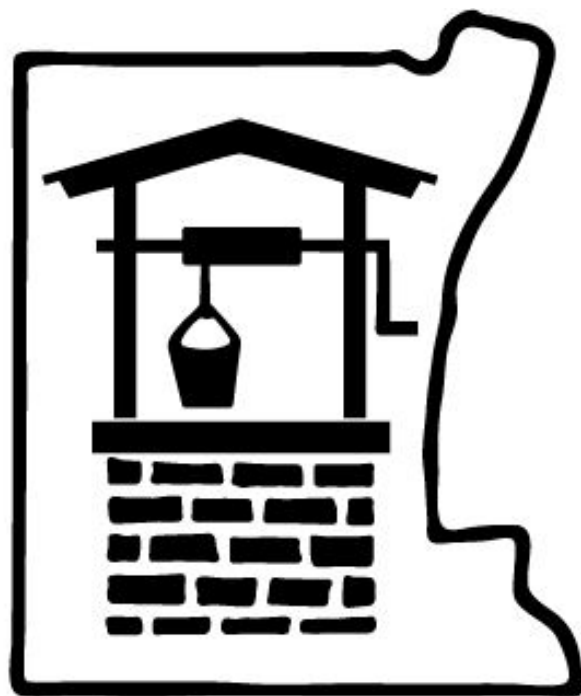


RUSK COUNTY GROUNDWATER CONSERVATION DISTRICT



DISTRICT ANNUAL REPORT 2022

SEPTEMBER 2021 TO AUGUST 2022

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CURRENT BOARD OF DIRECTORS

BOBBY BROWN – PRESIDENT

HARRY HAMILTON – VICE PRESIDENT

JOHN LANGSTON – SECRETARY/TREASURER

KEN RAGLE – DIRECTOR

SAMMY NICHOLS- DIRECTOR

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JODY WHITE - DIRECTOR

EMILY WHITWORTH – DIRECTOR

RYAN ELLIS – DIRECTOR AT LARGE

GENERAL MANAGER

ROBERT THORNTON

REPORT COMPLETED 9/2/2022

REVIEWED BY BOARD DIRECTORS

NOVEMBER 14, 2022

DISTRICT MISSION

*“THE RUSK COUNTY GROUNDWATER CONSERVATION DISTRICT’S
MISSION IS TO PRESERVE AND PROTECT THE GROUNDWATER
RESOURCES OF THE DISTRICT FOR RUSK COUNTY RESIDENTS.”*

Table of Contents

12.1.	Providing the Most Efficient Use of Groundwater	4
12.2.	Controlling and Preventing Waste of Groundwater.....	6
12.3.	Addressing Conjunctive Surface Water Management Issues	8
12.4.	Addressing Natural Resource Issues	8
12.5.	Addressing Drought Conditions	10
12.6.	Addressing Conservation, Recharge Enhancement, and Rainwater Harvesting...	11
12.7.	Addressing the Desired Future Conditions of the Groundwater Resources	13
Appendix A		13
Appendix B		25

METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS:

An annual report will be prepared and presented to the Board of Directors on District performance about achieving management goals and objectives. The presentation of this report will occur within the first quarter of the following fiscal year. The Annual Report will be prepared in a format reflective of the performance standards listed following each management objective. The District will maintain the reports on file for public inspection at the District's office upon adoption.

MANAGEMENT PLAN GOALS, OBJECTIVES & PERFORMANCE STANDARDS:

The Rusk County Groundwater Conservation District has seven (7) management objectives with fifteen (15) goals detailed in the Management Plan, Section 12, adopted November 12, 2018. These objectives and goals provide details along with the performance of the District in attaining these goals as follows:

12.1. PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER**12.1.A. MAINTAIN A WELL REGISTRATION PROCESS**

OBJECTIVE: The District will require the registration of all groundwater wells, exempt and non-exempt, new and existing, within the boundaries of the District to be registered in accordance with the District Rules.

PERFORMANCE STANDARD: The number of new and existing water wells registered with the District will be provided at the regular District Board meetings and in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

At each regularly scheduled Board meeting, Well Statistics for the month are recorded and reported to the Board. The following are well statistics for the year for new, existing, exempt, and non-exempt wells and are maintained in the District's database.

12.1.B. MAINTAIN A WELL PERMITTING PROCESS

OBJECTIVE: The District will require all new and existing non-exempt water wells within the boundaries of the District to be permitted in accordance with the District Rules.

PERFORMANCE STANDARD: The District will process applications for operating permits of all non-exempt water wells pursuant to the permitting process of the District Rules. A summary of the number of applications for permitted use of groundwater will be provided at the regular District Board meetings and in the District's Annual Report. See table below.

Annual Report 2022 - Numbers

September 1, 2021 - August 31, 2022	
Authorizations to Drill & Produce Water:	55
Authorizations to Drill Denied:	1
Total Authorizations Overall:	1976
Amended Applications:	2
Amended Applications Denied:	0
Total Amended Applications Overall:	15
Rush Applications:	9
Total Rush Applications Overall:	58
Total Registrations Issued, New Wells:	43
Total Registrations Issued, Existing Wells:	60
Total Registrations Overall:	5317
Total Operating Permits (OP) Issued, New Wells:	12
Total Operating Permits Issued, Existing Wells:	6
Total Permits OPs Issued Overall:	134
Total Operating Permits on File:	213
Transfer Inspections Completed:	2
Transfer Inspections Overall:	565
Surface Inspections Completed:	41
Surface Inspections Overall:	585
Large Diameter Wells Registered:	23
Large Diameter Wells Registered Overall:	456
Large Diameter Wells Plugged:	24
Large Diameter Wells Plugged Overall:	61
Plugged Oil and Gas Water Wells Overall:	774
Wells Plugged or Consumed in Mines Total Overall:	1358

*Overall: numbers since District or rule creation

ACTIVITY AND ACCOMPLISHMENTS:

At each regularly scheduled Board meeting, Well Statistics for the month are recorded and reported to the board which includes applications for permitted use.

To find more detail on the District managing groundwater supplies, please refer to the District's Management Plan and Rules all available to the public on the District's website, www.rcgcd.org.

See Objective 12.1.A for Activity and Accomplishments regarding District Well Statistics.

12.1.C. MAINTAIN AN ELECTRONIC DATABASE

OBJECTIVE: Maintain the District's Groundwater Well Database for registrations, permits, and groundwater production volume. The database shall include information deemed necessary by the District to enable effective monitoring and regulation of groundwater in the District.

PERFORMANCE STANDARD: The District will document all new and existing wells in the District's database. All new and existing wells documented will be included in the District's Annual Report.

PERFORMANCE STANDARD: The District will include a summary of the estimated volume of water produced in Rusk County in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

The District utilizes a web-based Database. All registrations, permits, and groundwater production volumes are accessible from the database for District use.

See Objective 12.1.A for Activity and Accomplishments regarding District Well Statistics.

See Appendix A, for Activity and Accomplishments related to documenting groundwater production.

See Appendix B, for Activity and Accomplishments related to documented new and existing wells in the District's database.

12.2. CONTROLLING AND PREVENTING WASTE OF GROUNDWATER

12.2.A. DISSEMINATE INFORMATION ON WASTE PREVENTION

OBJECTIVE: The District will provide information on an annual basis for educating the public on elimination, reduction, and prevention of the waste of groundwater. The District will use at least one of the following methods to provide information to the public annually:

- a. Distribute literature packets or brochures;
- b. Conduct public or school presentations;
- c. Sponsor an educational program or course;
- d. Provide information on the District's web site;
- e. Submit an article for publication with local papers;
- f. Present displays at public events.

