



DAM SAFETY SECTION

CRITICAL INFRASTRUCTURE DIVISION

DAM SAFETY INSPECTION REPORT

GENERAL INFORMATION

INVENTORY No.: TX02712

DAM: Indian Lake Dam

OWNER: Indian Lake Owners Association (ILOA)

STREAM: Unnamed Tributary of Gravelly Creek

BASIN: Colorado River

COUNTY: Bastrop

GENERAL LOCATION: Approx. 5 Miles NE of Smithville

LATITUDE / LONGITUDE: 30.045106, -97.088047

DAM HEIGHT: 36 feet (ft)

SIZE CLASSIFICATION: Small

NORMAL CAPACITY: 540 acre-feet (ac-ft)

MAXIMUM CAPACITY: 822 ac-ft

NORMAL WATER LEVEL: 363.2 feet above mean sea level (ft-msl)

CURRENT WATER LEVEL: 360.7 ft-msl

PREVIOUS INSPECTION DATE: October 22, 2020

CURRENT INSPECTION DATE: November 12, 2025

INSPECTION BY TCEQ PERSONNEL: José Ayala and Samuel Fournier, EIT

PERSONNEL CONTACTED: Doug Wilson - (ILOA, Vice-President)

SUMMARY

Indian Lake Dam, a small size earthen dam, was inspected by TCEQ staff on November 12, 2025, as part of the TCEQ regular inspection schedule. The dam was found in overall good condition. Several items of concern included: benching erosion observed along the upstream slope, several longitudinal cracks observed along the downstream slope, negative drainage occurring on the two 4-inch PVC drainpipes, overgrown grass and brush growth observed

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along the spillway approach, and the location of the siphon pipe outlet is unknown.

Other non-inspection related items of concern included the need to finalize the Emergency Action Plan (EAP), prepare an Operation and Maintenance (O&M) Plan, and evaluate the hydraulic adequacy of the dam.

BACKGROUND

Indian Lake Dam was constructed sometime in 1962 for recreational purposes. The dam was first inspected in August of 1972 by the Texas Water Rights Commission (TWRC), a predecessor agency to TCEQ, as part of an application for a water rights permit and to obtain pertinent reservoir and dam data. Since then, Indian Lake Dam has been inspected on multiple occasions and found with similar deficiencies which include: downstream slope failure (slide along the right side of the slope); longitudinal cracks on the crest; and seepage along the toe of the dam.

Seepage was first noted on the downstream slope near the right abutment in 1972. The dam was modified with the installation of a blanket drain on the downstream toe over the seepage area in 1974.

Downstream slope failures (slides) have occurred along the right side of the downstream slope. Slides first occurred in 1975 and again in 1976 with much larger slides and in multiple areas. Repairs were made to these areas; however, the dam experienced severe erosion damage in 1979 when a 6-inch diameter low flow pipe was believed to have ruptured and created a near piping failure of the dam. It was estimated that a flow of about 500 gallons per minute (gpm) caused a 100-foot-wide section of embankment material to slough off. Subsequently, the original low flow outlet was decommissioned and plugged with grout in 1979 and a siphon pipe was installed just to the left of the decommissioned low flow pipe and completed in 1980. It was also during 1980 that the lake level was lowered to allow repairs and work to flatten the downstream slope to a 3 horizontal to 1 vertical slope and install a drainage blanket to the affected area.

The 2001 and 2004 inspection reports noted a 100-foot long slide along the right side of the downstream slope. Repair attempts to the slide were made by the ILOA in 2003. Repairs consisted of the construction of a 15-foot deep interceptor wall built into the slope which failed about a month after completion. In 2004, about 8,000 pounds of bentonite clay was spread above the upstream side of the dam in an attempt to slow water infiltration and the installation of a french drain with two 4-inch Polyvinyl Chloride PVC outlet pipes that discharge near the downstream duck pond.

The dam was again inspected in March of 2009 and in November of 2015. The dam was found to be in good and fair condition, respectively, with similar maintenance nature deficiencies found in the 2020 inspection.

