Rio Grande Valley Summer 2022 Review

Summer 2022 Weather Story for the Rio Grande Valley: Record to Near-Record Heat Leads to Critical Water Supply Issues…Until Mid-August Rains Bring Some Relief

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A symbol of summer, 2022: Near record-low water levels at Falcon Lake State Park on the south end of Falcon International Reservoir along the Starr/Zapata County line, August 2, 2022.

Month-by-Month Summary

After a second end-of-month soaking in late May 2022 across the Rio Grande Valley/Deep South Texas largely ended the spring 2022 drought, **June** kept the "heat beat" going – with very little rainfall. The three anchor cities (McAllen, Harlingen, and Brownsville) of the Valley ranked among the top 20 warmest on record with rainfall ranking among the top fifteen driest. There were no nearby tropical cyclone threats, and the beach was the place to be – though persistent southeast flow maintained a prolonged longshore (south to north) current on many days.

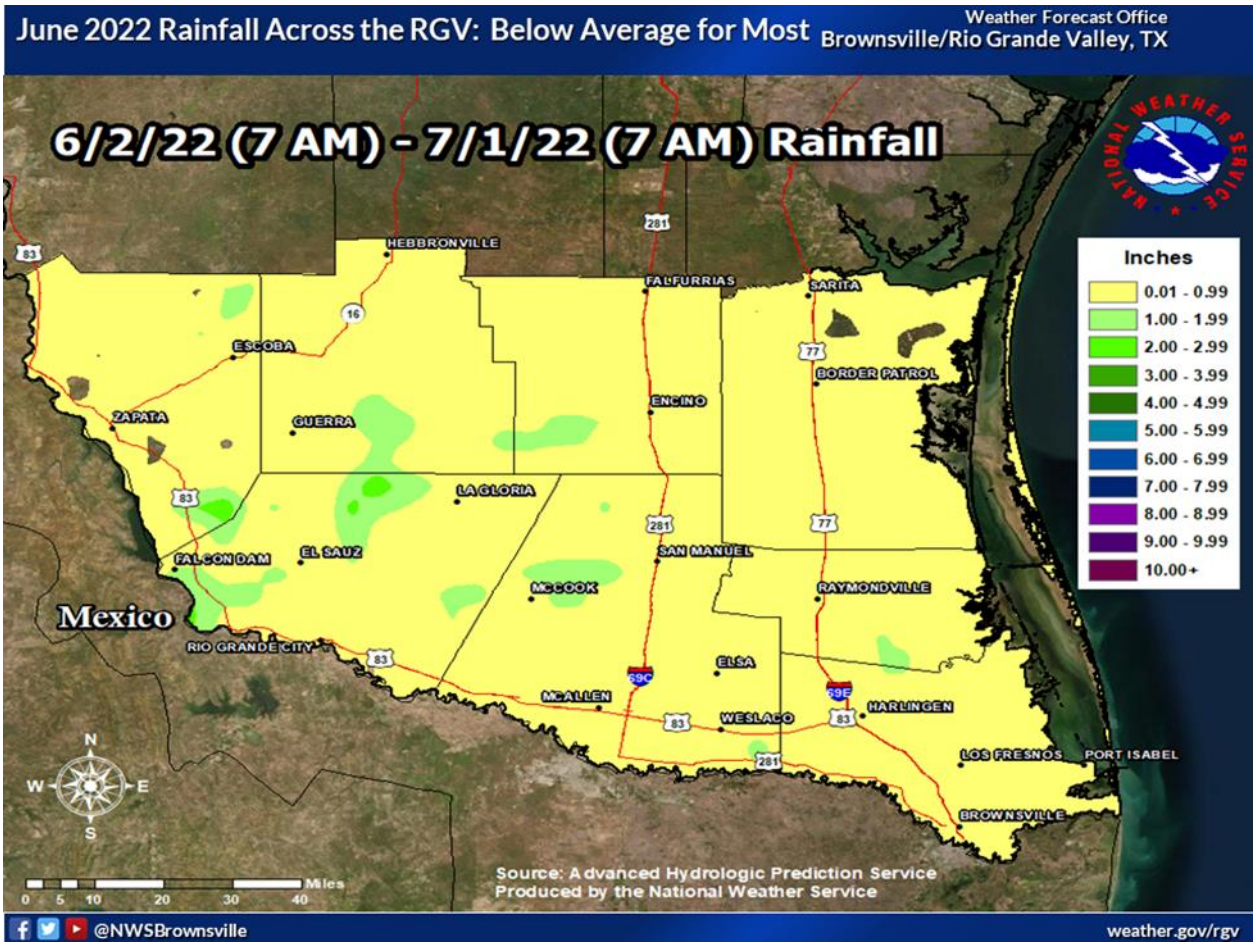

Figure 1. Rainfall map (not annotated) for June, 2022, across the Lower Rio Grande Valley/Deep S. Texas ranch country.

July was a searing-hot month, even by Valley standards. Though not in the league of 2009's incredible heat, it was in range of other Julys in the recent decade, including 2016-2019. All Valley locations ranked within the top ten hottest, with Brownsville in first place (88.0°F) over 2018's 87.5°F. As for rainfall, individual thunderstorms on single days landed on each of the anchor cities airports, keeping the rankings below the top 20 driest – though farther west, little no rain fell and locations such as Rio Grande City ranked driest on record with no measurable July precipitation. A small cluster of storms on July 27th slammed areas around Harlingen with 2 to more than 3 inches, creating temporary minor flood issues but more notably, a pocket of green-up amidst increasingly dry grasses and brush elsewhere in the Valley, Brush Country, and Rio Grande Plains. The back-to-back hot months, however, did rank among the top ten – and the combination of these temperatures with well below average rainfall brought drought conditions back to the region by the start of August.

