WATERMAN WASH AT RAINBOW VALLEY ROAD
FCD GAGE ID# 83307

STATION DESCRIPTION

LOCATION – The gage is located on the Rainbow Valley Road bridge over Waterman Wash in Rainbow Valley southeast of the town of Buckeye in the city of Goodyear. Latitude 33° 15' 41.3" N, Longitude 112° 26' 38.4" W. Located in the SE1/4 SE1/4 of S10 T2S R2W near the intersection of Queen Creek Road and Rainbow Valley Road. It is in the Avondale SW 7.5 minute USGS quadrangle.

ESTABLISHMENT – The gage was installed on March 18, 1999

DRAINAGE AREA – 362 mi^2

GAGE – The gage is a pressure transducer type instrument. It is located on the first pier from the left bank. The PT diaphragm is at elevation 0.45 feet gage height, levels of June 27, 2018.

There is one staff gage at this location on the right side of the second pier from the left bank. The staff gage displays in gage height.

There is one crest stage gage at this location. The pin elevation is 1.47 feet gage height, levels of June 27, 2018.

ZERO GAGE HEIGHT – Zero gage height is defined as the zero point on the mounted staff gage on the second pier on the downstream side of the bridge. At present, zero gage height is equal to 1,009.854 feet NAVD88.

HISTORY – No previous history at this site. Gage was installed by the District on March 18, 1999. Sonar level sensor replaced with pressure transducer on April 13, 2000. A crest stage gage was installed on April 13, 2000. A survey of November 30, 2000 indicated the gage height elevations of the reference marks were not correct. All references and gages were surveyed on November 30, 2000 and all gage elevations and reference elevations are now tied correctly. Current gage height elevations are 1.9 feet less than established on May 27, 1999. Grading within the channel occurred and was surveyed on July 26, 2001. Date of grading is unknown, but is assumed to be July 1, 2001 for rating purposes. Transducer and crest-stage gage were moved to the first pier on April 11, 2005. Transducer and crest-stage gage were moved to the third pier on June 21, 2007. This move was done because the transducer was vandalized and the low-flow had migrated rightward. PT re-secured at a new elevation, date unknown, but made effective as of survey date of April 15, 2010. Transducer was moved closer to the crest-stage gage in late 2011. The effective date will be October 1, 2011. The transducer gage

was found to have been moved since the previous survey. Photographic evidence indicates that it was lowered sometime between February 2012 and May 2014. Continual water on the gage since 2014 prevented fully viewing the PT gage.

REFERENCE MARKS – Several reference marks were found or established.

BM-50833 is an FCDMC brass cap located near the station tube on the right downstream bank. It is at elevation 11.716 feet gage height and 1,021.570 feet NAVD88, levels of June 27, 2018.

RM-1 is an Arizona Highway Department brass cap in the center of the Rainbow Valley Road bridge. It is at elevation 12.000 feet gage height and 1,021.854 feet NAVD88, levels of June 27, 2018.

RM-2 is an Arizona Highway Department brass cap on the upstream sidewall of the Rainbow Valley Road bridge. It is at elevation 12.923 feet gage height and 1,022.777 feet NAVD88, levels of June 27, 2018.

RM-3 is a chiseled 'X' on the top of the left downstream wingwall. It is at elevation 12.031 feet gage height and 1,021.885 feet NAVD88, levels of June 27, 2018.

RM-4 is a chiseled 'X' on the top of the right downstream wingwall. It is at elevation 12.011 feet gage height and 1,021.865 feet NAVD88, levels of June 27, 2018.

RP-1 is a chisel mark on the downstream sidewall of the bridge near the gage, over pier 2 from the left bank. It is at elevation 14.407 feet gage height and 1,024.261 feet NAVD88, levels of June 27, 2018.

RP-2 is a chisel mark on the southwest corner of a large transformer box near the gage station. It is at elevation 11.905 feet gage height and 1,021.759 feet NAVD88, levels of June 27, 2018.

