

# WATERLINES

## Authority Initiates Bold New Strategy to “Share” Groundwater

### What do you know about SURFACE WATER?

Texas has vast water resources and every time it rains, the water that cannot be absorbed by the ground runs off, flowing downhill to fill our creeks, streams, reservoirs and rivers.

On average, this runoff amounts to an astonishing 50 million acre-feet per year. *(One acre-foot equals 325,851 gallons -- that's an area about the size of a football field covered with one foot of water!)*

Texas experiences about 16 Trillion gallons of runoff during an average year...or a football field with water 9,280 miles deep! Most of this runoff, however, eventually passes into the Gulf of Mexico through the state's 80,000 miles of streams and rivers.

Texas' river system is long enough to circle the earth three times. With 15 major river basins, it is second only to Minnesota in total surface miles of inland waterways.

*(Source: The Texas Water Foundation)*

Residents in northwest Houston have traditionally relied on groundwater pumped from individual wells by municipal utility districts or other water suppliers. This system has served us well over the years, but the water we have “taken” has caused the depletion of the aquifers beneath us. Several years ago, the Harris Galveston Coastal Subsidence District (HGCSO) mandated the phased reduction of our dependence on groundwater to preserve these important aquifers; to give them a “rest” and time to recharge. The first of these mandated reductions is scheduled for January 1, 2010.

The North Harris County Regional Water Authority was created by the 76th Texas Legislature (and confirmed by voters in January 2000) and assigned the responsibility for obtaining and delivering a long-term supply of potable water at the lowest responsible cost for the water users within its boundaries. The individual water districts will continue to supply water to their customers, and everyone throughout the Authority will help to pay for the new system and future supply of surface water.

As planning progressed, it soon became apparent that there were water districts that were experiencing difficulty with either water quality or not having enough water in their wells to meet a growing demand. The dilemma facing these districts was to decide whether or not to drill new wells (sometimes at a cost of more than a million dollars) that may be taken out of service when the area is converted to surface water in 2010.

After months of discussion and in-depth research, the Authority initiated a bold new strategy to share the groundwater by connecting the districts that had surplus capacity in their wells to the ones that needed additional water now. This innovative solution -- called the Groundwater Transfer Program -- is now underway and involves constructing portions of the 2010 distribution lines ahead of schedule.



*Continued on page 5*

# REGIONAL WATER AUTHORITY AND CITY OF HOUSTON AGREE ON WATER SUPPLY CONTRACT

The Board of Directors of the North Harris County Regional Water Authority has announced that following months of intense negotiations, Houston City Council and the Authority's Board of Directors have unanimously approved the water supply contract between the two entities.

The contract includes provisions for the Authority to purchase sufficient capacity in the City's water system to enable the utility districts within NHCRWA boundaries to meet the phased groundwater reduction mandates of the Harris-Galveston Coastal Subsidence District (HGCS D). The phased transition to surface water requires the north Harris County area to reduce its dependence on groundwater by 30 percent in 2010, by 70 percent in 2020, and by 80 percent in 2030.

Under the terms of the contract, the City of Houston will be responsible for the design, construction, ownership, maintenance and

operation of both untreated and treated water facilities prior to the point of delivery, which was mutually agreed to be near Beltway 8 and U.S. 59. The Authority will be responsible for the design, construction, ownership, maintenance and operation of all its facilities located beyond the point of delivery of water from the City. Each party to the contract will be responsible for the preparation, approval and administration of its own Groundwater Reduction Plan required by the Subsidence District.

Once the Authority pays the City its pro-rata share of the capital costs of the untreated water facilities, it will own the purchased capacity and not owe any additional payments until it increases its future untreated water facilities demand. There is a specific set of reservation milestones for this process included in the agreement.

The formula for the Authority to pay for treated water facilities capital costs is more complex, but is basically determined by when the facilities were – or will be — constructed. Initially, the Authority is acquiring 31 million gallons a day of capacity in the untreated and treated water facilities, which satisfies the 2010 HGCS D milestone to reduce groundwater usage by 30 percent. Additional capacity will have to be reserved and purchased to meet future milestones and to achieve the requirement of 80 percent reduction of groundwater usage mandated for 2030.



