

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 Sand Canyon Dam No. 1029-2 County Orange
 Type of Dam Earth Type of Spillway Ogee weir and open channel
 Water is 10.4 feet below spillway crest and 18.9 feet below dam crest.
 Weather Conditions Sunny
 Contacts Made Nang Mwe, Christian Wimenta, and Steve Habiger with IRWD
 Reason for Inspection Maintenance Inspection

Important Observations, Recommendations or Actions Taken

<i>Select if needed:</i>		<i>Descriptions, actions, and recommendations:</i>
☐	Maintenance items required.	- As requested, the bent stem for Slide Gate #2 has been repaired (Photo 6), and vegetation regrowth in the outlet channel has been removed (Photo 7), since the last inspection. - As requested, rainfall data has been included with the most recent instrumentation report. - Arrangements need to be made to fully cycle Slide Gate #4 and all downstream valves during the next inspection. - Piezometers P-1B, P-2A, and P-4 need to be monitored for increasing trends in the data. - IRWD mentioned a possible upcoming project to perform concrete work in the spillway invert. DSOD needs to be kept apprised of the progress of the work moving forward to determine if an application will be required.
☒	Outlet/spillway valves/gates need to be fully cycled during the next DSOD inspection.	
☐	Instrumentation submittal overdue.	
☐	Open construction, alteration, enlargement, repair, or removal application.	
☐	No Action Items/Recommendations.	
☒	Other.	

Conclusions

Hazard Classification: ☒ Extremely High ☐ High ☐ Significant ☐ Low
 Condition Assessment: ☒ Satisfactory ☐ Fair ☐ Poor ☐ Unsatisfactory
 Reservoir Restriction: ☐ Yes ☒ No

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

Inspected by C.M. Lancaster CML 6/30/2025
 Date of Inspection 5/6/25
 Date of Report 6/24/25

Photos taken? ☒ Yes ☐ No

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUSName of Dam Sand Canyon Dam No. 1029-2Date of Inspection 5/6/25**Observations and Comments****Dam***Dam Description:* The dam consists of a zoned earthen embankment with an asphalt-lined crest and upstream slope.*Dam crest in satisfactory condition:* ☒ Yes ☐ No*Maintenance needed:* None.*Upstream/downstream slopes, abutments, and toe areas uniform, stable, and in satisfactory condition:* ☒ Yes ☐ No*Maintenance needed:* None.*Vegetation control satisfactory:* ☒ Yes ☐ No*Maintenance needed:* None.*Rodent control satisfactory:* ☒ Yes ☐ No*Maintenance needed:* None.*Dam comments:* None.**Spillway***Spillway Description:* The spillway consists of an unlined approach, reinforced concrete ogee weir control section, and a downstream open channel with reinforced concrete side walls and an unlined bedrock invert.*Log boom in place and intact:* ☒ N/A ☐ Yes ☐ No*Spillway approach area, control section, and downstream exit clear:* ☒ Yes ☐ No*Maintenance needed:* None.*Spillway condition satisfactory:* ☒ Yes ☐ No*Maintenance needed:* None.*Spillway comments:* IRWD mentioned a possible upcoming project to perform concrete work in the spillway invert. DSOD needs to be kept apprised of the progress of the work moving forward to determine if an application will be required.**Outlet***Outlet Type/Description:* The low-level outlet consists of a 20-inch steel pipe encased in reinforced concrete through the embankment. The upstream end is controlled by one 20-inch slide gate and three 24-inch slide gates. The downstream end is controlled by seven valves.*Outlet Control:* ☒ Yes ☐ No

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Observations and Comments

Last Cycled (DSOD Presence): See below (Independently by Owner): See below

Outlet Component	Last Fully Cycled In DSOD's Presence	Last Fully Cycled By The Owner
24-inch Slide Gate #1	5/6/25	5/6/25
24-inch Slide Gate #2	5/6/25	5/6/25
24-inch Slide Gate #3	5/6/25	5/6/25
20-inch Slide Gate #4	4/19/23	February 2025
D/S 20-inch Valve 5	4/19/23	February 2025
D/S 20-inch Valve 19	4/19/23	February 2025
D/S 24-inch Valve 23	4/19/23	February 2025
D/S 24-inch Valve 24	4/19/23	February 2025
D/S 16-inch Valve 32	4/19/23	February 2025
D/S 24-inch Valve 33	4/19/23	February 2025
D/S 20-inch Valve 34	4/19/23	February 2025

Comments: Slide Gate #4 and all downstream valves need to be fully cycled during the next inspection.

Overall outlet condition satisfactory: ☒ Yes ☐ No

Outlet visually unobstructed: ☒ Yes ☐ No

Maintenance needed: None.

Outlet comments: As requested, Slide Gate #2 has been repaired since the last inspection. Arrangements need to be made to fully cycle Slide Gate #4 and all downstream valves during the next inspection.