PERFORMANCE STANDARD: A summary of the District's efforts to disseminate information on waste prevention will be included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

The District disseminated waste prevention and conservation literature, materials, and demonstrations to the public in the following ways:

- A. Information on conservation is found on the District's website at rcgcd.org by going to the <http://rcgcd.org/water-conservation/> link.
- B. Other disseminations through Social Media, included pointing users back to District's website:
 - a. September 2021: Facebook Posts: Drought update; 4H Water Ambassador Job Shadow
 - b. October 2021: Facebook Posts: Drought, Burn bans, Groundwater education

- c. November 2021: Facebook Posts: 4H Water Ambassador's video; Rain amounts
 - d. December 2021: Facebook Posts: Rain/cold weather, Storm potential, Drought outlook
 - e. January 2022: Facebook Posts: Rain and drought, cold temperatures.
 - f. February 2022: Facebook Posts: Cold weather pipe preps, rain, and drought
 - g. March 2022: Facebook Posts: Rain totals and drought, burn ban, severe weather threat.
 - h. April 2022: Facebook Posts: Rain and storms, rain totals, drought, Folk Art Day at Depot– GM taught elementary students about old, large diameter wells and water conservation.
 - i. May 2022: Facebook Posts: Rain totals, rain outlook, severe weather, and newly installed rain barrel.
 - j. June 2022: Facebook Posts: Rain and drought, drought outlook/drought statement/article in Henderson Daily News, and rain outlook.
 - k. July 2022: Facebook Posts: Drought update, rainfall, burn ban, updated drought statement, drought update.
 - l. August 2022: Facebook Posts: Drought, Burn ban lifted, Projected rain, Drought update.
- C. Press Release in Henderson Daily News
- a. June 2022, Drought Article
 - b. July 2022: Article on DCP Stage II for District
 - c. August 2022, District Ad showing area, Aquifer, and Directors, Tax and Budget Notice.
- D. The District maintains a native, drought tolerant landscape around the District office to serve as an example of plants that can be utilized to minimize waste and promote conservation. The landscape and practice is promoted on the District's website.
- E. The District's Website hosts several educational items available to the public. Specific topics by section on the website regarding waste prevention and conservation are as follows: Monitoring Programs, District Groundwater Geology and Groundwater Resources, Groundwater Well Education, Recharge Enhancement, Water Conservation, Youth Education Program, Groundwater Well Education, Conservation Education, and finally the District's Current Events, News, and Articles. *Total website users for the year were 2,592 down from 3,196 last FY.*
- F. The District installed a rain barrel on parking lot side in Spring 2022 to demonstrate rainwater harvesting.
- G. Donated \$500 to Texas 4-H Water Ambassadors Program in support of water education; Received notes of thanks from Ambassadors.

12.2.B. IDENTIFY WASTEFUL PRACTICES

OBJECTIVE: The District will identify wasteful practices within the boundaries of the District through the following methods:

- a. Track water loss for all water utilities within the District;
- b. Enforce District Rule 9.2.5 requiring inspection and/or plugging of oil and gas groundwater wells.

PERFORMANCE STANDARD: The District will include a summary of the total volume of water loss from water utilities in the District's Annual Report.

PERFORMANCE STANDARD: The District will include the total oil and gas groundwater wells inspected and plugged each fiscal year in the Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

Through Rule 9.2.5, continued efforts to eliminate comingling of aquifers zones of different quality and prevent waste of water from one zone to another. Abandoned, large diameter wells were inspected and plugged. This prevents contamination of the aquifer.

See Objective 12.1.A Activity and Accomplishments for oil and gas groundwater wells inspected and plugged.

See Appendix A for summary of water loss of Rusk County water utilities.

12.3. ADDRESSING CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES

12.3.A. PARTICIPATING IN THE REGIONAL WATER PLANNING PROCESS

OBJECTIVE: The District will attend at least one East Texas Regional Water Planning Group (Region I) and the Northeast Texas Regional Water Planning Group (Region D) meeting each fiscal year.

PERFORMANCE STANDARD: The District will participate in the regional planning process by attending at least one meeting of Region I and Region D meetings each fiscal year. A report will be presented at a regular board meeting of the District on conjunctive surface water issues of the appropriate Regional Water Planning Groups. Attendance of meetings for Region I and Region D will be included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

District representatives attended Regional Water Planning Group (RWPG) I meetings. Following attendance of RWPG I meetings, the District Board was briefed on the status and activities at the following regular board meeting in GM Report. The following are dates District Representatives attended and participated in the RWPG Region I meetings:

RWPG	Meeting Date	Representative
Region I	March 23, 2022	Robert Thornton
Region I	April 7, 2022	Robert Thornton

12.4. ADDRESSING NATURAL RESOURCE ISSUES

12.4.A. MONITOR WATER LEVELS

Objective: The District will manage and maintain its existing water level monitoring program. The District will monitor water levels within the District

boundaries at least annually and will be recorded in the District's database.

PERFORMANCE STANDARD: A description of the number of wells measured and the monitoring results of the year will be included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

AQUIFER MONITORING

MONTHLY: The District collects static water level readings at 16 monitor wells monthly.

QUARTERLY: The District collects static water level readings at about 50 monitor wells quarterly. As wells are plugged by owners, the District shifts its wells monitored and numbers accordingly. This data is maintained in the District's database.

REAL-TIME STATIONS: The District has four (4) real-time water level monitoring stations recorded by transducers. Data from these monitor wells is uploaded daily via satellite to the Texas Water Development Board site and is linked to the District website for real-time coverage locally.

Data is collected in the field and evaluated by depth to water from surface and is kept in the District's database. The District's quarterly average (2nd Quarter.) aquifer levels by Depth to Water are displayed in the following graph. See Appendix A, for Annual Groundwater Elevations report.

Quarterly Average Static Water Level Fluctuations



12.4.B. ADDRESS ABANDONED AND NUISANCE WELLS

OBJECTIVE: The District will encourage the plugging of abandoned and nuisance groundwater wells. The District will conduct inspections of groundwater wells within the District's boundaries to encourage proper maintenance of groundwater wells and to document abandoned and nuisance

groundwater wells that pose a risk to the District's groundwater resources.

PERFORMANCE STANDARD: A description of the number of wells inspected, the number of wells in violation, and the number of wells brought into compliance or plugged will be included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

The District promotes its Abandoned Well Program to assist and encourage well owners to cap or plug abandoned or nuisance groundwater wells. Many of these are old, large diameter wells.

The District conducts healthy well inspections of existing wells, newly drilled wells, and down-hole inspections of groundwater wells for oil and gas rig supply and exploration. This helps the District in identifying potential risks to the aquifer and those well owners by eliminating public health and safety risks of groundwater commingling and abandonment. All inspected wells and recorded and kept on file at the District Office and in the District's Database.

A description of wells identified through the District's healthy well inspection program is outlined below:

District Abandoned & Nuisance Well Prevention					
September 1, 2021 - August 31, 2022	2021-2022	2020-2021	2019-2020	2018-2019	2016-2017
Transfer Inspections Completed:	2	1	6	11	9
Surface Inspections Completed:	41	34	95	87	67
Wells sent Notice of Violation:	3	3	4	12	37
Wells brought into compliance:	3	0	4	7	39
Wells Plugged or Consumed in Mines:	12	97	102	109	137
Well Plugging Reimbursements:	0	0	0	0	4

12.5. ADDRESSING DROUGHT CONDITIONS

12.5.A. DROUGHT CONTINGENCY PLAN

OBJECTIVE: The District will implement its Drought Contingency Plan (DCP) if conditions meet the criteria listed in the plan. The District will evaluate its DCP annually to determine if any amendments are necessary and properly respond to drought conditions locally.

