Status of Drought Briefing: January 2021

Maps:

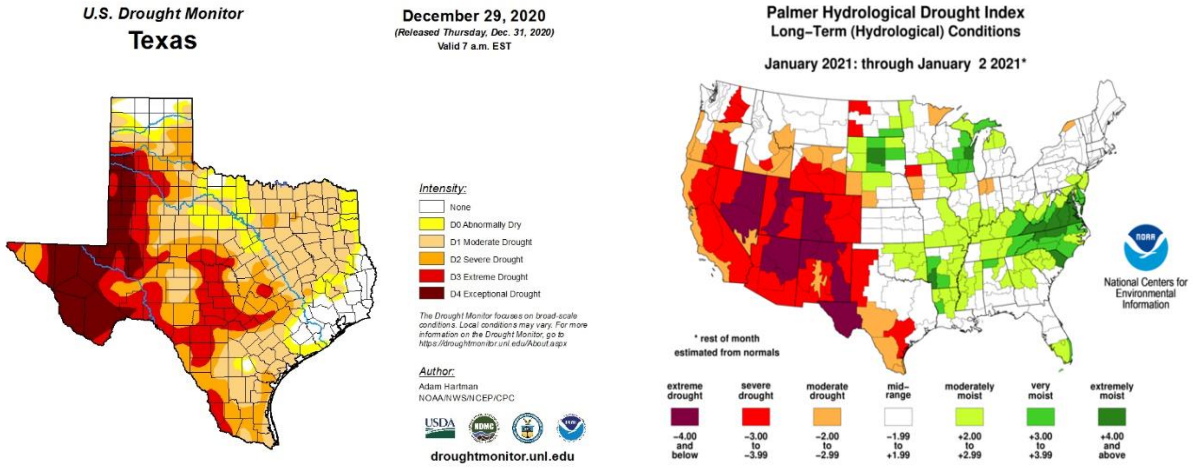
Below are the latest maps including the *US Drought Monitor* map for Texas and the *Palmer Hydrological Drought Index* map. The US Drought Monitor map indicates that our District is within drought condition "Severe Drought" and the Palmer Hydrological Drought Index indicates "Severe Drought" conditions.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

District Drought Triggers:

As of January 5th, 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 **0** 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 'Severe Drought' conditions.

Recommended Drought Stage:

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



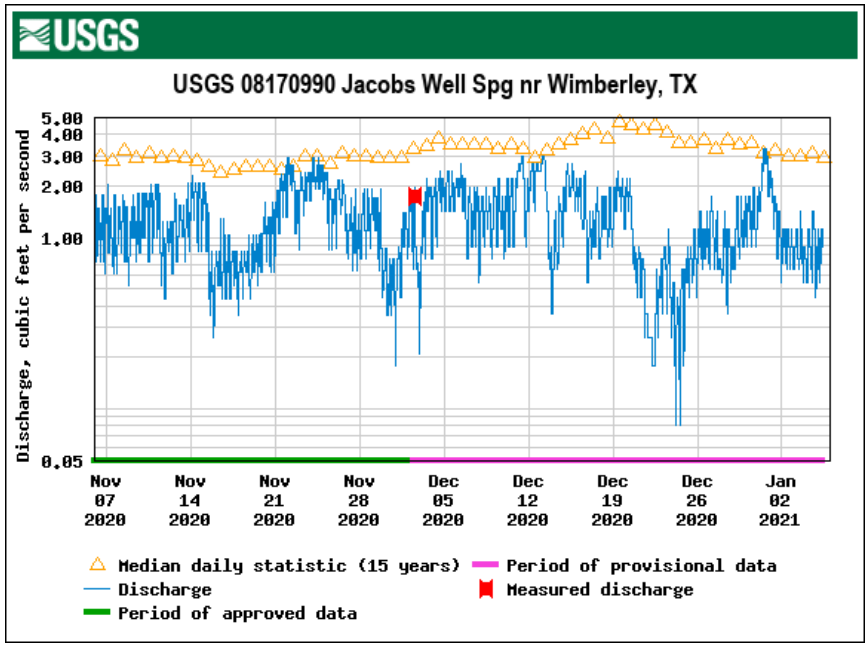
Jacob's Well Groundwater Management Zone Drought Triggers:

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 December 31st indicates that the discharge at Jacob's Well is **0.98** cubic

feet per second. The trigger for the 30% Curtailment is an average discharge below 3 cubic feet per second.