Operation and maintenance expenses paid by the Authority are calculated and based on the actual expenses incurred by the City of Houston in producing/treating the amount of water delivered to the Authority. All future costs will be calculated based on costing formulas in the contract, and therefore will not be subject to the City of Houston's ordinance rates.

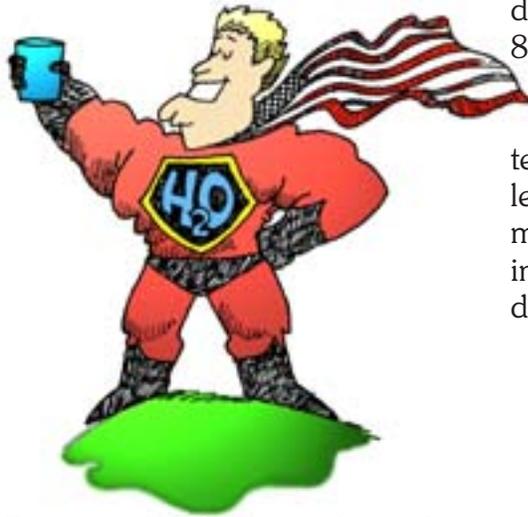
The execution of this landmark contract will enable the Authority to fulfill its mission to provide a long-term supply of quality drinking water at a responsible price and to meet the Subsidence District's requirements for certification of the Groundwater Reduction Plan, and to be able to enter the next phase of the conversion to surface water with confidence in a secure source of supply.

The Authority and the City will move forward with the advice and counsel of an Advisory Committee which is to be established under the terms of the contract. The Authority will serve as a member of this group that will focus on some critical long-range planning for regional water solutions; discuss annual Operations and Maintenance budget matters; the surface water system's operational issues; upcoming or ongoing surface water projects and other surface water-related issues. 💧



Hey Kids...

Author T. Waterman  
answers your questions  
about WATER...



**Q: How important are our ground water resources?**

**A:** Ground water, which is stored in *aquifers* below the surface of the Earth, is one of the Nation's most important natural resources. Ground water is currently the source for almost 100 percent of the water used in neighborhoods in north Harris County. That will change in 2010, however, when 20 percent of our drinking water will come from surface water resources, such as a river, lake, or reservoir.



**Q: Where does our household water come from?**

**A:** Water is piped to most area homes by a municipal utility district (MUD), or by the city in which they live. In some cases, families obtain their drinking water from their own private water well.

**Q: How is water delivered to our homes?**

**A:** Many years ago when everyone lived in rural areas, they would have to get their own water from rivers or from local wells. Today, since most people in the U.S. live in towns and cities, and communities, we rely on an organized system of pipelines, water pumping stations, and water tanks and water towers to deliver our drinking water.

**Q: How much water does the average person use at home per day?**

**A:** Estimates vary, but each person uses about 80-100 gallons of water per day. The largest use of household water is in the bathroom -- to flush the toilet, and for showers and baths. That is why, in these days of water conservation, toilets and showerheads that use less water than before are becoming more important. Texas now has laws that specify that toilets may use only a specific number of gallons for each flush.



**Q: Does a little leak in my house really waste water?**

**A:** It's not the little leak that wastes water -- it is the little leak that keeps on leaking that wastes water. And the fact is that little leaks often get ignored-- and continue to leak again another day. So, how can a little leak turn into a big waste? Many of our toilets have a constant leak -- somewhere around 22 gallons per

day. This translates into about 8,000 gallons per year of wasted water, water that could be saved.

Or what if you have a leaky water line coming into your house. If it leaks 1 gallon of water every 10 minutes that means that you are losing (and paying for) 144 gallons per day, or 52,560 gallons per year.



**Q: How does our swimming pool stay so clean?**

**A:** It is not an easy task to keep a swimming pool so clear and clean. If you just set a pan of water outdoors in the middle of summer, you'll see that it ends up containing gunk very quickly. Swimming pool water is continuously pumped through a filter to trap particles, like all those bugs that fall in. To keep algae and dangerous bacteria from growing, chemicals such as chlorine are added. Chlorine is also added to your drinking water to keep those bacteria out of your stomach.

