



# 2017

Lone Star Groundwater  
Conservation District  
Annual Report

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## CREATION

In 2001, the 77th Texas Legislature, through House Bill 2362, authorized the creation of the Lone Star Groundwater Conservation District (LSGCD). Montgomery County voters then confirmed the District's creation on November 6, 2001, with 73.85 percent of the vote.

Since its creation, LSGCD has carried out its statutorily-mandated functions to conserve and protect groundwater resources in Montgomery County, and has developed a system to ensure that the groundwater supply in Montgomery County will remain a sustainable resource for years to come.

## MISSION

The Lone Star Groundwater Conservation District is committed to managing and protecting the groundwater resources of Montgomery County and to working with others to ensure a sustainable, adequate, high quality and cost-effective supply of water.

LSGCD's regulatory system was developed through a public process and allows flexibility among water users in how they go about achieving compliance with LSGCD's rules and groundwater reduction requirements.

LSGCD will strive to develop, promote, and implement water conservation, augmentation, and management strategies to protect water resources for the benefit of the citizens, economy, and environment of Montgomery County. The preservation of this most valuable resource can be managed in a prudent and cost-effective manner through conservation, education, management, and permitting.

## LOCATION & EXTENT

The Lone Star Groundwater Conservation District is located in Montgomery County, in southeastern Texas. Its boundaries are coterminous with the boundaries of Montgomery County, Texas. The District is bordered by Walker County to the north, San Jacinto and Liberty Counties to the east, Harris County to the south, and Waller and Grimes Counties to the west.

Peach Creek is the boundary with San Jacinto County, and Spring Creek forms most of the boundary with Harris County. LSGCD comprises an area of approximately 1,090 square miles.



### DISTRICT OFFICE

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Conroe, Texas 77303  
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[www.LoneStarGCD.org](http://www.LoneStarGCD.org)





## KATHY TURNER JONES

### General Manager

**K**athy Turner Jones is a native Texan, having lived the majority of her life in the Lubbock area before moving to Montgomery County. Ms.

Jones earned a Bachelor of Arts and Sciences in Business with a Finance Minor from the University of the Southwest in Hobbs, New Mexico, graduating Summa Cum Laude. She recently completed a Master of Science at Texas A&M University in the Water Management and Hydrological Science Program.

Bringing twelve years of experience in groundwater management, Ms. Jones was named General Manager of the Lone Star Groundwater Conservation District in 2002. There, she has led, and continues to lead, the District in its ongoing mission to conserve, protect, and preserve the groundwater resources of Montgomery County—one of the fastest-growing counties in the nation—currently touting a population of about a half a million residents. Under her

direction, the District established offices in Conroe, developed a core staff, created a well-permitting and registration system, while continually motivating public interest in good groundwater management practices. Ms. Jones has spearheaded many data-driven initiatives over the last decade, increasing the available hydrological research relevant to the area. These initiatives have also included advancements for engineering planning, water usage and water supply analysis, and appropriate, cost-effective regulatory policies.

Ms. Jones serves on several committees, including: Member on Region H Water Planning Group; Chair of GMA 14 Joint Planning Group; Member on Texas Groundwater Protection Committee. She is also an appointment member on the Trinity and San Jacinto and Galveston Bay Basin and Bay Area Stakeholder Committee. Ms. Jones serves as a Trustee for the Texas Water Conservation Association Risk Management Fund and as an Executive Board Member for the Texas Water Conservation Association. She additionally served as president of the Texas Alliance of Groundwater Districts for two terms.



## SAMANTHA REITER

### Assistant General Manager / Permitting Director

**S**amantha Reiter was born and raised in Round Rock, Texas. She moved to Montgomery County in 2010 and began her career with Lone Star Groundwater Conservation District. Ms. Reiter earned both an associate degree from Blinn College in Bryan and a Bachelor of Arts degree from Texas A&M University. Ms. Reiter has held a variety of positions with the District, getting her start in 2010 as the Executive Administrative Assistant to the General Manager and worked her way up to Permitting Director in 2012. Ms.

Reiter was recently promoted to Assistant General Manager in July 2017. In addition to her duties as Assistant GM, Ms. Reiter continues to manage the permitting department and oversees the District's GIS and online permitting database. She is also the District's Public Information Officer. Ms. Reiter prides herself on being well versed on the District's rules and regulations as well as staying in tune with legislative changes to groundwater laws in Texas. She is a graduate of Leadership Montgomery County (Class of 2015) and is also involved with the Montgomery County Fair & Rodeo.



**Rick Moffatt**  
President

*Represents MUDs East of Interstate 45*



**James M. Stinson, PE**  
Vice President

*Represents Woodlands Joint Powers Agency*



**Gregg Hope**  
Secretary

*Represents Montgomery County*



**W.B. Wood**  
Treasurer

*Represents Soil & Water Conservation District*



**John D. Bleyl, PE**  
Member

*Represents City of Conroe*



**M. Scott Weisinger, PG**  
Member

*Represents all cities except Conroe*



**Jace Houston**  
Member

*Represents San Jacinto River Authority*



**Roy McCoy, Jr.**  
Member

*Represents MUDs West of Interstate 45*



**Webb Melder**  
Member

*Represents Montgomery County*

The Lone Star Groundwater Conservation District was created to develop, promote, and implement water conservation, augmentation, and management strategies to protect groundwater resources for the benefit of the citizens, economy, and environment of Montgomery County, Texas. To fulfill this directive, the Board of Directors adopted rules on August 26, 2002, to regulate the drilling and operation of water wells in Montgomery County and to set fees for the production of groundwater.

The Board of Directors of the Lone Star Groundwater Conservation District represent the various water interests of Montgomery County. The Board meets monthly at the District offices to dispense with District business including the approval of well permits, decisions on rules and by-laws, and progress reports on District committees.

## Committee Assignments

### Budget & Finance

-Billy Wood, Chair  
-Gregg Hope  
-Jim Stinson  
-Webb Melder

### Policy & Personnel

-Jace Houston, Chair  
-John Bleyl  
-Rick Moffatt  
-Jim Stinson

### Rules & By-Laws

-Jim Stinson, Chair  
-Scott Weisinger  
-Billy Wood  
-Rick Moffatt

### Water Awareness & Conservation

-Billy Wood, Chair  
-Scott Weisinger  
-Webb Melder  
-Roy McCoy

### Findings & Review

-Rick Moffatt, Chair  
-Gregg Hope  
-John Bleyl  
-Jace Houston

### Executive Committee

-Rick Moffatt, Chair  
-Billy Wood  
-Jim Stinson  
-Gregg Hope

### Professional Services Committee

-Jace Houston, Chair  
-John Bleyl  
-Gregg Hope  
-Scott Weisinger



## RICHARD J. TRAMM

On March 15, 2017, Richard J. Tramm, former president of Lone Star Groundwater Conservation District and the longest serving board member, was honored for “his outstanding service and dedication to preserving the integrity of our groundwater aquifers and our valuable resource - water” with a presentation of a Texas State Senate Resolution sponsored by former Lone Star Groundwater Conservation District board member and Texas State Senator Brandon Creighton.

Mr. Tramm was appointed to the Lone Star Groundwater Conservation District board of directors in 2001 by the Montgomery County Commissioners Court. He initially served as President until 2005. During the next several years he also served as Secretary and Vice-Pres-

ident of the Board of Directors, until again being elected as President in 2009. He continued to serve in that capacity until the conclusion of his recently completed fourth term in office.

Mr. Tramm is in the water business currently serving as the General Manager of the Porter Special Utility District. He recently won a seat on the East Montgomery County Improvement District Board of Directors. Richard is an avid marathon runner and remains involved in his community.

The Lone Star Board of Directors and Staff extend their thanks and appreciation to Richard J. Tramm for his service to the Lone Star Groundwater Conservation District and the residents of Montgomery County.

**In this March 20, 2017 photo, County Judge Craig Doyal, center, reads Senate Resolution No. 425, honoring Richard J. Tramm, left, for his service to the Lone Star Groundwater Conservation District during a recognition reception held at LSGCD's office in Conroe. Standing to the right is newly elected LSGCD Board President Rick Moffatt.**



## PAUL R. NELSON

On June 30, 2017, Paul R. Nelson retired from his position as Assistant General Manager, marking the end of a 40-plus year career in water resource management. Mr. Nelson has been a significant contributor to the District and an iconic conservation and sustainability champion. He joined the District in 2011. Previously, he served as the GIS Coordinator with the North Harris County Regional Water Au-

thority. He holds an extensive background in the areas of public works administration, water conservation, and long-range water planning.

Since his retirement, Mr. Nelson has continued serving in a voluntary role as coordinator of the District's Gulf Coast / Montgomery County Water Efficiency Network, an organization that meets monthly to highlight the latest in water conservation. Mr. Nelson is credited with this group's creation as well as its continued success over these last several years.