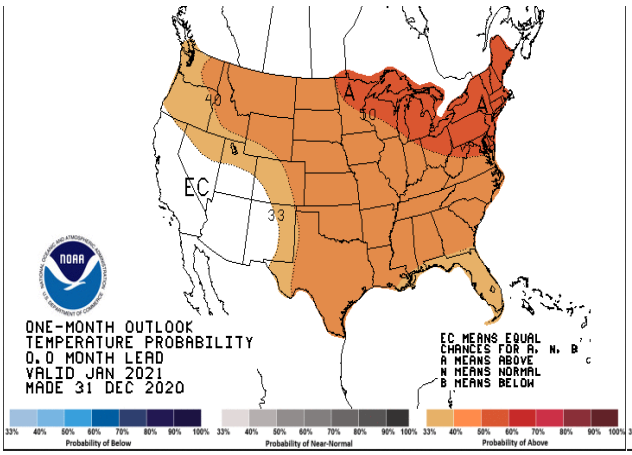
Recommended Drought Curtailment for Jacob's Well GMZ:

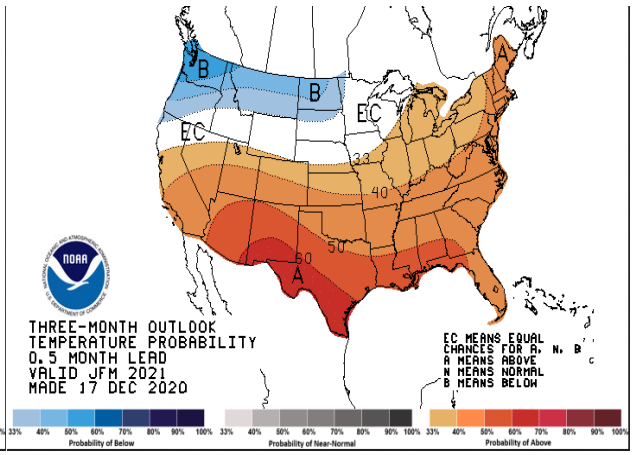
The drought recommendation for the Jacob's Well GMZ is to apply a 30% Curtailment for the month of January.



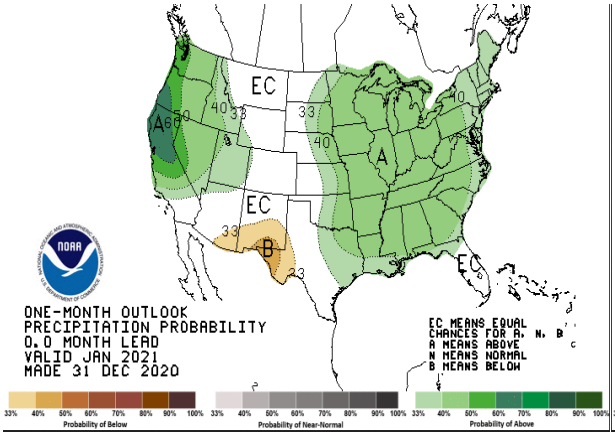
NOAA Forecasts:

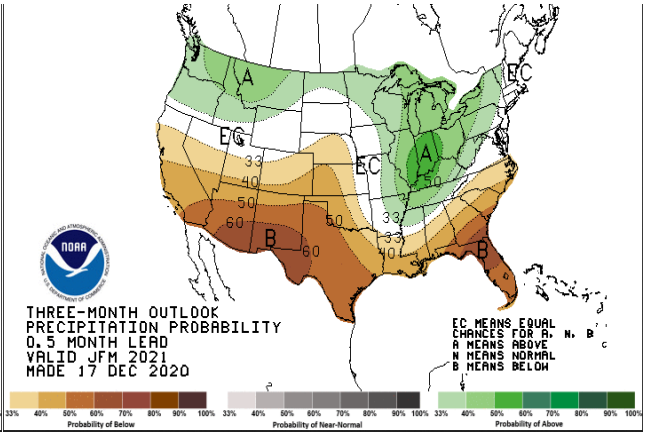
Temperature – According to the one-month temperature outlook provided by NOAA, there is a 40-50% chance that average temperatures will be higher than those typically observed at that time of year. The three-month outlook indicates a 50-60% chance that average temperatures will be higher than those typically observed at that time of year.



