to expand (Capitol Area Council of Governments, Jan. 2011, and various reports).

The District is exploring the Trinity Aquifer for its potential as an additional source of water.

But the Trinity, one of the most extensive and highly-used aquifers in Texas, also poses limitations. To explore its potential as an additional source of water and better manage its water resources as a whole, the District uses groundwater science.

One project, a multiport monitor well system in Hays County about five miles west of Buda, is helping to:

1. Characterize the Trinity Aquifer in the Balcones Fault Zone
2. Determine hydrologic relationships within and among the Trinity

Please see BSEACD, page 4

Texas Commission on Environmental Quality reconsiders Hill Country PGMA recommendations

By STEVE MUSICK, P.G.
Musick Groundwater Consulting

The Texas Commission on Environmental Quality has withdrawn its recommendation to form a new groundwater conservation district where the Trinity Aquifer crops out in Comal, Hays and Travis counties.

Under the executive director's new recommendation, the proposed GCD's boundaries would no longer include Hays County. Instead, the western Comal County territory would be added to the Trinity Glen Rose Groundwater Conservation District and the southwestern Travis County territory would be added to the Barton Springs/Edwards Aquifer Conservation District. A second preliminary hearing was held on April 6 to name additional parties and consider the executive director's report and new recommendation.

Two actions in the fall of 2010 have bearing on the issues and the scope of the recommendations. An August 2010 opinion by the attorney general which deals with supremacy of statutorily created districts calls into question the Commission's

Please see PGMA, page 19



From the top of the rig

Perspectives of Division Presidents



Ken Grant
Contractors & Drillers



Randy Lyne
Manufacturers & Suppliers



Steve Musick
Ground Water Science

Quenching Texas' thirst

The 2011 Convention and Trade Show in Lubbock was a great success; even the weather cooperated. There might not have been quite as many golfers present if we'd waited a week for the wind chill to hit minus 18 degrees. We had the very popular inaugural Leroy Goodson Bowling Tournament that was enjoyed by all who attended. There was more bonding at this activity than any I have ever seen at a TGWA function.

All fun aside, the 82nd Legislative Session is in progress, and we must keep a vigilant eye on what our representatives and senators are doing for (or to) us. There are many bills before the Legislature that could affect us all.

As the population of Texas continues to grow, the importance of groundwater will continue to grow. I think there are good opportunities for ground water professionals to help satisfy that thirst for water.

I have contacted all my committee chairs, and they are willing and ready to serve. I look forward to a good year with them.

Please see Grant, pg. 3

Updating our skills and wares

I am looking forward to my term as president of the M&S Division and want to express my sincere thanks to my fellow officers, directors and members. You are a great group of folks, and I know with your help and support we will have a successful year.

That's what this organization is all about. People volunteering their time, efforts and knowledge to see that the water well and groundwater industry continues to be successful.

Fortunately (sometimes it seems unfortunately) I get to visit areas across our entire nation in this industry that are engaged in our industry. There are challenging times ahead -- new regulations and requirements are being put on the backs of the water well industry. We must continue to update, upgrade and market our wares and skills. Those of us in the M&S Division must do all we can to assist those who are out in the field, doing the work. I'm grateful to be a part of this, and I know you are also.

Many in our division continue to provide excellent

Please see Lyne, pg.5

TGWA's top-notch CE program relies on hard-working professionals

Returning from Lubbock as the new division president, I remain impressed by the quality of the convention and trade show, especially the Association's continuing education program.

The CE program keeps professionals in the water well business up to speed on developments and best practices in well technology and diagnostic tools, ground water science, state agencies' rules and regulations and developments in local ground water districts.

This year new classes included Ground Source Loop Installations and Net Positive Suction Head and Cavitation. Regional talks assessed groundwater and well development in the Ogallala; arsenic occurrence, and groundwater management in the Panhandle.

The CE program relies on volunteers from the Association's three divisions and technical and science specialists from the water well industry, state agencies, groundwater districts and universities. We owe a debt of gratitude to these hardworking professionals.

Please see Musick, pg. 3

From Sherry Abel

PRESIDENT

Ladies Auxiliary honors our service men

I'm honored to serve as president of the Ladies Auxiliary. I look forward to the upcoming board meeting and to planning our 2012 convention.

