Status of Drought Briefing: February 2021

Maps:

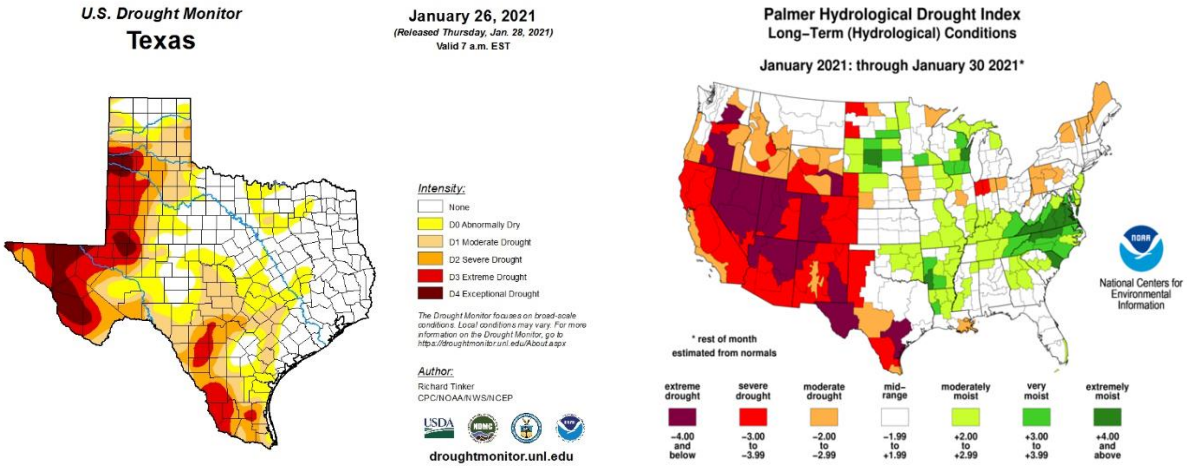
Below are the latest maps including the *US Drought Monitor* map for Texas and the *Palmer Hydrological Drought Index* map. The US Drought Monitor map indicates that our District is within drought condition "Moderate Drought" and the Palmer Hydrological Drought Index indicates "Extreme Drought" conditions. These maps have been collected and will be part of the District's 2021 Annual Report.

District Drought Triggers:

As of February 2nd, the Pedernales River drought trigger indicates **0** consecutive days of discharge flows above the drought stage 'Alarm' and **0** consecutive days below the drought stage 'Critical'. The Blanco River drought trigger indicates **0** consecutive days of discharge flows above the drought stage 'Alarm' and **21** consecutive days of discharge flows below the drought stage 'Critical'. To move out of drought stage 'Alarm' or into drought stage 'Critical', both rivers must have 60 consecutive days of flow above or 30 consecutive days of flow below the drought stage, respectively. The District's third trigger, the Palmer Hydrological Drought Index, shows 'Extreme Drought' conditions.

Recommended Drought Stage:

The drought recommendation for HTGCD is to remain in Drought Stage 'Alarm – 20% Curtailment' until further notice.



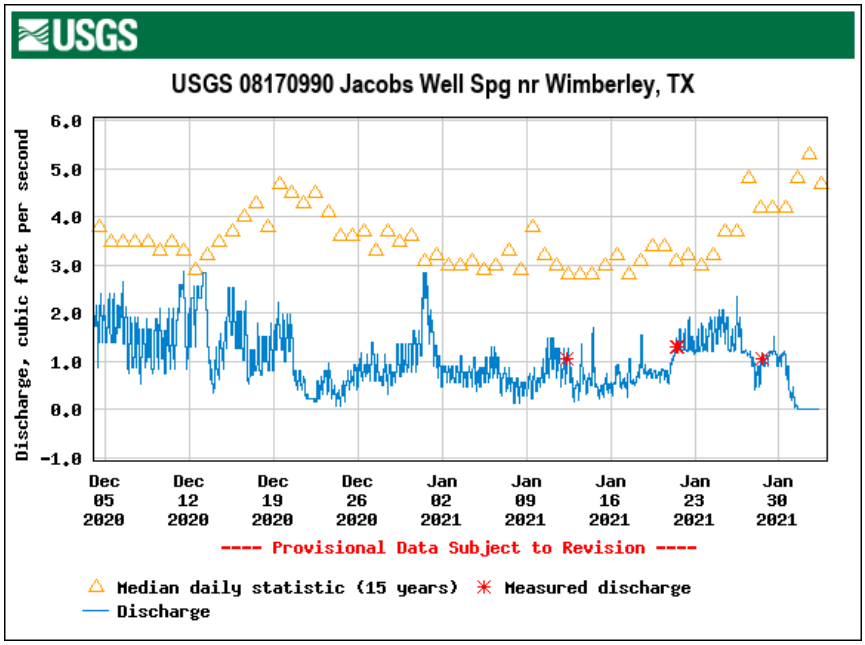
Jacob's Well Groundwater Management Zone Drought Triggers:

At the end of every month, the average discharge rate at Jacob's Well is calculated in order to determine which drought cutback amount will be applied to the Jacob's Well GMZ for the following month. The

running 10-day average as of January 31st indicates that the discharge at Jacob's Well is **1.16** cubic feet per second. The trigger for the 30% Curtailment is an average discharge below 3 cubic feet per second.

