



WINTER 2011

WATERWORKS



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Complying with the Groundwater Reduction Mandates...

The WHCRWA Board of Directors is delighted to report that the Authority has successfully met the mandated 30 percent reduction in reliance on groundwater required by the Harris-Galveston Subsidence District! According to Board president, Bruce Parker, "Since the Authority was created by the Texas Legislature in 2001, we have been focused on meeting the deadlines as set forth by the Subsidence District, and now we have passed this first critical milestone. Our work isn't over yet, however. We still have to construct additional infrastructure to reach the next target reduction to 70 percent of our water needs being supplied by surface water. And that's a lot of waterline left to put in the ground."

During the past 12 months, the Authority has made significant progress in converting local utility districts to surface water purchased through a long-term contract with the City of Houston. At the end of 2009, the Authority's first Pump Station with a pumping capacity of 37,500 gallons per minute was online. Twenty eight districts had been converted and were receiving approximately 16.5 million gallons of surface water a day. That translated to 16.4 percent of the total number of districts within the Authority being converted ahead of schedule.

In 2010, two additional ground storage tanks were added at Pump Station #1 and, with 37 water plants converted, the Authority was receiving an average daily flow of 22,1 MGD of surface water from the City of Houston. By the end of the year, 34.5 percent of the water districts had been converted.

Looking ahead to meeting the projected 2020 demand for surface water, the WHCRWA is participating with other regional water authorities and the City of Houston to construct the Luce Bayou project that will transfer approximately 400 MGD of water from the Trinity River to Lake Houston, through about 3 miles of pipeline and approximately 24 miles of canal, at an estimated cost of \$300 million.

"The WHCRWA is committed to devoting the same kind of diligence to meeting the next goal in reducing our reliance on groundwater as we have for the past decade in achieving the 2010 target," Parker said. "The important thing now is for all of us to make a personal commitment to using this precious finite resource more efficiently. This isn't a luxury, but an absolute necessity if we are to have adequate supplies in the future to sustain our quality of life as well as reasonable growth and economic development for our community. The Authority will continue its water conservation education programs to assist in this important effort." ■

The water we conserve today can serve us tomorrow!

UPDATE: WATER PRICE INCREASES

Since its initial meeting in 2001, the WHCRWA Board of Directors has been committed to constructing an entirely new water delivery infrastructure to bring surface water purchased from the City of Houston to our neighborhoods.

An initial fee of \$0.10 per 1000 gallons of water pumped from ground-water wells was imposed in 2001; and fees have escalated annually to fund construction of the new water delivery infrastructure necessary to comply with the initial 30% reduction mandate in 2010. To accomplish this goal, the Authority has installed approximately 51 miles of new water lines throughout the community, and delivered surface water to our neighborhoods for the first time in 2005.

The Board of Directors is pleased to report that these efforts have enabled the Authority to reach the mandated 30 percent reduction within the prescribed timeframe! In the years ahead, we will have to maintain this minimum reduction requirement through 2020, when the next threshold (70 percent) is triggered.

Accelerating Delivery...

Over the past five years, a number of the districts within the Authority experienced either water quantity or water quality problems severe enough to request the delivery of surface water ahead of the mandated timeframe. Since the same lines would be utilized in the 2010 conversion, the Authority was able to accelerate construction of the necessary water lines and delivered surface water to the neighborhoods that needed it. This decision also enabled the Authority to receive "Early Conversion Credits" from the Subsidence District. This has not only helped water districts that needed water immediately, but offered the added benefit of constructing new infrastructure under favorable economic conditions, allowing the Authority to contain costs as much as possible.

At the **end of 2010**, the WHCRWA was delivering surface water to approximately **39** water plants, with an average daily flow of **16.5** million gallons (mgd). Funding generated by the ground-water pumpage fee and bond sales (the latest held in **2009**) enabled the construction of the Authority's Pump Station #1 with a capacity of 37,500 gallons per minute. Two additional ground storage tanks **were** completed in 2010. Currently, **31** districts have been converted to surface water.



Looking forward...

In addition to funding the construction of new water lines and plant facilities, revenue is allocated to securing water supplies for 2020 forward, and to participating in the addition of the Luce Bayou Project, which will transfer water from the Trinity River to Lake Houston to meet the increased demand projected for 2020 and beyond. The WHCRWA is partnering with the North Harris County Regional Water Authority, the City of Houston, and the North Fort Bend Water Authority in developing Luce Bayou, with additional funding of \$28 million from the Texas Water Development Board (TWDB).