**Q: How many baths could I get from a good rainstorm?**

**A:** Let's imagine that your house sits on a one-half acre lot. And let's say you get a storm that drops 1 inch of rain -- that amounts to about 13,577 gallons of water on your yard. A big bath holds about 50 gallons of water, so if you could save that inch of water that fell you could take a daily bath for 271 days!



Source: USGS Water Science for Schools

# Watering your Texas lawn...how do you know how much is enough?



**The simple answer to how much is enough is** that you should water when plants need water. Of course many variables can affect this. Different plants have different water needs. Soils have different water-holding capacities. Sprinkler systems differ. Some plants have a protective layer of mulch. As the temperature rises and the day lengthens, transpiration (water loss from the leaves) and evaporation from the soil increases. So June's lawn watering schedule will differ from the schedule used later in the summer.

**Watering infrequently and deeply** is the key to forcing grass and plants to grow deep roots so they can access water for a longer period of time and thrive through the long, hot summer. Water close to the surface evaporates long before the deeper moisture. Homeowners who water every other day are overwatering. Air is forced out of soil that is continually saturated. Since roots need air, overwatering tends to promote very shallow roots.

**As a general rule, proper watering means applying 1 to 1 1/2 inches of water per week.** How long you run your sprinkler system depends on how much water the system applies. To figure out how long to run your system or sprinkler, place small empty 1 inch deep cat food or tuna cans (at least 3) over the area the sprinkler covers.

Water the length of time you

think is correct. Each can should have the same amount of water, about 1 inch. If the cans contain less than 1 inch of water, you need to water longer. If the cans have an uneven amount of water, the distribution of water needs adjustment.



According to the Texas Water Development Board's Lawn Watering Guide, apply enough water to wet the soil to a depth of 4-6 inches. Use a soil probe (available at most garden centers) to help determine exactly how deep the water penetrates.

Use a sprinkler that emits large drops of water that remain close to the ground, not one that sprays a fine mist into the air. Water during the early morning or evening hours since evaporation losses will be up to 60 percent higher during the day. Do not water on windy days, and set the sprinkler so that that lawn is watered, not sidewalks and driveways. Consider adding a rain sensor for your sprinkler system.



Remember not to cut the grass too short. Longer blades of grass will reduce evaporation and root stress since shaded soil will not

dry out as quickly. Be sure to control any insects that attack your lawn quickly and completely.

A reasonable amount of fertilizing is necessary to develop the root system and to help keep the lawn healthy. Too much fertilizer, however, will lead to excessive growth, which will then require more watering. Many experts recommend leaving the grass clippings on the lawn, which will minimize the need for additional fertilizer.

**Add a little color...**



Color looks great by the front door or in the back yard where you can see it from a window or the patio, and adding a small flowerbed or a container can make a great impression. Measure the area and figure out how many square feet it is to help you determine the number of plants and how much soil amendments and mulch to purchase.

If a plant grows 2 feet wide, you need one plant every 2 feet. If the plant grows 6 inches wide, you need a plant every 6 inches.

Once plants are in the ground, cover the soil with a good layer of mulch and water it gently. The water will settle the soil and mulch. Water every day for about a week if it does not rain. 💧

*Source: Texas Cooperative Extension Service and Texas Water Development Board.*

## ***Bold New Plan...***

*Continued from page 1*

By implementing the water transfer program now, those MUDs and private well owners within the 2010 conversion area will be able to purchase their water supplies from the Authority (who will purchase excess capacity from other MUDs) without the need for additional capital expenditures for facilities with a potentially short useful life. While water districts have traditionally had what is called “interconnects” with neighboring MUDs as backup in emergencies or water shortages, a transfer of water between districts on this scale would not have been possible without the Authority’s coordination and assistance.

In December 2002, the Authority accomplished the first part of its assignment with the approval of a water supply contract with the City of Houston (see article on page 2).

Now, in the very near future, the next phase of the process will begin -- constructing the infrastructure necessary to deliver the water to our communities.