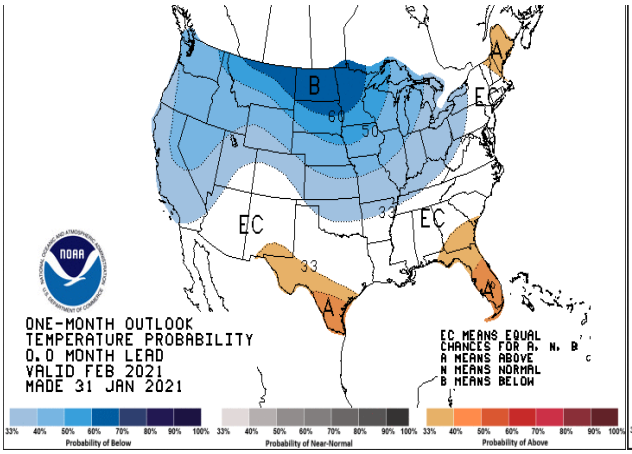
Recommended Drought Curtailment for Jacob's Well GMZ:

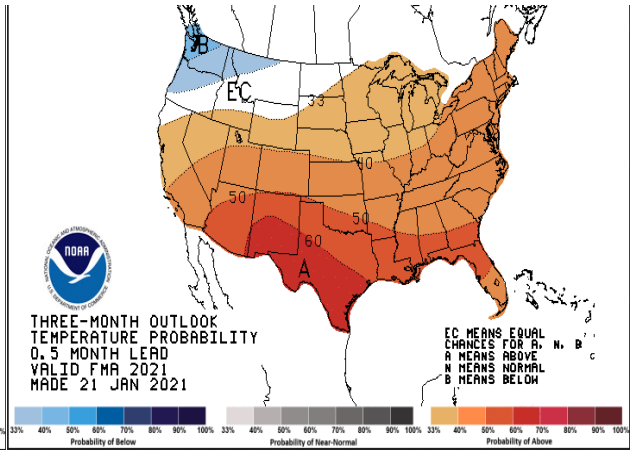
The drought recommendation for the Jacob's Well GMZ is to apply a 30% Curtailment for the month of February.



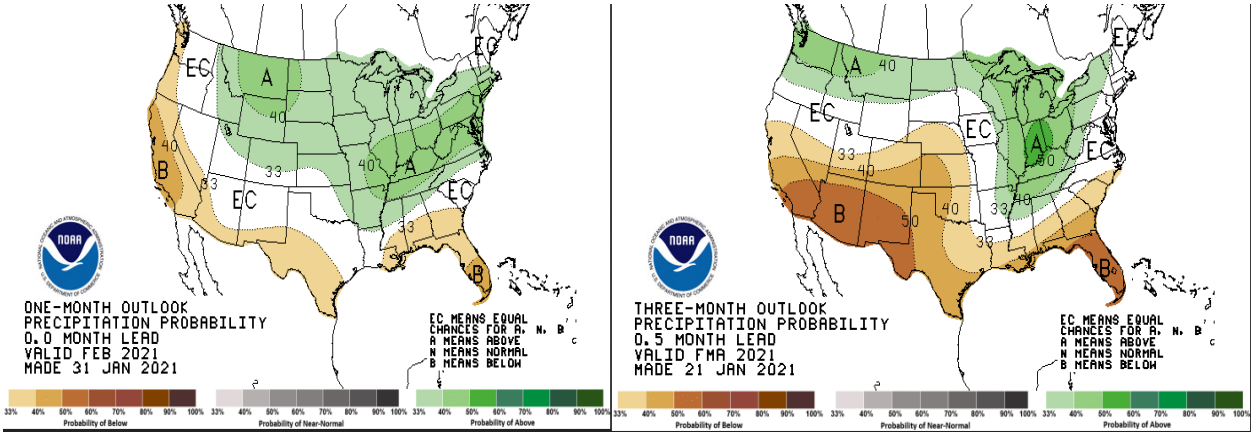
NOAA Forecasts:

Temperature – According to the one-month temperature outlook provided by NOAA, there is a 33-40% chance that average temperatures will be similar than those typically observed at that time of year. The three-month outlook indicates a 60-70% chance that average temperatures will be higher than those typically observed at that time of year.