PERFORMANCE STANDARD: A summary of the evaluation of the District's Drought Contingency Plan and any revisions to the plan for proper response to drought conditions will be included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

The District's DCP was evaluated as required annually by the District's Board of Directors and General Manager at the June 2022 meeting. Drought conditions were evaluated with possibility

of enacting DCP due to lack of rain and higher usage during summer. Conditions monitored weekly and monthly. Stage II of DCP enacted at July 26, 2022 Board meeting. RCGCD Stage II Drought notice sent to WSCs, Henderson Daily News, posted on Web and Facebook.

12.5.B. TRACK DROUGHT CONDITIONS

OBJECTIVE: The District will monitor drought conditions using a suitable source such as the U.S. Drought Monitor or the Palmer Drought Severity Index Map.

PERFORMANCE STANDARD: Link's on the District's web page to the Palmer Drought Severity Index, U.S. Drought Monitor, and the TWDB's website on drought will be made available to the public.

PERFORMANCE STANDARD: A summary of monitored drought conditions will be provided at the regular District Board meetings and in the District's Annual Report.

PERFORMANCE STANDARD: Monthly rainfall across Rusk County is monitored through six (6) District rain gauges, and two (2) additional sites – Texas A&M at Overton & a National Weather Service site in Henderson.

ACTIVITY AND ACCOMPLISHMENTS:

Drought conditions are tracked in the District and surrounding area with Texas Drought Monitor once a month and presented at the Monthly Board meetings. Texas Drought Monitor, and the TWDB's website on drought, are made available to the public on the District's web page, <http://rcgcd.org/monitoring-programs/>. Climate Prediction Center (CPC) resources are also monitored for Drought Outlooks and El Nino/La Nina conditions.

12.6. ADDRESSING CONSERVATION, RECHARGE ENHANCEMENT, AND RAINWATER HARVESTING

12.6.A. PUBLIC EDUCATION TO EMPHASIZE WATER CONSERVATION

OBJECTIVE: In coordination with efforts in waste prevention, the District will provide information on an annual basis to promote conservation. The District will use at least one of the following methods to provide information to the public annually:

- a. Distribute literature packets or brochures;
- b. Conduct public or school presentations;
- c. Sponsor an educational program or course;
- d. Provide information on the District's web site;
- e. Submit an article for publication with local papers; and
- f. Present displays at public events.

PERFORMANCE STANDARD: A summary of the District's efforts to disseminate information on water conservation will be included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

See Objective 12.2.A for Activity and Accomplishments regarding efforts to disseminate information on water conservation. Yearly highlights: GM taught elementary students water conservation at Depot's "Folk Art Day" in April 2022. District donated \$500 to Texas 4-H Water Ambassadors Program; Received notes of thanks from Ambassadors; Numerous Facebook posts on drought and water conservation through the year, especially in Summer 2022 due to heat and lack of rainfall.

12.6.B. RECHARGE ENHANCEMENT

OBJECTIVE: To continue education on the diversity of the resource, the District will provide information relating to recharge enhancement on the District web site.

PERFORMANCE STANDARD: Information that has been provided on the District web site will be included or summarized in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

Recharge Enhancement education and external links are made available to the public on the District's web page in the Education Tab at, <http://rcgcd.org/205-2/>. This material provides information on groundwater movement and aquifer characteristics regarding recharge enhancement within Rusk County.

12.6.C. RAINWATER HARVESTING

OBJECTIVE: The District will promote rainwater harvesting by providing information about rainwater harvesting on the District web site.

PERFORMANCE STANDARD: Information on that has been provided on the District web site will be included or summarized in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

Rainwater Harvesting education and external links are made available to the public on the District's web page in the Education Tab at, <http://rcgcd.org/rain-water-harvesting/>. This material provides information for an alternative water supply, reducing stress on our area aquifers, and complexity of the unit's design. ***The District installed a rain barrel in Spring 2022 for use on the office lawn and to demonstrate how such a barrel can be incorporated into a gutter system of an office or home.***

12.7. ADDRESSING THE DESIRED FUTURE CONDITIONS OF THE GROUNDWATER RESOURCES**12.7.A. MANAGE AND MAINTAIN A WATER LEVEL MONITORING PROGRAM**

OBJECTIVE: The District will manage and maintain its existing water level monitoring program. The District will monitor water levels within the District boundaries at least annually and will be recorded in the District's database, as part of Objective 12.4.A. The District will evaluate water level trends and compare to the DFCs adopted by the District's.

PERFORMANCE STANDARD: A description of the number of wells measured and the monitoring results of the year will be included in the District Annual Report.

PERFORMANCE STANDARD: An annual comparison of water level changes to the District's DFC will be evaluated and included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

See Objective 12.4.A. Activity and Accomplishments for the District managing and maintaining its existing water level monitoring program and results.

See Appendix A for annual comparison of water level changes to the District's DFC.

12.7.B. MONITOR ESTIMATE ANNUAL PRODUCTION

OBJECTIVE: The District will estimate total annual groundwater production for each aquifer based on water use reports, estimated exempt use, and other relevant information and compare production estimates to the Managed Available Groundwater (MAG).

PERFORMANCE STANDARD: An annual comparison of total recorded and estimated annual production to the District's MAG will be evaluated and included in the District's Annual Report.

ACTIVITY AND ACCOMPLISHMENTS:

See Appendix A below for total estimated annual production compared to the MAG.

APPENDIX A**DISTRICT MAG & DFC COMPARISON & PRODUCTION REPORTING ANALYSIS 2021**



PRODUCTION REPORTING ANALYSIS WITH MAG COMPARISON AND WATER LOSS ANALYSIS 2021

**BY ROBERT THORNTON, GENERAL MANAGER
ASSISTED BY DIANA MARTINEZ, OFFICE MANAGER
MAY 25, 2022**

The Rusk County Groundwater Conservation District (District) requires reporting of groundwater production for all permit holders of non-exempt wells, mining, and oil and gas rig supply and exploration. Meters are required for groundwater production of oil and gas, mining, and permitted wells outside of agricultural and domestic usage.

The District's 2018 Management Plan requires the District to monitor estimated annual production (12.7.B.) and conduct an annual comparison of the District's water level changes to its adopted DFC (12.7.A.). This report reviews the production by type of use with comparisons to past years' statistics. *Note: The Management Plan is to be updated in 2023.*

Acronyms & Definitions

- An acre-foot is defined as the volume of one acre of surface area to a depth of one foot.
- 1 acre-foot = 325,852 liquid gallons
- a/f: acre-feet
- PWS: Public Water Supply
- GAM: Groundwater Availability Model
- MAG: Managed Available Groundwater
- GMA 11: Groundwater Management Area 11
- TCEQ: Texas Commission on Environmental Quality
- TWDB: Texas Water Development Board

PRODUCTION REPORTING STATISTICS

Overall total reports submitted for 2021 were down by one from 2020. Steam Electric had one report. Mining dropped to one. Oil and gas saw an increase. Some of the difference in overall total reports is due to how PWS reports are submitted. Sometimes multiple wells are listed on one form/report.