Many of our neighborhoods were constructed more than 25 years ago, so few residents remember having water pipes installed near their homes. The new infrastructure built as part of the Groundwater Transfer Program will be an integral part of the ultimate system. It will be used to transport water in the interim within the Authority until conversion to surface water. This construction will be accomplished by a team of experienced, local consultants under contract to the Authority will be responsible for designing the system and construction is scheduled to begin this year.

The process for acquiring necessary easements for the pipelines is underway. Every reasonable effort will be made to minimize disruption in our neighborhoods, on

local streets and thoroughfares. Even so, there will be some inconvenience and impact to property as this massive project is underway.

The Authority is creating a comprehensive Community Relations program to be able to respond to questions, concerns and complaints residents may have. NHCRWA will be aggressively seeking opportunities (see article below) to make presentations before community and civic groups to discuss water issues in general, proposed routes and construction plans, and to emphasize our commitment to minimize the impact on traffic flow in the areas as well on residents’ property.

Residents are encouraged to visit the Authority’s website, [www.nhcrwa.com](http://www.nhcrwa.com), to attend our regular Board meetings (dates and agendas also online), and to schedule speakers for your clubs and organizations by contacting Community Relations at 281-440-3924. ♠

**Want to learn more about our future water supplies, where they will come from, and what they will cost?**

**Schedule an informative presentation for your club or organization...**

- 1. Call Community Relations for more information -- 281-440-3924, or fax your request to 281-440-4104.**
- 2. Visit the website, and use the “contact us” feature to tell us about a speaking opportunity/date.**

**In the meantime, remember that the water we conserve today can serve us tomorrow! Use it wisely!**





## U.S. Geological Survey National Water-Quality Assessment Program Includes Ground Water in the Houston Metro Area

by Timothy Oden

The U.S. Geological Survey (USGS) is a bureau of the U.S. Department of the Interior that provides the nation with reliable, impartial information about our water, mineral, and biological resources. The USGS has a number of scientific programs that involve the study of water quantity or quality, one of which is **NAWQA** --the National Water Quality Assessment Program.

In 1991, the U.S. Congress directed the USGS to begin the NAWQA Program to assess the quality of our nation's ground-water and surface-water resources. This program has been collecting and analyzing data in more than 40 major river basins and aquifer systems, referred to as study units, across the country.

The goal of the NAWQA program is to develop long-term consistent and comparable information on streams, ground water and aquatic ecosystems to support sound management and policy decisions. NAWQA was designed to answer a series of questions: "What is the condition of our streams and ground water? What are the factors affecting the condition? Is water quality changing over time?"

At any given time, one-third of the study units are involved in high-intensity monitoring that lasts 3 to 4 years; trends are assessed about every 10 years. The Trinity River