The dam was last inspected on October 22, 2020, which found the dam in overall good condition. The 2020 inspection included the following observations:

- Minor cracks on the crest surface near the right end of the dam measuring about 6-inches deep.
- Slide observed on the lower downstream slope to the left of the PVC pipes.
- Benching erosion observed along the shoreline on the right side of the upstream slope.
- Moderate vegetative growth was observed at the spillway inlet.
- A crack was observed on the air inlet siphon plug located on top of the concrete anchor block.
- Additionally, there was a need to finalize and submit an Emergency Action Plan (EAP), prepare an Operation and Maintenance (O&M) plan for the dam, and evaluate the hydraulic adequacy of the dam.

PRE-INSPECTION MEETING

TCEQ staff met with Mr. Wilson, Ms. Bonny Joplin (ILOA, President), Mr. John Keller (ILOA, Treasurer), and Mr. Charles Faulds for a brief pre-inspection meeting at the dam site prior to the inspection. All were present and accompanied TCEQ staff through the duration of the inspections.

POST-INSPECTION MEETING

A verbal exit interview, explaining the results of the inspection, was conducted on the same day of the inspection with all Indian Lake Dam representatives.

INSPECTION FINDINGS

Figure 1 is a location map with respect to the City of Smithville. Figure 2 is an aerial view of the dam with 10-foot elevation contours produced from 2017 Light Detection and Ranging (LiDAR) Data from the Texas Geographic Information Office (TxGIO) and NHD Flowlines. Figures 3 and 4 are aerial views of the dam and spillway with approximate photo locations. Note that right and left indications are from the perspective of an observer looking downstream. Field measurements taken during the inspection were done

using a hand-level and survey rod. The water level was at approximately 360.7 feet-msl, or approximately 2.5-feet below the spillway crest.

Crest (Photos 1-3)

- The 15-foot-wide crest of the dam had a well-maintained grass cover with several bare soil areas.
- The overall alignment of the crest appeared to be level.
- The previously noted cracks along the crest were not observed during this inspection.
- The crest was found to be in good condition.

Upstream Slope (Photos 4-7)

- The 2.5 horizontal to 1 vertical [2.5H:1V] upstream slope of the earthen embankment was generally unchanged from the last inspection.
- A few areas of the shoreline appeared to be slightly uneven near the left end of the dam.
- Some overgrown grassy vegetation was observed along the right end of the dam.
- Benching erosion, ranging from 1 to 1.5 feet high, was observed along the shoreline near the left end and right end of the dam at the approximate normal pool elevation, respectively.
- The upstream slope was found to be in good condition.

Downstream Slope (Photos 8-13)

- The 3H:1V downstream slope of the earthen embankment was generally unchanged from the last inspection.
- The downstream slope had a well-maintained grass cover along the length of the slope.
- The previous report noted a slide on the lower downstream slope toe area that is in-line with the siphon pipe; however, it could not be confirmed if this area is in fact a slide occurring or simply a low uneven area where it is believed that the siphon pipe outlet is located.
- Several longitudinal cracks were observed along the lower downstream slope at the right end of the dam. The most significant crack measured approximately 11-inches deep. This general area of the slope also appears to be where the drainage blanket had been installed.
- Two 4-inch diameter PVC drainpipes were observed within a densely overgrown area of the downstream slope toe near the center of the dam. This drainpipe system was installed during the repairs of the historic slide that occurred in the early 2000's. Both pipes were noted to be

angled slightly upwards, creating negative drainage and not properly draining. Flow was not measured during this inspection.

- The downstream slope was found to be in good condition.

Spillway (Photos 14-16)

- The spillway is located on the right end of the dam and consists of a 65-foot-wide uncontrolled earth-cut channel with approximate 2H:1V side slopes. A tubular framed and steel grate debris fence was located along the concrete weir at the spillway inlet.
- Overgrown grass and brush growth was observed along the spillway approach just upstream of the debris fence.
- A burrow/hole was observed along the debris fence and near the right end of the concrete weir. The burrow/hole measured approximately 1.4-feet deep.
- The spillway channel was clear of debris and had a well-maintained grass cover. The previously noted deterioration and undermining of the concrete structure downstream of Big Bow Road was not observed during this inspection.
- The spillway was found to be in good condition.