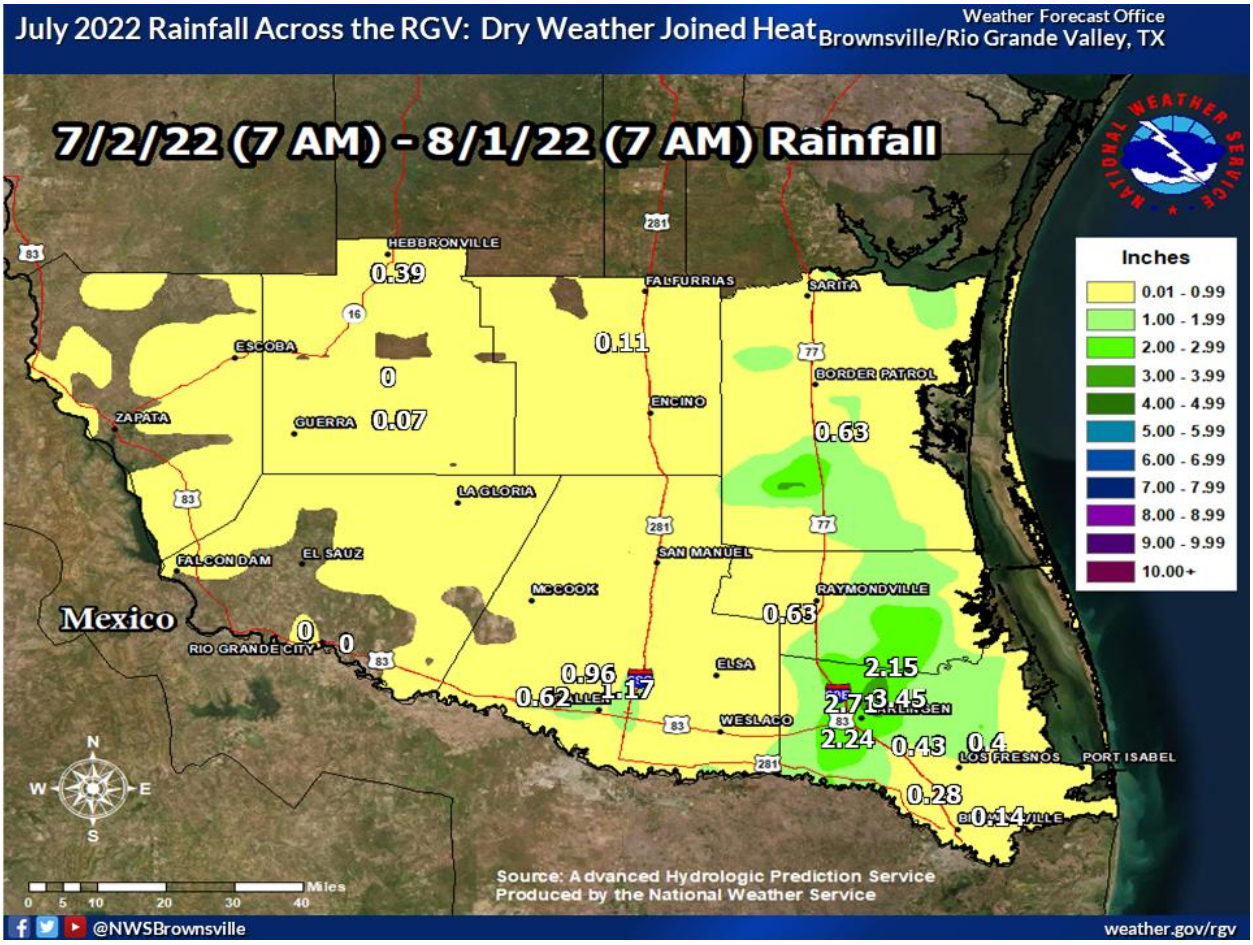

Figure 2. Rainfall map (not annotated) for July, 2022, across the Lower Rio Grande Valley/Deep S. Texas ranch country.

August saw heat and dryness continue during the first ten days of the month. Triple-digit temperatures and low humidity across the Rio Grande Plains maintained high evaporation rates that extended along the Rio Grande through the Texas Big Bend region. Between August 13 and 15, both Falcon and Amistad International Reservoirs fell to or near record low levels. Falcon dropped to 350,962 on the 13th (10.75 percent of storage capacity), ranking among the lowest since 1998-2002. Amistad, a much larger reservoir, dropped to 888,857 just after midnight on August 15th – by far the lowest on record since the reservoir was constituted (filled) between 1969 and 1971. The combined shared percentage between the reservoirs fell to 20.7 percent, triggering "Stage 2" water restrictions at many communities from Laredo through Brownsville. At the time of our visit to Falcon (photo above), model forecasts offered little hope of any welcome rain to the reservoirs or the tributaries that feed them. In fact, several Mexican reservoirs were also at low to near record low values, including Venustiano Carranza (Rio Salado, west of Laredo) at 7 percent, and Presa Luis Leon, a notable reservoir in the Rio Conchos basin, which had fallen to 12 percent.

Then came Atlantic tropical wave "98L".

98L formed as a disorganized mass of convection just south of the Louisiana Coast just after the end of the first week of the month, and oozed southwest by the 13th – remaining disorganized, but containing plenty of tropical "juice". On the 14th and early on the 15th , the wave moved across the South Texas Coastal Plains to the Rio Grande Plains, from Rivera to Laredo, before turning northwest and paralleling the Rio Grande between Laredo and Del Rio, ultimately sliding through the Texas Big Bend region later on the 15th into the 16th. Rainfall of 3 to 7 inches fell across the South Texas Coastal Plains/Brush Country, including Kenedy through Jim Hogg County, on the 14th. Other rain bands formed well southeast of the "center" on the 14th, and dropped pockets of 3 to 7 inches across portions of Cameron, Willacy, and Hidalgo County during the

afternoon and overnight. A final burst of energy formed persistent rain bands the following afternoon across the Mexican Rio Grande Plains, which tracked along the same path across northwest Zapata and southern Webb County. In just a few hours, an estimated 6 to 10 inches fell in some locations between San Ygnacio and Laredo in just a few hours. By the 16th, rapid "flash" flows on arroyos in northern Zapata County developed – all great news to finally move Falcon International Reservoir off the "floor" of its low values between the 13th and early on the 15th, over the next few days.