I want to say a big "thank you" to Shirley Ann Casarez for three years' leadership and hard work. She gives credit to the ladies on the board, but she does so much extra! I have big shoes to fill.

The 2011 convention was a great success. We had a good time at the Buddy Holly museum and at lunch. The hospitality room was awesome. The food was out of this world and of course Patrick and Shirley, who were our hosts, are phenomenal.

As a board, we decided that our service project would be the Red Horse Squadron. These mobile rapid-response teams support special projects. They build airfields, buildings, pave surfaces and drill water wells. In March, we polished our "smart shopping" skills, bought over 100 items these special folks had requested, and shipped the packages immediately. We plan to send two or three more care packages over the course of the year to show our appreciation.

We also want to send notes or letters thanking the squadron members for serving our country. If any of you would like to write a note or letter please send it to the attention of Becky Arledge at the TWCA offices. We will make sure it gets there. Unfortunately, we may not have the individual names, but even so the notes make a big difference.

Remember that water is a precious commodity, and we are stewards helping preserve it.

Love always,

Sherry Abel



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Contractors & Drillers Division

Ken D. Grant, President Jason Cadwallader, President-Elect Dennis Kern, Vice President Robert Wagstaff, Secretary-Treasurer Dale Felder, Immediate Past President

Directors-at-Large

Table with 3 columns: 2012, 2013, 2014. Lists names of directors for each year.

Chapter Directors

Table with 2 columns: Central Texas, East Texas, Mid-Coast, South Plains, West Texas. Lists names of chapter directors.

Manufacturers & Suppliers Division

Randy Lyne, President Tom Blake, Vice President Van Schmuck, Secretary-Treasurer Dan Collins, Immediate Past President

Directors

Table with 3 columns: 2012, 2013, 2014. Lists names of directors for each year.

Ground Water Science Division

Steve P. Musick, President Rusty Tarver, Vice President Kaveh Khorzad, Secretary-Treasurer John Waugh, Immediate Past President

Directors

Table with 3 columns: 2012, 2013, 2014. Lists names of directors for each year.

Association Staff

Leroy Goodson, Executive Secretary Dean Robbins, Deputy Executive Secretary

Grant, continued from page 2

I am looking forward to a great year working with the TGWA Board. Leroy and staff are keeping us on track and moving forward. Thank you for allowing me to serve as your president. I hope to serve you all well.

Ken D. Grant

Musick, continued from page 2

The knowledge and experience available through the CE program will become increasingly important in our industry. A case in point is the 82nd Legislature where the review of several water agencies, public concern over water planning and legal issues over ownership is making groundwater ownership a hot-button issue.