Instrumented seepage monitoring at the dam: ☒ Yes ☐ No

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Observations and Comments

<u>Seepage</u>	<i>Description and measurements:</i> There are left and right subdrains that outfall into a seepage vault near the base of the downstream left groin. There is also an old concrete seepage weir box located on the left abutment near the lower left groin.	
	Seepage Monitoring Point	Flow (gpm)
	Left Subdrain	~0.75
	Right Subdrain	Dry
	Weir Box	Wet
	<i>Seepage observations and comments:</i> There was no seepage observed on the downstream slope or toe of the dam. The area around the seepage weir box on the left abutment was wet, but there was no live flow. All seepage appeared to be clear.	
	A video inspection of the subdrain pipes was conducted recently and revealed a root ball inside of the left subdrain. IRWD attempted to remove the root ball by way of water jetting but was unsuccessful. As long as seepage and piezometric data in the vicinity do not exhibit signs of blockage or concern, the root ball will not be required to be removed at this time. Seepage from the left subdrain needs to continue to be closely monitored during routine maintenance work.	
	<i>Seepage conditions are consistent with past inspection observations:</i> ☒ Yes ☐ No	
	<i>Maintenance needed:</i> The owner plans to modify the seepage collection box on the left abutment by removing the concrete structure and making surface modifications to the area to better track and monitor the seepage condition. IRWD continues to keep DSOD apprised of the work and will send draft plans of the work once they are produced.	
<u>Instr.</u>	<i>Dam instrumented:</i> ☒ Yes ☐ No	<i>Submittal required:</i> ☒ Yes ☐ No
	<i>Submittal frequency:</i> Annually	<i>Overdue:</i> ☐ Yes ☒ No
	<i>Latest instrumentation submittal:</i> <u>5/19/25</u>	<i>Reporting period:</i> <u>CY 2024</u>
	<i>Dam instrumentation:</i> Instrumentation at the dam consists of 6 survey monuments, 11 open well piezometers, 7 vibrating wire piezometers, and 2 subdrains.	
	<i>Instrumentation at the dam is judged adequate at this time:</i> ☒ Yes ☐ No	

INSPECTION OF DAM AND RESERVOIR IN CERTIFIED STATUSName of Dam Sand CanyonDam No. 1029-2Date of Inspection 5/6/25**Observations and Comments***Instrumentation review:*

Survey Monuments: The survey monuments are located along the crest of the dam. The survey data shows slight settlement and downstream movements of the dam since the monuments were installed; however, movements over the last 20 years have been minimal. The largest cumulative settlement of 0.241 feet occurred at Monument 4, and the largest cumulative downstream movement of 0.063 feet occurred at Monuments 3 and 4. No concerning trends or conditions were observed in the data.

Piezometers: The open well piezometers were installed in 8 boreholes, 3 of which are “nested” piezometers, meaning they have A and B elevations corresponding to the different sensing zones. Piezometers, P1-B, P-2B, P-3, P-5, P-6, P-7, P-8A, and P-8B appeared to track reservoir elevations and remained within historical ranges. Piezometers P-1B, P-2A, and P-4 appeared to have elevated readings over the last couple years. Reportedly, P-1B has debris build-up in the pipe making accurate readings difficult, and P-2A may be providing erroneous data due to the presence of a stone in the pipe that IRWD has been unable to remove during previous cleaning attempts. Over the last two years the reservoir was also sustained at higher elevations and rainfall was heavier than typical. Piezometers P-1B, P-2A, and P-4 need to be monitored for increasing trends in the data. There were no other concerning trends or conditions observed in the data.

The vibrating wire piezometers appeared to track reservoir elevation changes, each to differing degrees, with possible influences from rainfall as well. All of the vibrating wire piezometers have about a 2-year gap in data, from February 2019 to December 2020, as the data loggers were producing erroneous readings. The readings appear to have returned to expected levels. No concerning trends or conditions were observed in the data.

Subdrains: The right subdrain has been dry since at least 2007 and continued to read dry during the reporting period. The left subdrain appeared to track fluctuations in the reservoir elevation and remained within historical ranges. The left subdrain fluctuated between 0.52 gpm and 4.38 gpm during the reporting period. Although there was a root ball discovered in the left subdrain during a video inspection of the drain pipe, no evidence of blockage or concerns are observed in the seepage data.

Instrumentation data indicate the dam is performing satisfactorily:

☒ Yes ☐ No

In accordance with Division 3, Part 1, Chapter 2, section 6029 of the California Water Code, the owner or operator of a dam or reservoir is responsible for the safe operation, performance, and maintenance of their dam or reservoir, and obtaining all necessary permits and approvals from other permitting agencies, as required.

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Photo 1. Upstream slope of the dam.



Photo 2. Downstream slope of the dam.

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Photo 3. Spillway ogee weir.



Photo 4. Downstream channel of the spillway.

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Photo 5. Downstream stilling basin of the spillway.



Photo 6. Slide Gate #2 bent stem has been repaired.

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Photo 7. The downstream exit and channel of the low-level outlet.