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*"NOTHING IS  
CONSTANT—BUT  
CHANGE"*

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This well-known quote seems an appropriate summary of the year 2017 for the Lone Star Groundwater Conservation District. It was a historic year for the District, both in terms of the significant strides made toward managing the groundwater resources in Montgomery County for future generations, and in the new direction set by the Texas Legislature for future governance of the District. The District also continued to face costly legal challenges in 2017, detracting from the District's main responsibility and goal: the conservation; preservation; protection; recharging; and prevention of waste of groundwater. Despite these sometimes disruptive changes, I am confident as we begin 2018 that the strength of our science, the solidarity of our board and team of staff, our continued negotiations with our opposing litigants, and the integrity of our legal system, collectively, will result in a positive and effective year for the District.



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One of the greatest accomplishments for the District in 2017 was the board of director's approval in October of the "Strategic Water Resources Planning Study," which includes recommendations for future increases in groundwater pumping in Montgomery County. This three-year scientific study, conducted by the hydrogeology consulting firm LBG-Guyton Associates, was commissioned by the board in October 2014 to evaluate the impacts to local aquifers of the District's 2016 groundwater pumping reductions. The study also evaluated the development of additional groundwater supplies in Montgomery County and provides other information and recommendations that will be beneficial in the next five-year joint planning cycle in Groundwater Management Area 14 (GMA 14).

Part of the study entailed a survey of all the large water well permit holders in Montgomery County to determine how much additional decline in the water levels of their respective aquifer they could tolerate within their wells. Based on those survey responses and groundwater modeling results included in the study, the board of directors identified a new recommended planning goal for aquifers in Montgomery County that would allow increased groundwater pumping from the

current goal of 64,000 acre-feet per year to 100,000 acre-feet per year by the year 2070. Although increased pumping will result in greater declines in water levels in the aquifers over the 50-year planning period than under the current goal, the survey results reveal only a limited number of well owners may be required to lower their pumps or water wells to accommodate water-level declines.

The Lone Star board in October gave unanimous approval to the increased groundwater pumping levels and resulting aquifer conditions included in the groundwater availability model "Run D," the board's recommended model scenario. The District's decision to pursue these changes in the desired future conditions for our aquifers based on the strategic planning study's recommendations is consistent with the District's position throughout its legal challenges. The changes to the desired future conditions approved by the Lone Star board led to a settlement with the cities of Conroe and Magnolia involving an appeal of the previous desired future conditions. In December, I, along with District consultants, presented the results of the study, including the board's new recommendations for changes to the desired future conditions Run D, to

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the groundwater conservation district representatives of GMA 14. In order to be finally approved, such a proposal requires a technical evaluation and public hearings process and must receive an affirmative vote from at least four out of the five member groundwater conservation districts in GMA 14.

The District is currently in the process of mediation with the City of Conroe and other investor-owned utility plaintiffs in an attempt to settle the still remaining lawsuit filed against the District in 2015 on the validity of the District's rules and regulations. We are hopeful that this matter will be resolved in the near future, allowing the District to shift our focus back to our primary purpose.

The 85th Regular Session

of the Texas Legislature in 2017 brought changes to the structure and method by which the Lone Star board of directors are selected. House Bill 1982, authored by Representative Will Metcalf in the Texas House of Representatives and sponsored by Senator Brandon Creighton in the Texas Senate, amends the District's enabling legislation to provide for a seven-member elected board comprised of: one elected member from each county commissioners precinct (four total); one elected at-large member by county-wide vote; one elected member by City of Conroe voters, and one elected member by voters of The Woodlands Township. The amendment also prohibits a director from serving more than three full terms and is effective with the November 6, 2018 General

Election.

Our current board and the boards of directors I have served with over the last 16 years have been comprised of individuals who are dedicated to serving the citizens of Montgomery County who rely on the District to wisely manage local groundwater resources and protect private property rights in groundwater. I am privileged to serve alongside them. As a new board is elected in November, I believe that effective leadership and sound policy will continue to be the hallmarks of the Lone Star GCD. Yes, change is constant, and sometimes difficult. But the way we respond to change makes all the difference. I look forward to seeing what accomplishments lie ahead for Lone Star GCD in 2018.

## Stakeholder Advisory Committee

In 2015, a Stakeholder Advisory Committee was created. The purpose of the committee is to build a close working relationship with the different stakeholder groups of the District so that the board of directors and staff can obtain feedback on significant issues such as rules changes and science-related projects. The Stakeholder Advisory Committee appointments and the entities they represent are as follows:

- **Kenny Eickelberg**  
*City of Shenandoah*
- **Scott Taylor**  
*City of Conroe*
- **Kerry Masson**  
*Utility District Director*
- **Luke Tussing**  
*Water Supply Corporation (non-utility district water system)*
- **Mike Mooney**  
*Woodlands Joint Powers Agency*
- **Rigby Owen**  
*Private Resident (Lake Conroe Area)*
- **Ryan Quigley**  
*Quadvest (investor-owned utility)*
- **Wayne Register**  
*Retired Engineer (Soil and Conservation District)*
- **Tom Michel**  
*San Jacinto River Authority*



## SUCCESSFUL ACHIEVEMENT OF 2017 MANAGEMENT GOALS

The 75th Texas Legislature in 1997 enacted Senate Bill 1 (SB1) to establish a comprehensive statewide water planning process. In particular, SB1 contained provisions that required groundwater conservation districts to prepare management plans that identify the water supply resources and water demands, which will shape the decisions of each district. SB1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries.

Each year, the District is charged with providing evidence of the District's progress in achieving the management goals set forth in the District's Groundwater Management Plan. The evidence of the District's progress toward each goal is included in this Annual Report and made available to the public after adoption by the board of directors. This report is intended to fulfill the requirement of the District's Groundwater Management Plan of complying with the achievement of management goals as outlined herein.

## OBJECTIVES AND PERFORMANCE STANDARDS

### *GOAL 1: ADDRESSING THE DESIRED FUTURE CONDITIONS ADOPTED BY THE DISTRICT UNDER TEXAS WATER CODE SECTION 36.108*

The District seeks to protect the Gulf Coast Aquifer, the economy and environment of Montgomery County, and private property rights for today's constituents and for future generations. Therefore, the umbrella goal for the District, to which all other goals in this management plan are linked, is to manage the groundwater resources so that, in the near future, the amount of groundwater produced from the Gulf Coast Aquifer is no more than the average annual effective recharge (64,000 ac/ft/yr) to the Gulf Coast Aquifer System. Only upon achievement of this equilibrium will the water resources for Montgomery County be managed on a truly sustainable basis.

In order to achieve sustainability in the use of the Gulf Coast Aquifer in Montgomery County, the District has adopted Phase II (B) of the District Regulatory Plan (DRP). The DRP Phase II (B) is designed to provide the actual regulatory requirements for achieving a long-term sustainable rate of groundwater production within Montgomery County—beginning with an initial groundwater reduction and conversion effort that is required to be met by 2016. As part of those requirements, Phase II (B) requires each Large-Volume Groundwater User (those using 10 million gallons per year and above) ("LVGU") in the District to submit a Groundwater Reduction Plan ("GRP"), either

individually or jointly with other LVGUs. It also establishes regulatory milestones designed to allow for the initial phase of conversion from groundwater to an alternative water source, generally consistent with the underlying conversion assumptions set out in Phases I and II (A) of the DRP.

The primary purpose of a District Management Plan is to develop goals, management objectives, and performance standards that, when successfully implemented, will work together to achieve the adopted Desired Future Conditions ("DFCs") for a district. In this management plan, the District's second management plan update, Goals Two through Eight directly and/or indirectly support Goal One.

## OBJECTIVE 1.1

Soon after creation, the District committed to managing water in the Gulf Coast Aquifer on a sustainable basis, and it remains equally committed to this management principle today.

This commitment is reflected in this updated District Management Plan. The sustainable yield of the Gulf Coast Aquifer is thus an important regulatory marker for the District.

The District's permitting program allows the District to track water use and water levels in the Gulf Coast Aquifer. It also provides for the major funding source for the operations of the District, allowing it to continue to monitor the Gulf Coast Aquifer, to routinely participate in the development of the ever improving science of the Gulf Coast Aquifer, both specific to Montgomery County and as necessary on a regional basis, to introduce new technologies to acquire data, and to educate the public about water conservation and the need for alternative water supplies.

