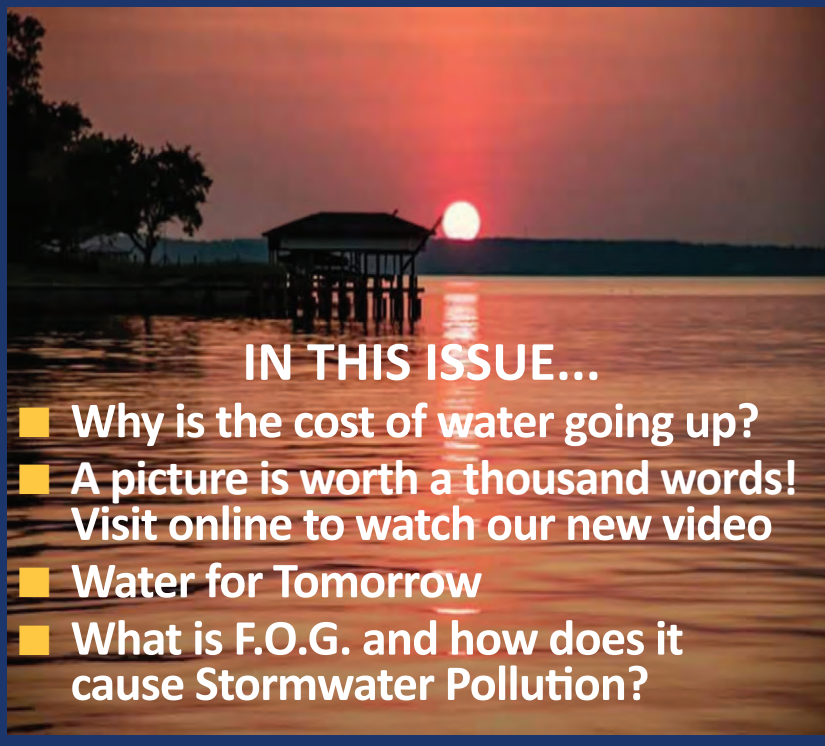
WATERLINES

NORTH HARRIS COUNTY REGIONAL WATER AUTHORITY

WATER FOR THE FUTURE



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North Harris County REGIONAL WATER Authority

WINTER 2019

North Harris County REGIONAL WATER Authority

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The North Harris County Regional Water Authority (NHCRWA) was created by the 76th Texas Legislature and was confirmed by a public vote in January 2000. The primary mission of the NHCRWA was to secure adequate surface water and develop a system to facilitate the transition to surface water in compliance with the Harris-Galveston Subsidence District's mandated groundwater reduction timeframe.

YOU'RE INVITED TO VISIT WWW.NHCRWA.COM TO VIEW OUR NEW VIDEO

WHY DOES THE COST OF WATER KEEP GOING UP?

Decades before **WATER** became the global issue that it is today, the state of Texas had begun taking aggressive measures to preserve and protect this finite natural resource. In fact, The Lone Star State is recognized as having one of the most comprehensive ***state water plans*** in the nation. That's a good thing because a staggering number of businesses and people relocate to Texas every year.

The 2010 census recorded a population of just over 600 thousand for the northwest Harris County area alone. Experts now forecast that the state's population will increase more than 70 percent between 2020 and 2070, from 29.5 million to 51 million. Over half of this projected growth will occur in the Dallas-Fort Worth and Houston metropolitan areas.

Each year, the ***Texas Water Development Board*** collects information on water usage and comprehensive population projections from water systems around the state. The ***State Water Plan*** – produced every five years — provides a critical roadmap for our long-term planning.

Will we have enough water to meet the needs of our growing population and to sustain economic growth and development for future generations? The answer is a cautiously optimistic "Yes".

How do we know? Let's go back 40 years or so for a quick science lesson…

For decades, drinking water for much of southeast Texas traditionally came from the ***Gulf Coast Aquifers*** – which is made up of many layers of clay, rocks and sand. Over geologic time, these layers naturally compact…and collapse underground — never to be restored. Sadly, the area's steadily increasing population and voracious thirst for water sped up this natural process. Aggressive groundwater pumping not only resulted in a decline of the underground aquifers, but also triggered land surface *elevation loss,* or what is called ***subsidence,*** throughout the region.

The Harris-Galveston Subsidence District (HGSD) was created by the Texas Legislature in 1975 to study and control subsidence in Harris and Galveston counties. The District issued a regulatory plan requiring industries on the Houston Ship Channel to convert from groundwater to surface water. The results were dramatic — subsidence in the Baytown-Pasadena area was dramatically improved, and has since been largely halted.

The combination of subsidence in northwest Harris County and evidence that aquifers were beginning serious decline, confirmed the need to convert to surface water. Based on the success of their initial effort, the Subsidence District took a similar approach in north and west Harris County. The first phase of the District's mandate was completed in 2010, which reduced reliance on groundwater by 30 percent. The next deadline is 2025 – requiring 60 percent conversion to alternate (or surface) water.