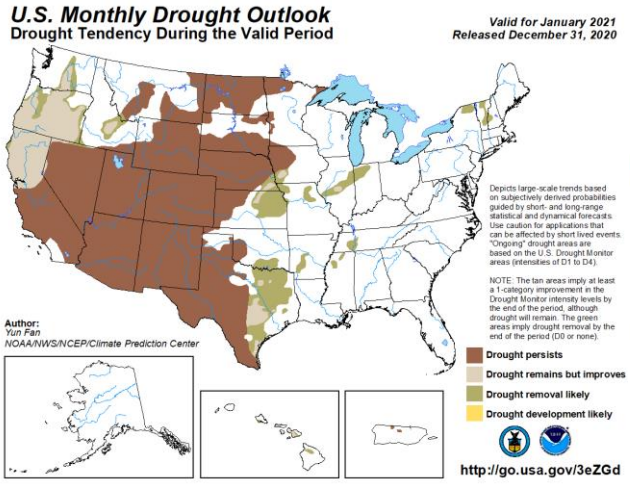


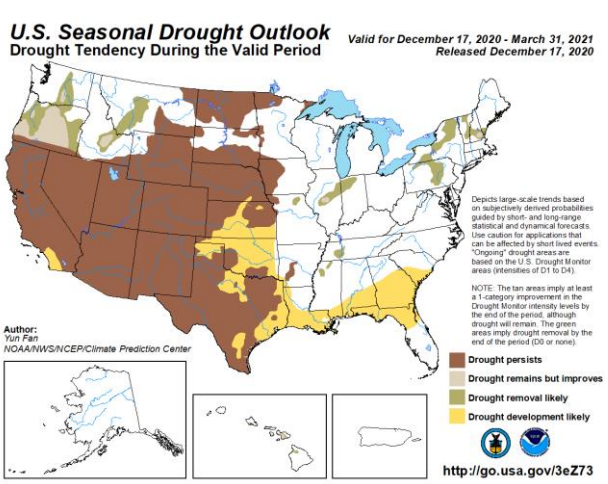
Precipitation – According to the one-month precipitation outlook provided by NOAA, there is a 33-40% chance that average rainfall rates will be higher than those typically observed at that time of year. The three-month outlook indicates a 50-60% chance that average rainfall rates will be lower than those typically observed during that time of year.





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





January 2021 Water Level Report

On December 18th & 19th, 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 1 – 5 feet above measurements taken in November.

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.	242.2	**239.4**	+2.8	8 years
Whit Hanks	Mt. Gainor Rd.	194.4	**192.1**	+2.3	13 years
Jack Brown	Farrell Ln.	423.4	**418.6**	+4.8	17 years
Henly Church	Henly Loop	388.4	**384.0**	+4.4	21 years

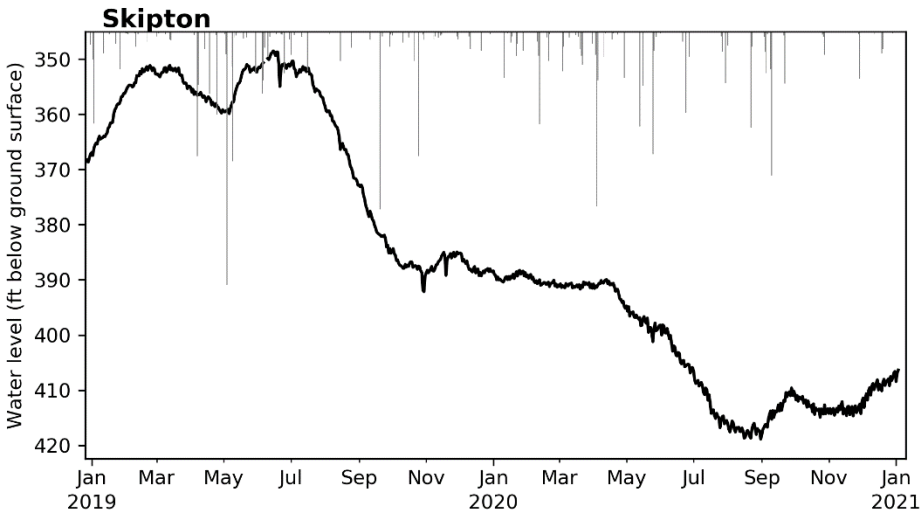
*Note that the Roman well is currently dry and we are unable to get water levels past the pump depth.