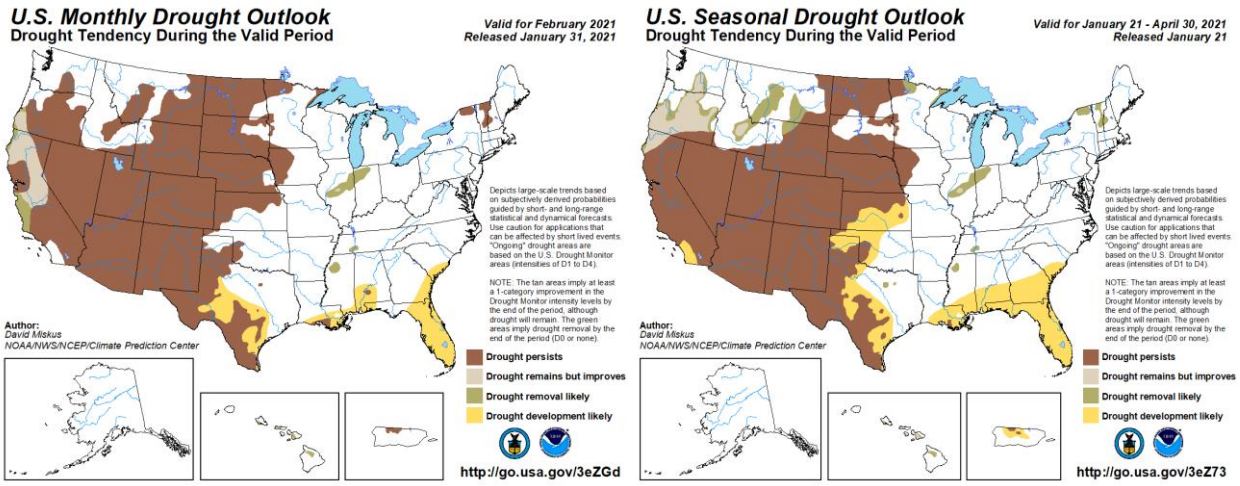




Precipitation – According to the one-month precipitation outlook provided by NOAA, there is a 33-40% chance that average rainfall rates will be higher than those typically observed at that time of year. The three-month outlook indicates a 33-40% chance that average rainfall rates will be lower than those typically observed during that time of year.



Drought - The monthly drought outlook provided by NOAA predicts that drought conditions will likely persist for HTGCD through January 2021. The seasonal drought outlook predicts that drought conditions will likely persist for HTGCD through March 2021.



Hays Trinity GCD Drought Stage History

2009	District Wide												**2009**	39.75	16
2010													**2010**	44.37	10
2011													**2011**	**19.17**	31
2012													**2012**	32.09	22
2013													**2013**	47.47	9
2014													**2014**	30.26	23
2015													**2015**	**53.78**	3
2016													**2016**	51.14	5
2017													**2017**	37.88	18
2018													**2018**	38	17
2019													**2019**	32.6	21
2020													**2020**	40.05	14
2021													**2021**		
	Jan	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**		Ttl Rain	32 y rank
2020	Jacobs Well GMZ												**2020**	40.05	14
2021													**2021**		

District Wide Drought Stages --

- 0%
- 20%
- 30%
- 40%

Curtailment off of total permit

Jacobs Well GMZ Drought Stages

- 0%
- 10%
- 20%
- 30%

Curtailmant off of 2016-2019 actual use

February 2021 Water Level Report

On January 13th & 14th, the District conducted its monthly Monitoring Run to gather water level data from our monitor well network. Across the District, most wells saw stable conditions or a slight increase in water levels from the previous month. Generally, these increases are 2 – 8 feet above measurements taken in December.

Of particular interest are the wells located in the northwestern portion of the District, north of Onion Creek and south of Hamilton Pool Road. In August, these wells had been showing historically low water levels, with some wells having a period of record of 13, 17, or even 21 years. The water levels for these wells **have risen slightly** for the past month, with the changes in depth being anywhere from 1 – 5 feet for most wells. A table of these wells, along with their monthly readings, is included below:

Well Name	Well Address	Oct. Depth	Nov. Depth	Change	Period of Record
Roman	W. Fitzhugh Rd.	308	**308***	0	6 years
Hegemier	Stagecoach Ranch Rd.	239.4	**239.6**	-0.2	8 years
Whit Hanks	Mt. Gainor Rd.	192.1	**190.4**	+1.7	13 years
Jack Brown	Farrell Ln.	418.6	**412.4**	+6.2	17 years
Henly Church	Henly Loop	384.0	**382.2**	+1.8	21 years