Reports Received				
Type	2018	2019	2020	2021
PWS Total:	87	87	88	72
Mining Total:	9	5	3	1
Oil & Gas Total:	17	14	6	22
Steam Electric Total:	1	1	1	1
Non-Ex Outside of PWS Total:	20	20	23	24
Overall Total:	134	127	121	120

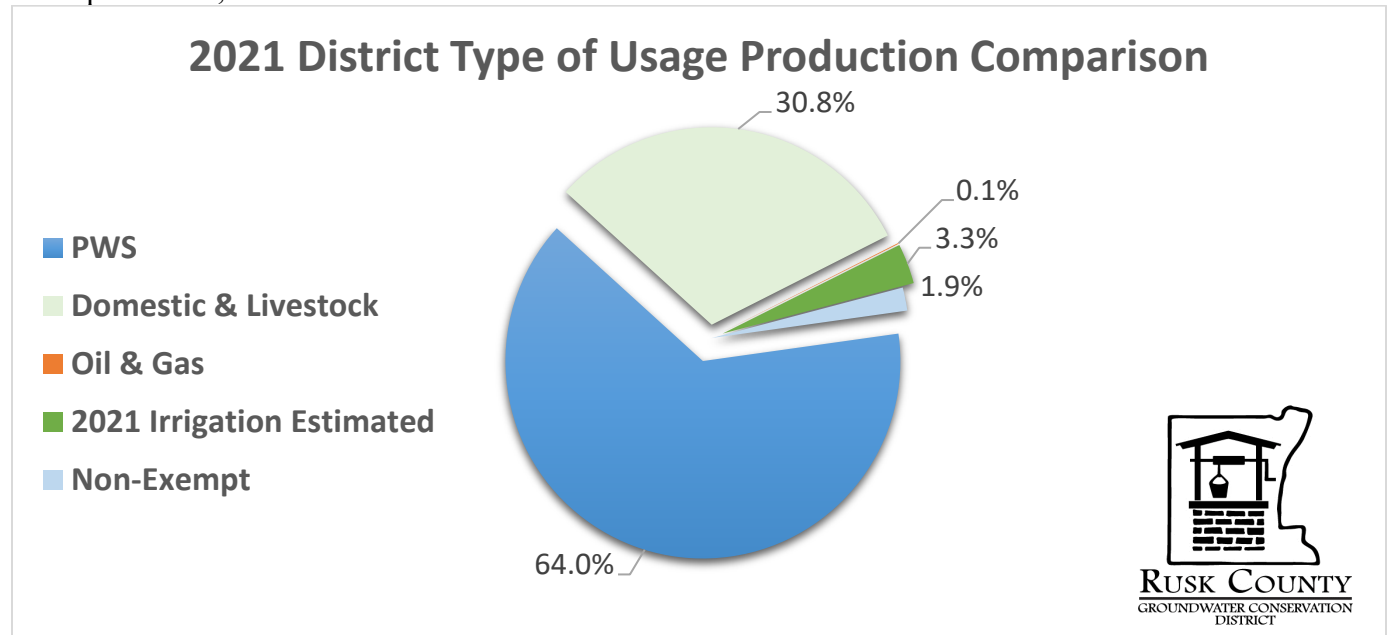
Overall Total Production increased by 236.5 a/f from 2020. The year 2021 ranks third in groundwater production for the years of 2018-2021 at 8,404.5 a/f. The largest increase in production came from PWS with 405.7 a/f. Oil and gas dropped 10.3 a/f. *Irrigation and Domestic/Livestock increased at 70 a/f and 92 a/f. The largest decrease in production came from Mining at 323.2 a/f.

Total Production by Type of Use (acre-feet per year)									Production Difference from 2020 to 2021
	2018		2019		2020		2021		
PWS:	6,015.9	66.5%	5,784.2	66.5%	4,970.3	60.9%	5,376.0	65.2%	405.7
Mining:	330.7	3.7%	58.1	0.7%	323.2	4.0%	0.0	0.0%	-323.2
Oil & Gas:	28.8	0.3%	27.2	0.3%	15.9	0.2%	5.6	0.1%	-10.3
Steam Electric:	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
Non-Exempt outside of PWS:	79.5	0.9%	126.7	1.5%	156.6	1.9%	158.9	1.9%	2.3
*Irrigation-TWDB:	173.0	1.9%	206.0	2.4%	206.0	2.5%	276.0	2.5%	70.0
Domestic & livestock-TWDB:	2,412.0	26.7%	2,496.0	28.7%	2,496.0	30.6%	2,588.0	31.0%	92.0
Overall Total:	9,039.9	100%	8,698.2	100%	8,168.0	100%	8,404.5	100%	236.5

*TWDB irrigation estimates '18-'21 *TWDB Domestic & Livestock data provided in 5-10 year intervals

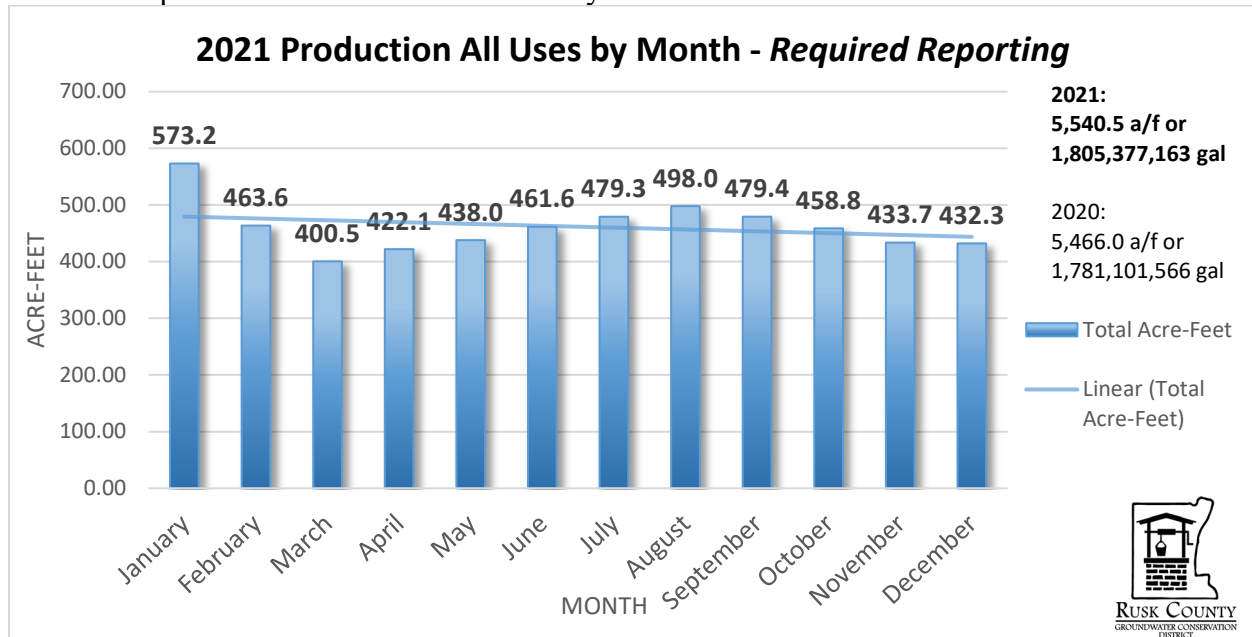
PRODUCTION BY TYPE OF USE

Production by Type of Use in Rusk County in 2021 is led by Public Water Suppliers producing 64%, Domestic & Livestock at 30.8%. Smaller amounts were seen in Irrigation at 3.3%, Non-Exempt at 1.9%, and Oil & Gas at 0.1%.