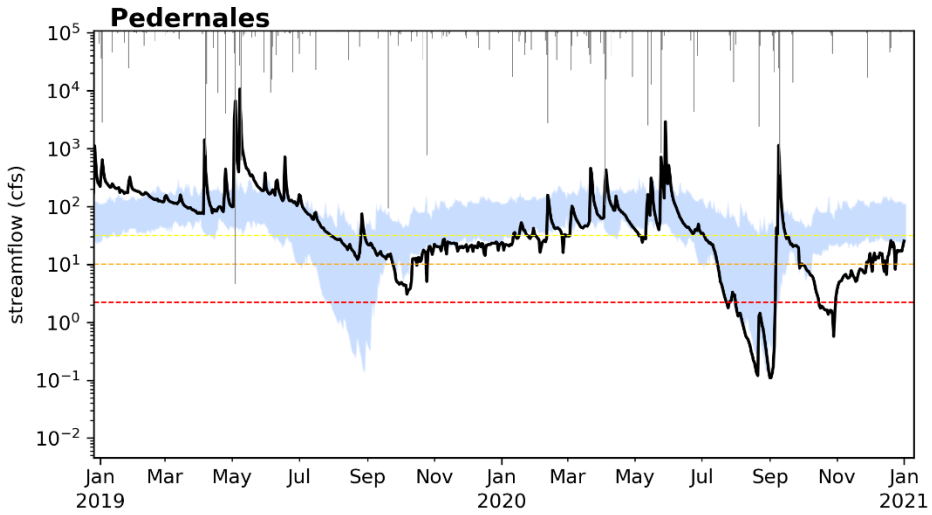
Additionally, the Skipton Dedicated Monitoring Well located in this area also reflects a rise in water levels. The level changed from 412.90 feet in November to 407.93 in December; an increase in line with other measurements taken during the run. The historical value of this well's water levels is limited 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 there have been a few rainfall events in the last month. 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.

