

**SUNNYCOVE FRS
FCD GAGE ID# 5248**

STATION DESCRIPTION

LOCATION - The gage site is a dam located in the town of Wickenburg, approximately 1 mile southwest of the downtown area. From US 60, turn south of Kellis Road to the cemetery. The dam is located behind the cemetery. Latitude 33° 57' 25" N; Longitude 112° 44' 24" W. Located in the SE1/4 SE1/4 of S11 T7N R5W of the Wickenburg 7.5-minute USGS quad map.

ESTABLISHMENT - The gage was installed on July 1, 1986.

DRAINAGE AREA - 1.35 mi².

GAGE - The gage is a non-submersible pressure transducer. The PT orifice line is at 0.00 feet gage height, or 2,135.10 feet NAVD 1988, levels of January 24, 2012.

There are ten staff gages at this location.

A staff plate is located near the orifice line and is viewable from the top of the dam. It reads directly in gage height, levels of January 24, 2012.

There are nine black and white staff gages located on the upstream face of the dam. The staff gages are five foot in height and are divided into one-foot increments. The range is from zero to 45 feet. The staff gages read in gage height +/- 0.1 feet, levels of January 24, 2012.

ZERO GAGE HEIGHT - Zero gage height is defined as 0.0 feet on the staff gage. Elevation 2,135.10 feet NAVD 1988.

HISTORY - PT elevation of 2,134.50 feet MSL on January 9, 1990. Survey by RWC placed PT at 2,134.02 feet MSL, or 6.28 feet gage height, where 0.00 feet gage height was the invert of the lower orifice in the intake tower. PT lowered to -0.10 feet gage height (2,127.82) on July 13, 1992. PT moved to 8.50 feet gage height on August 17, 1993. PT moved to 0.75 feet gage height on August 27, 1993. PT moved to 1.50 feet gage height on January 19, 1994. PT moved to 0.00 feet gage height on February 16, 1996. PT moved out of CMP on July 24, 1997 to escape drawdown when gates are opened. New PT elevation of 0.90 feet gage height. A non-submersible PT was installed on February 25, 1999 at 0.90 feet gage height. The SCS staff gage was replaced with nine 5-foot staff gages reading in gage height during spring 2000. Found the orifice at 0.60 feet gage height during survey of January 8, 2002. Made effective for Water Year 2002. Stage gage

elevation changed in 2011 to 0.00 feet gage height. Effective date will be October 1, 2011.

REFERENCE MARKS -

SNYCV-16 is an FCD brass cap on top of Sunnycove FRS near the left side of the dam. Elevation is 46.29 feet gage height, or 2,181.39 feet NAVD 1988, levels of January 24, 2012.

RM1 - Reference 431 from the Wickenburg ADMS It is a chiseled '+' on top of east concrete curb at the south end of pavement on Kellis Road. Elevation = 2,160.71 feet MSL, gage height 27.71 feet.

RP1 - Nail in center of white '+' used for aerial survey of Wickenburg ADMS located near gate at southeast end of dam. Elevation = 2,178.33 feet MSL, gage height 45.33 feet.

RP2 - Top of yellow rod near fence post made of tie near RP1. Elevation = 2,179.30 feet MSL, gage height 46.30 feet.

RP3 - White paint on northwest corner of concrete for gate control. Elevation = 2,180.44 feet MSL, gage height 47.44 feet.

CHANNEL AND CONTROL - The gage is located behind the dam. The control for flows through the principal outlet is a 30-inch diameter culvert, assuming the gate is open. For impoundments greater than 37.1 feet gage height, weir flow will begin through the emergency spillway.

PRINCIPAL OUTLET / EMERGENCY SPILLWAY

The principal outlet is a 30-inch diameter culvert pipe of length 290 feet. The culvert invert elevation at the inlet is 2,128.60 feet NAVD88 or -6.50 feet gage height. The culvert invert elevation at the outlet is 2,126.10 feet NAVD88 or -9.00 feet gage height. There are two intake orifices in the intake tower. The lower orifice is at elevation 2,130.10 feet NAVD88, or -5.00 feet gage height. The upper orifice is at elevation 2,150.10 feet NAVD88, or 15.00 feet gage height. Flow begins in the intake tower at elevation 2,171.60 feet NAVD88 or 36.50 feet gage height.

The emergency spillway crest is at approximately 37.1 feet gage height, or 2,172.20 feet NAVD 1988, levels of January 24, 2012. The spillway is 100 feet wide and side walls sloping at 2:1.

Top of dam elevation is at 2,180.1 feet NAVD 1988, or 45.0 feet gage height.

RATING -

The current discharge rating is rating #3. Rating #3 is an adjustment of elevations of Rating #2. Rating #2 is a combination of culvert flows through the principal outlet and weir flow through the emergency spillway. Flows through the culvert were evaluated using the FHWA HY8 program. Flows through the emergency spillway were evaluated using the weir equation and weir coefficient of 2.90. The two ratings were combined into a single discharge rating. Rating #1 was developed using similar methods.

The current capacity rating is rating #3 which is a revision of rating #2, adjusted for movement of the gage. Rating #2 was developed from DTM from the Wickenburg ADMS. Rating #1 was taken from the HEC-1 output from the ADMS in 1992.

POINT OF ZERO FLOW - The PZF is at -5.00 feet gage height, or 2,130.10 feet NAVD 1988. This represents the lower orifice elevation of the intake tower.

DISCHARGE MEASUREMENTS - Outlet culvert is buried from the dam to its outlet at the Hassayampa River. Discharge measurements are not possible. If desired, low flows through the emergency spillway could be measured.

FLOODS / SIGNIFICANT IMPOUNDMENTS – The highest impoundment on record occurred on July 18, 2015 with a peak stage of 31.85 feet gage height, and 144.6 acre-feet, and 66.9 percent full. The next highest impoundment at the dam was recorded on August 22, 1992, at 21.68 feet gage height, and 53 acre-feet, or 24.5 percent full.

REGULATION - The dam itself regulates flows on Sunnycove wash.

DIVERSIONS - None known

ACCURACY - Good

JUSTIFICATION - Monitor impoundments behind Sunnycove dam for flood warning to town of Wickenburg.

UPDATE – June 7, 2016
DE Gardner