

ROY COOPER

Governor

ELIZABETH S. BISER

Secretary

DOUGLAS R. ANSEL

Interim Director



NORTH CAROLINA
Environmental Quality

NOTICE OF INSPECTION

3/11/2024

Watkins Pond Inc. Anthony Bridges
98 Berkshire Ln.
Hampstead NC 28443-0480

RE: Waktins Lake Dam WAKE-076
Wake County, North Carolina
Neuse River Basin

Dear Mr. Bridges,

The Dam Safety Law of 1967, as amended, provides for the certification and inspection of dams in the interest of public health, safety, and welfare, in order to reduce the risk of failure of such dams; to prevent injuries to persons, damage to property; and to insure the maintenance of stream flows.

Our records indicate you are the owner of the referenced dam, which is located off Mitchell Mill Road. This dam was inspected on 1/3/2024 by personnel of the Division of Energy, Mineral, and Land Resources (DEMLR). This inspection revealed the conditions outlined below:

1. Trees and bushes and vegetative debris were observed on the dam. This type of growth and/or debris can cause problems and even failure of the dam by creating holes when trees are uprooted due to wind or ice; by creating habitat for burrowing wildlife; by leaving possible seepage holes when trees die and their roots decay; and by causing erosion of the dam around this growth should the dam overtop during heavy rains. Therefore, we recommend that this type of growth be removed to a distance of at least one-half the maximum dam height beyond the downstream toe and a good grass cover be established and maintained on the dam.

All trees, brush, and woody vegetation must be removed from the slopes and crest of the dam embankments and the emergency spillway areas. All trees and/or brush less than six inches in diameter at breast height may be removed either by excavation or cutting flush to the ground. All trees greater than six inches in diameter at breast height must be completely removed by excavation, including roots, and the resulting excavations properly backfilled



North Carolina Department of Environmental Quality | Division of Energy, Mineral and Land Resources
Raleigh Regional Office | 1628 Mail Service Center | 3800 Barrett Drive | Raleigh, North Carolina 27609
919.791.4200

with select fill. All disturbed areas must be immediately stabilized, in accordance with the approved plans, with appropriate final cover (e.g. grass, riprap, turf reinforcement mats, etc.) adequate to prevent surface erosion. The excavation and backfilling required for tree removal will require engineering plans, prepared by a professional engineer licensed in the State of North Carolina, to be submitted to the North Carolina Dam Safety Program for review and approval before removal may proceed. FEMA 534 "Technical Manual for Dam Owners, Impacts of Plants on Earthen Dams" and USACE EP 1110-2-18 "Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures" should be used as guidance.

2. There was apparent wetness from standing water noted along the toe contact area of the dam. Excessive wetness can cause failure of dam due to internal erosion and/or embankment sliding. You should inspect the seepage periodically and notify this office if there is an increase in the amount of seepage, discoloration of water or embankment sliding occurs.
3. Erosion is occurring in the emergency spillway. This erosion is usually progressive in nature and if allowed to continue may even erode into the dam itself. Therefore, we recommend that the eroded areas be repaired to prevent further erosion.
4. The inlet location of the principal spillway barrel pipe could not be identified at the time of the inspection. Please be advised that deterioration of the barrel pipe may cause failure of the dam resulting from internal erosion of the embankment through deteriorated areas of the pipe. Partial or complete blockage of the outlet pipe will reduce the capacity of the primary spillway to carry water which increases the likelihood of a dam overtopping failure. Any repairs to the dam, including repair to spillway pipes, must be done under a legally qualified engineer's supervision using a design prepared by that engineer and approved by this Department prior to beginning repair work [NCGS 143-215.27(a)].
5. Seal cracks and joints in the emergency spillway with a continuous water-immersion grade sealant. Monitor the emergency spillway for any unusual conditions and significant deterioration. Professional engineering oversight may be required.
6. There was apparent displacement of the concrete sections in the emergency spillway. These can indicate movement of material or seepage under the concrete sections. Excessive seepage can cause failure of the dam due to internal erosion. You should inspect the seepage periodically and notify this office if there is a significant change in conditions. Assessment of the severity of this condition by a qualified engineer is required. Any repairs undertaken will require prior approval by this Division.

The following items pertinent to maintenance and operation of the dam are also recommended.

1. Maintain a ground cover sufficient to restrain accelerated erosion on all earthen portions of the structure.
2. Periodically remove trees less than about six inches in diameter and thick undergrowth from the slopes and crest of the dam. This will serve to prevent the formation of a root system which might significantly increase seepage through the dam which could ultimately result in failure of the structure; reduce the possibility of damage to the dam due to the uprooting of trees by wind or other natural causes; and facilitate ease of inspection and increase the likelihood of early detection of more serious problems connected with the dam.
3. Periodically remove all trees from the emergency spillway. This will maximize capacity should the emergency spillway become active. Entrapment of debris can impede flow.
4. Periodically check the operation of all drain valve facilities. This will ensure satisfactory operation of the drains should an emergency situation arise.
5. Periodically monitor the subject dam and appurtenant works with respect to elements affecting its safety. This is in light of the legal duties, obligations, and liabilities arising from the ownership and/or operation of a dam.