Steve Musick



Editorial Services: laura@raunpr.com Advertising: 512-583-0929

and Edwards aquifer units

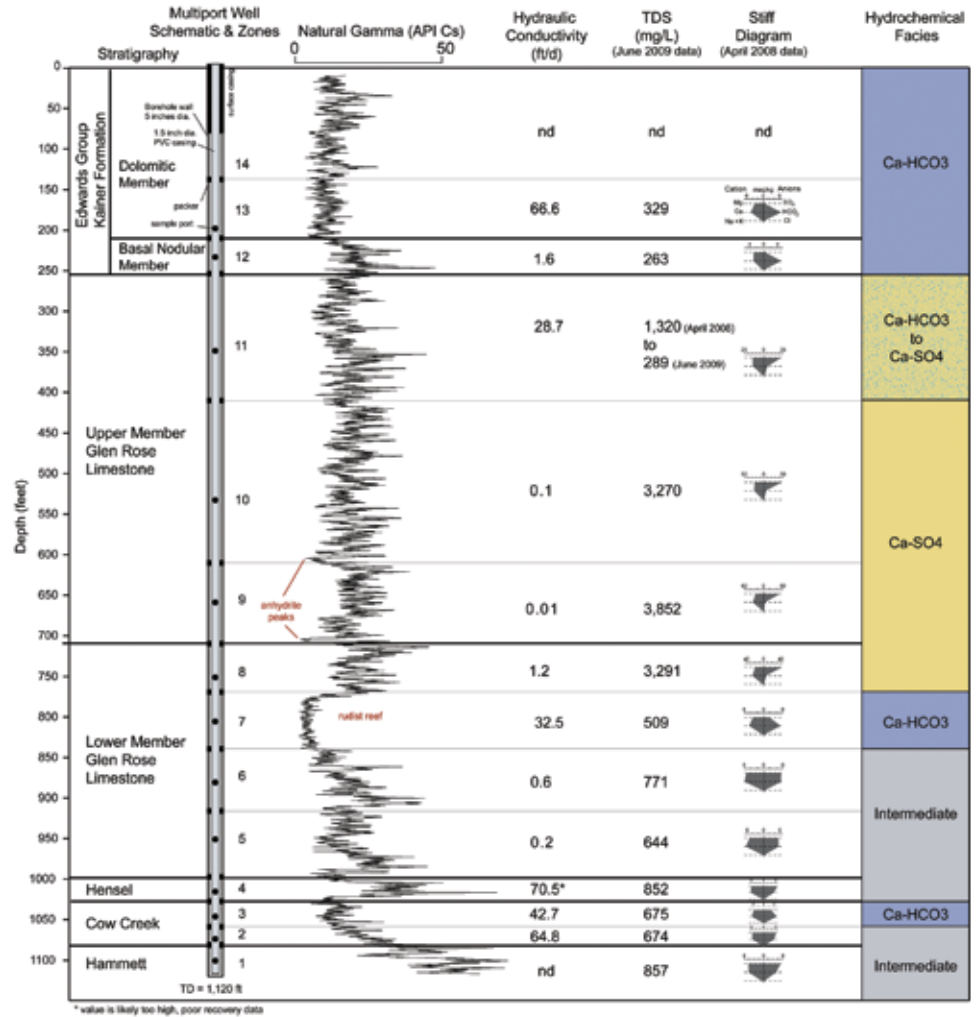
3. Assess the potential for vertical versus horizontal flow in the aquifers

This unique well contains 14 monitoring zones completed in the Edwards and Trinity aquifers which allow District hydrologists to collect data on water levels, geochemistry, isotopes, and permeability. The well, a Westbay® multiport system from Schlumberger, makes it possible to take pressure measurements and collect samples at discrete zones within a single borehole. A 5-inch (13-cm) diameter borehole was drilled to a total depth of 1,120 feet (341 m) and equipped with 14 zones isolated by permanent packers separating hydrostratigraphic units of each aquifer (Fig. 1). The drill rig encountered circulation problems when drilling into the Hammett Shale. Despite a booster air compressor, the rig kept blowing gaskets, which precluded drilling into the Lower Trinity Aquifer.

A geophysical log of the borehole, consisting of natural gamma and caliper was conducted. These data are critical to the design of the well, the placement of packers, sample ports, and pumping ports. HX steel casing was inserted in the borehole as a guide tube to facilitate placement of the system and logging of unstable portions of the borehole. District and Westbay® staff assembled and installed the system through the HX casing. Each joint was pressure tested during the installation. After installation, the HX casing was removed and the packers were inflated. Head measurements and water samples are taken using specially-designed tools lowered by wireline into the casing system.

Head differences between zones in the multiport well range from less than 1 foot (0.3 m) to as much as 80 feet (24 m). Head data reveal two separate hydrogeologic

Results of the multiport well sampling



Testing data from the 14 zones within the multiport well reveal two separate hydrogeologic regimes: An upper regime (Edwards and Upper Glen Rose units measured by zones 10-14) and lower regime (Lower Glen Rose, Hensel and Cow Creek measured by zones 1-8).

regimes with the Edwards and Upper Glen Rose units (zones 10-14) making up the upper regime, and the Lower Glen Rose, Hensel, and Cow Creek (zones 1 - 8) making up the lower regime. The average, long-term head difference between the two regimes is about 50 feet (15 m) with the higher heads consistently in the upper regime. Therefore, the potential for flow is downward. Heads in zone 9 fluctuate between the heads in the upper and lower regimes.

Total dissolved solids range from 263 milligrams per liter in an Edwards zone to 3,852 mg/l in the lowermost zone of the Upper Trinity. Two monitoring zones that were installed in the Cow Creek Limestone, near the bottom of the well, have TDS

values of 675 mg/l and 674 mg/l.

A new multiport well was drilled to a total depth of 1,375 feet in September 2010 in the artesian portion of the Edwards Aquifer. This new well is similarly completed through the Middle Trinity and has 21 zones. District staff is in the early stages of data collection for this new multiport well.

