ONE-PAGE PLACE ASSESSMENT: AUSTIN, TEXAS

LOCATED IN THE AUSTIN–TRAVIS LAKES SUBWATERSHED WITHIN THE TEXAS-GULF WATERSHED

SUN ⚐1

LATITUDE 30.3°

ELEVATION 483 FT / 147 m

	MAR 21	JUN 21	SEP 21	DEC 21
DEGREES N or S of DUE EAST THE SUN RISES[1]	0°	28°N	0°	27°S
DEGREES N or S of DUE WEST THE SUN SETS[1]	0°	28°N	0°	27°S
SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON)[a,1,2]	60°	83°	60°	36°

SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO[b] 1 : 1.36 …AND AZIMUTH[c] 0°

9AM & 3PM WINTER-SOLSTICE SHADOW RATIO[b,1] 1 : 2.59 …AND AZIMUTH[c,1] 44°

CLIMATE ⚐2

AVERAGE HIGH & LOW TEMPERATURES[3] *1942 – 2024*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
°F HIGH	61.3	65.4	72.8	79.7	85.9	92.1	95.5	96.1	90.3	81.9	71.1	63.7	79.2
°F LOW	39.1	42.8	49.9	57.8	65.5	71.8	73.8	73.6	68.5	58.6	48.7	41.2	57.2
°C HIGH	16.3	18.6	22.7	26.5	29.9	33.4	35.3	35.6	32.4	27.7	21.7	17.6	26.2
°C LOW	3.9	6.0	9.9	14.3	18.6	22.1	23.2	23.1	20.3	14.8	9.3	5.1	14.0

RECORD HIGH[3] 112° F | 44.4° C | *September 2000* RECORD LOW[3] -5° F | -20.6° C | *January 1949*

WIND ⚐3

MAX SPEED[5] 79 MPH | 127 km/h

PREVAILING WIND DIRECTION (FROM WHERE) & AVERAGE SPEED[4]

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
	N	N / S	S	S	S	S	S	S	S	S	S / N	N / S	S
MPH	8.2	8.7	9.2	9.1	8.5	8.0	7.4	6.8	6.6	6.9	7.6	7.7	7.9
km/h	13.2	14.0	14.8	14.6	13.7	12.9	11.9	10.9	10.6	11.1	12.2	12.4	12.7

WATER ⚐4

AVERAGE RAINFALL (GAIN)[3] *1942 – 2024*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
INCHES	2.35	2.14	2.31	2.74	4.64	3.18	1.82	2.34	3.24	3.68	2.55	2.22	32.83
mm	59.7	54.4	58.7	69.6	117.9	80.8	46.2	59.4	82.3	93.5	64.8	56.4	843.5

AVERAGE PAN EVAPORATION (POTENTIAL LOSS)[d,6] *1916 – 1979*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
INCHES	2.90	3.62	5.43	6.30	7.29	8.79	9.84	9.76	7.11	5.69	3.67	2.81	73.21
mm	73.7	91.9	137.9	160.0	185.2	223.3	249.9	247.9	180.6	144.5	93.2	71.4	1,859.5

WETTEST YEAR'S RAIN[3] 58.29 INCHES | 1,481 mm | *2015* DRIEST YEAR'S RAIN[3] 9.98 INCHES | 253 mm | *1954*

LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION[7]
58 DAYS: *July 31 – September 26, 2011*

RAINFALL INCOME[e] 524 GPCD / 1,983 lpcd

AREA[f,8] 326.51 SQ MILES / 845.3 km²

POPULATION[f,8] 974,447 *2022*

UTILITY-WATER USE[9] 125 GPCD / 473 lpcd

HISTORICAL 70.70 FT | 21.55 m | *1979* DEPTH TO GROUNDWATER[g,10] 71.49 FT | 21.80 m | *2010* CURRENT

CURRENT GROUNDWATER EXTRACTION ≈ NATURAL GROUNDWATER RECHARGE[h,11]