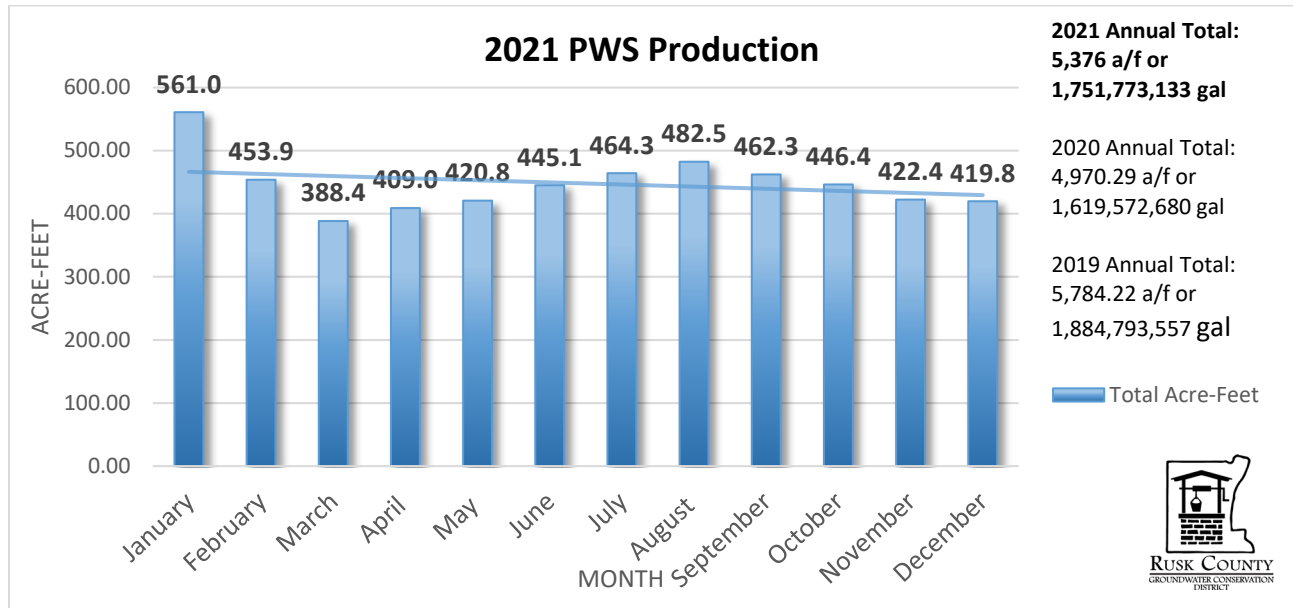
TOTAL PRODUCTION BY MONTH FOR ALL TYPES OF USE

Total Production for all Uses (Required Reporting) shows the largest month of production was August at 498 a/f and the lowest month of production being March at 400.5 a/f. There was a decrease in production toward the end of the year.

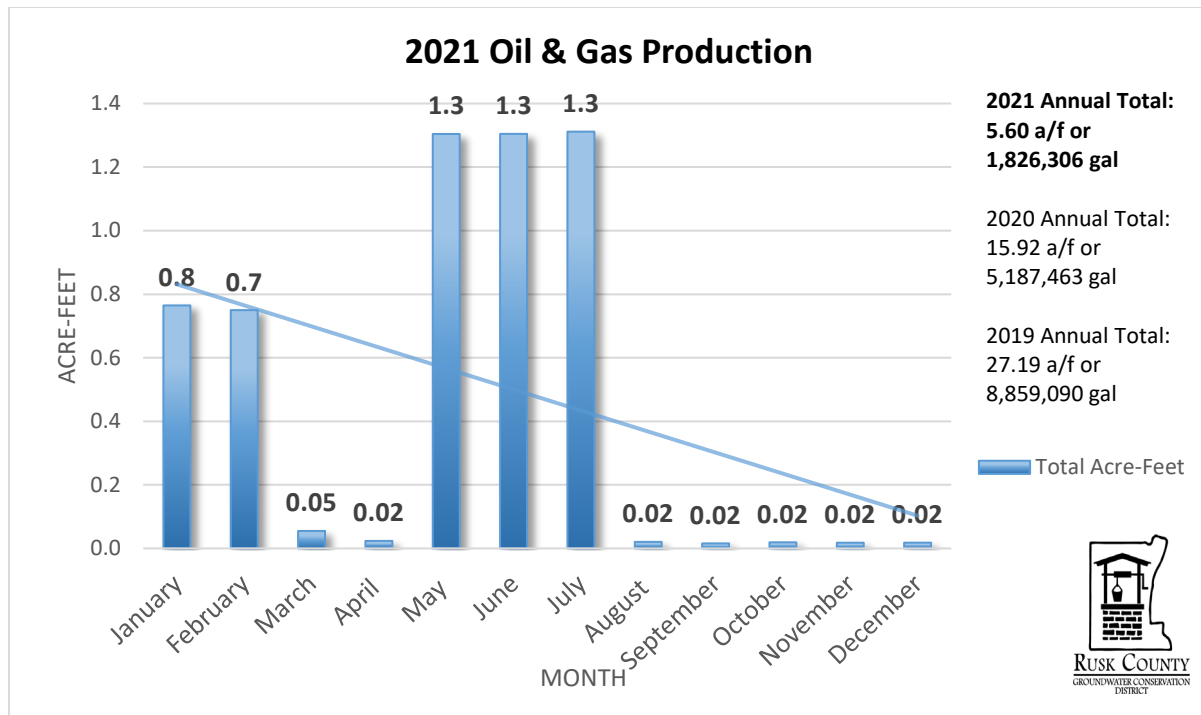


PRODUCTION BY INDIVIDUAL TYPES OF USE

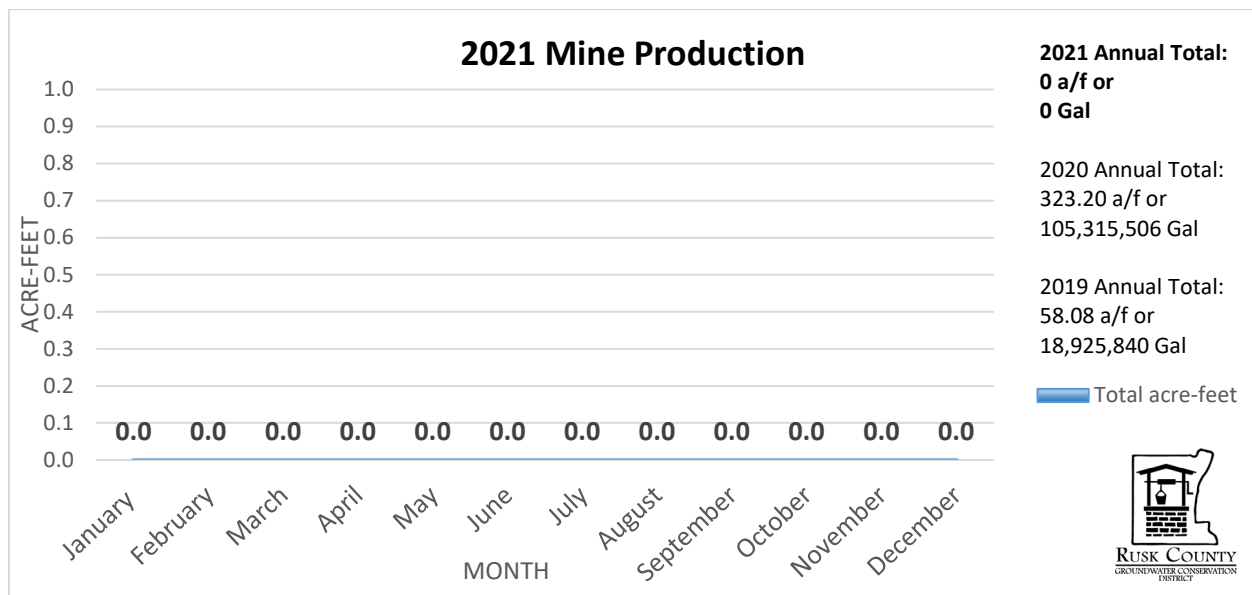
PWS Production increased from 2020 by 405.7 a/f. PWS's largest month of production was January at 561 a/f and the lowest month of production was March at 388.4 a/f.



