July 1, 2020

Mr. Stan Evans, PE
Frog Pond Water Control & Improvement District #1
P. O. Box 818
Colmesneil, Texas 75938

RE: Dam and Spillway Condition Assessment
Final Report

Dear Mr. Evans and Members of the Board:

Capco Engineering, Inc. is pleased to submit our FINAL assessment report for the Frog Pond Lake WCID dam and spillway.

The attached revised report presents our findings and prioritized recommendations for short-term and long-term maintenance and improvements. It also includes responses to your 12 comments dated 3/20/2020 and an updated recommendations table cross-referenced to our responses.

Thank you for the opportunity to work with you. Should you have any questions regarding our report, please do not hesitate to contact our Project Manager, Gary Burton at 903-531-9670 or garyb@capco-engineering.com.

Sincerely,

Gary L Burton, III 7/1/2020

Gary L. Burton, III, PE

STATE OF TEXAS
GARY L. BURTON III
56643
LICENSED
PROFESSIONAL ENGINEER

Encl.

Cc: Brian E. Capps, PE – President, Capco Engineering, Inc.
Leonard Zapolskyy – Intern, Capco Engineering, Inc.

DAM & SPILLWAY ASSESSMENT REPORT

GENERAL INFORMATION (Taken from TCEQ Dam Safety Inspection Report)

INVENTORY NO.: TX03775

DAM: Frog Pond Lake Dam

OWNER: Frog Pond Lake WCID

STREAM: Wolf Creek

BASIN: 06 - Neches River

COUNTY: Tyler

GENERAL LOCATION: 2 Miles southeast of Colmesneil

DAM HEIGHT: 19-ft

SIZE CLASSIFICATION: Small

NORMAL CAPACITY: 410 ac-ft

MAXIMUM CAPACITY: 867 ac-ft

NORMAL WATER LEVEL: 200 ft-msl

CURRENT WATER LEVEL: 200.005 ft-msl

PREVIOUS INSPECTION DATE: March 28, 2018

CURRENT INSPECTION DATE: November 25, 2019

INSPECTION BY CAPCO ENGINEERING, INC.: Gary Burton, PE and Leonard Zapolskyy

PERSONNEL CONTACTED: Stan Evans – Vice President, Frog Pond Lake WCID

SUMMARY

Frog Pond Lake Dam, a small size earthen dam, was inspected by Gary Burton, PE and Leonard Zapolskyy on November 25, 2019, accompanied by Stan Evans, PE. The dam was found in overall fair condition. The primary issues of concern included: minor bare areas along the crest; minor benching and erosion along the upstream slope; large trees, bare areas, and surface erosion along the downstream slope; excessive trees and brush in the discharge channels of both the service and emergency spillways; a significant overgrowth of trees and brush along the downstream toe; seepage from under the right end wall of the service spillway (as well as from the earthen embankment just beyond the spillway); standing water (potential seepage or leakage) within the discharge basin of the drain; and the lake drain consisting of

the existing pipe and gate valve. The concrete service spillway was engaged making it unsafe to walk on for a close-up inspection.

INSPECTION FINDINGS

Attachment 1 is an aerial view of the dam indicating photo locations. Attachment 2 are the photos taken for this assessment. Note that right and left indications are from the perspective of an observer looking downstream. Field measurements were not taken during the inspection. The water level was at approximately 200.005 ft-msl (1/16" over spillway crest) with the reservoir just above the normal pool elevation.

CREST

- The 15-ft wide crest of the dam had a well-maintained vegetated cover on most of the length with a few deficiencies observed (Photos 1, 3, 4, 6, 7, 25 & 32).
- The crest was found to be in good condition.
- Effort was being made on the left end to establish a vegetative cover with the aid of an erosion control blanket (Photos 1, 3, 4, 6 & 7).

UPSTREAM SLOPE

- The slope varied from 3 horizontal to 1 vertical [3H:1V] along the left side of the dam to 2H:1V along the right end of the dam. It should be noted that some areas of the slope appeared slightly steeper than 2H:1V adjacent to the spillway. Additionally, minor benching (less than 1-ft deep) was observed along the majority of the waterline (Photo 9).
- It was noted that the upstream slope (left half) exhibited areas of bare soil (Photos 1, 6 & 7).
- The erosion rills (approximately 3-ft wide and less than 1-ft deep) that were noted along the slope at the last inspection were successfully removed before placing an erosion control blanket (Photos 1,3,6 & 7).
- A slump was observed near the midpoint of the dam, which appeared to be from a slide (Photo 9).
- The upstream slope was found to be in fair condition.

DOWNSTREAM SLOPE

- The downstream slope generally had a 2H:1V slope with some areas slightly steeper that had an undulated appearance. The slope had a well-maintained vegetated cover with a few large trees; however, the toe was significantly overgrown with large trees and brush (Photos 2, 4, 5, 13, 27 & 35).
- A few bare areas and surface erosion were observed along the slope (Photos 21, 24 & 25).
- Holes caused by two large fallen trees were observed (Photos 21, 22, 23 & 26). These holes must be filled soon.
- Varmint holes (Photos 14, 16).
- An embankment slope sag caused by growing tree (Photo 27).
- Seepage at the tree holes (Photo 21, 24).

- Seepage around the reservoir drain valve (Photos 10, 11).
- The downstream slope was found to be in fair condition.
- Downstream slope and toe must be cleared before they can be properly inspected.

