

October/November 2011



Newsletter of the Trinity River Authority of Texas

Plans to expand Huntsville Regional Water Supply System move forward



Huntsville approves funds to expand water supply system

Huntsville residents have voted to fund expansion and improvements to the Trinity River Authority's Huntsville Regional Water Supply System. The city's Proposition 1, allowing the Huntsville City Council to approve a resolution authorizing TRA to issue bonds, earned 71 percent positive votes in the early November election.

HRWSS is currently configured to deliver a total of eight million gallons of treated water per day to Huntsville as well as two Texas Department of Criminal Justice prison units in northern Walker County. The system's firm capacity, the volume of water it is capable of delivering with one of its components out of service, is 6.0 MGD. HRWSS also delivers up to 7.0 MGD of partially treated water to Tenaska's electric power generating plant in Grimes County.

Previously, Huntsville funded engineering design services to expand HRWSS capacity to 12.0 MGD firm and to improve the system's processes. The passage of the city's Proposition 1 will allow for the funding to construct these improvements.

Bringing more raw water to the plant is fundamental to increasing the system's capacity. To that end, a new 8.0-MGD pump will be added to the raw water pump station, raising its firm capacity to 24.0 MGD. To accommodate additional water, a portion of the raw water

pipeline will be replaced with larger diameter pipe.

Planned modifications and additions to the filtration units at the plant are crucial to improving quality and increasing the quantity of water HRWSS can produce. The existing bank of four filters will be doubled, bringing the total number to eight. The new filters will have built-in nitrate-removal capabilities and deep beds of granular activated carbon to remove taste and odor compounds. With changes in the piping configuration, plant operators will be able to run the new filters in parallel with the old ones, or in a series.

Changes and additions to the system's clear well capacity will also improve water quality and increase capacity. A new 1.2-million-gallon clear well, a tank that temporarily stores treated water prior to distribution, will be constructed to work in concert with the existing 0.4-million-gallon clear well. The existing clear well will have a chlorine feed system installed nearby as well as baffles inside the tank to slow down the water's flow and increase chlorine-contact time at the plant in order to meet state regulations.

One of HRWSS' most critical components, the high-service pump station that propels treated water to Huntsville and the TDCJ, is most in need of updating. Most of the pumps, motors and electrical



The HRWSS raw water pump station in the headwaters of Lake Livingston. A new 8.0-MGD pump will be added, and a portion of the pipeline transporting raw water to the plant will be replaced with larger diameter pipe.

equipment are more than 30 years old. With spare parts nearly impossible to find, maintenance is challenging and expensive. As a result, engineering plans call for a new high-service pump station with four 4.0-MGD pumps located on top of the new clear well.

Finally, system-wide improvements to electrical components, including backup power for the pump stations, will improve reliability for HRWSS customers.

Now that the city council is expected to approve funding,

the next step in the journey toward expanding HRWSS is to receive Texas Commission on Environmental Quality approval for the engineering plans. After TCEQ approves the plans, TRA will publicly advertise the project for bids and select a contractor. Construction is scheduled to begin in June of 2012, and completion is expected by November 2013.

TRA management estimates that construction and associated costs will total approximately \$18.5 million.

Texas voters pass Proposition 2



Texas voters made their voices heard on 10 proposed constitutional amendments on Nov. 8, including one that dealt with a key water issue. Proposition 2, providing for the issuance of additional general obligation bonds by the Texas Water Development Board in an amount not to exceed \$6 billion at any time outstanding, passed with 52 percent of voters in favor. This amendment will provide much-needed funding to continue to meet Texas' water and wastewater infrastructure demands – this cost-effective financing will also ultimately lower costs for the water consumer.



On the cover: An aerial view of the Huntsville Regional Water Supply System treatment plant.

Huntsville residents recently voted to fund expansion of the system's capacity. The proposed \$18.5 million construction project will make additions and improvements to the plant, as well as to the raw water pump station.

Construction is expected to begin mid-year 2012 and be complete by late 2013. See story this page.

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DCRWS responds to neighborhood odor concerns

Denton Creek Regional Wastewater System Project Manager John Bennett recently hosted two plant tours and attended a meeting of the Briarwyck Home Owners Association after members reported various odors in their neighborhood. During the tours, HOA members visited each area of the plant to observe wastewater treatment processes from the raw water intake through the treated water discharge to Cade Branch.

"The tours helped HOA members understand what causes odors at the treatment plant and the steps we are taking to eliminate odors in their neighborhood," said Bennett. "We were also able to reassure our neighbors that we may not always be able to control every odor, but that nothing they smell from our plant is dangerous to them or their families."

In an effort to be a good neighbor, DCRWS was designed with a number of mechanisms in place to curb odors in the collection system and at the plant. Magnesium hydroxide and hydroxyl ion fog are added at various locations throughout the system to prevent malodorous compounds from forming and escaping from raw wastewater. Physical barriers, including covers on solids processing areas and equipment that handles raw wastewater, help keep odors localized.

DCRWS also tracks the location and occurrence of odors with automated odor loggers that detect hydrogen sulfide, the wastewater-related compound that smells like rotten eggs, on the plant grounds as well as in the neighborhood.

