



## ***Clearwater Underground Water Conservation District***

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***Leland Gersbach, President***

***Gary Young***

***Jody Williams***

***Scott Brooks***

***David Cole***

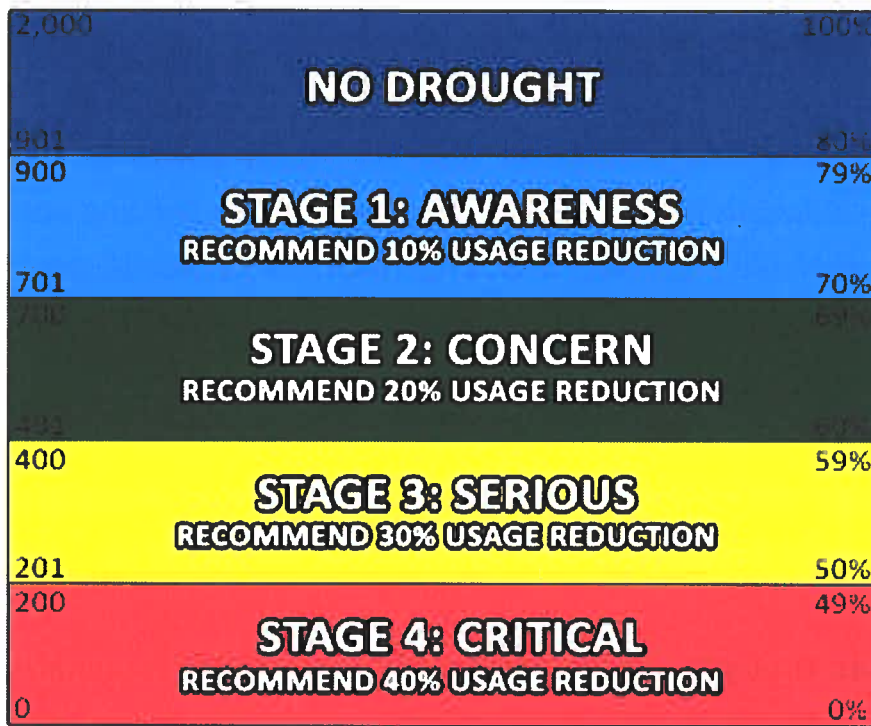
### **Clearwater Staff Reports**

**March 24, 2020**

- 1. Drought Status**
- 2. Educational Outreach Update**
- 3. Monitoring Wells**
- 4. Rainfall/Drought Conditions**
- 5. Well Registrations**
- 6. Non-Exempt Monthly Well Production**

# Trinity Aquifer—Drought Status Report

## NO DROUGHT

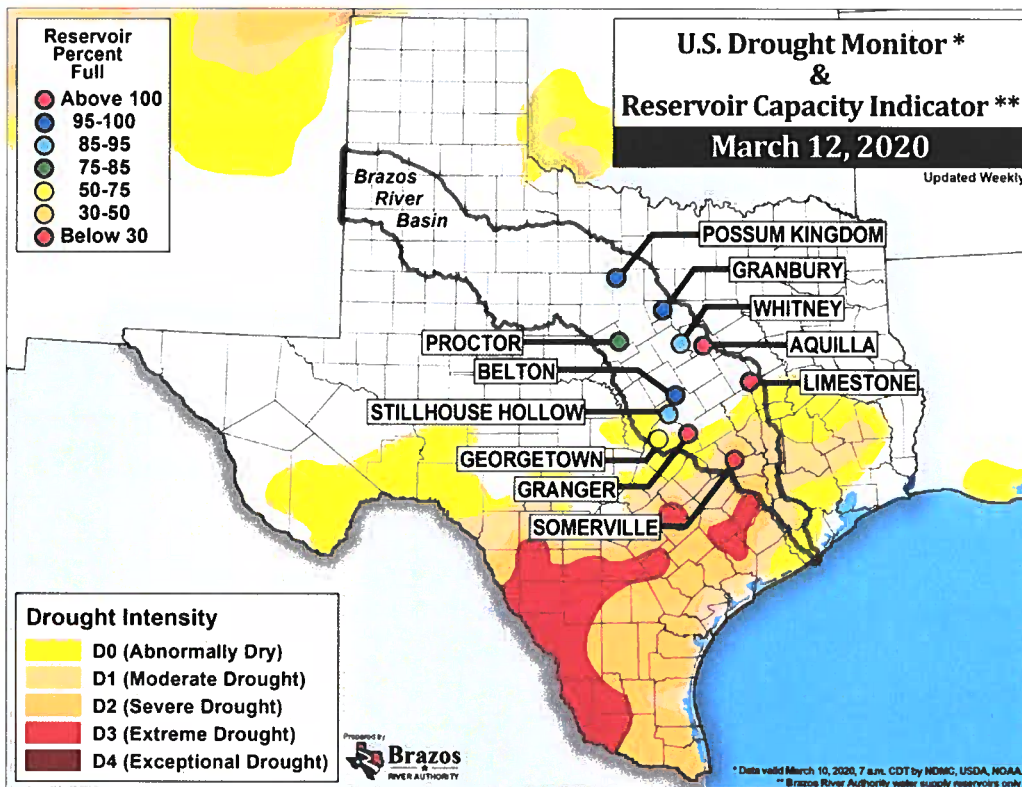


34.12 PDI  
103.40 %

Precipitation Deficit Index (PDI)

PDI is based on a 33" normal yearly average and is a 365 day running total.

AS OF 03/12/2020

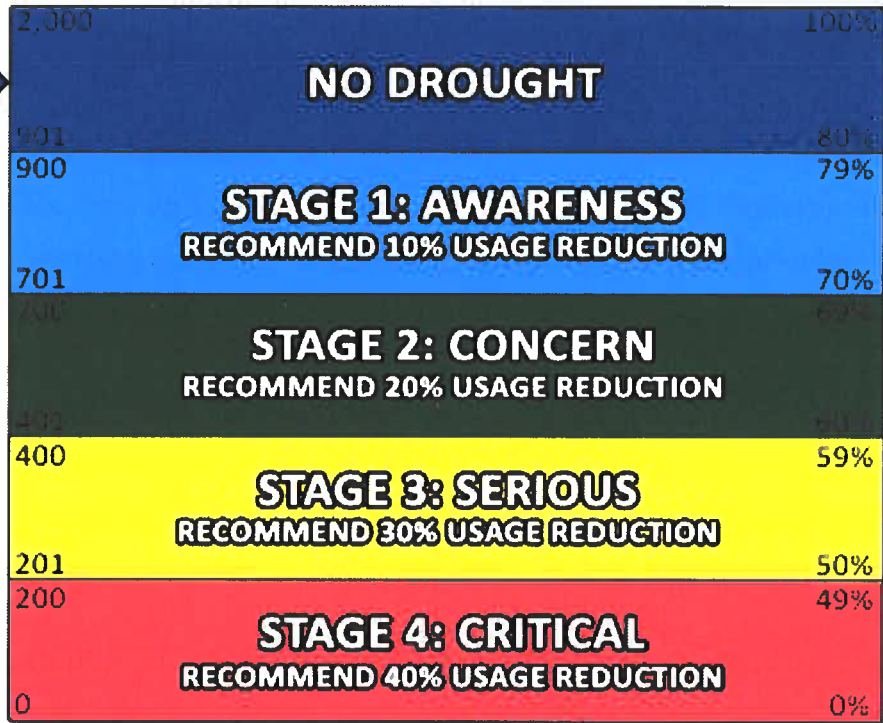


# Edwards BFZ Aquifer—Drought Status Report

## NO DROUGHT

1259.11 ac-ft  
(month)  
21.16 cfs

Salado Creek  
Spring Discharge



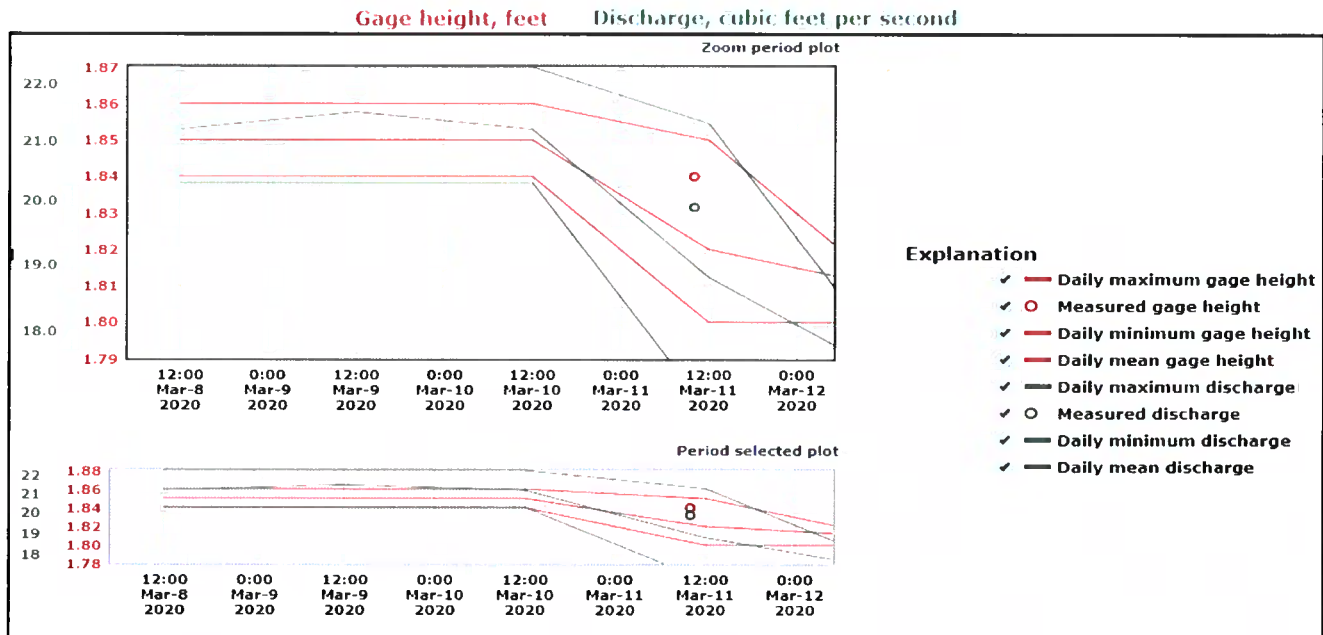
33,368 PDI  
101.11%

Precipitation Deficit Index (PDI)

AS OF 03/12/2020

PDI is based on a 33" normal yearly average and is a 365 day running total.

### USGS 08104300 Salado Ck at Salado, TX







## Education Outreach Highlights 3/18/20

**1. Goal: Improve our educational outreach efforts and expand our identified audiences (4<sup>th</sup>-5<sup>th</sup> grade, high school environmental sciences students, and the real-estate sales community).**

Goals and objectives in the Management Plan (A:3, A:4, B,F:1,F:2 pages 22-26).

- Feb 19 – Staff hosted the education trailer at Saegert Elementary in Killeen for the S.M.A.R.T. event (Science, Math Activities Requiring Thinking). 120 students and teachers in attendance.
- March 5 – Staff hosted the education trailer at Charter Oak Elementary in Belton for Career Day. 42 students and teachers in attendance.
- March 6 - Staff hosted the education trailer at Miller Heights Elementary in Belton for Career Day. 60 students and teachers in attendance.

**2. Improve Communication and Reporting of Usage by well owners who are permitted (HEU or OP) by the district. Goals and objectives in the Management Plan (A:1, A:2, A:3,G:1,G:2, pages 22-23).**

- Continue working with HALFF to make improvements to the new platform and correct flaws as needed.
- Most of our permitted users are entering their monthly water usage online now.

**3. Increase the District Communication strategically by expanding utilization of a media sources.**

Goals and objectives in the Management Plan (A:1, A:2, A:3,G:1,G:2, pages 22-23).

- Continually adding more information to the website to make it a valuable resource to Bell County along with utilizing more social media.

**4. Improve Annual Reporting accuracy and timeliness per State mandated Legislation and Management Plan. Goals and objectives in the Management Plan (A:1,2,3,4; B; C; D; E; F; g pages 22-26).**

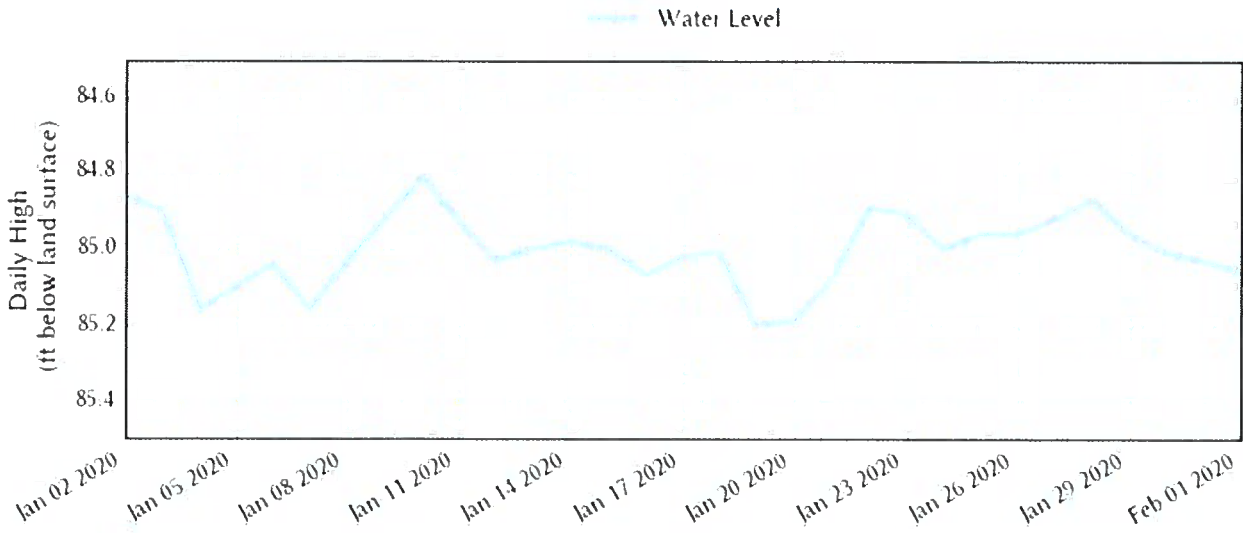
- The 2019 Annual Report is being presented at the March meeting.