SPILLWAY

- The spillway is located along the right end of the dam and consists of an 80-ft wide concrete chute with a 3.5-ft tall by 10-ft wide concrete box culvert (pilot channel) near the midpoint of the spillway. The spillway chute and box culvert discharge into a riprap lined channel that was overgrown with large trees and brush. Additionally, the box culvert is controlled by a series of stoplogs that maintains the normal pool about 1-ft below the concrete control section of the spillway chute (Photos 36-48).
- Seepage was discharging from underneath the right end wall and the right abutment just beyond the spillway; however, with the spillway flowing during the inspection, complete evaluation of the seepage could not be conducted (Photos 45 - 48).
- A pair of 4-inch diameter PVC pipes (one on per side wall) exited the side walls of the discharge basin. It was speculated that the pipes were the outlets of the drain system installed in 1995; however, no flow was discharging from the pipes. Nonetheless, due to the seepage discharging from under the right end wall, there is a potential that the drain system could be clogged or nonfunctional (Photos 41, 45).
- The downstream end of the left side wall was undermined about 2-ft deep (Photos 43, 44).
- Portions of the riprap within the earthen channel were displaced resulting in multiple areas of minor erosion and voids within the channel (Photos 41, 42).
- The box culvert was engaged during the inspection; therefore, a complete evaluation of the culvert could not be conducted.
- The spillway was found to be in fair condition.

RESERVOIR DRAIN

- The reservoir drain outlet is located to the left of the dam's midpoint and consists of a steel conduit (with a valve at the downstream end), which discharges into an earthen channel. Water was standing within the discharge basin of the drain; however, it rained prior to the inspection, and it could not be determined if the drain was leaking or if the standing water was from the rain. Nonetheless, the previous inspection also noted water standing within the channel; therefore, there is a potential that the valve is leaking and/or seepage is discharging along the pipe and exiting the toe within the channel (Photos 10-12).
- The channel downstream of the reservoir drain was completely overgrown with large trees and brush.
- The inlet was submerged in the reservoir and could not be inspected.
- The reservoir drain was found to be in fair condition.

DOWNSTREAM CHANNEL

The channel downstream of the spillway was a significantly overgrown section of Wolf Creek that meandered in an easterly direction for the extent of the predicted inundation limit.

RECOMMENDATIONS

The following maintenance items are recommended. They are listed in order of priority with an engineer's opinion of probable cost (OPC). *(Reference Q#2.)*

PRIORITY	DESCRIPTION	OPC
1	Remove and dispose of fallen trees and fill voids left by their root balls with select soil fill material, well compacted, with a minimum of 50% passing a #200 sieve and a plasticity index of 15-30.	$5,000
2	Clear along entire downstream slope and toe. Remove all trees 4" diameter and smaller. Clear of all debris and brush so a good visual inspection can be made of the downstream slope and toe. Fill all voids with well compacted select fill.	$10,000 *(Ref Q#1 & 5)*
3	Clear channel downstream of service spillway for unimpeded flow.	$10,000 *(Ref Q#11)*
4	Repair concrete walls of service spillway. Add toe walls if necessary.	$10,000
5	Initiate annual spillway crack and joint sealing program.	$2,000/year
6	Install seepage control blanket behind concrete spillway walls.	$20,000 *(Ref Q#12)*
7	Install 12-18" rock riprap on entire upstream slope for erosion control and wave action.	$200,000
8	Develop program to control varmints pigs, and burrowing animals.	$1,000/year
9	Drain Valve: - Check operation of the drain valve and repair or replace if necessary. - Install concrete apron and rock riprap to slow velocity and move the discharge 20-30 ft away from the toe. - Use SCUBA to check valve inlet and plug prior to working on valve. - Get closed circuit TV inspection of the drainpipe.	$30,000 *(Ref Q#4)*
10	Install toe drain along entire downstream toe.	$50,000 *(Ref Q#9)*
11	Construct emergency spillway on left (north) end of dam.	$30,000 *(Ref Q#7 & 8)*

CAPCO ENGINEERING INC.

July 1, 2020

FROG POND LAKE WCID #1

Capco Engineering, Inc. Response to Comments From WCID Board in Letter Dated March 20, 2020

Question #1: In order to facilitate maintenance of the dam and spillways, it is recommended that the District own at least 50' from the high-water level on the wet side of the dam and 50' downstream of the dam toe. If not owned by the District, we recommend attempting to acquire maintenance easements from adjacent property owners. It should be to their advantage. If easements cannot be obtained, perhaps a maintenance agreement can be entered into with adjacent property owners. This should be discussed with the District's attorney. An accurate and up-to-date map of the adjacent property boundaries and owners is a must. There should be plenty of local "land men" looking for work who could assist the District in this effort. Trees and brush and unwanted vegetation should be kept cleared for a distance of 30' downstream of the toe.

Questions #2: The OPC in the table is based on paying a contractor to do the work. Self-performing the work by qualified volunteers is also acceptable and should result in cost savings to the District.

Question #3: Whether or not you provide the report to the TCEQ is up to you. I think it would show that the District is being as proactive as it can afford to be. Let us know if you would like a version of the table without the cost column.

Question #4: I am not sure what you mean by "a sloped concrete slab collar". I would not recommend trying to "prevent" seepage by any type of collar. The latest recommended technology is to "manage and control" seepage with more permeable soil blankets that give any seepage present a path of least resistance. The water can then be collected and routed to a

discharge point where the flow rate can be monitored. Using collars around pipes to prevent seepage is how engineers used to do it, but later research has shown them to be ineffective.

