AGUA FRIA AT GRAND AVENUE
FCD GAGE ID# 5503

STATION DESCRIPTION

LOCATION – The gage is located on the US 60 highway bridge crossing of the Agua Fria River near Sun City. The gage is located near the middle of the channel on the second pier from the right bank. The gage housing is located on the right bank of the channel between the highway and railroad bridges. Latitude N33° 36' 24"; Longitude W112° 18' 14". Located in the NW1/4 NW1/4 S18 T3N R1E in the El Mirage 7.5-minute quadrangle.

ESTABLISHMENT – The District established the ALERT gage on April 27, 1994. The USGS had maintained gages at the location for many years prior. The USGS established crest gages on December 5, 1962 and a water-stage recorder on October 1, 1980. The gage was removed for bridge construction from September 16, 1992 to November 10, 1993.

DRAINAGE AREA – 1,628 mi^2, of which 1,433 mi^2 is controlled by New Waddell Dam.

GAGE – A pressure transducer type instrument is installed at this site. Elevation of the transducer is 2.10 feet, taken from the staff gage on June 6, 2007.

Two 0.01-foot staff gages are located near the transducer. The staff gage on the east side of the pier reads 0.02 high. The staff gage on the west side of the pier reads 0.05 feet high, both levels of February 11, 2002.

A painted staff gage is located on the second railroad pier from the left bank, and is viewable from the east (left) bank. To convert painted staff gage readings into FCD gage height, add 1.47 feet. Levels of February 11, 2002.

One crest stage gage is located at the gage site. The crest stage gage is located on the same pier as the transducer. The pin elevation is 3.26 feet gage height, levels of February 11, 2002.

ZERO GAGE HEIGHT - Zero is based on the zero of the old 0.02-foot USGS staff gages installed near the old orifice. Elevation is 1,105.96 feet M.S.L.

HISTORY – The USGS established crest gages in December 1962. The USGS established continuous data collection in October 1980. The District piggybacked to the USGS system beginning in April 1994. Gage datum was lowered 2.00 feet on November 19, 1993. The USGS ceased involvement with this gage on September 30, 1998. Survey of all gages and one USGS reference point on February 11, 2002 confirmed that the lower orifice elevation is at 1.84 feet gage height. Previously, in the NovaStar database, the base value was at 1.80 feet. A correction was made to the most recent calibration in the

database, (Sept. 1998.) Nitrogen / non-submersible transducer setup was replaced with a submersible transducer on August 21, 2006. Higher crest gage was found missing during the 2010 station visit.

REFERENCE MARKS –

RM5 – was established on September 15, 1992. It is the top of a 1/2-inch bolt anchored in the center of the downstream end of the tallest railroad pier, second pier from the left bank, about 5 feet above ground level. Elevation 8.70 feet gage height, USGS levels of November 19, 1993, and FCD levels of February 11, 2002.

RM6 – was established on November 19, 1993. It is the top of a nut on a 3/8-inch bolt anchored in the upstream end of the orifice pier (2nd pier from the right bank) about 3 feet above ground level. Elevation 6.16 feet gage height, levels of November 19, 1993. RM was not surveyed in February 2002.

RM7 – was established November 19, 1993. It is the USGS gaging station brass cap mounted on the upstream side of the right bank highway bridge abutment in the horizontal surface of the enclosed area beneath the road surface, 11 feet streamward from the gage house near the orifice pipe. Elevation 18.10 feet gage height, levels of February 11, 2002.

RM-AFGRND is an FCD brass cap located about 12 feet west of the station gage house on the right bank. Elevation 23.31 feet gage height, levels of February 11, 2002.

CHANNEL AND CONTROL – Channel is straight for 800 feet upstream and 1200 feet downstream from the gage. Right bank upstream and downstream is edge of old landfill with shaped side slopes utilizing channel sand and gravel. Left bank upstream is a gradual slope from the old hauling roads for sand and gravel operations further upstream. The left bank upstream is nearly vertical and composed of a cemented conglomerate. The left bank downstream consists of old river sand, gravel, and boulders with some shaping by mechanical means. Vegetation is sparse on both banks. The streambed is composed of sand, gravel, cobbles, and some large boulders downstream of the bridge. There is a drainage ditch on the left bank just upstream of the railroad bridge that carries runoff from the community of Sun City. This runoff creates low flows in the low water channel near the orifice when no flow is coming down the main channel upstream.

The channel is the control for medium and high flows. The low water control is a cobble riffle about 100 feet downstream from the gage orifice. The section under the bridge is approximately 600 feet from left to right bank.

RATING – The current rating is USGS rating #5, dated January 22, 1996. This rating was made effective for District purposes to October 1, 1995. This rating is also FCD Rating #2.

DISCHARGE MEASUREMENTS – Low flow measurements could be made by wading near the gage. Higher flows may be measured by bridge crane, if conditions permit. Indirect measurements could be made 1000 feet above the gage, however, it would not account for inflow from the Sun City drain.

POINT OF ZERO FLOW – The PZF at the gage was surveyed at 1.60 feet on February 11, 2002.

FLOODS – A flood of 58,400 cfs occurred on December 19, 1978.

REGURLATION – New Waddell Dam regulates flows approximately 15 miles upstream.

DIVERSIONS – New Waddell Dam diverts and accepts water from the Central Arizona Project.

ACCURACY – Fair

JUSTIFICATION – Monitor flows in the Agua Fria River for record and for unbridged road crossing at Northern Avenue, and Lower Buckeye Road.

UPDATE - July 13, 2011
DE Gardner