The heavy rainfall from 98L put a notable stop to the worsening drought across the Lower Rio Grande Valley/Deep South Texas Brush Country/Coastal Plains; still, some areas missed the "bigger" rains (which totaled a measured/estimated 8 to 12 inches across eastern Jim Hogg, northeast Starr, northern Hidalgo, and much of Brooks and Kenedy County). Nevertheless, the mid-month rains were a (good) harbinger of things to come. While the month largely ended near average with only spotty rainfall, September would start climatologically on target – and additional rainfall in both the Lower Rio Grande Basin (watershed) and across the Rio Grande Valley would further erode drought.

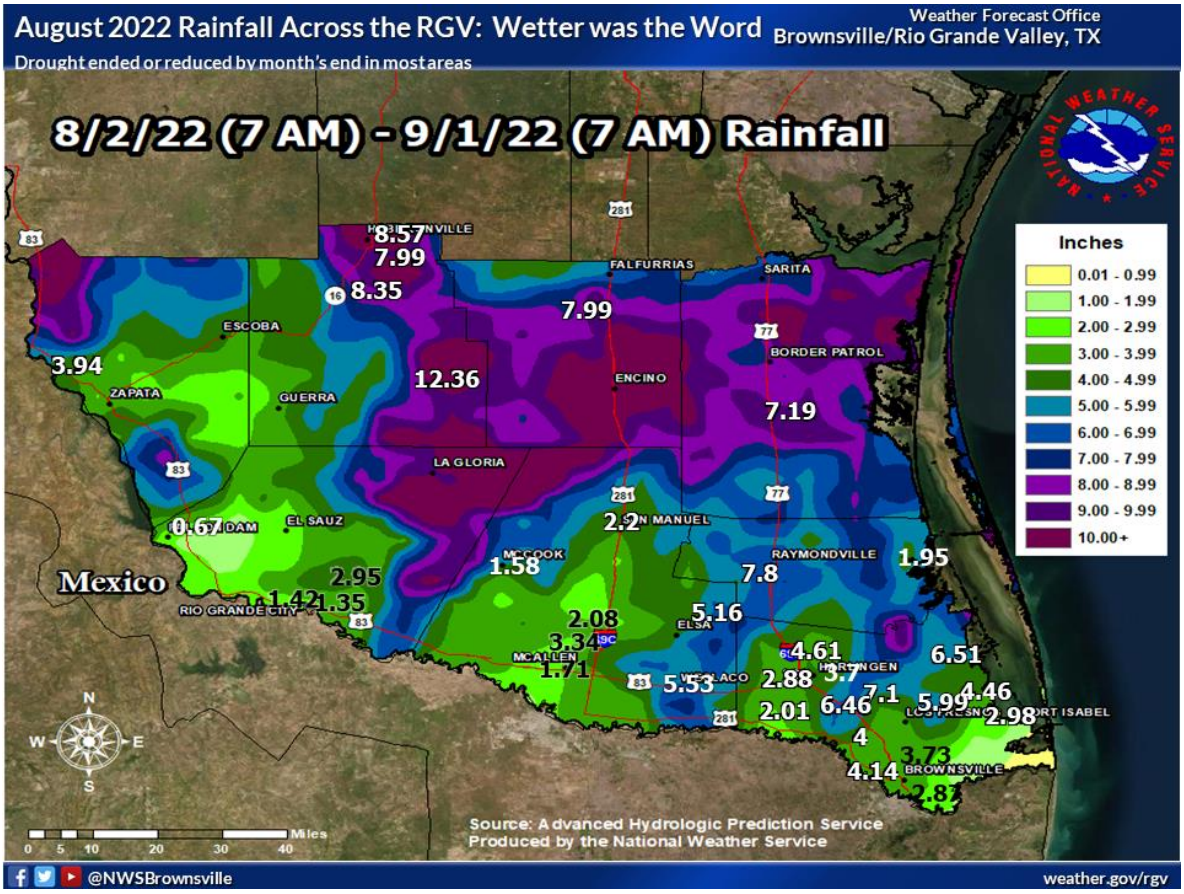

Figure 3. Rainfall map (not annotated) for August, 2022, across the Lower Rio Grande Valley/Deep S. Texas ranch country.

