UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	
	)	
DUKE POWER COMPANY	)	Docket Nos. STN 50-488
	)	STN 50-489
(Perkins Nuclear Station, Units 1, 2 and 3)	)	STN 50-490

APPLICANT'S BRIEF IN OPPOSITION TO EXCEPTIONS

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Introduction

On February 22, 1980, the Atomic Safety and Licensing Board ("Licensing Board"), convened to conduct the instant proceeding, issued a Partial Initial Decision ("PID-3") 1/ which held that there is no alternative site obviously superior to that proposed for the Perkins Nuclear Station ("Perkins"). On August 29, 1980, Mary Apperson Davis and the Yadkin River Committee ("Intervenors") filed exceptions to PID-3; 2/ a supporting brief was filed on October 28, 1980. 3/ Pursuant to 10 CFR §2.762(b), Duke Power Company ("Applicant") files the instant brief in opposition

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1/ See 11 NRC 310. The Licensing Board previously issued two other Partial Initial Decisions in this proceeding: LBP-78-25, 8 NRC 87 (July 14, 1978) and LBP-78-34, 8 NRC 470 (October 27, 1978).

2/ The Atomic Safety and Licensing Appeal Board tolled the time for filing exceptions. See Order (unpublished) of March 4, 1980; Order (unpublished) of May 30, 1980; Memorandum and Order, ALAB-597, 11 NRC 870 (June 20, 1980). By Order (unpublished) of August 14, 1980, the Appeal Board directed that exceptions be filed on or before August 29, 1980.

3/ The time for filing a supporting brief was extended pursuant to Appeal Board Order of September 22, 1980.

to Intervenors' exceptions and urges this Atomic Safety and Licensing Appeal Board ("Appeal Board") to affirm the Licensing Board's decision below. 4/

Statement of the Case

On March 29, 1974, Applicant filed an application with the Atomic Energy Commission 5/ to construct and operate the Perkins facility. Included as part of the application was an Environmental Report ("ER") which was filed pursuant to 10 CFR Part 51. (Applicant Exhibit 1). The ER consisted of, inter alia, detailed information regarding alternate site considerations, including selection of candidate areas, establishment of site criteria and a description of eleven actual site-plant alternatives. (See ER §§9.2 and 9.3). The NRC Staff independently evaluated this information and set forth its results in its Final Environmental Statement ("FES") of October, 1975. (Staff Exhibit 3 at §§9.1.2.2 and 9.1.2.3). Therein, the Staff employed a systematic review process, which utilized Applicant's division of its service

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4/ The time for filing a brief in opposition was extended pursuant to Appeal Board Order. See Order (unpublished) of November 25, 1980.

5/ Pursuant to the Energy Reorganization Act of 1974, 42 U.S.C. 5801, et seq., the Nuclear Regulatory Commission ("NRC") succeeded to the licensing and regulatory functions of the Atomic Energy Commission.

area into four regions corresponding to the four major river basins in the service area. The characteristics of actual specific sites were described and evaluated on the basis of numerous specified criteria and analyses.

As noted, intervention status was accorded Mary Apperson Davis and the Yadkin River Committee. In addition, the State of North Carolina was granted leave to participate as an "interested state" pursuant to 10 CFR §2.715(c). None of these parties raised the issue of alternative sites. Formal hearings were conducted as to contested issues, as well as other matters.

On June 16, 1978, the day proposed findings were due, the NRC Staff moved to reopen the record on the basis of certain Appeal Board decisions which it felt rendered previous Staff consideration of alternative sites deficient. On July 14, 1978, the Licensing Board granted the Staff's motion and reopened the proceeding. Thereafter, the Staff immediately propounded a series of questions to the Applicant concerning its alternative site selection process. Applicant provided detailed responses to these questions. 6/

6/ Applicant's response included a 1973 Site Study which served as the basis for Applicant's selection of the Perkins site and a 1978 Phase I Siting Study which was independent of Perkins inasmuch as it was designed to select the best site alternatives for baseload generation needs in the period after the commercial operation of the Perkins units. (Staff Exhibit 10). The details of these Studies are set forth in PID-3. (See 11 NRC at 312-316).

The Staff independently assessed Applicant's information and conducted its own alternative site review and analysis. (NRC Staff testimony following Tr. 3049; see also PID-3, 11 NRC at 319-327). Formal hearings were conducted with respect to the matter, evidence was presented and full cross-examination of witnesses was afforded to all participating parties. Thereafter the record as to alternative sites was closed, proposed findings were submitted and PID-3 was rendered. As noted, Intervenors took exception to PID-3 and the matter is now before this Appeal Board.