Question #5: Most earthen dams on small to intermediate size reservoirs that I have seen have close to a 2H:1V slope. The TCEQ Dam Safety Program in its publication "Design and Construction Guidelines for Dams in Texas" (RG-473) recommend a 3H:1V downstream slope to facilitate maintenance activities such as mowing. For mowing *along* the dam (as opposed to *up and down* it) on a riding mower, I recommend a 4H:1V slope for safety when I'm planning for a new dam. All erosion rills, slides, and slumps should be repaired, and minimum slope should be 2H:1V.

Questions #6: Yes, you could self-perform adding soil to the crest to fill in low spots. Be sure and use select fill, remove all grass prior to adding fill, scarify existing soil a minimum of 6" to get a good bond between the existing and new soils, and compact well. Also, add grass seed or sod, fertilizer, and water until good stand is established.

Question #7: I thought I recalled seeing a vague emergency spillway channel on the left side of the dam. I apparently was mistaken. No emergency spillway was noted in our photos nor in the TCEQ 03/28/2018 report. Remove recommendation 4 from the list. I recommend constructing an emergency spillway at the left side of the dam.

Question #8: Without doing a H & H study, we cannot speculate on how wide an emergency spillway would need to be to pass 100% PMF. Since you apparently already can pass the required 25% PMF with just the service spillway, I would recommend only designing for passing up to 50 or 75% of PMF with addition of an emergency spillway. Typically, emergency spillways have no concrete lining or apron, just a well-maintained grassy channel. With over 6' from service spillway crest to top of dam, I would recommend designing for an emergency spillway crest of 3-4' below top of dam. One or two feet is insufficient, in my opinion. The most important part of having an emergency spillway is to keep the downstream channel clear of obstruction for unimpeded flow.

Question #9: I assume you are referring to your 11/29/17 synopsis, where on page 2 you reference EGA's report that recommended "construct rock toe drain at base of downstream slope". If so, they were recommending installation of basically a French drain along the toe to intercept and convey seepage to a controlled discharge point. They should have said "gravel" rather than "rock". This is recommended for all earthen dams. Rip rap is not required on the downstream slope or toe.

Question #10: No response required.

Question #11: The large concrete chunks do not appear to be a problem at this time since they are not impeding significant flow. However, the brush and trees do need to be removed since they appear to be impeding flow.

Question #12: For the seepage control blanket behind the concrete spillway walls, we would recommend excavation along the entire length of the wall from top to bottom. Then, fill that void with a free draining granular fill enclosed with a geotextile fabric such as Mirafi 140N. The fabric should allow for water flow through the fabric and prevent pressing of smaller soil particles into the granular fill. We would not recommend a concrete apron be constructed over the excavated area, just erosion protection with good grass cover.


NORTH
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80
160
HORIZONTAL SCALE
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12
11
10
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16
15
17
18
19
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21
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34
36


NORT
20
0
HORIZONTAL SC
1
2
3
4
40
39
38
37
35

ATTACHMENT 2

FROG POND LAKE DAM, COLMESNEIL, TX 75938
Inspection Date 11/25/2019 at 1:30 pm

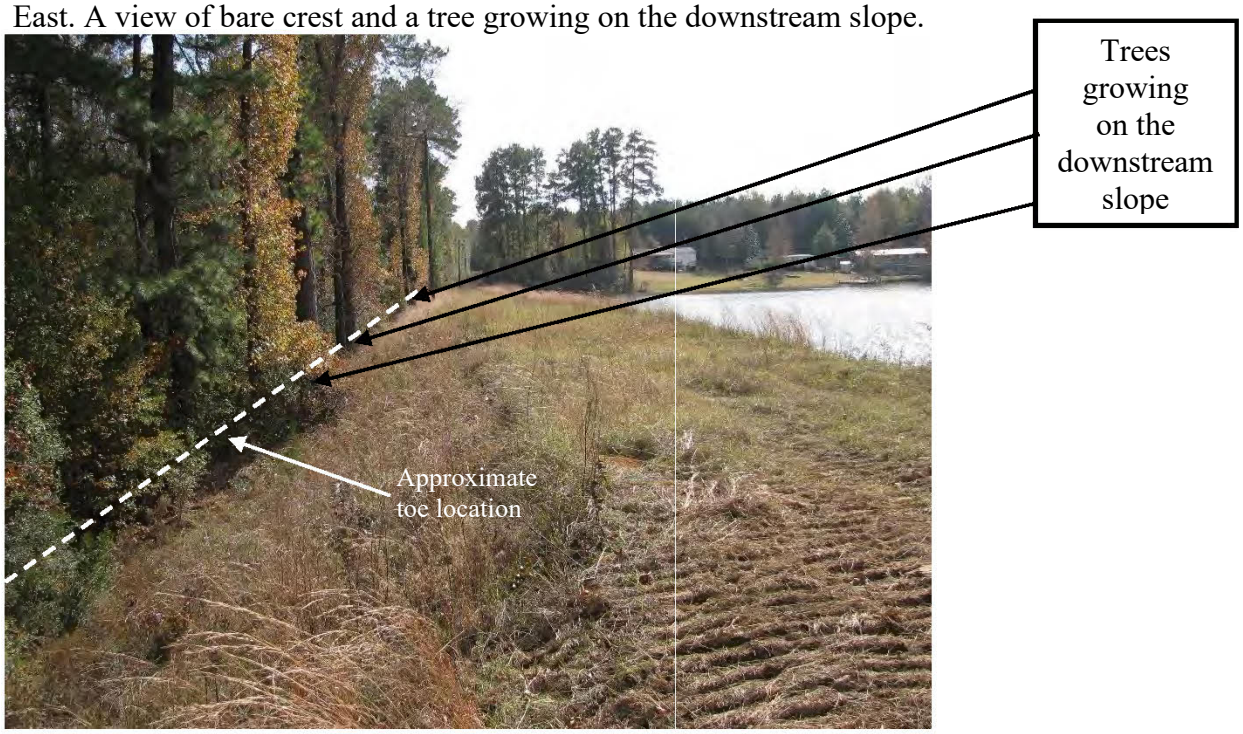
Photograph No. 1 – Left side of the dam looking North West. Large trees growing along the downstream slope, big bare areas.