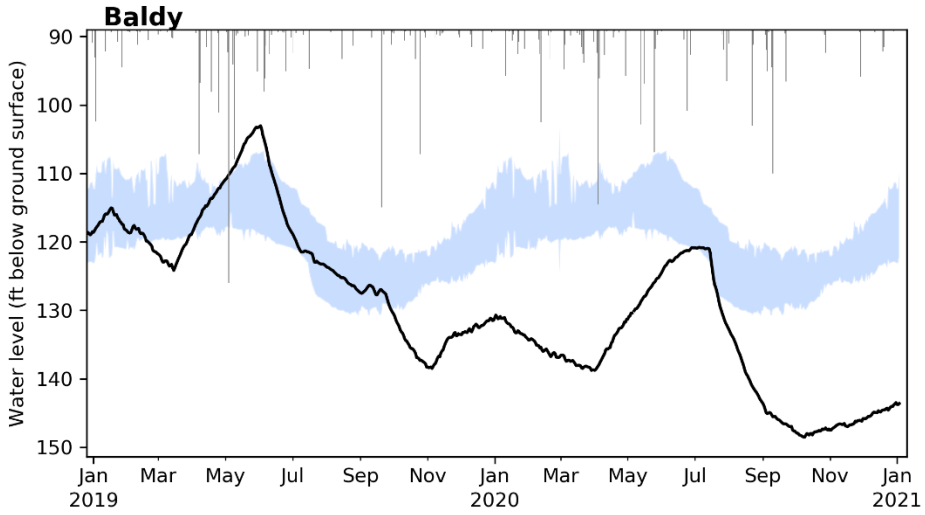
District Water Levels and Streamflow

Northern Region





Southern Region



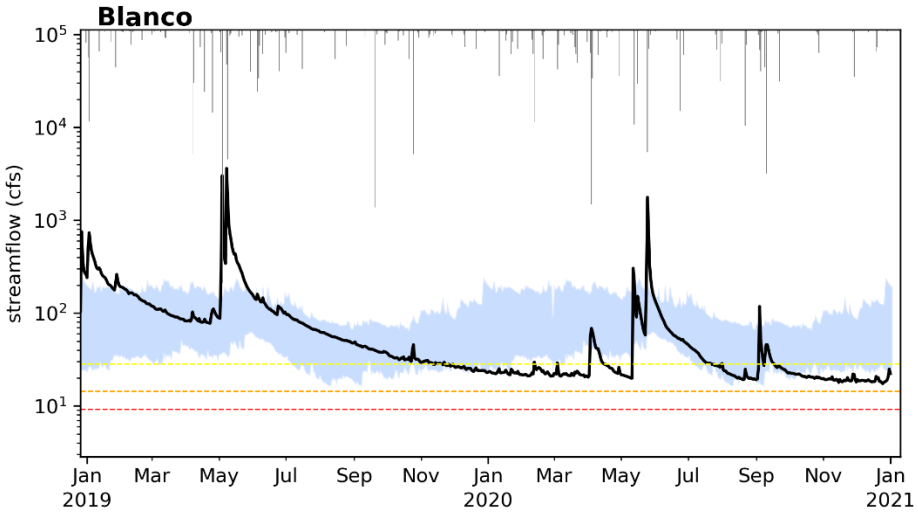
