California Natural Resources Agency
Department of Water Resources
Division of Safety of Dams

Memorandum of Field Inspection
King Ridge Dam and Reservoir, Violation, No. 7000-121
Sonoma County
18 June 2014
Jim Lowe

Conclusion

King Ridge Dam and reservoir are located on private property at 29876 King Ridge Road, Cazadero, California 95421. As presently operated, the dam is of jurisdictional size and it is being operated and maintained without approval from the Department of Water Resources, Division of Safety of Dams, in violation of Section 6077 of the California Water Code.

Introduction

This inspection of this dam, made on June 17, 2014, was performed as a routine annual inspection. The first inspection was performed on January 10, 2012 in response to a November 15, 2011 letter from Mr. Aaron Miller of the Division of Water Rights. He indicated that the dam associated with Reservoir ID No. 1771 may be under State jurisdiction for safety.

Participants:

Jim Lowe, DSOD
Robert Mann, Owner

Owner:

Robert C. Mann
29876 King Ridge Road
Cazadero, CA 95421-95421
Phone: (707) 847-3329
Email: bob@bftb.net

Contact person at Water Resource Control Board

Jeff Wetzel
916-323-9390
jwetzel@waterboards.ca.gov

Location

The dam is located on private property off of 29876 King Ridge Road, Cazadero, in Sonoma County, approximately 30 miles north-west from the city of Santa Rosa. The dam is located within the NW ¼ of the NE ¼ of Section 20, T9N., R12 W., MDB&M (Lat: 38.614230, Lon: -123.206534)

Description

1. Embankment and Reservoir

The earth embankment appears to be a homogeneous fill constructed from a local borrow. The table below contains the dimensions of the embankment and its reservoir storage capacity as reported by the Water Resources Control Board and from measurements I made during the field investigation.

Jurisdictional Height: Embankment Height:	59 feet 64 feet
Freeboard @ crest of spillway:	5 feet
Storage Capacity	183 acre-feet
Reservoir Area	13.4 acres
*Crest Width:	~10 feet
*Crest Length	~450 feet
*Upstream Slope:	~ 3:1 (H:V)
*Downstream Slope:	~ 3:1 (H:V)

*Measurements made during DSOD investigation.

2. Spillway

There are two unlined open channel spillways, one at either end of the dam. The right spillway is the lower of the two and is approximately 5 feet below the crest elevation. The left spillway is about a foot higher, or 4 feet below the crest.

3. Outlet

There is no outlet at the dam.

Inspection

The weather was clear and mild, and the water level within the reservoir was ~0.5 foot below the right spillway, and 5.5 feet below the embankment crest.

The dam crest is about 10 feet wide. Approximately 10 feet below the crest on the downstream side of the embankment is a roughly 40 feet wide bench. The relatively level bench is then followed by the downstream face of the embankment which terminates in the natural drainage channel at the toe. The height of the embankment below the bench is approximately 54 feet; adding the 10 feet elevation gain between the bench and crest yields a total embankment height of 64 feet.

As with the previous inspection, vegetation control on the upper portion of the embankment is satisfactory but additional clearing of woody trees and bushes from the downstream face and groins is desirable. The upper downstream face, dam crest, and bench are covered with ankle tall grass and other low ground cover provide protection against erosion without impeding monitoring and inspection for seepage and other defects, but trees and bushes along the downstream face and groins impede and complicate routine monitoring by obscuring some areas of the downstream areas from convenient viewing.

Tule along the upstream face waterline, along the right spillway approach, and within the left spillway entrance channel, should also be thinned or removed. Tule provides attractive habitat for destructive burrowing rodents, and tule within spillways can trap and accumulate floating debris which could in turn impede spillway flows.

No water was observed at the downstream toe. Mr. Mann said that the toe becomes dry soon after spilling, and that no seepage is present during the dryer months of the year.

The dam needs to be checked for the following:

- Adequacy of the spillway for the Inflow Design Flood. This includes adequate residual freeboard and the structural and hydraulic stability of the channel.
- Adequacy of the foundation preparation and stability of the embankment under various loading conditions.

As it does not have a gravity outlet, this dam has no means of draining the reservoir in the event of an emergency. An outlet is needed for emergency drawdown.

Action

The dam is determined to be of jurisdictional size and therefore in violation of the California Water Code. A letter informing the owner about our finding and asking him submit a plan to remove the dam violation was sent March 8, 2012.

The upstream face, crest, and downstream bench as viewed from the left upstream abutment. The left spillway entrance channel is in the foreground and the right spillway entrance channel is at the opposite end of the embankment; both are circled for clarity. Both should be cleared of tule and cattails to permit unimpeded flow during storm events.

The roughly 40-feet wide downstream bench below the crest. The bench adds considerable additional width, and presumably strength, to the embankment.

The right spillway entrance, control section and upper channel as viewed from the right abutment. Having two independent spillways adds spillway capacity and provides redundancy in the event one of the two becomes impaired.