Photograph No. 2 – Left side of the dam looking North West. A view of bare crest and a tree growing on the downstream slope.

Photograph No. 3 – Standing on the left side of the dam looking South. A view of bare crest (poorly maintained vegetative cover) and an upstream slope.

Photograph No. 4 – Standing on the left portion of the dam looking South East.

Photograph No. 5 – Standing on the left side of the dam looking South East. A view of bare crest and a tree growing on the downstream slope.



Photograph No. 6 – Standing near a midpoint looking North West. A view of the 3H:1V non-vegetated portion of the upstream slope and crest.

Photograph No. 7 – A view of Frog Pond Lake bank with vegetative cover looking North East.

Photograph No. 8 – A view of Frog Lake bank protected by vegetative cover. Budget for rock riprap to protect slope against wind action erosion looking South West.

ATTACHMENT 2

FROG POND LAKE DAM, COLMESNEIL, TX 75938
Inspection Date 11/25/2019 at 1:30 pm

Photograph No. 9 – Standing near the midpoint of the dam looking South East. A view of the 1H:1V vegetative cover of the upstream slope. Note the sag near the midpoint of the dam caused by slide.

Photograph No. 10 – A view of the reservoir drain valve looking North East. A view of standing water standing and the toe erosion.

Photograph No. 11 – A view of the reservoir drain valve looking East. A view of standing water standing and the toe erosion.

Erosion, as an indicator of high velocity turbulent flow

Photograph No. 12 – A view of the reservoir drain valve looking East. A view of standing water standing and the toe erosion.

Photograph No.13 – Standing near the midpoint of the dam looking North West. A view of the overgrowth of trees and brush along the toe

Photograph No. 14 – Standing at the toe near the midpoint of the dam looking West. A view of a varmint burrow 2 feet above the dam toe.

Photograph No. 15 – Standing back to varmint's holes on the downstream slope looking East. A view cattail-field areas and trees close to the dam.

Photograph No. 16 – Standing near the midpoint of the dam at the foot looking West. A view of a varmint burrow 2 feet above the dam toe.

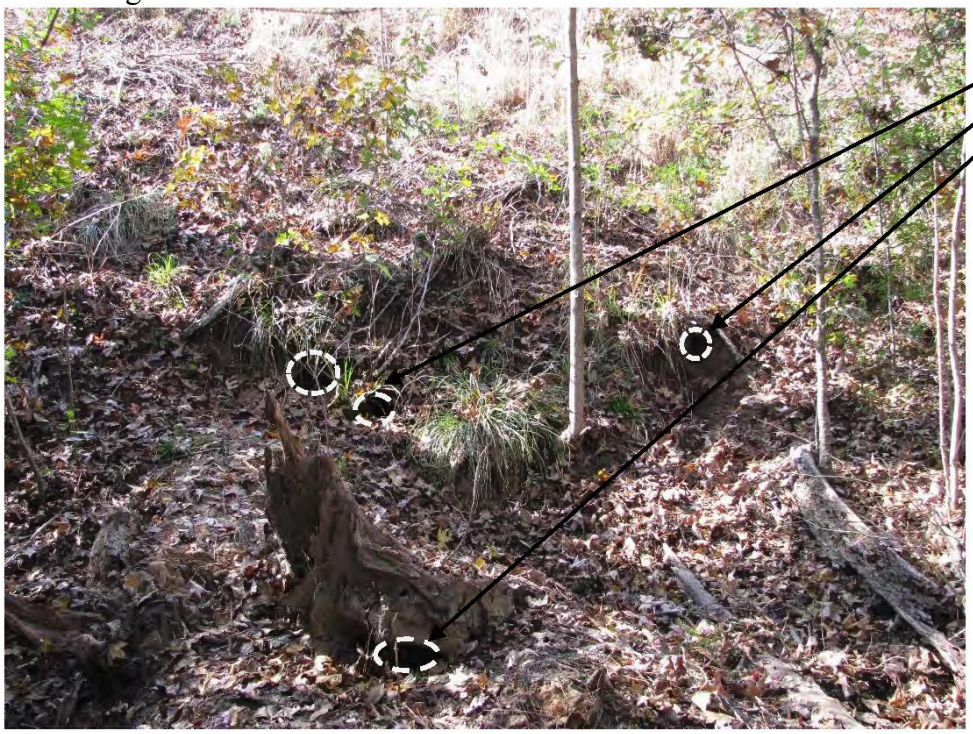
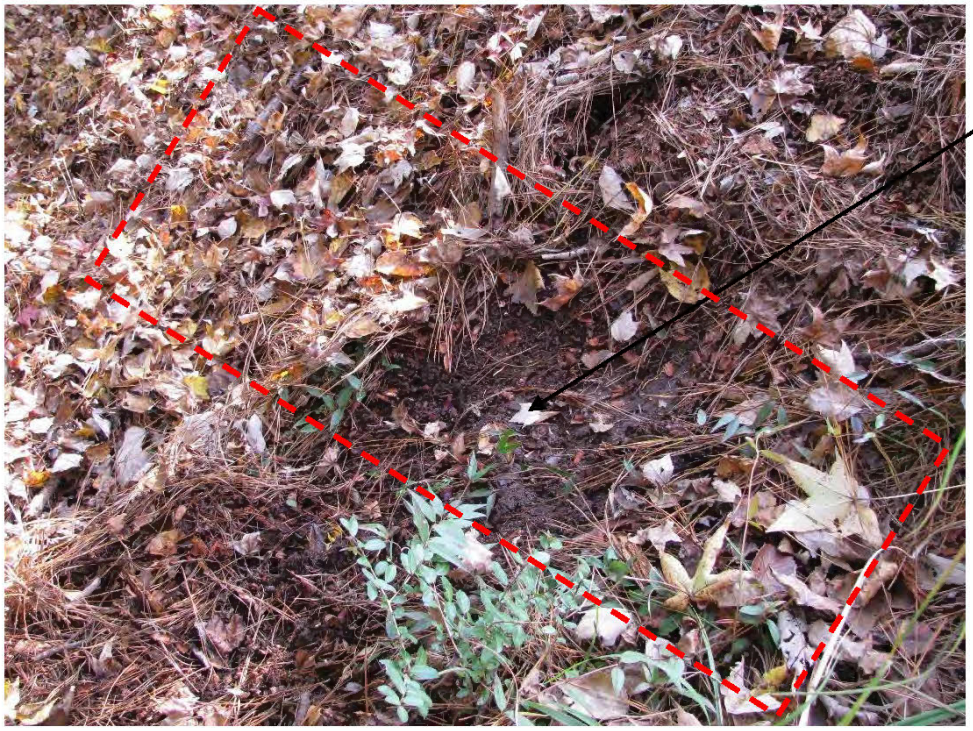