RP-3 is a small bolt protruding from the pier wall on the right side of the second pier from the left bank. It is under the bridge. It is at elevation 3.116 feet gage height and 1,012.970 feet NAVD88, levels of June 27, 2018.

RP-4 is the lower upstream bolt on the lower clamp that attaches the crest gage to the pier wall. It is at elevation 2.453 feet gage height and 1,012.307 feet NAVD88, levels of June 27, 2018.

CHANNEL AND CONTROL – The channel has a natural sand and clay bottom. The channel has significant vegetation just upstream of the gage and downstream of the gage. Both banks of the channel are earthen fill. The natural floodplain of the channel no longer exists as both banks are severely encroached. No good control exists for low

flows. At higher flows (< 2.0 feet gage height), the channel is the control. At high flows, the bridge crossing is in control. Piers are angled with the channel. The channel tends to contract downstream of the bridge and the channel has steep side slopes downstream of the bridge.

RATING – The current rating is Rating #5 developed from survey data collected in August 07, 2024. The channel downstream had several flows since the previous rating and changes to the cross sections thus justifying a new stage-discharge computation.

The previous rating is Rating #4 developed in June 2018 due to significant bank work.

The previous rating before was Rating #3. This rating was developed using survey data from a survey of July 26, 2001. The rating was developed due to significant grading in the channel that has increased the capacity of the channel and decreased the roughness. It is suspected that further channel changes will occur following moderate to significant events. There is much exposed loose silt material that is transportable. Follow up will be done following any events to determine need for further refinement of Rating #3. The rating was developed from four surveyed cross sections' data in an HEC-RAS model. A single HEC-RAS run was used in the rating development.

DISCHARGE MEASUREMENTS – Low discharges measurements could be made by wading the channel in a reach approximately 400 feet upstream from the bridge. The channel and banks can be very soft when wet. Caution should be exercised when entering the wet channel. Entering the channel near the gage should be done with caution. Sinking in the muck is a possibility. Bridge measurements are not advised. A monumented, 4-cross section reach is located approximately 400 feet upstream of the gage and can be used for indirect methods for higher discharges. None of the given elevations are tied to gage height, but are used only for slope area computations.

XS4 is located approximately 400 feet upstream from the bridge. XS4LB is a piece of fence rail at elevation 24.73 feet, levels of July 26, 2001. XS4RB is a piece of fence rail at elevation 26.02 feet, levels of July 26, 2001.

XS3 is located approximately 215 upstream from cross section four. XS3LB is a piece of fence rail at elevation 23.60 feet, levels of July 26, 2001. XS3RB is a piece of fence rail at elevation 26.35 feet, levels of July 26, 2001.

XS2 is located about 250 feet upstream from cross section three. XS2LB is fence rail at elevation 25.31 feet. XS2RB is fence rail at elevation 27.98 feet, levels of July 26, 2001.

XS1 is located approximately 260 feet upstream from cross section two. XS1LB is a piece of fence rail at elevation 27.79 feet, levels of July 26, 2001. XS1RB is a piece of fence rail at elevation 28.76 feet, levels of July 26, 2001.

POINT OF ZERO FLOW – The point of zero flow was found to be approximately 0.0 feet gage height, levels of August 6, 2018. The low point was found near the third pier from the left bank.

FLOODS – The peak flow recorded at this gage occurred on July 30, 2016 with a peak discharge of 5,713 cfs at a stage of 10.82 feet gage height. The next peak had a discharge of 3,329 cfs and a stage of 8.98 feet gage height, and occurred on September 8, 2014.

REGULATION – No known regulation of flows.

DIVERSIONS – No known diversions.

ACCURACY – Fair

JUSTIFICATION – Streamgage exists for long term record and for warning to MCDOT to provide time for them to barricade crossings of Waterman Wash at Tuthill Road and Narramore Road.

UPDATE - August 28, 2024
ES Thomas