For the Summer, the periodic August rains did nothing to quell the seasonal temperatures, which ranked among the top three hottest in Brownsville and Harlingen, and top ten hottest at McAllen and Rio Grande City. For the period from April through August (five months), Brownsville (records since 1878) and Harlingen (since 1912) remained at their hottest on record, with Harlingen nearly *a full degree* above the prior record, set in 1953. The prolonged heat turned what had been a top quintile (20 percent of all records) *coolest* year from January through mid March into a top quintile *warmest* year, with Brownsville surging back into the top fifteen warmest (January-August), likely headed for another top ten finish which has been common since 2011.

Top Ten Heat for Summer (June-August) 2022

Valley's Anchor Cities Finish High on the Temperature Charts

Weather Forecast Office
Brownsville/Rio Grande Valley, TX

Maximum 3-Month Mean Avg Temperature for Brownsville Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	87.9	2019-08-31	0
2	87.5	2018-08-31	0
3	87.2	2022-08-31	0
4	86.9	1998-08-31	0
5	86.4	1980-08-31	0
6	86.3	1982-08-31	0
7	86.1	2012-08-31	0
8	86.0	2005-08-31	0
9	86.0	2001-08-31	0
10	85.9	2016-08-31	0

Last value also occurred in one or more previous years.

Period of record: 1878-01-01 to 2022-08-31

Maximum 3-Month Mean Avg Temperature for HARLINGEN, TX

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	88.0	2019-08-31	8
2	87.9	1998-08-31	4
3	87.2	2022-08-31	0
4	87.1	2016-08-31	5
5	86.9	2018-08-31	12
6	86.8	2009-08-31	5
7	86.7	2017-08-31	7
8	86.5	2020-08-31	7
9	86.4	2005-08-31	0
10	86.4	2012-08-31	6

Period of record: 1912-02-07 to 2022-09-01

Maximum 3-Month Mean Avg Temperature for McAllen Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	90.8	2009-08-31	0
2	90.1	2017-08-31	0
3	90.0	2018-08-31	3
4	89.9	1998-08-31	2
5	89.6	2016-08-31	0
6	89.3	2019-08-31	0
7	88.8	2012-08-31	0
8	88.5	2015-08-31	0
9	88.2	2022-08-31	0
10	88.1	1980-08-31	1

Period of record: 1941-06-01 to 2022-08-31

Maximum 3-Month Mean Avg Temperature for RIO GRANDE CITY, TX

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	89.4	2009-08-31	2
2	89.3	1996-08-31	5
3	89.0	1997-08-31	7
4	89.0	1901-08-31	0
5	88.9	2022-08-31	4
6	88.8	1999-08-31	5
7	88.8	2001-08-31	13
8	88.8	2019-08-31	2
9	88.7	1928-08-31	0
10	88.7	1902-08-31	2

Period of record: 1897-01-01 to 2022-09-01

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Table 1: Average temperatures (ranked) for Brownsville, Harlingen, McAllen, and Rio Grande City, Summer (June-August) 2022.

Record/Near Record Heat from April-August 2022

Valley's Anchor Cities Continued at or Near Top of the List

Weather Forecast Office
Brownsville/Rio Grande Valley, TX

Maximum 5-Month Mean Avg Temperature for Brownsville Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	85.1	2022-08-31	0
2	84.8	2019-08-31	0
3	84.1	2018-08-31	0
4	84.1	2011-08-31	0
5	84.0	2012-08-31	0
6	84.0	2020-08-31	0
7	83.4	2017-08-31	0
8	83.3	2001-08-31	0
9	83.3	2006-08-31	0
10	83.2	2002-08-31	0

Period of record: 1878-01-01 to 2022-08-31

Maximum 5-Month Mean Avg Temperature for HARLINGEN, TX

Click column heading to sort ascending, click again to sort descending

Rank	Value	Ending Date	Missing Days
1	84.9	2022-08-31	2
2	83.9	1953-08-31	2
3	83.7	2002-08-31	2
4	83.5	1998-08-31	5
5	83.3	1950-08-31	0
6	83.3	1945-08-31	2
7	83.2	1943-08-31	0
8	83.2	1957-08-31	3
9	83.1	2003-08-31	2
10	83.1	2006-08-31	3

