

ATTACHMENTS

Attachment E

Letter from Mary Santini, Duke Energy
to
Dr. Steven Cline, NC Dept. of Health and Human Services
requesting information on assessment of public health impacts from thermophillic
organisms from McGuire operation
dated February 10, 2000.



Duke Power Company
Group Environment, Health & Safety
13339 Hagers Ferry Road
Huntersville, NC 28078-7929

February 16, 2000

Dr. Steven Cline
Director
Medical Evaluation & Risk Assessment
Occupational & Environmental Epidemiology
Dept. of Health & Human Services
P.O. Box 29601
Raleigh, NC 27626-0601

Subject: McGuire Nuclear Station
Environmental Report – Operating License Renewal
Thermophilic Organisms

Dear Dr. Cline:

Duke Power Company is preparing an application to the US Nuclear Regulatory Commission (USNRC) to renew the operating licenses for McGuire Nuclear Station. McGuire Nuclear Station is a two-unit plant, located in northwestern Mecklenburg County, approximately 17 miles north-northwest of Charlotte, NC.

McGuire Unit 1 became operational in 1981, and Unit 2 became operational in 1984. The current NRC licenses expire in 2021 (Unit 1) and 2023 (Unit 2). The extended licenses would be for a 20 year period beyond the current license expiration dates. The expiration dates for the extended licenses will depend on the date of the USNRC decision on the license application.

The USNRC requires that an applicant assess certain site-specific environmental issues related to the continued operation of the plant. Among the issues to be evaluated is the impact of thermophilic organisms on public health. Specifically, 10 CFR 51.53(c)(3)(ii)(G) requires that:

If the applicant's plant uses a cooling pond, lake, or canal or discharges into a river having an annual average flow rate of less than 3.15×10^{12} ft³/year (9×10^{10} m³/year), an assessment of the impact of the proposed action on public health from thermophilic organisms in the affected water must be provided.

As part of this evaluation the NRC suggests that the applicant consult with the state agency responsible for environmental health as to whether there is a concern about the potential existence and concentration of *Naegleria fowleri* in the receiving waters for the plant cooling water discharge.

To facilitate your review of this issue, I have included copies of portions of NUREG-1437 Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS). This document was prepared by the NRC to evaluate the impact of environmental issues related to license renewal of nuclear plants and to determine which environmental issues can be evaluated generically and which issues require plant specific evaluation. The Executive Summary and Chapter 1 provide a description of the evaluation process used in the GEIS. GEIS Section 4.3.6 contains an evaluation of the impact of microorganisms on human health. Appendix D to the GEIS provides background information used in the GEIS evaluation. Copies of these sections are included as Attachment 1.

McGuire Nuclear Station uses Lake Norman as a source for condenser cooling water. The heated effluent from the condenser discharge enters Lake Norman through a discharge canal. This canal is 0.6 mile (1 km) long with an average depth of 40-ft (12.2 m). A sketch of the cooling canal area is included as Attachment 2.

The heated effluent mixes initially in the canal with surface waters of the main lake before stabilizing vertically and spreading over the lake surface, ultimately dissipating its heat to the atmosphere. In 1997, the average monthly discharge water temperature ranged from 19.4°C (67.0°F) in February to 36.3°C (97.4°F) in August. The intake water temperature can range from approximately from 5°C in the winter to 30°C in the summer. The highest monthly average temperature change from the station intake to the discharge canal between 1981 to 1984 was 7.1°C (12.8°F) and the average flow is approximately 1873 cfs. The NPDES Permit for McGuire Nuclear Station (NC0024392) lists a 95°F monthly average discharge temperature limit for October through June and a 99°F limit for July through September.

No swimming or boating is allowed in the canal, although fishing is permitted from its banks. Boating, fishing, and water contact activities take place at the confluence of the canal and the lake. The closest privately owned dock is <0.25 mile away. Duke Power Company has never performed a study of *N. fowleri* or other pathogenic organisms in the discharge canal primarily because no health concerns have been expressed over the years of the plant's operation.

Duke Power requests that you review the attached information and respond with your comments on public health concerns you may have regarding the potential presence of *N. fowleri* and other thermophilic organisms in McGuire's discharge canal.

Please feel free to contact me at 704-875-5346 or mmsantini@duke-energy.com if you have any questions regarding this matter.

Thank you for your timely assistance.

