Dewberry

Quarterly Dam Inspection Report

Murphey Candler Park Dam, City of Brookhaven

April 26, 2022

SUBMITTED BY:

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SUBMITTED TO:

City of Brookhaven Parks & Recreation
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04/26/2022
Dewberry Engineers Inc.
COA#: PEF002398
Expires: 06/30/2022

Embankment (Earth) Dam Inspection Form

Name of Dam: Murphey Candler Park Dam Inspection: 04/26/2022 8:30 am

Location of Dam (County): DeKalb County, GA

Inspected by (Print Name): Sam Crampton/Seth Bradley/ Matt Deshotel/Carly Federman/David Taylor

Weather: Sunny to Cloudy

If an inspection item requires further action on your part, place a check mark to the left of the number of the item.

A. Crest (refer to Glossary for description)

☐ 1. How would you describe the vegetation on the crest? (Check all that apply)

Recently Mowed_____ Overgrown_____ Good Cover____ Sparse_____

Other/Corrective Action (describe): The crest of the dam has a 20-ft wide asphalt paved road at the center with a concrete pedestrian walkway on either side. The narrow areas between the asphalt road and the pedestrian walkway are covered by sparse, recently mowed grass.

☐ 2. Are there any trees or other inappropriate or excessive vegetation on the crest? Yes_____ No___✓

If yes, describe (type of vegetation, size, location, etc.)/Corrective Action:_____

☐ 3. Is there a paved road or driveway on the crest? Yes___✓___ No_____

If yes, describe the condition (for example, good condition, numerous cracks, newly paved)/Corrective Action: The road is functional and in good condition (See Photos 1 and 2). Some minor cracks were observed on the paved road at a few locations as described in item 5 of this section (See Photos 3- 5).

☐ 4. Are there any depressions, ruts or holes on the crest? Yes____✓____ No _____

If yes, describe (size, location, etc.)/Corrective Action: There is a minor depression at the downstream left side of the crest by the end of the road guard rail. This depression appears unchanged since the previous report in October (See Photo 5). Cracks remain in the concrete sidewalk pavement and the asphalt road at this location. These do not appear to be in any area of critical concern but should continue to be monitored.

☐ 5. Are there any cracks on the crest? Yes___✓___ No_____

If yes, describe (length and width, location, direction of cracking, etc.)/Corrective Action: Several minor longitudinal cracks were observed towards the downstream edge of the roadway just left of the center of the dam (See Photos 3 and 4). Longitudinal cracking can be an indication of embankment slide, although there is no evidence that is what is causing these specific cracks. These cracks should continue to be monitored to ensure they do not increase in size or width, or otherwise worsen. The depressed area at the left, downstream edge of the dam crest (discussed in item 4 above) has created a semi-circular crack in the pavement (See Photo 5). These cracks should be monitored to ensure they do not increase in size or otherwise worsen.

☐ 6. Other observations on the crest/Corrective Action:_____

B. Upstream Slope (refer to Glossary for description)

1. What is the reservoir level today? At Normal Pool___✓___ Above Normal Pool ____Feet Below Normal Pool_____Feet

☐ 2. How would you describe the vegetation on the upstream slope? (Check all that apply)

Recently Mowed_____ Overgrown ___ Good Cover_____ Sparse__✓___

Other/Corrective Action (describe): The upstream slope is primarily covered with unevenly distributed riprap and patches of vegetative growth. The upstream slope was observed to have been cleared of larger woody vegetation in the January 2022 inspection, however regrowth from previously cut back stumps as well as new growth was observed during this inspection. (See Photos 6 and 7).

☑ 3. Are there any trees or other inappropriate or excessive vegetation on the slope? Yes_✓__ No__

If yes, describe (type of vegetation, size, location, etc.)/Corrective Action: The slope was notably observed to be recently cleared during the January 2022 inspection. This was a good first step in preventing further growth of potentially destabilizing root systems. It is recommended that woody vegetation and saplings continue to regularly be cut down to the base as they appear. Larger remaining stumps should be extracted from the dam and any voids created from this process should be backfilled and compacted. Unless removed and properly backfilled these stumps will slowly decay and leave voids in the soil and provide access points for concentrated flow of water leading to erosion of the dam slope. Note that any tree or shrub with a diameter of 8 inches or larger requires engineer oversight for removal. Though no vegetation or stumps of this diameter were observed, there is at least one stump close to that size near the waterline at the right side of the dam (See Photo 9). Some vegetation previously cut back to the root has also begun showing signs of regrowth. (See Photos 6-10). Some riprap has been disturbed to allow for removal of woody vegetation. One large depression is located towards the left side of the dam (See Photo 10). If must be moved as part of the process of clearing vegetation it's important that the riprap be redistributed again to provide even coverage after the work is completed.