ARGUMENT

While Intervenors have filed an exceedingly large number of exceptions their brief makes it clear that there are only a few major allegations of error. 7/ Intervenors contend that the Licensing Board committed error by not finding and giving controlling weight to allegedly critical differences in water quantity and quality between the Perkins site and Lake Norman. 8/ They also allege that the

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7/ Intervenors have failed to brief many of their exceptions (i.e., Nos. 3, 5, 13, 15, 26, 31, 42-46, 48-49, 51-55, 61-96, 98, 100-102). Pursuant to recognized case law, these exceptions must be viewed as abandoned. See Florida Power & Light Company (St. Lucie Nuclear Power Plant, Unit No. 2), ALAB-435, 6 NRC 541, 542 (1977).

8/ Applicant would note that alternative site analysis is not limited to consideration of water quantity and quality issues as Intervenors suggest. Rather, as will be discussed infra, a broad range of criteria must be considered.

Board committed error by failing to adopt Intervenors' position on these matters and by not following NEPA requirements or taking a hard look at the evidence. The underlying theme in both their exceptions and brief was that the Staff had so failed to fulfill its obligations in performing its alternative site review and analysis that there could be no basis for finding that there was no site obviously superior to Perkins. (See Intervenor's Brief at 21-22).

As will be shown, infra, the Staff complied with all applicable NRC guidance in performing their evaluation, independently analyzed the available data, and reached a reasonable conclusion that a Lake Norman site was not obviously superior to Perkins. (PID-3, 11 NRC at 327). This conclusion is supported by the record of this proceeding. In this regard the water quantity and water quality at the Perkins site and Lake Norman were thoroughly considered. (PID-3, 11 NRC at 316-319, 330-335). Intervenors were unable to seriously challenge the Staff's (or the Applicant's) evidence and thus failed to provide contrary evidence that would require a reversal of the Board's findings. Before discussing the Staff's analysis and the Intervenors' contentions, it is helpful to briefly review the evidentiary and review standards applicable to this proceeding.

A. The Licensing Board And Staff Complied With The Appropriate Standards For An Alternate Site Review

In order to sustain their appeal, Intervenors must show either that the Staff and/or Licensing Board failed to satisfy NEPA requirements regarding alternative site review or that there was insufficient evidence upon which to find that no obviously superior site existed. Intervenors cannot make either showing.

1. The Licensing Board And Staff Correctly Applied The Test Of "Obvious Superiority" Required In This Proceeding

Intervenors argue that the Licensing Board erred in failing to apply the "proper standard of plain or simple superiority mandated by NEPA alternative site consideration." (Intervenors' Brief at 20). As the Appeal Board noted in its Order (unpublished) of May 30, 1980, the Commission has recently affirmed the application of the obviously superior standard in alternate site reviews. See Rochester Gas & Electric Corporation, et al. (Sterling Power Project, Nuclear Unit No. 1), CLI-80-23, 11 NRC 731 (1980). Therein the majority of the Commission rejected Intervenors' argument.

The obviously superior standard was enunciated in Public Service Co. of New Hampshire (Seabrook Station, Units 1 & 2), CLI-77-8, 5 NRC 503, 526-30 (1977). Therein the Commission stated:

> Two significant realities of the NEPA process support the use of the standard of obvious superiority -- the inherent imprecision of cost benefit analysis and the probability that more adverse information has been developed respecting the closely examined proposed site than any alternates. The imprecision springs from the nature of the cost/benefit analysis the Commission must perform. In the nuclear licensing context, the factors to be compared range from broad concern with system planning, safety, engineering, economic and institutional factors to environmental concerns, including ecological, biological, aesthetic, sociological, recreational and so forth. Much of the underlying cost-benefit data is difficult of articulation, much less quantification. Given these difficulties, any evaluation of a particular site must inevitably have a wide margin of uncertainty.
>
> This conclusion appears the stronger when one considers that the Applicant's proposed site comes before the Board after having been intensively studied by the Applicant, Staff and Intervenors for a period of years. The Applicant is required to have produced an inventory of information about the geology, hydrology, meterorology and ecology of the proposed site. Through this required monitoring it is hoped that every major environmental impact that may result from construction of the facility will have been located and the potential problems with the site will have been identified. The alternate sites to which the proposed site is compared have undergone no comparable study. Common sense teaches that the more closely a site is analyzed, the more adverse environmental impacts are likely to be discovered. It would, therefore, be mistaken to conclude that an alternate site which appeared marginally superior to the proposed site, would remain superior upon further investigation, considering all of the possible but unknown disadvantages of the alternate site. Nor does, as one Intervenor has suggested, the solution to this problem lie in requiring more intensive analysis of alternate sites by applicants before they submit their applications. [Id. at 528-529].