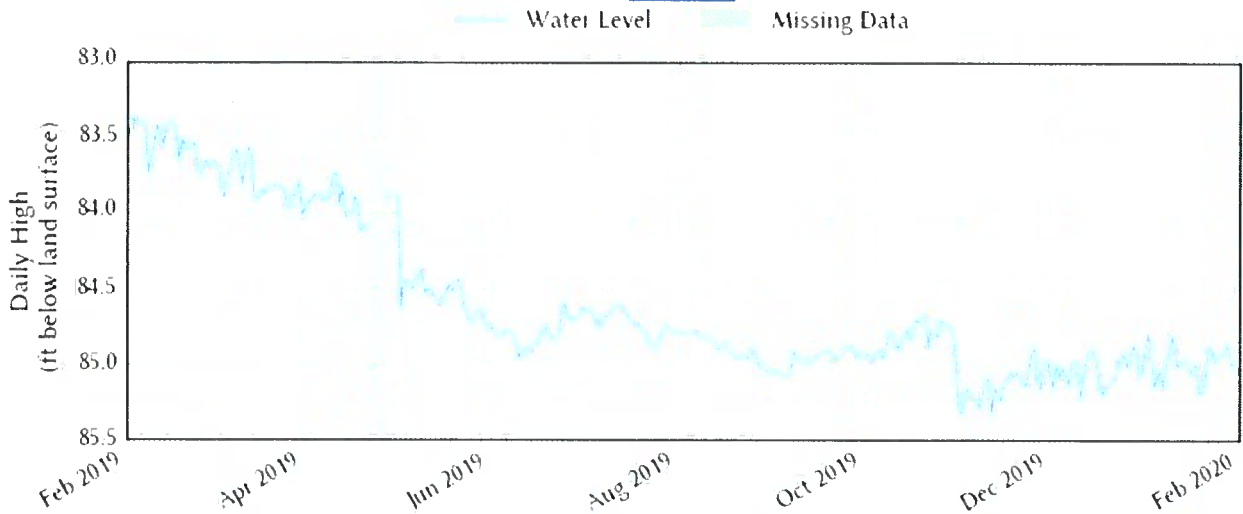
**February 2020**

**Continuous Monitoring Well # 4058201  
(Central Texas College - Ranch Rd)  
Upper Trinity Aquifer**

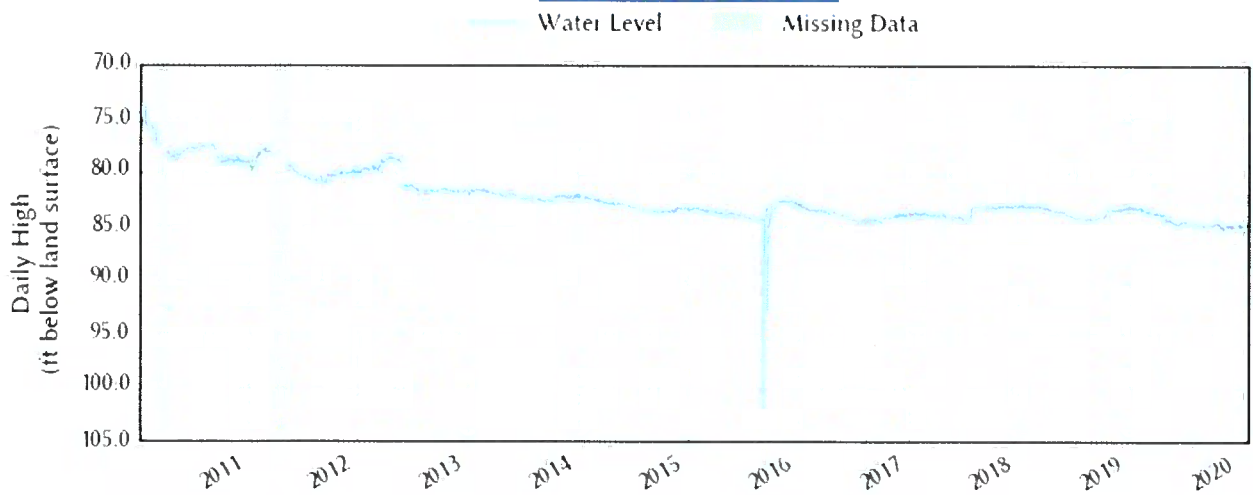
**Last 30 Days**



**1 Year**

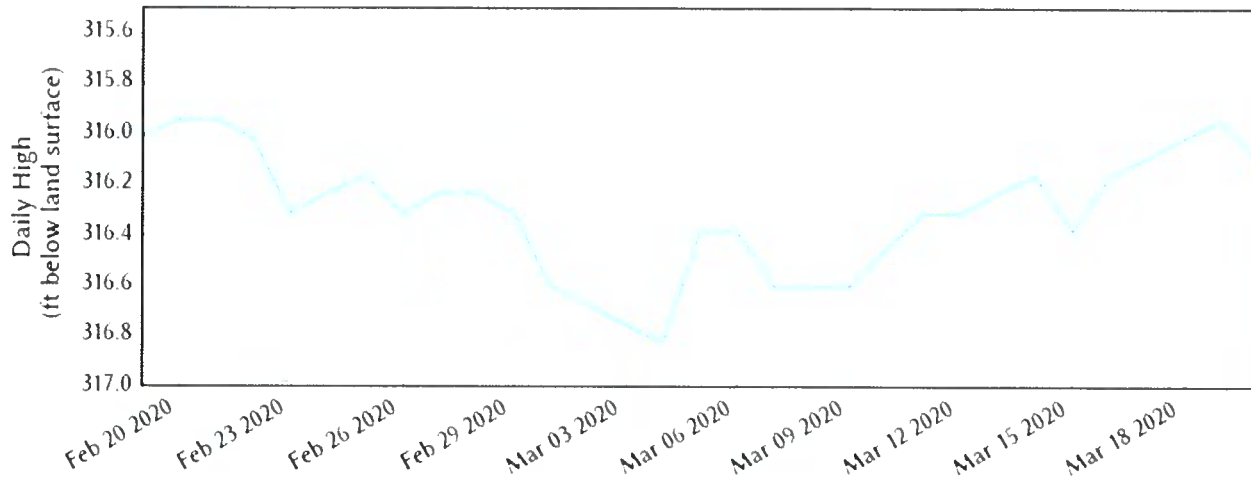


**Period Of Record**



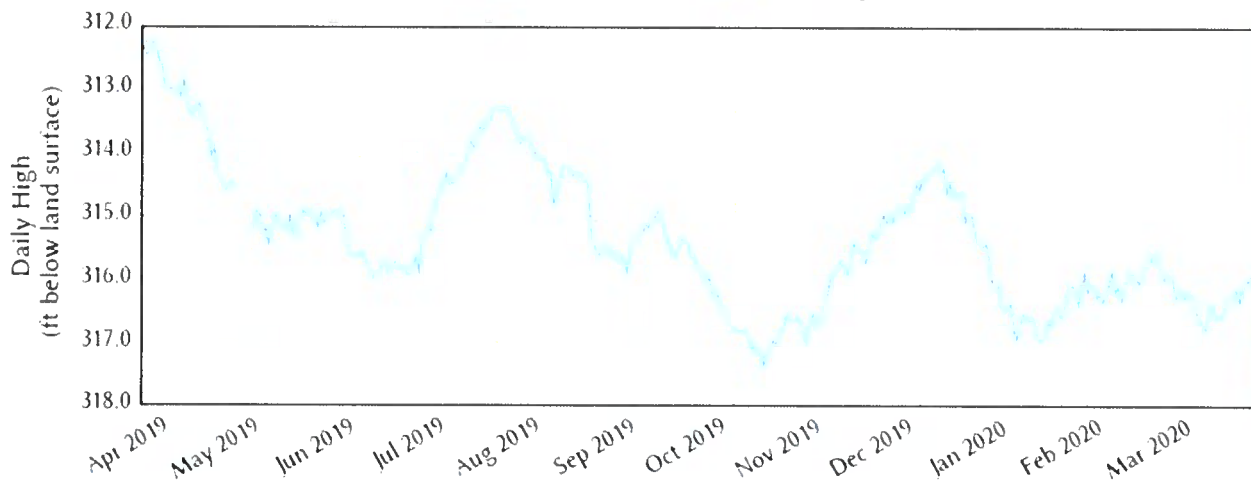
Last 30 Days

Water Level



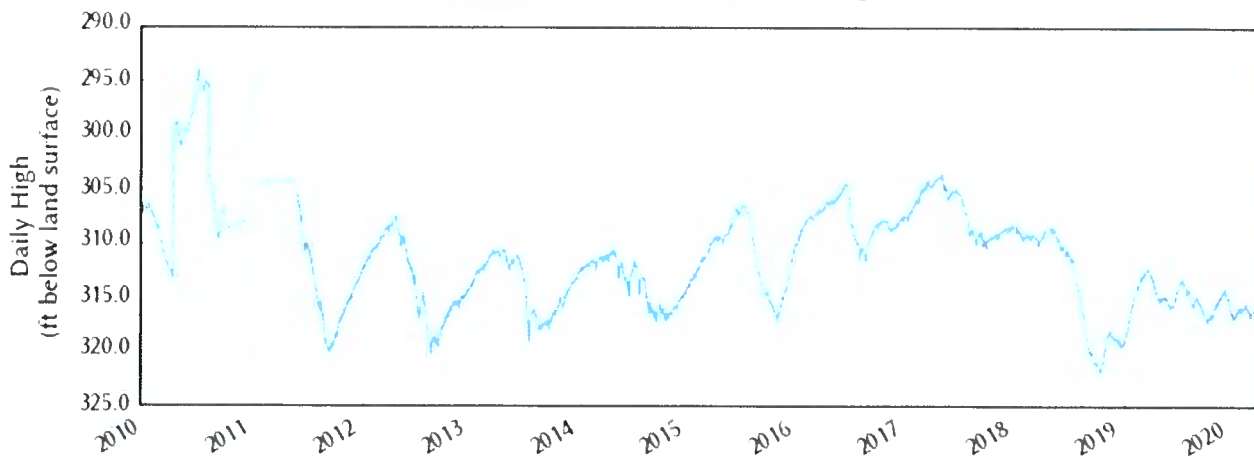
1 Year

Water Level Missing Data



Period Of Record

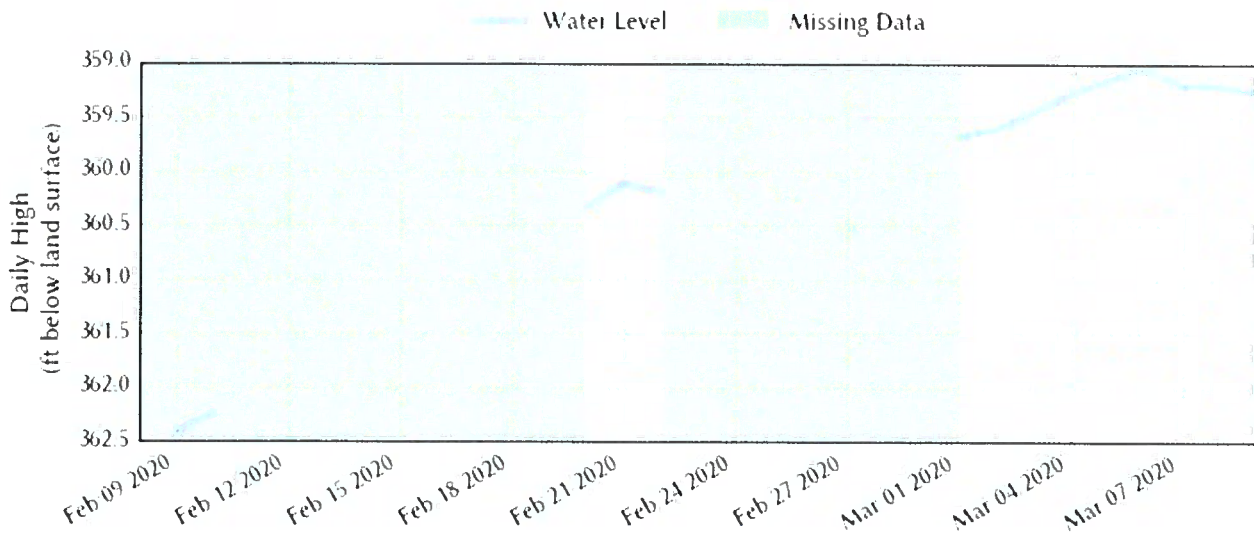
Water Level Missing Data



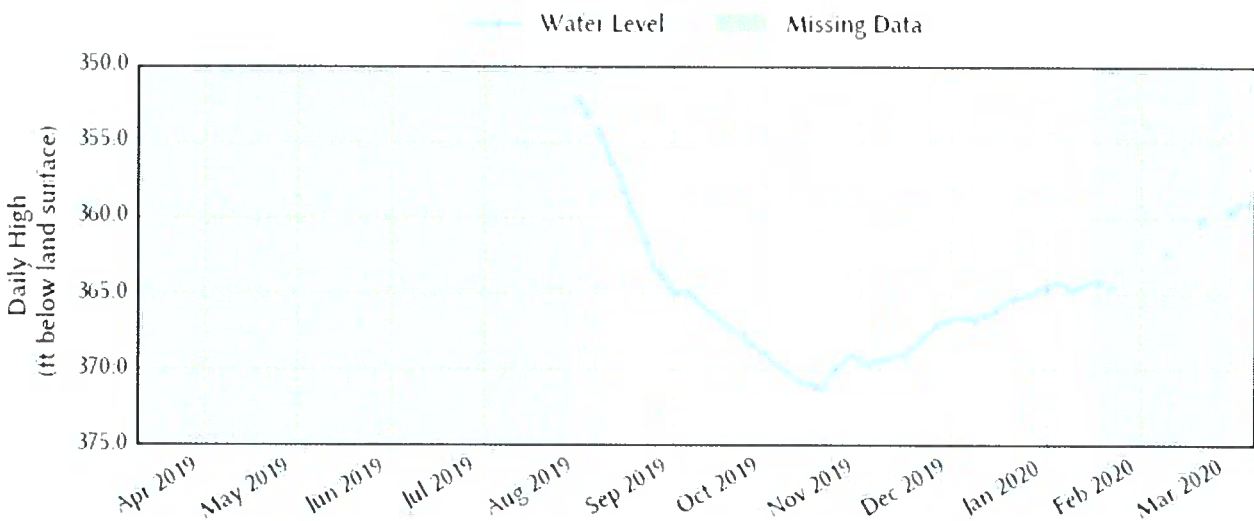


**Continuous Monitoring Well # 5802304  
(Killeen - River Ridge Ranch Park Well #1)  