Sincerely,

Mary M. Santini

Mary M. Santini
Microbiologist
Group Environmental Health & Safety

Attachments

cc: William M. Miller, GEH&S, Environmental Engineering
Gene E. Vaughan, GEH&S, Scientific Services

Attachment F

Letter from Dr. Ricky Langley, NC Dept. of Health and Human Services
providing response to request for evaluation of risk from thermophilic organisms
dated June 12, 2000



North Carolina
 Department of Health and Human Services
 Division of Public Health
 1912 Mail Service Center ■ Raleigh, North Carolina 27699-1912
 2728 Capital Boulevard ■ (919) 733-3421 ■ Courier 56-32-00
 Ann F. Wolfe, M.D., M.P.H., Director

June 12, 2000

Ms. Mary Santini
 Group Environmental Health & Safety
 Duke Power Company
 1339 Hagers Ferry Road (MG03A3)
 Huntersville, North Carolina 28078-7929

Dear Ms. Santini:

Enclosed are examples of theoretical risk assessments for *Naegleria fowleri* from different areas of the United States and utilizing different methodologies. Since the presence or absence of *N. fowleri* in Lake Norman is not known, a site-specific risk assessment is not possible at this time. As noted in a letter to Dr. Steve Cline on February 16, 2000, the US Nuclear Regulatory Commission (NRC) requires that an applicant assess certain site-specific environmental issues including the impact of thermophilic organisms (*Naegleria fowleri*) on public health. The USNRC suggest that the applicant consult with state agencies as to whether there is a concern about the potential existence and concentration of *Naegleria fowleri* in the receiving waters for the plant cooling water discharge.

Based on discussions with the Centers for Disease Control and Prevention (CDC) that only a small percentage of cases of amebic meningoencephalitis have been associated with thermally enhanced waters, the rarity of the disease given the millions of swimming events in warm fresh water bodies in the United States, the low theoretical risk as shown in the attached report, and the lack of "action levels", the North Carolina Department of Health and Human Services (NCDHHS) feels the risk to individuals utilizing Lake Norman for recreational activities is extremely low. Sampling is not recommended by the NCDHHS at this time for *Naegleria*. In the future, if a regulatory agency requires a site-specific risk assessment, then the actual concentration of this organism in Lake Norman would need to be determined in order to do a risk assessment for Lake Norman. Additionally, an updated estimate of the number of individuals using Lake Norman for recreational purposes (swimming, diving, and skiing) should be determined so a risk estimate based on the exposed population can be calculated. If sampling is undertaken, the Centers for Disease Control and Prevention recommend sampling for *Naegleria fowleri* 3-4 times during the first summer. If no organisms are found, then sampling 1-2 times a summer for the next two years would be recommended.

If Duke Power Company decides on sampling based upon requirements or recommendations from other agencies, the North Carolina Division of Public Health would be glad to assist you in performing an actual risk assessment for Lake Norman once the sampling and population estimates are completed. However, if there is a case of amebic meningoencephalitis associated with Lake Norman, the NCDHHS Division of Public Health would conduct an investigation, and at that time, determine if sampling for this organism would be indicated to protect the public's health. If you have additional questions, please contact me at (919) 715-6428.

Sincerely,

Ricky Langley, MD, MPH
 Medical Evaluation and Risk Assessment Unit
 Occupational and Environmental Epidemiology Branch

RL:mbf

Attachment

- c: Dr. Steve Cline, DDS MPH
- Dr. Bill Tynan, MD MPH
- Bill Pate, MSPH, CIH
- Dr. Newt McCormack, MD MPH



Theoretical Risk Assessment of *Naegleria fowleri* Induced Meningoencephalitis Utilizing Various Methodologies

Duke Power Company has asked the North Carolina Department of Health and Human Services to comment on the public health concerns regarding the potential presence of *Naegleria fowleri* and other thermophilic organisms in the portion of Lake Norman affected by McGuire nuclear plant's discharge canal. As part of a renewal of its operating license, the US Nuclear Regulatory Commission requires that an applicant (Duke Power in this case) assess certain site-specific environmental issues related to the continuing operation of the plant. As part of this evaluation, the NRC suggest that an applicant consult with state agencies responsible for environmental health as to whether there is a concern about the potential existence of *N. fowleri* in the receiving waters for the plant's cooling water discharge. (1)