HOA members were able to

identify specific odors during the plant tours that occasionally migrate offsite.

"We were surprised to learn they could smell the aeration basins in the neighborhood," said Bennett.

Aeration basins emit a smell that is sometimes characterized as earthy or musty but not usually malodorous. Nonetheless, it is a smell that people outside of a wastewater treatment plant don't typically encounter, and many HOA members found it unpleasant.

In response, Bennett and his staff implemented two additional mechanisms to counteract the odors. They placed deodorizing blocks along the 10-foot brick wall that separates the plant from the neighborhood. In addition, they built a large-scale, mobile atomizing unit that functions to neutralize odors from the aeration basins as well as other areas of the plant.

Roanoke residents, including Briarwyck HOA members, are encouraged to document any odors they detect in their neighborhood. Residents can report the time and location of odors with an odor log form on the TRA

website, or they can call the plant at 817-430-4657. Tracking the time and location of odors enables DCRWS to respond quickly and efficiently.

In the near future, DCRWS will plant a double row of 18-foot eastern cedar trees along the brick wall between the Briarwyck neighborhood and the plant. The trees will further screen the plant from view, prevent migration of



A 10-foot brick wall separates the DCRWS aeration basins from the Briarwyck housing development. Crews will soon plant a double row of eastern cedar trees along the wall to augment several other odor control strategies the system has in place.

odors and also neutralize any odors that occur.

DCRWS treats wastewater for Fort Worth, Haslet, Roanoke, Southlake, the Circle T Municipal Utility Districts Nos. 1 and 3, Keller, Northlake, Flower Mound, Westlake and Argyle. The system was originally built in 1990 in what was a remote, rural area of

Tarrant County to treat wastewater for three communities. TRA has since expanded the system almost continuously in response to extensive industrial, commercial and population growth in the geographic region. The most recent expansion, completed in 2010, increased the system's capacity from 5.0 million gallons per day to 11.5 MGD.

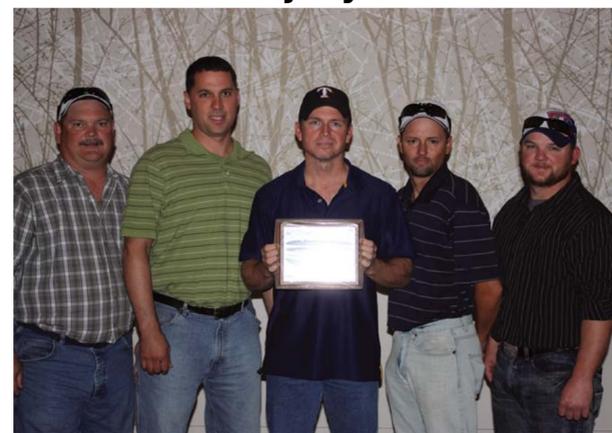
TRA CReWSers overcome injury to finish third in nationals

TRA's Operations Challenge team, the CReWSers, won second place in the laboratory event and third place overall during October's Division 1 national competition in Los Angeles – in spite of a serious hand injury Team Captain Dale Burrow suffered just days before the competition in a non-work-related accident. The win marks the team's 11th top-three claim in 13 years.

Sporting stitches in the palm of his right hand, Burrow continued to perform crucial physical tasks in the maintenance, collections, safety and laboratory events. He used the hole saw in the collections event, one of the most physically demanding tasks in the competition. He also lifted a pump with a jib crane during the maintenance event, another critical task that depends on the hands.

"My injury slowed us down a little, but it would have been much worse to make a last-minute substitution," said Burrow. "I didn't want to let the team down."

While Burrow's injury may have slowed the team slightly, it had a positive impact on its accuracy.



The TRA CReWSers, from left to right, are Steve Price, CRWS chief operator; David Brown, CRWS senior maintenance mechanic; Dale Burrow, CRWS interceptor system specialist and team captain; Jake Burwell, CSS construction inspector II; and Patrick Lynn, CRWS operator II and team coach.

"We only earned three penalties over the entire competition," said Burrow. "That is a record for the team."

Keeping penalties to a minimum is essential to winning at the national level. The team is also pleased with its fourth place finish

in process control, the pencil-and-paper event. The CReWSers also finished fourth in collections and fifth in both maintenance and safety.

Next up for the CReWSers is the state Operations Challenge competition at Texas Water in April 2012.

About Operations Challenge

Operations Challenge showcases the diverse skills required for the operation and maintenance of wastewater treatment facilities and their collection systems and laboratories. Wastewater operations and maintenance professionals, competing in five fast-paced events, are judged on a combination of precision, speed and safety.

Events:

- Process Control
- Laboratory
- Safety
- Pump Maintenance
- Collections Repair

License for hydroelectric power generating facility at Lake Livingston Dam undergoing additional review

The Federal Energy Regulatory Commission recently issued a license to the East Texas Electric Cooperative to build and operate a hydroelectric power generating plant next to Lake Livingston Dam. The power project is a joint effort between ETEC, the city of Houston and the Trinity River Authority as expressed in a memorandum of understanding the three parties entered into in February 2007.

The Lake Livingston Hydroelectric Power Plant will redirect up to 4,500 cubic feet of water per second through three eight-megawatt generators to produce up to 24 megawatts daily.