During this inspection, we also investigated the potential for property damage and loss of life in the event that your dam fails. This investigation determined that failure of your dam could result in severe property damage and/or possible loss of life downstream. Therefore, we are listing your dam in the "High Hazard" category.

Please be advised that though we make every reasonable effort to determine the safety of your dam, our resources limit us to surficial inspection. There is no certainty regarding the internal stability of the dam. Dams, and especially their spillways and conduits, deteriorate with age. Therefore, you are advised to keep a close watch on your dam and to notify us if you detect any changes, especially cracks, ground movements, or changes in seepage rate or color.

Please note that any repair, modification, or permanent breach of your dam will require prior approval from DEMLR under the Dam Safety Law of 1967 (NCGS §143-215.23). Essentially, the Dam Safety Law requires dam owners to submit plans prepared by a legally qualified professional engineer for review and approval by DEMLR. The engineer's design and application submittal must meet the requirements of Title 15A Subchapter 2K of the North Carolina Administrative Code, which sets out minimum design standards for dams under the jurisdiction of the Dam Safety Law to protect the downstream public from the consequences of dam failure.

Tropical weather, as well as intense thunderstorms, have produced flooding in all geographic regions of North Carolina in the last few years. During such events, dams may be at an increased risk of failure that may potentially result in the loss of life or property damage. Documents called Emergency Action Plans (EAPs) have proven to be very useful in facilitating efficient notification

of people downstream of dams. EAPs outline the procedures to be followed when a dam experiences problems due to extreme precipitation, seismic activity, excessive seepage, slides, sinkholes, or other natural hazards that impact dams. The EAP documents the procedures for warning downstream residents and provides guidance regarding when such action may be necessary or prudent. The document may also address other emergency actions, such as lowering of the impoundment, that may be taken to decrease the likelihood of a dam failure or lessen the damage due to a failure should it occur.

As a dam owner you may incur liability for loss of life and downstream property damage if your dam fails. **If one has not already been prepared, it is requested that an EAP be developed for your dam.** If an EAP has been prepared, but not revised within the past four years, it should be updated. You may wish to retain a professional engineer with experience in developing EAPs to prepare one for your dam. Shell EAP documents for small earthen and concrete dams are provided at the Land Quality Section web site referenced below. Small dams are defined by law as those less than 35 feet in height or with total storage less than 750 acre-feet of volume, whichever criteria determines the larger size classification. The shell EAP documents are provided only as a guide and may not address all required information for the conditions pertaining to your dam and the potentially affected area downstream of your dam.

Two copies of the EAP should be submitted to DEMLR at 1612 Mail Service Center, Raleigh, NC 27699, and a copy should be sent to your County's Emergency Management Director. Additional guidance and information can be found at the following website: <https://www.fema.gov/media-library/assets/documents/3357> "FEMA 64 - Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners"

Tropical Storm Season Dam Safety Preparedness Guidance

As a result of previous historic tropical storm activity and severe flooding experienced in North Carolina, we are recommending that dam owners lower normal operating levels (NOL) of their impoundments between June and November. Lowering of operating levels is typically accomplished by operating drain, pump and/or siphon systems. Drawdown rates should not exceed one (1) vertical foot per day unless otherwise approved by this office and/or the dam's current engineer(s) of record. Your efforts are intended to assist in providing storage capacity as well as additional protection against your dam overtopping. As suggested guidance, we recommend the following schedule of minimum drawdown levels:

By August: NOL lowered by at least one (1) foot

By September: NOL lowered by at least two (2) feet

Notification and coordination efforts should be conducted in advance with all potentially affected upstream and downstream parties. To the maximum extent practical, discharges from separate facilities located on the same flooding source should not be concurrent, but rather staggered, in an effort to minimize potential cumulative downstream impacts. Reservoir releases