Middle Trinity Aquifer**

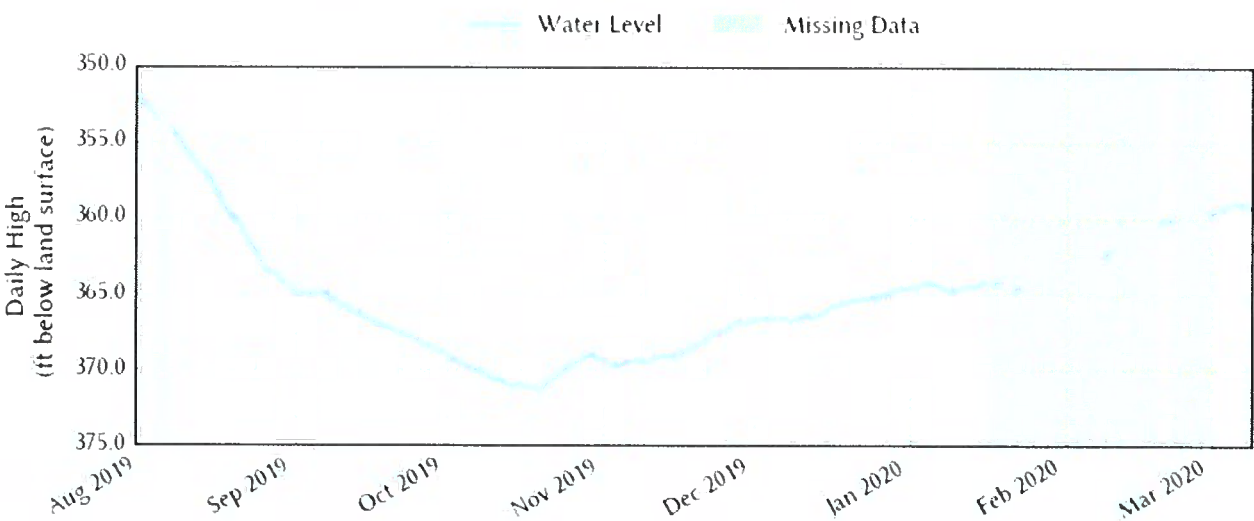
**Last 30 Days**



**1 Year**



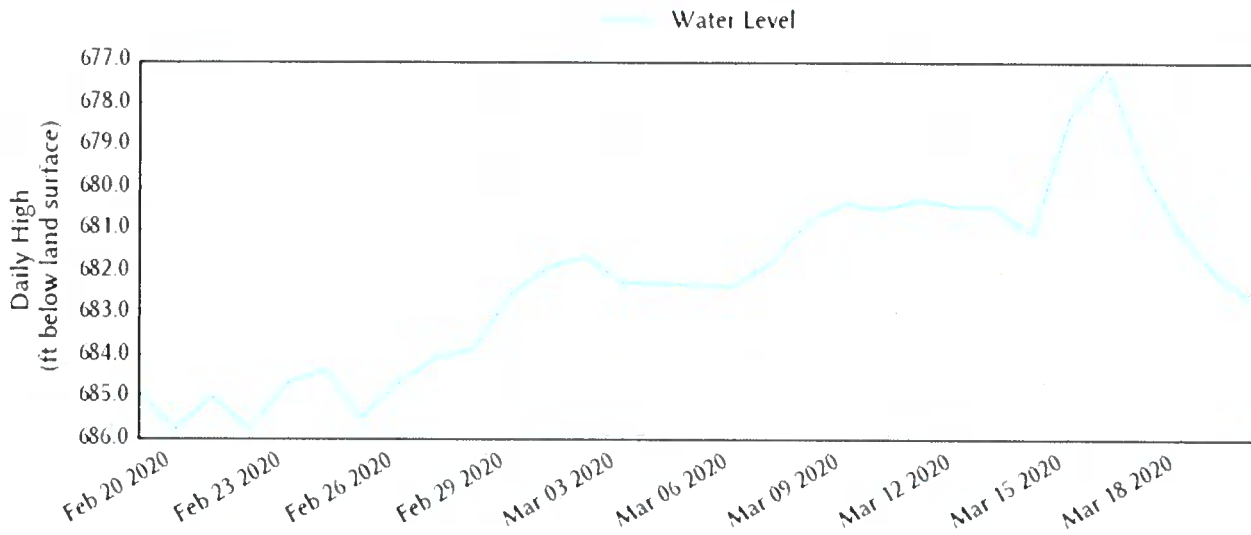
**Period Of Record**



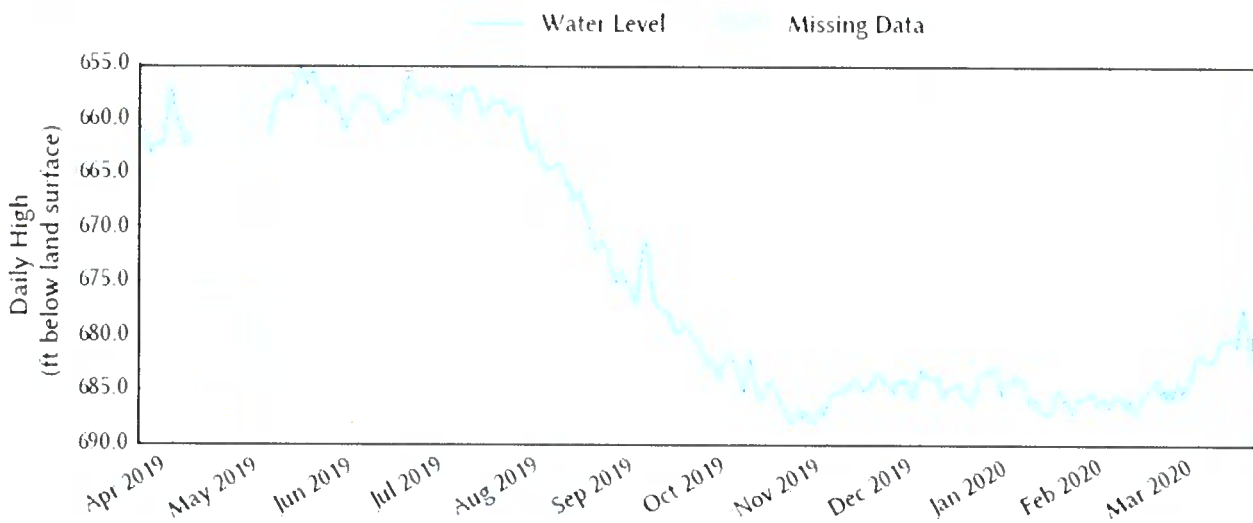
**February 2020**

**Continuous Monitoring Well # 5803701  
(Gault Site - Williamson County)  
Middle Trinity Aquifer**

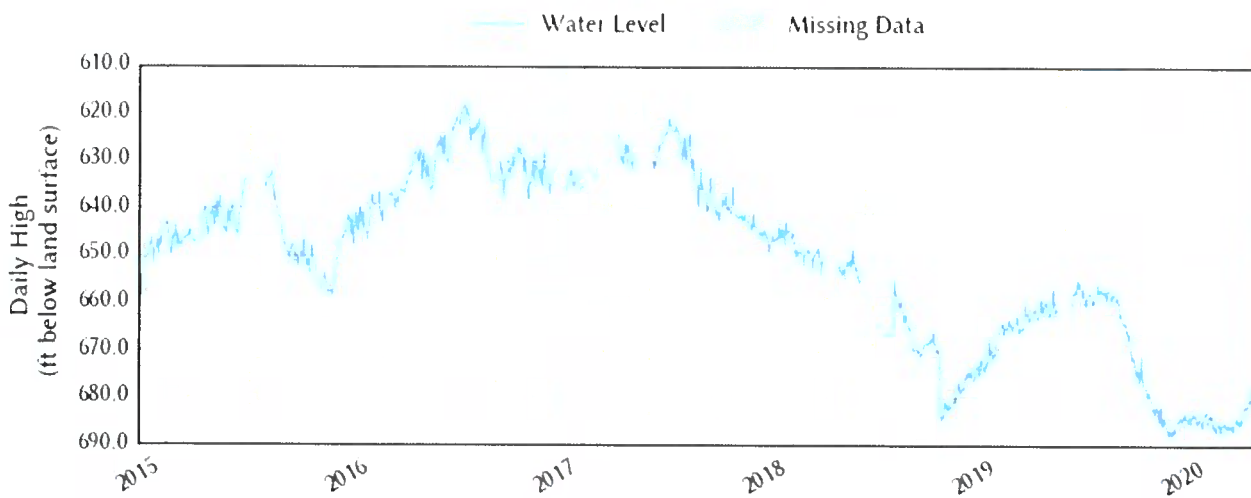
**Last 30 Days**



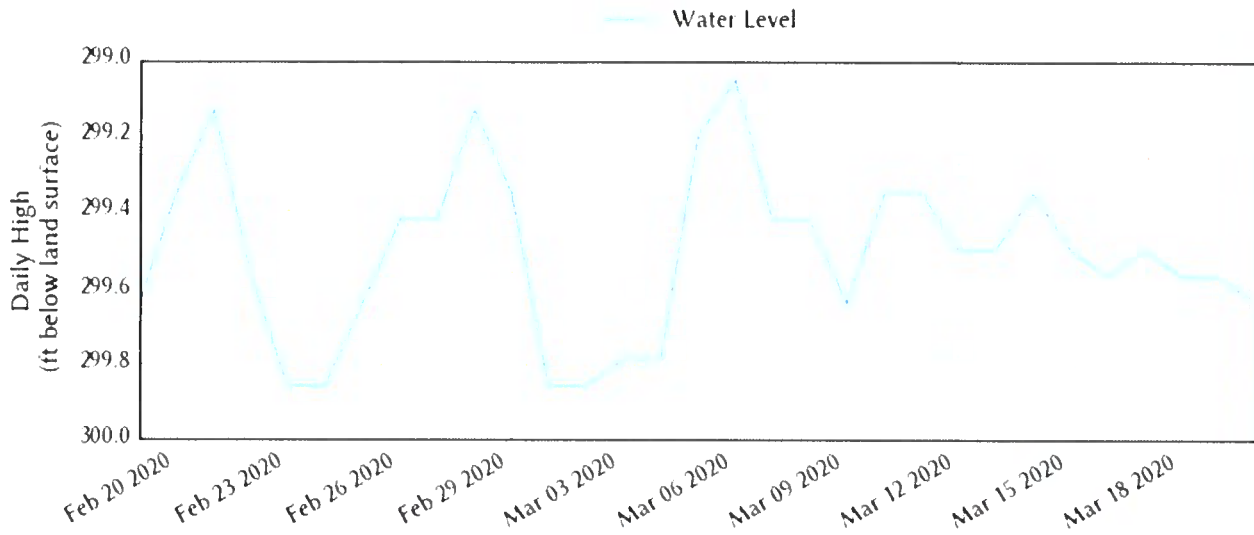
**1 Year**



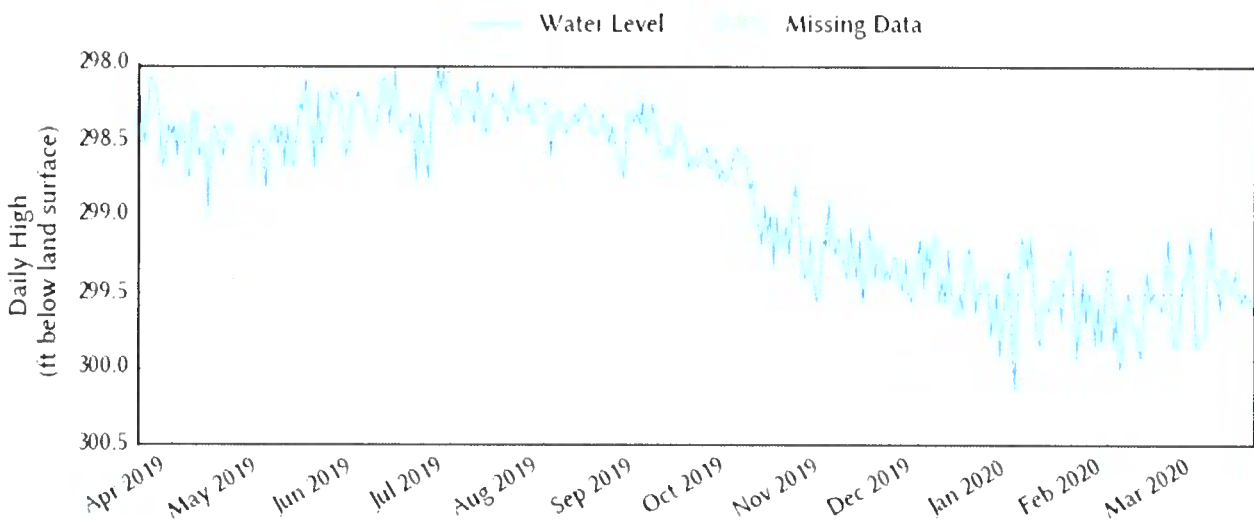
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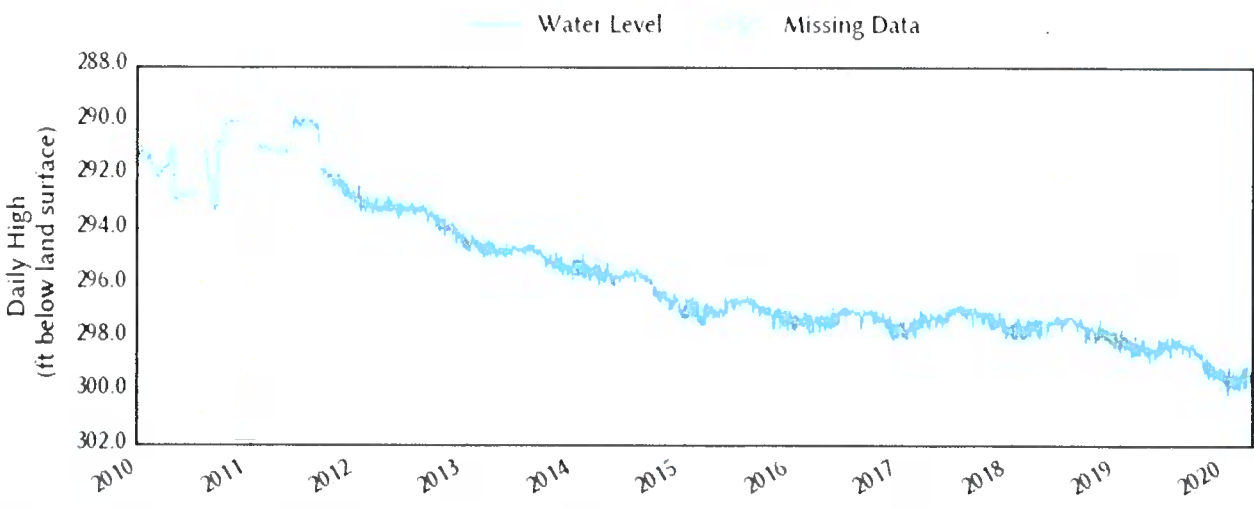
**Last 30 Days**