☐ 4. Are there any depressions, bulges, ruts or holes (such as animal burrows) on the slope? Yes ✓ No_____

If yes, describe (size, location, etc.)/Corrective Action: Multiple depressions due to inadequate riprap coverage were observed along the upstream face of the dam. See comments in items 3 and 7 of this section for more detail.

☑ 5. Are there any eroded areas on the slope (such as wave erosion along the shoreline)? Yes ✓ No_____

If yes, describe (size of area, location, severity, etc.)/Corrective Action: Significant erosion of the soil beneath the riprap continues to progress near the left wing wall of the concrete spillway. The erosion depth is up to 2-ft vertically in some locations immediately adjacent to the end of the left wing wall, comparison with previous inspection photos shows that 6 inches of soil have eroded since the December 2020 inspection in one location. (See Photos 11- 13). There is both undercutting and erosion perpendicular to the wall. Horizontal undercutting adjacent to the wing wall seen in Photo 11 has removed soil up to one foot under the wingwall. Future rain and high flow events can cause increased erosion and undercutting. Corrective actions are required and include filling and compacting the soil near the concrete spillway. Repairs are necessary to prevent further erosion. There is insufficient riprap coverage in the area immediately adjacent to the right wing wall also, as noted in previous inspection reports (See Photos 27 and 30). Soil has started to erode from beneath the sidewalk on the upstream side of the dam crest as well, leaving a void several inches beneath the sidewalk in some places. (See Photo 21). Recommend backfilling soil in the void beneath the sidewalk and placing a filter material and additional well-graded riprap to prevent continued erosion.

☐ 6. Are there any cracks, sloughs or slides (vertical cliffs) on the slope? Yes_____ No ✓

If yes, describe (length, width, height, location, etc.)/Corrective Action:_____

☑ 7. Is there any type of slope protection along the shoreline (such as riprap)? Yes ✓ No_____

If yes, describe what type and its condition (for example, riprap - adequate, inadequate, sparse)/Corrective Action: Coverage of riprap is inconsistent across the width and height of the dam face (See Photos 6, 9, 14-16). Inconsistent coverage at lower elevations leaves opportunity for concentrated flows and subsequent erosion. Similarly, the upper section of the dam face lacks adequate riprap coverage to provide protection at higher water levels. Recommend replacing riprap as needed across dam face to create uniform coverage up to sidewalk elevation. Notable areas include: 1) The right (west) side of the dam near the concrete spillway where it is visibly very sparse compared to the rest of the dam face (See Photo 15), 2) Several makeshift pathways leading from the pedestrian walkway to the water near the upstream left abutment and near the principle spillway riser (See Photo 16). As Discussed in item 5 above, potential consequences of insufficient riprap coverage include providing opportunities for concentrated flows of water, leading to channelization and erosion of the dam slope. Corrective action includes placing a filter material and well-graded riprap along the dam face to create adequate uniform coverage of the slope up to the sidewalk elevation.

☐ 8. Other observations on the upstream slope/Corrective Action:

C. Downstream Slope (refer to Glossary for description)

☐ 1. How would you describe the vegetation on the downstream slope? (Check all that apply)

Recently Mowed ✓ Overgrown _____ Good Cover ✓ Sparse _____

Other/Corrective Action (describe): The downstream slope of the dam is covered in well maintained recently mowed grass (See Photo 17 and 18). Several patches of missing grass on the left side of the downstream slope have exposed the underlying soil (See Photos 19, and 20). Recommend these areas be re-seeded and monitored to ensure that they don't grow larger or lead to increased erosion. There is a large area of soil exposed by equipment used to place riprap around the batting cages on the right side of the downstream slope, to the left of the spillway (See Photo 23). This area should be seeded with grass or otherwise stabilized to prevent soil erosion.

☐ 2. Are there any trees or other inappropriate or excessive vegetation on the slope? Yes _____ No ✓

If yes, describe (type of vegetation, size, location, etc.)/Corrective Action: _____

☐ 3. Are there any depressions, bulges, ruts or holes (such as animal burrows) on the slope? Yes _____ No ✓

If yes, describe (size, location, etc.)/Corrective Action.