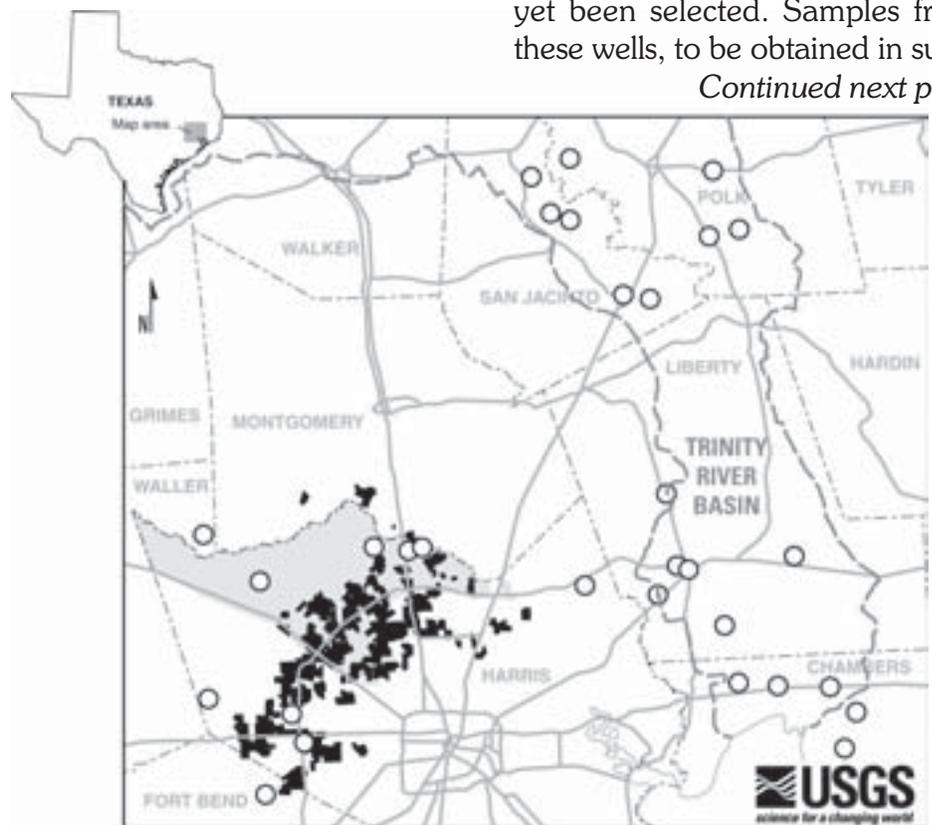
Basin study unit currently is in its second cycle of intensive data collection, which, for the first time, includes ground water in the Houston metropolitan area.

In the southern part of the Trinity River Basin and in the Houston metropolitan area, the NAWQA is assessing water quality in the Gulf Coast aquifer system, primarily in the Chicot aquifer.

The assessment will be based on analyses of water samples from three sources: (1) a network of 30 domestic wells in the region (see

figure). Samples from these wells, obtained in summer 2002, will characterize water used by rural homeowners. (2) A network of 32 shallow wells to be installed and sampled by early summer 2003. NAWQA staff currently are selecting sites for these wells in areas of recent residential and light commercial development where the Chicot aquifer is at land surface (see figure). Samples from these wells will characterize water that recharges the Chicot aquifer. (3) A network of 15 public-supply wells, which have not yet been selected. Samples from these wells, to be obtained in sum-

*Continued next page*



- EXPLANATION
-  Area of North Harris County Regional Water Authority
  -  Area of recent residential and light commercial development where Chicot aquifer is at land surface
  -  Site of domestic well sampled in summer 2002

mer 2003, will characterize water supplied from the deeper parts of the Chicot aquifer.

In addition to the groundwater quality study, the Trinity River Basin NAWQA is conducting surface-water and ecological studies in the Dallas-Fort Worth area. Those studies are looking for trends in water quality during the period from the first intensive data-collection cycle (1991–95) to the present and investigating the effects of human activities on water and ecological quality.

Additional information about the Trinity River Basin NAWQA can be obtained from the project Web site at <http://tx.usgs.gov/>. Specific questions about the project can be directed to Bruce Moring, Project Chief, e-mail: [jbmoring@usgs.gov](mailto:jbmoring@usgs.gov) or phone (512) 927–3585. Information about other USGS activities in Texas can be obtained by contacting the District Chief, e-mail: [dc\\_tx@usgs.gov](mailto:dc_tx@usgs.gov) or phone (512) 927–3500.

More information is available at these Web sites:  
USGS: <http://water.usgs.gov>  
USGS programs in Texas:  
<http://tx.usgs.gov/>  
NAWQA:  
<http://water.usgs.gov/nawqa>  
Trinity River NAWQA:  
<http://tx.usgs.gov/trin/>

#### **About the author**

*Timothy Oden is a USGS hydrologist with extensive experience in the collection and analysis of water-quality data. During his 8 years with the USGS, Timothy has worked on two NAWQAs and is an instructor for the USGS in training others in the collection of water-quality data. Timothy received a Bachelor of Science degree in geology from Central Missouri State University with an emphasis in hydrogeology. ♠*

## **Jimmie Schindewolf Selected as the Authority's General Manager...**

Jimmie Schindewolf is a native Texan and a lifetime resident of the Klein community. His family roots go back 150 years when his ancestors were among some of the area's original settlers. He is a graduate of Klein High School, and later earned his Civil Engineering degree at the University of Houston, where he also completed graduate work.