Period of record: 1912-02-07 to 2022-08-31

Maximum 5-Month Mean Avg Temperature for McAllen Area, TX (ThreadEx)

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	87.4	2009-08-31	0
2	87.2	2017-08-31	0
3	86.6	2016-08-31	0
4	86.5	2018-08-31	3
5	85.9	2011-08-31	0
6	85.9	2022-08-31	0
7	85.9	2019-08-31	0
8	85.8	1998-08-31	2
9	85.8	2012-08-31	0
10	85.5	2015-08-31	0

Period of record: 1941-06-01 to 2022-08-31

Maximum 5-Month Mean Avg Temperature for RIO GRANDE CITY, TX

Click column heading to sort ascending, click again to sort descending.

Rank	Value	Ending Date	Missing Days
1	87.0	1902-08-31	2
2	86.6	1999-08-31	15
3	86.3	2022-08-31	6
4	85.9	1946-08-31	1
5	85.7	2011-08-31	17
6	85.7	2000-08-31	7
7	85.6	1948-08-31	1
8	85.5	1996-08-31	9
9	85.5	1947-08-31	2
10	85.3	1953-08-31	0

Period of record: 1897-01-01 to 2022-08-31

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Table 2: Average temperatures (ranked) for Brownsville, Harlingen, McAllen, and Rio Grande City, April through August 2022.

The August rainfall recharged groundwater supplies, at least temporarily, across a good portion of the Brush Country and Kenedy County rangeland area, and helped out pockets of Cameron and Willacy. Other areas of Hidalgo, western Starr, western Jim Hogg, and much of Zapata, remained on the low side, seasonally. That, too, would change during the first week of September. By the end of August, widespread moderate to extreme drought would be trimmed back fairly dramatically. The rainfall had mixed results; cotton growers who experienced the August 14th bursts of rain (Willacy/Cameron/part of Hidalgo) and had not yet picked and rolled the cotton bolls sustained losses; those who either missed the rains or picked early reaped the benefit of the needed dry/hot weather from July through early August. Details on cotton successes or failures across the Valley will be available later this year.

Water levels rose from their record to near-record low levels observed between August 13-15 to slightly higher levels by the end of the month. At Falcon, values as low as 10.75 percent of storage capacity (August 13th) lifted to 13.5 percent on the 31st; at Amistad, values as low as 22 percent of storage (August 15th) lifted to 27.9 percent on the 31st .