☑ 4. Are there any eroded areas on the slope (such as along abutment contacts)? Yes ✓ No _____

If yes, describe (size of area, location, severity, etc.)/Corrective Action: Minor erosion/bare spots were observed in high-traffic areas such as near the sprinkler box, the batting cages, principal spillway outlet box and near the right downstream abutment. A moderate area of erosion remains near the batting cages left of the spillway, apparently caused by equipment traffic from applying the new riprap protection around the adjacent retaining wall. (See Photo 23). Several patches of missing grass on the left side of the downstream slope have exposed the underlying soil (See Photos 19, and 20). Corrective actions in these areas includes filling in bare spots, compacting and grassing or adding a layer of gravel if grass continues not to grow.

☐ 5. Are there any cracks, sloughs or slides (vertical cliffs) on the slope? Yes _____ No ✓

If yes, describe (length, width, height, location, etc.)/Corrective Action: _____

☐ 6. Are there any wet areas or areas of hydrophilic (lush, water-loving) vegetation? Yes _____ No ✓

If yes, describe (size of area, location, etc.)/Corrective Action:

☐ 7. Do any wet areas indicate seepage through the dam (such as rust-colored, stained water)? Yes _____ No _____ N/A ✓

If yes, describe (for example, new area of seepage, no change from past observations, size of area, location) /Corrective Action: _____

☐ 8. Are there any leaks (flowing water) from the slope or beyond the toe of the dam? Yes _____ No ✓

If yes, describe (location, rate of flow, turbidity of flow)/Corrective Action: _____

☑ 9. Other observations on the downstream slope/Corrective Action: An animal guard on the toe drain located roughly at the center of the downstream dam face should be straightened and secured from the bottom to provide adequate barrier against small animals entering the drainpipe (See Photo 24). Previously noted minor damage to a utility box adjacent to a small concrete marker on the right side of the downstream face near the dam crest remains with no evidence of repair (See Photo 22). As previously noted, a hole has formed in the fiberglass structure on the downstream side of the box. It appears that the soil near the hole in the structure has begun to erode. This hole should be repaired, and soil should be backfilled to ensure erosion does not continue to worsen around the utility box. Riprap has been placed around several of the retaining walls for the adjacent baseball facilities, a good step for erosion protection. Evidence of minor vandalism was observed in the form of rocks from the recently applied riprap lying in the spillway. (See Photo 45). Though unlikely to cause any damage in small numbers, it could lead to larger issues over a long enough timespan, at a minimum leading to reduced erosion protection due to loss of the riprap.

D. Plunge Pool (refer to Glossary for description)

☐ 1. Is there any type of erosion protection around the plunge pool (such as riprap)? Yes ✓ No _____

If yes, describe what type and its condition (for example, riprap - adequate, inadequate, obstructed by vegetation)
Chute blocks and baffle blocks are used to dissipate the water energy. Additionally, riprap is used downstream of the stilling basin to protect the natural channel bottom from erosion. The current channel erosion protection measures appear adequate and functional. New riprap bank protection placed along channel downstream of plunge pool is functioning well.

☑ 2. Is there any erosion and or seeps around or going into the plunge pool? Yes__✓_ No___

If yes, describe (size of area, location, severity, etc.) /Corrective Action: There is potentially a cavity forming beneath the lower right (west) face of the spillway directly above the plunge pool (See Photo 43). During the December 2019 and October 2021 inspections, striking the face of the spillway with a survey rod produced a hollow tone in this location, distinct from solid sounds produced by striking elsewhere on the spillway. There is no readily apparent cause of the cavity. Further investigation with ground penetrating radar or another suitable non-destructive method is recommended to confirm the existence and size of any cavity. Corrective action includes injecting flowable fill or other suitable material into the cavity and monitoring the area for any signs of worsening condition. Investigation is strongly recommended to determine if corrective action is needed. A cavity in this location poses a significant risk and has potential to cause costly spillway failure if left unaddressed. This area was not examined during this inspection.

☐ 3. Other observations around the plunge pool/Corrective Action:_

1). Erosion previously observed at the right stream bank downstream of the plunge pool immediately next to the storm drain headwall has been addressed by placing new riprap bank protection along both side of the channel.

E. Principal and Emergency Spillways (refer to Glossary for description)

☐ 1. What types of spillways does the dam have (such as corrugated metal, concrete or siphon pipe; concrete or earth channel)?

Principal Spillway_____30-inch diameter CMP with concrete riser__ Emergency Spillway Concrete Channel__

Other/Corrective Action:_____

☐ 2. Has the emergency spillway activated (had flow) since the last inspection? Yes____✓____ No_____

If yes describe (date(s) of flow, reason for activation, depth of flow) /Corrective Action: The emergency spillway experiences continuous service flows (See Photo 29).