Conclusions

Significant differences in head and TDS values suggest that there is very little vertical flow between these zones in the vicinity of the well. Where nearby faults cut across the Edwards and Trinity units, there is greater potential for flow between zones. However, the large discrepancies in TDS

Please see BSEACD, continued on page 7

courtesy of Barton Springs/Edwards Aquifer Conservation District

Welcome **New Members**

Join TWGA today!
Apply online at www.tgwa.org/membership.html

Daniel L. Ayers
D. L. Ayers Water Wells
Canton, TX

David Bazzell
DB Marketing
Perry, OK

Matthew Beasley
WILO USA, LLC
Melissa, TX

Glen Campbell
Lorenzo, TX

Brad Davis
Gray's Water Well Service
Huntsville, TX

Jeremy Everett
SMP Pumps
Lubbock, TX

Joe Fogg
Cerus Industrial
Hillsboro, OR

Glen Haskin
PMI Pipe & Supply
Boerne, TX

Garrett Jones
Laval Underground Surveys,
LLC
Fresno, CA

Carson J. Keifer
Motor Controls, Inc.
Dallas, TX

Roger H. Kitten
Kitten Pump & Supply
Slaton, TX

Sabrina Leven
Enviro-Ag Engineering, Inc.
Dumas, TX

Robert Patterson
Upper Trinity Groundwater
Conservation District
Springtown, TX

Calvin Madsen
C & W Construction
Beaver, OK

Juan A. Martinez, Jr.
Martinez Pump Service
Uvalde, TX

David Rounds
University of Texas at Arlington
Arlington, TX

Leland Stukey
Poly Rig Company, Inc.
Plainview, TX

Vonnie Townsend
Townsend Pump Service
Lubbock, TX

Antonio Trejo
Texas A&M University
Environmental Studies
Brenham, TX

David Wagner
Blast Hole Bit Company
Durant, OK

Brian Walden
Walden Drilling
Roanoke, TX

Clay Winnard
Wyo-Ben, Inc.
Montgomery, TX

Tom White
Lubbock Electric Co.
Lubbock, TX

PENALTIES & SANCTIONS

Enforcement actions by
the Texas Department of
Licensing and Regulation.

3/11/11

A WINNIE man was fined \$1,500 for drilling a water well and failing to submit the required State of Texas well report within 60 days.

3/4/11

A MCKINNEY man was fined \$1,000 for drilling a water well without the required State of Texas Water Well Drillers' License.

3/2/11

An ALLEN man was fined \$2,000 for drilling a water well without the required State of Texas Water Well Drillers' License.

2/28/11

A MCKINNEY man was fined \$1,000 for drilling a water well without the required State of Texas Water Well Drillers' License.

2/20/11

A CALDWELL man was fined \$3,000 for failing to obtain an operating permit prior to drilling a well and failing to place a proper cap/cover over a newly-drilled unattended well.

1/25/11

An AUSTIN man was fined \$375 for drilling water well and failing to submit the required State of Texas well report within 60 days.

12/16/10

A HOCKLEY man was fined \$1,500 for drilling water well and failing to submit the required State of Texas well report within 60 days, local groundwater conservation district and person for whom the well was drilled.

12/16/10

A LAREDO man was fined \$1,000 for offering to perform as a water well driller or pump installer without the proper license.

10/28/10

A SUTHERLAND SPRINGS man was fined \$8,500 for false, misleading, or deceptive representations; respondent twice drilled a water well with an expired State of Texas Water Well drillers license; respondent drilled a water well and failed to have the slab or block extend laterally at least two feet from the well in all directions; respondent drilled a water well and failed to submit the required State of Texas well report within 60 days.

Lyne, continued from page 2

continuing education programs, and we express our sincere appreciation for your efforts and dedication. We know you love and care about the industry, or you wouldn't give your time and energy to provide classes -- especially on weekends and evenings -- in many cases traveling long distances to get to the classes.

As we go through this year, let us be mindful that we must provide the best and most affordable products for our industry so that those who utilize them can provide the best product for the consumer. A high quality and quantity of water!

Until next time, best wishes.