Back in the 1950's, some visionary Houston officials understood that achieving the city's future economic potential hinged on securing the rights to nearby surface water resources. Their foresight led to the construction of three man-made lakes as water storage reservoirs – Lake Houston, Lake Livingston and Lake Conroe — fed by the San Jacinto and Trinity Rivers.

Fortunately, the Houston region can now

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RISING COST OF WATER

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rely on the surface water resources secured all those years ago. There are some hurdles ahead, however, because there is not enough water in the San Jacinto River system to meet our 2025 needs and beyond.

LAKE CONROE DAM, 1970

So, where will these future supplies come from…and how will we pay for them?

Since its creation in 2000, the North Harris County Regional Water Authority (NHCRWA) has complied with Subsidence District groundwater reduction mandates, and is also responsible for building the water pipelines to deliver treated water to the municipal utility districts (MUDs) to serve hundreds of thousands of residents…and that's no small task. The current challenge is to complete the planning and engineering stage of the multi-pronged 2025 conversion system.

A new alliance of regional water providers have teamed up to initiate the **Luce Bayou Interbasin Transfer Project** with the capacity to bring raw water from the Trinity River to Lake Houston and the City's North East Water Purification Plant. The partners include the City of Houston, the North, West and Central Harris County Regional Water Authorities, the North Fort Bend Water Authority, and the Coastal Water Authority.

Construction on the 90-acre **Capers Ridge Pump Station** on the Trinity River's west bank is underway. When fully functional, it will be able to divert up to 500 million gallons of water a day from the Trinity River and pump it into side-by-side underground pipelines. To provide an idea of the size of these pipes, a Ford F150 pickup truck could drive through these 8 foot diameter pipes with room to spare. The water will flow through these pipelines to a storage and sedimentation basin, and then into a canal that runs to the northeastern tip of Lake Houston.

In anticipation of more raw water coming into the San Jacinto/Lake Houston reservoir, regional water authorities and the City of Houston forged a partnership to accomplish an expansion of the ***Northeast Water Purification Plant*** with each paying its fair share of the costs. This multi-billion dollar project — to be completed in phases over the next 6 to 9 years — will increase the treatment capacity from the current 80 million gallons a day to 400 million gallons a day. **The expansion project is considered to be the largest design-build infrastructure project of its kind underway in the U.S. today.**

In addition to the cost of purchasing the surface water from the City of Houston, there are shared transmission, operations and maintenance expenses to be paid. All of these factors — coupled with the cost of constructing the NHCRWA's 2025 water supply system — will impact the future cost of water.

How will we pay for it? The NHCRWA was not given taxing authority when it was created by the State Legislature. Instead of taxes, fees are charged for groundwater pumped by the utility districts and their customers within the NHCRWA's boundaries. They are also charged for the delivery of surface water. There have been numerous bond sales over the past 18 years to fund the 2010 distribution system and other construction and operating costs. While the Authority has pledged to *keep the fees as low as possible, for as long as possible*, we know that the cost of water will continue to go up in the future.

SWIFT

State Water Implementation Fund for Texas

In November 2013, Texans had the opportunity to vote for a constitutional amendment creating the **State Water Implementation Fund for Texas** (SWIFT) to assist in financing priority projects in the state water plan to ensure the availability of adequate future water resources. They did so overwhelmingly.

This election signaled the State's new approach to ***turning water plans into water supplies.*** **SWIFT --** administered by the Texas Water Development Board -- enabled municipalities, counties, water authorities and other water providers to apply for the low interest loans. With assistance from the SWIFT program, Texas now has the means to help meet the state's water needs far into the future.

Since their initial application was accepted by TWDB in 2015, the NHCRWA has been the largest recipient of *subsidized, multi-year funding* through the SWIFT Program in the state! This will save the Authority's rate payers millions of dollars in interest payments over the next 30 years.

The North Harris County Regional Water Authority – singularly and in concert with other regional water providers – will continue to pursue its mission to provide a secure, long term supply of potable water for our neighbors and community. In the meantime, it is up to each of us to use our finite water resources wisely.

FACTORS IMPACTING THE RISING COST OF WATER

Steel tariffs have significantly increased the quoted steel pipe costs from $427 per linear foot of 8 foot water line steel pipe in 2016 to $752 per linear foot in 2018. Every increase of $100 per linear foot results in about $20M increase for the project.

Skilled labor is in short supply across the nation generally for construction.

The need for more tunneling under roads and properties rather than laying the pipe in an open trench increases costs.

MASSIVE WATER INFRASTRUCTURE PROJECTS

Fortunately, looking toward the future, the Houston region can rely on the surface water resources secured half a century ago with the construction of the water storage reservoirs fed by the San Jacinto and Trinity Rivers.