Seabrook was affirmed by the First Circuit Court of Appeals in New England Coalition on Nuclear Pollution v. U.S. Nuclear Regulatory Commission, 582 F.2d 87 (1978). There, the Court said:

> Given the necessary imprecision of the cost/benefit analyses involved and the fact that the proposed site will inevitably have been subjected to far closer scrutiny than any alternate site, we cannot say that it is unreasonable to insist on a high degree of assurance that the extreme action of denying an application is appropriate. [Id. at 95].

The Appeal Board discussed the obvious superiority standard in Rochester Gas and Electric Corp. (Sterling Power Project Nuclear Unit No. 1), ALAB-502, 8 NRC 383 (1978). Therein it stated:

> The standard to be used by a Licensing Board in evaluating alternate sites derives from the Commission's Seabrook decision, CLI-77-8, supra, 5 NRC at 522-536. There the Commission described the lengthy and thorough review given proposed sites for nuclear power plants, commencing long prior to the adjudicatory consideration of site-related issues and involving not only the NRC Staff, but, as well, other interested governmental agencies and the general public. It contrasted this extensive review with the necessarily more limited analysis which reasonably can be accorded to possible alternative locations for the reactors--noting that "[c]ommon sense teaches that the more closely a site is analyzed, the more adverse environmental impacts are likely to be discovered." 5 NRC at 529 (fn. omitted). [Id. at 393].

As can be seen, consistent with the obvious superiority standard, is the recognition that the indepth information gathered for a chosen site, such as Perkins, renders an alternate site appraisal of that site conservative in comparison to other alternative sites. In this regard see Seabrook supra, 5 NRC at 511, wherein the Commission stated:

> It is in the nature of these applications that the site chosen by the Applicant receives the most intensive analysis--it is this site which must be certificated by State and EPA authorities and evaluated as safe and environmentally suitable by our own staff.

The obvious superiority standard does not require that alternate site comparisons be based upon detailed information, rather information such as can be gathered on a reconnaissance level is contemplated. See Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 504-505 (1978) wherein the Appeal Board stated:

> We recognize that, as the Commission has explained, alternative sites will not be--and cannot be expected to be--evaluated as rigorously as an Applicant's proposed site.

In sum, due to the "inherent imprecision of cost/benefit analysis and the probability that more adverse information has been developed respecting the closely examined proposed site than any of the alternatives", it is appropriate to utilize the obvious superiority standard in the instant appeal. 5 NRC at 528.

2. The Licensing Board Correctly Applied the "Preponderance Of The Evidence" Standard In This Proceeding

Intervenors contend that the Licensing Board s findings were "not supported by the evidence." (Intervenors' Brief at 22). However, they fail to advance a precise evidentiary standard; rather, they appear to be arguing that anything less than overwhelming evidence on a given point is insufficient. This is clearly not the case.

The Appeal Board articulated the correct evidentiary standard for licensing board proceedings in Consolidated Edison Company of New York, Inc. (Indian Point Station,

Unit No. 2), ALAB-188, 7 AEC 323 (1974) where it said:

> The issues must be resolved on the basis of the evidentiary record developed in the proceeding conducted by the Licensing Board. With regard to whether an applicant has sustained its burden of proof on contested issues, the quantum of proof which must be adduced is a preponderance of the evidence. Whether or not the record evidence on contested issues satisfies the preponderance rule is a judgmental process which is often of the highest order and complexity. [7 AEC at 356-57].

This standard was recently affirmed by the Appeal Board in Commonwealth Edison Company (Zion Station, Units 1 & 2), ALAB-616, ___ NRC ___ (Slip op. October 2, 1980).

Intervenors also attack the Licensing Board for not adequately supporting its findings or decision. (Intervenors' Brief at 9). However, an examination of that decision and of the underlying record clearly reveals that the Board has met the standard for properly explaining its decision that was given by the Appeal Board in Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 & 2), ALAB-422, 6 NRC 33 (1977).

It is thus clear that if the decision was correctly based on a preponderance of the evidence and if that basis was "articulated in reasonable detail," then the decision should be affirmed.