IN MEMORIAM

Robert James Neely
October 30, 1930 – February 8, 2011



On February 8, 2011, Our Creator was pleased to receive from our midst our friend and fellow groundwater contractor and business owner, Robert James Neely. Mr. Neely leaves a distinguished career of dedicated service in groundwater, public service and related activities and leadership.

Mr. Neely served on the board of directors of the Texas Ground Water Association

for many years and as its president from 1981 -1982.

Mr. Neely was recognized by the TGWA in 1992 as Contractor of the Year with the coveted Owen F. Jensen Award. In 1995, Mr. Neely was again honored by the TGWA with the "Honorary Life Membership Award" for his service and dedication to the Association and its membership.

Mr. Neely owned and operated Neely Water Well Service in Riviera, Texas. He began his water well operation in 1966 when he purchased a "Gin Pole Rig" and began his water well profession. Today the business consists of pump and windmill service in South Texas. Mr. Neely was instrumental in developing the local chapter of the TGWA for South Texas and was active in its activities throughout the years. He retired in 1993, leaving his son Jim to operate the business while he started collecting and restoring antique cars and tractors.

Mr. Neely was first and foremost a devoted family man who shared his life with his wife of 61 years, Ruby, and his children, grandchildren and great grand-children. They were his life. They worshipped him, and he in turn worshipped them. He loved his fellowman. Mr. Neely was a member of the Lions Club, trustee and past president of the Riviera School Board, a member of the Kleberg County Appraisal District, Kingsville Auto Club, and Tried Iron Club. He was also an adult 4-H leader in Kleberg County and the community of Riviera. Mr. Neely was a man of great vision, boundless energy, great strength of character, and had an abiding sense of humor. We will miss him in the great endeavors which we all strive to accomplish. May the memory of this kind man remain with us as a constant reminder of all that is commendable.

Be It resolved that this recognition of his splendid career, his sterling qualities, and his dedicated service to his State and Nation by the Texas Ground Water Association be recorded in the proceedings of this meeting of the Board of Directors of the Association; that his wife Ruby; his four children Bobette (Keith) Naylor, Bridget (Jack) Wickett, Jim (Lisa) Neely and Roberta Neely; sister Opal O'Brien, six grandchildren, Brooke (Aaron) Unterbrink, Jessica Naylor; Alex and Ashley Neely, Brett (Susan) Wickett and Brain (Doris) Wickett; and five great-grandchildren, Jack Naylor Unterbrink and Guy Neely Unterbrink, Timothy Wickett, Alan and Taskina Wickett, be extended the deepest sympathy of the Association, and that copies of this memorial be extended to his family.

ADOPTED IN SAN MARCOS, TEXAS,
THIS 9TH DAY OF APRIL 2011.

Murray Don McKinley, Jr.
May 28, 1948 – March 30, 2011



On March 30, 2011, Our Creator was pleased to receive from our midst our friend and fellow groundwater contractor and business owner, Murray Don McKinley, Jr. Mr. McKinley leaves a distinguished career of dedicated service in groundwater, public service and related activities and leadership.

Mr. McKinley served on the Board of Directors of the Texas Ground Water Association for many years and as its president in 1992 – 1993.

Until recently when they sold the business, Mr. McKinley owned and operated McKinley Drilling in Pearsall, Texas.

Mr. McKinley was a graduate of Texas A&I University in Kingsville, Texas. He was an active member of the First United Methodist Church and past master and district deputy of the Frio Lodge #399 Ancient Free and Accepted Masons. He was a licensed flight instructor and managed the Frio County Airport for many years.

He greatly enjoyed flying airplanes and was a superb mechanic. He was a strong Christian man, devoted husband, wonderful father, good friend and mentor to many.

Mr. McKinley was first and foremost a devoted family man who shared his life with his wife Diane, his children, and his grandchild. They were his life. They worshipped him, and he in turn worshipped them. He loved his fellowman. Mr. McKinley was a member of the Pearsall Independent School District School Board and the Board of Directors of the Medina Electric Cooperative.

Mr. McKinley was a man of great vision, boundless energy, great strength of character, and had an abiding sense of humor. We will miss him in the great endeavors which we all strive to accomplish. May the memory of this kind man remain with us as a constant reminder of all that is commendable.