**1 Year**

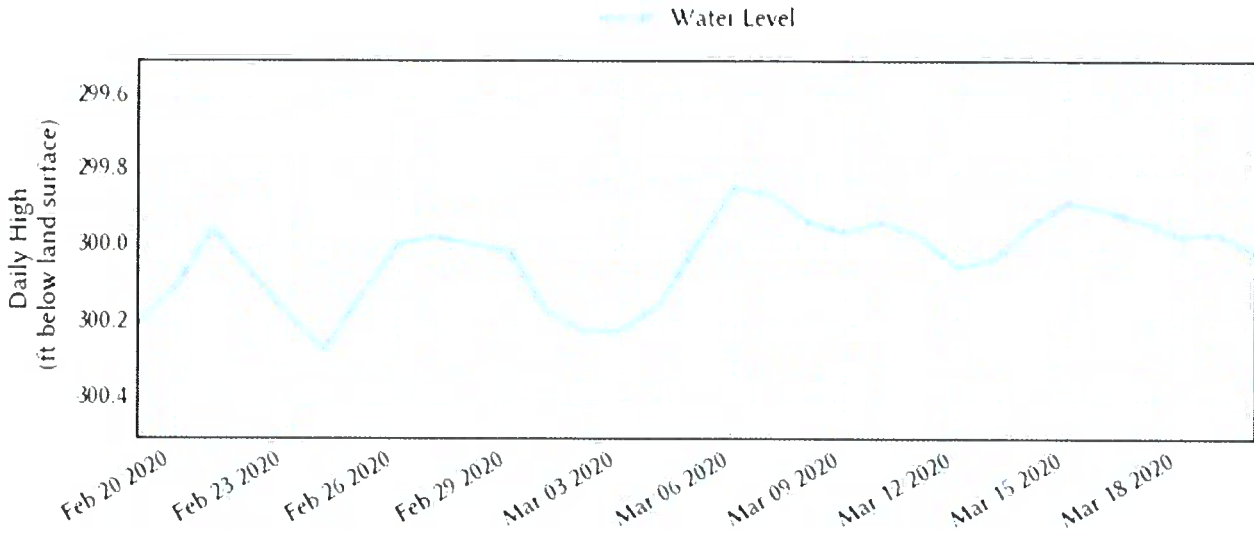


**Period Of Record**

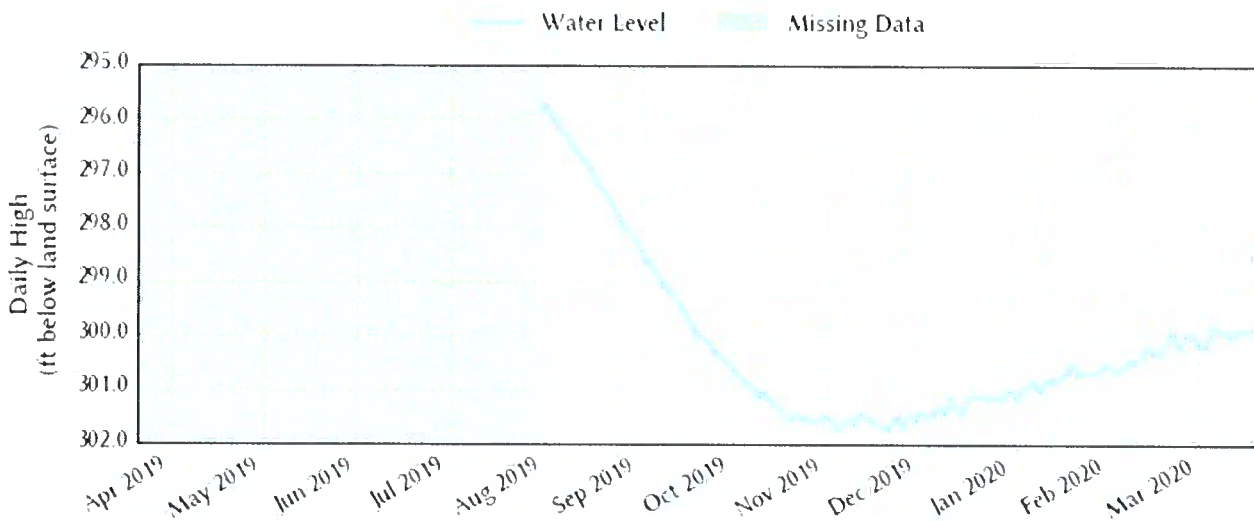


**Continuous Monitoring Well # 5802303  
(Killeen - River Ridge Ranch Park Well #2)  
Lower Trinity Aquifer**

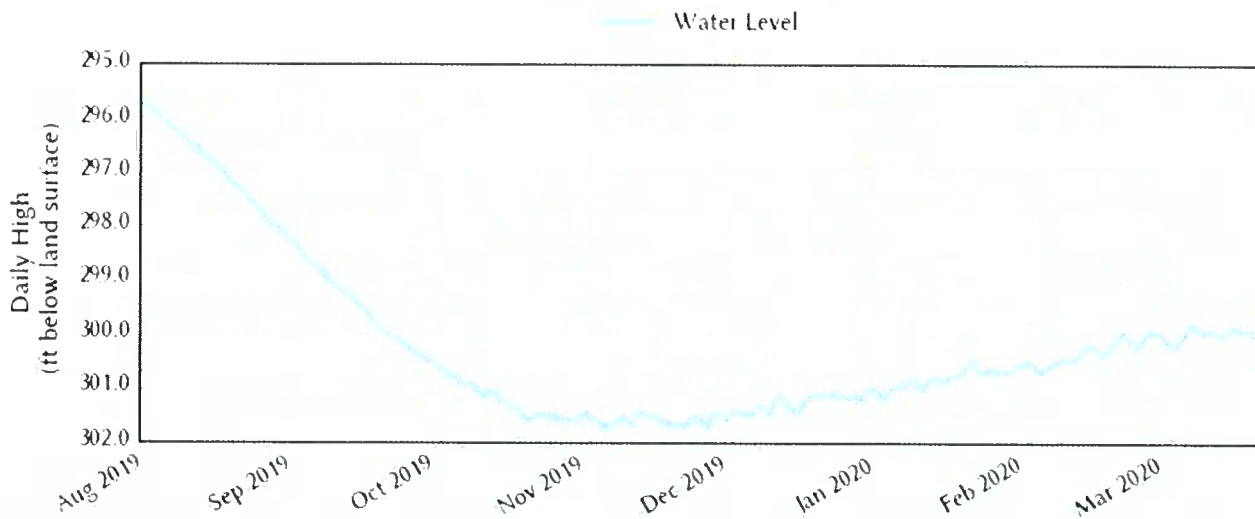
**Last 30 Days**



**1 Year**

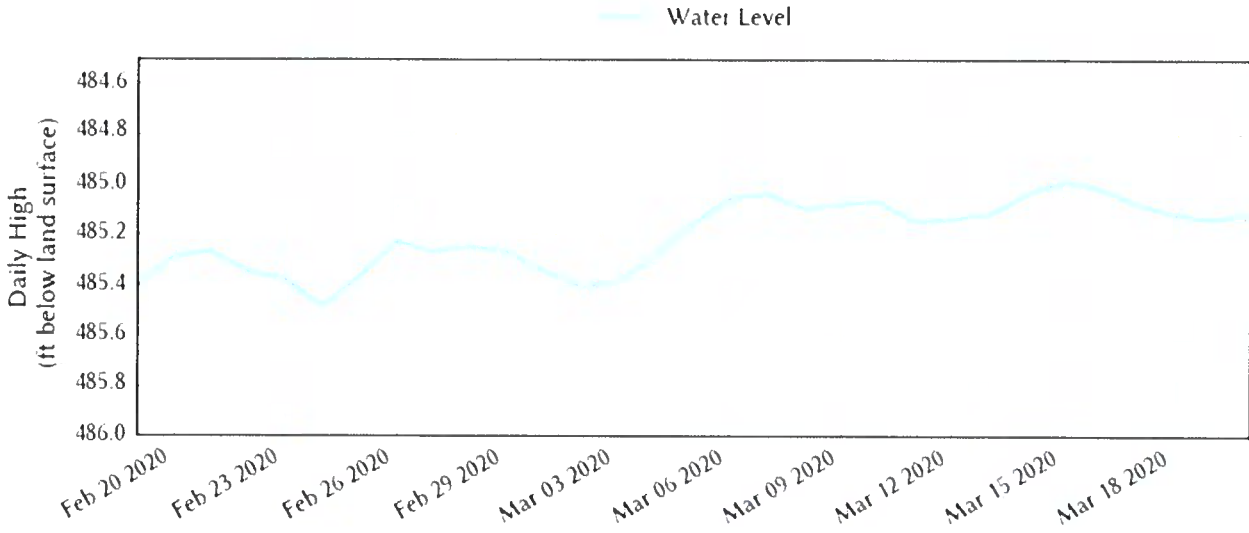


**Period Of Record**

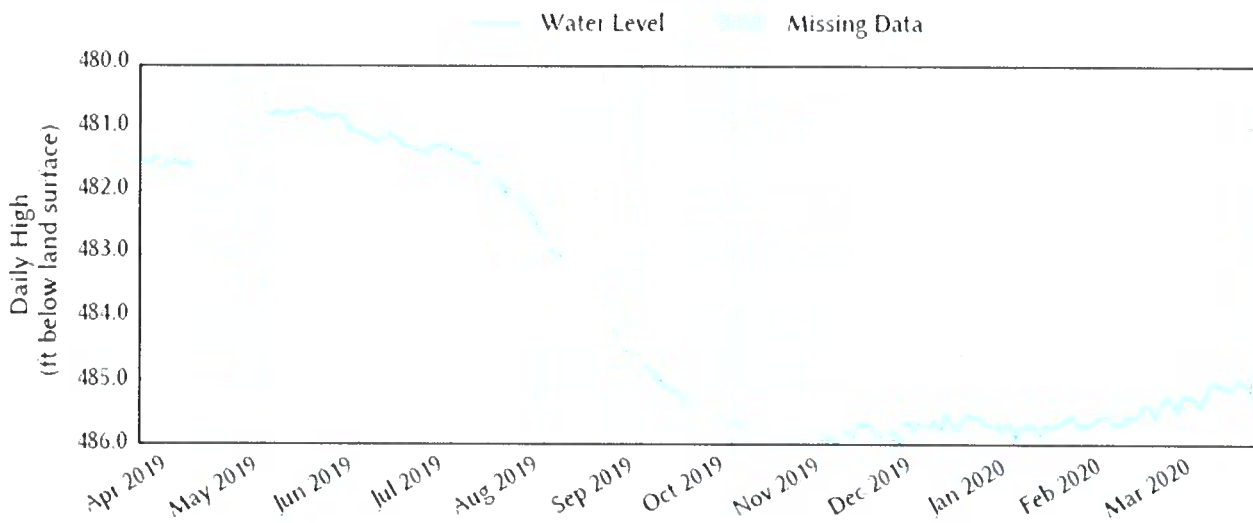


Continuous Monitoring Well # 4054701  
(Temple - Cearley Well)  
Lower Trinity Aquifer

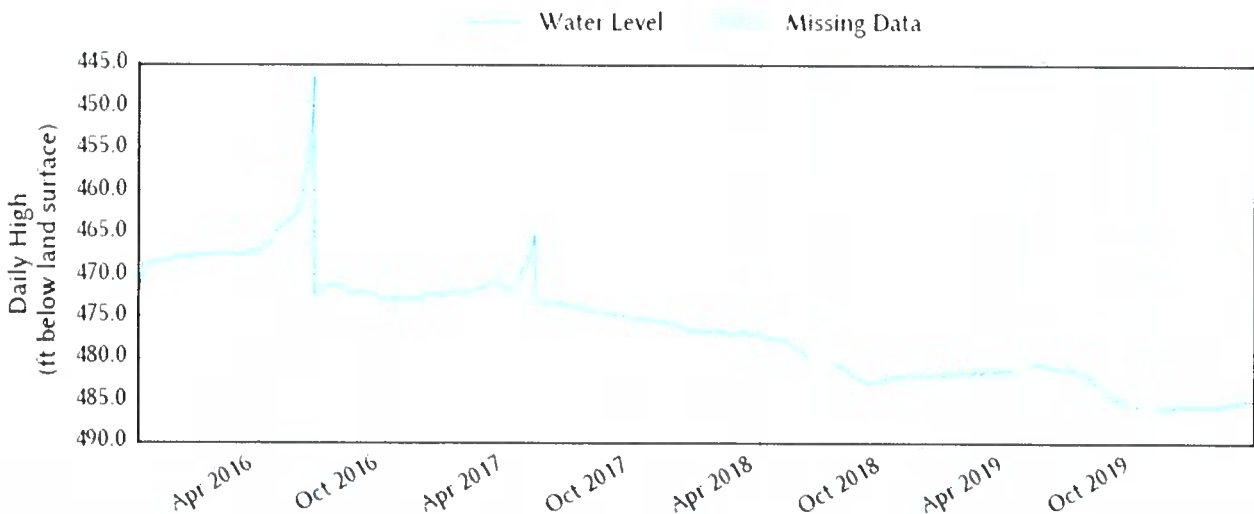
Last 30 Days



1 Year

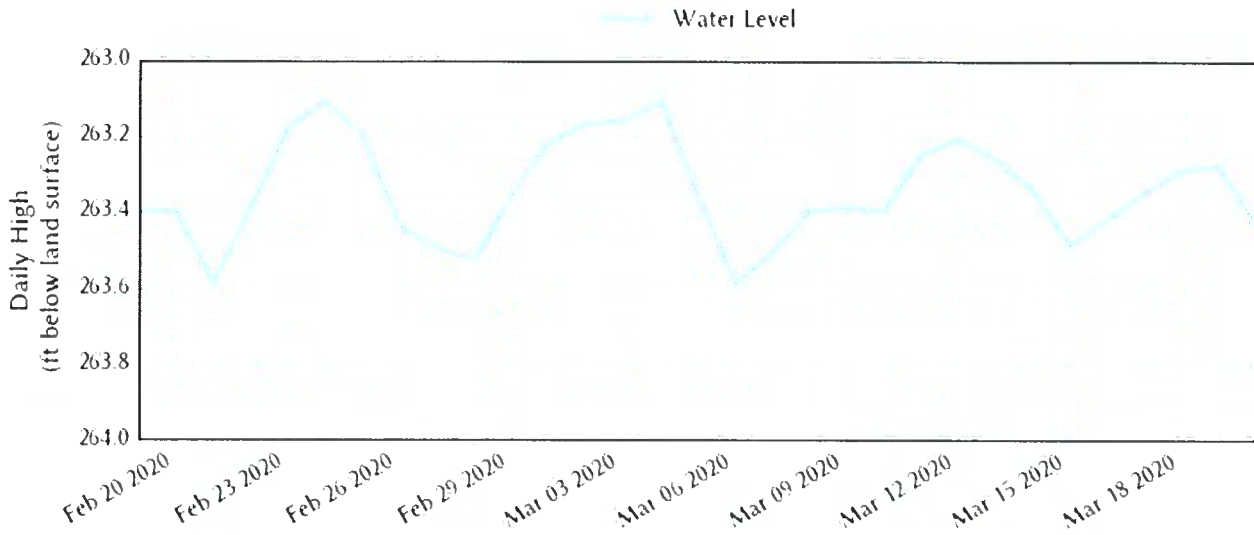


Period Of Record

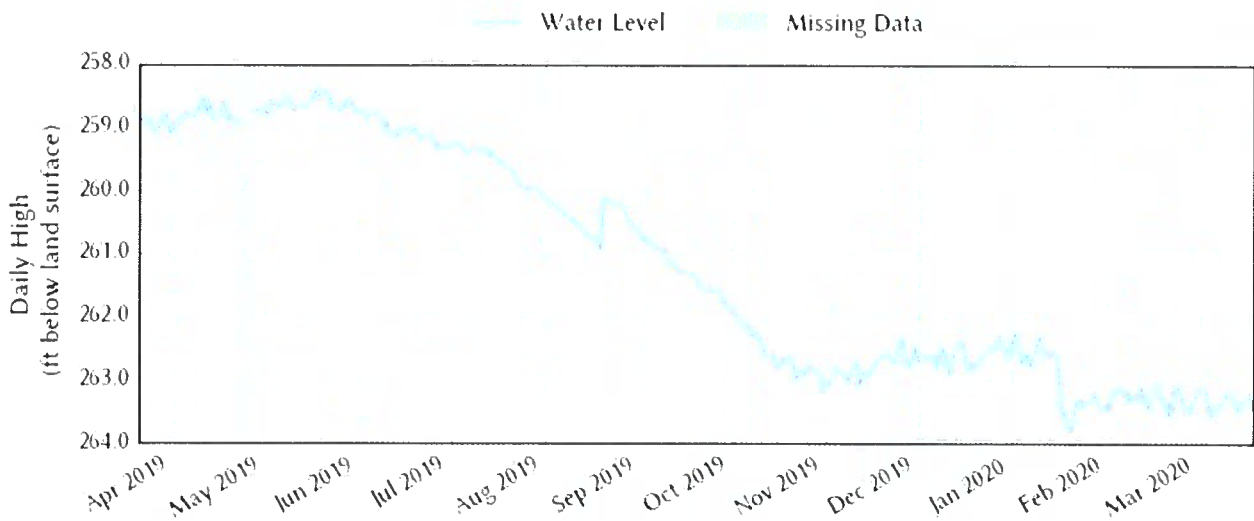


Continuous Monitoring Well # 4061509  
(Temple - Pea Ridge Well)  
Lower Trinity Aquifer

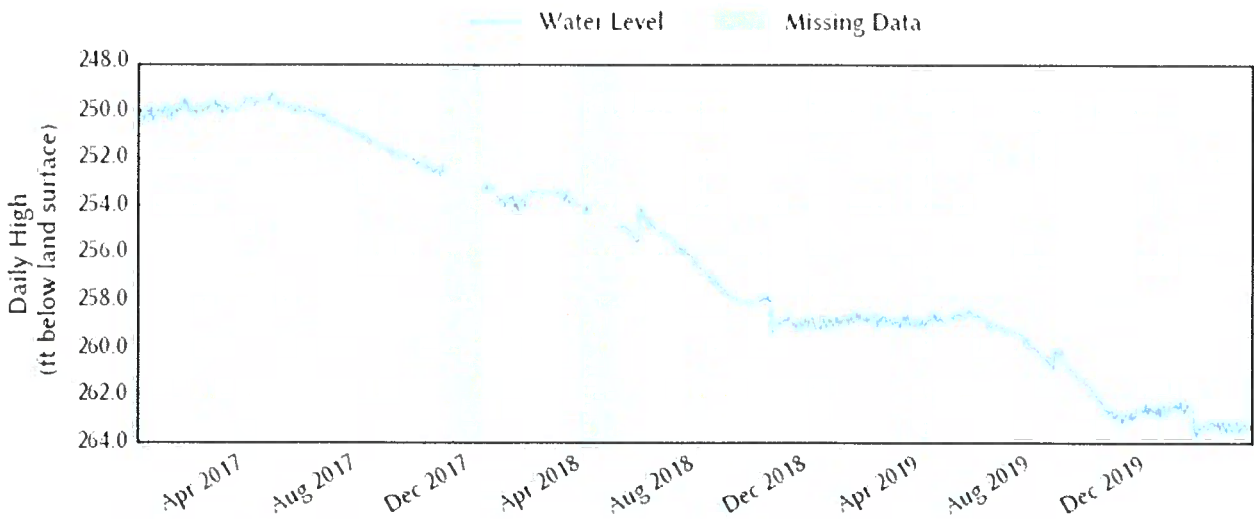
Last 30 Days



1 Year

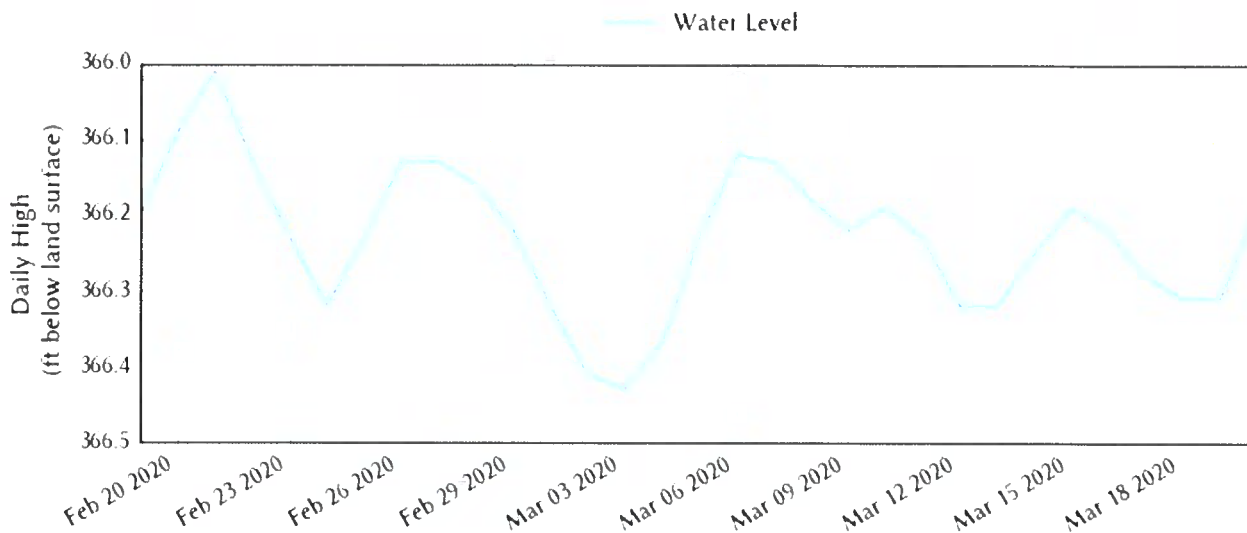


Period Of Record

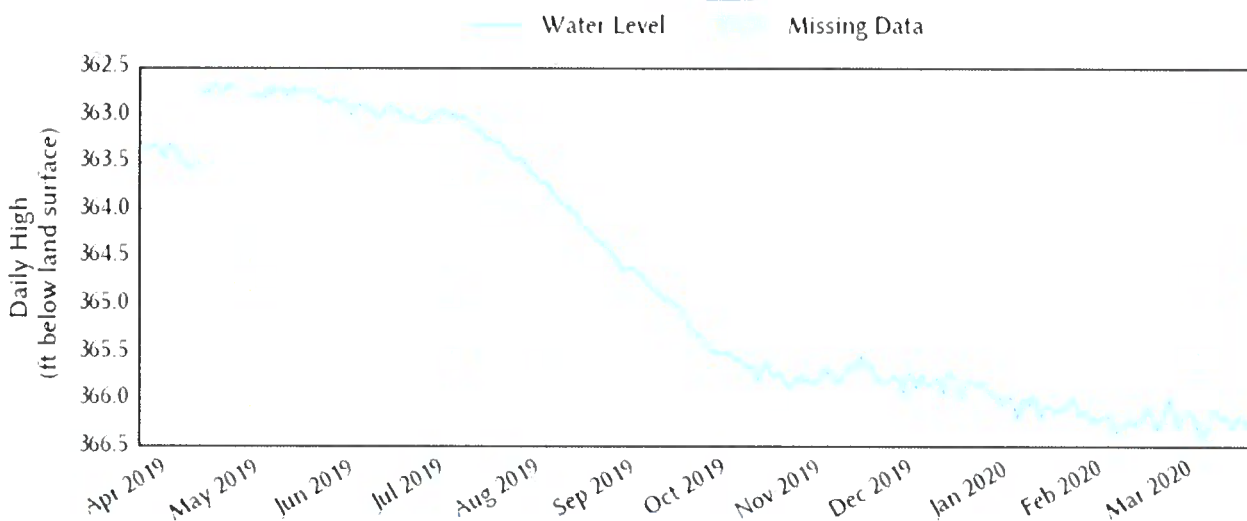


Continuous Monitoring Well # 4062501  
(Temple - Acres Well)  
Lower Trinity Aquifer