A minimum release of 200 cfs will be maintained through the spillway to sustain aquatic life in the stilling basin below the tainter gates, and power will be generated only with flows released to meet downstream commitments or to pass stormwater runoff through the dam. Water will not be released for the sole purpose of generating power, nor will Lake Livingston be drawn down to accommodate construction or to generate power. ETEC will pay TRA and Houston a collective \$1.5 million annually during the first thirty years of the project's operation and \$2.5 million per year from then on.

The Lake Livingston Project will generate, on average, 124 million kilowatt-hours of electricity per year – enough energy to annually serve approximately 12,000 households and offset approximately 64,000 tons of carbon dioxide emissions from fossil fuel power generating plants. ETEC estimates construction and startup costs to range from \$80 to \$85 million with \$35 million financed through low-interest Clean Renewable Energy Bonds.

A tentative schedule calls for construction to begin within the next two years.

TRA and the city of Houston have jointly filed a request for rehearing with FERC to clarify specific language in the license. ETEC has filed a similar request for rehearing as well.

"TRA and Houston support the development of clean, renewable hydropower to help address our nation's energy needs," said TRA Southern Region Manager Jim Sims. "But the primary purpose of Lake Livingston is to provide water for Houston and other communities. We want to make sure those provisions continue to be protected in the language of ETEC's license."

TRA's regional wastewater systems earn Peak Performance Awards

CRWS one of only 12 systems nationwide to earn Platinum 17

The National Association of Clean Water Agencies has honored the Trinity River Authority's five regional wastewater treatment systems with Peak Performance Awards for 2010. NACWA distributes Peak Performance Awards for compliance with each system's National Pollutant Discharge Elimination System permit limits.

Gold Awards honor projects that have achieved 100-percent compliance with NPDES permit limits for an entire calendar year. Silver Awards recognize facilities that have received no more than five NPDES excursions throughout the calendar year.

NACWA's prestigious Platinum Award recognizes 100-percent compliance with NPDES permits over a consecutive five-year period. Platinum Award status continues, year after year, as long as 100-percent compliance is maintained.

All five of TRA's regional wastewater systems achieved 100-percent compliance in 2010, earning Gold and Platinum Awards.

"It is tremendously gratifying to receive these awards," said Northern Region Assistant Manager Patty Cleveland. "It validates our commitment to protect public health and our environment."

Central Regional Wastewater System received a Platinum 17 Award for an outstanding 17 years of 100-percent compliance with the system's permit limits. CRWS is one of only 12 systems nationwide to achieve this feat.

Red Oak Creek Regional Wastewater System received a Platinum 11 Award for 11 years of compliance.

Ten Mile Creek Regional Wastewater System has received a Platinum 9 Award and Denton Creek Regional Wastewater System earned

a Platinum 6 Award.

Mountain Creek Regional Wastewater System earned a Gold Award for maintaining 100-percent compliance with its permit limits.

TRA's wastewater treatment plants produce water that is up to 99 percent cleaner than when it arrives at a facility. For example, CRWS influent has 196 parts per million of total suspended solids. The cleaning process removes 99.04 percent of TSS, resulting in 1.3 parts per million.

Although CRWS has contributed nearly a trillion gallons of reclaimed water to the Trinity River basin over its long history of achieving compliance with permit limits, Project Manager Bill Tatum admits it can be a challenge, especially during expansions and improvements.

"Continuous construction activities at the plant and in the collection system make it necessary to shut down equipment and re-route flow. Adding to the complexity, contractors sometimes have 350 employees on site in addition to 175 CRWS employees," he said. "Making sure the operators have the necessary equipment to maintain the processes under those conditions takes planning and coordination."

According to TRA's Clean Rivers Program Coordinator Angela Kilpatrick, wastewater treatment plants that consistently adhere to permit requirements ultimately benefit our environment. "Reclaimed water discharged by wastewater treatment plants provides healthy habitats for aquatic flora and fauna that wouldn't otherwise exist," she said. During the summer months, and other periods of dry weather, almost all of the water in the Trinity River comes from wastewater treatment facilities.

Tamada accepts Congressional Gold Medal on behalf of father



Ron Tamada, Northern Region engineering services manager



Kay Tamada

Northern Region Engineering Services Manager Ron Tamada recently attended a Congressional Gold Medal ceremony on behalf of his father, who served in one of three Japanese-American U.S. Army units during World War II. Kay Tamada died in 1995.

Ron Tamada joined 1,200 people, including veterans or their surviving family members, for three days of ceremonies honoring two combat units as well as the Military Intelligence Service.

Kay Tamada's family were among the thousands of Japanese-Americans relocated from the U.S. West Coast to centrally located internment camps after the U.S. naval base at Pearl Harbor, Hawaii, was bombed in 1941. He was already in the army at the time of the attack. Other men and women volunteered or were drafted from the camps to serve in the armed forces.

According to Ron Tamada, Japanese-Americans were grateful for an opportunity to aid in the war effort to prove their loyalty to the United States. While the Army usually chooses a motivational slogan for each of its units, in a testimony to their patriotism,

the 100th Battalion, one of the two Japanese-American combat units

chose its own: Remember Pearl Harbor. The two combat units were the most decorated in World War II.