Be It resolved that this recognition of his splendid career, his sterling qualities, and his dedicated service to his State and Nation by the Texas Ground Water Association be recorded in the proceedings of this meeting of the Board of Directors of the Association; that his wife Diane; his father Don McKinley; his three children, daughters Amy Cave (Matthew), Kim (fiancé Hamilton); and son Nathan (Kim); his grandchild, Benjamin; his two sisters and two brothers: Marilyn McKinley (Bobby Bonnett), Melanie Rigby (Jim), John (Becky), and Ike (Susie) be extended the deepest sympathy of the Association, and that copies his memorial be extended to his family.

ADOPTED IN SAN MARCOS, TEXAS,
THIS 9TH DAY OF APRIL 2011.

IN MEMORIAM



Allen E. Johnson
April 29, 1943 –
December 21, 2010

On December 21, 2010, Our Creator was pleased to receive from our midst our friend and fellow groundwater contractor and business owner, Allen E. Johnson. Mr. Johnson leaves a distinguished career of dedicated public service

in groundwater and related activities and leadership.

Mr. Johnson was elected to the board of directors of the Texas Ground Water Association in 1992 and was re-elected to six consecutive three-year terms. Mr. Johnson was recognized by the TGWA in 2001 as Contractor of the Year with the coveted Owen F. Jensen Award. Then, in 2009, Allen was honored by the TGWA with the "Honorary Life Membership Award" for his service and dedication to the Association and its membership.

Mr. Johnson owned and operated Modern Well Service and Supply for the past 39 years, dealing with the sales and repair of water pumps, designs of water systems for domestic, industrial, livestock and agriculture, and public water supply operations and compliance. He was licensed in Texas as a Master Pump Installer by the Texas Dept. of Licensing and Regulation, and Grade D Water Operator's and Customer Service Inspector licenses under the Texas Commission of Environmental Quality.

Mr. Johnson was very active not only in the TGWA, but with the Panhandle/South Plains Groundwater Chapter and served many years as its secretary-treasurer. He also served as chair of the chapter scholarship committee and was very active in the continuing education classes hosted in the chapter's area, developing C.E. courses and presenting them at the state and local level for license renewal credit.

Prior to starting his own business, Mr. Johnson was employed by Green Machinery Company in Plainview, Texas, from March 1965 to January 1974. Upon graduation from high school, Allen was employed at Sebo's, a farm supply company, from 1961 to 1964, and then at Fry & Cox, a tractor dealership in Muleshoe, Texas.

Mr. Johnson was a member of the College Heights Baptist Church in Plainview where he served as a deacon and with the Outreach of the Brotherhood Program for adult men.

Mr. Johnson was a man of great vision, boundless



(L to R) Evelyn & Charlie Johnson receive a TGWA Memorial Resolution for husband and father Allen Johnson at the TGWA Annual Convention in Lubbock earlier this year.

energy, great strength of character, and had an abiding sense of humor. We will miss him in the great endeavors which we all strive to accomplish. May the memory of this kind man remain with us as a constant reminder of all that is commendable.

Be it resolved that this recognition of his splendid career, his sterling qualities, and his dedicated service to his State and Nation by the Texas Ground Water Association be recorded in the proceedings of this meeting of the Board of Directors of the Association; that his wife Evelyn, son Tom Johnson and wife Shannon, son Charlie Johnson, brother Art and wife Joyce Johnson, sister Pauline and husband Frank Finch, two grandchildren, Andrew and Alyssa Johnson, be extended the deepest sympathy of the Association, and that copies of this memorial be extended to his family.

ADOPTED IN LUBBOCK, TEXAS, THIS
27TH DAY OF JANUARY 2011.



See additional photos from the TWGA Annual Convention on pages 8 - 11.

TGWA Annual Convention and Trade Show



Contractors & Drillers Division

Contractors & Drillers Division: (L to R), front row, seated: President Ken Grant, Rusty Gilmore, Patrick Casarez, Vice President Dennis Kern, Travis Russell, TGWA Executive Secretary Leroy Goodson. Second row, standing: Don McElroy, Jerry Browning, Randy Roberts, David Rumbelow, Debora Wagstaff, Secretary Robert Wagstaff, Bill Stoner and Clark Abel (kneeling). Back row: Ross Smart, Pete Brien, Donald Vaughan, Jim Taylor, Immediate Past President Dale Felder, President Elect Jason Cadwallader, Bill Lange and Alan Brison. Not pictured: Ray Whisenant, Jr., Jim Bob Neely, Bobette Neely Naylor, Mike Pyburn, Terry Lowe, Paul Rhodes and J. Ronald Stanley.



