NCDENR
North Carolina Department of Environment and Natural Resources
Division of Energy, Mineral and Land Resources
Land Quality Section

Tracy E. Davis, PE, CPM
Director

Pat McCrory, Governor
John E. Skvarla, III, Secretary

NOTICE OF INSPECTION

Date: March 11, 2014

Duke Energy Corporation
Attention: Sean DeNeale
526 South Church Street, ECI-013
Charlotte, North Carolina 28202

RE: Buck Steam Station Basin 2 to Basin 3 Dam
ROWAN-070 – High Hazard Potential
Rowan County

Dear Mr. DeNeale:

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 record indicates that you are the owner and/or responsible for the referenced dam, which is located off Dukeville Road and was inspected on February 26, 2014 by personnel of the Land Quality Section. This inspection revealed the conditions outlined below. Please note that references to "right" and "left" in descriptions of the dam structure are referenced while looking in the downstream direction.

1. Evidence of an animal trail extends from the upstream toe to the downstream toe of the dam. Although no erosion was associated with the path, it is recommended the animals be removed from the dam.

   Additional information on the problems associated with animals on dams can be found in free publications such as FEMA 473, *Impacts of Animals on Earthen Dams*. This document can be viewed online at http://www.damsafety.org/media/Documents/PDF/fema-473.pdf.

2. A buildup of ash-like material was observed above the discharge outlet and below the area of a recent bore. Please monitor this area periodically and contact this office if you notice any changes.

Additionally, the following general maintenance procedures are recommended:

1. Maintain a ground cover sufficient to restrain accelerated erosion on all earthen portions of the structure.

2. Periodically remove undergrowth, woody vegetation, and trees less than six inches in diameter from the slopes and crest of the dam and establish a good grass cover. All limb debris should be removed as well. This will serve to:

   a. prevent the formation of a root system which might significantly increase seepage through the dam which could ultimately result in failure of the structure;

   b. reduce the possibility of damage to the dam due to the uprooting of trees by wind or other natural causes; and

   c. facilitate ease of inspection and increase the likelihood of early detection of more serious problems connected with the dam.

   Additional information on the problems associated with undesirable vegetation on dams can be found in free publications such as FEMA 534, *Impacts of Plants on Earthen Dams*. This document can be viewed online at http://www.damsafety.org/media/Documents/PDF/fema-534.pdf.

3. Periodically check the operation of all drain valve facilities. This will ensure satisfactory operation of the drains should an emergency situation arise.

4. 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 significant environmental damage to the Yadkin River and possible interruption of utility service. Therefore, we are listing your dam in the "High Hazard Potential" Note that all hazard classifications are subject to change due to downstream conditions.

Please be advised that the Division of Energy, Mineral and Land Resources must approve any excavation, modification, or major repair work to this dam before the work commences. Also, note that this dam may not be breached, meaning the dam may not be drained by cutting a notch in the dam, without prior engineered breach plans being submitted to and approved by the Division of Energy, Mineral and Land Resources.

The "Dam Operation Maintenance and Inspection Manual" published by this Division provides inspection guidelines and recommended routine dam maintenance activities for the owner as well as emergency procedures in the event of possible dam failure. This document may be viewed online at http://portal.ncdenr.org/web/lr/dams.

Although every reasonable effort is made to determine the safety of each dam, our resources generally limit us to a surficial inspection of the dam and its appurtenant structures. This letter carries no implication regarding the internal stability of the dam. Dams, and especially their spillways and conduits, deteriorate with age. You are therefore advised to keep a close watch on the dam and notify us if you detect any changes, especially cracks, ground movements, or changes in seepage rate or color.

Please notify this office in writing if you wish to assert that you have no ownership or otherwise are not responsible for maintenance or repairs to the subject dam. If you have an emergency situation during non-office hours, you should notify 911 and the State Emergency Operations Center at 1 (800) 858-0368. They will notify the appropriate personnel in this Office of the situation.