☑ 3. For pipe spillways, is the intake obstructed in any way (such as with excessive debris)? Yes_____ No____✓

If yes, describe (type of debris, reason for obstruction, etc.) /Corrective Action: On 6/21/2017, DeKalb County Fire & Rescue divers inspected the principal upstream riser structure (See Photo 28). The divers did not identify any issues in the outer part of the riser or sluice gate. They did note that the orifice was buried in soft silt. An inspection has not been performed since. Wasps have built a nest inside the riser tube. The wasp nest should be removed to avoid potential hazards during any maintenance or emergency operation of the spillway riser.

☐ 4. For pipe spillways, what is the condition of any trash racks (for example, adequate, inadequate, damaged)? /Corrective Action:

Pipe is submerged and could not be observed. Divers on 6/21/2017 indicated that trash racks appeared to be in-place and consistent with the plans provided by GA SDP. An inspection has not been performed since.

☑ 5. For pipe spillways, are there any visible cracks, separations or holes in the pipe(s) (intake or outlet)? Yes_✓ No

If yes, describe (location, width of crack or separation, etc.)/Corrective Action: Crawler type CCTV of the principal spillway pipe captured on March 20, 2020 was provided to Dewberry. Review of this footage indicated deteriorated sections of the pipe, some joint separation and soil intrusion. As previously discussed with city officials, the principal spillway should be rehabilitated. It is not recommended to operate the spillway for non-emergency purposes until this has occurred. In the event of an emergency, operation of the spillway should be performed with extreme caution, including but not limited to closing of the road over the dam, continuous monitoring, and being prepared to fully implement the emergency action plan to mitigate the potential for loss of life in the event of a dam failure. The outlet to the pipe was visually inspected from the brick chamber on the downstream slope. Dewberry is currently assisting Brookhaven with plans to use CIPP to rehabilitate the emergency spillway.

☐ 6. For pipe spillways, are there any apparent leaks in the pipe(s)? Yes_____ No__✓__

If yes, describe (location, rate of flow from leak, etc.)/Corrective Action

☐ 7. For pipe spillways, how would you describe the overall condition of the pipe(s)? (Check all that apply)

Functioning Normally___ Not Functional____ Deteriorated__✓__ Damaged____ Adequate___ Inadequate____

☑ 8. For concrete or earth channel spillways, is the entrance or channel obstructed in any way? Yes__✓__ No_____

If yes, describe (type of obstruction, location, etc.)/Corrective Action: A small amount of woody debris has collected at the upstream end of the spillway platform (See Photo 29). This debris should continue to be removed as it collects. The mat of grassy vegetation growing from the right bank into the concrete spillway was previously cleared. It remains much improved from the previous overgrown state, but the location should be monitored for vegetation and silt collecting again. (See Photo 30). Grass should be periodically cut back and removed as it grows back to prevent increased accumulation of sediment and debris in the spillway. Grass between spillway slabs was dormant in the previous inspection but has resumed growing again. Concrete joints upstream and downstream of the West Nancy Creek Drive bridge also needs to be resealed, as noted in section 12 below (See Photos 35, and 40).

☐ 9. For earth channel spillways, how would you describe the vegetation in the spillway? (Check all that apply)

Recently Mowed_____ Overgrown_____ Good Cover_____ Sparse_____

Other (describe)/Corrective Action: N/A

☐ 10. For earth channel spillways, are there any trees or other inappropriate vegetation in the spillway? Yes___ No_____

If yes, describe (type of vegetation, size, location, etc.)/Corrective Action: N/A

☐ 11. For earth channel spillways, are there any eroded areas in the spillway? Yes_____ No _____

If yes, describe (size of area, location, severity, etc.)/Corrective Action: N/A

☑ 12. For concrete channel spillways, are there any cracks or holes in the spillway? Yes __✓__ No_____