New residential and commercial development in our community requires an adequate water supply, and this sustained growth continues to drive up future demand projections. Over the past several years, additional factors -- rising fuel and electric power costs, financial market issues, and increasing costs of materials -- have had an impact on the Authority's costs, as well.

At the December 2010 meeting, the WHCRWA board voted to **increase the groundwater pumpage fee charged to the districts from \$1.25 per 1,000 gallons to \$1.55 per 1,000 gallons, and the surface water fee from \$1.55 per 1,000 gallons to \$1.85 per 1,000 gallons.** This increase funds the purchase of surface water available under contract with the City of Houston, as well as the operation and maintenance of the entire delivery system. 💧



Educating Tomorrow's Water Users. . . CY FAIR ISD 7TH Grade Science

Texas Essential Knowledge and Skills (TEKS) is the official K-12 curriculum for the state of Texas and details the curriculum requirements for every course. They are a set of skills that the State has determined are essential for each student to learn, and the state's standardized test, the TAKS (Texas Assessment of Knowledge and Skills), measures how well the students learned or mastered those skills.

Periodically, the State of Texas revises the curriculum guidelines for individual courses and they introduce new concepts, vocabulary and supporting topics. For the 2010- 2011 school year just such a change occurred with the inclusion of some new TEKS at the 7th grade science level. One of them -- requiring students to “model the effects of human activity on ground water and surface water in a watershed” -- happens to coincide with the important work of the West Harris County Regional Water Authority (WHCRWA).

According to Bruce Parker, WHCRWA president, “Since the Authority was created by the Texas Legislature in 2001, we have followed a plan to convert area residents from our traditional reliance on groundwater -- which comes from underground aquifers -- to surface water, which is stored in Lake Houston. Quite simply, we have been drawing down the supply of groundwater faster than the aquifers have been able to recharge. In so doing, we have been on a collision course between water supply and demand.”

The Authority has been engaged in constructing an entirely new water delivery infrastructure to bring surface water to the local municipal utility districts who, in turn, supply their commercial and residential customers, in order to comply with a Harris-Galveston Subsidence District mandate to reduce groundwater pumpage by 30 percent in 2010, 70 percent in 2020, and by 80 percent in 2030.

“Many residents have questions about our water supplies,” Parker continued, “so we are delighted to have the opportunity to work with the educators in our area to share information about this critical topic. The Authority has offered classroom programs focused on water conservation for grades 2-7 for more than 6 years, including supplying two Mobile Teaching Labs that travel to the schools for the students to visit. Now we are happy to add some new educator workshops to provide hands-on learning opportunities directly related to the new 7th grade science TEKS.”

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A Water Efficiency Checklist for Restaurants...

According to the NPD Group, a leading market research company, U. S. restaurant locations continue to decline due to challenging economic circumstances. Still, they number over 575,000 locations...large and small, chains and independents. During these trying times, the marginal locations – and restaurants in general – need to study every line of their financial statement for ways to save money. And because many restaurants are significant consumers of water in their day-to-day operations, a place to start is their kitchens. Water conservation measures are numerous, and traditionally, have been aimed at homeowners. But as the cost of water skyrockets and shortages around the globe multiply, more and more businesses are acquainting themselves with the efficient use of this precious resource. Not surprisingly, this includes a growing number of casual dining restaurant chains around the country.

Another study done by the Massachusetts Water Resources Authority, put water consumption in restaurants with seating capacities ranging from 85-1500 seats (serving from 2,000 to 40,000 meals per week) at **1-13 million gallons per year**, depending upon where they fall in the spectrum. Of particular note, restaurants within this scale have reported a wide range of usage...from **six to twenty-nine gallons per prepared meal** – numbers which trumpet a significant opportunity for more efficient water utility (Note: assuming each of America's restaurants use 5 million gallons of water per year, this would be equivalent to all of the water in *twenty* Lake Conroes, with its capacity of 430,260 acre feet or 140 billion gallons).

A detailed study of eating establishments completed by the Southwest Florida Water Management District, reports that roughly 50% of water utilized in



most restaurants is...as suggested above...in the kitchen area. Important conservation practices that can be employed in those thirsty kitchens include: (1) **presoaking** dirty utensils and dishes in basins of water rather than rinsing with running water; (2) replacing high-volume **automatic shut-off spray nozzles** and faucets in the kitchen (and bar area) with low-volume nozzles; (3) installing **foot-triggers for faucets** in food preparation areas; (4) **washing only full loads** in dishwashers (and using rinse water from the dishwashers to flush garbage disposal units), and replacement of dishwasher spray heads to reduce flow.