B. The Staff Alternative Site Analysis Was Adequate And In Compliance With Applicable NRC Guidance

As noted, the underlying theme of both Intervenors' brief and exceptions is that the Staff failed to perform an adequate

alternative site analysis. 9/ They contend that Staff failed to secure proper information to perform the analysis, failed to use an adequate methodology to evaluate the information it had, and failed to give proper consideration to certain allegedly critical considerations in that analysis. (Intervenors' Brief at 6).

9/ The Intervenors objected to the evidence offered by the Staff panel on the grounds that none of the witnesses had independent experience as a witness, author, teacher, writer or authority with regard to alternative site analysis and that their only experience was on behalf of and in support of the nuclear industry. (Intervenors' Brief at 6). The Board overruled the objections and Intervenors assign that as error.

The professional qualifications of the Staff panel reflect that such was composed of experts in various areas which are routinely examined in an alternate site review. For example, the witness testifying as to aquatic ecological impacts had a Ph.D in botany with a minor in oceanography and limnology; his list of qualifications reflected experience as a consultant on water quality and as a botany researcher; he had instructed courses in phycology and botany and had published several articles. (See, Professional Qualifications for Dr. Stephen B. Gough following Tr. 3049). Another panel member who assessed potential impacts on terrestrial ecosystems and land uses was a Ph.D ecologist with research experience which included the trophic structure of forest soil invertebrates, decomposition and elemental cycling in a deciduous forest, radionuclide cycling and terrestrial ecosystems and ecology. (See, Professional Qualifications of Dr. James F. McBrayer following Tr. 3049).

With the exception of the NRC environmental project manager, each member of the Staff panel was employed at the Oak Ridge National Laboratory. Intervenors assert that because of this, they were incapable of independent judgment (Tr. 3012). If this were true, then no NRC Staff member could ever prepare the testimony which the

(Footnote continued on next page.)

The record belies these contentions. Not only did the Staff comply with all applicable NRC regulations and guidance, but it performed a fully adequate analysis of the alternative sites issue. 10/ Further, the analysis and

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NRC is required to prepare. Preparing environmental impact statements for the NRC is not "experience that [is] totally on behalf of and in support of the nuclear industry" as Intervenors contend. Since 1974 the licensing and regulatory functions of the old Atomic Energy Commission have been lodged in the NRC, while the Energy Research and Development Administration (now subsumed by the Department of Energy) has been responsible for research and development (42 U.S.C. 5801) thus eliminating possible conflicts in the two roles.

10/ An examination of the Staff alternative site submittals in Rochester Gas & Electric Corporation's Sterling project (Docket No. 50-485, Supplemental Testimony of Martha S. Salk, Dino C. Scaletti and Arvin S. Quest, following Tr. 1296; NRC Staff Supplemental Testimony - Alternate Sites, by Dino C. Scaletti, following Tr. 4048) and Florida Power & Light Company's St. Lucie Unit 2 project (Docket No. 50-389, Supplemental Testimony of John R. Young on Alternative Sites Evaluation following Tr. 5443; Testimony of Frank P. Hungate, Duane H. Fickheisen, and Robert G. Baca following Tr. 5443); reflect that a similar format was utilized. As noted, both the Appeal Board and Commission have affirmed the Staff's alternative site analysis in Sterling (8 NRC 383 (1978) and 11 NRC 731 (1980) respectively); both the Appeal Board and the U.S. Court of Appeals have affirmed St. Lucie's treatment of alternative sites (5 NRC 1038 (1977) and Hodder v. NRC, 13 ERC 1711 (D.C. Cir., 1978) cert. denied 62 L.Ed.2d 37 (1979)).

testimony of Applicant bolsters the Staff's review. 11/

1. The Staff Acquired Sufficient Information To Adequately Analyze The Alternative Sites

Intervenors attempt to discredit the information which Staff used as supposedly self-serving information supplied by the Applicant. They imply that anything less than a detailed de novo examination of possible sites by the Staff will not meet NEPA requirements. (Intervenors' Brief at 8). Applicant submits that sound regulatory policy recognizes the propriety of requesting information of the regulated entity seeking a license, for, in most cases, it is such entity that possesses the necessary baseline data. Further, as the Commission pointed out in Seabrook, supra (5 NRC at 542) the NRC's NEPA analysis "should focus on 'the proposal submitted by private parties'...." 12/ As to NRC practice,

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11/ See, Philadelphia Electric Company (Limerick Generating Station, Units 1 & 2), ALAB-262, 1 NRC 163 (1975) which recognized that evidence presented at a hearing may cause a Licensing Board to arrive at conclusions different from those in an FES, in which event the FES is simply deemed amended pro tanto. 10 CFR §51.52(b)(3). See also Boston Edison Company et al. (Pilgrim Nuclear Generating Station, Unit 2), ALAB-479, 7 NRC 774 (1978). The Courts have approved this practice. See i.e., Citizens For Safe Power v. NRC, 524 F.2d 1291, 1294 n.5 (D.C. Cir. 1975).