Photo No. 17 – Standing on the right portion of the dam at the toe looking North East. A view of the standing water at the same elevation with a toe.

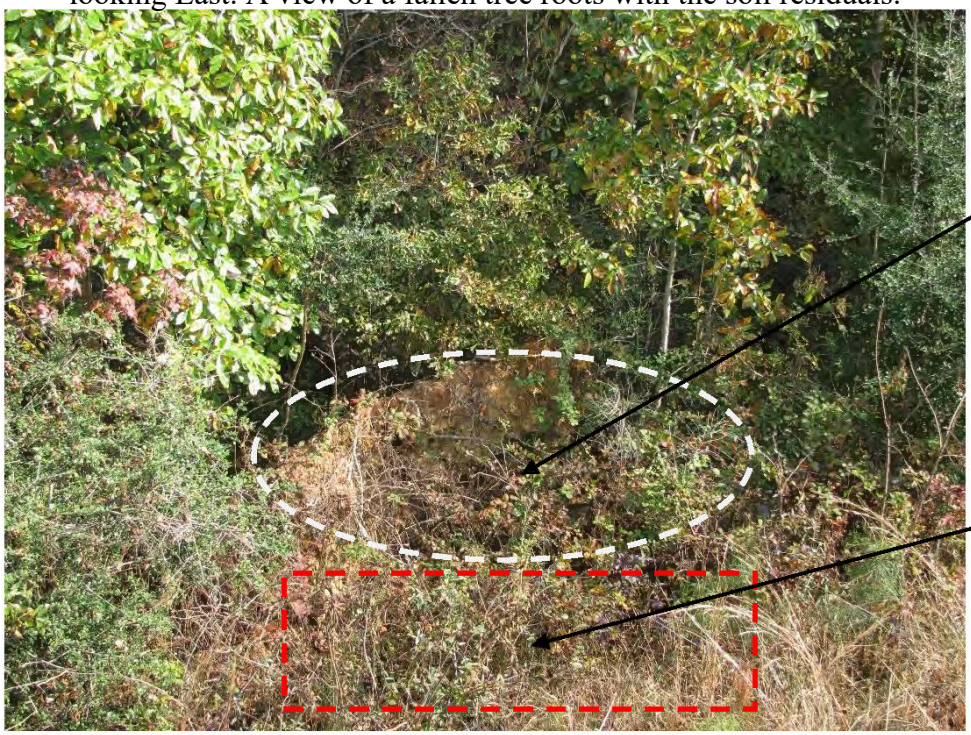
Photo No. 18 – Standing on the right side of the dam at the toe looking East, observing the standing water at the same elevation with a toe.

Photo No. 19 – Standing on the right side of the dam at the toe looking South East, observing the standing water at the same elevation with a toe.