Members of the Ladies' Auxiliary honor our service men: (L to R) Ladies Auxiliary President Shirley Casarez, Evelyn Johnson, Julie Sedberry, Army Staff Sgt. Franco, and Debora Wagstaff.

Jan. 26-28 Lubbock Memorial Civic Center



Ground Water Science: (L to R) Pat Goodson, Vice President Rusty Tarver, President Steve Musick, Immediate Past President John Waugh, Bill Klemt, William "Bill" Stein, Steven Bond, Secretary-Treasurer Kaveh Khorzad and William Gamblin.



Left, National Ground Water Assoc. President Art Becker wearing his TGWA cowboy hat.



Right, Manufacturer & Supplier of the Year Robert D. "Bob" Trees thanks the audience for his award.

Manufacturers and Suppliers Division: (L to R), front row: James "Jim" Jackson, Ronnie Hensley, Judy Herndon, Don J. Childers, Ken Howard, and Secretary-Treasurer Van Schmuck. Second row: Robert Lasater, Randy Pfeifer, Immediate Past President Dan Collins, President Randy Lyne and Loren Slater. Not pictured: Vice President Tom Blake.



TGWA Annual Convention and Trade Show



(L to R) Dan Collins receives Outgoing M&S President Award from Leroy Goodson.



(L to R), Charlie Waller receives an Honorary Life Membership Award from President Dale Felder.



(L to R) John Waugh receives Outgoing GWS President's Award from Leroy Goodson.



(L to R) Amelia Taylor receives LaVoyce Gauden Outstanding Woman Award from Incoming Ladies' Auxiliary President Sherry Abel.



Worldwide Drilling Resource's
Kathy Heinrich



All photos courtesy of Worldwide Drilling Resource, Bonifay, Florida.



(L to R) Edmund J. "Johnnie" Friedel, Jr. receives the Owen F. Jensen award for Contractor of the Year from Outgoing M&S President Dan Collins.

Jan. 26-28 Lubbock Memorial Civic Center



(L to R), Outgoing Ladies Auxiliary President Shirley Casarez is recognized by President Dale Felder.



(L to R), Judy Herndon receives the Wesley Young Award for Manufacturer & Supplier of the Year from President Dale Felder.



(L to R) Dale Felder receives Outgoing C&D President's Award from Leroy Goodson, who in turn was honored with the TGWA President's Award.



Walter "Bud" Kern was awarded Honorary Life Membership.



(L to R) Robert D. "Bob" Trees receives the Wesley Young Award for Manufacturer & Supplier of the Year.

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GOULDS G&L

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AMTROL / STATE-GPE
POLY & GALVANIZED STEEL STORAGE TANKS

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MOTOR DRIVES, CABLE & RELATED ACCESSORIES
YASKAWA IQ PUMP DRIVE

Drilling Supplies
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CERTA-LOK CASING & SCREEN,
BAROID / CETCO DRILLING FLUIDS & MUD PRODUCTS,
COTEY WELL REHABILITATION CHEMICALS,
STEEL CASING & SCREEN

Environmental Supplies
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ENVIRONMENTAL WELL ACCESSORIES,
SAMPLING EQUIPMENT & REMEDIATION EQUIPMENT,
GRUNDFOS REDI-FLO PUMPS & CONTROLS

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American West Windmill & Solar Company
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PARTS, PUMP JACKS & MIDLAND CYLINDERS
LORENTZ COMPLETE SOLAR PUMPING SYSTEMS

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BSEACD, continued from page 4

values between zones suggest that vertical flow along faults in this area is small compared to horizontal flow in each zone. Multiport well monitoring is critical to understanding the hydrologic relationships within and among the Trinity and Edwards aquifer units. Additional multiport wells should be installed on or near faults to evaluate the potential for flow along these faults and where geochemical data suggest upward flow from the Trinity into the artesian portion of the Edwards. Data from multiport wells will help to increase our understanding of these aquifers and ultimately lead to better management of the groundwater resources of the Barton Springs/Edwards Aquifer Conservation District.