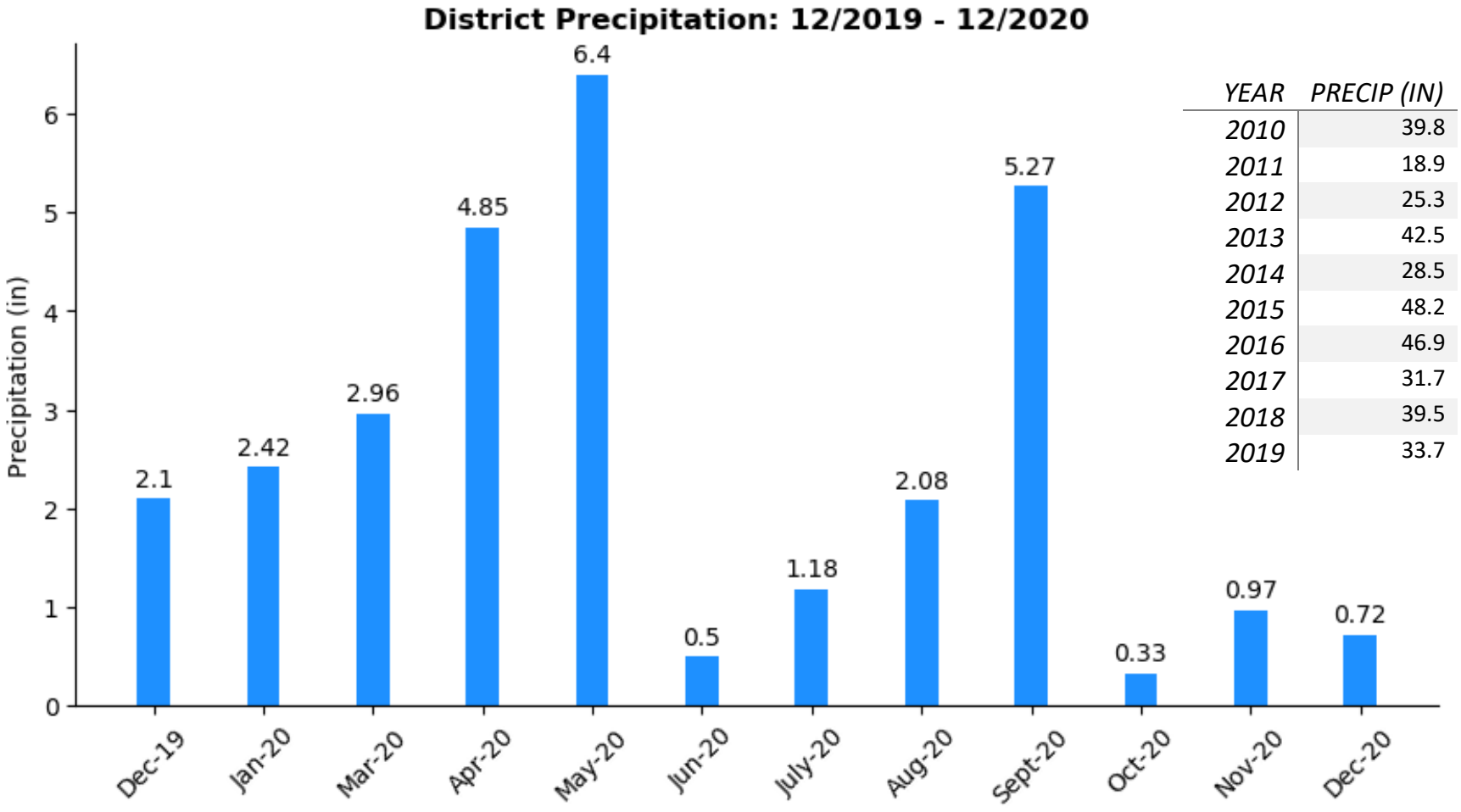
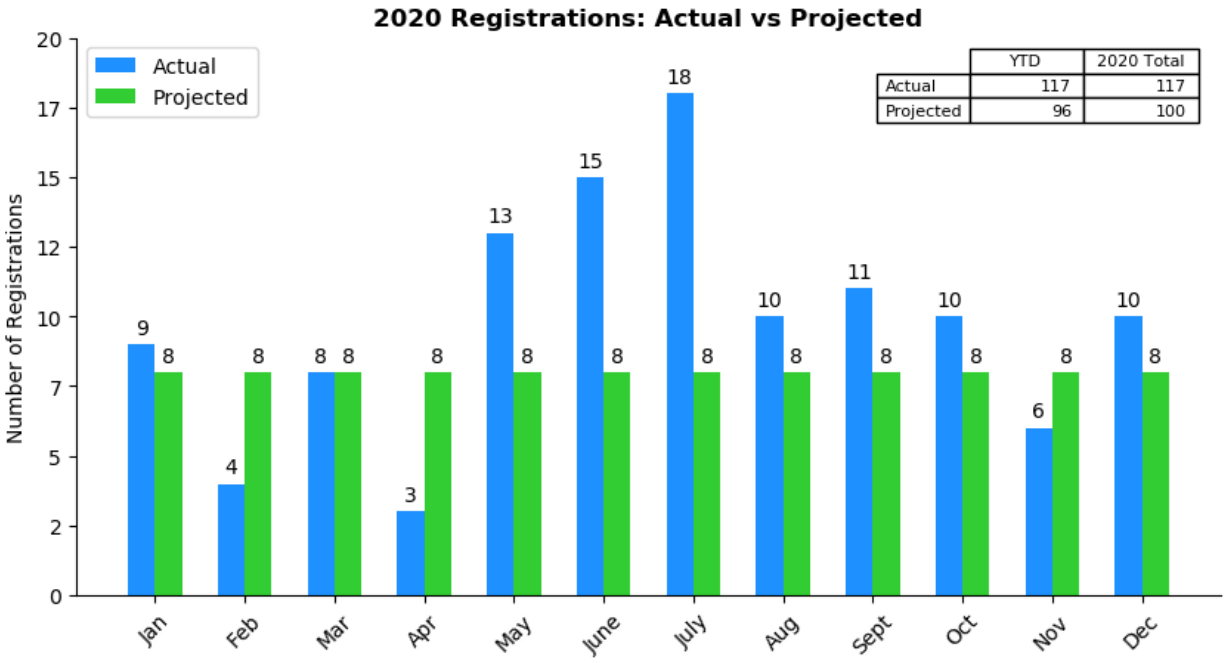
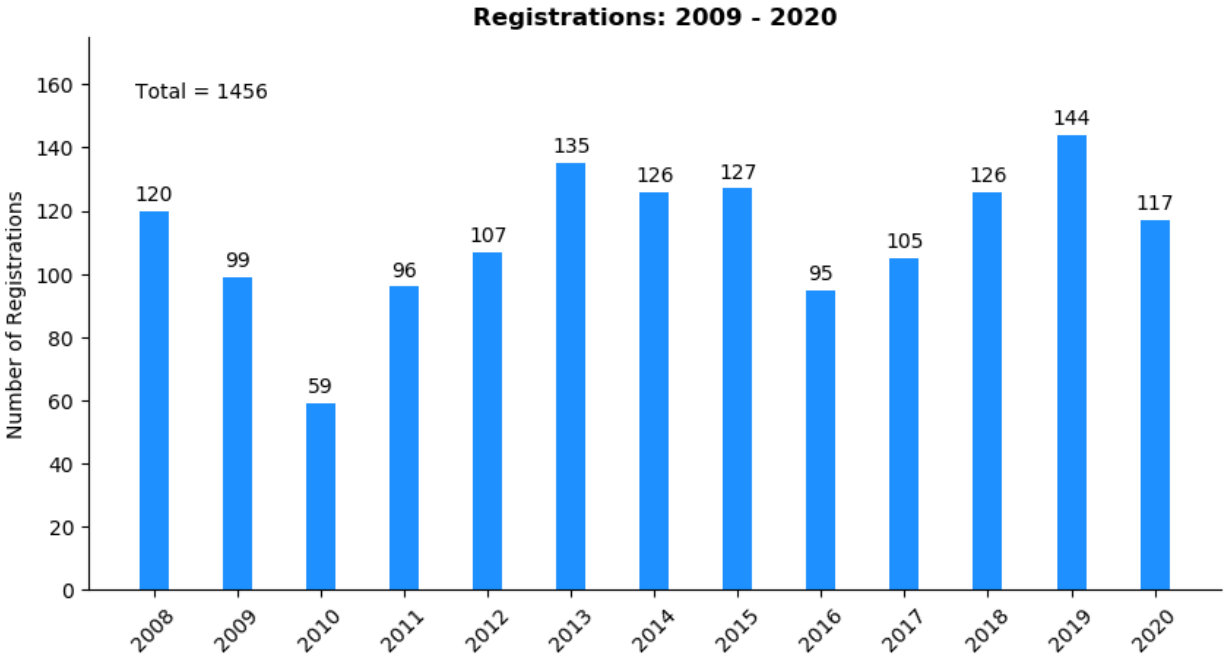