The McGuire Nuclear Station Unit 1 became operational in 1981 and Unit 2 became operational in 1984. The McGuire nuclear plant uses Lake Norman as a source for condenser cooling water. The heated effluent from the condenser discharge enters Lake Norman through a discharge canal. The canal is 0.6 miles long with an average depth of 40 feet. The heated effluent mixes initially in the canal with surface waters of the lake before the temperature stabilizes. The average monthly discharge water temperature ranged from 67.0 degree F in February to 97.4 degree F in August 1997. Swimming and boating are not allowed in the canal, although fishing is permitted from its banks. Boating, fishing, and water contact takes place at the confluence of the canal and the lake. The closest privately owned dock is <0.25 miles away. (1)

There are several microorganisms, many pathogenic to humans, whose presence may be enhanced by thermal additions to natural water bodies. Among these are *Salmonella* species, *Aeromonas* species, *Shigella* species, *Pseudomonas* species, thermophilic fungi, *Legionella* species and the free living *Naegleria* species. (2) Pathogenic *Naegleria* have been isolated from discharge waters of nuclear power plant cooling reservoirs. (3) According to Dr. G. S. Visvesvara of the Centers for Disease Control and Prevention (CDC) (personal communication, May 18, 2000), approximately 3-5% of the cases of amebic meningoencephalitis has been associated with thermally enhanced waters.

According to information provided by Mary Santini, microbiologist with Duke Power Company (personal communication, April 2000), numerous data on water quality including dissolved oxygen (DO), water chemistry, phytoplankton, zooplankton, and fisheries monitoring are collected yearly on Lake Norman. However, while coliforms are being monitored for, *Naegleria* sp. are not monitored for in the discharge canal. Because the presence of *Naegleria fowleri* is unknown, a site-specific risk assessment is not possible. However, different methodologies have been utilized to try to derive a theoretical risk and these are discussed below.

Infection of humans with free-living ameba is infrequent, but can be a life-threatening event in both healthy and immunocompromised individuals. Examples of free-living amebic species include *Naegleria*, *Acanthamoeba*, and *Balamuthia*. Free-living ameba can cause three distinct clinical syndromes: primary meningoencephalitis, granulomatous amebic encephalitis, and amebic keratitis. (4) *N. fowleri* is predominantly associated with primary amebic meningoencephalitis.

Naegleria fowleri, also known as *N. aerobia* or *N. invadens*, is the only recognized pathogenic species of *Naegleria*. *N. fowleri* is thermophilic with the trophozoite form growing well at temperatures as high as 113 degrees F. The presence of *N. fowleri* in fresh water is directly related to water temperature. As the water temperature drops during the winter, *Naegleria* trophozoites form cysts that can be isolated from lake bottom sediments.

Primary amebic meningoencephalitis occurs primarily in healthy children and young adults who have recently swam in warm freshwater lakes or ponds. The ameba penetrates the nasal submucosal nervous plexus and the cribriform plate and gain access to the central nervous system. *N. fowleri* produces

a diffuse meningoencephalitis and purulent leptomeningitis with severest involvement of the cortical gray matter. A diffuse or focal myocarditis is often seen in patients with primary meningoencephalitis. (4) Unfortunately, the case mortality rate is over 90% in patients with primary meningoencephalitis.

By immunologic testing, it appears that the majority of young adults, but not infants, have been exposed to *N. fowleri*. Healthy children and young adults are the chief victims of *N. fowleri* infection. The factors that protect most individuals from invasive disease are not known. As of 1997, approximately 179 cases of primary meningoencephalitis have been reported worldwide with 81 cases in the United States. In North Carolina three cases have been reported with none attributed to Lake Norman as the water source. Two were from the same lake and none were associated with thermally enhanced water discharges.

Studies have been done on the risk of developing meningoencephalitis from contact with fresh water. Wellings and colleagues have estimated that there have been a billion exposures of people to *Naegleria* contaminated fresh waters with only seven cases reported in Florida in a 14 -year period of time. (5) This calculates to a risk of 1 case per 142,857,140 exposures over 14 years or 0.007 cases per million exposures or an annual occurrence of 0.5 cases per year in Florida.

One other risk assessment by Martinez (6) is based on an average of two cases per year in the US (1965-1991) and an estimated 60,277,000 swimming exposures (fresh and salt water) annually providing an estimate of 0.033 cases per million persons exposed to recreational waters. Since it was not possible to differentiate salt and fresh water contact, the actual risk from freshwater contact would be higher.