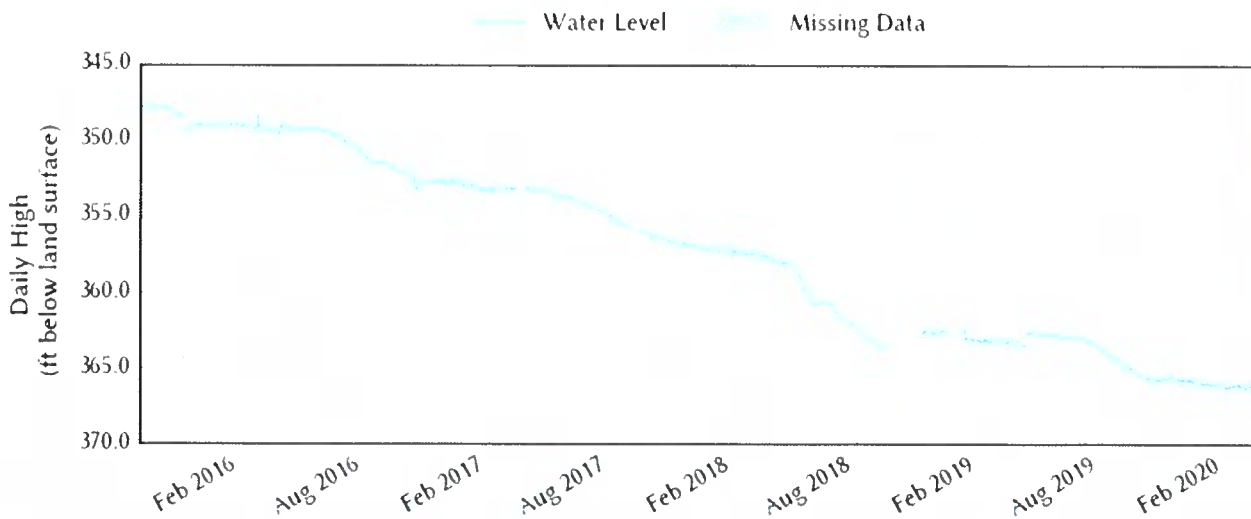
Last 30 Days



1 Year



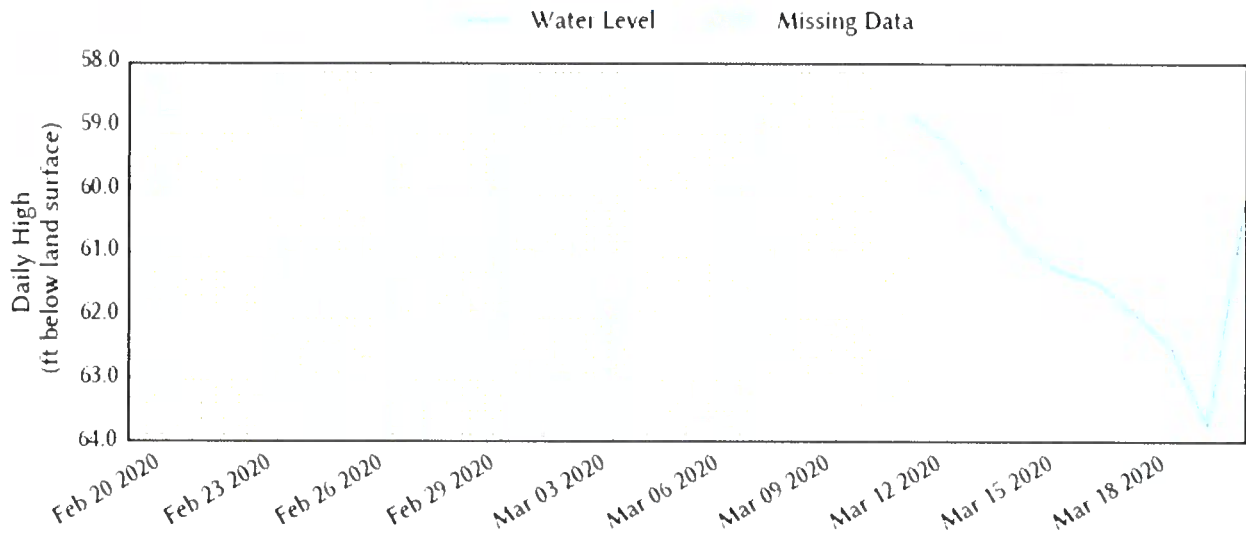
Period Of Record



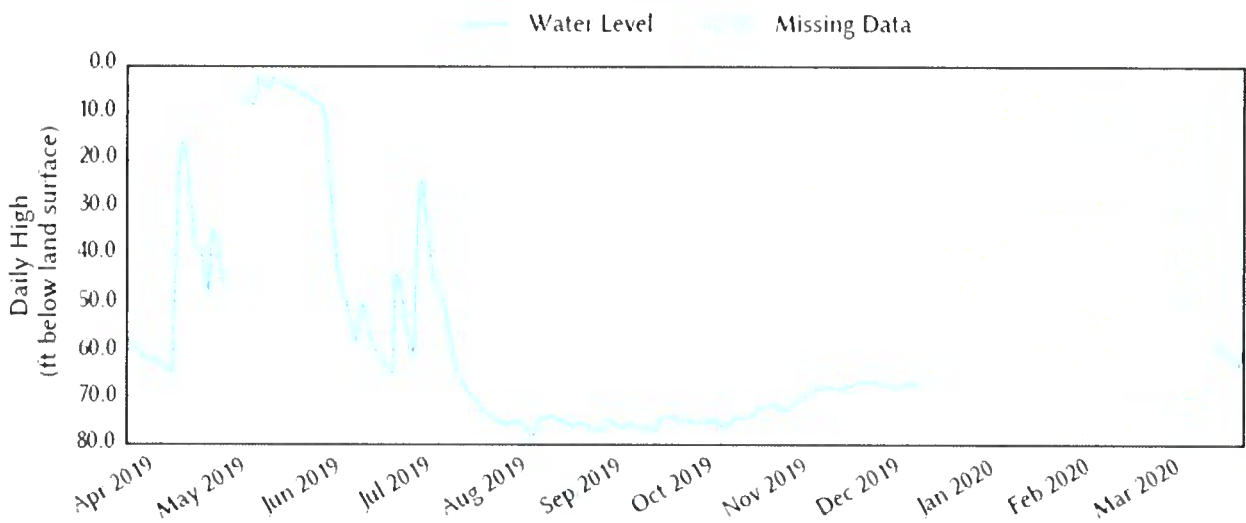
**February 2020**

**Continuous Monitoring Well # 5804628  
(Salado Cemetery)  
Edwards Aquifer**

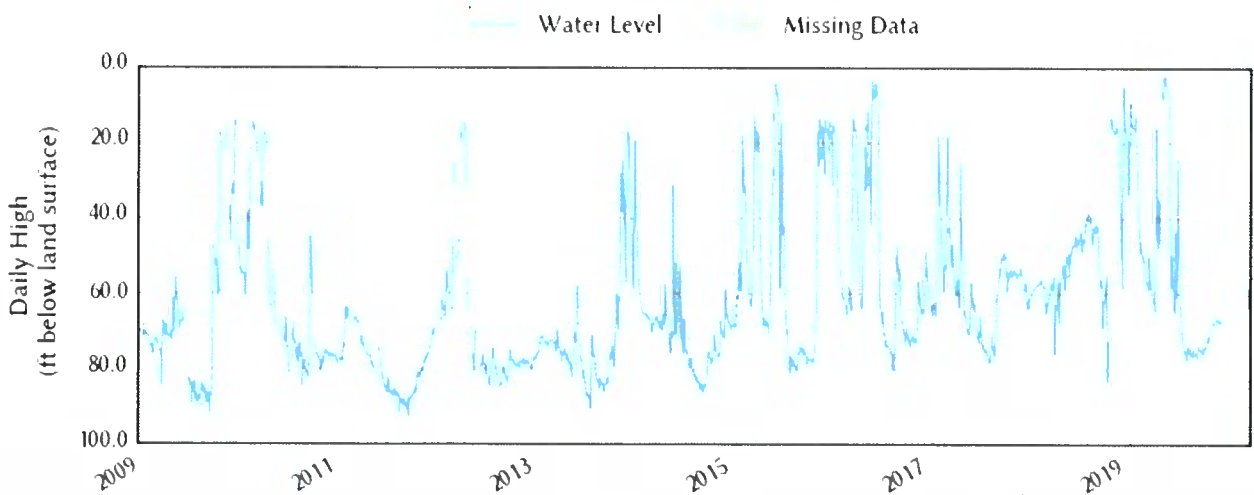
**Last 30 Days**



**1 Year**



**Period Of Record**

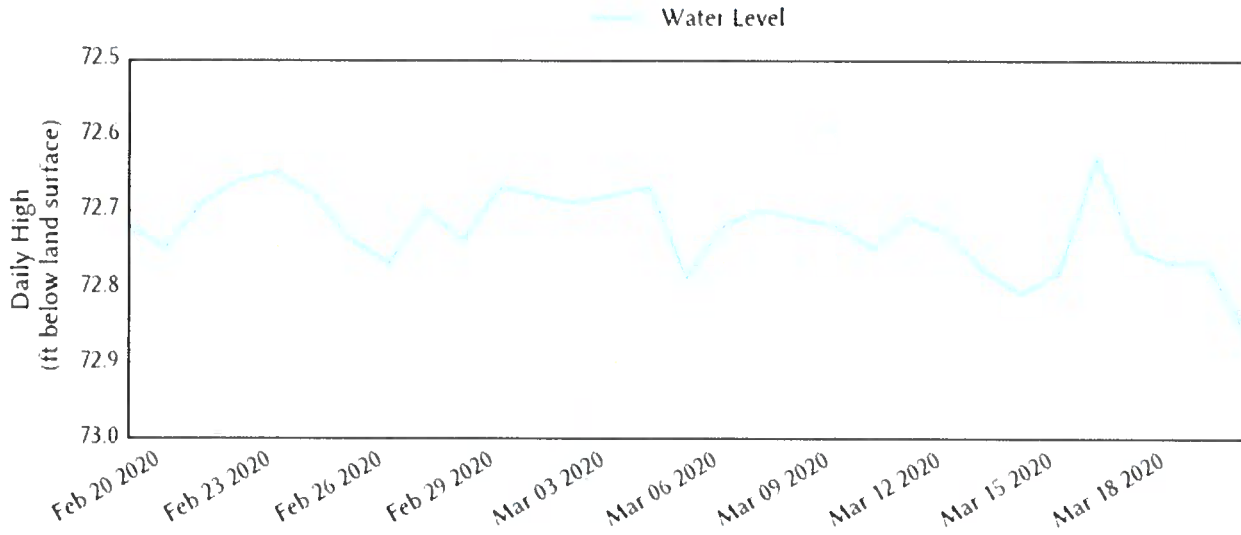




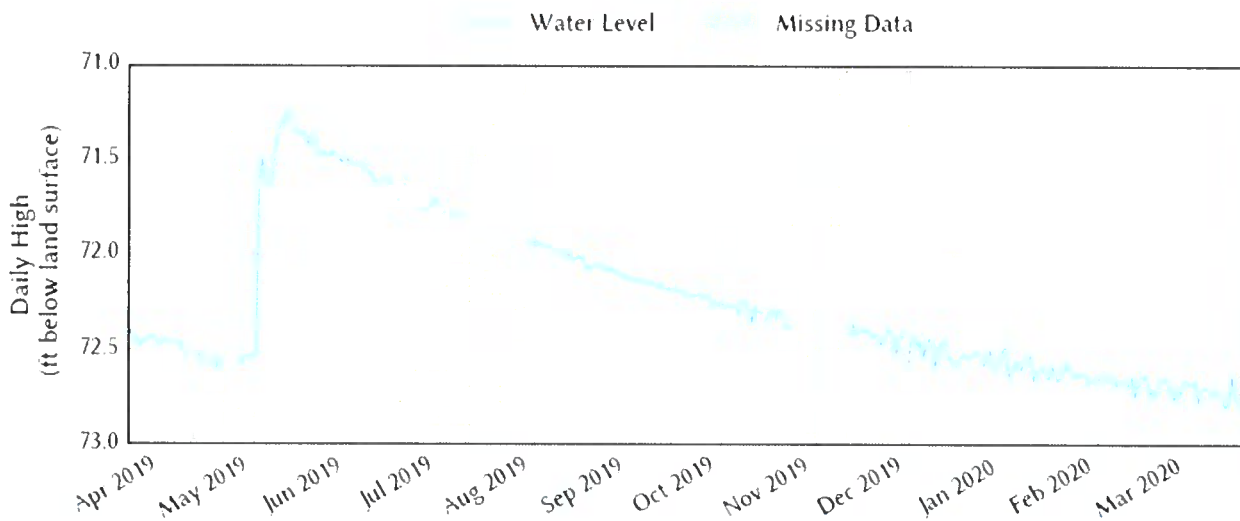
**February 2020**

**Continuous Monitoring Well # 5804702  
(FM 2843 - Patterson's Crossing - Salado Creek)  
Edwards Aquifer**

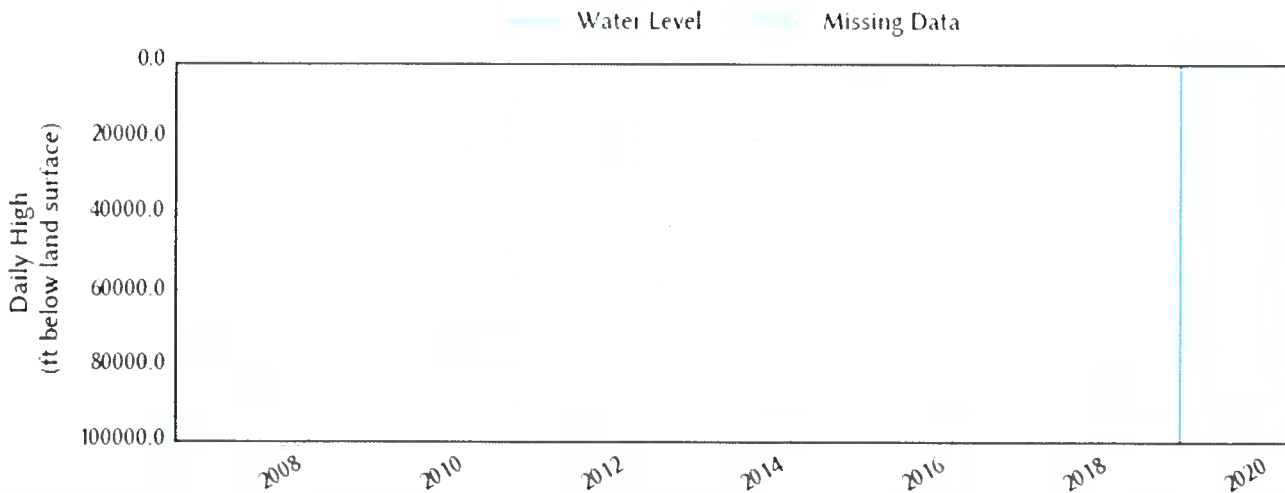