It is the objective of the District to provide a permitting process that is straightforward, transparent, and easy for the permit-holder to access through the Internet. The District Board

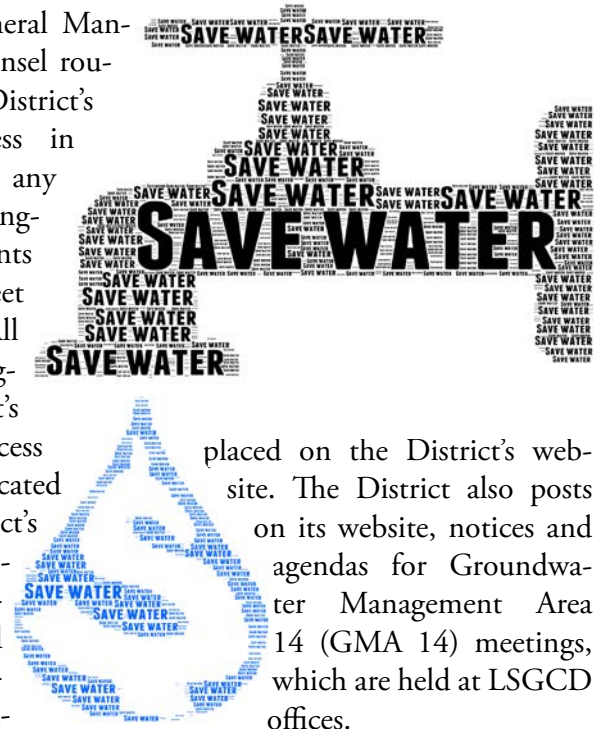
of Directors, General Manager, and legal counsel routinely review the District's permitting process in order to identify any procedural changes or amendments necessary to meet this objective. All substantive changes to the District's permitting process will be communicated through the District's website throughout any rulemaking process and will be summarized in the Annual Report submitted by the General Manager to the Board of Directors of the District.

### PERFORMANCE STANDARD 1.1

Draft rules, public meeting and hearing announcements, and available supporting materials will be included prior to rulemaking activities by the District on the District's website at [lonestargcd.org](http://lonestargcd.org).

### STATUS

All postings, notices, and meeting announcements were



placed on the District's website. The District also posts on its website, notices and agendas for Groundwater Management Area 14 (GMA 14) meetings, which are held at LSGCD offices.

### PERFORMANCE STANDARD 1.2

A summary of any amendments to District rules that are adopted throughout the calendar year will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

Following a multi-year planning process which led up to a number of formal rule changes in 2015, the board determined that no rule amendments were necessary in 2017.



The process for joint-planning by Groundwater Conservation Districts (GCDs) in Groundwater Management Areas (GMAs) was originally established by House Bill 1763 in 2005 and substantially amended by Senate Bill 660 in 2011. One of the primary objectives of GMAs is to determine “desired future conditions” (DFCs) for relevant aquifers locat-

ed within each GMA. Desired future conditions are defined as the desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a GMA at one or more specified future times as defined by participating GCDs within a GMA as part of the joint-planning process. There are 16 GMAs in Texas, and Montgomery County is in GMA

14. Currently, Lone Star GCD’s General Manager, Kathy Turner Jones, serves as the GMA 14 chairman. There are five GCDs in GMA 14 representing 13 of the 21 counties in GMA 14. Three other counties are represented by subsidence districts; five counties are not represented by any type of district. The current, five-year joint-planning cycle will be concluded in early 2016.

## MILE MARKERS

### May 27, 2015

- Consideration and approval of DFC option resulting from HAGM Run #2 as a candidate for adoption as a proposed DFC to be further reviewed in consideration of the nine statutory factors listed in Texas Water Code Section 36.108(1-9) and in accordance with Section 3.04 of the administrative procedures adopted by GMA 14.

### June 24, 2015

- Consideration and approval of DFC option resulting from HAGM Run #2 for the Gulf Coast Aquifer System and from published TWDB GAM Runs for other relevant aquifers in GMA 14 as the proposed DFCs in accordance with Texas Water Code Section 36.108 (d) and (d-2) and in accordance with Section 3.05 of the administrative procedures adopted by GMA 14.

### July 2, 2015

- Information considered by GMA 14 throughout current round of joint planning was distributed and made available to GCDs in GMA 14 and on the Lone Star GCD webpage for public review.

### July 6—October 3, 2015

- The 90-day public comment period for proposed DFCs occurred. Each GCD held a public hearing on the proposed DFCs relevant to the individual GCD in accordance with requirements included in Texas Water Code Section 36.108 (d-2). During the public comment period, each GCD made available in the GCD office a copy of the proposed DFCs and all supporting materials such as documentation of factors considered under Texas Water Code Section 36.108 (d) and the groundwater availability model results.

### October 4, 2015

- After public hearing, each GCD compiled a summary of relevant comments received along with suggested revisions to proposed DFCs and basis for the revisions.

### October 28, 2015

- GMA 14 meeting for District Representatives to consider summary reports submitted by each of the GCDs in GMA 14 and consider any proposals for alternative DFCs. After agreement to a few editorial and non-substantive revisions, GMA 14 District Representatives directed contracted consultants to prepare a draft Explanatory Report for review and comment by the GMA 14 District Representatives.

### January 2, 2016

- Draft Explanatory Report provided to GMA 14 District Representatives for review and comment.

### April 29, 2016

- In accordance with the requirements of Chapter 551, Government Code, desired future conditions were adopted by two-thirds vote of all GCDs in GMA 14.

### July 12, 2016

- TWDB determines explanatory report and other materials submitted administratively complete.

### August 9, 2016

- LSGCD board adopts DFCs for Gulf Coast Aquifer that apply to LSGCD.

### December 15, 2016

- TWDB completes execution of the Northern Gulf Coast GAM to calculate estimates of modeled available groundwater for GMA 14.

### December 8, 2017

- GMA 14 met to begin working forward to accomplish state mandates to support development of DFCs for the third round of joint planning as required by Texas Water Code Section 36.108.

## *GOAL 2: PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER*

Since the District’s creation in 2001, the District has operated on the core principle (or goal) that groundwater should be used as efficiently as possible for beneficial purposes. In order to achieve this goal, the District maintains a qualified staff to assist water users in protecting, preserving, and conserving groundwater resources.

The board of directors has in the past and continues today to base its decisions on the

best data available to treat all water users as equitably as possible. Once data is collected, the District utilizes a wide variety of forums to provide important information to water users throughout the District so that sound decisions regarding the efficient use of groundwater can be made. The following management objectives and performance standards have been developed and adopted to ensure the efficient use of groundwater.

### **OBJECTIVE 2.1**

Each year, the District will require all new exempt or permitted wells that are constructed within the boundaries of the District to be registered or permitted with the District in accordance with the District Rules.

### **PERFORMANCE STANDARD 2.1**

The number of exempt wells registered and non-exempt wells permitted by the District for the year will be incorporated into the Annual Report submitted by the general manager to the board of directors of the District.

### **STATUS**

To demonstrate completion of Performance Standard 2.1, the number of exempt and permitted (non-exempt) wells registered or permitted by the District for 2017 is provided in Table 1.

**TABLE 1: NUMBER OF EXEMPT AND PERMITTED WELLS REGISTERED OR PERMITTED BY THE DISTRICT FOR 2017**

Number of Exempt Wells Registered.....	424
Number of Non-Exempt Wells Permitted.....	57
Number of Non-Exempt Catahoula Wells Permitted.....	0
<b>TOTAL.....</b>	<b>481</b>

**TABLE 2: NUMBER AND TYPE OF APPLICATIONS FOR THE PERMITTED USE OF GROUNDWATER RECEIVED IN 2017**

Amendment to an Existing Operating Permit or Historical Use Permit Application* .....	77
New Operating Permits**.....	39
Amendment to an Existing Alternative Water Source Permit*.....	2
New Alternative Water Source Permit**.....	0
<b>TOTAL.....</b>	<b>118</b>

\*Applications for Permit Amendments may not reference a specific well

\*\*Applications for new operating permits may include more than one well



## OBJECTIVE 2.2

The District will work to ensure the efficient use of groundwater by maintaining qualified staff and technical consultants necessary to execute and maintain the District’s well registration and permitting system. This effort includes the timely processing and technical reviews of permit applications. Each year, the District will regulate the production of groundwater by maintaining a system of permitting the use and production of groundwater within the boundaries of the District in accordance with the District Rules.

### PERFORMANCE

#### STANDARD 2.2

Each year the District will accept, process, and review applications for the permitted use of groundwater in the District in accordance with the permitting process established by District Rules. The number and type of applications made for the permitted use of groundwater in the District and the number and type of permits issued by the District will be included in the Annual Report submitted by the general manager to the board of directors of the District.