"The future of the generations of Japanese-Americans that came after the war was built on the sacrifices made by the men in those three units," said Ron Tamada.

Unlike many *nisei*, or second-generation Japanese-Americans, Kay Tamada spoke Japanese and was recruited to join the MIS to put that skill to use. The MIS was tasked with interpreting intercepted documents and messages, interrogating prisoners of war and preparing informational materials.

The Congressional Gold Medal, considered the highest civilian award in the United States, is awarded for performing an outstanding deed or act of service to the security, prosperity and national interest of the country.

The U.S. Congress awarded three medals, one to each unit. Each individual unit member, or a surviving family member, received a replica of the medal.

General Manager's Message

Budget serves as roadmap to improved quality of life

Henry Ford once said that the highest use of an organization's capital is not to make more money, but to make money do more for the betterment of life. I've learned, during my first round of budget preparation with the Trinity River Authority, that a similar philosophy permeates our organization. While budget preparation and approval dominate our activities throughout the summer and early fall, our staff is committed to a budgeting process that ensures the equitable treatment of our customers, along with the provision of essential services that directly improve and maintain the quality of life for millions throughout the Trinity River basin.

As a political subdivision of the state, TRA exists without the benefit of a tax base and/or appropriations from either the state or the federal government. All of TRA's projects are independent financial entities, which allows us to ensure that no one project, city or group of cities ends up subsidizing any other project or group. Because TRA operates on a fund accounting basis, the entire recently approved TRA budget for Fiscal Year 2012

actually consists of 38 individual budgets that together represent our financial operations for the coming fiscal year. Developing these separate budgets is a massive undertaking, but we believe it is the best approach to maintaining the fiscal integrity of our relationship with each customer, along with the long-term financial health of our facilities.

This year's process culminated as part of the regularly scheduled October meeting of TRA's board of directors, during which board members approved a total FY 2012 budget of \$201.8 million. This figure represents an increase of approximately 1 percent over FY 2011's budget total of \$199.7 million, primarily attributed to increases in costs for personnel services, capital outlays and scheduled debt service payments.

We are very pleased to have so closely held the line on this budget. In the midst of booming populations and a slow financial recovery for many of our customers, plus rising costs for raw water and infrastructure needs, we have kept top-of-mind our commitment to

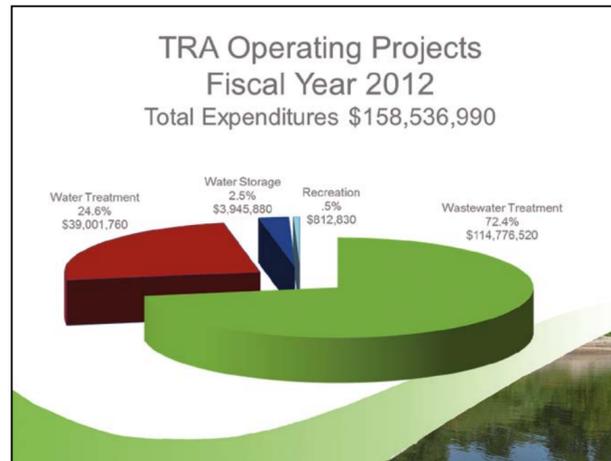
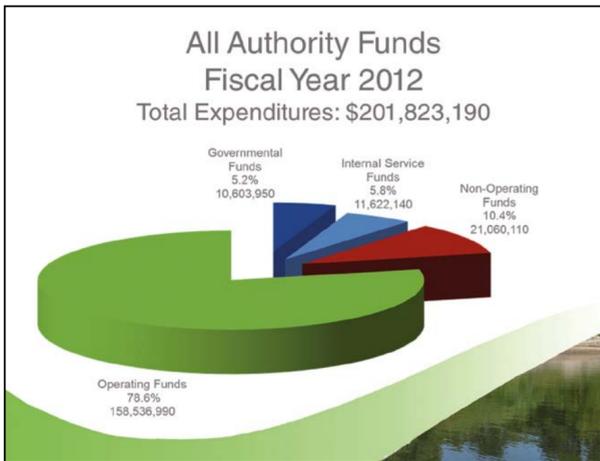
responsible fiscal planning. We have also balanced that commitment with increasingly stringent regulatory requirements. We have challenged ourselves to be savvy and innovative in the way we approach our operations costs, and that philosophy has led to savings in everything from electricity rates to prices of chemicals that we can then pass on to our customers. Above all, we remain dedicated to providing the high level of service and technical expertise on which TRA has built its professional reputation.

We also haven't developed our budgets in a vacuum. The customers of each water or wastewater project played a tremendous role in establishing financial goals during customer advisory meetings throughout August and September. Our customers are certainly the most knowledgeable about population growth and other factors that affect service within their respective communities, and their participation in the budgeting process is invaluable. I am pleased this year to have continued TRA's long-standing tradition of presenting to the board an overall budget that has been



General Manager J. Kevin Ward approved by all customer cities.