**Last 30 Days**



**1 Year**



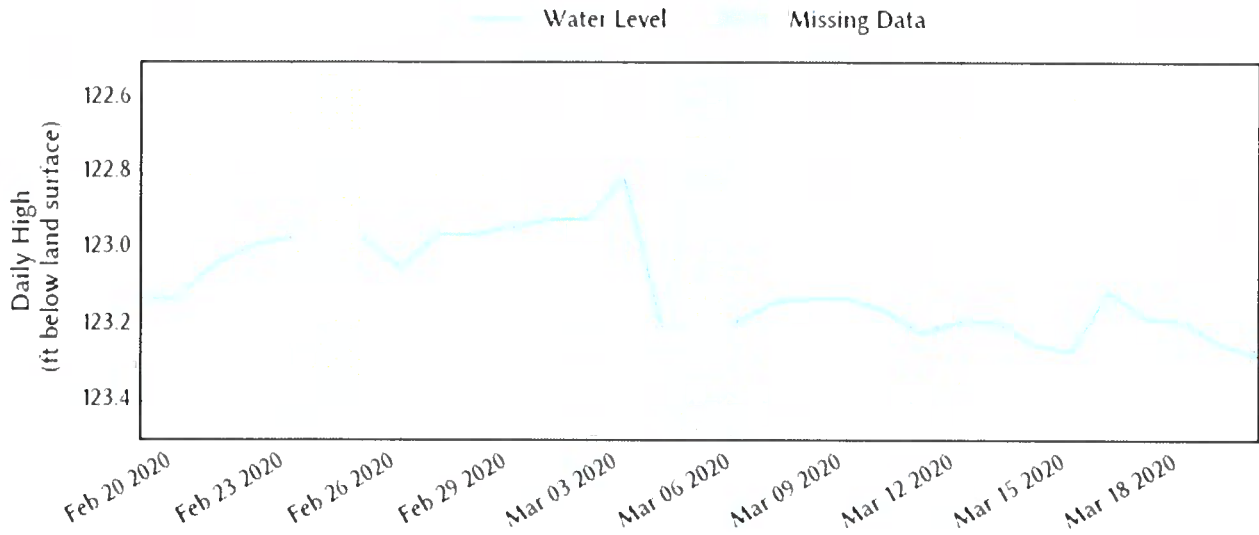
**Period Of Record**



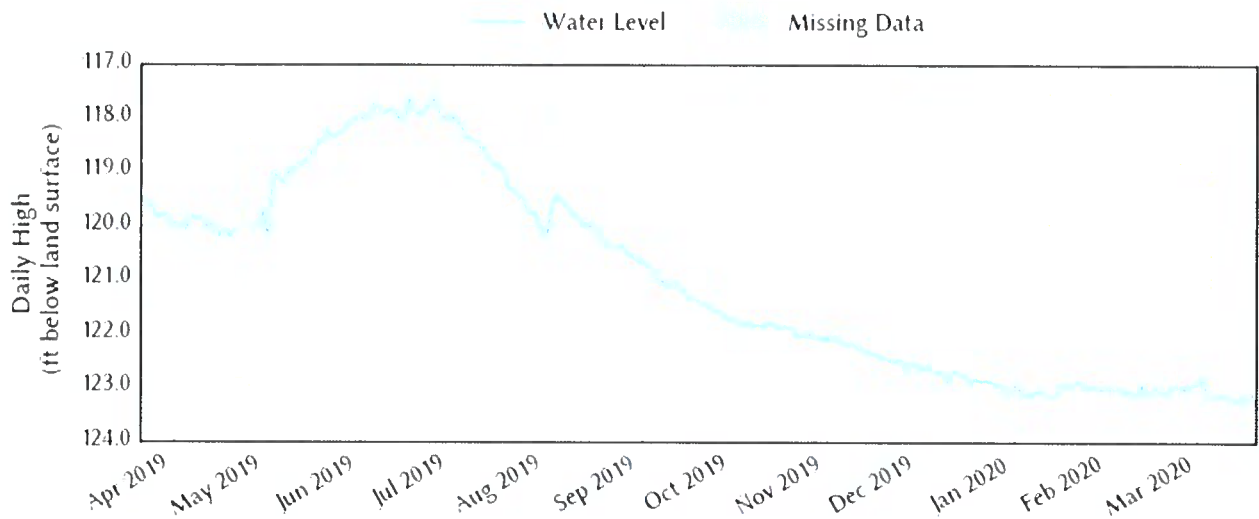
**February 2020**

**Continuous Monitoring Well # 5804816  
(IH-35 Rest Stop - West)  
Edwards Aquifer**

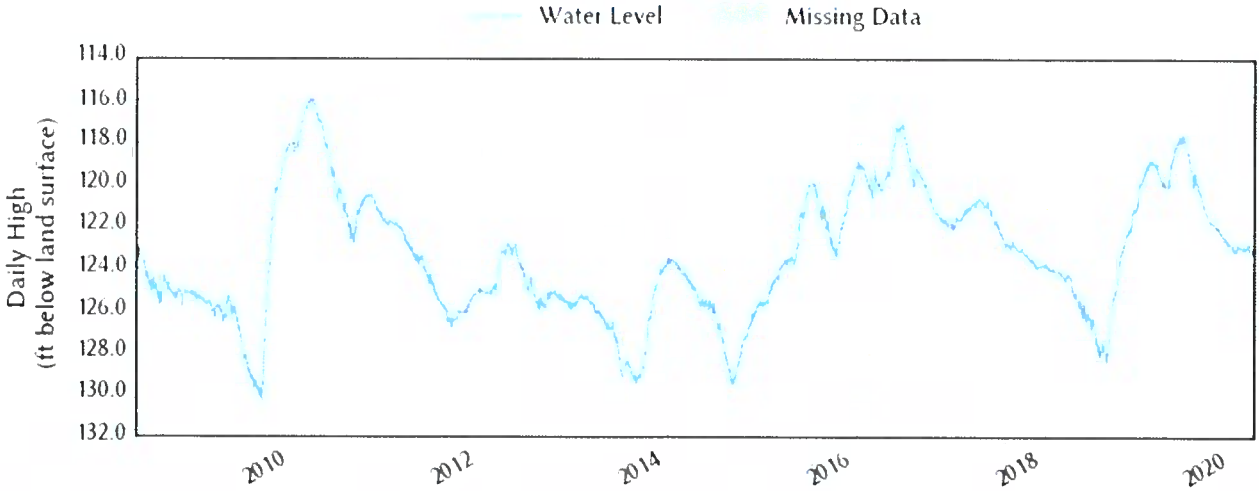
**Last 30 Days**



**1 Year**



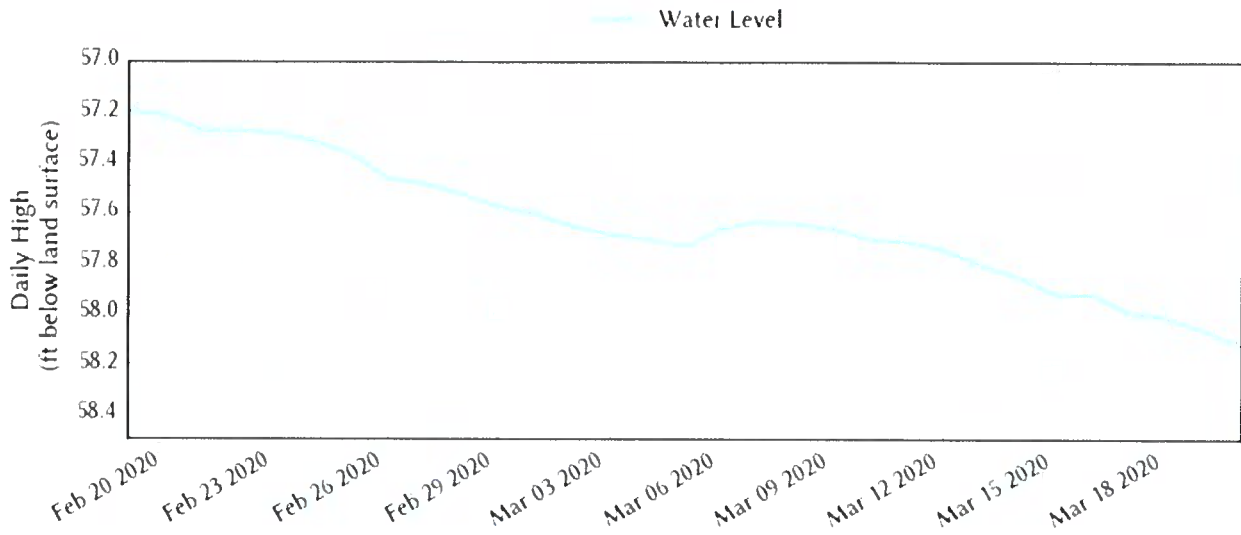
**Period Of Record**



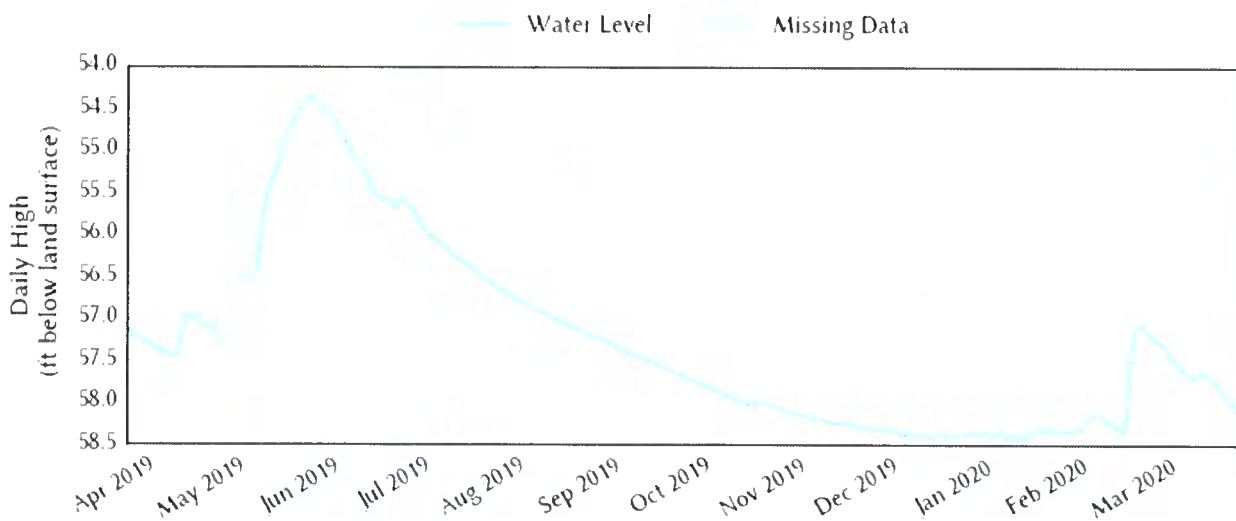
**February 2020**

**Continuous Monitoring Well # 5803702  
(Gault Site - Williamson County)  
Edwards Aquifer**

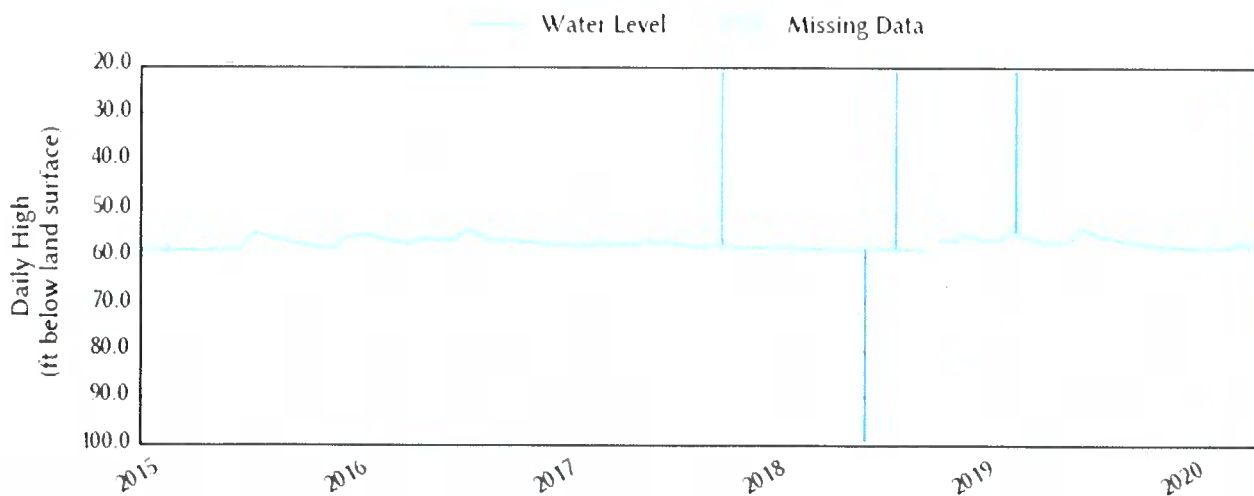
**Last 30 Days**



**1 Year**

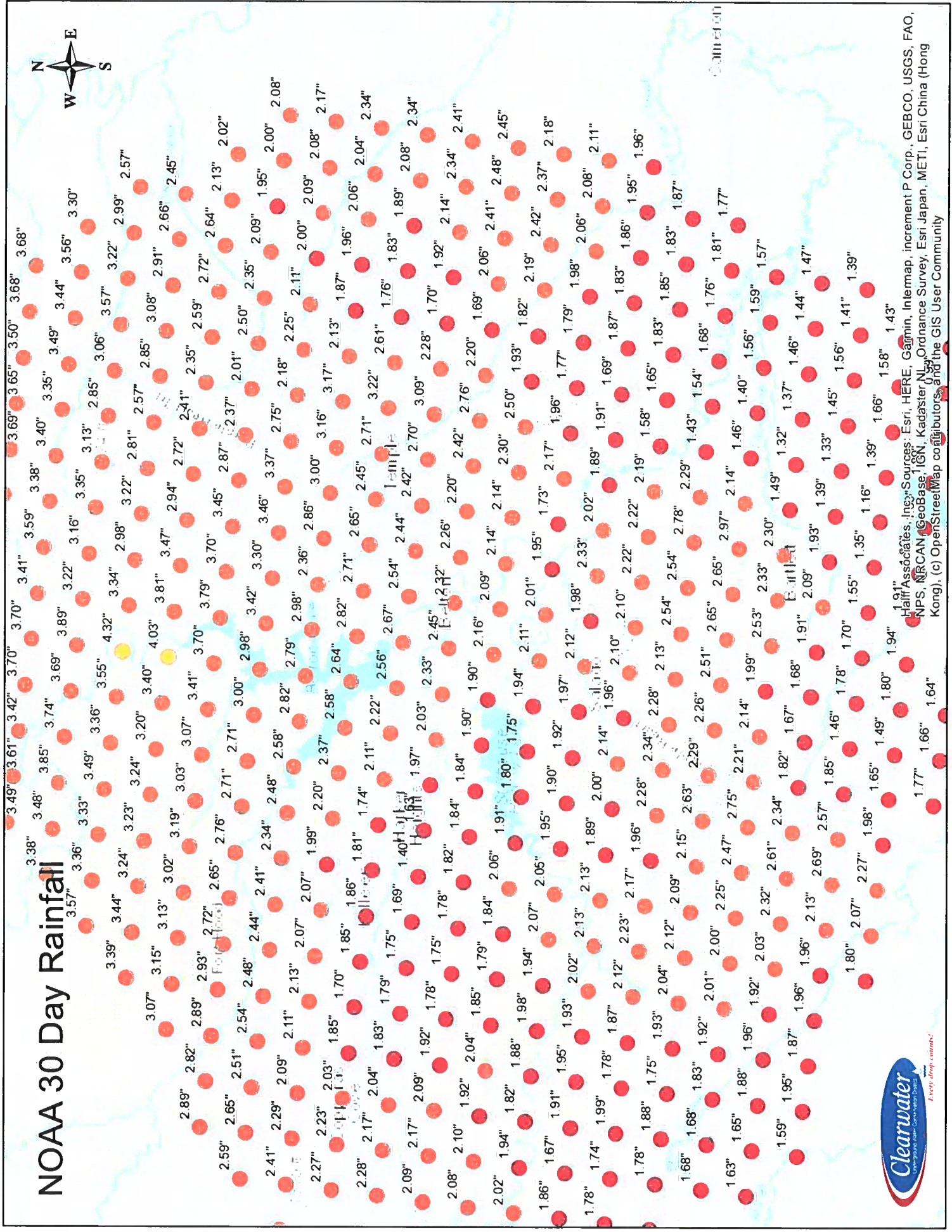