If yes, describe (width of crack or hole, location, etc.)/Corrective Action: The cutoff wall at the upstream face of the concrete spillway appeared to be in good condition and functioning well. 1) There are multiple areas of uplifting concrete at the joint of the spillway and the masonry wall on the left side of the flume, downstream of West Nancy Creek Drive (See Photos 31- 33). Corrective action includes sealing the cracks to prevent widening or lengthening. Concrete is completely separated from one of these locations, leaving a hole 2 to 3 inches deep at the masonry wall joint (See Photo 33). Corrective action includes grouting and patching holes left behind by chipped or spalling concrete. 2) The caulk in the joints between the spillway bottom and the retaining walls along the left side of the spillway is missing or eroded over the majority of the spillway length (See Photo 32). Corrective action includes removing old caulk and reapplying caulk to the joints between the spillway base and the retaining walls of the spillway along its entire length. 3) Along the masonry retaining wall at the left side of the concrete spillway, there are cracks and areas missing grout between many of the stones (See Photo 36-39). Vines and other vegetation previously observed growing on the masonry wall directly downstream of West Nancy Creek Drive have begun growing again in warmer temperatures. (See Photo 39). Corrective action includes removing any remaining vegetation and re-grouting impacted areas. The prescribed repairs should be considered a provisional solution, and the aging masonry wall should eventually be replaced with a concrete wall. 4) Caulk between concrete slabs making up the spillway bottom is peeling and working loose from the lateral seams in multiple locations. The lateral seam directly upstream of the West Nancy Creek Drive bridge was observed to be undermined, and a cavity roughly 6 inches deep directly under the joint was observed. As noted in previous reports, caulk is also peeling from the lateral seam downstream of the bridge (See Photos 40 and 41). Corrective action includes removing old caulk and replacing with new caulk. 4) Concrete has completely separated from the bottom of a vertical crack at the top right of the plunge pool face (See Photo 44). This area of the spillway sees continuous flows, and the cracked concrete is a potential entry point for water to erode soil beneath the spillway. Corrective action includes sealing the cracks to prevent widening or lengthening. 5) Some of the trees and vegetation growing along the fence line on both sides of the spillway were

previously cut back but have begun growing again (See Photo 42). Corrective action includes cutting/removing trees/vegetation including the remaining lower trunks of cut trees to prevent new growth. Any holes must be filled and compacted. It is recommended that any trees within 15 feet of the spillway walls be removed. Grass previously dormant in colder temperatures during the Jan 2022 inspection has resumed growing (See Photo 35). All grassy vegetation should be cleared from the spillway channel and joints resealed. Previously completed repairs to spillway slab adjacent to concrete wall appear to be holding up well (See Photo 34).

☐ 13. For concrete channel spillways, are there any leaks or evidence of undermining (flow under the concrete)? Yes_____ No ✓

If yes, describe (location, rate of flow from leak, indicators of undermining, etc.)/Corrective Action:_____

14. For earth or concrete channel spillways, how would you describe the overall condition of the spillway? (Check all that apply)

Functioning Normally ✓ Not Functional____ Deteriorated____ Damaged ____ Adequate____ Inadequate____

☐ 15. Other observations on the spillways/Corrective Action: _____

F. Instrumentation (refer to Glossary for description)

☑ 1. Are there any toe drains at the downstream toe or any other seepage drains on the dam? Yes ✓ No_____

If yes, describe the condition (for example, clogged, free flowing, deteriorated, good condition) /Corrective Action: There is a toe drain near the center of the downstream slope (See Photo 24). There is no flow from the toe drain and it appears clear of large debris. Additionally, there are six spillway underdrains located on the spillway face above the plunge pool. Minor flows were observed from some spillway underdrains but were not measured due to access (See Photo 43). A small toe drain at the right side of the plunge pool was previously observed to be emitting a rust colored liquid. A sample was collected from this drain during the March 2021 inspection and allowed to settle. Settled solids from this runoff were found to be attracted to a magnet held against the container, verifying that the solid material in the pipe runoff is composed largely of iron. The pipe leading to this toe drain is being steadily corroded and should be replaced to avoid further issues resulting from flow from the compromised pipe creating voids in the surrounding soil. New riprap has recently been placed along the channel banks in this area including a large stone directly in front of this pipe outlet (See Photos 25 and 26). This stone does not appear to be integral to bank protection. Recommend moving this stone so that the pipe can continue to be monitored for increasing signs of deterioration until pipe is repaired.

☑ For drains, is an animal guard installed at the outlet of each drain? Yes_____ No ✓

If no, which drains lack animal guards? /Corrective Action: The damaged animal guard at the toe drain located near the center of the downstream slope observed in previous inspections has not been repaired (See Photo 24), it is recommended that the bars be straightened and secured at the bottom of the pipe to function effectively Animal guards are missing from four of the spillway underdrains on the right side of the spillway (See Photo 43). Corrective action includes replacing missing animal guards.