The result is that we now have in place our roadmap for FY 2012 – a planning document that represents TRA's best judgment as to the activities we will accomplish during the coming year. Moving forward, we take very seriously our role to implement and finance projects that lie within our sphere of operations outlined by the Texas Legislature; are economically justifiable; are technically feasible; and will benefit all or part of our designated service area. We are committed to the betterment of life for everyone throughout the Trinity River basin who depends on us for essential water and wastewater treatment services.



Walker County Trash Bash reports tons of success

Several members of Walker County Proud Communities, representing both Walker County and the city of Huntsville, recently visited TRA's general office to present results from 2011's Walker County 16th Annual Trash Bash.

Partially funded by TRA's Clean Rivers Program, the Trash Bash started in 1996 as an event to allow Walker County residents to bring large items such as appliances, tires, yard waste and furniture to disposal sites free of charge. Any type of household trash that is not normally picked up on garbage collection days is also received, with the exception of hazardous waste. Volunteers get involved as well by cleaning up roadsides and

neighborhoods as part of the event. "We're very proud to be part of the Walker County Trash Bash," said TRA Clean Rivers Program Coordinator Angela Kilpatrick. "Volunteers at this event have kept more than two thousand tons of garbage and debris out of Lake Livingston and the Trinity River watershed over the past 16 years. Their efforts are making a huge difference."

This year's Trash Bash, held in March, yielded more than 193 tons of waste, including 72 tons of tires, 11 tons of appliances and 110 tons of garbage. County and city vehicles ferried 487 loads of debris to disposal sites during the event.



Walker County Proud Communities recently visited TRA's general office. Seen here on the front row are Michelle Clark, TRA public information officer; Linda McKenzie, purchasing agent, Walker County; Amy Lee, publisher, Huntsville Item newspaper; Esther Herklotz, superintendent, Huntsville Solid Waste and Recycling; Ashlyn Roberts, secretary, Walker County Commissioner's Office, Precinct 2; TRA General Manager Kevin Ward. Back row: Danny Pierce, Walker County judge; Glenn Clingenpeel, senior manager, TRA's Planning and Environmental Management Division; James Ray Necker, office manager, Walker County Commissioner's Office, Precinct 1; Tim Paulsel, commissioner, Walker County Precinct 4; and Sam Scott, TRA's executive services manager.

Employee Milestones

New Hires

GO is excited to have **Melissa Saniuk** as senior accountant, and **Jesús Gomez-Longoria** as maintenance mechanic I.

CRWS welcomes **Shayn Wedeman** and **Juan Avila** as operators I, **Robert Favors** and **James Williams** as maintenance mechanics I, and **Lukasz Janiszewski** as biologist.

DCRWS is pleased to have **Patrick Wagnon** as maintenance mechanic II.

Promotions

Eric Palmer was promoted to senior biologist at CRWS.

Andrew Moore was promoted to operator II at DCRWS.



inTRA bids goodbye and sends warmest wishes to **Helen Smith**, accounting clerk, who retired Dec. 5 after 26 years at the Southern Region office. Smith plans to take it easy in retirement and enjoy herself as much as possible. Her life of leisure will begin with a trip to Florida for a long visit with her sister.



Current Events

Congratulations to **Andrew Moore**, DCRWS operator II, for earning his C wastewater license.

Danny Smith, MCRWS operator I, deserves a pat on the back for earning his C wastewater license with an impressive score of 90.

Hats off to **Marco Acosta**, TCWSP operator I, for earning his C surface water treatment operator license.

Northern Region Manager **Fiona Allen** is pleased to announce that her oldest daughter, Dr. Meredith Allen Abbott, has passed the board certification process to be a diplomate of the American Board of Ophthalmology.

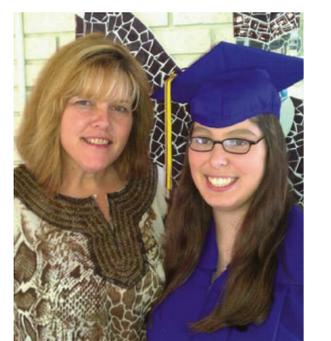
Uh oh! Northern Region Development Manager **Bill Smith** bet Northern Region Manager **Fiona Allen** that the Texas Tech Red Raiders would best Texas A&M Aggies in an Oct. 8 football match. Smith was obliged to don a Texas A&M T-shirt when the Aggies won 45-40.

TRA Fiscal Year 2012 Holidays

- Christmas Day December 26, 2011
- New Year's Day January 2
- Martin Luther King Jr. Day January 16
- Texas Independence Day March 2
- Good Friday April 6
- Memorial Day May 28
- Independence Day July 4
- Labor Day September 3
- Thanksgiving Day November 22
- Day after Thanksgiving November 23



ROCRWS Project Secretary **Wendy Derdeyn** proudly welcomed a new grandson into the family. **Elijah River Golden** was born Sept. 26, 2011, weighing 9 pounds, 5 ounces, to proud parents **Andy Golden** and **Ashley Derdeyn**.



Debra Wright, TCWSP messenger/clerk is proud to report that her daughter **Jessica** graduated early from **Keys High School**. **Jessica** plans to continue her education at **Tarrant County College**.