**Period Of Record**



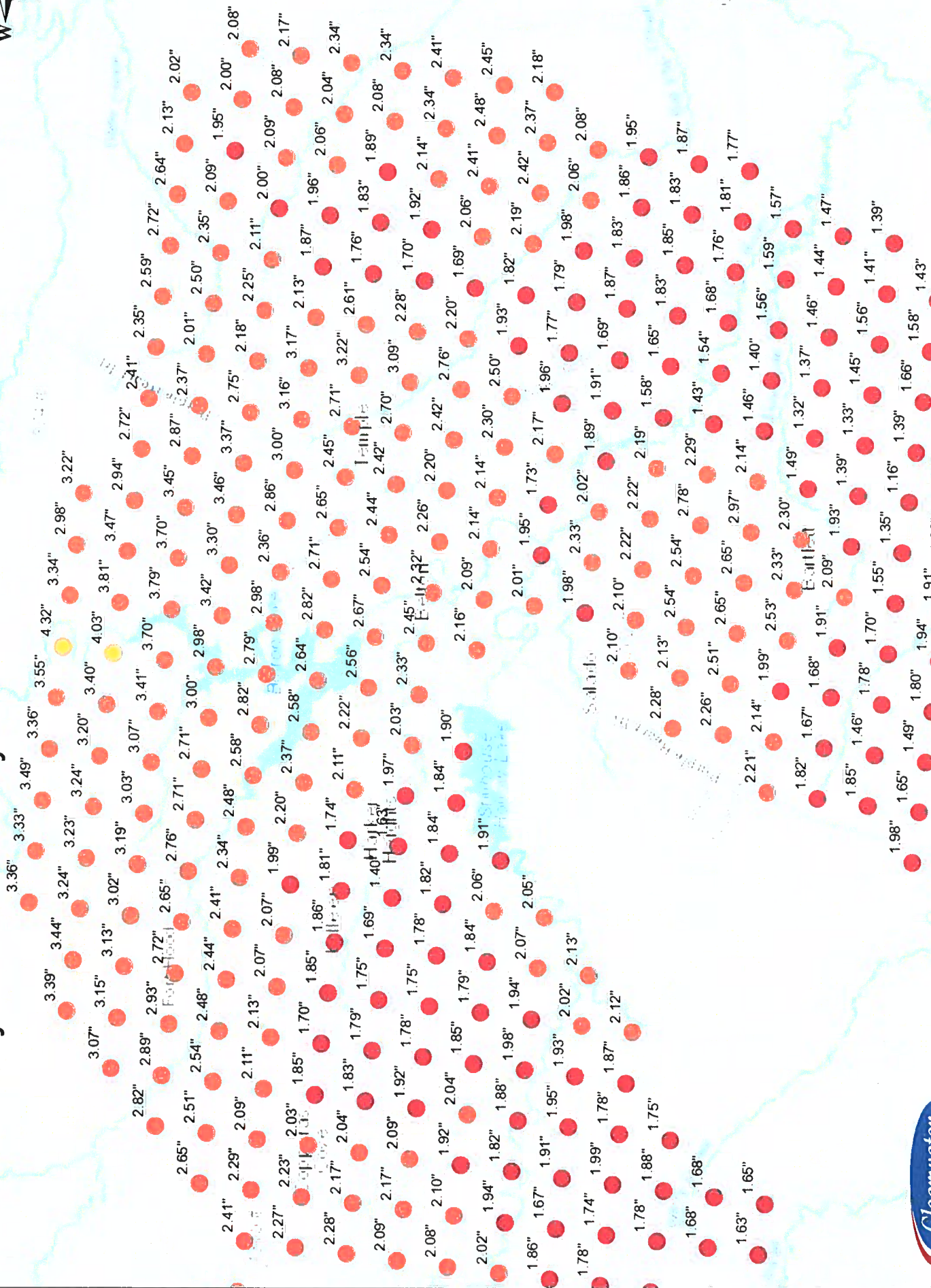


# NOAA 30 Day Rainfall



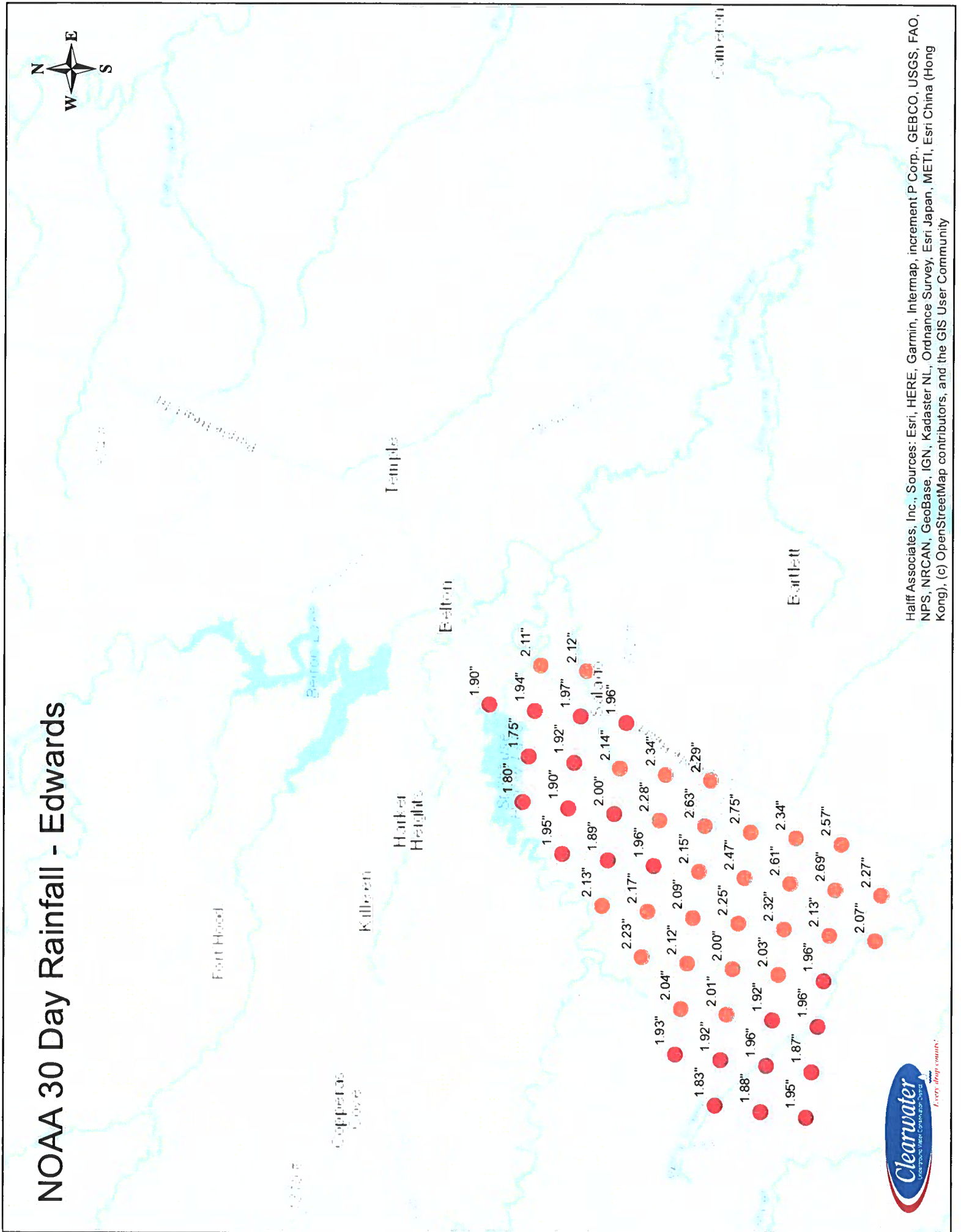
Map Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# NOAA 30 Day Rainfall - Trinity



Map Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

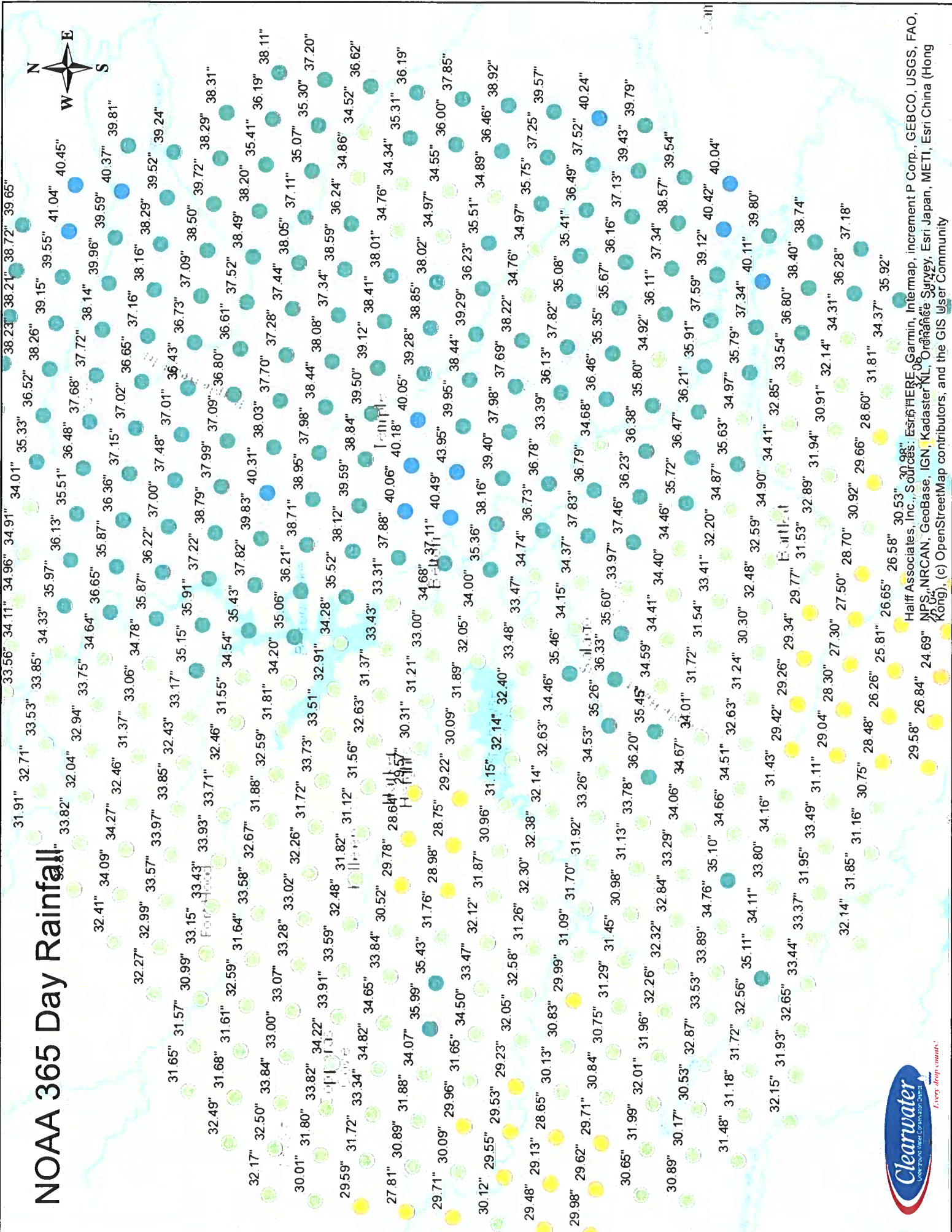
# NOAA 30 Day Rainfall - Edwards



Half Associates, Inc., Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



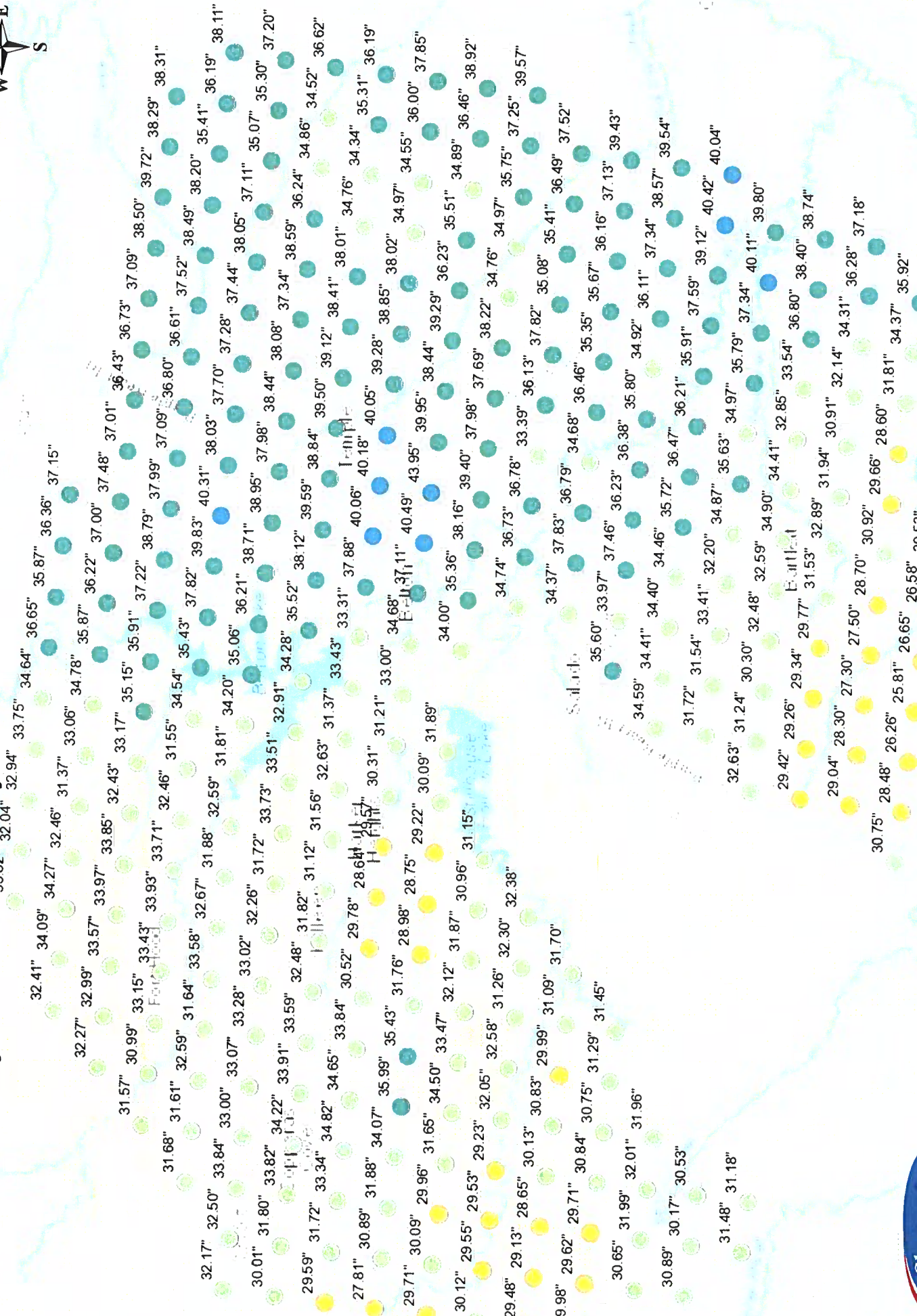
# NOAA 365 Day Rainfall



Halif Associates, Inc., Sources: Esri HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