WATERGY ⚐5

ANNUAL KWH USED TO TREAT AUSTIN'S POTABLE WATER[i,12] 98,360,014

TOTEM SPECIES ⚐6

AMPHIBIAN: Barton Springs Salamander *(Eurycea sosorum)*

MAMMAL: Cave Myotis *(Myotis velifer)*

FISH: Guadalupe Bass *(Micropterus treculii)*

BIRD: Black-capped Vireo *(Vireo atricapilla)*

MOLLUSK: Texas Fatmucket *(Lampsilis bracteata)*

PLANT: Leafy Brickell-bush *(Brickellia dentata)*

REPTILE: Texas Gartnersnake *(Thamnophis sirtalis annectens)*

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Available online at HarvestingRainwater.com/one-page-place-assessments

FOR MORE INFORMATION & HOW TO APPLY IT

⚐ **1.** For more SUN information, see chapters 2 & 4 and appendices 5 & 7 of *Rainwater Harvesting for Drylands and Beyond (RWHDB), Volume 1, 2nd Edition*

⚐ **2.** For more CLIMATE information, see the introduction; chapters 1, 2, & 4; and appendix 5

⚐ **3.** For more WIND information, see chapters 2 & 4 and appendices 5 & 9

⚐ **4.** For more WATER information, see the introduction, chapters 1–4, and appendices 1–5

⚐ **5.** For more WATERGY information, see chapters 2 & 4 and appendix 9

⚐ **6.** For more TOTEM SPECIES information: The ethics, principles, and strategies throughout *RWHDB* help us shift from a negative to a positive impact on these species and their habitats and ecosystems, on which our quality of life also depends.

AUSTIN PLACE-ASSESSMENT NOTES

a. The solar-noon altitude angle (a.k.a., solar-noon elevation angle) refers to the number of degrees the sun is located above the equator-facing horizon at solar noon on the given date. In the northern hemisphere, the equator-facing horizon is to the south. In the southern hemisphere, the equator-facing horizon is to the north.

b. The solar-noon winter-solstice shadow ratio is the object's height : length of object's shadow cast on December 21 at noon (the longest noontime shadow of the year). The ratio is 1 : x, where x = 1 ÷ tangent (90 – (latitude + 23.44)).

c. Azimuth is the angle formed between a reference direction (here, due south) to the point on the horizon directly below a given object. Solar noon is the time on any day when the sun's azimuth is 0°. The 9 am & 3 pm winter-solstice azimuth indicates the sun's deviation, in degrees, east/west of due south at those times (–/+ 3 hours from solar noon) on December 21.

d. An evaporation pan holds water whose depth is measured daily as water evaporates. These data allow us to determine evaporation rates at a given location. Compare average rainfall (water gain) to potential water loss via evaporation by checking pan-evaporation rates for your area. If pan-evaporation rates exceed rainfall rates, you are in a dryland environment, where evaporation-reducing strategies such as mulch, windbreaks, shading, and covered water storage are very important.

e. Calculated in situ w/ average rainfall, area, & population

f. City proper

g. USGS well ID 301432097480001 YD-58-50-217 is about 2.5 miles up Barton Creek from Barton Springs, in the same local aquifer (Edwards). Both readings shown were taken in late April of their respective years.

h. Austin Water does not rely on groundwater extraction, but instead "draws water from the Colorado River into three regional water treatment plants.... Wastewater is cleaned into high-quality effluent that is safely returned to the Colorado River to environmental flows. More than a billion gallons of this high-quality effluent are reclaimed each year for outdoor irrigation, industrial cooling, manufacturing and other uses."

i. Calculated by multiplying monthly 'kWh per million gallons (MG)' data for each of Auston's three treatment plants (Davis, Ullrich, and Plant 4) by their respective monthly outputs in MG, and summing the totals to arrive at the annual figure for 2023.

CREDITS: Brad Lancaster – Resource concept, content oversight, research | Megan Hartman – Resource creation, research

AUSTIN PLACE-ASSESSMENT REFERENCES

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