**TABLE 3: NUMBER OF OPERATING PERMITS OR PERMIT AMENDMENTS ISSUED AND ADMINISTRATIVE DISPOSITION OF APPLICATIONS/PERMITS MADE BY THE DISTRICT IN 2017**

Applications Approved as Submitted.....	101
Applications Approved as Amended .....	17
Applications or Permits Expired Due to inaction by Applicant or Permittee.....	0
Applications Approved w/ Conditions .....	0
Applications Denied.....	0
<b>TOTAL .....</b>	<b>118</b>

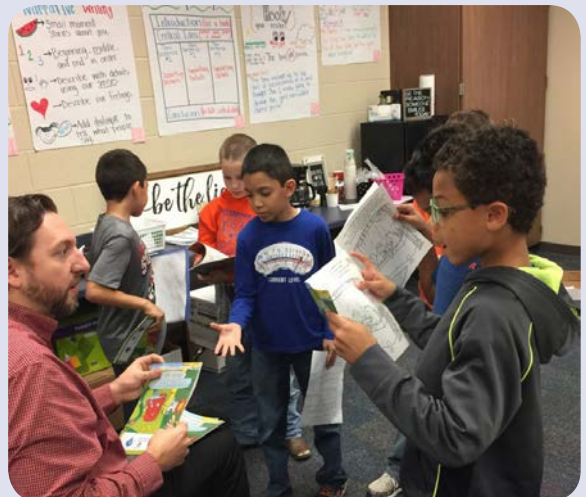
**TABLE 4: PRIMARY USE OF WATER ON PERMITS APPROVED IN 2017**

Industrial .....	13
Irrigation.....	23
Irrigation (Agriculture) .....	1
Public Supply/Commercial .....	44
Public Water Supply (PWS) .....	37
Other .....	0
<b>TOTAL .....</b>	<b>118</b>

### STATUS

The number and type of applications referred to in Performance Standard 2.2 are included in Table 2 (previous page), Table 3, and Table 4.

# 2017 PUBLIC OUTREACH





Public outreach is critical to encouraging conservation, and although it's impossible to verify the number of gallons saved due to these activities, the District is able to report that, collectively, for all speaking engagements, tours, and events staff directly interacted with thousands of people in Montgomery County. Below is a summary of public interaction opportunities in which staff was involved:

## SPEAKING ENGAGEMENTS:

- Leadership Montgomery County Infrastructure Day
- Local Working Group/Conservation Planning Meeting
- LSGCD Stakeholder Advisory Committee Meeting
- Lone Star College - Tomball Campus
- 6th Annual Gulf Coast Water Conservation Symposium
- HARC/USGS Presentation regarding groundwater subsidence studies
- Rice University - Engineering Design Course (simulated role as client)
- Smarter About Water Seminar

## EVENTS & EDUCATIONAL OUTREACH:

- Vogel Intermediate Mobile Lab visit
- Boy Scout troop Mobile Lab visit
- Texas Wildlife and Woodlands Expo
- Montgomery County Fair Kids Day
- Montgomery Intermediate Mobile Lab visit
- Earth Day Rain Harvesting Demos at Conroe & Woodlands Home Depots
- Conroe Kidzfest
- Texas 4-H Water Ambassadors Program sponsor
- Co-hosted Water Well Owner Training event
- Woodlands Landscaping Solutions
- Splendora Jr. High Mobile Lab visit
- Ford Elementary FIRST LEGO League visit
- Patterson Elementary FIRST LEGO League visit
- Cannan Elementary FIRST LEGO League visit



George Hawkins, CEO & General Manager of DC Water, served as the keynote speaker at the 6th Annual Gulf Coast Water Conservation Symposium.



In this Jan. 24, 2017 photo, on behalf of the 2014 Leadership Montgomery County class's rainwater harvesting project sponsored by LSGCD, State Rep. Will Metcalf, pictured center, accepts the Texas Water Development Board's All-Star Rain Catcher Award.



James Ridgway, Jr. presents at a Lone Star College Environmental Science class.

**GOAL 3: CONTROLLING AND  
PREVENTING WASTE OF GROUNDWATER**

As with Goal 2, the District also constantly strives to prevent the waste of water resources in Montgomery County. The prevention of waste of groundwater is one of the core responsibilities for groundwater conservation districts, dating back to the original legislation authorizing the creation of groundwater conservation districts in 1949 (House Bill 162). The District works to control and prevent the waste of groundwater through the adopted District Rules and Regulatory Plan.

To this end, the District has developed standard usage numbers for the majority of use categories represented by District permits. Each request for a new permit or a permit amendment is scrutinized based on these standard usage factors. For wells providing make-up water to impoundments, the District maintains records of the amount of evaporation measured by the San Jacinto River Authority

at Lake Conroe. Permit amendments are only allowed to use the measured evaporation rate plus 10 percent for losses through the bottom and sides of the impoundment. Similarly, the District maintains records of evapotranspiration rates to guide permit amendment requests for irrigation water. Standards are also applied to single and multi-family residential usage as well as commercial usage. Requests for water in excess of the standards for these latter uses must provide additional justification for these requests.

As a practical matter, it is sometimes difficult to differentiate Goal 3 from Goal 2. For example, certain objectives such as Objective 2.1 and Objective 2.2 could also be viewed as strategies to prevent and control the waste of groundwater, in addition to the stated goal of providing the most efficient use of groundwater.

**OBJECTIVE 3.1**

In order to increase public awareness of the need to control and prevent the waste of groundwater in Montgomery County, the District operates a waste prevention outreach strategy. This outreach strategy currently focuses on enhancing the use of the District's website to provide resources applicable to the prevention of waste of groundwater. The District website provides a routinely updated link containing a Best Management Practices Guide

(published by the Texas Water Advisory Council in partnership with the TWDB). The District will work to identify outreach opportunities with regional and local water providers so as to increase public awareness for the prevention of groundwater waste.

**PERFORMANCE  
STANDARD 3.1**

The District provides and will routinely update the link on the District's website to Best Management Practices, which includes

helpful tips to control and prevent the waste of groundwater.

**STATUS**

The District has maintained a link on its website to the most recent version of the Best Management Practices Guide by the Texas Water Advisory Council.

Additional helpful links on conservation are also available, including Best Management Practice mini-guides specific to Agriculture, Commercial and Institutional, Industrial, Municipal, and Wholesale.



## OBJECTIVE 3.2

Each year, the District will make an evaluation of the District rules to determine whether any amendments are recommended to decrease the amount of waste of groundwater within the District.

### PERFORMANCE STANDARD 3.2

The District will include a discussion of the annual evaluation of the District Rules and the determination of whether any amendments to the rules are recommended to prevent the waste of groundwater in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

The board and staff of the District have had numerous discussions in 2017 regarding potential changes to the District Rules, and have discussed such potential changes with a number of stakeholders in the District. While no rules amendments were made in 2017 and no recommendations for rules amendments are made at this time, the District plans to continue discussions and evaluation of possible amendments to the District Rules and District Regulatory Plan in 2018 that will promote the beneficial use and the avoidance of waste of groundwater.

## OBJECTIVE 3.3

Each year, the District will apply a water use fee structure to the permitted use of groundwater in the District to encourage the elimination and reduction of waste of groundwater.

### PERFORMANCE STANDARD 3.3

Each year, with the exception of wells exempt from permitting, the District will apply a water use fee to the permitted use of groundwater in the District pursuant to District Rules. The amount of fees generated by the water use fee structure and the amount of water used for each type of permitted use of groundwater will be included in the Annual Report submitted by the general manager to the board of directors of the District.

### STATUS

See tables 5 and 6.

**TABLE 5: THE AMOUNT OF WATER USE FEES GENERATED BY THE DISTRICT IN 2017**

Water Use Type	Permitted Amount	Fee Rate	Fee Amount
*HUP / Operating Permits	30,806,582,869 gallons	\$0.075/1,000 gallons	\$2,310,493.72
Water Subject to Transportation Fee	21,889,990 gallons	\$0.0375/1,000 gallons	\$820.87
AG Permits/Applications	526,820,488 gallons	\$1.00 per acre foot	\$1,616.75
Catahoula AWS Production Permits	2,664,740,000 gallons	\$0.06/1,000 gallons	\$159,884.40
<b>Total</b>	<b>34,020,033,347 gallons</b>		<b>\$2,472,815.74</b>

\*May include water transported out of the District but not subject to transportation

**TABLE 6: AMOUNT OF WATER REPORTED TO DISTRICT AS PUMPED FOR EACH TYPE OF PERMITTED GROUNDWATER USE**

Commercial .....	74,684,463	Public Supply (PWS).....	16,197,920,172
Industrial.....	418,269,125	*AWS-CRAF.....	1,407,062,000
Irrigation.....	732,518,184	<b>**Total .....</b>	<b>19,045,532,145</b>
Irrigation (Agriculture).....	134,519,749	<b>Grand Total.....</b>	<b>17,638,470,145</b>
Public Supply .....	80,558,452		

\*AWS-Catahoula Restricted Aquifer Formation | \*\*Data received as of March 7, 2018. The reported pumping for 2017 is incomplete due to incomplete reporting by a small number of permittees | † Less AWS Pumping

# Timeline of Recent District Rule Changes

## **October 14, 2014.....Rulemaking Hearing**

- Hearing received continuance to November 11, 2014. Public had until October 21, 2014 to provide additional comments.

## **November 11, 2014 ...Regular Board Meeting**

- *Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014* — Legal Counsel updates; public comment received; hearing received continuance to December 9, 2014.

## **November 18, 2014 .....Public Workshop**

- Public workshop on proposed amendments to district rules and district regulatory plan.

## **December 9, 2014.....Regular Board Meeting**

- *Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014* — Legal Counsel updates; public comment received; hearing received continuance to January 13, 2015.

