

STATE OF CALIFORNIA
CALIFORNIA NATURAL RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
DIVISION OF SAFETY OF DAMS

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUS

Name of Dam Lagunitas Dam No. 33-2 County Marin
 Type of Dam ERTH Type of Spillway Concrete weir with steel and timber flume
 Water is 0.4 feet above the spillway crest and 7.1 feet below the dam crest.

Weather Conditions Moderate to heavy rain
 Contacts Made Lucy Croy, Trinity Leonard, Carl Sanders, and Ronnie Chasteen during the inspection
 Reason for Inspection Periodic Evaluation

Important Observations, Recommendations or Actions Taken

Vegetation control along the upstream face needs improvement, and numerous small trees, bushes, and other woody vegetation that have accumulated along the waterline and upstream groins require removal.

A single gauge monitors pressure for the upstream outlet control hydraulic system. The gauge does not appear to provide any meaningful information, and I've asked Ms. Croy to replace the single gauge with opening and closing pressure gauges for each of the two valves.

Conclusions

From the known information and visual inspection, the dam, reservoir, and the appurtenances are judged safe for continued use.

Observations and Comments

<u>Dam</u>	<p>The visible portions of the upstream face, downstream face, crest and abutments are in satisfactory condition with no indication of significant surficial distress or instability. The low concrete retaining wall along the upstream side of the crest is in satisfactory condition.</p> <p>As discussed in the 7 April 2016 inspection report, vegetation control along the upstream face needs improvement, and numerous small trees, bushes, and other woody vegetation that have accumulated along the waterline and upstream groins require removal; vegetation control along the downstream face has improved and is now quite good. Access for inspection and monitoring for seepage and other defects is satisfactory.</p> <p>Rodent control remains satisfactory, and only minor indications of rodent activity were observed.</p>
<u>Spillway</u>	<p>The approach, control section, chute, and flume were clear and unobstructed.</p> <p>Pressure treated timbers supporting the flume appear to be in good condition, as does the stainless steel flume sheathing, the under flume supports, and flume foundation connections.</p> <p>Approximately 0.4' of water was flowing through the spillway control section. The current design storm, prepared in 1983, is for a 2200 year return period producing 1328 cfs (~738 cfs / sq mi) from the 1.8 square mile drainage area. The spillway capacity is ~1812 cfs which is greater than the peak inflow. Total freeboard is 7.5 feet and the residual freeboard for the design storm is 1.8 feet. Freeboard is satisfactory.</p>
<u>Outlet</u>	<p>A 16-inch butterfly valve at elevation 759.0', and a 12-inch butterfly valve at elevation 747.0', provides upstream control for the fully encased normally unpressurized outlet. A 10-inch gate valve near the right downstream toe provides downstream control.</p>

J. Lowe
13 Feb 2017

Photos taken? Yes X No _____
 cc for Owner/Book

Inspected by J. Lowe
 Date of Inspection 8 February 2017
 Date of Report 13 February 2017

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Date of Inspection 8 February 2017

Observations and Comments

A single gauge monitors pressure for the upstream outlet control hydraulic system. The gauge does not appear to provide any meaningful information, and I've asked Ms. Croy to replace the gauge with opening and closing pressure gauges for each of the two valves.

All upstream controls were partially cycled; the downstream control was fully cycled. The 16-inch upstream control and the 10-inch downstream control were fully cycled during 7 April 2016 inspection. Other than a lack of feedback from the single hydraulic pressure gauge monitoring the upstream control actuator, all outlet control valves and hydraulic actuators appear to function properly.

Seepage Rainfall prevented evaluation for minor seepage. No evidence of significant seepage was observed within the downstream face, groins, or abutments.

Historical seepage from two sources along the left abutment, identified as the "Upper" and "Lower" leaks, is monitored from the lower left groin. Clear seepage through the Upper and Lower left abutment leaks were estimated at 6 gpm, and 3 gpm, respectively; seepage flows are within historical limits.

A more detailed description of the left abutment seepage is presented in the Instrumentation (Instr.) section of this report.

Instr. Instrumentation consists of two seepage measurement locations. Both seeps originate from the left abutment and are designated the "Upper" and "Lower" leaks.

The Upper leak originates within a pea gravel backfilled shallow adit in the upper left abutment. The source of the upper leak is believed to be within the vicinity of the upstream end of the spillway and adjacent fractured rock abutment. The Lower leak collects seepage believed to originate in fractured rock in the lower left abutment. Both leaks are collected and delivered within 3" PVC pipes to the recently repaired and improved seepage collection vault. Valves at the end of the delivery pipes allow the observer to isolate, and by doing so measure, seepage from one source or the other.

The latest instrumentation data was received from the owner on December 16, 2015, and no new data has been received since that time. The last instrumentation review is presented in the 7 April 2016 inspection report, and is not repeated here; I direct the reader to the earlier report for a detailed explanation of the instrumentation monitoring the dam, and the performance of the dam as reflected in the 16 December 2015 submittal. The conclusion of the April 2016 review was that, "Based on the data submitted the dam appears to be performing satisfactorily, and no additional instrumentation is believed necessary at this time".

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The upstream face looking towards the spillway (indicated), above, and looking away from the spillway, below. Vegetation control along the upstream face needs improvement, and numerous small trees, bushes, and other woody vegetation that have accumulated along the waterline and upstream groins require removal.



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View towards the right downstream groin, above, and towards the left downstream groin, below. Note the location of the seepage collection pipe near the upper left groin (circled).



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Approximately 0.4' of water was flowing through the spillway control section. Flow within the timber-supported steel-sheathed flume appeared normal (above). The bottom photograph shows spillway flow exiting the flume into the unlined plunge pool.

