

**SUNNYCOVE FRS
FCD GAGE ID# 46507**

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 - 1.39 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 NAVD88, levels of July 2, 2024.

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 displays directly in gage height, levels of May 21, 2024.

There are nine 5-foot staff gages located in the pool area of the dam. The staff gages are divided into one-foot increments. The range is from zero to 45 feet. The staff gages display in gage height with the lower gages accurate to within 0.1 foot and the gages from 20 feet and higher between 0.2 and 0.35 feet higher than displayed, levels of July 2, 2024.

ZERO GAGE HEIGHT - Zero gage height is defined as 0.00 feet on the staff plate on the outlet tower and is equivalent to elevation 2,135.10 feet NAVD88.

HISTORY – Gaging established on July 1, 1986. The PT elevation was found to be 2,134.50 feet M.S.L. on January 9, 1990. A January 1992 survey by RWC found PT at 2,134.02 feet M.S.L., or 6.28 feet gage height, where 0.00 feet gage height was the invert of the lower orifice in the intake tower (2,128.00 feet M.S.L., from As-Builts). Following the 1992 survey, datum was tied to the Wickenburg ADMS datum, rather than the As-Built SCD datum. PT lowered to -0.10 feet gage height 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.

From the July 2, 2024 survey, the optical level was used to estimate the correlation between the FCDMC staff plate and the SCS staff gages on the intake tower. It was noted that the SCS staff gages are still present at higher elevations but have been hidden with paint. It was found that 16.57 feet gage height on the staff plate is equivalent to 2,149.91 feet M.S.L on the SCS gage, which is also equivalent to 2,151.67 feet NAVD88.

REFERENCE MARKS -

All references in previous Station Descriptions, except SNYCV-16 are no longer valid since most were surveyed in the early 1990's and are not recoverable. New references were identified during the survey of July 2, 2024.

SNYCV-13 is an FCDMC brass cap located on top of Sunnycove FRS at station 13+00. It is at elevation 46.548 feet gage height and 2,181.648 feet NAVD88, levels of July 2, 2024.

SNYCV-14 is an FCDMC brass cap located on top of Sunnycove FRS at station 14+00. It is at elevation 46.320 feet gage height and 2,181.420 feet NAVD88, levels of July 2, 2024.

SNYCV-15 is an FCDMC brass cap located on top of Sunnycove FRS at station 15+00. It is at elevation 46.650 feet gage height and 2,181.750 feet NAVD88, levels of July 2, 2024.

SNYCV-16 is an FCDMC brass cap located on top of Sunnycove FRS at station 16+00. It is at elevation 46.324 feet gage height and 2,181.424 feet NAVD88, levels of July 2, 2024.

RP-1 is a bolt on the upstream side of the gated inlet enclosure on the inlet tower. It is at elevation 2.118 feet gage height, levels of July 2, 2024.

RP-2 is a bolt in the dam pool securing the PT and gate gear shaft nearest to the intake tower. It is at elevation 12.707 feet gage height, levels of July 2, 2024.

RP-3 is a bolt in the dam pool securing the PT and gate gear shaft near the midpoint of the dam. It is at elevation 17.856 feet gage height, levels of July 2, 2024.

RP-4 is a bolt in the dam pool securing the PT and gate gear shaft nearest to the top, but still midway in the pool. It is at elevation 28.202 feet gage height, levels of July 2, 2024.

RP-5 is the top bolt supporting the PT conduit about 5-inches left of the end of the PT housing. It is at elevation 0.530 feet gage height, levels of May 21, 2024.

RP-6 is the northwest corner of the gate control cradle on top of the dam. It is at elevation 46.348 feet gage height, levels of July 2, 2024.

CHANNEL AND CONTROL – There is a 30-inch outlet culvert under the dam with three inlets into the outlet tower structure. The lower inlet is gated and is at -5.34 feet gage height. A second small inlet is located near the middle of the outlet tower. It is open and flow begins at 14.82 feet gage height. The upper inlet is ungated as well. Flow begins at 36.39 feet gage height. Flow begins over the emergency spillway at about 37.10 feet gage height. All levels from the 2023 Wood Patel survey.

PRINCIPAL OUTLET / EMERGENCY SPILLWAY

The principal outlet is a 30-inch diameter culvert pipe with a length of 290 feet. The culvert invert elevation at the inlet is 2,128.26 feet NAVD88 or -6.84 feet gage height, levels by inference. The culvert invert elevation at the outlet is 2,125.76 feet NAVD88 or -9.34 feet gage height. There are two intake orifices in the intake tower. The lower orifice is at elevation 2,129.76 feet NAVD88, or -5.34 feet gage height. The upper orifice is at elevation 2,149.92 feet NAVD88, or 14.82 feet gage height. Flow begins in the upper inlet in the intake tower at elevation 2,171.49 feet NAVD88 or 36.39 feet gage height.

The emergency spillway crest is at approximately 37.1 feet gage height, or 2,172.20 feet NAVD88, levels of January 24, 2012. The spillway is 100 feet wide and side walls sloping at 2:1.

Minimum top of dam elevation is at 2,180.26 feet NAVD88, or 45.16 feet gage height.

RATING -

The current discharge rating is rating #4. Rating #4 is a rating developed using several methods to more accurately calculated flow through the orifice and the top weir. The rating assumes the gated outlet is closed and no flow passes through it.

The current capacity rating is rating #4 developed from new topo information.

POINT OF ZERO FLOW - The PZF is at -5.34 feet gage height, or 2,129.76 feet NAVD88. This represents the lower gated orifice elevation of the intake tower, when opened. The lowest ungated PZF is at 14.82 feet gage height. These elevations are from the official survey done by Wood-Patel in 2023.

DISCHARGE MEASUREMENTS - Outlet culvert travels underground 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, though it would be difficult to access the spillway during high impoundment events.

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 FRS for flood warning to town of Wickenburg.

UPDATE – July 3, 2024
 D Gardner