## **January 13, 2015 .....Regular Board Meeting**

- *Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014* — Legal Counsel updates; public comment received; hearing received continuance.

## **January 28, 2015 .....Public Workshop**

- Public workshop on proposed amendments to district rules and district regulatory plan.

## **April 14, 2015.....Regular Board Meeting**

- *Rules Development and Bylaws Committee report* — Board unanimously voted to permanently table proposed rules relating to well spacing and tract size.

## **May 12, 2015 ..... Notice of Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014**

- Board unanimously voted to delay a vote on proposed amendments to the District Rules and Phase II(B) of the District Regulatory Plan until a proposed advisory committee had had an opportunity to meet, discuss items presented. Board unanimously voted to continue hearing on June 9, 2015.

## **June 9, 2015..... Notice of Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014**

- Legal Counsel updates; public comment received; Hearing received continuance to July 14, 2015.

## **July 14, 2015..... Notice of Continuance of Public Hearing on Proposed Amendments to District Rules and District Regulatory Plan from October 14, 2014**

- Legal Counsel updates; public comment received; Motion passed to approve amendments to District Rules and Phase II(B) of the District Regulatory Plan.

## **November 10, 2015 ...Regular Board Meeting**

- *Rules Development and Bylaws Committee report* — The committee recommended proposed amendments to District Rules and District Regulatory Plan.

## **December 8, 2015.....Rulemaking Hearing**

- Legal Counsel updates; public comment received; Motion passed to approve amendments to District Rules and Phase II(B) of the District Regulatory Plan.

**GOAL 4: CONTROLLING AND PREVENTING SUBSIDENCE**

**S**ubsidence is geologic term used to describe the sinking of the land surface. Subsidence may occur as a result of natural causes or from man-induced or anthropogenic causes. Subsidence, especially in low lying coastal areas may cause significant damage due to flooding and also structural damage to roads and buildings.

Subsidence in the Gulf Coast region has been caused by removal of oil and gas minerals as well as groundwater from the subsurface. Subsidence may also result from the removal of other minerals in the subsurface such as salt and sulfur. This is because these fluids are pressurized and, therefore, when naturally occurring, act to hold up the loose-

ly consolidated sedimentary particles in the subsurface (clays, silts, and sands). Due to the inelastic nature of the sediments, in particular the clays, in areas where subsidence occurs, the subsidence is permanent. Flooding resulting from subsidence in the Harris/Galveston area has resulted in major losses to land and property over the past 50 plus years. The District, in cooperation with the Harris-Galveston Subsidence District, maintains a network of eight subsidence monitor stations to continually measure subsidence. To date, minor subsidence of approximately 0.5 foot has been measured at monitoring stations located in the southern portion of the District.

**OBJECTIVE 4.1**

Each year, the District will hold a joint conference with the Harris-Galveston Subsidence District and the Fort Bend Subsidence District focused on sharing information regarding subsidence and the control and prevention of subsidence through the regulation of groundwater production.

**PERFORMANCE**

**STANDARD 4.1**

Each year, a summary of the joint conference on subsidence issues will be included in the Annual Report submitted by the general manager to the board of directors of the District.

**STATUS**

On December 8, 2017, District staff met with Mike Turco, representing both the Harris-Galveston Subsidence District and the Ft. Bend Subsidence District, to discuss issues and share information related to the detection and prevention of subsidence in Montgomery County, including: Strategic Planning Study - Task 3; recent subsidence monitoring and GPS data processing center research led by Dr. Guoquan Wang of the University of Houston; ongoing developments related to surface water infrastructure; maintenance and repair issues related to PAM/subsidence monitoring equipment; and USGS-led

efforts related to groundwater and subsidence.

**OBJECTIVE 4.2**

The District is now participating with the Harris-Galveston Subsidence District in the collection of subsidence data from dedicated stations located in the District. Data from these subsidence monitor stations will be discussed during the joint conference described in Objective 4.1 above.

**PERFORMANCE**

**STANDARD 4.2**

Results from the subsidence monitor stations will be noted

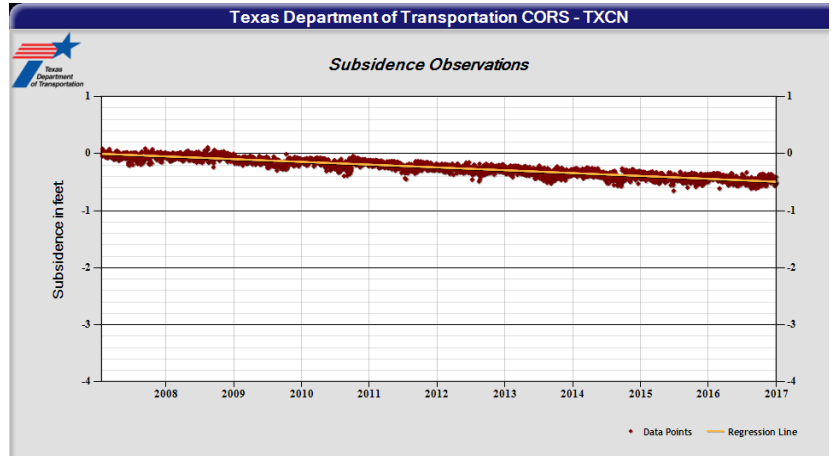
*continued on page 20*

*cont'd from page 19*

in the summary of the joint conference on subsidence described in Performance Standard 4.1 and included in the Annual Report submitted by the General Manager to the Board of Directors of the District.

## STATUS

In 2017, the District continued to collect data from the eight stations of the subsidence monitoring system. Units 12 and 13 have been in place since 2001, and are located in areas of significant groundwater pumpage and/or growth (The Woodlands and Kingwood). The data collected from these two units indicate a continuing linear decline in land surface elevation. The remaining six units were strategically placed throughout the county in 2011. In 2016, the District acquired an additional Trimble data modem. This has resulted in the doubling of the amount of data collected over



the time period. In addition to maintaining data collected from the District's units, staff also monitors a CORS (Continuously Operating Reference Station) located near the intersection of Highway 3083 and Highway 1484, on the north side of Conroe. This station is sponsored and maintained by TxDOT and the National Geodetic Survey. The data from this site also shows a continued decline in surface elevation. The results of the data collected to date from

all stations, in the form of easy-to-read graphs via Google Earth, are readily available for viewing by the public on the District's website. Above is a reproduction of the monitoring station located on the TxDOT site. In addition, there is a detailed article on the subject of subsidence on the District's website.

## LINKS:

- *Lone Star GCD's PAM units:*  
[www.lonestargcd.org/subsidence](http://www.lonestargcd.org/subsidence)
- *Harris-Galveston Subsidence District*  
[www.hgsubsidence.org](http://www.hgsubsidence.org)

**Evaluating Four Decades of USGS Groundwater and Compaction Science**  
An interactive look at water-level changes in the Chicot, Evangeline, and Jasper aquifers and land subsidence in the Houston-Galveston Region, Texas

View water-level altitudes for over 800 wells and regional contours from 1977 to 2016 as it relates to sediment compaction.

Detailed map symbology quickly and clearly conveys water-level conditions for these aquifers in an 11,000 square mile region.

Map layers can be toggled on or off from the Layers menu and data can be viewed through interactive time steps.

Map frames can be synced or used independently. A two-map view allows users to compare conditions at different time periods.

## NEW USGS WEB APP SHOWCASES AQUIFER-LEVEL CHANGE, SUBSIDENCE IN RELATION TO GROUNDWATER WITHDRAWALS

In 2017, on LSGCD's "subsidence" page, the District began linking to the USGS's new interactive web application which illustrates how groundwater, sediment compaction, and land-elevation change are related in the Houston-Galveston region. The USGS measures groundwater levels in over 700 wells in an 11-county area annually in the Houston-Galveston area while the cumulative compaction in the Chicot and Evangeline aquifers are measured at 13 extensometer stations in the 11-county area.



# WATER CONSERVATION



## DON'T LEAVE THE TAP RUNNING NEEDLESSLY

Turn off your sink faucet while washing hands, brushing teeth and scrubbing dishes and pots



## USE DUAL FLUSH TOILET

Don't flush it more than necessary

## STOP LEAKY TOILET AND DRIPPING FAUCETS

A faucet that drips at the rate of one drop per second will waste 2,700 gallons per year



## EATING LOCAL ORGANIC FOOD AND LESS MEAT

Some foods require a lot more water to produce especially foods with carbon footprint

## CHOOSE AND USE YOUR APPLIANCES WISELY

Use energy efficient appliances



## REDUCING FLOWS OF WATER

Use high efficiency faucet aerator and low flow shower head

## SET UP A RAIN BARREL

Rain barrel collects rain water from eaves to water your garden



## *GOAL 5: ADDRESSING CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES*

As demands for water supplies continue to increase, the importance of addressing groundwater and surface water management issues conjunctively will continue to increase. From its inception, the District has worked with public water suppliers, other stakeholders, and the sole surface water management entity in the District, the San Jacinto River Authority, to conduct studies and evaluate options regarding the conjunctive use and availability of

groundwater and surface water resources in the District.