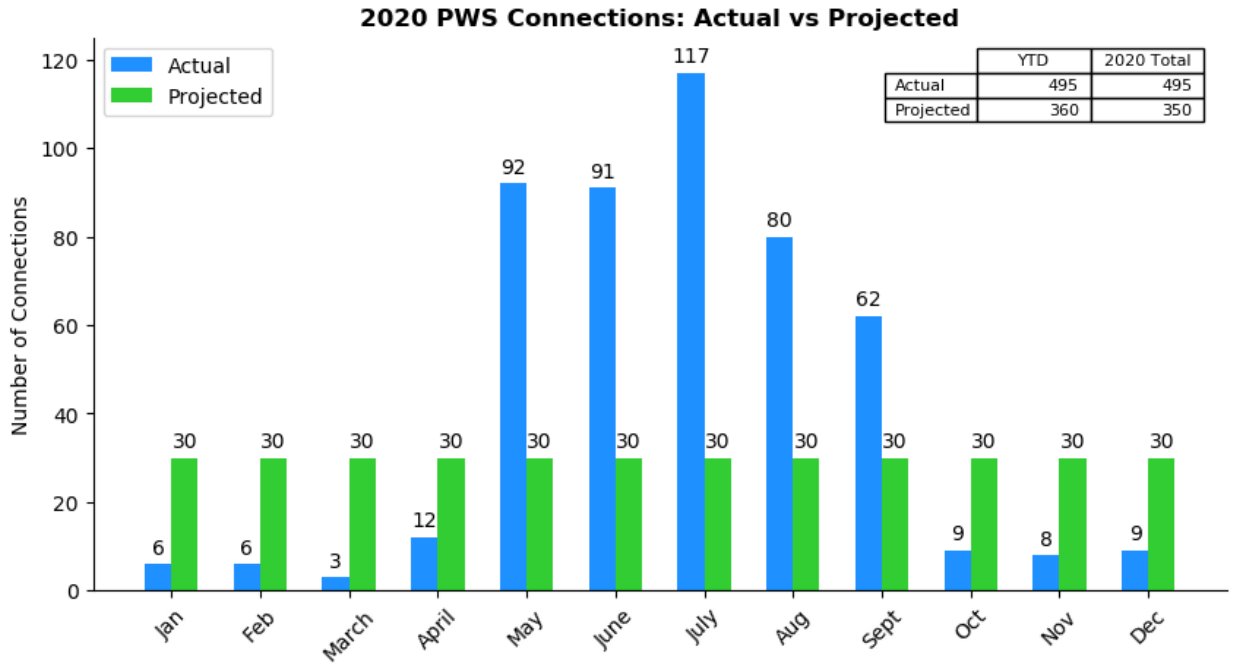
Figure. Streamflow and water levels representing the northern and southern portions of the District. The shaded blue area represents normal conditions. Normal conditions have not been established for the Skipton well as there is there is less than 2-years of data. Grey bars on secondary x-axis represents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