Acknowledgements

The District project team consisted of Brian A. Smith, Ph.D., P.G., Brian B. Hunt, P.G., W.F. (Kirk) Holland, P.G., Joseph Beery, and Guy Riels. C&C Drilling (Boerne, Tex.) drilled the borehole. We thank Dr. Brann Johnson (retired, TAMU) for providing logistical support and consultations; the EAA and Geary Schindel, P.G. for geophysical logging of the well; the TWDB for support and funding of chemical and

TAKE AWAY

The Barton Springs / Edwards Aquifer Conservation District is using a 14-port multiport well monitoring system to better understand the hydrologic relationships within and between the Trinity and Edwards aquifers. The project will yield flow and supply data -- water levels, geochemistry, isotopes, and permeability -- that will ultimately help it better manage the region's water resources.

isotopic analyses; and the City of Austin (WQPL) for providing the well study site. Steve Musick, P.G. compiled and edited this article.

About the authors



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 more than 10 years. Contact Brian at brians@bseacd.org.



Brian Hunt graduated from the University of Texas at Austin with a B.S. (1996) and M.Sc. (2000) in geological sciences. Brian is a senior hydrogeologist who has worked with the District for more than 10 years. Contact Brian at brianh@bseacd.org.

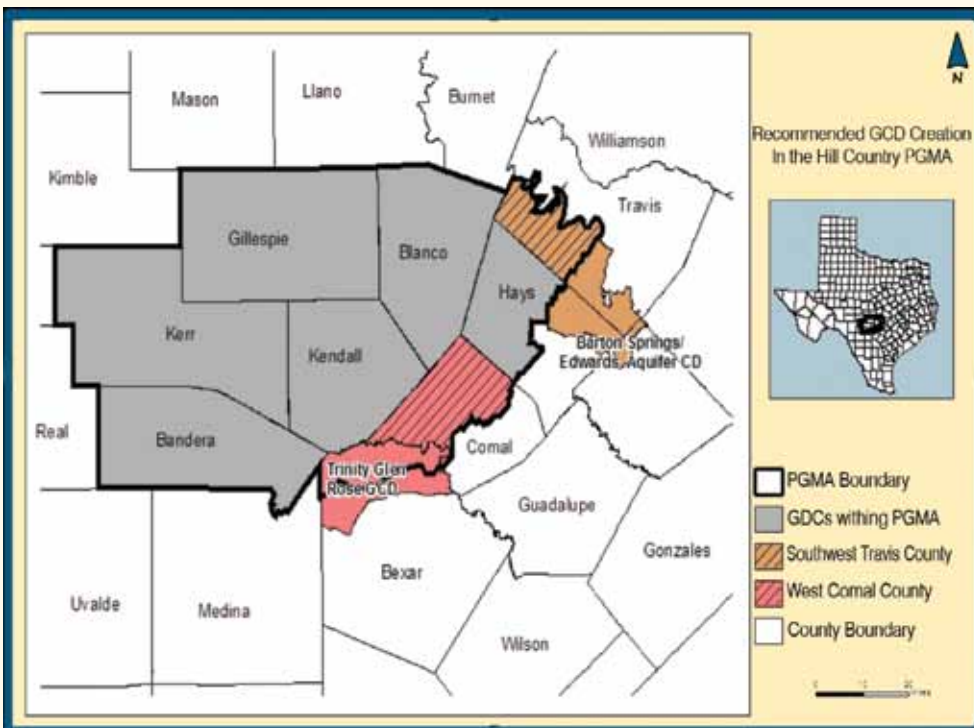
PGMA, continued from front page

authority to create a district over the existing Hays Trinity GCD. In September the new directors of the

Hays Trinity GCD withdrew the previous board's support for the proposed multi-county district.

Editor's Note: An update on the Hill Country PGMA will be included in the next issue.

Courtesy of Texas Commission on Environmental Quality



About the author



Steve Musick holds a bachelors degree in Geological Sciences from the University of Texas. He worked with the Texas Commission on Environmental Quality and its

predecessor agencies for 26 years in the areas of groundwater management, groundwater districts, groundwater protection, and program development. He currently consults for the Ground Water Protection Council on technical and policy issues.

TCEQ's revised recommendation for the Hill Country PGMA calls for addition of territories in western Comal and southwestern Travis counties to existing groundwater districts.

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