These stakeholders have representation on the District's board of directors, which has helped to engender and ensure ongoing communication and coordination between the entities. This coordination eventually led to the development and adoption of the DRP, which encourages water users in the District to develop surface water supplies and other alternative water supplies through its requirements to

reduce groundwater production and develop detailed plans identifying future water demands and supplies to meet those demands. In addition, through the District's designated representative(s), the District actively participates in a number of planning forums including the regional water planning process. It is through this commitment to participation in a broad mix of water-related forums that pertinent issues related to conjunctive surface water management issues will be addressed.

### **OBJECTIVE 5.1**

Each year, the District's designated representative will participate in the regional planning process by attending at least 75 percent of the Region H – Regional Water Planning Group meetings in order to encourage the development of surface water supplies to meet the needs of water user groups in the District.

### **PERFORMANCE STANDARD 5.1**

The participation and attendance of the District's designated representative at each Region H Regional Water Planning Group will be noted in the Annual Report submitted by the general manager to the board of directors of the District.

### **STATUS**

The General Manager, as in previous years, represented Groundwater Management Area 14 as a voting member of the Region H – Regional Water Planning Group. The Assistant General Manager, Paul R. Nelson, continued to serve as the General Manag-

er's Alternate until he retired in June 2017. Thus, the District's representatives participated in the regional planning process by attending 75 percent of the Region H meetings. In addition, the General Manager continued to serve on Region H's Groundwater Supply Committee. Participation on this committee and attendance at the meetings provides the District with the opportunity to provide valuable input regarding the role of groundwater in overall regional planning and to encourage the development of surface water supplies to help meet the needs of water user groups in the District. The Texas Water Development Board shared a presentation at the beginning of 2017 introducing the fifth cycle of regional water planning in Texas. This presentation included background information related to regional and state water planning in Texas, an overview of regional water planning groups, fundamentals of water planning, and the foundation of the State Water Plan. TWDB was commended for collating 16 various water plans into one concise plan. Mid-way through the year, the committee was briefed on the new Major Water Provider (MWP) classification and presented the results of a proposed methodology for identifying potential MWPs based on intervals of projected water demand or supply allocation.

#### **REGION H WATER PLANNING GROUP ATTENDANCE**

#### **February 28, 2017**

Kathy Turner Jones,  
Paul R. Nelson

#### **June 7, 2017**

Paul R. Nelson

#### **November 1, 2017**

Kathy Turner Jones

#### **December 6, 2017**

Kathy Turner Jones

## GOAL 6: ADDRESSING NATURAL RESOURCE ISSUES

The District understands the important nexus between water resources and natural resources. The exploration and production of natural resources such as oil and gas in Montgomery County clearly illustrate this nexus.

These activities, along with related issues

such as waste disposal utilizing underground injection wells clearly represent potential management issues for the District. Improperly plugged oil and gas wells may provide a conduit for various hydrocarbon and drilling fluids to potentially migrate and contaminate groundwater resources in the District.

### OBJECTIVE 6.1

In order to monitor, as appropriate, waste injection activities associated with the exploration and production of oil and gas in Montgomery County, the District will monitor permit applications and permit amendment applications for Class II injection wells filed with the Railroad Commission of Texas and Class I and Class V injection well permit applications and permit amendment applications filed with the Texas Commission on Environmental Quality. District staff will review these notices and brief the Board of Directors as appropriate. A summary of injection well permit activity and any actions taken by the District in response will be included in the Annual Report submitted by the General Manager to the Board of Directors of the District.

### PERFORMANCE

#### STANDARD 6.1

Beginning with the 2014 Annual Report, a summary of injection well permit activity at the Railroad Commission of Texas and the Texas Commission on Environmental Quality along with any actions taken by the District in response will be included in the Annual Report submitted by the General Manager to the Board of Directors of the District.

### STATUS

On September 6, 2017, the District received a copy of an application to amend an existing injection well's permit which was filed by Denbury Onshore with the Railroad Commission of Texas (RRC). The District's legal counsel identified several areas of concern and forwarded

to the District's technical consultant. On September 7, 2017, the following day, the technical consultant confirmed that the application was missing substantial, relevant information. Shortly thereafter, the District submitted an official protest to the application.

The injection well in the application was drilled in 1934, and is located in the Conroe oil field. Upon further technical review, concerns regarding the age of the well and potential inadequate cement in the well to protect against groundwater endangerment were also identified.

After ongoing communication between the applicant and LSGCD, along with the completion and submittal of various testing results, the District withdrew its protest on January 18, 2018.



**GOAL 7: ADDRESSING DROUGHT CONDITIONS****OBJECTIVE 7.1**

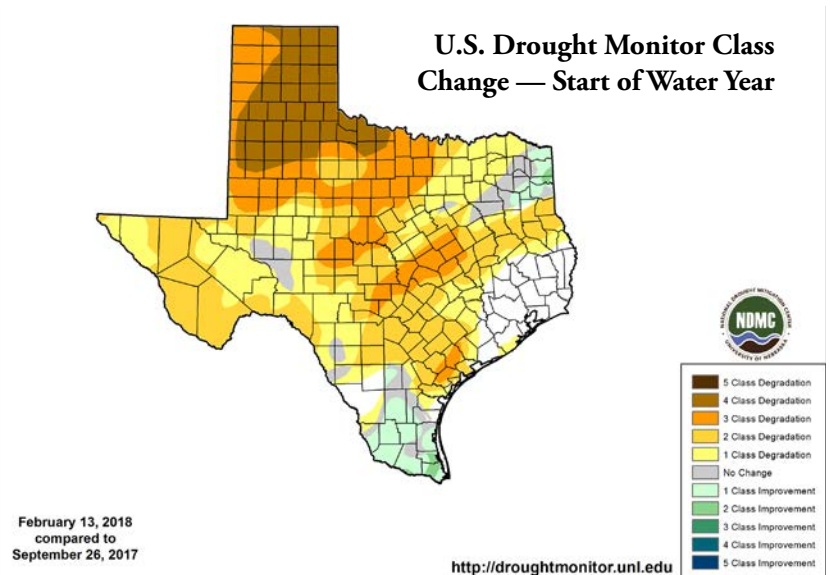
Recurring drought conditions that climaxed in 2011 continue to serve as a reminder of how dependent we are on precipitation. Droughts occur and reoccur in the area, as do cycles of above average precipitation. A well-informed public can best respond to developing drought conditions by adopting best management practices appropriate for drought conditions.

**PERFORMANCE****STANDARD 7.1**

An important objective of the District is to provide ongoing and relevant drought-related meteorological information. Beginning in 2014, the District will make available through the District's website easily accessible drought information with an emphasis on developing droughts and on any current drought conditions. At least one of the following links will be provided: updates to the Palmer Drought Severity Index ("PDSI") map for the region, the Drought Preparedness Council Situation Report, and the TWDB Drought Page.

**STATUS**

Links to the Palmer Drought Severity Index maps and situation reports can be found on the District website.

**LOCAL PRECIPITATION**

According to precipitation data collected from the weather station located at the Conroe-North Houston Regional Airport (station ID # USW00053902), 2017's annual rainfall total equaled 58.85, the third-highest annual record in the station's history. 2016 set the second-highest record at 60.93. 2004 holds the current record at 63.34 inches. Based on the station's historic data going back to 1998, the station's average annual rainfall total equals 44.22 inches.

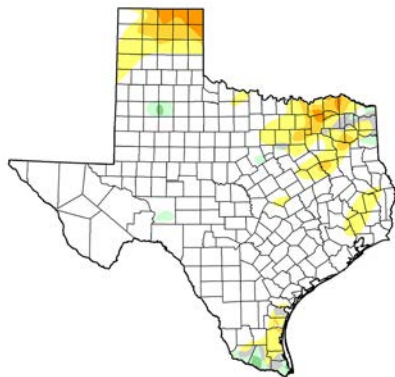
Five months of the year—January, February, June, August, and December—were over their respective monthly

averages. The remaining seven months—March, April, May, July, September, October, and November—fell under their respective monthly averages.

In August, when Hurricane Harvey hit the region, the station established a new all-time record for rainfall measured in a single month at 24.63 inches, nearly 42 percent of the year's total. Moreover, about 21 inches of that monthly total fell within a three-day span, from Aug. 26-29. The previous high for August was set in 2016 at 7.73 inches.

September was the driest month of 2017 at 0.34 inches of rainfall. It was also the driest September recorded in the station's history.