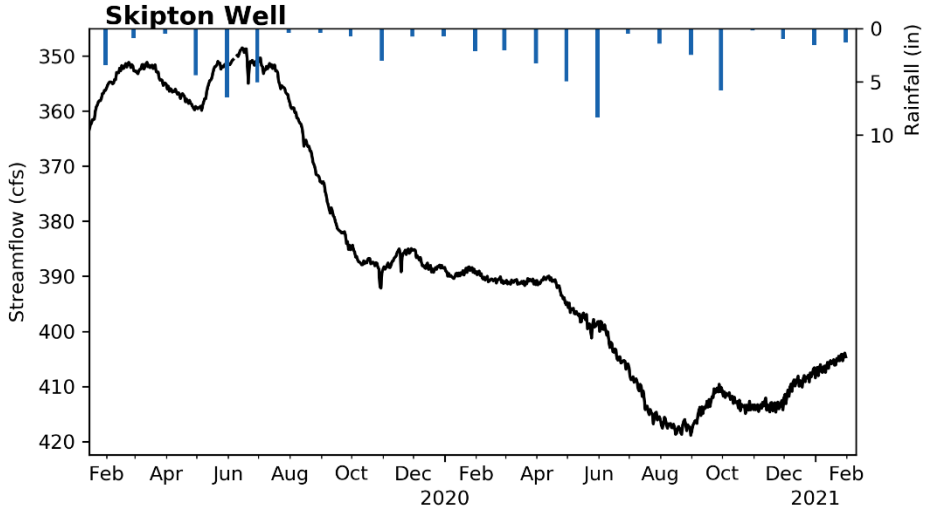
*Note that the Roman well is currently dry and we are unable to get water levels past the pump depth.

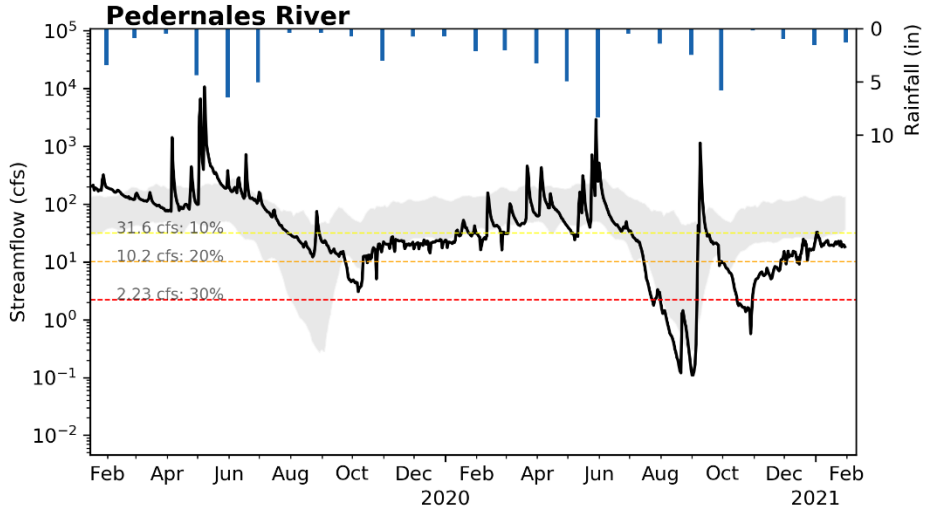
Additionally, the Skipton Dedicated Monitoring Well located in this area also reflects a small rise in water levels. The level changed from 407.93 feet in December to 405.51 in January; an increase in line with other measurements taken during the run. The historical value of this well's water levels is limited since the well only has a period of record of about 2 and a half years. That being said, the Skipton well provides a strong data point for current water level trends because we know the details of the well's construction and we can confirm that those water levels are coming solely from the Middle Trinity aquifer.

The small increases in water level are welcome and it will be important to watch these trends as we get into the drier months of the year. We hope that current trends continue and, as always, we encourage the conservation of groundwater whenever possible. I'll be looking forward to giving another update after next month's Monitoring Run.