He began his engineering career with the Texas Highway Department in the late 1960s before serving as a Design Engineer, and subsequently Chief Subdivision Engineer, for Harris County's Engineering Department. In 1974 he accepted the position as Assistant Director of Public Works for the City of Houston and later became Director of the Department. He continued in this role under Mayors Hofheinz, McConn and Whitmire. During Mayor Jim McConn's administration (1980), Schindewolf also served as the Mayor's chief assistant.

After a decade of public service, Schindewolf entered the private sector as the owner of a construction firm. The company completed street paving and utility projects for both private and governmental clients.

Schindewolf was active in the Associated General Contractors of America and served as president of the Houston Engineering and Scientific Society. He had become President-Elect of the Houston Contractors Association just prior to being tapped by Mayor Bob Lanier to reorganize and consolidate three City of Houston departments into a new Department of Public Works and Engineering.

As head of this large department, Schindewolf was responsible for managing an annual operating and maintenance budget of \$700 million, an annual Capital Improvement Program budget of \$600 million, and a workforce of approximately 5,000 employees. In 1993, Schindewolf was recognized by the University of Houston Cullen College of Engineering as a Distinguished Engineering Alumnus. He was selected as Houston Area Engineer of the Year in 1994, and was also the first recipient of the American Public Works Association Charles Swearingen Award for distinguished service to the public works profession.

During most of the 1990's, in addition to his duties as Director of Public Works, Engineering, Schindewolf served Mayor Lanier as Chief of Staff and was responsible for all infrastructure-related activities.

He left the City in 1998 and founded Schindewolf & Associates, Inc., which served as the Owner's Representative for the design and construction of Enron Field (now known as Minute Maid Park), and undertook the same role for the Reliant Stadium project, which was also completed on time and within budget.

Schindewolf and his wife Carrie still reside in the Klein area and live on Spring Cypress Road. ♠



## Visit the Authority online...

[www.nhcrwa.com](http://www.nhcrwa.com)

Each month, the Authority's website receives between 90,000 and 100,000 "hits" -- from folks who want to know what is going on with this new governmental agency that has the responsibility of providing water for our neighborhoods in the future.

The site was created in late 2000, and has grown considerably in this relatively short period of time. In the initial stages, the website was primarily utilized as a rapid communications tool for the various municipal utility districts, the elected Authority Board of Directors, and the many engineers, attorneys, and other consultants that serve the massive water industry. It wasn't long, however, before the site began to be used to alert the public about local Town Hall meetings, and to share information about current issues, board decisions, and progress in negotiating a water supply contract with the City of Houston.

Today, this informative site contains meeting minutes, Town Hall Powerpoint presentations and videos of special forums, a Kid's Page, links to a wealth of other state, local and federal water sites, and copies of all the Action Report and Waterlines newsletters. Of increasing importance is the information provided on the Water Conservation page...visit it to learn how you can save water -- and dollars -- by making simple adjustments in the way you use water at home and in the yard.

There is also a Discussion Forum where questions and comments can be posted so stop by and visit with us online. We will welcome your input and suggestions. 💧



## ISN'T THAT AMAZING...

💧 The human body is made up of 65 percent water; the brain is 75 percent water.

💧 Water is the only substance that occurs in all three stages of matter -- as a solid (ice), in a liquid state (rain), and as a gas or vapor (steam or fog).

💧 If every home in this country had a faucet that dripped one drop a second, we would waste 928 million gallons of

water each day -- that's enough water to fill more than 7-1/2 billion 8 oz glasses.

💧 99 percent of the earth's water is in the oceans. Only 1 percent is available for human consumption.



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### NHCRWA Board of Directors

	Term Ends
Ron Graham, President	2006
Lenox Sigler, Vice President	2006
Kelly Fessler, Secretary	2004
Al Rendl, Asst. Secretary	2006
Jim Pulliam, Treasurer	2004

Jimmie Schindewolf, General Manager



**STOP THE DROP!**  
Use water wisely...

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