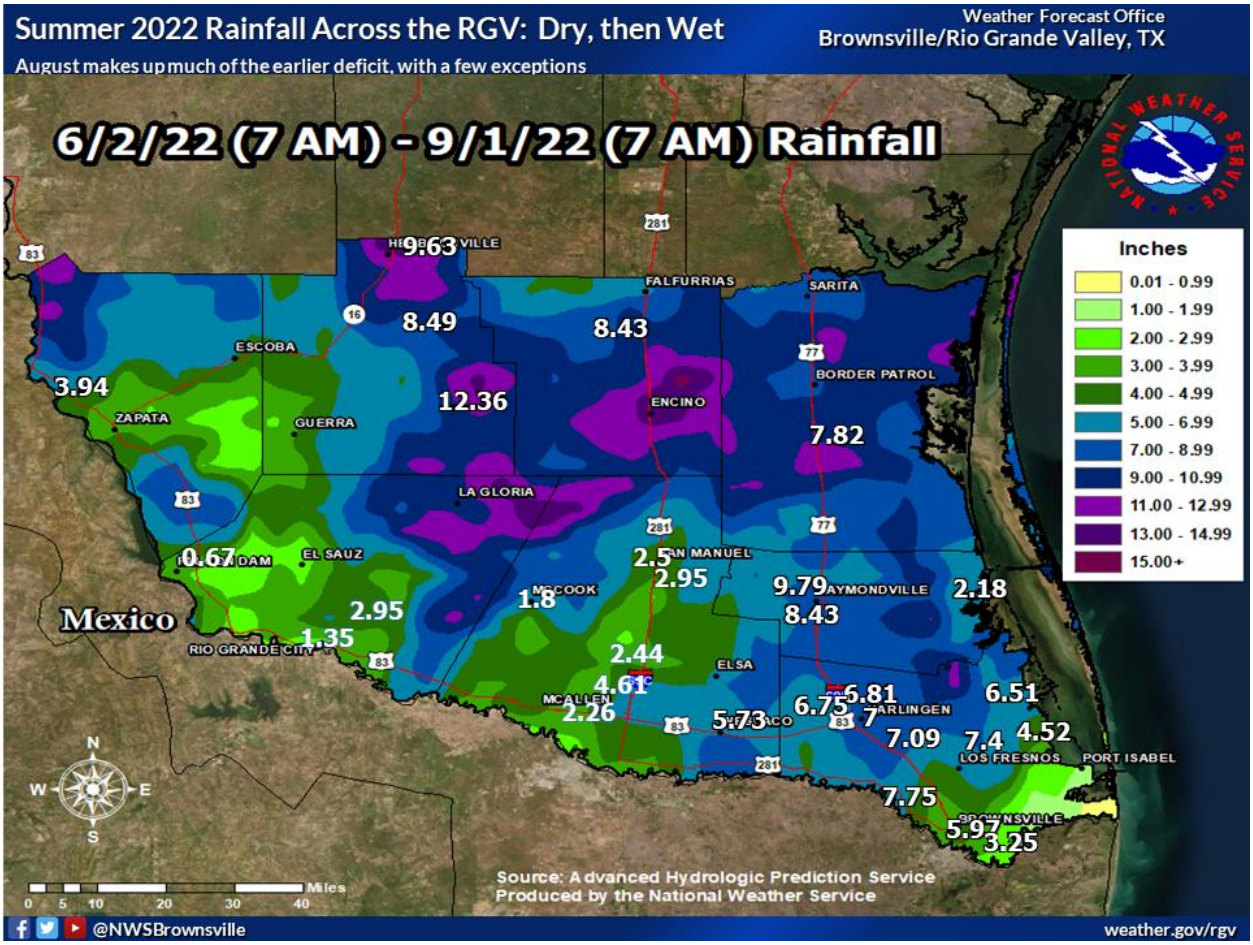

Figure 4: Total Rainfall for Summer 2022 (annotated) across the Lower Rio Grande Valley/Deep S. Texas ranch country.