By comparison, Hallenbeck and Brenniman (7) developed a risk estimate for estimating the number of cases and individual risks resulting from primary freshwater contact based on seven cases of primary amebic meningoencephalitis over 14 year exposure period in Florida.

Equation 1: $\text{CASES (annual)} = 3.8 \times 10^{-7} \times N$ N is the number of exposures at a lake during a swimming season and 3.8×10^{-7} is the Wellings's risk factor (cases per exposure)

The total number of cases over some period of time can be calculated as follows

Equation 2: $\text{CASES (total)} = 3.8 \times 10^{-7} \times N \times S$ S is the number of swimming seasons

Equation 3: $\text{Individual risks (annual)} = 3.8 \times 10^{-7} \times E$ E is the number of swimming exposures per person per season

The total individual risk over some period of time can be calculated as

Equation 4: $\text{Individual risk (total)} = 3.8 \times 10^{-7} \times E \times S$

Assuming the mixture of exposure types (swimming, skiing, diving) are the same as in Florida lakes and that the lake ecology is similar to lakes in Florida, a risk estimate using the formulas above can be calculated.

A third risk assessment method has been developed that has used an animal model and extrapolated the risk to humans. (9) Mice were exposed by swimming for five minutes in water seeded with known concentrations of *N. fowleri* in order to establish a dose-response relationship. When actual reported concentrations of *N. fowleri* were used to predict risk to humans using a linear two population model, the risk to humans for a five-minute exposure ranged from 0.0132 cases per billion exposures for 1 pathogenic ameba per 560 liters in thermally polluted and freshwater lakes in Florida, to 2.7 cases per billion exposures 1 pathogenic ameba per 3.4 liters in a fresh water body in Oklahoma, up to 1.48 cases per million exposures when the highest measured concentration of 1 pathogenic ameba per 5 milliliters water

collected from a man-made artificial cooling lake in South Carolina. The concentrations of pathogens used in the table represent concentrations of pathogenic *Naegleria* found in environmental waters at three different sites in the United States.

TABLE 1. Concentrations of Pathogenic Ameba in Environmental Waters

SITE	CONCENTRATION OF AMEBA	CALCULATED HUMAN RISK
South Carolina	1 Pathogen / 5 Milliliters	1.48 cases per million exposures
Okiahoma	1 Pathogen / 3.4 Liters	2.17 cases per billion exposures
Florida	1 Pathogen / 560 Liters	0.0132 cases per billion exposures

Using these three different risk assessments models, the theoretical risk of human meningoencephalitis due to *N. fowleri* occurring would range from 0.007 cases per million exposures (based on Florida exposure data over a 14-year period of time) to 1.48 cases per million exposures (based on extrapolation from mice to humans data and a calculated human risk from a South Carolina thermal input water). Sources of uncertainty in the risk assessments include the concentration of pathogenic amebas in the environment, fraction of the population swimming in the waters, length of swim, relative fraction of amebas that reach the brain after entering the nasal passages in mice and humans, and the immune reaction efficacy in mice and humans. (9)

In contrast, drownings are much more frequent occurrences in North Carolina. Accidental drownings in N.C. for 1994-1998 are shown below: (North Carolina Medical Examiners Office)

Year	Number of drownings
1998	98
1997	88
1996	104
1995	111
1994	97

Based on a 1995 population estimate of 7,186,050 in N.C. and the average number of yearly drownings of 99.6 for 1994-1998, then the risk of drowning is 13.86 per million persons. The North Carolina Division of Parks and Recreation estimated from a 1995 survey that there are an annual average of 19,069,390 swimming exposures in rivers, lakes, and the Atlantic Ocean and 23,173,846 swimming exposures in pools in North Carolina. Based on the total number of exposures, the risk of drowning from all swimming exposures is 2.35 per million swimming exposures.

In conclusion, because it is not known if *Naegleria fowleri* is present in Lake Norman as no one monitors for this organism there, no cases of amebic meningoencephalitis have been reported from Lake Norman, and the theoretical risk of developing amebic meningoencephalitis is extremely low from swimming in Lake Norman, the Department of Health and Human Services does not recommend posting Lake Norman for *Naegleria* at this time. To do a site-specific risk assessment, then the actual concentration of pathogenic *Naegleria* in Lake Norman, especially around the thermal discharge canal, would have to be determined on an ongoing basis. The CDC recommends sampling three to four times the first summer. If no *Naegleria* are found initially, then repeat sampling one to two times the next two summers (personal communication with Dr. Visvesvara, CDC). Additionally, more updated information on the number of visitors to Lake Norman recreational waters is needed. Once the actual concentration of pathogenic ameba is determined, then an actual risk assessment for this body of water can be calculated. In the future, if a case of amebic meningoencephalitis is reported from Lake Norman, the issue of posting will need to be reexamined.