**January 3, 2017**  
(Released Thursday, Jan. 5, 2017)  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	81.50	18.50	6.29	1.97	0.04	0.00
<b>Last Week</b> 12-27-2016	75.85	24.15	6.97	1.77	0.04	0.00
<b>3 Months Ago</b> 10-04-2016	88.04	11.96	1.41	0.00	0.00	0.00
<b>Start of Calendar Year</b> 01-03-2017	81.50	18.50	6.29	1.97	0.04	0.00
<b>Start of Water Year</b> 09-27-2016	94.83	5.17	0.62	0.00	0.00	0.00
<b>One Year Ago</b> 01-05-2016	98.31	1.69	0.00	0.00	0.00	0.00

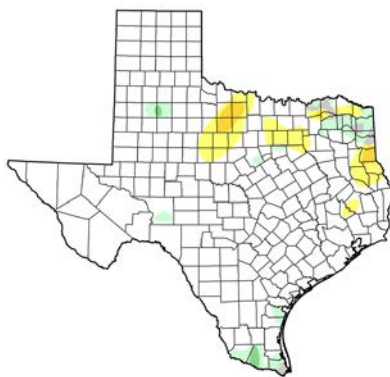
Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

David Miskus  
NOAA/NWS/NCEP/CPC



**May 2, 2017**  
(Released Thursday, May. 4, 2017)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	91.38	8.62	1.44	0.00	0.00	0.00
<b>Last Week</b> 04-25-2017	90.58	9.42	1.34	0.00	0.00	0.00
<b>3 Months Ago</b> 01-31-2017	92.34	7.66	3.40	1.08	0.01	0.00
<b>Start of Calendar Year</b> 01-03-2017	81.50	18.50	6.29	1.97	0.04	0.00
<b>Start of Water Year</b> 09-27-2016	94.83	5.17	0.62	0.00	0.00	0.00
<b>One Year Ago</b> 05-03-2016	89.33	10.67	1.08	0.00	0.00	0.00

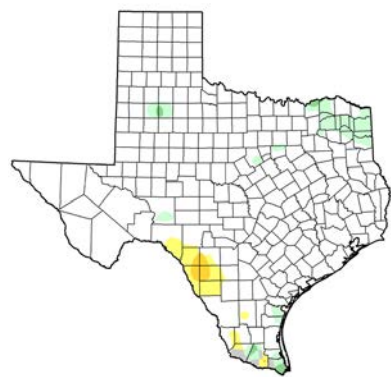
Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brian Fuchs  
National Drought Mitigation Center



**August 29, 2017**  
(Released Thursday, Aug. 31, 2017)  
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	96.14	3.86	0.87	0.00	0.00	0.00
<b>Last Week</b> 08-22-2017	86.44	13.56	2.47	0.00	0.00	0.00
<b>3 Months Ago</b> 05-30-2017	65.50	34.50	3.70	0.00	0.00	0.00
<b>Start of Calendar Year</b> 01-03-2017	81.50	18.50	6.29	1.97	0.04	0.00
<b>Start of Water Year</b> 09-27-2016	94.83	5.17	0.62	0.00	0.00	0.00
<b>One Year Ago</b> 08-30-2016	89.86	10.14	2.43	0.16	0.00	0.00

Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

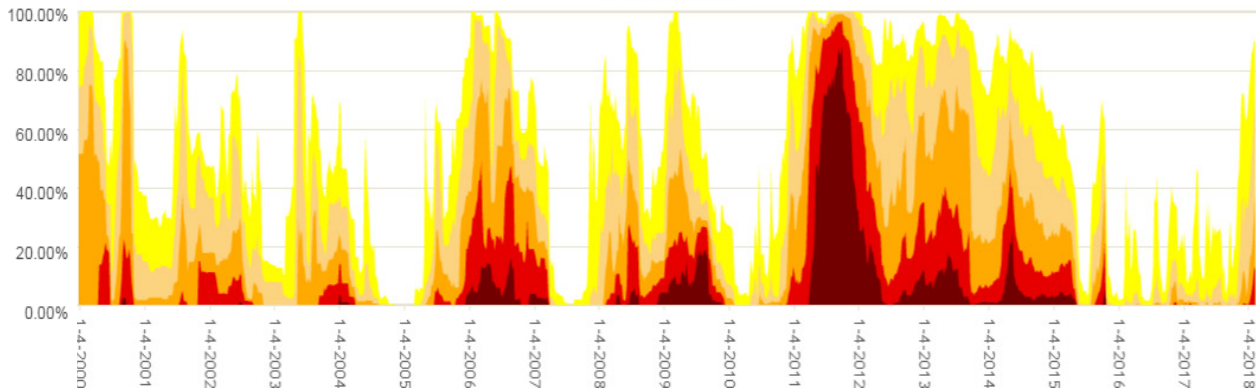
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Chris Fenimore  
NCEI/NESSDIS/NOAA



Texas Percent Area



**GOAL 8: ADDRESSING CONSERVATION, RECHARGE ENHANCEMENT, RAINWATER HARVESTING, PRECIPITATION ENHANCEMENT, OR BRUSH CONTROL WHERE APPROPRIATE AND COST EFFECTIVE**

Conservation and rainwater harvesting have been determined to be appropriate goals for the District. As with Goals 2 and 3, the successful implementation of an effective water conservation program is a cornerstone to the efforts of the District. As part of this effort, the District is sponsoring and participating in water conservation programs such as the Gulf Coast/Montgomery County Water Efficiency Network, Water IQ, Serve Water On Request Only, and the Home Water Works.

A visit to the District's new headquarters is all that is required to realize the commitment of the District

to rainwater harvesting. The entire comprehensive water conservation demonstration facility was designed as a demonstration to the citizens of Montgomery County of the positive benefits of rainwater harvesting in reducing water consumption from the Gulf Coast Aquifer. The design and subsequent construction of the various rainwater harvesting and water conservation techniques integrated into the new District headquarters have not only caught the attention of local residents, but recently, the District was awarded the 2012 Texas Rain Catcher Award from the Texas Water Development Board for the innovation demonstrated by the de-

sign of the new comprehensive water conservation demonstration facility.

After review by the board of directors, the general manager, and the District's technical consultants, it has been determined that recharge enhancement, precipitation enhancement, and brush control are not appropriate groundwater management strategies for the District. This evaluation is based on costs of operating and maintaining these programs, lack of neighboring programs in which to participate, and probable lack of effectiveness of these programs, due to the climate, hydrogeology, and physiography of the District.

**2017 WATER EFFICIENCY NETWORK PRESENTATIONS**

**January 2017:** "85th Texas Legislative Session and Water"—Dr. Ken Kramer, Water Resources Chair, Sierra Club

**March 2017:** "Houston-Galveston Region's 2016 Basin Summary Report"—Paniz Miesen, Environmental Planner, Houston-Galveston Area Council.

**April 2017:** "Texas Water Resources Institute | Trends In Water Use Efficiency Research"—Dr. Kevin Wagner, Deputy Director of Engagement, Texas Water Resources Institute.

**May 2017:** "Getting Water From That Cloud—Taking Virtual Water and Making it Real"—Jonathan Kleinman, President of AIQUEOUS.

**June 2017:** "Water Rates and Conservation"—William (Bill) Hoffman, Jr., P.E.

**July 2017:** "Water-Level Altitudes and Changes in Houston-Galveston Region and Montgomery County; the Scientific Story of Groundwater-Levels, Long-term Changes, and Subsidence"—Sachin Shah, Chief of Hydrologic Studies and Research, and Jason Ramage, Hydrologist, USGS.

**September 2017:** "Soil: Your Ultimate Water Reservoir - Tapping The Potential"—John Ferguson, Owner of Nature's Way Resources

**October 2017:** "Galveston Bay: How's it Doing and What Can You Do?"—Sarah Gossett, Water Quality Manager, Galveston Bay Foundation.

**OBJECTIVE 8.1**

The District seeks to promote water conservation through an active water conservation awareness program. As part of this program, the District will maintain links to recognized water conservation awareness programs such as the Gulf Coast/Montgomery County Water Efficiency Network, Water IQ, Serve Water On Request Only, and the Home Water Works programs on the District's website.

**PERFORMANCE****STANDARD 8.1**

Links to at least one of the water conservation awareness programs such as the Gulf Coast/Montgomery County Water Efficiency Network, Water IQ, Serve Water On Request Only, and the Home Water Works programs will be provided on the District's website and noted in the Annual Report submitted by the general manager to the board of directors of the District.

**STATUS**

The Lone Star GCD website contains valuable conservation links as well as references to outside expert resources. Internally, there is a conservation page displayed prominently on the site's main menu, which contains practical information on ways to conserve water at home, both

indoors and out. Also on this page, there are links to outside resources, including the Texas AgriLife Earth Kind Plant Selector (native plant resource), Gulf Coast/ Water Efficiency Network, Water IQ, Serve Water on Request Campaign and the Home Water Works website. Many of these resources, in addition to others, are also located on the "Links" page for easy use.

The Gulf Coast/Montgomery County Water Efficiency Network continued to be one of the District's significant conservation/outreach efforts. This group of professionals from throughout the region meets once each month to share ideas and hear from a speaker regarding a conservation-related topic. All presentations are made available on the District's website, and the sessions themselves are livestreamed so that they can be viewed by those who cannot attend the meeting. These are made available via the District's Facebook page. A listing of speakers and topics covered in 2017 can be examined on page 26.