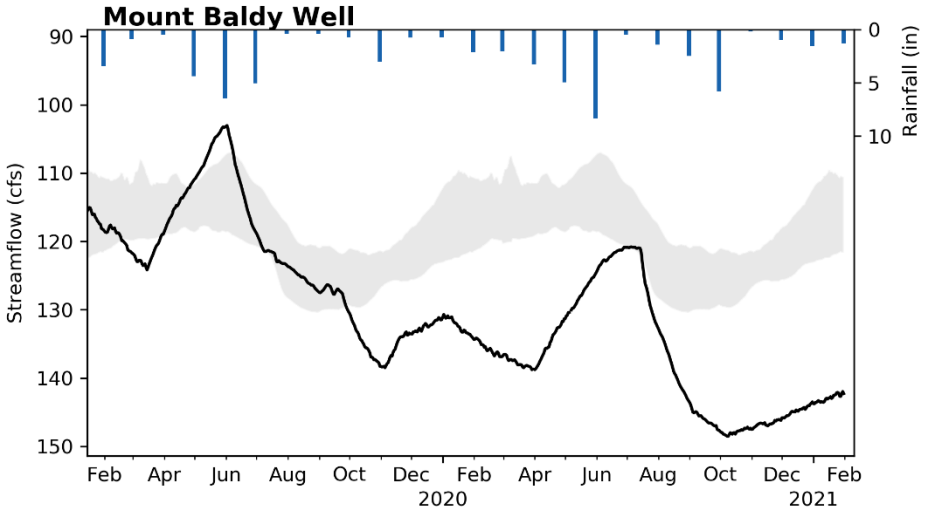
District Water Levels and Streamflow

Northern Region





Southern Region



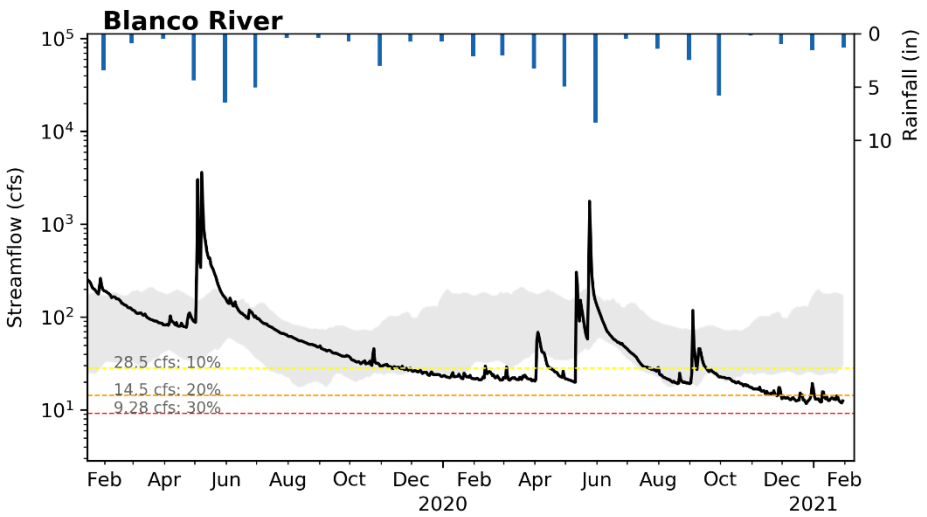
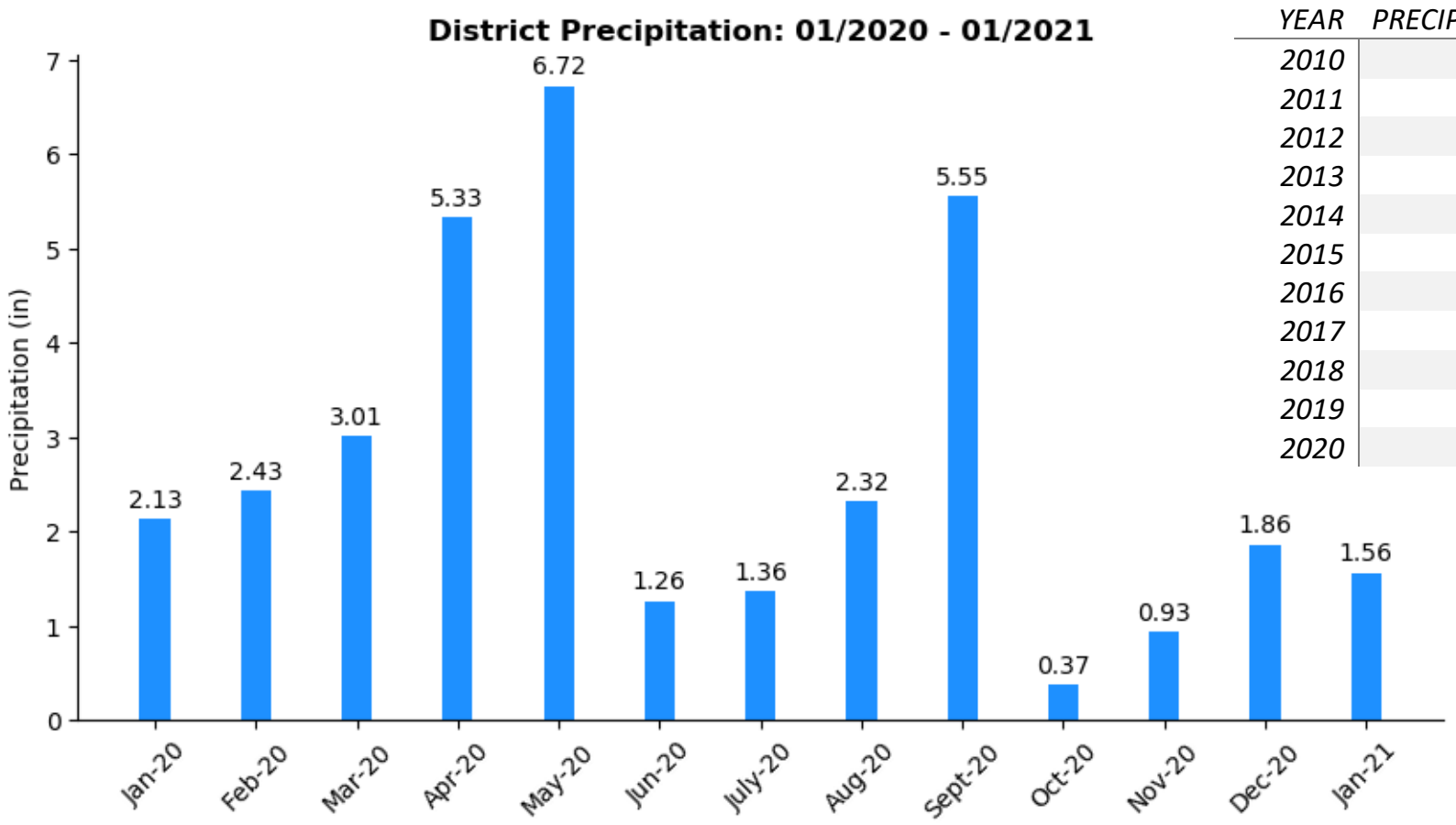
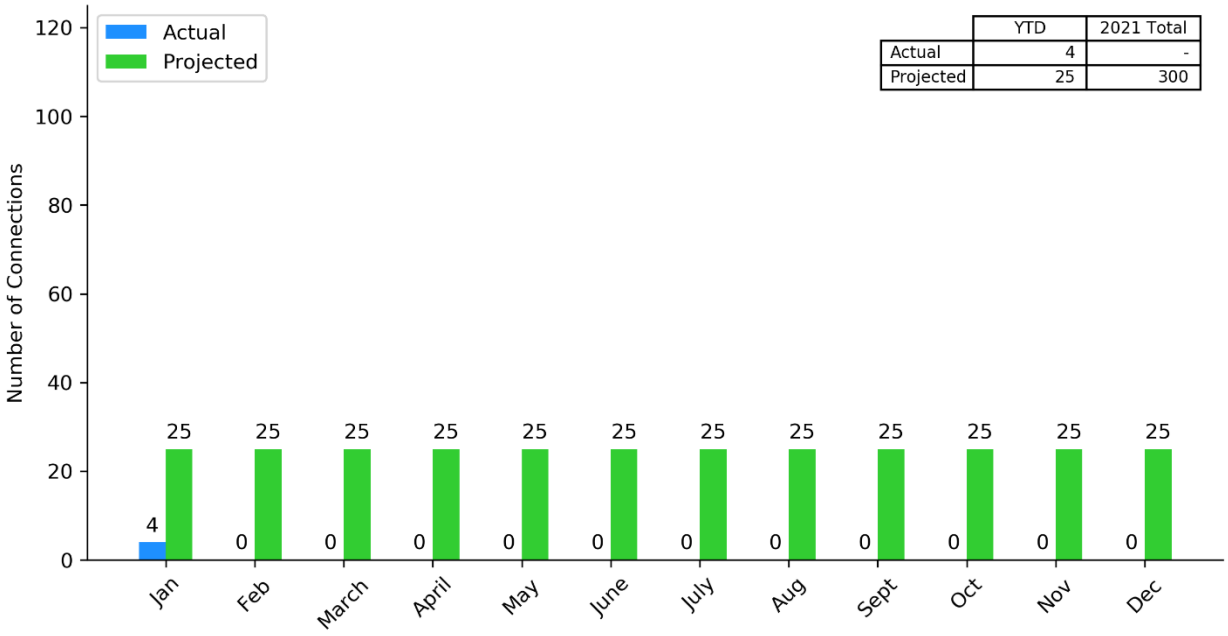


