

**SPOOKHILL FRS
FCD GAGE ID# 74707**

STATION DESCRIPTION

LOCATION – The structure runs parallel to the Red Mountain Freeway from south of Brown Road to near Thomas Road, east of Power Road. The gage is located on the principal outlet on the north end of the structure. Latitude N33° 28' 01", Longitude W111° 40' 48". Located in the NE1/4 NW1/4 SW1/4 S31 T2N R7E in the Buckhorn 7.5-minute quadrangle.

ESTABLISHMENT – The gage was established on March 13, 1984.

DRAINAGE AREA – 13.87 mi²

GAGE – The gage is a pressure transducer type instrument located at the principal outlet. The PT is at gage height 0.28 feet, or 1,568.38 feet NAVD1988.

There is one staff gage, divided into several sections, at this location. It is painted on the principal outlet and is viewable from several spots. The staff gage reads in gage height, levels of April 21, 2016.

There is no crest gage at this location.

ZERO GAGE HEIGHT – Zero gage height is defined as the concrete slab on the outside, upstream side of the principal outlet. Per the design, the elevation is 1,568.10 feet NAVD 1988. This elevation was found to be

HISTORY – No previous history at this location. Station installed March 13, 1984. Connections under Brown, McKellips, and McDowell Roads reconstructed during freeway construction in 2007-2008. Principal outlet destroyed and rebuilt, May – June, 2008. New principal outlet and outlet culvert constructed about 200 feet east of the previous outlet. Gage at old principal outlet removed on May 1, 2008. Gage at new principal outlet installed June 23, 2008.

REFERENCE MARKS –

SM-14A is an FCDMC brass cap settlement marker located at station 300+00 on top of the dam crest at the principal outlet. Elevation is 24.905 feet gage height and 1,592.980 feet NAVD88, levels of March 1, 2018.

RP-2002 is a chiseled 'X' at the left end of the spillway crest on the spillway crest. It is at elevation 15.862 feet gage height and 1,583.931 feet NAVD88, levels of April 21, 2016.

RP-2003 is a chiseled 'X' at the center of the spillway crest on the spillway. It is at elevation 15.859 feet gage height and 1,583.928 feet NAVD88, levels of April 21, 2016.

RP-2004 is a chiseled 'X' at the right end of the spillway crest on the spillway. It is at elevation 15.893 feet gage height and 1,583.962 feet NAVD88, levels of April 21, 2016.

RP-2005 is a chiseled 'X' on top of the right spillway wall. It is at elevation 23.917 feet gage height and 1,591.986 feet NAVD88, levels of April 21, 2016.

BM-SPOOK-BM3 is a MCDOT GDAC point located at the top of the dam near the west access ramp. It is at elevation 24.412 feet gage height and 1,592.487 feet NAVD88, levels of March 1, 2018.

RP-2006 is a chiseled 'X' on the left side of the downstream headwall. It is at elevation 13.788 feet gage height and 1,581.863 feet NAVD88, levels of March 1, 2018.

RP-2007 is a chiseled 'X' on the right side of the downstream headwall. It is at elevation 13.797 feet gage height and 1,581.866 feet NAVD88, levels of April 21, 2016.

RP-2008 is a chiseled 'X' on the left side of the upstream outlet headwall. It is at elevation 9.424 feet gage height and 1,577.493 feet NAVD88, levels of April 21, 2016.

RP-2008 is a chiseled 'X' on the left side of the upstream outlet headwall. It is at elevation 9.411 feet gage height and 1,577.480 feet NAVD88, levels of April 21, 2016.

RP-1 is a chiseled 'X' on the concrete near the end of the left wingwall at the downstream side of the dam. It is at elevation -0.084 feet gage height and 1,567.991 feet NAVD88, levels of March 1, 2018.

RP-2 is a chiseled 'X' at the invert of the outlet. It is at elevation -0.105 feet gage height and 1,567.970 feet NAVD88, levels of March 1, 2018.

RP-3 is a chiseled 'X' at the invert of the inlet at the inside of the outlet structure. It is at elevation -0.028 feet gage height and 1,568.047 feet NAVD88, levels of March 1, 2018.

CHANNEL AND CONTROL – The primary outlet has several intake points to the outlet. A two-foot square gated opening is at the bottom of the outlet works, or 0.00 feet gage height. When opened, the gated outlet acts as an orifice. An ungated outlet is at 9.4 feet gage height. An emergency spillway is available for levels above 15.8 feet gage height.

PRINCIPAL OUTLET / EMERGENCY SPILLWAY –

The principal outlet is 12-foot wide by 8-foot high and 90 foot long concrete box culvert. The outlet of the culvert is designed to be at –0.09 feet gage height and was found to be at -0.105 feet on March 1, 2018. There are two inlets to the culvert via an intake structure that is 9.4 feet high. First a gated 2-foot square inlet is at the bottom of the intake. Above 9.4 feet gage height, flow begins over the top of the inlet.

The emergency spillway located approximately 500 feet southwest of the principal outlet. Flow over the spillway would be to the west first into the CAP canal, and if large enough, across Power Road. Minimum elevation of the spillway is approximately 15.8 feet gage height. Width of the spillway crest is 262 feet with side walls of about 8 feet.

The top of dam elevation is approximately 25.3 feet gage height.

RATING – The current discharge rating is Rating #3 from the design of the new principal outlet works and existing spillway.

The current capacity rating is from the design of the structure and the Red Mountain Freeway.

DISCHARGE MEASUREMENTS – Low flow discharge measurements could be made from the outflow channel. It also may be possible to do a measurement from the bridge at Thomas Road if the channel is carrying much water.

POINT OF ZERO FLOW – If the slide gate is open, flow begins through the primary outlet at 0.0 feet gage height. Flow begins over the top of the principal outlet at 9.4 feet gage height. Flow begins through the spillway at 15.8 feet gage height.

FLOODS / SIGNIFICANT IMPOUNDMENTS – The largest event occurred on July 10, 2008, at 8.90 feet gage height and 210 acre-feet.

REGULATION – Flow from Signal Butte Floodway is regulated by Signal Butte FRS upstream.

DIVERSIONS – None known

ACCURACY – Fair to good

JUSTIFICATION – Monitor water levels behind Spookhill FRS for public safety.

UPDATE – July 26, 2022
Waters, S.