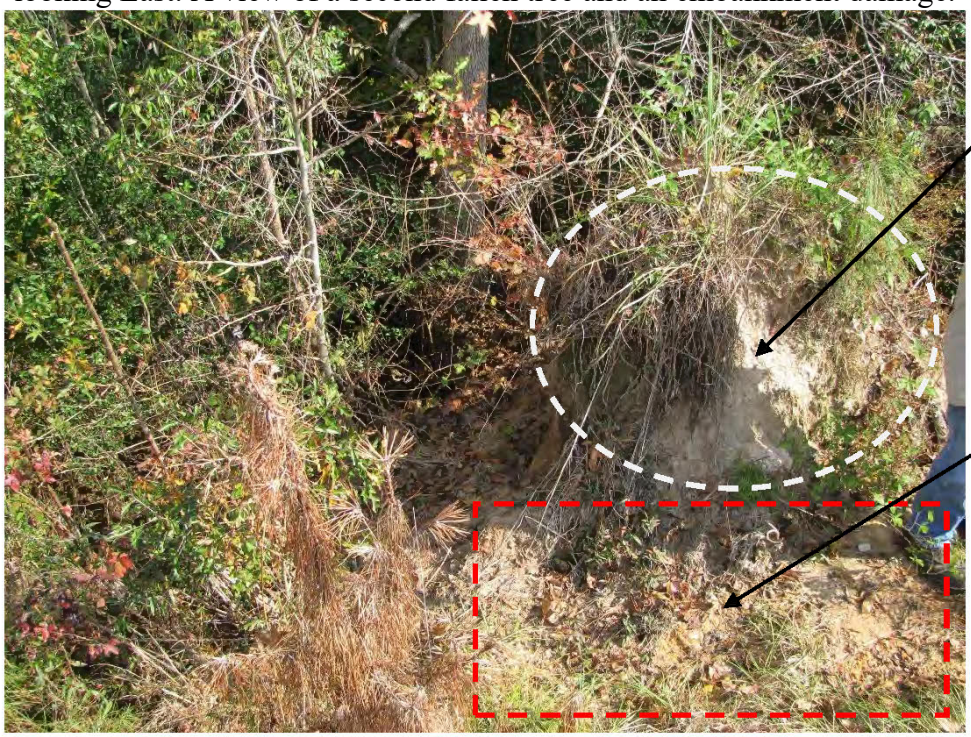
Photographs No. 20 – Standing about 300 ft away North from the spillway looking South West. A view of a wet area in horizontal band under the dry leaf litter.



Photograph No. 21 – Standing about 250 ft away North from the spillway looking East. A view of a fallen tree roots with the soil residuals.



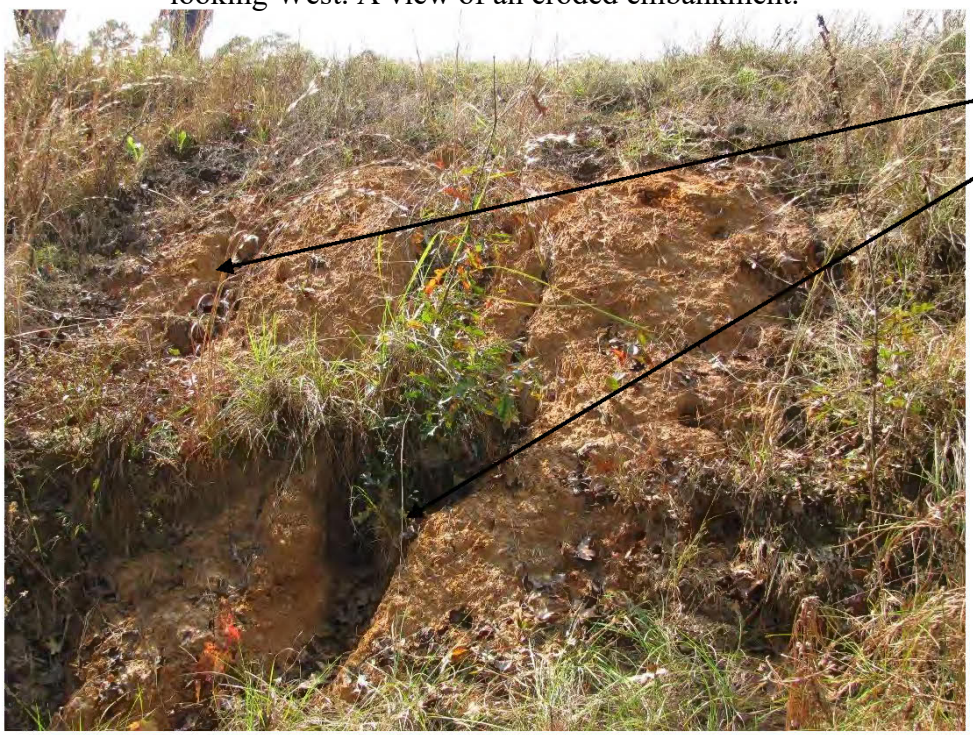
Photograph No. 22– Standing about 200 ft away North from the spillway looking East. A view of a second fallen tree and an embankment damage.



Photograph No. 23 – Standing about 200 ft away North from the spillway looking East. A view of the soil pulled out from the downstream slope.

Photograph No. 24 – Standing about 200 ft away North from the spillway looking East. A view of an erosion and soil pulled out from the dam slope.

Photograph No. 25 – Standing about 200 ft away North from the spillway looking West. A view of an eroded embankment.



Photograph No. 26 – Standing about 200 ft away North from the spillway looking North. A view of a dam's downstream slope.

Photograph No. 27 – Standing on the right side of the dam looking North. A view of a tree growing on the 3H:1V downstream slope caused sag.