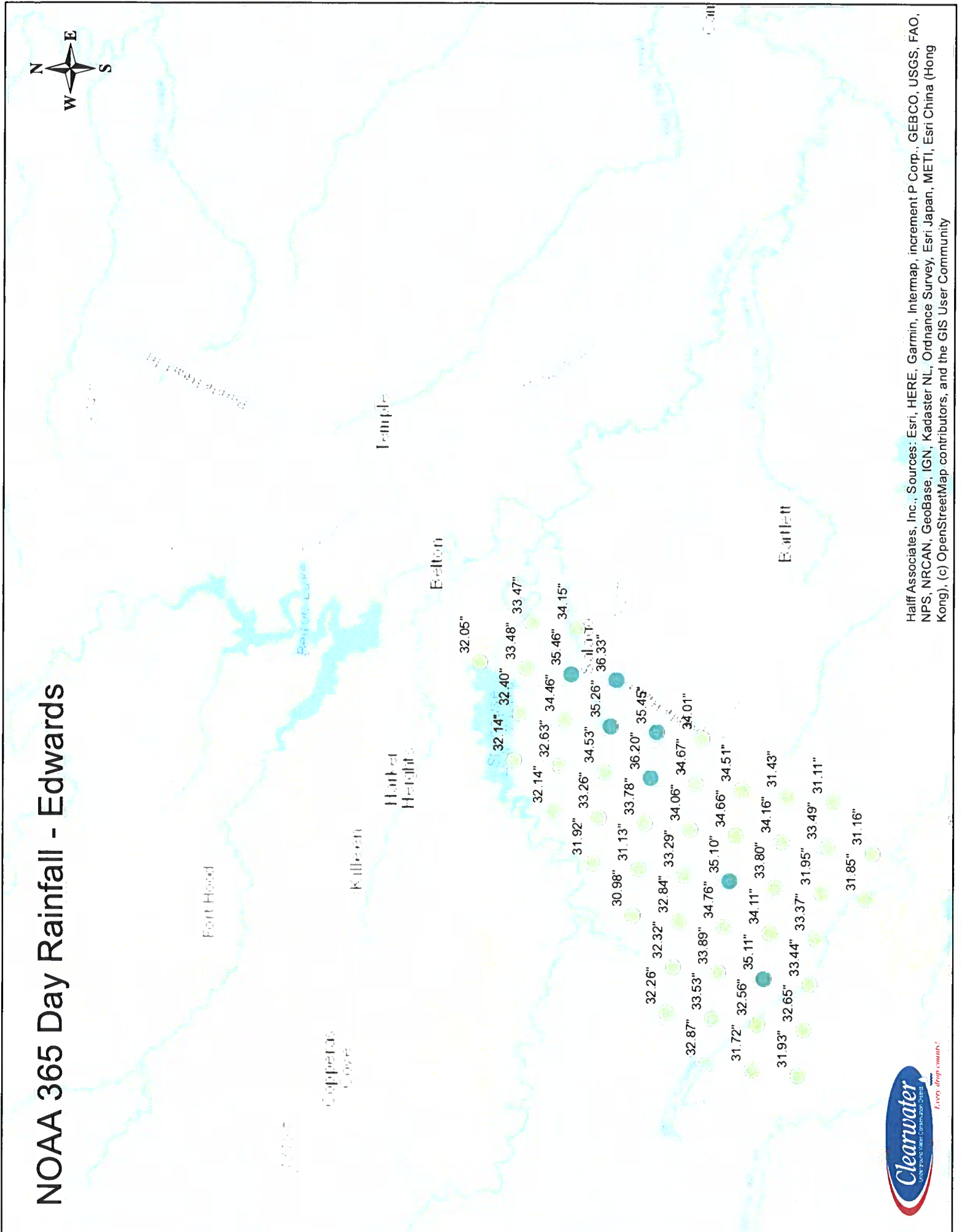


# NOAA 365 Day Rainfall - Trinity



Halif Associates, Inc. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

# NOAA 365 Day Rainfall - Edwards



Half Associates, Inc., Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



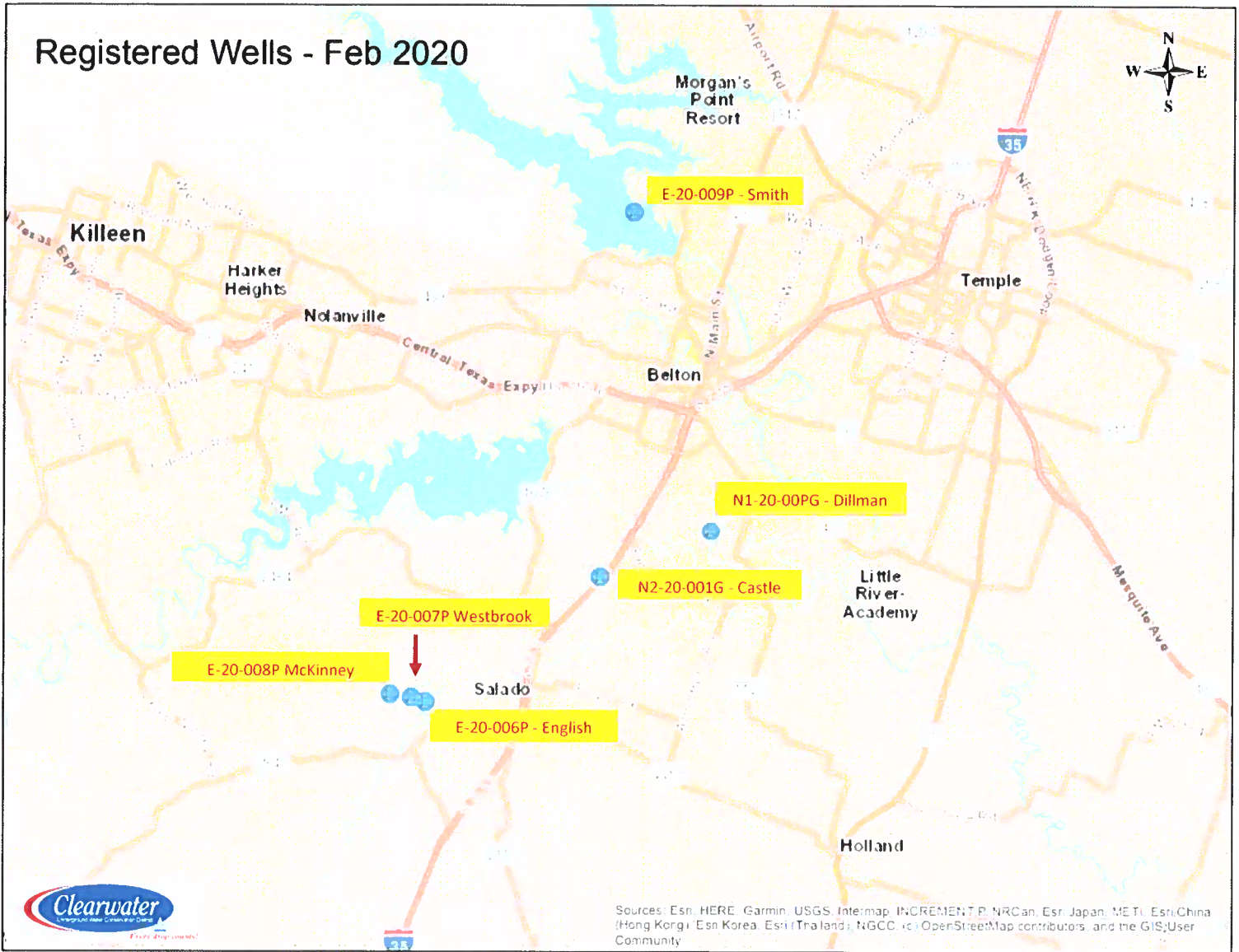
## Well Registration Totals

Year	Exempt Wells		Non-Exempt Wells			Monitor Wells		Total
	Grandfathered	New	Grandfathered	Class 1	Class 2	Water	Envr	
2002 - 2019	4352	1013	104	33	52	25	121	5700
2020 - Jan	4	1	0	0	0	0	0	5
Feb	0	4	0	1	1	0	0	6
Mar								0
Apr								0
May								0
June								0
July								0
Aug								0
Sept								0
Oct								0
Nov								0
Dec								0
Total 2020	4	5	0	1	1	0	0	11
Totals	4356	1018	104	34	53	25	121	5711

## Adjustments

Adjustment Type	Exempt Wells		Non-Exempt Wells			Monitor Wells		Total
	Grandfathered	New	Grandfathered	Class 1	Class 2	Water	Envr	
2002-Present	4356	1018	104	34	53	25	121	5711
Never Drilled	N/A	-27	N/A	-3	-4	0	-1	-35
Plugged	-203	-42	-18	-2	-1	-2	-53	-321
Totals	4153	949	86	29	48	23	67	5355

# Registered Wells - Feb 2020



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

<u>Well #</u>	<u>Name</u>	<u>Address</u>	<u>City</u>	<u>Aquifer</u>	<u>Depth</u>	<u>Use</u>	<u>Status</u>
E-20-006P	Michael English	1249 Hidden Park Ct.	Salado	Undclrd	180'	Domestic	Proposed
E-20-007P	Destry Westbrook	1517 Trails End	Salado	Undclrd	890'	Domestic	Active
E-20-008P	Michael & Susan McKinney	1378 Crystal Springs Ct	Salado	Undclrd	100'	Domestic	Proposed
E-20-009P	Gary Smith	13750 Dandelion Trail	Belton	Undclrd	900'	Domestic	Proposed
N1-20-001P	Richard & Joyce Dillman	5095 Elm Grove Rd	Belton	Undclrd	160'	Domestic	Proposed
N2-20-001G	Richard Castle	1507 Hilltop Circle	Salado	?	160'	Industrial	Inactive



## Edwards (BFZ) Aquifer Status Report – March 2020

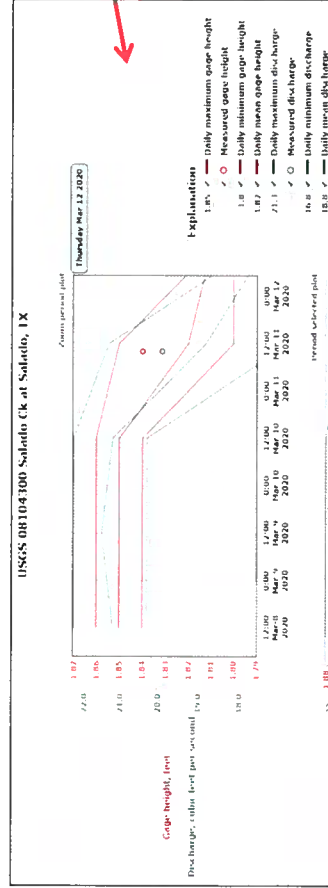
<u>DFC Analysis Over Time</u> (2000-Present) Modeled Available Groundwater		<u>HEUP and OP Permit Analysis</u> Relative to the Modeled Available Groundwater			<u>2020 YTD Prod.</u> Jan - Feb 236.16 Ac-ft 9.40%		<u>Pending Applications</u>			<u>Exempt Well Reservations</u>		
DFC Adopted * Minimum Spring Flow	Status of DFC ** Current / Low	MAG *** Ac-ft	HEUP Ac-ft	OP Ac-ft	Total Permitted Ac-ft	2019 Actual Production Ac-ft	Available for Permitting Ac-ft	Pending Applications Ac-ft	Exempt Well Reservation Ac-ft	Exempt Well Use Estimation Ac-ft	Available Exempt Use Ac-ft	
<b>Edwards (BFZ) Aquifer</b>	<b>100 Ac-ft</b> per month or <b>1.68 cfs</b>	<b>1259.11 Ac-ft</b> 3/13/2020 vs <b>220 Ac-ft</b> 08/20/2014	<b>6469</b>	<b>2209.7</b>	<b>301.44</b>	<b>2511.14</b>	<b>1,994.27 Ac-ft</b> 79.44%	<b>3131.54</b>	<b>1.26</b>	<b>825</b>	<b>361</b>	<b>464</b>

\*Desired Future Conditions (DFC) established by Clearwater UWCD and approved by GMA8 and TWDB. is the description of how the aquifer should look in the future (50 years based on maintaining the Salado Spring Complex discharge during a repeat of drought conditions similar to the drought of record in the 1950's, under drought of record, a five-day average of discharge amounting to 200 ac-ft-month is preferred and 100 ac-ft/month is the minimum acceptable spring flow. Spring flow is measured and estimated by the USGS Gage in Salado Creek located below the Salado Creek Spring Complex.

\*\*Status of the DFC is the estimated spring flow over a five-day average from the springs releasing artesian pressure from the Edwards BFZ Aquifer expressed as acre feet per month of spring flow into Salado Creek.

\*\*\*The Modeled Available Groundwater (MAG) is the estimated amount of water available for permitting assigned to Clearwater UWCD by the Executive Administrator of TWDB, based on the desired future conditions.

Richard & Joyce Dillman Revocable Living Trust N1-20-001P (0.59 ac-ft/yr)  
Richard Castle N2-20-001G (0.67 ac-ft/yr)

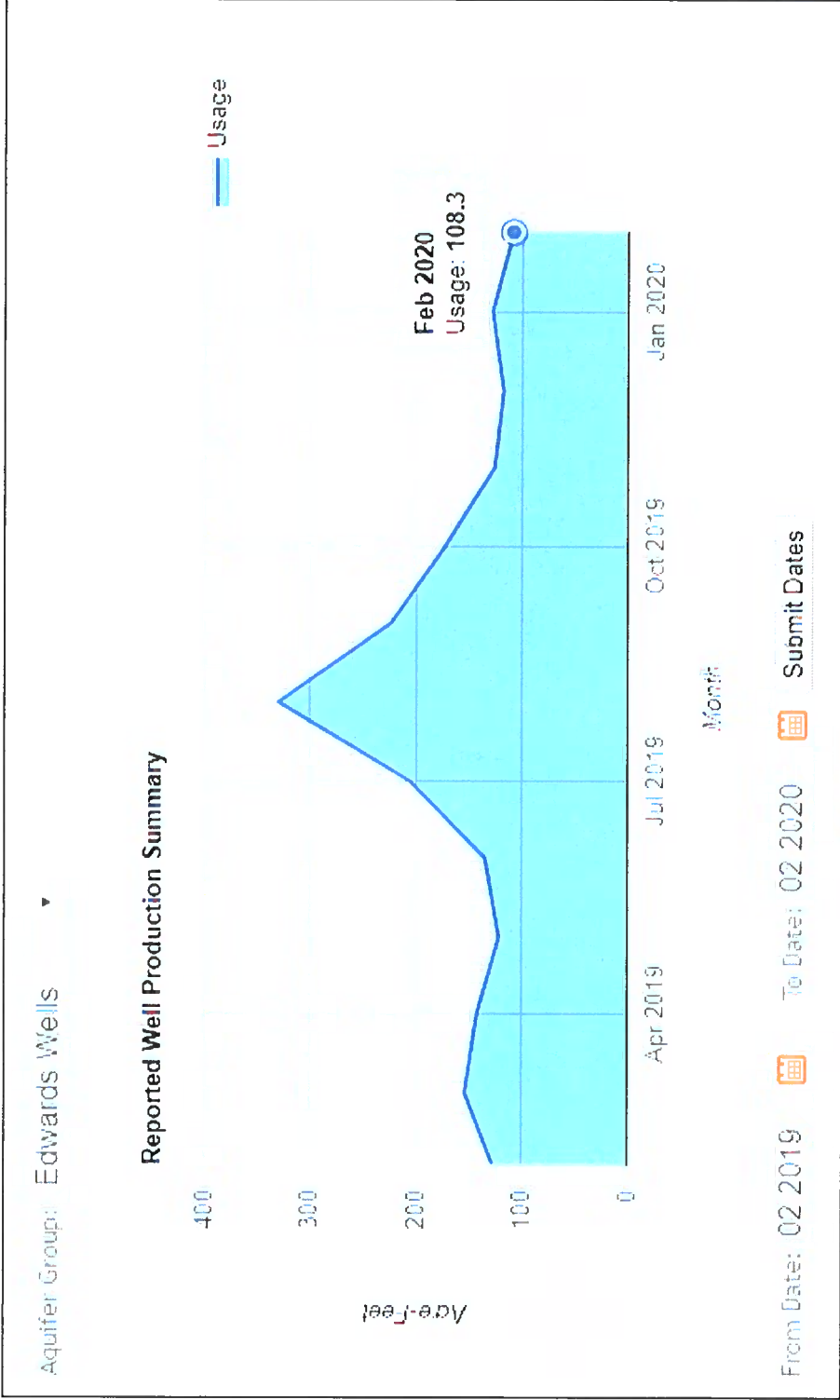


CFS is measured continuously at the downstream gage with USGS developing the rating curve according to industry standards and maintaining the information for public access on the USGS website.

5 - day average for March 8<sup>th</sup> – March 12<sup>th</sup> was 21.16 CFS = 1259.11 ac-ft/month

5 - day average for February 5<sup>th</sup> – February 10<sup>th</sup> was 16.1 CFS = 958.02 ac-ft/month

Edwards (BFZ) Aquifer Status Report – March 2020





Trinity Aquifer Status Report – March 2020

<u>DFC Analysis Over Time</u> (2000-Present) Modeled Available Groundwater		<u>HEUP and OP Permit Analysis</u> Relative to the Modeled Available Groundwater			<u>2020 YTD Total Prod.</u> Jan - Feb 131.42 Ac-ft 2.92%		<u>Pending Applications</u>		<u>Exempt Well Reservations</u>			
		DFC Adopted * Average Drawdown (by layer)	MAG ** Ac-ft Current	HEUP Ac-ft (by layer)	OP Ac-ft (by layer)	Total Permitted Ac-ft (by layer)	2019 YTD Prod. (by layer)	2020 YTD Prod. (by layer)	Available for Permitting Ac-ft (by layer)	Pending Applications Ac-ft (by layer)	Exempt Well Reserve Ac-ft (by layer)	2019 Exempt Well Use Estimate Ac-ft (by layer)
Trinity Aquifer (by layer)												
Pawluxy	NA	0	0	0	0	0	0	0	0			0
Glen Rose (upper)	-1.38 ft/yr -83 ft/60 yrs	974	61.9	70.15	132.05	48.84	0.40	148.95	0	693	223	470
Hensell (middle)	-2.28 ft/yr -137 ft/60 yrs	1099	259.3	210.38	469.68	81.32	25.45	81.71	0	548	490	58
Hosston (lower)	-5.50 ft/yr -330 ft/60 yrs	7193	1181.4	2716.08	3897.48	1009.73	105.56	3117.74	*** 1719.36	178	52	126
<b>Total</b>		<b>9266</b>	<b>1502.6</b>	<b>2996.61</b>	<b>4499.21</b>	<b>1139.90</b> (25.34%)	<b>131.42</b> (2.92%)	<b>3350.1</b>	<b>1719.36</b>	<b>1419</b>	<b>765</b>	<b>654</b>

\*Desired Future Conditions (DFC) is the description of how the aquifer should look in the future (60 years).

\*\*The Modeled Available Groundwater (MAG) is the estimated amount of water available for permitting assigned to Clearwater UWCD by the Executive Administrator of TWDB.

\*\*\*Pending applications in the Hosston Layer (Lower)

Trinity Oasis, LLC Operating Permit N2-13-002P (1702.8 ac-ft/yr) [this permit amount not reflected in Trinity Aquifer total permit amount; production contingent on TCEQ approval and plant construction]

Hines Texas, LLC Drilling/Operating Permit N2-20-002P (4.14 ac-ft/yr)

Hines Texas, LLC Drilling/Operating Permit N2-20-003P (4.14 ac-ft/yr)

Hines Texas, LLC Drilling/Operating Permit N2-20-004P (4.14 ac-ft/yr)

Hines Texas, LLC Drilling/Operating Permit N2-20-005P (4.14 ac-ft/yr)

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**Non-Exempt Wells--Other**

2020 Monthly Production (gallons)

Acres-Feet

File No.	State #	Name	Area	Permit	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	SEP	Oct	Nov	Dec	YTD	YTD ac-ft	% Permit
N2-11-001G		Bradley B. Ware	100.00	100.00	2,313,645	0	0	0	0	0	0	0	0	0	0	0	0	2,313,645	7.10	2.68%
N2-11-002G		Bradley B. Ware	0.00	0.00	912,384	0	0	0	0	0	0	0	0	0	0	0	0	912,384	2.80	1.75%
<b>Net Aggregated</b>																				
N2-07-014P		Barking Oaks	0.00	112.18	10,024	78,576	0	0	0	0	0	0	0	0	0	0	0	168,539	0.87	8.45%
N2-07-013C		D.R. Dorsey Properties	2.47	2.47	20	5,960	8	0	0	0	0	0	0	0	0	0	0	12,044	0.04	0.00%
N2-10-007P		Goode Towing	0.05	0.05	2,613	0	0	0	0	0	0	0	0	0	0	0	0	2,613	0.01	20.00%
N2-09-005G		Lone Star Paving	1.07	1.07	1,780	1,360	0	0	0	0	0	0	0	0	0	0	0	3,140	0.01	0.93%
N2-14-001G		Mikeska	100.00	100.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-09-007G		Misty Creek HOA	6.45	6.45	17,050	17,000	0	0	0	0	0	0	0	0	0	0	0	34,050	0.10	1.55%
N2-14-009P		Roy Rodriguez	0.55	0.55	15,000	15,000	0	0	0	0	0	0	0	0	0	0	0	30,000	0.09	18.38%
N2-16-001P		Shelby	0.12	0.12	15,267	15,267	0	0	0	0	0	0	0	0	0	0	0	30,414	0.09	16.07%
N2-08-007G		Spikes 3 Bar Bonds	0.18	0.18	480	200	0	0	0	0	0	0	0	0	0	0	0	680	0.00	0.00%
N2-16-007P		Triu Investments	0.79	0.79	21,390	21,390	0	0	0	0	0	0	0	0	0	0	0	42,780	0.13	10.46%
N2-02-030C		Wells Fargo Bank	33.84	33.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
<b>Strasburger Farms</b>																				
N2-02-031G		Strasburger Farms (#11)	271.80	271.80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-032G		Strasburger Farms (#12)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-033G		Strasburger Farms (#15)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-034G		Strasburger Farms (#16)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-035G		Strasburger Farms (#2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-036G		Strasburger Farms (#3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-037G		Strasburger Farms (#4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-12-002P		Strasburger Farms (#5)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
N2-02-029G		Strasburger Farms (#6)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00%
<b>Totals:</b>			271.80	306.70	2,393,659	76,576	0	0	0	0	0	0	0	0	0	0	0	2,470,144	7.37	1.31%