CASANDRO WASH DAM

FCD GAGE ID# 53007

STATION DESCRIPTION

LOCATION Casandro Wash Dam is located west of downtown Wickenburg, Arizona just north of US 60 and about 500 feet west of Mariposa Drive. Latitude N 33° 57′ 57″. Longitude W 112° 54′ 01″. The gage is located in SE1/4 NW1/4 S11 T7N R5W of the Wickenburg 7.5-minute USGS quad map.

ESTABLISHMENT The Gage was installed on August 14, 1996, following the completion of the dam.

DRAINAGE AREA The drainage are at the dam is 1.2 square miles

<u>GAGE</u> The recording gage is a pressure transducer type instrument. Elevation 0.19 feet gage height, or 2,136.85 feet NAVD 1988.

There are staff gages at this location. The staff gages are as follows.

0 – 5 foot staff, at 5.0 feet= 4.99 feet gage height, or 2.141.648 feet NAVD 1988 5 – 10 foot staff, at 10.0 feet= 10.07 feet gage height, or 2.146.728 feet NAVD 1988 10 – 15 foot staff, at 15.0 feet= 14.94 feet gage height, or 2.151.598 feet NAVD 1988 15 – 20 foot staff, at 20.0 feet= 20.03 feet gage height, or 2.156.688 feet NAVD 1988 20 – 25 foot staff, at 25.0 feet= 25.07 feet gage height, or 2.161.728 feet NAVD 1988

ZERO GAGE HEIGHT Is defined as the ground in front of the inlet. Elevation 2,136.66 feet NAVD 1988.

HISTORY No previous gage at this location. Datum was changed for Water Year 1998 to better match the O & M black and white staff gages on the dam. These staff gages are more closely set to 0.0 feet as the ground in front of the inlet rather than the inlet invert. The inlet invert was used from the original installation to the end of the Water Year 1997 as the 0.0 feet gage height as no staff gages were installed when the installation was done. The pressure transducer was replaced on January 5, 2000. Datum updated to NAVD 1988 from survey of January 24, 2012.

REFERENCE MARKS

CAS-16 is an FCDMC brass cap near the top of the right bank of the emergency spillway at gage height 259.251 feet, or 2,165.911 feet NAVD88, levels of July 2, 2024. Elevation stamped on cap is 2,163.73 feet, NGVD 1929.

RM-1 is a brass cap located in the center of the spillway approach just upstream of the crest. It is marked as point 5077 in dam survey data. It is at elevation 18.220 feet gage height and 2,154.880 feet NAVD88, levels of July 2, 2024.

RM-2 is a brass cap location in the center of the spillway on the crest. It is marked as point 5076 in dam survey data. It is at elevation 20.257 feet gage height and 2,156.917 feet NAVD88, levels of July 2, 2024.

RP-1 is the southeast corner of the outlet 'tower' of the dam. It is at elevation 7.956 feet gage height, levels of July 2, 2024

RP-2 is a bolt painted white securing the trash rack at the inlet pad. It is at elevation 0.225 feet gage height, levels of July 2, 2024.

RP-3 is a bolt securing the separate PT and gate gear drive conduits, about halfway up the pool side of the dam. It is at elevation 14.449 feet gage height, levels of July 2, 2024.

RP-4 is a bolt securing the separate PT and gage gear drive conduits, near the top of the structure on the pool side of the dam. It is at elevation 22.347 feet gage height, levels of July 2, 2024

<u>CHANNEL AND CONTROL</u> The principal outlet for the dam is a 36-inch diameter culvert with two inlets. The emergency spillway is left of the principal outlet through the crest of the dam. Control for flows below about 20.34 feet gage height is culvert flow. Above 20.34 feet gage height, spillway flows begin.

PRINCIPAL OUTLET / EMERGENCY SPILLWAY

The principal outlet is a 36-inch pipe which has a 16-inch diameter restricted ungated opening. A second orifice with a 24-inch square opening is not considered in the stagedischarge relationship used in the ALERT system for this station. The ungated opening is at an elevation of 0.20 feet gage height, levels of July 2, 2024. A gated outlet is at elevation 3.52 feet gage height, levels of July 2, 2024. The top of the intake structure spills into the outlet at 8.00 feet gage height.

The emergency spillway begins to overflow at 20.34 feet gage height and 2,157.00 feet NAVD88. The spillway is an 80 feet wide concrete structure with an elliptical crest and a spillway chute of 3:1. The top of the dam is at 28.75 feet gage height and 2,165.41 feet NAVD88.

<u>RATING</u> The current discharge rating is rating #3 from Hoskin-Ryan analysis of the 2013. The current volume rating is rating #4 and is from an in-house analysis of recent mapping data. Both are applied as of May 11th, 2017.

POINT OF ZERO FLOW The PZF for the primary outlet is the inlet of the invert at 0.25 feet gage height, or 2,136.91 feet NAVD88, levels of January 24, 2012. The spillway elevation begins to flow at 20.34 feet gage height, or 2,157.00 feet NAVD88, levels of January 24, 2012.

DISCHARGE MEASUREMENTS Wading measurements could probably be made not far downstream for outflows. However, these outflows are relatively small (30 cfs at about 20 ft gage height). Direct measurements of spillway flows are not recommended.

FLOODS The peak impoundment of record occurred on July 18, 2015 with a peak stage of 18.64 feet gage height, and a volume of 113.4 acre0feet and 85.2 percent of spillway capacity. The next largest event occurred on September 26, 1997 with a maximum impoundment of 11.55 feet, 65 acre-feet, and 45.5% full. An event on August 31, 1999 had a maximum impoundment of 6.47 feet, 24.6 acre-feet, and 17% full. An event on October 27, 2000, had a maximum impoundment of 7.22 feet, 28.4 acre-feet, and 20% full.

REGULATION The dam regulates natural flows in Casandro Wash

DIVERSIONS None.

ACCURACY Good.

<u>JUSTIFICATION</u> Monitor FDCMC's Casandro Dam and provide data for flood response activities in the Town of Wickenburg.

UPDATE July 3, 2024

DE Gardner