REFERENCES

1. Letter to Dr. Steve Cline from Duke Power Company dated February 16, 2000.
2. NUREG-1437, Vol. 2. Aquatic microorganisms. D3-D7
3. Huizinga H, McLaughlin G. Thermal ecology of *Naegleria fowleri* from a power plant cooling reservoir. *Applied and Environmental Microbiology*, 1990, Vol. 56, p. 2200-05.
4. Singh U, Petri W. Free-living amoebas. In *Principles and Practice of Infectious Diseases*, 4th ed. Mandell G, Douglas R. Bennett J. Churchill Livingstone, New York, 2000, p.2811-17.
5. Wellings F. Amoebic meningoencephalitis. *Journal of the Florida Medical Association*. 1977, Vol. 64, p. 327-8.
6. Martinez A. Free-living amoeba: infection of the central nervous system. *The Mount Sinai Journal of Medicine*. 1993, Vol. 60, p. 271-8
7. Hallenbeck W, Brenniman G. Risk of fatal meningoencephalitis from waterborne *Naegleria fowleri*. *Environmental Management*, 1989, Vol. 13, p. 227-32.
8. Duke Power Company. Lake Norman: 1990 Summary. Maintenance Monitoring Program, McGuire Nuclear Station: NPDES No. NC0024392, June 1991.
9. Davis A. E. *Naegleria fowleri*: Assessing the Risk from a Free-Living Amoeba. Master's Technical Report, University of North Carolina-Chapel Hill. 1997.

Attachment G

Letter from William M. Miller, Duke Energy
to
Jamal Alavai, North Carolina Department of Transportation
Statewide Planning Branch
dated April 26, 2000.



Duke Energy Corporation
526 South Church Street
P.O. Box 1006
Charlotte, NC 28201-1006
Mail Code EC122B

April 26, 2000

Mr. Jamal Alavi
NC Department of Transportation
Statewide Planning Branch
PO Box 25201
Raleigh, NC 27611

**Subject: Duke Energy, McGuire Nuclear Station, Mecklenburg County, NC
Traffic Levels in the Vicinity of McGuire Nuclear Station**

Dear Mr. Alavi:

Duke Energy is preparing an application to extend the operating license for the McGuire Nuclear Station. This facility is located in Mecklenburg County, on highway NC 73, on the southern end of Lake Norman, west of the town of Huntersville, NC. The operating licenses for the McGuire units currently expire in the years 2021 (Unit 1) and 2023 (Unit 2). The extended licenses would be for twenty years past these dates.

Unit	Current License Expiration Date	Proposed License Expiration Date
Unit 1	June 12, 2021	June 12, 2041
Unit 2	March 2, 2023	Depends on the date that the renewed license is issued

As part of preparing this application, Duke Energy is required to assess the impact of the continued operation of the McGuire Station on local transportation. This information will be submitted to the United States Nuclear Regulatory Commission (USNRC) as input to their evaluation of the environmental impacts of the continued operation of the station. Background information on this issue is provided in Attachment 1.

Duke Energy requests that the NC DOT provide information on the existing traffic levels on the highway NC 73 in the vicinity of the McGuire station. We are specifically requesting:

1. Traffic count information on the intersections noted on Figure 1;
2. Traffic count information on the plant entrance roads shown on Figure 2 (if available);
and
3. Information on the level-of-service designation for these roads in the vicinity of the plant.

The specific road intersections where we are requesting this information are:

Lincoln County (See Figure 1)

Intersections of:

NC 73 and NC16 (South of Denver, NC) [Intersection L-1]

NC 73 and SR 1394 (just east of intersection of NC73 and NC 16) [Intersection L-2]

NC 73 and SR 1396 (just east of intersection of NC73 and NC 16) [Intersection L-3]

Mecklenburg County (See Figure 1)

Intersections of:

NC 73 and SR 2145 (Sam Furr Rd) located west of Huntersville, NC
[Intersection M-1]

NC 73 and SR 2136 (slightly west of previous intersection) [Intersection M-2]

Mecklenburg County (See Figure 2)

NC 73 and two entrances to McGuire Nuclear Station (East and West Entrances)

Thank you for your response to this request. If you need additional information, please contact me at 704-373-7900.