Photograph No. 28 – Standing on the right side of the dam looking North. A view of the 5H:1V downstream slope at the point of connection of the old spillway.

Photograph No. 29 – Standing about 60 ft away North from the spillway looking East. A view of an embankment for the old spillway channel wall.

Photograph No. 30 – Standing on the right end of dam looking South East. A view of the well-maintained vegetative cover along the crest.

Photograph No. 31 – Standing on the right end of dam looking North West. A view of the well-maintained vegetative cover along the crest.

Photograph No. 32 – Another view of the minor bare areas (arrows) randomly along the crest from right end of the dam looking North West.

Photograph No. 33 – Standing about 30 ft to the North from the spillway. A view of the dry area between old spillway embankment (on the left) and new spillway downstream mouth.

Photograph No. 34 – Standing on the left edge of the spillway looking North West. A view of the dam toe widening closer to the spillway.

Photograph No. 35 – Standing on the left edge of the spillway looking North West. A view of the well-maintained vegetative cover along downstream slope of the dam.

Photograph No. 36 – General view of the left side of the service spillway looking downstream to the East.

Photograph No. 37 – Standing on the left of the spillway inlet looking South East. A view of the spillway and box culvert inlets.

Photograph No. 38 – Standing on the left of the spillway inlet looking South. A view of the spillway and box culvert outlet.

Photograph No. 39 – Standing before the left side wall of the spillway looking South East. A view of the concrete discharge slab and riprap lined earthen channel.

Photograph No. 40 – A view of the left 4-inch diameter pipe installed as a part of the spillway drain system.

Photograph No. 41 – Standing on the left side wall of the spillway looking South East. A view of the concrete discharge slab, right 4-inch diameter drainpipe and riprap lined earthen channel.

Photograph No. 42 – A view of the farther downstream condition of the riprap lined earthen channel.

Photograph No. 43 – Standing just downstream of the spillway discharge looking West. A view of an erosion behind the left spillway concrete wall.

Photograph No. 44 – Standing just downstream of the spillway discharge looking North. A view of an undermined end wall (arrow).

Photograph No. 45 – Standing on the downstream edge of the spillway looking South East. A view of the undercut of the spillway chute.

Photograph No. 46 – A view of the seepage on the right side of the downstream channel and undercut of the spillway chute.

ATTACHMENT 2

FROG POND LAKE DAM, COLMESNEIL, TX 75938
Inspection Date 11/25/2019 at 1:30 pm

Photograph No. 47 – Standing at the right side of the spillway looking South East. A view of the seepage exiting at the spillway channel chute.

Photograph No. 48 – Closer view of the seepage exiting at the spillway downstream channel chute.

ATTACHMENT 3
FROG POND LAKE DAM, COLMESNEIL, TX

Texas Commission on Environmental Quality
Dam Inspection Form

Inspection Results—Dam Conditions

Dam Name: Frog Pond Lake Dam Inventory No: TX03775
Name of Inspector/s: Gary L. Burton, PE; Leonard Zapalsky
Name of Contact/s: Stan Evans
Date of Inspection: 11/25/19 Start Time: 1:30 PM End Time: 3:30 pm Weather: 70°
Crest level (at center) above water: ?
Service spillway level ☐ Above or ☑ Below water: 1/16"
Emergency spillway level above water: ?
Ground Moisture Condition: ☑ Dry ☐ Damp ☑ Wet ☐ Snow ____ ☐ Other:

Crest of Embankment General Condition: ☑ Good ☐ Fair ☐ Poor Width: 15' ±
Problems Noted: ☐ None ☑ Rutting ☐ Erosion ☐ Poor Drainage Height: 19'
☐ Trees ☐ Depressions ☐ Bulges ☐ Livestock Damage ☐ Cracks Length: ± 850'
☐ Misalignment of Crest ☐ Misalignment of Utility Poles ☐ Misalignment of Fences or Rails ☐ Sinkhole ☑ Burrows ☐ Breached ☐ Other:
Comments: Lack of vegetation on much of crest. Efforts underway to correct with erosion control blanket.

Upstream Embankment General Condition: ☐ Good ☑ Fair ☐ Poor Slope:
Problems Noted: ☐ None ☐ Rip-Rap ☑ Erosion ☐ Too Steep ☐ Burrows ☐ Trees ☐ Cattails ☐ Depressions ☑ Bulges ☐ Livestock Damage ☑ Slides ☐ Concrete Decay ☐ Cracks ☐ Sinkhole ☐ Benching ☐ Misalignment of Rip-rap ☐ Open Joints in Concrete
Comments: Lack of adequate control from erosion and wave action.

Downstream Embankment General Condition: ☐ Good ☑ Fair ☐ Poor Slope:
Problems Noted: ☐ None ☐ Sloughing ☑ Erosion ☑ Too Steep ☑ Burrows ☑ Trees ☐ Cattails ☑ Depressions ☐ Bulges ☐ Livestock Damage ☐ Slides ☐ Concrete Decay ☐ Cracks ☐ Sinkhole
☐ Other:
Comments: Hole left from root ball of fallen tree needs immediate attention.

Seepage on Downstream Slope Amount: ☐ Major ☑ Moderate ☐ Minor ☐ None Found
Problems Noted: ☐ None ☐ Saturation Starts at 50 % up Embankment
☐ Presence of Sediment in Flow ☐ Cattails at Toe of Dam ☑ Surface Water at Toe of Dam
☑ Seepage Associated with Sloughing ☐ Continuous Flow ☐ Sporadic Flow
Comments: Needs further investigation.