It is important to note that the City of Houston has over 1.2 billion gallons per day of reliable surface water rights -- a 70 percent share of Lake Livingston, a 70 percent share of Lake Conroe, 100 percent ownership of Lake Houston, and a 70 percent share of the future Allens Creek Reservoir. That, combined with its groundwater supply, is enough to serve customers in the city and surrounding counties through approximately 2050 and beyond.

The key to meeting future demand is tapping into some of the *unused water supply* on the Trinity River and getting it to where it is needed most – in west, central and north Harris County and north Fort Bend County. That means constructing new pipelines, pump stations and water treatment plant capacity.

The idea for the **Luce Bayou Interbasin Transfer Project** dates back to the late 1930's, when Houston leaders realized the need to identify water sources for future Houstonians and began planning for the use of surface water..

The Coastal Water Authority, a conservation and reclamation district created by the State in 1967, is managing the project. In its role as the City of Houston's untreated surface water provider, the city owns the water and CWA builds, operates and maintains the systems -- and gets the water where it needs to go.

The City of Houston, the North,West and Central Harris County Regional Water Authorities, and the North Fort Bend Water Authority are partners in Luce Bayou, with each paying their fair share for equipment and pipelines that will treat, transport and deliver the water from Lake Houston to points beyond.

With the prospect of more untreated water coming into the Lake Houston reservoir, the "partners" are working together on an expansion of the **Northeast Water Purification Plant**, again sharing the costs. This multi-billion dollar project -- to be accomplished in phases over the next 6 to 9 years -- will increase the treatment capaciity to 400 million gallons a day.

LUCE BAYOU INTERBASIN TRANSFER PROJECT - CONSTRUCTING THE CAPERS RIDGE PUMP STATION ON THE TRINITY RIVER

LUCE BAYOU INTERBASIN TRANSFER PROJECT - BRINGING WATER FROM THE TRINITY RIVER TO LAKE HOUSTON

NORTHEAST WATER PURIFICATION PLANT EXPANSION PROJECT -- 2018

WATER FOR OUR COMMUNITY...

NHCRWA 2025 INFRASTRUCTURE COSTS -- Est. $775M (2018 dollars)

In addition to the "partnered" construction projects previously described, the NHCRWA will also incur costs to build more infrastructure to receive and deliver water treated at the Northeast Water Purification Plant (NEWPP) to the MUDs/water providers within the Authority's boundaries. This includes two major pump stations and constructing an additional 94 miles of transmission and distribution lines to connect another 45 MUDs.

SECOND WATER TRANSMISSION LINE FROM THE NEWPP

Continuing their current 84-inch Northeast Transmission Line, the Authority is partnering with the City of Houston to construct an additional 16.5 miles of pipe to deliver 113 MGD of treated water from the NEWPP to the new SH 249 Regional Pump Station and storage facility. This includes 2200 ft. of a 120 inch line -- that's 10 ft. in diameter. Another segment, shared with the Central Harris County Regional Water Authority, will be 9 ft. in diameter and almost 8 miles long. These huge pipelines are big enough to drive a truck through.

North Harris County
REGIONAL WATER
Authority

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During winter months, the kitchen is often the favorite place for families to gather…drawn by tempting aromas and lots of tasty tidbits to sample. When the scrumptious meals are over; however, bulky "feast" leftovers get scraped into the disposal and are washed into the drain where they can accumulate in the pipes and ultimately cause some serious chaos.

Some foods and cooking condiments are potentially more troublesome than others. Discarded substances like cooking oil, bacon grease, mayonnaise, egg shells, and pasta can coagulate and stagnate in underground plumbing lines and get even nastier when joined by gravy and mashed potatoes. Long after the meal is forgotten, the sewer system gets sufficiently blocked to cause a backup inside the house (UGH). Then it's the plumber who benefits from costly remedies and repairs.

It is up to the homeowner to make sure that their pipes don't become clogged up with **F.O.G.** – fats, oil and grease. According to the Texas Commission on Environmental Quality (TCEQ), most sewer backups occur between the house and the main sewer lines, where it is the resident's responsibility to correct a problem if this should occur. Globs of grease in the main lines can cause an unpleasant chain of events and mayhem -- like sanitary sewer overflows that can pollute nearby lakes and streams, creating potential health threats for people and wildlife.

Remember, any substance poured onto the ground or into a storm sewer can end up in groundwater. Take the time to dispose of F.O.G. substances properly -- pour cooking oils, lard, and grease into closeable containers for disposal. Or consider mixing them with kitty litter in a zipped-top bag until the oil is absorbed and ready for disposal. Here are some more disposal ideas…

- Do NOT pour cooking oil, grease, or melted butter down the drain -- EVER.
- Be careful what you scrape into the disposal. Once the walls of the pipe begin to clog up, all kinds of food remnants can join the "group" and create a stubborn blockage. Let common sense rule!
- Don't run hot water over dishes, pans, fryers or griddles to wash oil and grease down the drain. They'll get "solid" again when they cool off.
- Consider starting a compost pile for appropriate scraps and leftovers.

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