Your cooperation and consideration in maintaining a safe dam is appreciated. Should you have any questions concerning our inspection, please contact me at (704) 663-1699.

Sincerely,

Zahid S. Khan, CPM, CPESC, CPSWQ
Regional Engineer
Land Quality Section

THE/cys

cc: Steven M. McEvoy, PE, State Dam Safety Engineer

DAM SAFETY INSPECTION REPORT

BOV-GHAZALE

NAME	COUNTY	NO.	INSPECTED BY	DATE
BUCK STEAM STATION BASIN 2 TO BASIN 3 DAM	ROWAN	070	EPLIN, KORMANIK	2/26/2014

OWNER	ADDRESS	PHONE
Duke Energy	See file	

TYPE DAM	TYPE INSPECTION	SITE CONDITIONS
☐ Concrete gravity ☐ Concrete arch ☒ Other ☒ Embankment ☐ Concrete buttress ☐ Stone masonry Ash Basin	☐ Initial ☐ Followup ☒ Periodic ☐ Other	☐ Dry ☐ Snowcover ☒ Wet ☐ Other

HAZARD DESCRIPTION	HAZARD CLASS
See file	☐ Low (A) ☐ Intermediate (B) ☒ High (C)

REMARKS
Alex Papp, Sean DeNeal, Opie Wooten, Scott Nordgren, Tom Bailey, Mike Miller, Max Gardner, Henry Butkins in attendance

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 ☐ 2.Trees ☐ 3.High bushes ☐ 4.Burrows ☐ 5.Wave erosion ☐ 6.Livestock damage ☐ 7.Slides ☐ 8.Depressions ☐ 9.Bulges ☐ 10.Sparse rip rap ☐ 11.Displaced rip rap ☐ 12.Cracks ☐ 13.Undermining ☐ 14.Holes ☐ 15.Spalling ☐ 16.Displaced joints ☐ 17.Deteriorated joints ☐ 18.Exposed reinforcement ☒ 19.Other	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Asphalt ☐ Other A) ANIMAL SLIDE
TOP OF DAM	☐ 1.None ☐ 2.Trees ☐ 3.High bushes ☐ 4.Burrows ☐ 5.Ruts ☐ 6.Livestock damage ☐ 7.Depressions ☐ 8.Unlevel ☐ 9.Misalignment ☐ 10.Has overtopped ☐ 11.Cracks ☐ 12.Spalling ☐ 13.Deteriorated joints ☐ 14.Displaced joints ☐ 15.Exposed reinforcement ☒ 16.Other	COVER: ☒ Vegetation ☐ Gravel ☐ Concrete ☐ Asphalt ☐ Other 16) ANIMAL SLIDE
DOWNSTREAM SLOPE / FACE	☐ 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.Other	COVER: ☒ Vegetation ☐ Rip rap ☐ Concrete ☐ Other 19) BARE/RE ESTABLISHMENT OF VEGETATION IN PROGRESS DUE TO EQUIPMENT DAMAGE FROM BORE 19) ANIMAL SLIDE
TOE CONTACT	☐ 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 20) ABOVE DISCHARGE PIPE 4-5 INCHES BUILDUP OF ASH-LIKE MATERIAL THAT MAY HAVE ORIGINATED BELOW THE RIP-RAP OPIE STATED A BORE WAS PERFORMED IN THE AREA AND THE MATERIAL MAY BE BORING CUTTINGS

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
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 collasped ☐ 17.Spalling ☐ 18.Outlet undercutting ☐ 19.Misalignment ☐ 20.Other	TYPE/SIZE: 11'x11' BOX RISER W/ 42" RCP BARREL
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.Undermining ☐ 13.Voids ☐ 14.Holes ☐ 15.Exposed reinforcement ☐ 16.Spalling ☐ 17.Outlet erosion ☐ 18.Misalignment ☐ 19.Inadequate capacity ☐ 20.Other	TYPE/SIZE: SAME AS PSPWAY
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: N/A

SKETCHES/COMMENTS