		Dam No. WAKE-076	Date 1-3-2024	Page 2
AREA	PROBLEMS	COMMENTS		
ABUTMENT CONTACTS	☐ 1. None ☒ 2. Trees ☒ 3. High bushes ☐ 4. Burrows ☐ 5. Erosion ☐ 6. Livestock damage ☐ 7. Slides ☐ 8. Depressions ☐ 9. Bulges ☐ 10. Wetness	☐ 11. Seepage ☐ 12. Boils ☐ 13. Cracks ☐ 14. Holes ☐ 15. Spalling ☐ 16. Displaced joints ☐ 17. Deteriorated joints ☐ 18. Exposed reinforcement ☐ 19. Undermining ☐ 20. Other	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other 2-3. Trees and high bushes observed.	
PRINCIPAL SPILLWAY	☐ 1. None ☐ 2. No trashguard ☐ 3. Obstructed ☐ 4. Plugged ☐ 5. Rusted ☐ 6. Damaged ☐ 7. Gates leaking ☐ 8. Joints leaking ☐ 9. Cracks ☐ 10. Joint deterioration	☐ 11. Joint displacement ☐ 12. Undermined ☐ 13. Voids ☐ 14. Erosion ☐ 15. Holes ☐ 16. Conduit collapsed ☐ 17. Spalling ☐ 18. Outlet undercutting ☐ 19. Misalignment ☒ 20. Other	TYPE/SIZE: Approximately 24" Corrugated metal pipe 20. Principal spillway appears submerged from emergency spillway water and possibly not utilized. Intake not found.	
EMERGENCY SPILLWAY	☐ 1. None ☐ 2. No ES ☐ 3. Same as PS ☐ 4. Obstructed ☒ 5. Erosion ☒ 6. Displaced rip rap ☐ 7. Sparse rip rap ☐ 8. Joints leaking ☒ 9. Cracks ☐ 10. Joint deterioration	☐ 11. Joint displacement ☐ 12. Undermined ☐ 13. Voids ☐ 14. Holes ☐ 15. Exposed reinforcement ☐ 16. Spalling ☐ 17. Outlet erosion ☐ 18. Misalignment ☐ 19. Inadequate capacity ☐ 20. Other	TYPE/SIZE: Approximately 50' wide concrete slab 5. Downstream section of the slab has eroded. 6. Riprap scattered just past the end of the slab. 9. Possible cracks observed allowing water underneath slab.	
DRAINS / OTHER OUTLETS	☐ 1. None ☐ 2. No bottom drain ☐ 3. Bottom drain inoperable ☐ 4. Subsurface drain dry ☐ 5. Subsurface drain muddy flow ☐ 6. Subsurface drain obstructed ☐ 7. No animal guard ☐ 8. Other	TYPE: None observed.		
SKETCHED/COMMENTS: UPDATE: 2/22/2024 SR 2224 was measured to be 8.6' below the top of dam.				

DAM SAFETY INSPECTION REPORT

Name Watkins Lake Dam		County Wake	No. 076	Inspected By R. Powe	Date 1/3/2024
Owner Watkins Pond Inc. Anthony Bridges			Address 98 Berkshire Ln. Hampstead NC 28443-0480		Phone No. 999-999-9999
Type of Dam ☒ Embankment ☐ Concrete Gravity ☐ Concrete Arch ☐ Other ☐ Concrete Buttress ☐ Stone Masonry		Type of Inspection ☐ Follow up ☒ Periodic ☐ Initial ☐ Other		Site Conditions ☒ Dry ☐ Snow Cover ☐ Wet ☐ Other	
Hazard Description Road approximately 75' downstream of dam.		Condition Assessment ☐ Satisfactory ☒ Fair ☐ Poor ☐ Unsatisfactory ☐ Not rated		Hazard Class ☐ Low (A) ☐ Intermediate (B) ☒ High (C)	
Remarks SR 2224 currently has high enough traffic count (4400 AADT) to make Watkins Lake Dam high hazard.			Action ☐ None ☒ Maintenance ☐ Monitoring ☐ Minor Repair ☐ Engineering		Recommendations ☒ Inspection letter ☐ Deficiency letter ☐ RE notice ☐ Engineering study ☐ Inspection by RE ☐ Inspection by DSE ☐ Dam safety order ☐ Enforcement ☐ Periodic reinspection ☐ Other reinspection
AREA	PROBLEMS		COMMENTS		
UPSTREAM SLOPE / FACE	☐ 1. None ☐ 11. Displaced rip rap ☒ 2. Trees ☐ 12. Cracks ☒ 3. High bushes ☐ 13. Undermining ☐ 4. Burrows ☐ 14. Holes ☒ 5. Wave erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Sparse rip rap		COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other 2-3. Trees and high bushes observed. 5. Moderate wave erosion observed.		
	☐ 1. None ☐ 11. Cracks ☒ 2. Trees ☐ 12. Spalling ☒ 3. High bushes ☐ 13. Deteriorated joints ☐ 4. Burrows ☐ 14. Displaced joints ☐ 5. Ruts ☐ 15. Exposed reinforcement ☐ 6. Livestock damage ☐ 16. Other ☐ 7. Depressions ☒ 8. Unlevel ☐ 9. Misalignment ☐ 10. Has overtopped		COVER: ☒ Vegetation ☐ Gravel ☐ Concrete ☐ Asphalt ☐ Other 2-3. Trees and high bushes observed. 8. Top of dam appears unlevel.		
DOWNSTREAM SLOPE / FACE	☐ 1. None ☐ 11. Seepage ☒ 2. Trees ☐ 12. Boils ☒ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Wetness		COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other 2-3. Trees and high bushes observed.		
	☐ 1. None ☐ 11. Seepage ☒ 2. Trees ☐ 12. Boils ☒ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Wetness		COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other 2-3. Trees and high bushes observed.		
TOE CONTACT	☐ 1. None ☐ 11. Seepage ☒ 2. Trees ☐ 12. Boils ☒ 3. High bushes ☐ 13. Cracks ☐ 4. Burrows ☐ 14. Holes ☐ 5. Erosion ☐ 15. Spalling ☐ 6. Livestock damage ☐ 16. Displaced joints ☐ 7. Slides ☐ 17. Deteriorated joints ☐ 8. Depressions ☐ 18. Exposed reinforcement ☐ 9. Bulges ☐ 19. Other ☐ 10. Wetness				