Sincerely,



William M. Miller, P.E.
Environmental Engineering

Attachments:

Attachment I

Figure 1 - McGuire Nuclear Station - Intersections Near Plant

Figure 2 - McGuire Nuclear Station - Site Entrances

cc w/att: Bill Cox, Town of Huntersville Planning Department

Background

The Nuclear Regulatory Commission (NRC) license renewal process requires that all applicants shall assess the impact of highway traffic generated by the proposed project on the level of service of local highways during periods of license renewal refurbishment activities and during the term of the renewed license.

In the context of license renewal, refurbishment activities would be defined as major outages for replacement of plant components or construction related activities in excess of the activities associated with normal refueling and plant maintenance outages. Refurbishment activities usually require a large number of additional workers at the site for the term of the activities.

From our ongoing assessments, Duke Energy has not identified any refurbishment activities associated with license renewal that would require major refurbishments or the number of workers above what is normal for current plant outages.

Duke Energy does not anticipate the number of workers on site during normal plant operations (non-outage periods) to increase during the license renewal period. Duke Energy believes, with the influences of the deregulated electric utility business environment, that the number of workers at McGuire will remain the same or slightly decrease.

There currently are approximately 1345 workers at the McGuire site during normal plant operations (non-outage periods). These workers employed at McGuire primarily reside in Mecklenburg County and in adjoining counties. Table 1 provides the employee residence location information for employees employed during normal plant operation.

The McGuire site has taken the following steps to minimize the impacts to local traffic:

- The starting times for workers at the station has been staggered in order to minimize the impact of plant workers entering and leaving the site.
- Workers leaving the site and traveling east on NC 73 are requested to use the east entrance and those workers traveling west on NC 73 are requested to use the west entrance.

Table 1

Location of Residence	Number of Employees
Cabarrus County, NC	93
Catawba County, NC	121
Gaston County, NC	180
Iredell County, NC	155
Lincoln County NC	305
Mecklenburg County, NC	318
Rowan County, NC	63
Other NC Counties	48
South Carolina	41
Other States	21

There is an average of 1015 additional workers on site during plant outage periods. The plant outages last from 30 to 40 days and occur about every 17 to 18 months. Table 2 provides an approximate number of vehicles on site during normal operation and during outage periods.

Table 2 - Number of Vehicles on Site (Approximate)

Period	Normal Plant Operation	Plant Outage
Dayshift Monday – Thursday	1015	1615
Nights Monday – Thursday	250	550
Dayshift Friday – Sunday	170	870
Nightshift Friday – Sunday	100	400