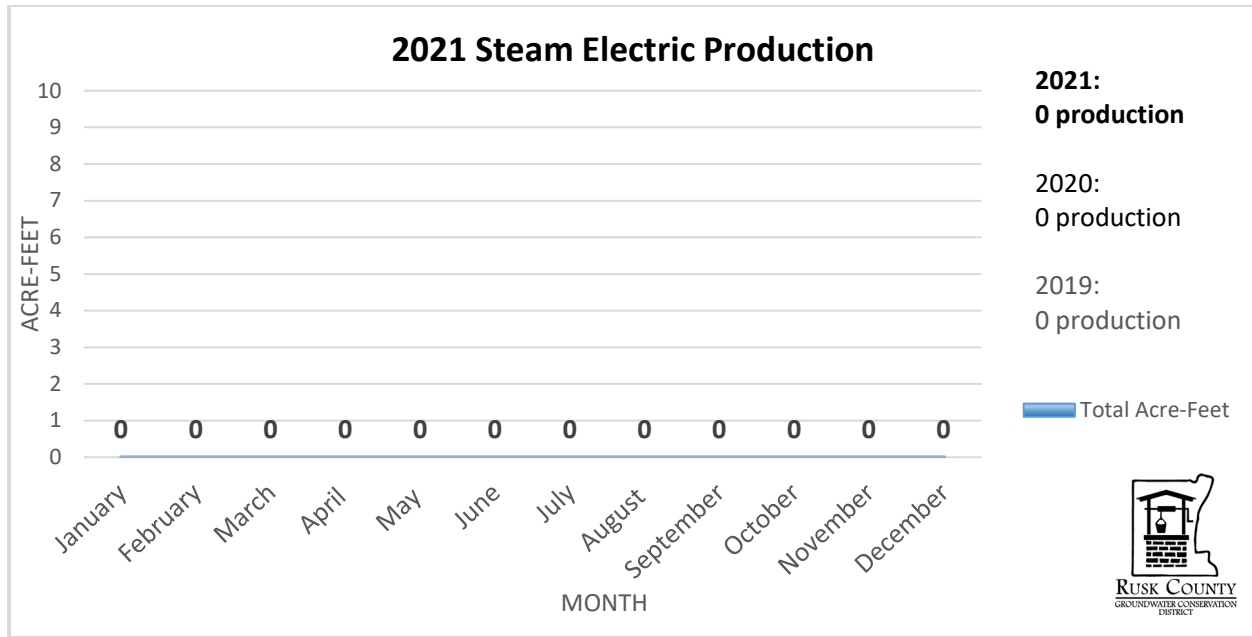
Oil & Gas production decreased from 2020 by 10.3 a/f. Oil and Gas' largest months of production were May-July at 1.3 a/f per month and the lowest months of production were April, August-December at 0.02 a/f per month.



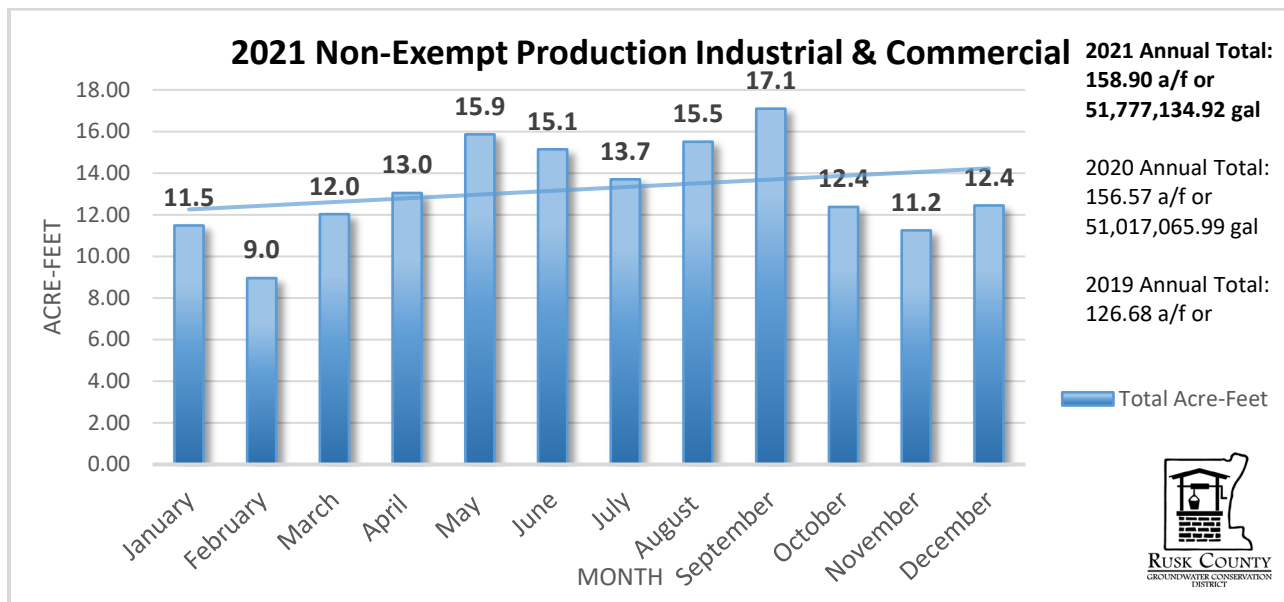
Mine Production decreased from 2020 by 323.2 a/f. There were no reports of groundwater production from the mines as operations have ceased.



Steam Electric Production Steam Electric did not produce groundwater during 2021. The last year of production was 2017 at 41.4 a/f.



Non-Exempt Outside of PWS Production increased 2.3 a/f. Non-Exempt's largest month of production was September at 17.1 a/f with the lowest in February at 9.0 a/f.



SUMMARY OF WATER LOSS OF RUSK COUNTY WATER UTILITIES

The District's Management Plan requires a summary of water loss from water utilities (12.2.B). The TWDB provided the District with the most current data regarding water loss as recorded through water utility surveys for Rusk County. All utilities are required to submit an audit every

five-years. Utilities required to submit an audit every year are those with more than 3,300 connections, or who have a financial obligation with the agency. The chart below shows those that submitted five-year audits for 2021. In addition, The City of Henderson's yearly audit for 2021 shows the total real water loss at 53,454,373 gal. or 164 a/f. The breakdown of other entities is below:

WSC	Total Real Losses in Gallons - 2021
City of Henderson	53,454,373 gallons or 164 a/f
City of New London	***Data Issue***
Goodsprings WSC	3,063,513 or 9.4 a./f
Goodsprings WSC Plant C	593,703 or 1.8 a/f
Pleasant Hill WSC	5,856,509 or 18 a/f
Southern Utilities Laird Hill	3,939,957 or 12 a/f

*The city of Henderson used 32% surface water and 68% groundwater in 2021.