Downstream Hazard Conditions ☐ Narrow Canyon ☐ Wide Canyon ☐ Lightly Sloping Prairie
☐ Pastureland ☑ Large Trees and Forest ☑ Brushy and Scrubby Forest ☑ No Homes
☐ Lightly Populated ☐ Moderately Populated ☐ Densely Populated ☐ Industrial ☐ Businesses
Estimated number of homes: _____
Comments: _____

Service Inlet Structure General Condition: ☑ Good ☐ Fair ☐ Poor
Problems Noted: ☐ None ☐ Blockage ☐ Not Located ☐ Steel Corrosion ☑ Concrete Spalling
☐ Concrete Cracking ☑ Reinforcement Corrosion ☐ Missing Parts ☐ Timber Decay
☐ Leakage Below Water Level ☐ Inoperable Valve ☐
Other: _____
Comments: Seepage under and through concrete wall.

Service Outlet Structure General Condition: ☐ Good ☐ Fair ☐ Poor
Problems Noted: ☐ None ☐ Blockage ☐ Not Located ☐ Corrosion of Conduit
☐ Presence of Sediment in Flow ☑ Inaccessible ☐ Concrete Cracking ☑ Concrete Spalling
☑ Reinforcement Corrosion ☐ Misalignment of Walls/Slabs ☑ Open Joints
Comments: _____

Service Spillway Condition: ☐ Good ☐ Fair ☐ Poor Depth: _____
Width: _____
Problems Noted: ☐ None ☐ Blockage ☐ Not Located ☐ Trees ☐ Burrows ☐ Back-Cutting Erosion
☐ Inaccessible ☐ Livestock Damage ☐ Concrete Cracking ☐ Concrete Spalling
☐ Reinforcement Corrosion ☐ Damaged Water-stops ☐ Open Joints ☐ Sinkholes
☐ Holes in Spillway Chute ☐ Seepage ☐ Misalignment of Walls/Slabs ☐ Damaged Gates
☐ Nonfunctional Gates ☐ Lubrication of Gates ☐ Testing of Gates
Comments: _____

Emergency Spillway Condition: ☐ Good ☑ Fair ☐ Poor Depth: _____
Width: _____
Problems Noted: ☐ None ☑ Blockage ☐ Not Located ☑ Trees ☐ Burrows ☐ Back-Cutting Erosion
☐ Inaccessible ☐ Livestock Damage ☐ Concrete Cracking ☐ Concrete Spalling
☐ Reinforcement Corrosion ☐ Damaged Water-stops ☐ Open Joints ☐ Sinkholes

❑ Holes in Spillway Chute ❑ Seepage ❑ Misalignment of Walls/Slabs ❑ Damaged Gates
❑ Nonfunctional Gates ❑ Lubrication of Gates ❑ Testing of Gates
Comments: _____

Other Items ❑ Major road along crest of dam ❑ Private road or driveway along crest of dam
❑ Vehicle bridge along crest of dam ❑ Culverts built into crest of dam
❑ Pipeline immediately downstream from dam - Type of pipeline: _____
❑ Water supply line in crest of dam ❑ Other:
_____
Comments: _____

Repair Items Ranked by Priority
Item 1: Remove fallen trees and fill root ball holes.
Item 2: Clear service spillway downstream channel
Item 3: Clear emergency spillway downstream channel
Item 4: Clear along entire toe and inspect for seepage.

Security Issues ❑ Vehicle Accessible ❑ Vehicle Gates ❑ Vehicle Fences and Railing
❑ Pedestrian Accessible ❑ Pedestrian Gates and Fences ❑ Obscured from Surveillance ❑ Locks
❑ Breaches in Fence ❑ Evidence of Parties ❑ Graffiti ❑ Security System
Comments: _____

Operational Procedures ❑ SOP Available Location Kept: _____
❑ Logbook Location of Logbook: _____
❑ Major Events Noted ❑ Staff Training
Topics of Training: _____
❑ Manual Gate Operations ❑ Powered Gate Operations ❑ Automated Gate Operations
Comments: _____

Communications ❑ Directory Available ❑ 24-Hour Coverage ❑ Telephone Available at Dam
❑ Cell Phone Coverage—Provider:
_____
Comments: _____

Emergency Action Plan ❑ Available ❑ Filed with TCEQ ❑ Change in Downstream Hazard
Frequency of Update: _____ Date of Last Revision: _____
Date of Last Exercise: _____

Comments: _____

_____

_____

Instrumentation ❑ Present ❑ Adequately Maintained ❑ Inadequately Maintained ❑ Operational
❑ Data Collected ❑ Data Analyzed ❑ Adequately Protected
Comments: _____

_____

_____

Early Warning System ❑ Present ❑ Adequately Maintained ❑ Inadequately Maintained ❑ Operational
Frequency of Maintenance: _____
Date of Last Exercise: _____
Comments: _____

_____

_____

Reservoir Drawdown Capability Method of Drawdown: Culvert stop logs & valve.
Maximum Drawdown: _____ c.f.s. Frequency of Testing: _____
Comments: _____

_____

_____

Backup Power ❑ Present ❑ Adequately Maintained ❑ Inadequately Maintained ❑ Operational
Frequency of Maintenance: _____
Date of Last Exercise: _____
Comments: _____

_____

_____