

NEW RIVER AT GLENDALE AVE
FCD GAGE ID# 61507 (5508) (PT Gage)
FCD GAGE ID# 61517 (RADAR Gage)

STATION DESCRIPTION

LOCATION – The station is located about 1/2 mile west of the intersection of Glendale and 99th Avenues. The station is on the left (east) bank of the river on the downstream side of Glendale Avenue. Latitude N33° 32' 11.8", Longitude W112° 16' 53.2". Located in the NE1/4 NW1/4 S08 T2N R1E, in the El Mirage 7.5-minute USGS quadrangle.

ESTABLISHMENT – March 21, 1990

DRAINAGE AREA – 623 mi² – of which 191 mi² is controlled by Cave Buttes Dam, 164 mi² by New River Dam, and 90 mi² is controlled by Adobe Dam.

GAGE – The gage is a pressure transducer type instrument. The PT is at gage height 2.50 feet gage height, or 1,048.343 feet NAVD88, levels of January 13, 2016.

There is a RADAR sensor mounted on the bridge directly above the center of the low flow channel. The elevation of the bottom of the sensor is at 20.752 feet gage height, levels of March 17, 2016.

There is one painted staff gage located on the downstream side of a bridge pier. The staff gage will not begin to be submerged until the entire channel is flowing. Zero on the painted staff gage is equivalent to 2.50 feet in the gage datum.

There is one crest gage at this location. The pin elevation is at 2.69 feet gage height, levels of January 13, 2016.

ZERO GAGE HEIGHT - Zero gage height is defined as the lowest point within the low-flow channel, which is 2.3 feet below the concrete apron under the Glendale Avenue bridge. Zero elevation is 1,045.843 feet NAVD88.

HISTORY – The USGS operated a partial record station from April 26, 1961 through February 13, 1964. A continuous station was installed February 13, 1964. The gage was moved to the upstream side of bridge on July 8, 1964. The continuous station discontinued September 30, 1970. Partial record station was re-instituted beginning October 1, 1970. The station was discontinued September 30, 1979. Gage datum was different for each site. Stilling well installed February 1990. Flood Control District installs gage on March 21, 1990. Continuous recording station began June 6, 1990 on downstream side of bridge at datum 0.24 feet higher than that for discontinued gage, ending WY1979. Staff gages installed April 12, 1990. Pressure transducer moved from

1.06 feet gage height to 0.75 feet gage height on July 7, 1999. Crest gage installed on April 4, 2000. Pressure transducer found at 1.10 feet gage height, on April 18, 2000. This was the new PT gage height as of April 4, 2000. A float gage was installed on February 20, 2002. The gage is in addition to the pressure transducer gage. The float gage was removed on August 1, 2005. The station including stilling well was removed on August 23, 2006 for construction of pedestrian walkways. Station was reinstalled on March 7, 2007. The stilling well was not replaced. The station was relocated to the southeast corner of the bridge and the transducer was placed on the first pier from the left bank. Datum was also redefined with the new installation. The new datum is based on painted staff gages. The old datum was based on staff gages located on the stilling well that was removed.

During 2015, a pedestrian underpass sidewalk was installed on the left bank of the stream, and a low flow channel in the center of the channel was installed, likely to counter the loss of area from construction of the sidewalk underpass. Due to the new low flow channel, it was decided to make the bottom of the low-flow channel as zero gage height. The bottom is 2.3 feet lower than the bottom of the main channel. Datum has been adjusted +2.300 feet effective March 3, 2016, the day the RADAR gage was installed.

REFERENCE MARKS –

BM-5508 is an FCDMC brass cap located near the edge of the left bank on the south side of Glendale Avenue. It is at elevation 19.642 feet gage height and 1,065.485 feet NAVD88, levels of January 9, 2018.

RP-1 is a chiseled 'X' on the west side of the pedestrian underpass sidewalk. It was established on January 13, 2016. Elevation is 6.917 feet gage height and 1,052.760 feet NAVD88, levels of January 9, 2018.

RP-2 is the fourth bolt from the bottom, downstream side, of the PT bracket. RP-2 had not been previously defined. Elevation is 5.958 feet gage height and 1,051.801 feet NAVD88, levels of January 13, 2016.

RP-3 is a chiseled 'X' on top of the left bank and is on the base of the light post located about 20 feet south of the station tube. It is at elevation 19.706 feet gage height and 1,065.549 feet NAVD88, levels of January 9, 2018.

The old RM-1 and RM-2 reference points have been destroyed since prior to 2007.

RM-3 – The most downstream bolt on the concrete surface (bottom of channel) where the old stilling well gage had been located on the fourth pier from the left bank. Elevation 2.410 feet gage height or 1,048.253 feet NAVD88, levels of January 13, 2016.

RM-4 is a bolt near on the right bank concrete apron about 5 feet upstream from the downstream edge of the abutment. Elevation 3.623 feet gage height or 1,049.466 feet NAVD88, levels of January 13, 2016.

RM-5 is presumed destroyed since its last survey in 2007. It was destroyed by the construction of the pedestrian sidewalk.

CHANNEL AND CONTROL – The channel is straight for about 500 feet above and below the gage and is composed of cobbles, gravel, and sand with dense brush in places. The streambed has been channelized with steep soil cement banks. A concrete slab beneath the bridge extends from bank to bank and about 20 feet above and below the bridge. The control for most flows is the fall over the rounded edge of the concrete slab. At extremely high flows the channel and constriction at the bridge become the control.

RATING – The rating was adjusted to accommodate the new low flow channel. The current rating is Rating #5. This rating was developed by R. W. Cruff using a rating by Coe and Van Loo (FCD 91-05) to develop a rating for this site. An existing USGS rating (USGS Rating #11.P) was used when the USGS maintained the gage and rating. It was determined that the USGS rating was only valid for flows below approximately 1.4 feet gage height. Both the HEC-2 rating and the USGS ratings were plotted. The extension of the USGS rating was considerably to the right of the HEC-2 model predicted. Thus, the best available rating for this site would be to use the USGS rating to about 1.4 feet gage height (800 cfs) and use the HEC-2 analysis to extend the rating. (RW Cruff, February 1998.) Previous ratings for this site had been maintained by the USGS. USGS rating #8 was used from April 4, 1990 through January 5, 1993. USGS rating #9 was used from January 6, 1993 through November 12, 1993.

DISCHARGE MEASUREMENTS – Low flow measurements can be made by wading. Caution should be exercised because the water flowing over the concrete apron can be flowing with high velocities and algal growth may make for slippery footing. Bridge measurements could be made for higher discharges (>1.75 feet gage height, USGS.)

POINT OF ZERO FLOW – PZF = -0.03 feet gage height = 1,048.8 feet NAVD88.

FLOODS – The largest flood recorded since gage installation, and since the upstream dams were constructed occurred on February 10, 1993, at 2.90 feet gage height, and 10,266 cfs. Prior to dam construction, the largest peak recorded was on December 19, 1967, at 19,800 cfs at 10.4 feet gage height (old datum) by USGS.

REGULATION – New River Dam, Adobe Dam and Cave Buttes Dam, in the upper parts of the watershed and drainage area regulate flows into New River, Skunk Creek, and Cave Creek/ACDC to only several thousand cfs at peak discharge.

DIVERSIONS – None known

ACCURACY – Fair

JUSTIFICATION – Monitor flows in New River channel as an input into the Agua Fria River for the Lower Buckeye Road unbridged crossing.

UPDATE – January 9, 2018
D.E. Gardner