☐ 3. For drains, measure the rate of flow from each drain and record below (use additional pages if necessary):

Designation/Location of Drain	Flow Rate	Flow Rate in GPM*	Turbidity of Flow (describe – clear, muddy, etc.)
Toe drain downstream slope	None	None	None
Primary principal drain	N/A	N/A	N/A

☐ 4. Are there any piezometers on the dam? Yes_____ No ✓

If yes, describe the condition (for example, good condition, damaged, etc.)/Corrective Action:_____

☐ 5. For piezometers, does each piezometer have a cap with a lock? Yes_____ No_____

If no, which piezometers need caps (to prevent rain water intrusion) and/or locks (to prevent tampering)? /Corrective Action:_____

☐ 6. For piezometers, are you able to take a measurement (depth to water) in each piezometer? Yes_____ No_____

If yes, record depth to water (in feet) in each piezometer, record on a separate page, and attach to this form.

☐ 7. Are there any other monitoring devices on the dam? Yes_____ No ✓

If yes, describe what type and the condition (for example, monitoring wells - good condition, damaged) /Corrective Action:

☐ 8. Other observations on instrumentation/Corrective Action:

**GPM (gallons per minute): to convert from oz/sec multiply by 0.4688; to convert from ml/sec multiply by 0.01585*

. **Photographs**

At a minimum, photographs should be taken of the crest, upstream slope, downstream slope and any other notable features. List of photographs (be sure to date stamp the photos):

1. Standing on crest of dam looking toward left abutment

2. Standing on crest of dam looking toward right abutment

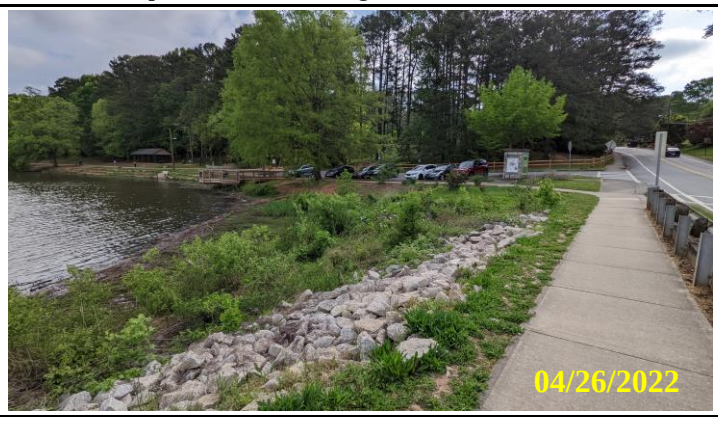
3. Minor longitudinal cracking in paved road on dam crest at left bridge abutment

4. Additional minor longitudinal cracking in paved road on dam crest

5. Depressed area on dam crest with crack on road pavement

6. View of upstream side looking towards left abutment

7. View of upstream side looking towards right abutment



8. View of vegetation on upstream face of the dam

9. View of stump close to diameter requiring engineer oversight for removal, located on right side of upstream dam face at waterline

10. View of disturbed riprap around cut back woody vegetation on upstream face of the dam

11. Inadequate riprap grading at the left wing wall of the concrete spillway resulting in erosion and undercutting of riprap. See Photo 12 for location of this photo.

12. Inadequate riprap grading at the left wing wall of the concrete spillway resulting in erosion and undercutting of riprap. Red circled area is location of Photo 13, yellow arrow pointing towards location of Photo 11

13. Inadequate riprap grading at the left wing wall of the concrete spillway resulting in erosion and undercutting of riprap

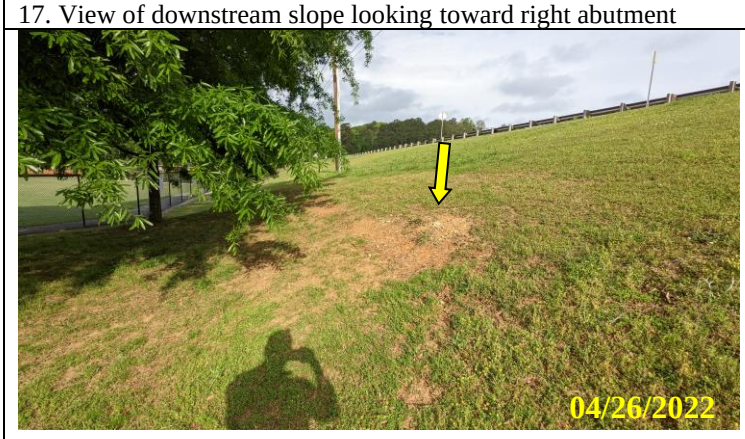
14. Sparse riprap near pedestrian walkway