Further, less high-volume but equally important water-saving techniques around the food and drink preparation area include: (5) **shutting off the continuous flow of water** used to wash drain trays of the coffee/milk/ soda beverage island. Instead, clean thoroughly as needed; (6) **adjusting ice machines** to dispense less ice if waste is observed; (7) **reducing the flow of water to dipper troughs** for ice cream and butter scoops; (8) **to stop using running water to melt ice** dumped into bar sink strainers; (8) and finally, to start using water from the steam

Don't Ask...Don't Serve!

In the dining area, many conservation-conscious restaurants serve water only upon request, a practice that not only saves water but optimizes wait-staff services and dishwashing time as well. Statistics suggest that it takes an amount equivalent to 3-4 glasses of water just to wash the glass...and that doesn't include filling it!



table, instead of fresh water, to wash down the cook's area.

Non-kitchen use can account for up to 35% of water usage in restaurants. For example, a leaking toilet can waste up to fifty gallons per day, and a leaky faucet can drip 1,000 gallons or more per week. As often required by many local building codes, conservation-minded restaurants should be vigilant about installing low-volume toilets (i.e., toilets labeled WaterSense® consume only 1.28 gallons per flush versus older models which utilized from 1.6 to 4.5 gallons per flush). *This single conservation practice can save a restaurant as much as 16% of its total water use.*

Another important water-saving practice in **restrooms** involves replacing existing faucets that use as much as 2.5 gallons per minute with faucets flowing 40% less per minute. In many cases, low-flow faucet aerators can be installed without having to replace the existing faucet. Water use in toilets can also be reduced by installing toilet tank water replacement devices (i.e., toilet dams, bags or weighted bottles), and by retrofitting tank-less (flushometer) toilets with water-saving diaphragms, which save roughly 20%...or one gallon...per flush. One gallon seems like a small amount of water, but in a busy comfort station, they add up.



Outside the restaurant, in the landscaping department, most diligent locations practice tried-and-true techniques to keep their grounds lush and beautiful. Water-conscious groundskeepers irrigate only when needed and *always* early in the morning or late in the evening when loss of water due to wind and evaporation is lowest. It is important to install

automatic rain shut-off devices and only use hoses with similar devices; to employ drip systems where appropriate; adjust sprinklers on a seasonal basis; avoid run-off by not watering hard-surface areas. Other water-savers include planting drought-tolerant, low-maintenance plants; using the lowly broom rather than a hose to clean hard surfaces; washing company vehicles only when needed; and investigating the availability of "gray" or reclaimed water for irrigation and other approved uses...all common sense practices requiring minimal investment.

Periodic checks of the plumbing for leaks should be standard practice, and when observed, unnecessary water flows should immediately be turned off. Another important safeguard should be the comparison of current month meter readings with prior months to more quickly identify potential leaks. And the entire water system should be periodically checked for pressure readings higher than 60 psi. Where observed, install pressure-reducing valves. And shut off water-cooled AC units when not needed, or when replacement is required, exchange water-cooled units with air-cooled AC systems.

Above all, restaurant managers should continuously remind their employees about the importance and benefits of water conservation. Encourage suggestions from staff and display conservation information (i.e., coloring books and pamphlets with specific messages to children) in easily accessible racks and on tables for customers to read; install highly visible signs in restrooms that promote the conservation of water to both employees and guests; and *assign one employee at each restaurant location to be responsible for evaluating water conservation opportunities and effectiveness* -- perhaps by adopting an incentive program to increase the effectiveness of this employee in promoting water efficiency.

Restaurant chains across the country are qualifying as prudent water conservationists; saving a valuable resource for future generations, they are also improving the financial performance of their business by reducing the cost for a resource that is rapidly increasing in price. 💧

At home or on the job... remember that the water we conserve today can serve us tomorrow!

Natives and Mulch Help Cope with Nature's Extremes

If your plants survived the long dry summer, there's always the impact of freezing winter temperatures to worry about. Records indicate that climate extremes — like droughts, freezes, snows, and floods — are part of the Houston area's normal weather cycle. That may be so, but Mother Nature's "mood swings" can sure wreak havoc on a homeowners' ability to maintain a consistent landscape.

If you want to learn a better way to sustain your plantings and spend less money on replacing plants and maintenance read on...

There are many plants that have managed to survive Houston's weather roller-coaster for decades. These plants are currently classified as *natives* or as *naturalized*. Experts may bicker about how long a plant must have lived in a specific location to be labeled a native, but just about everyone agrees that native plants are better able to successfully endure climate extremes.

When warm weather returns -- it really won't be that long until spring and it isn't too early to begin planning for your yard restoration projects -- plan a visit to the local nursery and ask to see varieties of their hearty, native plants. You might also visit www.aggie-horticulture.tamu.edu/earthkind/docs/pubs/wildscapes.pdf to learn more about how natives attract butterflies and humming birds.

The next key issue is not *what* you grow but *how you protect* what you grow. Mulch protects plants...period. This natural 'product' protects landscaped areas against weather extremes — from dry to soggy and from freezing to sizzling. Mulch protects both the surface and root areas of plants: it's a blanket that evens out extreme air temperatures; it's a buffer against rain's ability to wash soil away, and it holds water around plants' roots to provide a consistent source of moisture.

Mulch protects surface growth by lessening splatters of soil on leaves during rain storms or overhead sprinkler waterings. Mulch also evens surface temperatures so stems and leaves do not absorb dry, reflected heat. Applied to a bed over a period of years and left on the soil, mulch ultimately works its way *into the soil* and becomes part of the top layer. As a part of the soil, it provides an ideal environment for microorganisms and makes the soil friable, retaining up to 50% more water than soil without mulch-like materials incorporated into it.



Coincidentally, this integration of mulch and soil allows for rain water to filter through the earth's layers below the surface before ending up in aquifers or underground rivers, which helps reduce stormwater pollution of lakes and streams.

Consider implementing "sustainable infrastructure techniques"

These techniques involve substituting alternatives to areas traditionally covered by nonporous surfaces. Grasses and natural ground cover, for example, can be attractive and practical substitutes for paved driveways, walkways, and patios. Some homes effectively incorporate a system of natural grasses, trees, and mulch to cut down on the paved surface area.

Consider constructing wooden decks, gravel or brick paths, and rock gardens to keep the natural ground cover intact and allow rainwater to slowly seep into the ground. This acts as a natural filtering process and reduces harmful water quality impact from rainfall that carries chemicals and pollutants with it into storm sewers and retention ponds, and eventually into nearby streams and lakes.

Creating a rain garden in a shallow depression in the yard -- planted with native flowers and grasses -- can also make good use of rainwater runoff.



YES! Kids Can Conserve Our Precious Water Supplies!



All living things need water to survive. Sadly, we have taken our water supplies for granted and have not always been careful about how we have used this valuable natural resource. Our drinking water is going to cost more in the future, so it is important that we learn to use it wisely.

Here are some things you can do to help make our water resources last longer...

About 75% of the water used inside our homes is used in the **bathroom**. Experts estimate that in an average household about 40% gets flushed down toilets and another 30% is used in showers and baths.



1. Take shorter showers. A five minute shower uses 25 gallons of water. One option is to turn the water on to get wet, turn it off while you lather up and wash your hair...then turn it back on to rinse off. This bathing method can save as much as a hundred gallons of water a week!

2. Heres a “two-for-one” idea — place a bucket or plastic container in the shower to catch extra water. This can be used to water indoor plants.

3. Dont use the toilet as a trash can -- flush only when necessary.

4. Don't run the water while brushing your teeth. Turn it back on to rinse your toothbrush and clean the sink. Only use the water you actually need for washing your face, too.

5. Tell your parents if you see a leaking faucet or if the toilet “runs” after flushing. These leaks can waste thousands of gallons of water a year and that is just money down the drain.

6. It also takes a lot of water to wash dishes and to do the laundry. If you help with these household chores, use the right water level, and only run these appliances with full loads.

A huge amount of water is used outside the home...for lawns and gardens. Kids may not design and plant these areas, but they are often responsible for helping to maintain them.

7. Adjust the lawn mower to a higher setting. Longer blades of grass will help shade the ground and this helps hold moisture longer.

8. Water lawns only when necessary. Providing a deep soaking less frequently will help build good roots for better drought resistance.

9. Water the yard, not the sidewalk or concrete. If there s a sprinkler system, tell your parents if any of the heads are not functioning properly.

10. In every case, only use the amount of water you actually need. Make a commitment to conserve — look for new ways to use water wisely in and around your home!