Siphon Pipe (Photo 17)

- The 12-inch diameter Polyvinyl Chloride (PVC) siphon pipe is located near the mid-right portion of the dam.
- A previously noted crack was still present along the concrete anchor block.
- The outlet of the siphon pipe was not observed during this inspection; however, it is assumed to be located at an overgrown area along the downstream toe area.
- The operational condition of the siphon pipe is unknown.

Downstream Channel (Photo 18)

- Flows from the spillways travel along a well-defined channel bed with scattered small brush growth.
- A tubular framed fence was observed just downstream of the spillway channel/roadway crossing. Grass and brush vegetation were observed growing along the fenceline.
- The channel meanders in an easterly direction along an unnamed tributary for approximately 0.5 miles downstream before converging with Gravelly Creek.
- The downstream channel was found in fair condition.

CONFIDENTIAL: DOWNSTREAM HAZARDS

This dam is classified as a high hazard dam due the potential impact to five residential homes immediately downstream of the dam. In addition, FM 153 (a major collector per TxDOT and secondary highway per TCEQ) is located approximately 2.7 miles downstream of the dam and Big Bow Road (a private neighborhood road and possible egress route used during an emergency) is located approximately 320-feet downstream of the dam and could also be impacted. This is enough to warrant a high hazard classification for this dam; however, a breach analysis would need to be performed to fully delineate the hazards.

It should be noted that the hazard classification is not a description of the condition of the structure, but rather, a description of the potential for loss of downstream life or property in the event of a failure of the dam. The high hazard classification indicates that some potential for loss of life exists.

HYDROLOGIC / HYDRAULIC (H&H) ANALYSES

The current 30 Texas Administrative Code (30 TAC), §299.15(a)(1) states that a dam of this size and hazard classification is required to safely pass 75% of the Probable Maximum Flood (PMF) without overtopping.

TCEQ records indicate that an interoffice memorandum performed by the Texas Water Rights Commission (TWRC) in September 1973, determined the dam was capable of passing the Soil Conservation Services (SCS) class (b) assumptions. Since then, the hazard classification of the dam has increased and the test flood methodologies have been revised; therefore, the current hydraulic adequacy of the dam is unknown.

OPERATION AND MAINTENANCE (O&M) PLAN

It is unknown if a written O&M plan has been developed for this dam; however, it is evident that maintenance work is being conducted. Dam owners are not required to submit an O&M plan; however, it is required that all dam owners have and implement one.

EMERGENCY ACTION PLAN (EAP)

An updated draft EAP was submitted via email on February 1, 2024, by the Indian Lakes Owners Association. The EAP was not approved upon receipt, and additional information was requested by the TCEQ in a letter dated November 14, 2024. On December 5, 2024, the board of ILOA requested an extension until March 31, 2025, for addressing the comments on the draft EAP. A revised or final version has not been received.

REQUIREMENTS/RECOMMENDATIONS

The following requirements and/or recommendations are provided (not prioritized):

1. It is recommended that the draft EAP be finalized and submitted to the TCEQ Dam Safety Section for review and approval. The EAP should then be provided to the local Emergency Management Coordinator (EMC) to review, approve, and sign. This plan can be a positive step by the dam owner to accomplish safety objectives, protect the investment, and reduce potential liability. Attached is a copy of the November 14, 2024, comment letter. It should be noted that the majority of the EAP, excluding the inundation map (generated by an engineered breach analysis), can be developed by the owner without the assistance of a Texas Licensed Professional Engineer (PE).
2. In 30 TAC, §299.43(a), a written O&M plan is required to be developed. The owner may use the most current version of the agency's *Guidelines for Operation and Maintenance of Dams in Texas*, a manual, a checklist, or some other written procedure to demonstrate implementation of the program. The *Guidelines for Operation and Maintenance of Dams in Texas* can be downloaded at:

https://www.tceq.texas.gov/publications/gi/gi_357/index.html

This plan should be designed to provide the owner or owner's representatives clear instructions for everyday operation of the dam, as well as maintenance guidance. The plan is for the owner's records and should be accessible if requested by TCEQ; however, the plan is not required to be submitted to the TCEQ. Your O&M plan should include items addressed in the requirements/recommendations portion of this report. The method and the timeframe for addressing these items are left up to the owner, and it is recognized that finances may govern when the work can be undertaken. The following deficiencies need to be monitored in conjunction with your O&M plan:

- a. Monitor longitudinal cracks along the lower downstream slope.
- b. Seal crack along the siphon concrete anchor block and monitor for any further movement.
- c. No active seepage was observed along the downstream toe area; however, the possibility of seepage has been documented in past inspections. The downstream toe area should continue to be kept well-maintained and routinely monitored for seepage. If seepage is located during a routine inspection, then the normal amount

should be estimated, and the seepage monitored at least monthly for any increase, especially if there is no corresponding rise in reservoir elevation. Recording seepage rates and corresponding reservoir level observations in a maintenance log will help identify potentially critical areas where water may be seeping through the embankment or foundation; extra care should be taken to detect seepage when reservoir levels are high.

If seepage location(s) moves (or emerges) high up on the embankment and/or historic seepage flowrates should increase drastically or include suspended soil (fines) or boils, then it is possible/likely that a piping condition exists and your PE, as well as TCEQ Dam Safety, should be contacted immediately. The reservoir may need to be lowered or drained to prevent an emergency situation from developing.

- d. Monitor benching erosion along the upstream slope.
- e. Routinely monitor and remove any overgrown grass/brush growth and debris along the debris fence traversing the spillway to allow for proper conveyance.
- f. Routine safety inspections should be conducted on a periodic basis and immediately after a significant rain event to evaluate the condition of the structure and detect and address problems before they progress to a serious level. These actions will minimize cost of dam maintenance and repair activities as well as minimize risks and liabilities associated with dam safety issues.

If conditions worsen with any of the deficiencies, then a PE should be consulted to determine the level of damage and recommend repairs/improvements, if needed.

- 3. All overgrown grassy vegetation along the upstream slope should be mowed. Mowing should continue to be performed as needed prior to any future inspections (including owner inspections), and/or typically not less than twice yearly.
 - a. All trees (regardless of size), excessive grassy vegetation, brush, and dry wood debris should be mowed and/or cleared from the spillway (inlet/outlet), debris guard fences, spillway channel, and the downstream area where the two 4-inch drainpipes discharge to ensure adequate flow conveyance.
- 4. A short grass cover should be established over bare soil area(s) primarily along the crest. A short grass cover provides an ideal surface

to protect against erosion, prevents harborage for burrowing animals, and allows for easier detection of incipient problems.

5. The siphon pipe outlet should be located and inspected. In addition, the overall operational condition of the siphon pipe system is unknown and should be further investigated. If the siphon is functional then it should be exercised at least on an annual basis to ensure it is in good working order and capable of lowering/draining the reservoir should an emergency situation ever warrant such. If the siphon has not been operated for a substantial period of time, it is recommended that your PE devise a plan to assess the functionality and ensure that the siphon pipe system is working properly.
6. The two 4-inch drainpipes along the downstream toe area should be sloped to properly drain away from the dam. The surrounding area of the pipes should be cleared of all obstructive vegetation and to routinely monitor flow.
7. The burrow/hole observed along the spillway inlet should be backfilled and properly compacted with non-dispersive fill and a grass cover should be re-established.
8. In adherence with 30 TAC Chapter 299, §299.15, this dam is required to safely pass 75% of the PMF. The current hydraulic adequacy of the dam is unknown. It is recommended that the owner retain a PE with dam safety experience to address the hydraulic adequacy of the dam per the TCEQ's *Hydrologic and Hydraulic Guidelines for Dams in Texas* (GI-364) and the new Probable Maximum Precipitation (PMP) tool required for all H&H analyses. This guidance is available at:

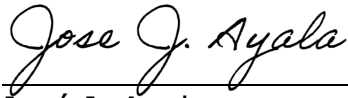
https://www.tceq.texas.gov/assets/public/comm_exec/pubs/gi/gi-364.pdf

Depending on the results of the analysis, additional spillway improvements or repairs may be necessary to upgrade the structure to safely pass the required design storm. The H&H analysis and any engineering plans and specifications to modify the dam to pass the design flood must be submitted to the TCEQ Dam Safety Section for review and approval prior to the beginning of any work.