**OBJECTIVE 8.2**

Educational materials specific to rainwater harvesting have been developed to highlight the various water conservation techniques that are incorporated into the design of the new District headquarters. This information will be available at

the main entrance to the District headquarters for visitors to take and review for potential use in homes and businesses in Montgomery County.

**PERFORMANCE****STANDARD 8.2**

Information on the District's new headquarters and rainwater harvesting capabilities will be made available during business hours for use by visitors to the facilities. A summary of this educational opportunity will be included in the Annual Report submitted by the general manager to the board of directors of the District.

**STATUS**

The Lone Star GCD facilities serve as real-life examples of conservation at work. The general public is welcome for a visit during business hours. Upon arrival, visitors will see the arroyo (dry river bed) as they approach the lobby. The purpose of this feature is to convey any parking lot rainwater runoff into a 15,000 gallon-capacity underground tank. The majority of the roof downspouts are directed into four stand-alone, 2,500-gallon above-ground cisterns. The collected rainwater is used to irrigate the District's landscaping, which features native plants and grasses.

This award-winning system

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*continued on page 28*

*continued from page 27*

also has corresponding educational materials framed inside the District lobby, which tells the story and shows construction photos. This enables visitors to see the underground tanks which provides perspective on how much rainwater is being utilized.

Visitors to District offices do not go away empty-handed. There is an abundance of educational material about conservation, water supply, and the purpose of the District. For those interested in installing a rainwater harvesting system at their home or business, there is a rain harvesting manual available on CD as well as on LS-GCD-branded USB flash drives, which describe all types of systems, ranging from small home systems to more elaborate ones.

An additional 500-gallon rainwater harvester was added in 2017 to expand the building's total rainwater harvesting capacity.

### **OBJECTIVE 8.3**

The District has recently added an important new tool at its comprehensive water conservation demonstration facility that will collect weather data 24/7 in collaboration with Texas A&M Agrilife Extension experts. The objective of installing this new equipment is to generate an Evapotranspiration ("ET") number to help residents use their irrigation systems more efficiently by knowing the ideal

amount of water needed to sustain a healthy lawn. The District will be rolling out the information part of the new program to enable commercial and residential "users" to regulate their irrigation system controllers so that they deliver only the amount of water necessary. Current measurements of ET will be maintained on the District's website.

### **PERFORMANCE**

#### **STANDARD 8.3**

Current measurements of ET will continue to be maintained on the District's website throughout the active growing season each year and noted in the Annual Report submitted by the general manager to the board of directors of the District.

### **STATUS**

In 2017, Lone Star GCD continued to monitor weather conditions on a daily basis and post weekly landscape watering advisories on its website under the heading, "Watering Recommendations." Each week, during the irrigation season, working in conjunction with Texas A&M/Agrilife staff, the District compiles evaporation and transpiration information based on relative humidity, temperature, wind speed, and radiation levels as measured by the weather station located at its facilities. The water losses calculated are then compared to the amount of rainfall for the same

period to determine how much water should be applied to make up the difference and maintain a healthy lawn while using as little water as possible. To account for the significant variations in the amount of rainfall that occur across an area as large as Montgomery County, rainfall amounts for the previous seven days are obtained from rain gauges located throughout the county.

In 2017, three additional gauges were added to the District's weekly survey, bringing the number of gauges to thirteen. If the amount of rain in any one gauge area equals or exceeds the calculated loss for the week, the District will recommend that no water be applied for the following week. In addition to housing this information on the District's website, individuals are able to sign up to receive the watering recommendations by email each week.

The District continued publishing an interactive mapping system of the rain gauges on its website. In addition to being able to determine the amount of water that should be applied in the next week on the chart described above, the public can go to the gauge on the map that's closest to their house or business. Clicking on that gauge reveals the maximum number of inches of water that needs to be applied during the next seven days.





## FINANCIAL SUMMARY<sup>1</sup>

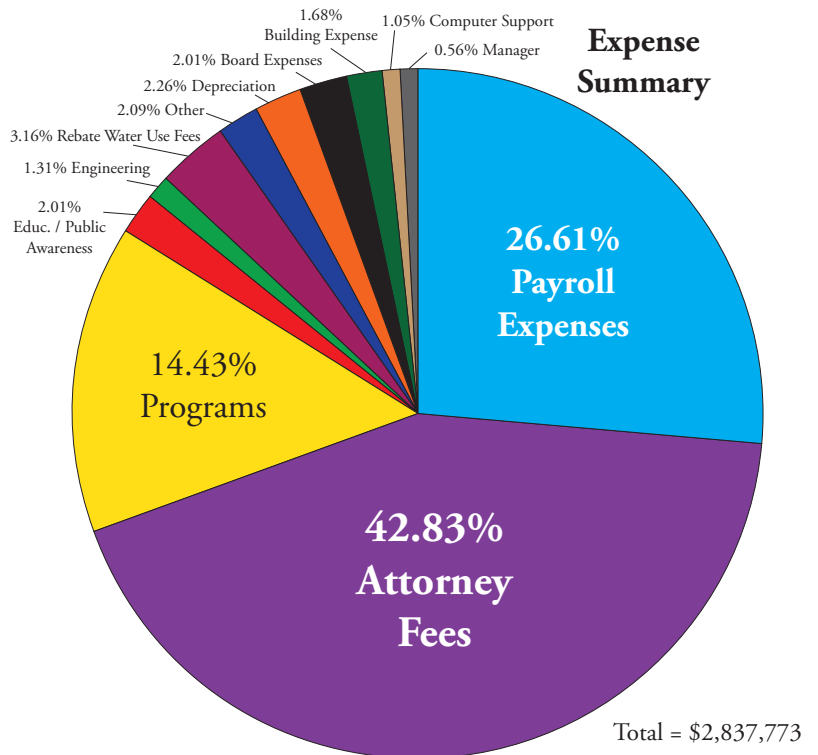
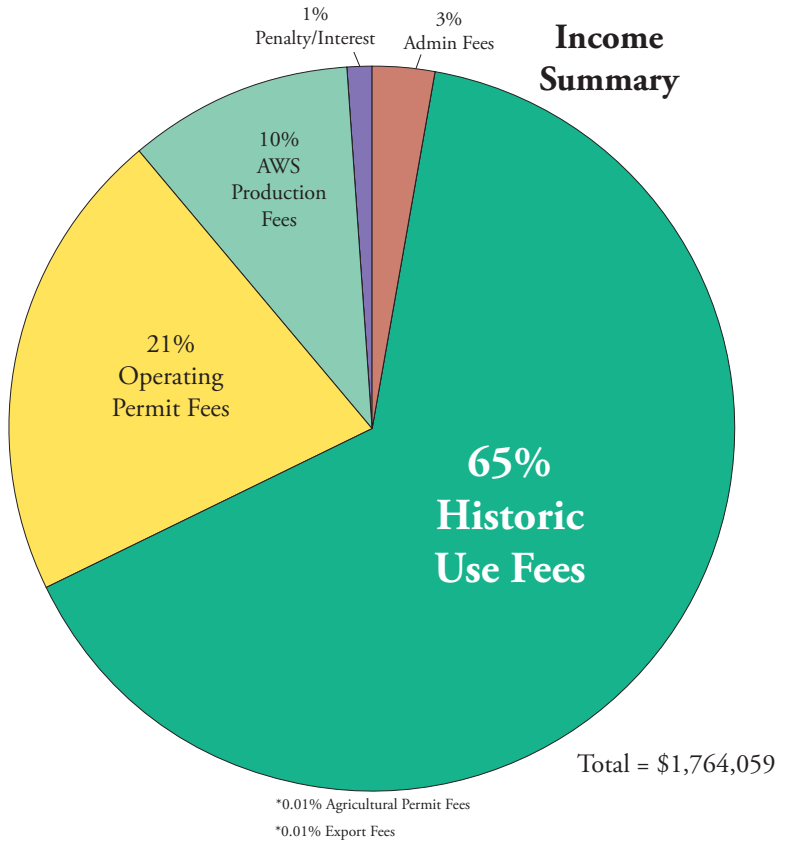
For the calendar year ending December 31, 2017, the District's total assets decreased by \$623,762 and total current and non-current liabilities increased by \$385,861. Net position decreased by \$1,073,714.

The decrease in total assets is attributable to using cash reserves in defense of a lawsuit. The District spent \$1,086,000 in litigation expenses for the year.

Total expenses for 2017 were \$582,886 greater than in 2016. Total revenue for 2017 was \$287,793 greater than in 2016. The increase in revenue is attributable to an increase in water use fees from six cents per 1,000 gallons to seven-and-a-half cents per 1,000 gallons, excluding alternative water source wells.

Net position of the District decreased 57 percent from the prior year.

<sup>1</sup>These amounts are per the unaudited financial statements for the year ended December 31, 2017; the annual audit has not been completed prior to creation of this report.



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