Halloween Fun Photos

Shawn Ballard, GIS intern, and **Brenna Witt**, executive services senior secretary

Art Encinas, GO maintenance mechanic II

Bart Hines, Northern Region assistant development manager

Richard Postma, construction services assistant manager

CRWS costume contest entrants. Back row, left to right: **Lisa Arent**, senior secretary; **Tracy Owens**, training coordinator; **Jesse Borries**, environmental inspector; **Genie Jones**, lab supervisor and winner of Most Original Costume; **Michelle Critz**, lab tech/bookkeeper; **Jennifer Whitaker**, lab supervisor and winner of Scariest Costume; **Craig Harvey**, lab division chief. Front row, left to right: **Silvia Zavala**, environmental inspector; **Mary Gaither**, lab supervisor and winner of Funniest Costume.

Left to right: **Rosanne Robertson**, senior secretary; **Brenda Porter**, land records research specialist; and **Jeanne Daily**, senior accounting clerk and winner of the inaugural GO Halloween costume contest.

Julie Wilson, general services executive secretary

Drought likely to continue but may weaken

While Texas is certainly no stranger to drought, this summer's scorching heat and lack of rain blasted state records and created dry conditions that stubbornly persist throughout the state. Currently 92 percent of Texas continues to experience extreme or exceptional drought, along with 87 percent of neighboring Oklahoma and 63 percent of New Mexico. According to Mike Halpert, deputy director of the National Oceanic and Atmospheric Administration's Climate Predictions Center, Texas is likely to remain warmer and dryer than normal during the winter, chiefly because La Niña – an intermittent Pacific Ocean phenomenon that was the root of the present drought – has returned. It appears "weaker than what was experienced during this time last year," according to Halpert, but experts don't rule out the possibility of its strengthening.

La Niña is expected to cause a pattern of drier than normal weather across most of Texas through at least late winter, and while some rain will fall, it is not expected to have a significant effect on the ongoing drought. And La Niña isn't the only factor affecting Texas weather – according to Dr. John Nielsen-Gammon, Texas' state climatologist, scientists now believe that Atlantic Ocean temperature variations also play a role in long-term droughts. For example, the devastating Texas drought of the 1950s may be at least partly correlated with warmer-than-average North Atlantic sea-surface temperatures. Studies have shown that drought in Texas has been historically more frequent when a Pacific Ocean La Niña event combines with a warm North Atlantic, such as was the case during the 1950s – and may be occurring now.

The 12 months from October 2010 through September 2011

were the driest for that 12-month period in Texas since 1895, when the state began keeping rainfall records – even though October was much cooler and wetter across the state than previous months. Rains in October and early November made a small dent in the drought situation, but it would take "upwards of 10 or even 15 inches of rain in many regions to make a noticeable improvement in the drought situation," according to Halpert.

Nielsen-Gammon reports that overall maximum temperatures in October were above average, and minimum temperatures were slightly below average, indicating a lack of soil moisture across the state. And some parts of Texas, particularly in the southeast, have accumulated rainfall deficits of up to 30 inches over the past year, according to David Brown, NOAA's Fort Worth-based regional climate services director for the southern region.

These prolonged dry conditions mean continued withdrawals from the state's water supply reservoirs, drawing them ever farther below normal levels. According to the Texas Water Development Board, as of press time total storage in 109 of Texas' major reservoirs was at 18.4 million acre-feet, or roughly 59 percent of the total conservation storage capacity – a record low since 1990.

For TRA, the continued drought merits carefully monitoring reservoir levels and taking drought contingency steps as appropriate. As a water supply customer of the Tarrant Regional Water District, TRA's Tarrant County Water Supply Project implemented Stage 1 drought contingency measures in late August, affecting Bedford, Colleyville, Euless, Grapevine and North Richland Hills – the facility's five customers for potable water treatment. Those restrictions remain in effect and are expected

to remain for the foreseeable future. TRWD would implement Stage 2 restrictions if combined reservoir levels reached 60 percent of capacity; at press time they registered at 68 percent.

According to TRWD's Conservation and Creative Manager Mark Olson, "Based on hydraulic models run by our engineering department, it'll be some time before we reach Stage 2 – even if the drought does persist into the spring of next year. The slightest improvement in rainfall projections beyond where we are today would most likely mean avoiding Stage 2 altogether."

In early October, according to the U.S. Army Corps of Engineers, Bardwell and Navarro Mills lake elevations above sea level dropped below Stage 1 trigger levels established in the drought contingency plans for both reservoirs. As part of subsequent drought contingency measures, TRA coordinates with the USACE to ensure that non-essential releases of water from both reservoirs are minimized. TRA also encourages wholesale customers to use any available alternative water sources and requests that wholesale water customers initiate voluntary measures to reduce water use by implementing Stage 1 of their respective drought contingency plans.

At press time, TRA's Lake Livingston registered 127.03 feet above mean sea level – four feet below its normal pool elevation of 131 msl, but still nearly two feet above its record low of 125.25 in 1988. Lake Livingston has a drought contingency plan that is triggered by lake level, but the plan does not stop the release of water to downstream diverters under any circumstances – as long as the water is available, TRA is legally obligated to send it downstream. Stage 1 of the plan

assumes a mild water shortage condition and is triggered when the level of Lake Livingston drops below 126.5 msl.