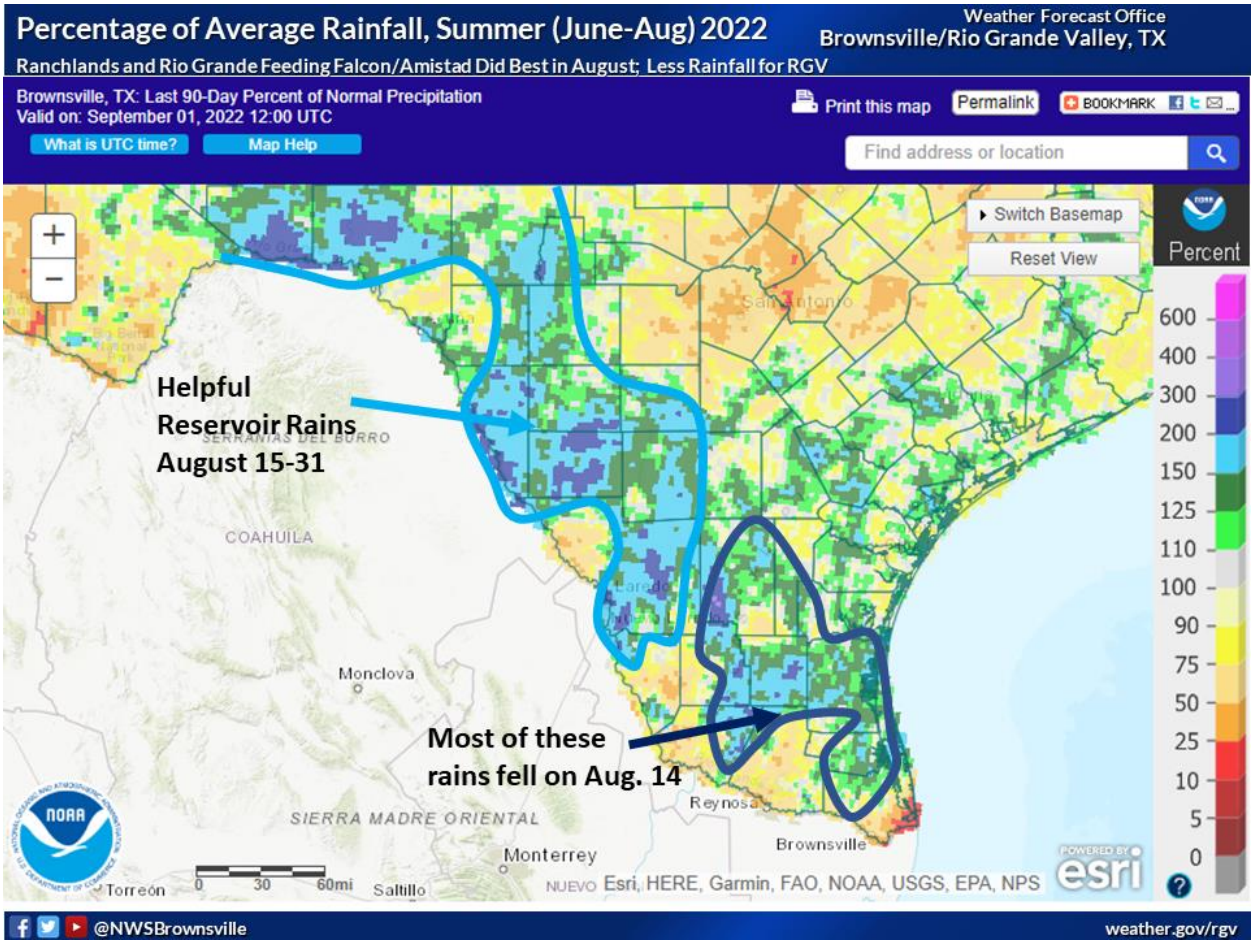

Figure 5: Departure of rainfall from average across the Texas portion of the Lower Rio Grande Basin.

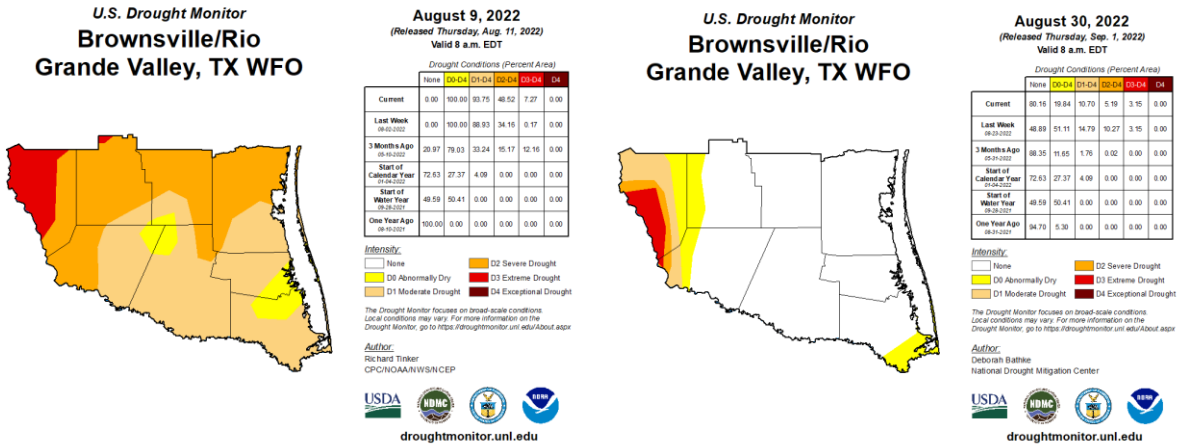

Figure 6. Sharp drought monitor improvements across the Rio Grande Valley/Deep S. Texas ranch country between August 9th and 30th, following the rains between August 12-15 that peaked on August 14th. The heaviest rains missed western Zapata, including over Falcon Reservoir – but torrential rain across many tributaries flowing into Falcon helped nudge levels higher by the end of August.