Figure. Streamflow and water levels representing the northern and southern regions of the District. The shaded grey area represents normal conditions. Normal conditions have not been established for the Skipton well as there is there is less than 2-years of data. Blue bars on secondary x-axis represents daily rainfall. The Pedernales and Blanco Rivers plots include drought stages represented as dotted lines.



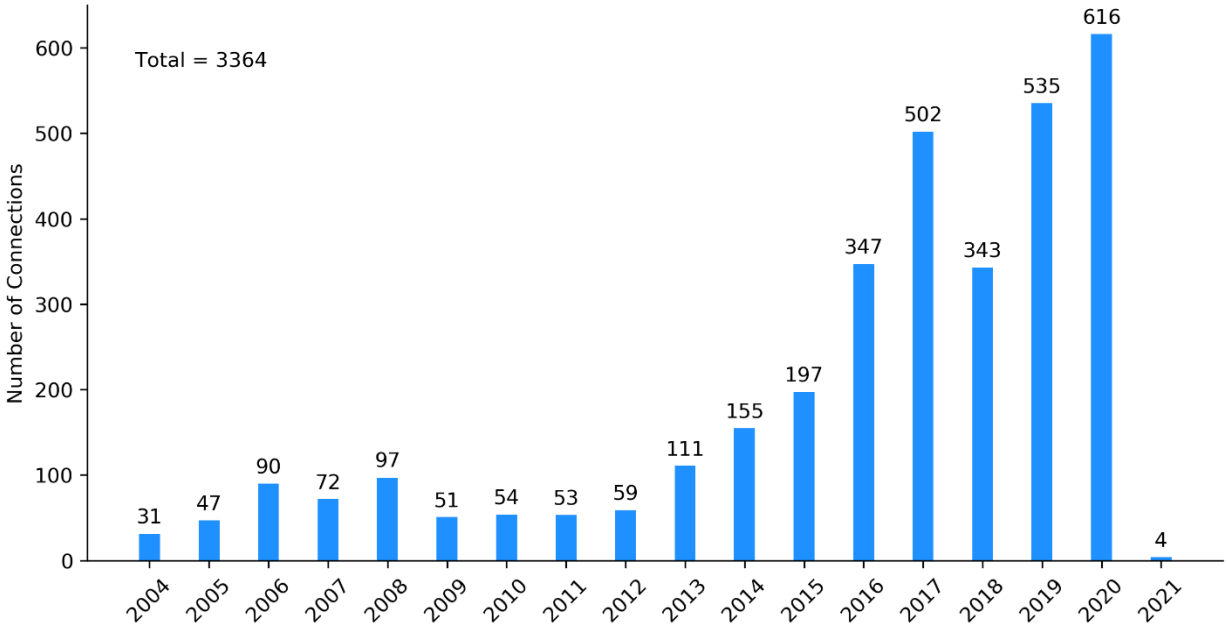
YEAR	PRECIP (IN)
2010	39.8
2011	18.9
2012	25.3
2013	42.5
2014	28.5
2015	48.2
2016	46.9
2017	31.7
2018	39.5
2019	33.7
2020	33.3