15. Very sparse riprap coverage at right side of upstream dam face

16. Pedestrian pathway showing sparse riprap near principal spillway riser

17. View of downstream slope looking toward right abutment

18. View of downstream slope looking toward left abutment



19. Patches of missing grass on downstream dam face

20. Patches of missing grass on downstream dam face

21. Minor undercutting and erosion at the pedestrian walkway on upstream dam crest

22. Damaged utility box and eroded soil on downstream face of dam

23. Right side of downstream dam face showing erosion and missing grass from equipment traffic

24. Toe drain at center of downstream dam face showing damaged animal guard

25. Toe drain at right side of plunge pool blocked by riprap

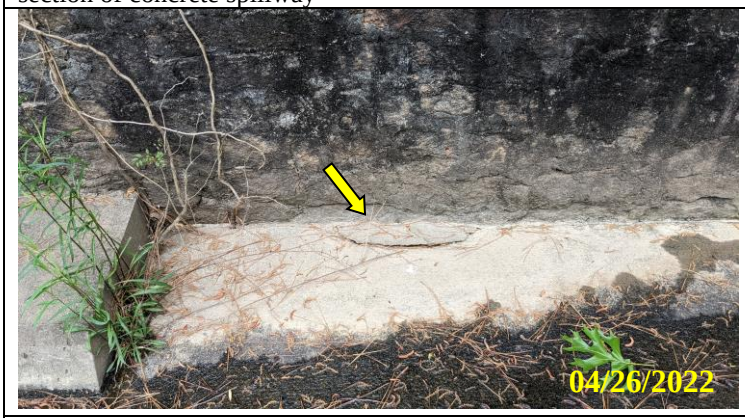
26. Matching toe drain on left side of plunge pool

27. View of overgrown vegetation and sparse poorly graded riprap at the right upstream wingwall

28. Principal spillway riser

29. Small amounts of woody debris accumulating in the upstream section of concrete spillway

30. Cleared vegetation from right side of spillway, sparse riprap along the right wing wall



31. Concrete spillway cracking and uplift at joint with masonry wall

32. Concrete spillway cracking and uplift at masonry wall joint with exposed seal

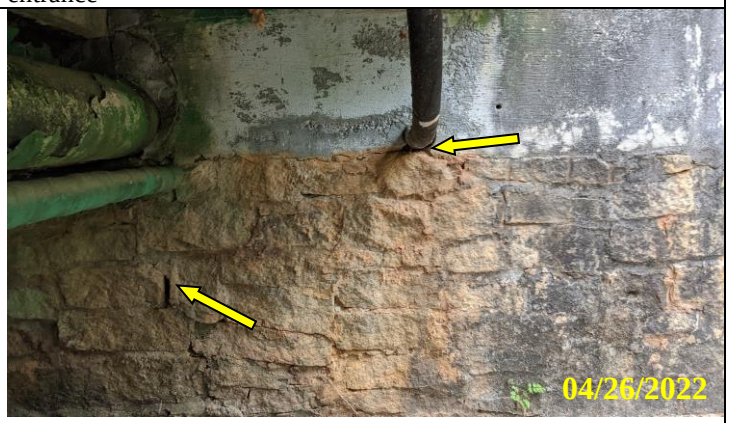
33. Concrete spillway cracking and missing concrete at masonry wall joint

34. Previously completed repairs to spillway holding up well

35. Grass growing between slabs in concrete spillway downstream of West Nancy Creek Drive

36. Missing grout and cracks in masonry wall at spillway entrance

37. Missing grout in masonry wall at bridge crossing



38. Missing grout in masonry wall at bridge crossing

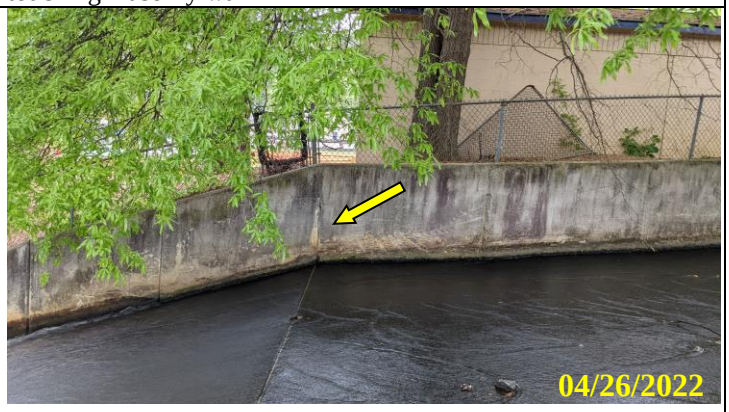
39. Vines and vegetation beginning to regrow on masonry wall downstream of bridge crossing

