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DUKE POWER COMPANY

POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

August 11, 1980

TELEPHONE: AREA 704
373-4083

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. B. J. Youngblood, Chief
Licensing Projects Branch No. 1

Re: McGuire Nuclear Station
Units 1 and 2
Docket Nos. 50-369, 50-370

Dear Mr. Denton:

Attached is Duke Power Company's response to the hydrologic engineering questions relating to Executive Order 11988, Floodplain Management. If there are questions concerning these responses, please advise.

Very truly yours,

William O. Parker, Jr.

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Attachment

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SEND DRAWINGS to:
TERA (RETURN to REG FILES after filming)

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ATTACHMENT 1
MCGUIRE NUCLEAR STATION

Response to Hydrologic Engineering Questions
Relating to E. O. 11988 Floodplain Management

General

There are three water bodies within or adjacent to the plant site. Lake Norman is by far the largest of these water bodies and borders a large portion of the site boundary to the north (Reference McGuire FSAR 2.4.1). The other two water bodies are contained within the site boundary. These two are the Standby Nuclear Service Water Pond (SNSWP) and the Waste Water Collection Basin (WWCB). (Reference McGuire FSAR Appendix 2G and McGuire ER Section 3.6.3.2.)

1. Provide descriptions of the floodplains of all water bodies, including intermittant water courses; within or adjacent to the site. On a suitable scale map provide delineations of those areas that will be flooded during the one-percent chance flood in the absence of plant effects (i.e., pre-construction floodplain).

   Response:

   The attached Duke drawing, MC-1019-1, depicts site topography prior to the start of earthwork. Note the elevation 775 contour that borders the site boundary along Lake Norman. The 100-year flood elevation for Lake Norman is cited as elevation 760.0 in the McGuire FSAR, page 2.4.9a. (The 760.0 elevation is also the full pond elevation. The 100-year flood would not increase this elevation since Cowans Ford has the capacity to pass the total 100-year flood flow.) From the above, it is concluded that the McGuire Station is not located in the 100-year floodplain of Lake Norman, and thus, has no impact on that floodplain.

   The SNSWP and WWCB are sited in tandem on a single intermittant stream that discharges to the Catawba River below the Cowans Ford Dam. McGuire drawing MC-1019-1 shows the dams of these two water bodies superimposed on the pre-construction topography of the site.

   Prior to construction, only natural ground cover existed in the 100-year floodplain depicted in black on MC-1019-1.

2. Provide details of the methods used to determine the floodplains in response to 1 above. Include your assumptions of and bases for the pertinent parameters used in the computation of the one-percent flood flow and water elevation. If studies approved by Flood Insurance Administration (FIA), Housing and Urban Development (HUD) or the Corps of Engineers are available for the site or adjoining area, the details of analyses need not be supplied. You can instead provide the reports from which you obtained the floodplain information.

Response:

The small on-site creek used for the SNSWP and WWCB is ungaged. Thus, sufficient flow records for a detailed frequency analysis are unavailable. However, the 100-year flood elevations were determined by the methods described in "A Technique for Estimating Heights Reached by the 100-year Flood on Unregulated, Nontidal Streams in North Carolina," by R. W. Coble, USGS, Water Resources Investigations 79-69, July, 1979 (copy attached).

As described in the above source, page 4, the flood height (h_{100}) for the 100-year flood, in feet, can be approximated for this area by the formula $h_{100} = 4.86^{0.24}$, where A is the drainage area in square miles. Using a drainage area of .267 square miles for the SNSWP and .423 square miles for the WWCB, the 100-year flood heights, above normal water elevations, are 3.5 and 4.0 feet at the SNSWP dam and WWCB dam, respectively. The delineation of the flood prone areas shown on MC-1019-1 in black was done following the procedure outlined in the above reference on pages 11-14.

3. Identify, locate on a map, and describe all structures and topographic alterations in the floodplains.

Response:

The SNSWP dam and the WWCB dam, and associated intake and discharge structures are located in and around the 100-year floodplain of the on-site intermittant stream. Details of the location of the dams and appurtenant structures are found on MC-1019-1, MC-1002-1 (both attached), and McGuire FSAR Figure 2G-1.

The plant intake structure, an unremoved portion of a rock cofferdam used for dewatering the intake structure area, discharge structure, and discharge canal, border the 100-year floodplain of the Catawba River. Their location and details are described in McGuire FSAR Section 2.4.8.1, and ER Sections 3.3 and 3.4.

4. Discuss the hydrologic effects of all items identified in 3 above. Discuss the potential for altered flood flows and levels, both upstream and downstream. Include the potential effect of debris accumulating on the plant structures. Additionally, discuss the effects of debris generated from the site on downstream facilities.

Response:

The effect of the SNSWP and WWCB in 3 is to inundate a portion of the 100-year floodplain of the on-site stream. Flood flows upstream of these obstructions will be altered by being retained in the two ponds. Downstream flood flows will be slightly reduced due to the upstream storage and control.

The site will be maintained to reduce the possibility of debris entering the ponds. However, trash bars are installed at the discharge structures to remove debris for collection and proper disposal.

The intake and discharge structures, canals, and dikes have been properly

designed for flooding conditions. Due to the insignificant effect on the Lake Norman water level from the 100-year flood, and due to the relative insignificant size of the alterations verses the floodplain area affected, these instructions will not effect upstream or downstream flood flows. No debris will be generated by these structures to pass on downstream. Each structure is designed to properly withstand the effects of debris accumulation. Accumulated debris will be collected for proper disposal.

5. Provide the details of your analysis used in response to 4 above. The level of detail is similar to that identified in item 2 above.

   Response:

   Detail of the analysis for 4 is provided with the answer and in the appropriate sections of the McGuire FSAR and ER referenced under General and in the answer to Question 3.