

**CAVE CREEK  
FCD GAGE ID# 19007**

**STATION DESCRIPTION**

**LOCATION** – The gage site is located about 1/2 mile southwest of the town hall for the town of Cave Creek. Latitude N33° 49' 48", Longitude W111° 58' 3.6". Located in S29 T6N R4E, in the Cave Creek 7.5-minute quadrangle.

**ESTABLISHMENT** – Gaging by the District established on May 28, 2003.

**DRAINAGE AREA** – approximately 115.8 mi<sup>2</sup>

**GAGE** – The gage is a pressure transducer type instrument. The gage is at elevation 0.25 feet gage height and 1,989.39 feet NAVD88, levels of July 3, 2017.

There are no staff gages at this location.

There is one crest-stage gage at this location. The pin of the crest gage is at elevation 1.97 feet gage height, levels of July 3, 2017.

**ZERO GAGE HEIGHT** – Zero gage height is defined as the bottom of the low flow notch of the road crossing at the gage. It is at elevation 1,989.199 feet NAVD88, levels of July 3, 2017.

**HISTORY** – No previous history at this location. Initial site selection occurred in August 2002. Preliminary work done in April 2003. Gaging established May 28, 2003. FCD brass cap placed on July 17, 2003. Survey of five cross sections at and below gage done August 11, 2003. Orifice line destroyed during event of February 12, 2005. Repaired in March 2005. Station housing submerged in event of September 3, 2005. Gas/Purge system rendered unworkable. Pressure transducer installed for a temporary fix as of September 8, 2005. New device setup installed on May 3, 2006 to replace the transducer. The ID changed to 4889. Electronics setup changed and ID changed to 4893 on September 11, 2008. The orifice line was destroyed during the January 21, 2010 event. A pressure transducer was installed June 16, 2010. A crest stage gage was installed in June 2017.

**REFERENCE MARKS** –

BM-4893 is an FCD brass tablet located on the upstream side of the road crossing. It is at elevation 1.239 feet gage height and 1,990.438 feet NAVD88, levels of July 3, 2017.

RP-1 is the bottom of the notch at the road crossing. It is at elevation 0.000 feet gage height and 1,989.199 feet NAVD88, levels of July 3, 2017.

RP-2 is a nail in the asphalt in the north side of the road, located about 125 feet east of the notch in the road crossing. It is at elevation 7.924 feet gage height and 1,997.123 feet NAVD88, levels of July 3, 2017.

RP-3 is a nail in the asphalt in the south side of the road, located about 220 feet east of the notch in the road crossing. It is at elevation 11.548 feet gage height and 2,000.747 feet NAVD88, levels of July 3, 2017.

**CHANNEL & CONTROL** – The channel at the gage is a concave concrete road crossing with a 1-foot square notch cut into the center low point. Small flows pass in through the notch, approximately 2 cfs. Above about 1 foot gage height, flow spreads in the road crossing about 100 ft wide. No good control exists until the channel begins to be the control. Upstream of the road crossing the channel is cobble with heavy vegetation on both banks. The channel is heavily vegetated both up and downstream, as of July 2017. Downstream of the road crossing, the channel contains many cobbles with somewhat less vegetation, though still significant. Small to moderate flows would not appear to cause much movement in the channel. A large bankfull flow in September 2005 caused negligible change in the channel

**RATING** – The current rating is Rating #3 developed in 2020. Created as an improvement of the 2014 rating #2. Rating #2 was a modification of rating #1 for flows above 6,000 cfs. An indirect measurement for a flow at 9.7 feet gage height was used to redraw the rating curve. Rating #1 was developed from a direct measurement of flows in the notch, hand computations of the Manning equation for low flows out of the notch, and HEC-RAS model for flows above about 200 cfs.

**DISCHARGE MEASUREMENTS** – Direct measurements can be made at the road crossing. Indirect measurements can be made in a reach downstream from the gage.

**POINT OF ZERO FLOW** – 0.00 feet gage height, inside the notch at the orifice.

**FLOODS** – The largest event recorded since installation occurred on August 19, 2014 with a peak flow of 17,190 cfs at 12.75 feet gage height. An event of 11,400 cfs and 9.7 feet gage height occurred on September 3, 2005. A larger event occurred on January 21, 2010 of 15,900 cfs and 12.1 feet gage height.

**REGULATION** – No known regulation

**DIVERSIONS** – No known diversions

**ACCURACY** – Fair - accuracy will improve as discharge measurements are done.

**JUSTIFICATION** – Monitor flows in the creek to determine quantity of flow past this point for the town of Cave Creek.

**UPDATE** -      October 25, 2023  
                         ES Thomas