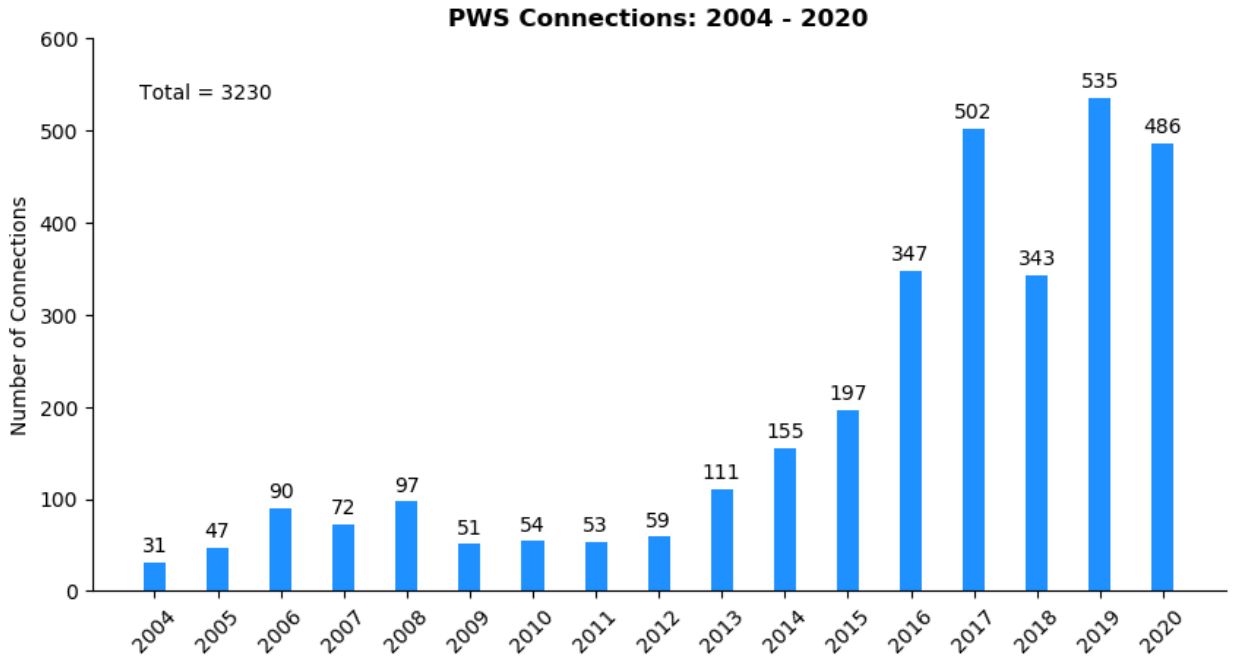


YEAR	PRECIP (IN)
2010	39.8
2011	18.9
2012	25.3
2013	42.5
2014	28.5
2015	48.2
2016	46.9
2017	31.7
2018	39.5
2019	33.7


2020 Registrations: Actual vs Projected
Actual
Projected
YTD
2020 Total
Actual 117 117
Projected 96 100
Number of Registrations
Jan 9 8
Feb 4 8
Mar 8 8
Apr 3 8
May 13 8
June 15 8
July 18 8
Aug 10 8
Sept 11 8
Oct 10 8
Nov 6 8
Dec 10 8


Registrations: 2009 - 2020
Total = 1456
Number of Registrations
2008 120
2009 99
2010 59
2011 96
2012 107
2013 135
2014 126
2015 127
2016 95
2017 105
2018 126
2019 144
2020 117


2020 PWS Connections: Actual vs Projected
Actual
Projected
YTD
2020 Total
Actual 495 495
Projected 360 350
Number of Connections
0
20
40
60
80
100
120
6
6
3
12
92
91
117
80
62
9
8
9
30
Jan
Feb
March
April
May
June
July
Aug
Sept
Oct
Nov
Dec


PWS Connections: 2004 - 2020
Total = 3230
Number of Connections
0
100
200
300
400
500
600
31
47
90
72
97
51
54
53
59
111
155
197
347
502
343
535
486
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

January 2021 – TCEQ Update

This is an update regarding the TCEQ projects that the District has been notified of since the previous board meeting on December 3rd.

- On December 18th, the District received notice of the 'Headwaters at Barton Creek Phase 5 Sections 1 & 2' project. The project is located at Headwaters Blvd. & Sage Thrasher Circle and is described as the development of 188 residential lots, multiple roadways, and 2 batch detention ponds. The District is currently working on its response to the TCEQ regarding this project.

January 2021 - Keaton Activity Report

- December 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
- Interactive Website Map (not in use yet):
    - General information about the District that the public can use
    - Includes:
        - Rivers, tributaries, public springs
        - Watersheds & subwatersheds
        - Surface geology
        - County cities, parks, & CCNs
        - Single Member Districts
        - River Basins & RWPGs
        - GCDs & GMAs
        - School Districts
        - USGS Stream Gauges
        - Pipelines
- Python Essentials Coursework:
    - Finished Module 4
        - 100% on Module Quiz
        - 75% on Module Test
    - Completed the Python Essentials Part 1 Summary Test
        - 83% score on 1st attempt
    - Reviewing course material in preparation for certification exam
- Start work on a TDS map for the Middle Trinity within the District
    - Gather water quality data from TWDB
    - Review wells for well construction data & aquifer comingling

December Science Report

Published two reports:

District Recharge Report

- The geologic influence on Middle Trinity Aquifer recharge
- Analysis water level, water quality, and literature for indications of recharge on a watershed scale.
- Also noting where future studies are needed to further our understanding on recharge.

Groundwater Modeling Scenario

- GAM run calculating drawdown due to a 2011-like drought with current production

Water Quality

- Well producing foam along Onion Creek
- Collecting and running samples for well owner
- Assessing the origin and cause for the foam

Ongoing Collaborating 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