Past Data for City of Henderson

The City of Henderson's yearly audit for 2020 showed the total real water loss at 107,571,529.7 gal. or 330.12 a/f.

Water loss can be accounted for by line failures and repairs, meter accuracy, and other unmetered fields. In addition, it is also hard to accurately know how much water loss occurs with leaks and firefighting, according to the city of Henderson.

NON-EXEMPT WELLS/PERMITTED WELLS

The total permitted amount of groundwater in the District is to be compared to the Modeled Available Groundwater (MAG) on an annual basis as guided by the District's Management Plan and Chapter 36 of the Texas Water Code in evaluation of the resource.

The District issues permits up the point that the total volume of exempt and permitted groundwater production will achieve an applicable desired future condition. Meaning, the District can permit over the MAG if there is no adverse effect on the groundwater levels as compared to the DFCs.

The District has permitted **199** non-exempt wells, totaling **9,691** a/f per year permitted production. Due to new operating permits, permit renewals, and identifying historical data for existing wells, there was an increase in permitted production.

The District's MAG is **14,018 a/f** per year.

Non-Exempt Wells Permitted		
Year	Amount of Permits	Permitted Production A/F
2018	169	9,295
2019	183	9,568
2020	187	9,638
2021	199	9,691

MODELED AVAILABLE GROUNDWATER (MAG) IN RUSK COUNTY

GMA 11 adopted DFCs August 11, 2021. The District adopted DFCs for Rusk County on February 14, 2022. The TWDB issued a report on GAM Run 21-016 MAG on March 7, 2022, with updated MAGs.

- MAG of the Carrizo-Wilcox Aquifer from years 2020 to 2080 is **14,018 a/f**.

Rusk County MAG Values (acre-feet per year)										
Aquifer	County	Regional Planning Area	River Basin	Year						
				2020	2030	2040	2050	2060	2070	2080
Carrizo-Wilcox	Rusk	I	Neches	7,111	7,111	7,111	7,111	7,111	7,111	7,111
Carrizo-Wilcox	Rusk	I	Sabine	6,907	6,907	6,907	6,907	6,907	6,907	6,907
Totals				14,018	14,018	14,018	14,018	14,018	14,018	14,018

The new Rusk County MAGs for the Carrizo-Wilcox Aquifer are 14,018 AF/yr. While lower than the previous MAGs, the MAG is higher than the estimated highest pumping in recent years (2011) of about 7,313 AF/yr. (in addition, this includes the exempt use).

DESIRED FUTURE CONDITIONS (DFCs) IN RUSK COUNTY

The District's groundwater elevations are compared to the 2013 baseline. The District makes these comparisons on an annual basis for the DFC and MAG, as guided by the District's Management Plan, Chapter 36 of the Texas Water Code, and best management practices of our groundwater resources. An analysis of the 2021 groundwater elevations to the DFC found that Rusk County's monitoring data are consistent with the desired future conditions.

The new DFC for the Carrizo-Wilcox Aquifer in Rusk County is an average drawdown of **86 feet from 2013 to 2080** GMA 11 adopted new DFCs on August 11, 2021. The new DFCs are based on the updated Groundwater Availability Model (GAM) which corrects many of the limitations and problems associated with the old GAM.

District Rule 8.2, Actions Based on Aquifer Response to Pumping

"The District shall utilize its existing well monitoring program, to access aquifer levels in the District and the effects caused by groundwater production to enforce the District's adopted Desired Future Conditions of the aquifers and to conserve and preserve groundwater availability and protect groundwater users and groundwater ownership and rights."

The District has adopted three threshold average aquifer drawdown levels to act as triggers to provide for increased levels of District regulatory responses based on the average aquifer drawdown levels in three consecutive years. Each level is based on an average of three consecutive years immediately prior to reaching the trigger.

Based on the 2021 analysis using the updated DFC, no threshold levels have been triggered. Average precipitation for 2013-2021 has been above the long-term average, with only three years

falling below average. Current pumping is about half of the assumed pumping that was the basis for the DFC simulation. Given the assumed pumping in the DFC simulation, average drawdown from 2013 in the 34 monitoring wells used by the District is estimated to be about 68 feet in 2021. However, actual monitoring data show about a 2.75 ft. rise in groundwater levels in 2021 as compared to the groundwater levels in 2013.

APPENDIX B

DOCUMENTED NEW & EXISTING WELLS IN DISTRICT DATABASE

Documented Wells FY 2021-2022				
Well Type	Type of Use	Well Owner (Current) Name	Well ID	Date Entered
Exempt	Dewatering	Luminant Mining Co, LLC	RC2021-0059	10/4/2021
Exempt	Domestic	James & Linda Garcia	RC2021-0047	9/21/2021
Exempt	Domestic	Shane and Wendy Oden	RC2021-0048	9/22/2021
Exempt	Domestic	Anatoliy Semenko	RC2021-0049	9/22/2021
Exempt	Domestic	Cody & Karen Foxworth	RC2021-0069	10/15/2021
Exempt	Domestic	Rocky and Lisa Crawford	RC2021-0070	10/18/2021
Exempt	Domestic	Jody White	RC2021-0072	10/20/2021
Exempt	Domestic	Jody White	RC2021-0074	10/20/2021
Exempt	Domestic	Izeal Garrett	RC2021-0082	10/26/2021
Exempt	Domestic	Betty Joyce Smith	RC2021-0083	10/26/2021
Exempt	Domestic	Kerri Patterson	RC2021-0086	11/2/2021
Exempt	Domestic	Stephen Dixon	RC2021-0087	11/5/2021
Exempt	Domestic	Ric Edgmon	RC2021-0088	11/15/2021
Exempt	Domestic	James & Emily Arp	RC2021-0089	11/24/2021
Exempt	Domestic	Michael Smith	RC2021-0090	12/3/2021
Exempt	Domestic	Brodrick Burks	RC2021-0091	12/7/2021
Exempt	Domestic	Robert Aaron Meadows	RC2021-0097	12/16/2021
Exempt	Domestic	Pepper, Richard	RC2021-0098	12/17/2021
Exempt	Domestic	David West	RC2021-0099	12/17/2021
Exempt	Domestic	Jean Mattern	RC2022-0003	1/10/2022
Exempt	Domestic	Mitchell Bell	RC2022-0007	1/27/2022
Exempt	Domestic	John Young	RC2022-0013	2/2/2022
Exempt	Domestic	Howard K. Hamrick	RC2022-0017	2/11/2022
Exempt	Domestic	Patricio Anaya	RC2022-0019	2/11/2022
Exempt	Domestic	Selina Harrison	RC2022-0022	2/25/2022
Exempt	Domestic	Tom Eatherton	RC2022-0023	2/28/2022
Exempt	Domestic	Jack B Brady Jr Estate	RC2022-0026	3/3/2022
Exempt	Domestic	Mary Jackson	RC2022-0028	3/14/2022
Exempt	Domestic	Steven Gaddis	RC2022-0030	3/22/2022
Exempt	Domestic	Mike & Tammy Baker	RC2022-0031	3/24/2022
Exempt	Domestic	Eddie Turner	RC2022-0032	4/1/2022
Exempt	Domestic	Linda Burks	RC2022-0034	4/6/2022
Exempt	Domestic	Reginald D Adelung	RC2022-0036	4/18/2022
Exempt	Domestic	Austin & Rebecca Kahil	RC2022-0037	4/18/2022
Exempt	Domestic	Daniel & Ally Pepper	RC2022-0038	4/26/2022
Exempt	Domestic	Danny Payne	RC2022-0042	5/27/2022
Exempt	Domestic	Martha Hendry	RC2022-0047	6/2/2022
Exempt	Domestic	Matt & Jennifer Leigeber	RC2022-0048	6/14/2022
Exempt	Domestic	Rodney Merritt	RC2022-0051	7/7/2022
Exempt	Domestic	Wesley McCasland	RC2022-0054	7/18/2022
Exempt	Domestic	Michael Hail	RC2022-0058	8/17/2022
Exempt	Domestic	Sherry L. Dugas	RC2022-0059	8/18/2022
Exempt	Domestic	Brad & Jessica Bryant	RC2022-0060	8/23/2022
Non exempt	Domestic	Ramon Gonzales	RC2021-0068	10/14/2021

