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 San Joaquin Reservoir Dam No. 1029 County Orange
Type of Dam Earth Type of Spillway Concrete drop inlets
Water is 7.5 feet below spillway crest and 13 feet below dam crest.

Weather Conditions Humid with overcast
Contacts Made Jacob Moeder, Steve Habiger, and Danielle Drake with IRWD
Reason for Inspection Periodic Maintenance Inspection

Important Observations, Recommendations or Actions Taken

- A new seepage location right of the spillway dissipating structure was reported in our January 14, 2020, inspection report. However, this area does not look like a new seepage point, it is just the continuation of the drainage path of the upstream leakage measured at the 06/16/08 Flowpoint.
- The five upstream valves and two downstream butterfly blowoff valves need to be fully cycled during our next inspection.
- Updated instrumentation data was submitted and reviewed.

Conclusions

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

Observations and Comments

Dam	The crest appeared to be well-aligned and in satisfactory condition. There is a crown in the middle of the crest that rises about two feet. The visible portion of the lined upstream slope and rip-rap covered downstream slope appeared to be uniform, stable, and in satisfactory condition. The downstream benches appeared to be stable and in satisfactory condition. Vegetation and rodent control appeared adequate. Bait traps are strategically placed on the embankment. The downstream toe area appeared to be normal.
Spillway	There are two overpour drop inlets for the spillway; one located at each abutment. The approach areas and both drop inlet structures were open and clear. The exit portal in the downstream tailworks dissipating structure was unobstructed. The concrete sections of the spillway appeared to be in satisfactory condition with no signs of distress.
Outlet	The outlet consists of five upstream valves and two in-line downstream butterfly blowoff valves. The blowoff valves are located inside the outlet vault that also houses the east, west, and filter drains. The vault is a permit required confined space. According to the logs, all the valves were last operated on May 25, 2022. We witnessed all the valves fully cycled during the January 14, 2020, and October 19, 2020, inspections. All the outlet valves need to be fully cycled in our presence during the next inspection.

Photos taken? Yes X No
cc for Owner/Files

CML 7/29/2022

Inspected by Joe Boyce JB 7/29/2022
Date of Inspection 06/13/2022
Date of Report 07/15/2022 ~~7/29/2022~~ RD

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Date of Inspection 06/13/2022

Observations and Comments

Seepage

There were no signs of abnormal seepage located at the groins, downstream slope, or toe of the dam. A new seepage location right of the spillway dissipating structure was reported in our January 14, 2020, inspection report. However, this area does not look like a new seepage point, it is just the continuation of the drainage path of the upstream leakage measured at the 06/16/08 Flowpoint.

The seepage points had the approximate flows:

East	36 gpm	Floor	11.5 gpm
West	42 gpm	U/S Collector 1	Dry
Filter	7.6 gpm	U/S Collector 2	Dry
Toe	2.1 gpm	06/16/08 Flowpoint	1.5 gpm

All flows appeared normal for this reservoir and were within historical readings.

Instr.

Instrumentation for this dam consists of 36 (3 destroyed) survey monuments, 34 piezometers, 8 monitoring wells, 8 seepage points, and reservoir level. The latest instrumentation report was transmitted on April 24, 2021, and contains data through December 2020.

The 34 piezometers consist of 6 standpipe piezometers, 8 vibrating wire piezometers, and 20 pneumatic piezometers. Standpipe Piezometers CP-1A, CP-1B, CP-2A, CP-2B, CP-3A, CP-3B and Monitoring Wells 1 through 8 are not located near the dam embankment. The dam embankment is located on the north side of the reservoir. The standpipe piezometers are located opposite the dam on the south side of the reservoir. The monitoring wells are located around the residential housing area located to the east of the reservoir. Piezometers CP-1A, CP-2A and CP-2B slightly responds to reservoir levels and the remaining standpipe piezometers continue to remain fairly constant even with changes in reservoir levels. The standpipe piezometers and monitoring wells continue to show predictable levels with no unusual conditions.

Vibrating wire piezometers VB-1 through VB-8 are located in the downstream embankment. Data for the vibrating wire piezometers have not been reliable since 2018 due to data logger problems. The instrumentation report states that incorrect conversion formula factors and/or digital readings are believed to be the problem. The owner and GEI are working with the data logger manufacturer to resolve the issue.

Eight of the twenty pneumatic piezometers C-1, C-2, C-3, C-5, C-7, C-9, LR-1, and LR-2 continue to show little response to changes in reservoir level. C-4, LR-3, RR-2, RA-1, RA-3, LA-1, and LA-2 are highly influenced by reservoir levels. C-6, C-8, LR-4, RA-2, and RA-4 slightly followed reservoir levels but not as dramatically as the previously mentioned pneumatic piezometers. The piezometer data shows normal and predictable trends in correlation to historical data.

The two collector drains (1 & 2) were dry throughout the monitoring period and are typically dry. The west drain usually shows slightly higher flows than the east drain and both drain flows regulate according to reservoir levels. The east and west drain flows ranged from 8.8 to 52 gpm during the monitoring period. The flows in the filter drain, floor drain, and downstream toe drain remain fairly constant. The flows in the filter drain ranged from 6.4 to 8.8 gpm, the flows from the floor drain ranged from 4.5 to 6.3 gpm, and the flows from the toe drain ranged from 1.9 to 4.2 gpm during the monitoring period. The right groin 6/16/08 Flowpoint flows were under 2 gpm. The data for the seepage flows appeared to be normal and within historical records. No sediment accumulation was detected from the East, West, or Filter Drains.

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The surveying data showed small movements over the monitoring period. The last two surveys were performed on November 24, 2019, and December 22, 2020. Movements comparing the last two subsequent surveys showed small deflections within 0.04 feet in the horizontal and vertical directions. The largest cumulative horizontal movement since the initial survey taken in 2005 was a downstream displacement of 0.145 feet from Monument SC-8. No unusual trends or conditions are presented in the surveying data.

The instrumentation indicates the dam is performing satisfactorily, and the instrumentation network is judged adequate at this time.

View of the crest and upstream slope.

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The upper downstream slope.

The lower downstream slope area.

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The approach to the two spillways were open and clear.

View looking in one of the drop inlet spillways.