Amidst the monitoring and careful planning, the burning question for the water industry remains: when will it end? Experts caution that there is no easy answer and that intense droughts are difficult to break. "At this point, all I can say is that we're in a period of frequent Texas drought until further notice," said Neilson-Gammon. "This period, with both the Pacific and Atlantic working against us, might be over in a couple of years, or it might last another 15 or 20 years. It seems likely to last another decade." And a decade of drought-friendly weather patterns may mean that we'll see more dry years than wet years in Texas for the foreseeable future.

But there is a sliver of good news – while back-to-back La Niñas are relatively common, the probability for a third occurring during the 2012-13 window is fairly low – no more than 10 to 15 percent. And according to Bob Rose, chief meteorologist for the Lower Colorado River Authority, second years of La Niña are historically weaker and shorter than first years, giving hope that there's little chance of repeating the unprecedented severity of this year's drought.

Scan the codes below for more in-depth drought information.



Texas Water Development Board Drought FAQ



Texas Drought Preparedness Council



The Climate Abyss – John Nielsen-Gammon

Wolf Creek Park staff recall season's treasured moments

As Wolf Creek Park prepares to close for the 2011 season, its staff can look back on the hottest, driest summer on record. Searing temperatures and extreme drought conditions not only kept a lot of folks indoors, but they also squelched many outdoor activities that park visitors traditionally enjoy.

An outdoor burn ban, in effect since March and only recently lifted, prohibited campfires and open air cooking, and low lake levels have closed the boat ramp and swimming area. Although fishing in Lake Livingston remains excellent, park visitors cannot fish off the bulkhead unless they are able to cast for a long distance.

Those who braved the heat this summer enjoyed special times and new park features. For example, at the start of the season, Wolf Creek Park launched a Facebook page to give park staff and visitors the opportunity to stay connected by sharing photos and comments.

A quick glance at the page suggests that fishing was phenomenal throughout the season. In early March, a guest caught and released a 40-pound catfish. In late March, two friends snagged several more big ones, but the greatest catch came in August when a family hooked 209 pounds of fish in a single day.

Many families enjoyed good times at the park this season with family reunions, an Easter egg hunt in April and many other events.

In addition, Wolf Creek Park personnel have their favorite camping season stories, starting with the American Cancer Society's Relay for Life in April; staff donned Hawaiian shirts and walked all night

to raise money to fight cancer. In July, Park Ranger Vickie Richards snapped photos of four armadillo babies who treated park guests to a daytime visit. Also in July, the park welcomed Ginger Tomplait back to the staff to greet guests and take reservations in the office. Finally, Charles "Eddie" Knight celebrated five years as park supervisor in September.

Visitors flocked to the park in October to enjoy cooler temperatures and the 27th Annual Wolf Creek Car, Truck and Bike Show. More than 1,300 people, not including campers, came to see the vintage cars and partake in the festivities.

Check the Wolf Creek Park Facebook page for photos of the highlights mentioned here, plus more. Use the QR code below for easy access.

Although visitor numbers were down nearly 30 percent over the season, revenue did not show a corresponding dip.

"Revenue was down about 10 percent," said Knight. "Not as much as we expected." Not as many people came, but those who did stayed longer.

Wolf Creek Park closed for the season Nov. 30. Knight takes advantage of the quiet winter months to make improvements throughout the park.

Currently, crews are placing cement-stabilized sand along most of the shoreline bulkhead. Once stormwater or wave action moistens the area, it will harden to form a wide walkway next to the lake. Visitors will be able to stroll along the waterfront or relax in chairs next to the lake to enjoy the view or to fish.



Wolf Creek Park staff will be busy this winter making improvements at the park. This crew is placing cement-stabilized sand along the shoreline bulkhead to form a wide walkway next to the water. Seen here from left to right are Charlie White, park ranger; Mike Wilson, park ranger; Douglas Raggett, senior park ranger; Curtis Chalk, maintenance helper; Roland Popham, Lake Livingston Project maintenance mechanic II; and Arthur Henderson, LLP senior maintenance mechanic.

Knight and his staff have also recently improved drainage of a perennially water-logged site near the picnic area.

Later this winter, crews plan to apply fresh coats of paint to several park buildings, including the restroom/shower facilities.

Next year, park visitors will enjoy a greater level of security due to a recent proposed agreement between TRA and the San Jacinto Sheriff's Department. When the park opens for the season in March, Sheriff's deputies will provide regular patrols on nights, weekends and holidays. Park security was previously provided by a combination of off-duty officers and TRA park rangers.

Wolf Creek Park is a 110-acre overnight camping and day-use park on the western shore of Lake Livingston. The park has

46 campsites for RVs requiring full hookups and 57 sites with water and electricity. All sites have picnic tables, fire rings and grills. Park visitors have access to a boat ramp and fishing pier, three restroom/shower facilities, a group shelter, playground equipment and a marina store.

Over the winter, interested parties can follow park happenings and improvements on Facebook. By "Liking" the page, visitors can receive updates from Wolf Creek Park through their individual Facebook news feeds.

The park will open for the 2012 season on March 1. Visitors can start reserving their favorite campsites as early as January 1.