40. Caulking peeling from between spillway slabs at upstream edge of bridge crossing, 6 inch void between slabs

41.Caulk peeling from between spillway slabs downstream of bridge crossing

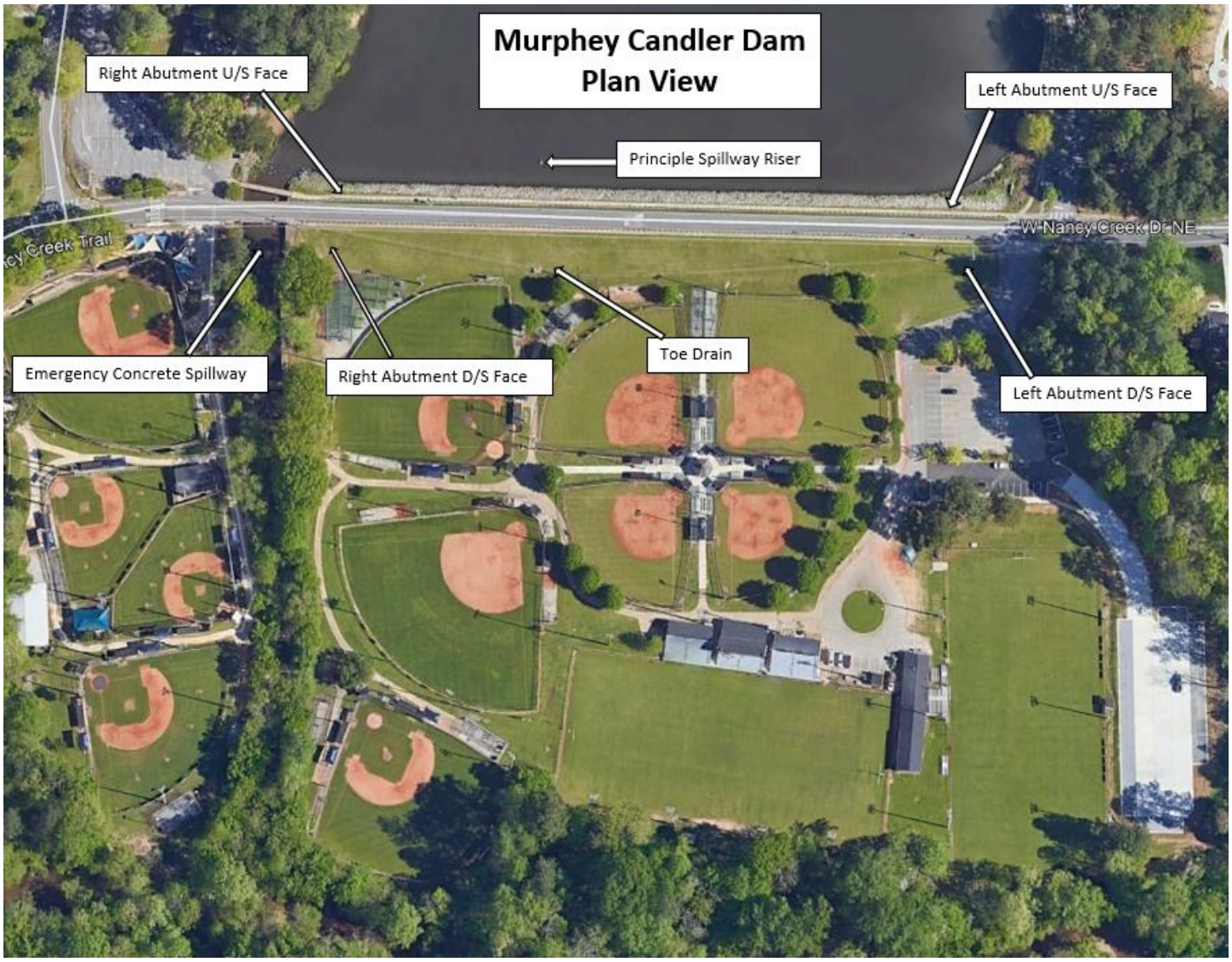
42. Trees at spillway fence, growing directly adjacent to and touching masonry wall

43. Spillway face above plunge pool showing locations of toe drains with missing animal guards. Yellow circle shows general area of suspected void behind spillway face



44. Cracked and missing concrete at top right of plunge pool face

45. Riprap thrown into spillway


Murphey Candler Dam
Plan View
Right Abutment U/S Face
Left Abutment U/S Face
Principle Spillway Riser
W Nancy Creek Dr NE
Emergency Concrete Spillway
Right Abutment D/S Face
Toe Drain
Left Abutment D/S Face