

## **CAVE CREEK AT SPUR CROSS ROAD**

**FCD GAGE ID# 20707**

**USGS GAGE ID# 09512280**

### **STATION DESCRIPTION**

**LOCATION** – The gage location is approximately five miles north of Carefree Highway and about 3.5 miles north of the town of Cave Creek. The gage located on the left bank of the natural channel approximately 1,500 feet downstream of Cottonwood Creek. Latitude N 33° 53' 14", Longitude W 111° 57' 12". Located in the SE1/4 SE1/4 SW1/4 S04 T6N R4E in the Cave Creek 7.5-minute quadrangle.

**ESTABLISHMENT** – The USGS began gaging in Water Year 1981. The District began gaging on June 16, 1993.

**DRAINAGE AREA** – 72.9 mi<sup>2</sup>

**GAGE** – The FCD gage is a non-submersible pressure transducer interfaced with the USGS bubbler orifice. The orifice elevation is at 2.64 feet gage height, levels of June 26, 2018.

There are several staff gages at this site. Essentially, the staff gage range is zero to 16 feet. The gage is divided into several sections. The gage display in gage height.

There are two crest gages at this location maintained by the USGS.

The pin elevation of the lower crest gage is 4.81 feet gage height, levels of June 26, 2018. The pin elevation of the upper crest gage is 8.87 feet gage height, levels of June 26, 2018.

**ZERO GAGE HEIGHT** - Zero is defined as the 0.00 line of the metal staff plates, and is equivalent to 2,260.026 feet NAVD88, levels of June 26, 2018 and March 28, 2019.

**HISTORY** – The USGS began gaging in Water Year 1981. USGS shifted gage datum by +2.0 feet at an undetermined time. FCD installed a PT on June 16, 1993. On February 15, 1995 the PT was removed and interfaced with the USGS bubbler line. The gage house was moved in February 2000 at the request of the landowner. The orifice line remained at the same location. The gage house was moved approximately 500 feet north of its previous location. A transmitter was set up at the orifice to a receiver at the gage house.

## **REFERENCE MARKS –**

BM-50207 is an FCDMC brass cap located near the large station house upstream of the gage location in the stream. It was established on January 11, 2019. Furthermore it was leveled from RM-X using a laser level and rod. It is at elevation 27.604 feet gage height and 2,287.630 feet NAVD88, levels of March 28, 2019.

RM-A is a USGS(?) brass cap located near the wireless link box on top of the left bank. It is at elevation 21.235 feet gage height and 2,280.523 feet NAVD88, levels of June 26, 2018.

RM-X is a rebar located near the station house. It was established on June 26, 2018. It is at elevation 28.206 feet gage height and 2,288.232 feet NAVD88, levels of June 26, 2018.

RM-Y is a rebar located high on the left bank between the station house and the gaging setup. It was established on June 26, 2018. It is at elevation 22.793 feet gage height and 2,282.819 feet NAVD88, levels of June 26, 2018.

RM-Z is a rebar located on the left bank near the gaging area. It is at elevation 12.390 feet gage height and 2,272.416 feet NAVD88, levels of June 26, 2018.

RP-1 is the top of the point on the metal bracing on the south side of the gage platform, next to the lower staff gage. It is at elevation 8.074 feet gage height, levels of June 26, 2018.

RP-2 is the northeast corner of gaging platform. It is at elevation 7.803 feet gage height, levels of June 26, 2018.

RP-3 is a bolt on the left bank downstream of the gage platform. It is at elevation 7.020 feet gage height, levels of June 26, 2018.

Old references:

RM1 is a chiseled square on top northwest corner of stone block and is 17.3 feet streamward, 10 feet downstream from centerline of shelter (prior to move). Elevation 20.217 feet gage height, levels of July 27, 1995.

RM2 is the top of a cut off rebar (flush with ground – painted red) with a chiseled 'X' on top. Location is 10.6 feet downstream from the center of the front of shelter (prior to move). Elevation 19.181 feet gage height, levels of July 27, 1995.

RM6 is a bolt in the rock holding the lower outside staff bracket five feet downstream from the orifice (closest bolt to the bank – painted red.) Elevation 7.034 feet gage height, levels of July 27, 1995.

RM7 is a bolt in a large boulder 15 feet upstream from the orifice, near the upper outside staff (painted red.) Elevation 7.044 feet gage height, levels of July 27, 1995.

A rebar reference was installed on August 11, 2003. The rebar is about 38 feet south of the large station housing. It has not been tied to gage height. Elevation 2,287.56 feet NAVD 1988. State Plane coordinates are N 1050564.491, E 688798.748. It was not found during the survey of June 26, 2018.

**CHANNEL AND CONTROL** – The channel is straight 300 feet upstream and 200 feet downstream from the gage. The left bank is approximately 20 feet high and is nearly vertical at gage. It is composed of silt and a large number of boulders and cobbles. The right bank is 5 – 7 feet high with vegetation consisting of Palo Verde trees, mesquite trees, heavy Johnson grass, and a few small cactuses. It is subject to overflow during high flows. The low flow control is a small cobble riffle about 50 feet below gage and is subject to shifting. The medium and high water control is the channel.

**RATING** – The current rating is USGS Rating #9, developed following a large peak from September 2005.

**DISCHARGE MEASUREMENTS** – Wading measurements can be made 65 feet below the gage at a maximum gage height of 3.0 feet. High water measurements are made from the cableway 70 feet downstream from the gage. The cableway is a 3/4-inch galvanized steel wire rope having a 189 foot span. The cable has width markings at five-foot intervals with the initial point at the left pull point. A slope area reach is located at the gage.

**POINT OF ZERO FLOW** – The PZF is at about 2.0 feet gage height, levels of June 2018.

**FLOODS** – The greatest flood of record was a discharge of 14,000 cfs and 16.4 feet gage height occurred on September 3, 2005. A second high event occurred on January 21, 2010 with a peak of 13,600 cfs at 16.19 feet gage height.

**REGULATION** – None known

**DIVERSIONS** – None known

**ACCURACY** – Fair

**JUSTIFICATION** – Monitor flows in Cave Creek at a location both above and below several large washes entering. Monitor flows into Cave Buttes Dam. This is a cooperative gage with the US Geological Survey.

**UPDATE** – May 7, 2020  
D E Gardner