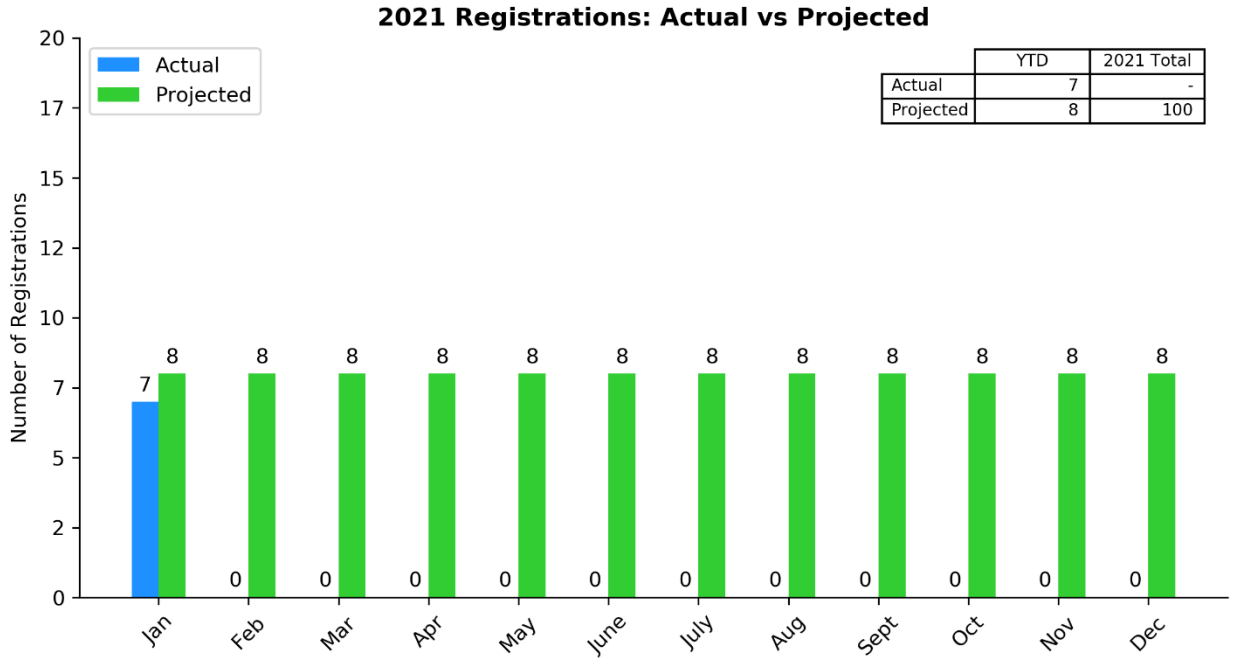
2021 PWS Connections: Actual vs Projected