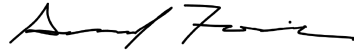
CONCLUSIONS

The owner of this dam may be liable for downstream damages in the event of a complete or partial failure of the dam or appurtenant structures. It is the owner's responsibility to maintain the dam in a safe condition in order to prevent loss of life and limit the potential for property loss. In addition, regular

maintenance may reduce future rehabilitation and repair costs. This structure will be scheduled for reinspection in 5 years, or in conjunction with any modifications.



José J. Ayala
Dam Safety Section
Critical Infrastructure Division



Samuel Fournier, EIT
Dam Safety Section
Critical Infrastructure Division

I concur:



David Trujillo, P.E.
Dam Safety Section
Critical Infrastructure Division



Figure 1 – Location Map of Indian Lake Dam

Indian Lake Dam, TX02712

Bastrop County • Inspection Date 11/12/2025 • by TCEQ Staff



Figure 2 – Aerial View of the Dam with 10-ft Elevation Contours from 2017 LiDAR data & National Hydrographic Dataset Flowlines

Indian Lake Dam, TX02712

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Figure 3 - Aerial View of Dam with Approximate Photo Locations

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Figure 4 - Aerial View of Spillway with Approximate Photo Locations

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Photo 1. View of the crest looking right from the left end of the dam. Note the well-maintained grass cover.



Photo 2. View of the crest looking left from the right end of the dam.



Photo 3. View of the crest looking right from the mid-left end of the dam. Note the bare soil area along the crest.



Photo 4. View of the upstream slope looking right from the near left end of the dam. Note the slight uneven shoreline (circled) and taller vegetative growth along the approximate normal pool level (dashed line).



Photo 5. View of the upstream slope looking right from the middle of the dam. Note the taller grass growth along the right end of the slope.



Photo 6. View of minor benching occurring along the mid-left end of the upstream slope along the shoreline. Benching in this area measured approximately 1-foot high.



Photo 7. View of benching occurring near the right end the upstream slope looking left. Note the taller grass growth obstructing the approximate 1.5-foot high bench along the approximate normal pool elevation.



Photo 8. View of the downstream slope looking right from the near left end of the dam. Note the well-maintained grass cover.



Photo 9. View of the downstream slope looking left from the right end of the dam. Note the well-maintained grass cover along the previously noted damaged areas.



Photo 10. View of an area believed to be the location of the siphon pipe outlet but noted in the previous report to be a new slide. Note the outlet was not observed and the area was overgrown with grass.



Photo 11. View of an area along the lower downstream slope at the right end of the dam where several longitudinal cracks were observed. Note the most significant crack measured approximately 11-inches deep.



Photo 12. View of the dense vegetative growth along the downstream toe area where the two 4-inch PVC pipes (circled) discharge.



Photo 13. View of the two 4-inch PVC drainpipes within the overgrown downstream area. Note the pipes were angled slightly upwards; therefore, creating negative drainage and not properly draining.



Photo 14. View of the spillway inlet looking right from the left end of the spillway channel. Note the tall grass growth along the inlet just upstream of the debris guard fence. The direction of flow is noted by the arrows.



Photo 15. View of burrow/hole along the debris guard fence and near the right end of the concrete weir (dashed line). Note the burrow/hole measured approximately 1.4-feet deep.



Photo 16. View of the spillway channel/roadway crossing approximately 320-feet downstream from the spillway inlet. The direction of flow is noted by the arrow.



Photo 17. View of the siphon pipe and concrete anchor block with air inlet plug (circled) near mid dam on the upstream slope. Note the crack (arrow) on the anchor block is still present as observed in previous inspections.



Photo 18. View of the downstream channel looking downstream from the spillway channel/roadway crossing. Note the brush and grass growth along the fence traversing the spillway channel. The direction of flow is noted by the arrows.