SCALE 1:24 000

1 MILE

0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Lake Norman

McGuire Nuclear Station

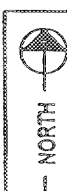
NC 73

East Entrance

NC 73

West Entrance

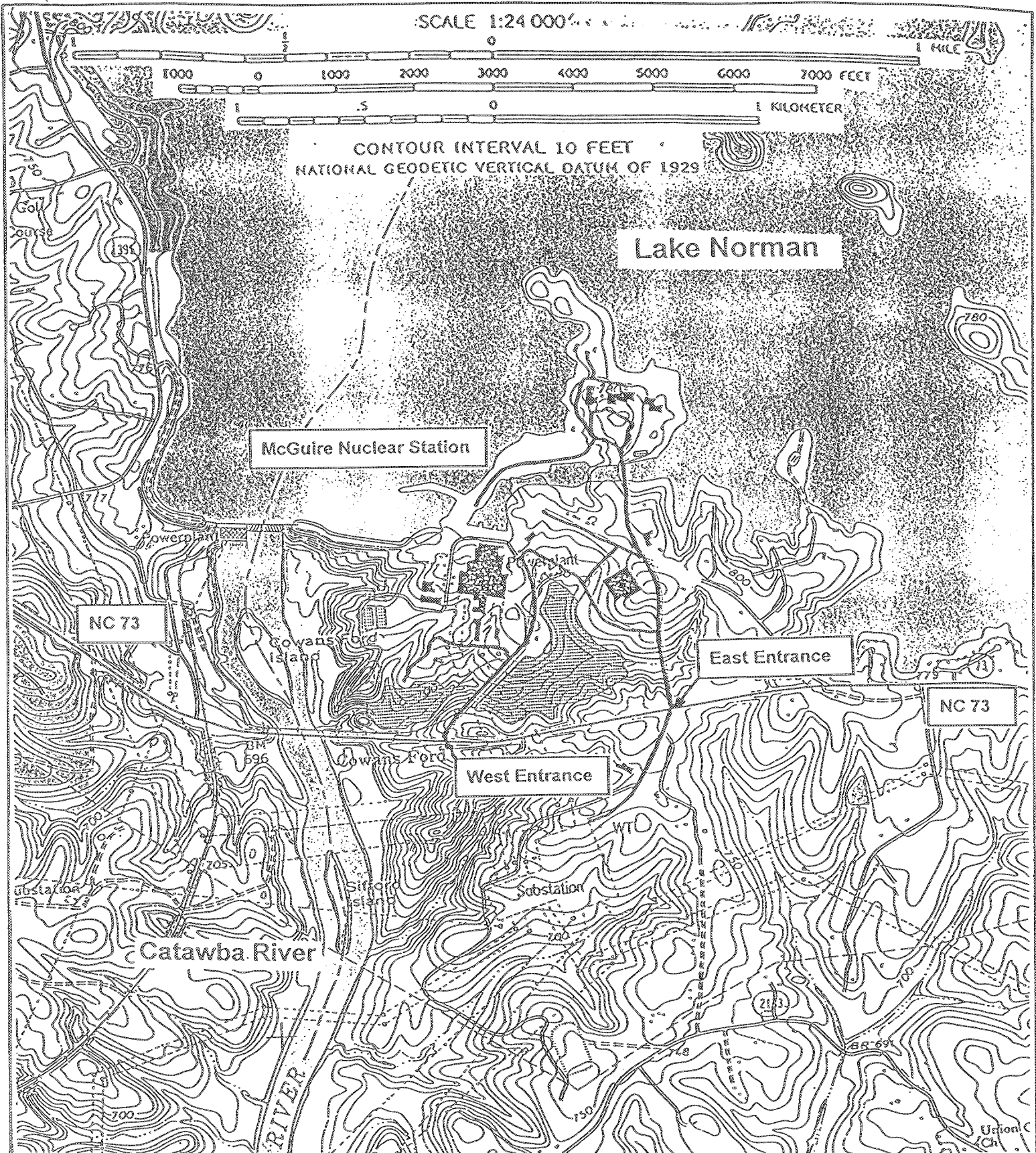
Catawba River



DUKE ENERGY

MCGUIRE NUCLEAR STATION
SITE ENTRANCES

FIGURE 2



Attachment H

Letter from Terry C. Arellano, North Carolina Department of Transportation
to
William M. Miller, Duke Energy
providing traffic data in the vicinity of McGuire
dated, December 27, 2000



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

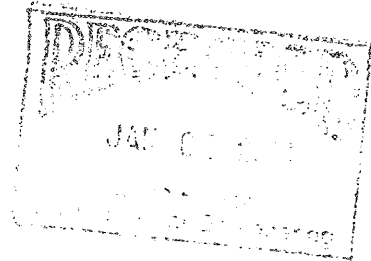
JAMES B. HUNT JR.
GOVERNOR

1554 MAIL SERVICE CENTER, RALEIGH, NC 27699-1554
(919) 733-4705

DAVID MCCOY
SECRETARY

December 27, 2000

Mr. William M. Miller, P.E.
Duke Energy Corporation
P.O. Box 1006
Charlotte, NC 28200-1006
Mail Code EC12ZB



Subject: Traffic Data in the Vicinity of McGuire Nuclear Station, Mecklenburg County

Dear Mr. Miller:

Enclosed please find the available traffic information at the locations requested in your April 26, 2000 memorandum to Mr. Jamal Alavi. The traffic count data and subsequent levels-of-service for the requested locations are presented in Table 1.

For your information, I assumed the Mecklenburg-Union Metropolitan Planning Organization Coordinator's position in May 2000 and Mr. Alavi forwarded your request to me in July 2000.

If you have any questions concerning the information enclosed, you may contact me by telephone (919-715-5737) or by email (arellano@dot.state.nc.us).

Sincerely,

A handwritten signature in black ink that reads "Terry C. Arellano".