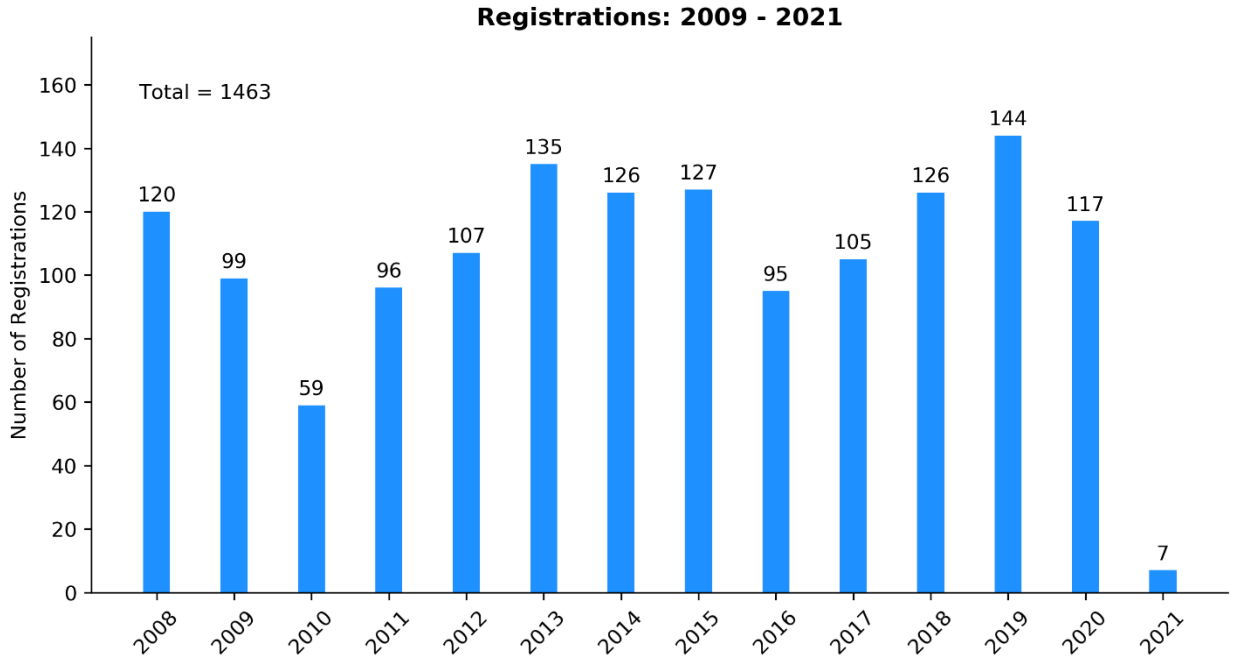


	YTD	2021 Total
Actual	4	-
Projected	25	300

PWS Connections: 2004 - 2021




2021 Registrations: Actual vs Projected
Actual
Projected
YTD
2021 Total
Actual 7 -
Projected 8 100
Number of Registrations
Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec
7 0 0 0 0 0 0 0 0 0 0 0
8 8 8 8 8 8 8 8 8 8 8 8


Registrations: 2009 - 2021
Total = 1463
Number of Registrations
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
120 99 59 96 107 135 126 127 95 105 126 144 117 7

February 2021 – TCEQ Update

This is an update regarding the TCEQ projects that the District has been notified of since the previous board meeting on January 7th.

- The District has not received any project notifications from the TCEQ since the last board meeting.

February 2021 - Keaton Activity Report

- January 2020 Monitoring Run:
    - Monitor well owners were contacted and informed of COVID-19 precautions taken during well visits
    - Water levels across the District saw a slight increase from the previous month
    - Quarterly Transducer Run
- Bi-Annual Water Quality Samping
    - Took water quality samples at each of our Dedicated Monitoring wells
        - Including the new Burton well
    - Collaborated with the Meadows Center to gather more data for the Old Hundred well
    - Results will come back from the LCRA within a few weeks
- Quarterly Pumpage Reports
    - Finished for 4th quarter
    - Also completed for 2020
- Drought Curtailment Charts
    - Working on revising the charts created for permittee use to make them more useful for the District
    - Will cut time out of Quarterly Pumpage Reports going forward.
- Python Essentials Coursework:
    - Took the Python Essentials Entry-Level Certification Exam
        - Passed with a 97% score.
    - Will begin the Python Essentials Intermediate Course soon.
- Monitor Well Network Verification
    - Worked with Philip to verify construction information and production interval for each of the Monitor wells
    - Will use the information to help create a Total Dissolved Solids map of the District based on water quality information from the TWDB.

January Science Report

Unit 3 (Upper Glen Rose) implications on recharge throughout Barton Creek watershed

- Combining Unit 3 mapping with flow measurements, water quality, and water level data to investigate the potential for Barton Creek to be contributing to the Trinity Aquifer.
- Preliminary data analysis and literature review are complete, will begin field work in February.

Investigating potential surface water contributions to the Trinity Aquifer throughout the Goldenwood and neighboring areas

- Water quality analysis of Middle Trinity wells producing near the Mount Bonnell Fault indicate a freshwater source. This freshwater may be coming from the surface via cross-formational flow with the Upper Glen Rose or Edwards.
- Preliminary data analysis is complete and working towards finding potential wells for water quality samples.

Pumping scenario model tool

- Writing a script that will run projected pumping scenarios quickly and efficiently.

Water Quality sampling

- Bi-annual sampling event of Dedicated Monitoring wells

Ongoing Regional Collaborative Projects:

Dye Trace

- Jacob's Well
    - Collaboration with BSEACD, Meadows Center, EAA, and Hays County and potentially contracting Zara
    - Currently establishing roles and cost

Modeling

- Bratwurst
    - SWRI and Meadows center are continuing to work on funding potentials, timeline, and total cost
- Modflow and HSPF background research

- Practice using Modflow, HSPF, and Flopy
- Background literature on modeling surface water and groundwater interactions