Wolf Creek Park Facebook page

TRA staff compete on winning teams at the Underground Construction Technology Association of North Texas inaugural Clay Shoot Event



The Most Honest Team included three TRA women. Seen here from left to right are TRA Public Information Officer Michelle Clark, Carollo Engineer Corinne Kluge, TRA Manager of Technical Resources Cynthia Belvin and TRA Northern Region Manager of Engineering Services Karen Stafford-Brown.



Two marksmen from TRA propelled the winning team to success. Seen here from left to right are TRA Northern Region Manager of Engineering Services Craig Crowder, Carollo Engineer Andy Dettmer, Irving Water Utilities Director Todd Reck and TRA DCRWS Project Manager John Bennett.

Drought impacts water and wastewater treatment systems

As the Texas drought passes its one-year mark, agricultural losses are mounting, wildfires are burning, concrete is cracking and water providers are implementing restrictions across the state. Aside from obvious concerns about water supply, drought conditions make serious impacts on the treatment of both water and wastewater as well.

TRA's water treatment plants operated at top capacity during the hottest, driest summer on record to quench thirsty lawns and landscaping, pushing equipment and staff to their limits and gobbling up raw water, chemicals and power. During peak-hour usage, TRA's Tarrant County Water Supply Project pumped 80-90 million gallons of water per day to residents in Bedford, Colleyville and Euless, along with portions of Grapevine and North Richland Hills. TCWSP Plant Manager Gerald Null notes that the lack of rainfall has had a huge impact on raw water supply.

"If rain doesn't fall locally and run off into Lake Arlington, raw water has to be pumped from Richland-Chambers and Cedar Creek reservoirs."

When TCWSP customer cities implemented mandatory water restrictions at the end of August, residents cut back usage to 50-60 MGD. A sudden reduction in demand poses additional challenges at water treatment plants. Operators observe and adjust process chemicals continuously as demand falls. In addition, they keep a close eye on treated water stored in tanks to make sure it retains the appropriate level of disinfection.

TRA's two surface water treatment systems in the Southern Region of the Trinity River basin – the Huntsville Regional Water Supply System and the Livingston Regional Water Supply System – also produced water at maximum capacity during the summer in response to increased demand from customers. Water use has decreased substantially with cooler temperatures and the occasional rain shower.

Trinity County Regional Water Supply System draws water from Lake Livingston through wells near the lake that pull the water through natural sand and gravel deposits. With rainfall substantially

below normal, the lake's level has dropped four feet below normal pool to 127.03 mean feet above sea level as of press time. At that level, the TCRWSS well field is not able to draw as much water from the lake, and the system's production has fallen to nearly half of normal capacity.

While water treatment systems see an increase in demand during drought, wastewater systems experience the opposite: decreased flow. This can cause challenges both at the plant and in the collection system.

Because wastewater most often flows by gravity from the point of origin to the plant, decreased flows travel more slowly than usual, allowing solids such as plastics, rags and strings to fall to the bottom of the pipes and accumulate at pipe joints and in junction boxes. This won't pose a problem until the next heavy rain event, when stormwater runoff fills pipes and increases velocity of the water enough to dislodge the built-up solids and send them to the plant on a crash course with the barscreens. TRA's plant managers will watch weather forecasts closely

this winter and make appropriate plans to deal with an onslaught of solids should heavy rainfall occur.

In addition, although wastewater plants treat less water during a drought, operators report that their influent is stronger, with greater concentrations of ammonia and total suspended solids. If not properly managed, this can initially upset the biological processes and result in a corresponding increase of ammonia and TSS in the effluent.

Also, while it may seem counterintuitive, plant managers report that less wastewater means more housekeeping.

"With decreased flow velocity, algae grow on basin walls and weirs," said Ten Mile Creek Regional Wastewater System Project Manager Ed Mach. "We remove it so it doesn't build up and interfere with flow."

Finally, drought is notoriously hard on underground pipes and concrete structures as contracting soils cause cracks and breaks. TRA's water and wastewater project managers are especially vigilant for structural problems during extended dry weather and extreme temperatures.



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Anniversaries

25 Years

Peggy Stewart, executive secretary,
financial services

20 Years

David Odom, chief operator, HRWSS
Eddie Grant, senior electronic tech., CRWS

15 Years

Robert Burchett III, maint. mech., SRSS

10 Years

James Wright, chief pilot, executive services
Darrell Davis, maintenance supervisor, LLP
Patrick Oyinatumba, senior chemist, CRWS
Cloise Miller, chief operator, CRWS

5 Years

Jeffrey Finch, operator I, CRWS
Douglas Raggett, senior park ranger, LRF

3 Years

Yesha Rai, senior secretary, Northern Region
Hong Wu, planning and environmental
management assistant, executive services
Charles Cotton, security guard, LLP
Clyde Thomas, electrician II, TCWSP



TCWSP Operations and Maintenance Chief Sid McCain, left, receives his 35-year anniversary certificate from Project Manager Gerald Null. McCain joined TRA in 1975 as an operator trainee. He was promoted several times, ultimately reaching his present position in 2001.



Wolf Creek Park Maintenance Supervisor Douglas Scott Raggett, right, celebrated his five-year anniversary with a certificate from Park Supervisor Charles "Eddie" Knight.