Non exempt	Domestic	Brent Jackson	RC2022-0040	5/20/2022
Non exempt	Domestic	Evangelization, Inc. c/o of	RC2022-0049	6/24/2022
Non exempt	Domestic	Brent Jackson	RC2022-0061	8/29/2022
Exempt	Geothermal	Douglas Dunn	RC2021-0085	10/29/2021
Non exempt	Irrigation	Bryan Johnson	RC2022-0014	2/4/2022
Exempt	Livestock	Reece Nichols	RC2021-0046	9/1/2021
Exempt	Livestock	Jody White	RC2021-0073	10/20/2021
Exempt	Livestock	Steven & Bobbie Vowell	RC2022-0050	7/1/2022
Exempt	Livestock	Evers, Gerald	RC2022-0056	8/1/2022
Exempt	Monitor	Luminant Mining Co, LLC	RC2021-0050	9/24/2021
Exempt	Monitor	Luminant Mining Co, LLC	RC2021-0054	10/4/2021
Exempt	Monitor	Luminant Mining Co, LLC	RC2021-0055	10/4/2021
Exempt	Monitor	Luminant Mining Co, LLC	RC2021-0056	10/4/2021
Exempt	Monitor	Luminant Mining Co, LLC	RC2021-0057	10/4/2021
Exempt	Monitor	Luminant Mining Co, LLC	RC2021-0058	10/4/2021
Exempt	Monitor	Fikes Wholesale, Inc.	RC2021-0080	10/26/2021
Exempt	Monitor	Fikes Wholesale, Inc.	RC2021-0081	10/26/2021
Exempt	Monitor	Verado Energy, Inc.	RC2022-0008	1/31/2022
Exempt	Monitor	Verado Energy, Inc.	RC2022-0009	1/31/2022
Exempt	Monitor	Verado Energy, Inc.	RC2022-0010	1/31/2022
Exempt	Monitor	Verado Energy, Inc.	RC2022-0011	1/31/2022
Exempt	Monitor	Verado Energy, Inc.	RC2022-0012	1/31/2022
Exempt	Monitor	Luminant Mining Co, LLC	RC2022-0015	2/7/2022
Exempt	Monitor	Luminant Mining Co, LLC	RC2022-0016	2/7/2022
Exempt	Monitor	Chick-Fill-A	RC2022-0024	3/2/2022
Exempt	Monitor	TCEQ	RC2022-0025	3/3/2022
Exempt	Monitor	TCEQ	RC2022-0027	3/4/2022
Exempt	Monitor	Union Pacific Railroad	RC2022-0044	5/31/2022
Exempt	Monitor	Union Pacific Railroad	RC2022-0045	5/31/2022
Exempt	Monitor	Union Pacific Railroad	RC2022-0046	5/31/2022
Exempt	Monitor	Verado Energy, Inc.	RC2022-0052	7/12/2022
Exempt	Monitor	Verado Energy, Inc.	RC2022-0053	7/12/2022
Exempt	Other	Ruth Reed	RC2021-0067	10/13/2021
Exempt	Other	Terry Wilson	RC2022-0020	2/14/2022
Exempt	Other	Menefee Jasper Estate	RC2022-0021	2/17/2022
Exempt	Poultry	Jody White	RC2021-0075	10/20/2021
Exempt	Poultry	Bebay Van Lam	RC2021-0092	12/9/2021
Exempt	Poultry	Bebay Van Lam	RC2021-0093	12/9/2021
Exempt	Poultry	Bebay Van Lam	RC2021-0094	12/9/2021
Exempt	Poultry	Bebay Van Lam	RC2021-0095	12/10/2021
Non exempt	Poultry	Luke Spivey	RC2021-0051	10/1/2021
Non exempt	Poultry	Luke Spivey	RC2021-0052	10/1/2021
Non exempt	Poultry	Luke Spivey	RC2021-0053	10/1/2021
Non exempt	Poultry	Scott Spivey	RC2021-0100	12/30/2021
Non exempt	Poultry	Jacob Nguyen	RC2022-0004	1/26/2022
Non exempt	Poultry	Jacob Nguyen	RC2022-0005	1/26/2022
Non exempt	Poultry	Jacob Nguyen	RC2022-0006	1/26/2022

Non exempt	Poultry	Jacob Nguyen	RC2022-0029	3/14/2022
Exempt	Rig Supply	Sabine Oil & Gas Corporation	RC2021-0079	10/22/2021
Exempt	Rig Supply	Sabine Oil & Gas Corporation	RC2021-0096	12/15/2021
Exempt	Rig Supply	Barrow Shaver Resources LLC	RC2022-0001	1/5/2022
Exempt	Rig Supply	Barrow Shaver Resources LLC	RC2022-0002	1/6/2022
Exempt	Rig Supply	Tanos Exploration II, LLC	RC2022-0018	2/11/2022
Exempt	Rig Supply	Valence Operating	RC2022-0033	4/5/2022
Exempt	Rig Supply	Mud Creek Operating	RC2022-0055	7/22/2022
Exempt	Unknown	Holland, Wayne E	RC2021-0060	10/6/2021
Exempt	Unknown	Holland, Wayne E	RC2021-0061	10/6/2021
Exempt	Unknown	Holland, Wayne E	RC2021-0062	10/7/2021
Exempt	Unknown	John Henson	RC2021-0063	10/7/2021
Exempt	Unknown	John Henson	RC2021-0064	10/7/2021
Exempt	Unknown	Austin & Sharon Moore	RC2021-0065	10/8/2021
Exempt	Unknown	Michael Holland	RC2021-0066	10/11/2021
Exempt	Unknown	Walker, Billie	RC2021-0071	10/19/2021
Exempt	Unknown	Alva Jean Stewart	RC2021-0084	10/26/2021
Exempt	Unknown	Holland, Wayne E	RC2022-0035	4/7/2022
Exempt	Unknown	Keith Barton	RC2022-0039	5/12/2022
Exempt	Unknown	Tim Taylor	RC2022-0041	5/23/2022
Exempt	Unknown	Cole, Benny	RC2022-0043	5/31/2022
Exempt	Unknown	Atmos Energy Corporation	RC2022-0057	8/16/2022
Exempt	Unknown	Jody White	RC2021-0076	10/21/2021
Exempt	Unknown	Jo Ann or Jeanie White	RC2021-0077	10/21/2021
Exempt	Unknown	Steve or Connie Larsen	RC2021-0078	10/21/2021