Terry C. Arellano, P.E.
Transportation Engineer

Attachment

cc: Mr. Bill Coxe, Town of Huntersville (w/attachment)
Mr. Dan Thomas, P.E., Statewide Planning Branch
Mr. Jamal Alavi, P.E., Statewide Planning Branch

Table 1. Traffic Data in the Vicinity of the McGuire Nuclear Station

Intersection		1999 AADT ¹ (vehicles/day)	Level of Service ²
L-1	NC 73 west of NC 16	9500	B
	NC 73 east of NC 16	15000	D
	NC 16 north of NC 73	15000	D
	NC 16 south of NC 73	1400	B
L-2	NC 73 west of SR 1394	15000	D
	NC 73 east of SR 1394	15000	D
	SR 1394 north of NC 73	4900	B
	SR 1394 south of NC 73	2800	B
L-3	NC 73 west of SR 1396	15000	D
	NC 73 east of SR 1396	15000	D
	SR 1396 south of NC 73	800	B
M-1	NC 73 south of SR 5544	17000	E
	NC 73 east of SR 5544	23000	D
	SR 5544 north of NC 73	8400	B
M-2	NC 73 west of SR 2136	n/a	n/a
	NC 73 east of SR 2136	17000	E
	SR 2136 south of NC 73	6000	B
M-3	NC 73@McGuire Station Entrance	n/a	n/a
M-4	NC 73@McGuire Station Entrance	n/a	n/a

¹ Average Annual Daily Traffic count data compiled by NCDOT Traffic Surveys Unit

² LOS based upon Capacity-LOS relationship as expressed in Table 2

Table 2. Capacity-LOS Relationship

Facility	Conditions	Maximum AADT by Level of Service ¹				
		A	B	C	D	E
NC 73						
• West of NC 16 to SR 5544	2 ln, var. pav. width, no signals	n/a	10000	14400	15600	15600
• From SR 5544 eastward	4 ln, 48' pav. width, no signals	n/a	16500	22875	24600	24600
NC 16	2 ln, 24' pav. width, no signals	n/a	10000	14400	15600	15600
SR 1394	2 ln, 18' pav. width, no signals	n/a	10000	14400	15600	15600
SR 1396	2 ln, 20' pav. width, no signals	n/a	10000	14400	15600	15600
SR 2136	2 ln, 24' pav. width, no signals	n/a	10000	14400	15600	15600
SR 5544	2 ln, 24' pav. width, no signals	n/a	10000	14400	15600	15600

¹ Table 5-5, 1998 *Level of Service Handbook*, Florida Department of Transportation

Attachment I

Letter from Jennifer R. Huff, Duke Energy
to
Renee Gledhill-Early, North Carolina State Historic Preservation Office
dated January 26, 2000



Duke Power
526 South Church Street
P.O. Box 1006
Charlotte, NC 28201-1006

January 26, 2000

Ms. Renee Gledhill-Early
North Carolina State Historic Preservation Office
4617 Mail Service Center
Raleigh NC 27699-4617

Subject: McGuire Nuclear Station
License Extension

Dear Ms. Gledhill-Early:

Duke Power is in the process of requesting an extension of the operating license for McGuire Nuclear Station from the Nuclear Regulatory Commission (NRC). As we discussed this morning, we are proposing to continue operation of the facility without any refurbishment activities. The facility itself, constructed over a number of years beginning in 1971, does not meet the criteria for being a Historic Property. There are no known Historic Properties located on the site nor adjacent to the site. I have included a site location map to facilitate your review.

As we discussed, the continued operation of the facility in its current state will not affect Historic Properties. Accordingly, no additional activities will be required in order to comply with Section 106 of the National Historic Preservation Act.

Please contact me by February 21, 2000 if Duke Power needs to take further action in order to comply with Section 106 requirements. I may be reached at the above address or at 704.373.4392.

Thank you for your assistance in this matter.

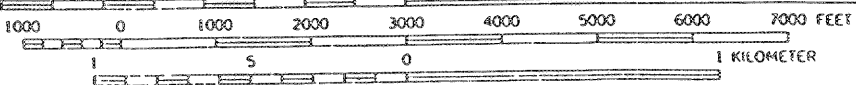
Sincerely:

Jennifer R. Huff
Scientist

Enclosure



SCALE 1:24 000



CONTOUR INTERVAL 10 FEET
 NATIONAL GEODESIC VERTICAL DATUM OF 1973



DUKE POWER

MC GUIRE NUCLEAR STATION
 SITE LOCATION MAP
 USGS LAKE NORMAN SOUTH, NC
 QUADRANGLE 1993

FIGURE: