



# WATERWORKS

**Water is a valuable natural resource...please use it wisely.**

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**The water we conserve today can serve us tomorrow!**

## From the Ground Up...

Have you ever wondered how large a container it would take to hold five million gallons of water? The West Harris County Regional Water Authority knows first-hand, with the recent construction of its first regional pump station that will serve the Authority's utility district customers in the conversion to surface water.

Building such a humongous structure is no easy task, and it took teams of experienced civil, structural, electrical, geotechnical, environmental and mechanical engineers, designers, and construction crews more than two years to complete. This will be the first of three 5 million gallon storage tanks on this site that will be constructed. As a rule, a water supplier will install approximately half as much storage capacity as the amount of water coming through the plant. In this case, that amount is anticipated to be 28.25 million gallons a day, so three-5-million gallon tanks will accomplish this storage.

A Pump Station does exactly that -- pressurizes and pumps water out into the distribution lines to the customers. It is at this point that the operator of the plant makes any necessary adjustments to maintain adequate disinfection of the water. The water 'business' in Texas is regulated by the Texas Commission on Environmental Quality (TCEQ), and must meet or exceed their standards and regulations for sustaining water quality.

In planning to meet the Authority's 2020 conversion goals -- and the anticipated delivery of 55 million gallons of water a day -- at least one more major plant of this size or larger will need to be constructed.

As part of this initial Pump Station, there is also a disinfection facility; an electrical controls building; standby power generators (with the capacity to operate the entire facility in an emergency); a detention pond; high level security components; parking; and a storage facility for parts and equipment and to house the operator's computerized controls and SCADA system that monitors the entire operation.



*Continued on page 2*

## FROM THE GROUND UP...

Continued from page 1

According to the Authority's engineer, Wayne Ahrens, P. E. of Dannenbaum Engineering, this pump station is a key component of the 2010 Distribution System.

"The West Authority is already delivering an average of 5 million gallons a day of surface water to approximately 10 percent of the utility districts within our boundaries. This water -- obtained through a contract with the City of Houston -- enables us to convert these utility districts well ahead of the 2010 mandate, which is earning us early over-conversion credits from the Harris-Galveston Subsidence District."

"In 2010," Ahrens continued, "the demand for water by residents living within the Authority's boundaries is estimated to be approximately 66 million gallons per day. Almost 46 million gallons of this demand will be supplied by water from the districts' groundwater wells, and the remaining 20 million gallons will be surface water provided by the Authority."

In 2020, however, a conservative estimate of the total demand jumps to a little over 80 million gallons a day (56 million gallons from surface water and 24 million gallons from ground water). As the cost of water continues to increase -- along with the cost of constructing the necessary infrastructure to deliver it to our neighborhoods -- using our finite water supplies more efficiently becomes even more important. In fact, the water we conserve today, can serve us tomorrow. ■



Meter and flow control station incoming to the plant site.

### From the "gee whiz" data bank...

- ◆ The 5 million gallon tank will take about five hours to fill up, but will take only 1-2 hours to be emptied.
- ◆ The Authority has already constructed 28 miles of water line, with another 10 - 11 miles to be completed for the 2010 system.



Stages of construction of the 5 million gallon reinforced concrete storage tank. Above, erecting precast panels.



Applying the 'post-tension' wiring to provide steel reinforcement for the tank.



Completed and coated storage tank and partially completed chemical feed building.



## What is ‘nonpoint source’ pollution and why do we need to stop it?

The really dramatic stories about Earth’s environmental problems tend to focus on big, recognizable targets such as smoking industrial facilities, leaking toxic waste dumps, and messy oil spills. As a result, people often forget about water pollution caused by smaller nonpoint sources -- including pollution at the household level.

The term “nonpoint source pollution” -- or NPS -- comes from the federal Clean Water Act of 1987 where it is used to describe pollution situations in which the “point source” is not identified as discharge from wastewater plants or industries.

What many people don’t realize, however, is that NPS pollution is a leading source of water quality degradation. Although individual homes might contribute only minor amounts of NPS pollution, the combined effect of an entire neighborhood can be significant. The Authority encourages homeowners to learn about the causes of this insidious form of pollution, and take the necessary, and often money-saving, actions to tackle the problem.

### **Stormwater runoff is a problem, too!**

Rainwater either seeps into the ground or “runs off” to lower areas, making its way into streams, lakes and other bodies of water. On its way, stormwater runoff can pick up and carry many substances that pollute water -- like pesticides, fertilizers, oil and soap -- that can be harmful even in small quantities. Others (sediment from construction, bare soil, or agricultural land, or pet waste, grass clippings and leaves) can harm creeks, rivers and lakes when they are present in sufficient quantities.

In addition to stormwater runoff, various human activities like lawn watering, car washing, and malfunctioning septic tanks can also put water onto the land surface where it runs off and

carries pollutants to creeks, rivers and lakes. The quantity of stormwater is also a problem. When stormwater falls on hard surfaces like roads, roofs, driveways and parking lots, it cannot seep into the ground, so it runs off to lower areas. To give you an idea of the difference a hard surface makes, consider the difference between one inch of rain falling onto a meadow and the same amount onto a parking lot. The parking lot sheds 16 times the amount of water that a meadow does!

### **We can help...**

Most people are unaware of how they impact water quality, and are seriously surprised to learn that folks going about their daily lives are the number one source of stormwater pollutants. Some common examples include over-fertilizing lawns, excessive pesticide use, not picking up pet waste, letting oil drip out of their vehicles, and littering.

As the saying goes, “We all live downstream.” Streams and creeks feed into rivers, lakes and the ocean. It is important to remember that, in the majority of cases, stormwater does not receive any treatment before it enters our waterways. We all drink water, so we are all affected when our water is polluted. And when water treatment costs rise, the price of drinking water goes up.

Polluted water creates numerous costs to the public and causes damage to wildlife in creeks, streams, rivers and lakes. Using common sense can go a long way to helping to minimize stormwater or nonpoint source pollution, so rule number one is: **Never put anything into the storm sewers.**

**For more information on this important topic, please visit:**

**[www.cleanwaterclearchoice.org](http://www.cleanwaterclearchoice.org)**

## Cy Fair and Katy ISD Educators Participate in WATER IS LIFE Workshops to Kick Off Program

In 2005, the North and West Harris County Regional Water Authorities launched a comprehensive water conservation program for area schools. From the very beginning, Cy-Fair schools have been active participants in the program that teaches youngsters the importance of ‘stewarding’ our natural resources and using our finite water supplies wisely. This year, for the first time, Katy ISD Elementary school science teachers will utilize the materials, as well.

Thanks to the generous sponsorship of companies that work in and service the water industry, thousands of books and materials are donated to students each year. In addition, the teachers have access to the Mobile Teaching Lab to supplement their classroom learning activities.

### Cy-Fair Educators

Alisha Cunningham, Cy-Fair ISD’s 6th grade helping science teacher, assists the middle school educators coordinate and utilize the tools provided by the Authorities. This year, the teachers were invited to participate in special workshops to review the classroom materials and to get an up-close look at the new exhibits in the Mobile Teaching Lab.

The Cy-Fair teachers have another resource that helps guarantee the success of programs like the **WATER IS LIFE** curriculum. The VIPs – Very Important Parents – volunteer their time to help the teachers, in this case by operating the Teaching Lab and supervising the students during their visits.

To be prepared for this mission, the VIPs also attended a workshop where they learned

about current water issues, including the conversion from ground to surface water, and the growing need for water conservation.

This year, one of the new components in the program addresses composting and recycling. Resources include a downloadable student booklet that allows them to record their experience with creating a compost ‘pile’ and identifying the biological processes involved in making it work.

### Expert at Work

WATER IS LIFE Resource Educator Carol Fraser – who is not only an experienced teacher but a Master Gardner, as well – was a key presenter at the workshops. She showed the science teachers several experiments that demonstrate the positive impact of compost in

the garden. At the Cy-Fair sessions, she had a series of boxes that contained the compost materials at various stages, and encouraged the guest ‘students’ to touch and feel and smell the rich, evolving product. Not everyone was thrilled to share the space with healthy, wiggly earthworms, however, and many were delighted to don plastic gloves before ‘feeling’ the compost.

Perhaps the most dramatic of Carol’s experiments is one that proves that soil to which compost is added retains 50 percent more water. The educators also experimented with ways to use an ordinary aquarium to show the earth’s layers and how water sheds work – another key curriculum component for this grade level.



*Carol Fraser, center, gathered half the VIPs around the Teaching Table at the Harris County WCID 132 Water Conservation Garden, where the workshop was held. The parents studied the compost boxes, and performed several experiments under Carol’s watchful eye. After their turn at the Teaching Table, the parents took their turn learning about the operation of the Mobile Lab.*

“There are so many different concepts that the students need to understand about water as a precious and finite natural resource,” explained Carol Fraser. “Some are relatively easy to grasp, but others – such as subsidence and aquifer depletion – are more complex and require some innovative, hands-on support for the students to ‘own’ the information. That is why we are offering the teachers these challenging exhibits and resources.”

“Water is a global issue,” she continued, “and the students of today will be called upon to manage this precious resource in their adult years. The earlier they can understand where our water comes from and how carelessly it can be wasted, the sooner they will develop positive water conservation habits.”

### **The Katy ISD Session**

Twenty eight of Katy’s Campus Lead Teachers met at the Merrill Center for an introduction to the WATER IS LIFE materials and Mobile Lab. Dan Sallee, president of the West Harris County Regional Water Authority, briefed the group on current water issues and



*Carol demonstrated the impact of ‘rain’ on the aquarium’s ground and surface water areas.*

talked about how important it is to get the conservation message out to youngsters.

“We are delighted that Katy ISD will now be a part of this program. We have designed the materials and curriculum to be both entertaining and informative, and look forward to learning of your teachers’ experiences with the program.”

Melony Gay, an engineer who serves as a board member of the North Fort Bend Water Authority, shared her excitement about the program materials with the educators. Melony’s children loved the water conservation adventure novel, *Journey to Pansophigus*, so much that she became a driving force to get the program sponsored by the new Authority.

“It is so very important for

our kids to learn to protect our water resources,” Melony said, “I just cannot stress strongly enough how critical it is to change wasteful habits. And the kids can do this!”

Carol Fraser had some thought-provoking activities for the Katy educators, urging them to think outside the box. They, too, used an aquarium in an experiment -- this time filling it with water in a rather damp demonstration of how little of the water in the world is available to drink.

Wanda Fleming, Katy ISD’s Science Curriculum Specialist, coordinated the workshop and will serve as Katy ISD’s liaison with the Authorities.

“We look forward to a continued partnership in promoting excellence in science education for our young people,” she said. ♦



*Dan Sallee briefed the educators about current water issues (left).*

*Carol Fraser provided some challenging interactivity for the Katy ISD Campus Lead Teachers (below).*



# Thinking GREEN...MUD 120 Plans a Park

A few years ago Harris County Municipal Utility District 120's 20-acre regional detention pond on Brays Bayou was just that - a large basin that played an integral role in the MUD's storm drainage system - but board members knew the precious greenspace could play a larger role in the community.

Fast-forward to 2007 and the site that still plays a key role during heavy rain storms is under transformation. MUD 120 is one-third of the way through a \$4 million park project that will serve as a community recreational hub for years to come.

McClendon Park at Brays Bayou is located on the west side of State Highway 6 between the Westpark Tollway and Westpark Drive. The park will be completed and open to the public in about a year. The Park is named after the Sidney McClendon Family, who has owned the property for years and donated a portion of their property to the MUD to enhance the Park.

MUDs have the ability through state law to use funds to pay for park facilities in their districts. Like MUD 120, several municipal utility district boards throughout Harris County have taken action and are turning detention pond sites and undeveloped properties in to park facilities that area residents can enjoy.

"Many of the detention ponds around town don't provide anything extra for the residents except for detention," said Jim Beavers, a MUD 120 board member. "Since it is dry much of the time in Houston, we originally wanted to provide some baseball and soccer fields in the detention pond area."

"As we were discussing options," Beavers said, "we started to think about adding additional facilities for families while the kids were playing ball. One thing lead to another and with the help of grant money from Texas Parks and Wildlife we will be able to provide a nice park facility for the community."

Once the board made the decision to take the proposed park plan up a notch, they hired an architect to determine what could be done on the 20-acre site. They also worked with an engineering firm to help with the Texas Parks and Wildlife grant process.

Beavers said MUD 120 was awarded a \$409,000 grant by Texas Parks and Wildlife. The MUD will fund the balance of the project with help from the Mission Bend Green Belt Association.

Bill Hammer, a MUD 120 board member, said the McClendon Park project has facilities for younger children, older children, adults of all ages, and families.

There will be an infant/toddler playground for those under the age of six years, and a young adult play station for school-aged kids through about 14 years old. Kids will also have swing sets, a water spray park/splash pad, and a "rocks and ridges" climbing amenity.

A sand volleyball court and a 9-hole disk golf course are open to "kids" of all ages.

A pavilion area will house two back-to-back barbecue pits, and several picnic tables. Scattered around the park are eight 12-foot-by-12-foot kiosks, each of which include a barbecue pit and picnic table.

Budding musical artists can showcase their skills on the amphitheatre stage, which has hill-side seating for large and small audiences. The amphitheatre was an idea contributed to the project by Greg Ordeaneaux, a Forth Bend County resident who serves as the District's tax assessor/collector.

In addition to its natural and educational benefits, the park's wetlands area, with a public boardwalk, will capture water, funnel it in to a system and be used to irrigate the 20-acre park.

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**From Left: Jolie Craft (engineer), board members Bill Hammer, Frances Browning, Gary Gassmann, Kathleen Schneider, Jim Beavers, and Norman Scholes (engineer).**

# Time to call in the Sprinkler Police!

How many times have you been driving through the neighborhood and seen sprinklers busy watering the streets and driveways, with runoff just streaming along in the gutters? How about sprinklers on esplanades -- often maintained by homeowner associations or local businesses -- running full blast **in the rain**?

Do you find yourself asking, "Who would do that?" The answer, is obviously lots of people. You'd like to think that no one would do it on purpose, but even if it is just carelessness, the water is being wasted all the same.

These days, irrigation systems often have automatic timers so, unless someone manually turns them OFF, they just continue to complete their appointed task, day in and day out -- even during rainstorms and extended periods of rainy weather. But now that the cost of water is going up, hopefully more people will have second thoughts about wasting our valuable drinking water on streets and sidewalks and on plants that aren't thirsty.

## Over-watering isn't just wasteful, it's bad for your plants, too.

Over-watering is one of the most frequent lawn care mistakes home-owners make. Too much water promotes a shallow root system, which causes grass and plants to become vulnerable to hot/dry weather. Lawns irrigated everyday or even three or four times a week, cause grasses and plants to develop shallow root systems that cannot survive without frequent watering. During drought conditions, or in hot weather, these "addicted" plants and grasses wilt quickly. And, if grass is cut to a height of one or two inches, the problem is compounded because the top few inches of soil dries out quickly in hot weather, and plants and grasses are further starved for water.

With less frequent watering, root systems push deeper into the soil looking for water. The goal is to irrigate deeply once per week applying approximately 1" of water. Using the cycle/soak method on the irrigation controller, water will penetrate 4 to 6 inches into the soil rather than running into the street.

## There are things we can do to help...

As individuals, we can make sure that a rain sensor is installed on our own irrigation system and that it is operating as it should. We can also complain when we see neighborhood or commercial sprinkler systems running inappropriately -- whether that is in the rain, right after a good rain (enough to sink into the soil), or when sprinkler heads are not properly aimed and water sidewalks and streets. It might take a few minutes to locate the responsible party, but unless someone makes the effort, the waste will continue.

Unfortunately, some experts warn that folks will not really get too concerned about conserving water until we feel the pinch in the 'pocketbook.' This has certainly been true in the energy field, when the cost of oil has steadily increased in recent years and impacted the retail or consumer prices for gasoline and electricity. When the price gets high enough, we cut back on what we use. **Our natural resources are finite...we can't afford to waste any of them!** ■



## What is a rain sensor and why do I need one?

A rain sensor is a small device wired to the common line on an automatic sprinkler system designed to override the automatic watering cycle when a certain level of rainfall is detected. The shut-off level is usually set at 1/4-inch of rain.

The sensors do not affect the sprinkler system's overall timing device. Once the collection dish dries out, the automatic timer kicks in.

The three primary benefits of installing a rain sensor are:

- **Cost savings** -- the sprinkler system shuts off when adequate rainfall is received, thus saving money on water bills.

- **System savings** -- there is less wear and tear on the sprinkler system because it only runs when necessary.

- **Lawn protection** -- reduces potential damage to the lawn caused by over-watering.

There are some exciting new products in the rain sensor arena...some that actually forecast the weather and keep your system from coming on if rain is expected. Whether you use high tech or no tech methods, don't allow your irrigation system to waste water...period. ♦

## THINKING GREEN...

Continued from page 6

A separate “xeriscape interpretive garden” has been set up for kids to see how run-off water can be captured and re-used.

The detention pond area will house a soccer field and a baseball field. Walking trails with exercise stations encircle the park.

“The park is coming along nicely,” Hammer said. “We have a lot of eyes inspecting the progress and that is a good thing!”

As the park is nearing completion of Phase 1, a Phase 2 structure is being planned to house a law enforcement substation. The MUD District is actively seeking a department within Harris County Precinct 3 to man the facility when it is ready.

Beavers said the park will be maintained by the Mission Bend Greenbelt Association, which is a partnership of five local MUD districts working to develop park and trail projects. Member MUDs that contribute funds to the association include MUD 120, Chelford One MUD, Chelford City MUD, Mission Bend MUD No. 1

and Mission Bend MUD No. 2.

Beavers said the park planning process is involved and lengthy, but well worth it. He offered some words of advice to other MUD boards considering a similar project:

- Develop a proposed project budget (it will cost you more than you think and take twice as long);
- Determine if the project should be constructed in phases (remember maintenance costs);
- Know what your community wants and needs;
- Look into joining BuyBoard to get the best prices on equipment without have to go out for bids;
- Decide if you want to apply for grant funding – hire a professional to guide you through the process;
- Hire a landscape architect to design the park (there are various regulations governing park safety requirements, ADA requirements, etc.); and
- Consider forming, or joining, a Regional Parks Committee where MUDs get together periodically to discuss parks and trails, to ask questions, and to share positive and negative experiences. ♠

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**Please Use Water  
Wisely...**

**The water we conserve  
today, can serve us  
tomorrow.**



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