12/ In Pilgrim, supra (7 NRC at 779) the Appeal Board citing Seabrook (5 NRC 530, fn. 30), noted that with respect to the Staff's obligation to compare alternatives "[i]t remains the staff's independent duty to gather, review, and analyze detailed data on potential alternative sites." Continuing, the Appeal Board emphasized that NEPA

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see 10 CFR §51.20(a)(3) which calls for Applicant's submittal of information concerning alternatives to the proposed action. See also 10 CFR §51.20(a)(5), (b) and (c) and NRC Regulatory Guides 4.2 and 4.7. In cases involving alternative site reviews, recognition has been given to the fact that Applicant has provided information to the Staff for its review. See the Commission's Memorandum and Order in Seabrook, supra, 5 NRC at 523-24; see also the Appeal Board's decision in Sterling, supra, 8 NRC at 390. In sum, to require the NRC Staff to refrain from seeking appropriate information from an applicant is contrary to common sense, NEPA and established NRC practice.

The Staff used the information provided by Applicant only for the purpose of determining the group of alternative sites to examine (Tr. 3792-94, Tr. 3291) and then used their own criteria in evaluating these sites. (Tr. 3082-83,

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> ...does not specify how investigations into possible alternate courses of action are to be conducted. The breadth of activities covered by NEPA has necessitated judicial acceptance of the idea that the issues, format, length, and detail of such inquiries may legitimately differ from one proposal to another. But whatever form it takes, the investigation must elicit "information sufficient to permit a reasoned choice of alternatives so far as environmental aspects are concerned. [7 NRC at 783].

This point was affirmed in New England Coalition on Nuclear Pollution v. NRC, supra 582 F.2d at 95; See also Greene County Planning Board v. FPC, 559 F.2d 1227, 1234 (2nd Cir., 1976) and 40 CFR §1501.7.

3089, and 3271-77). That the Staff used the information it obtained from the Applicant for the purpose of determining which alternative sites to analyze led the Staff to conclude that it was important to thoroughly analyze Applicant's methodology to determine whether any potentially "obviously superior" site was excluded by this information. (Supplementary NRC Staff Testimony following Tr. 3049 at p. 3). 13/ The Applicant had begun its study and by use of screening methods identified 100 sites within its region of interest for consideration. (PID-3, 11 NRC at 313-14) 14/ Staff took issue with Applicant's exclusion of areas on the basis of population. However, the Staff determined such to be a minor discrepancy and thus concluded that Applicant's

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13/ The propriety of such Staff action is recognized in Tennessee Valley Authority (Phipps Bend Nuclear Plant, Units 1 & 2), LBP-77-60, 6 NRC 647, 658-59 (1977).

14/ Intervenors attack Applicant's 1978 Phase I Study on the grounds that it is biased because it did not compare Perkins to the other sites examined. (Intervenors' Brief at 10). The 1978 Study was designed and undertaken to locate the best potential sites for development after Perkins Nuclear Station, (Supplementary NRC Staff Testimony following Tr. 3049 at p. 6). The Study was intended to find the very best sites by evaluating the total pool of potential sites using certain fixed criteria and rating and weighting scales. The Study was not intended to measure these sites relative to one another, but rather, to assign point values derived from the application of these criteria. The value assigned to each site would have been unchanged no matter what values were derived for other sites.

(footnote continued on next page).

coarse screening methodology was reasonable. (PID-3, 11 NRC at 319-20). Applicant then eliminated 62 sites for various reasons. (PID-3, 11 NRC at 314-15). The Staff raised two exceptions to this phase of Applicant's site screening but concluded that such exceptions did not render Applicant's methodology defective; rather the Staff found that the resulting 38 sites were representative of all the resource areas in the region of interest. (PID-3, 11 NRC at 320-21). The Applicant further narrowed the list of potential sites for reasons such as minimum streamflow criteria and nonduplication of sites located very close to each other. (PID-3, 11

(footnote continued from previous page.)

Since the 1978 Study did not compare sites to each other but rather compared all sites with the same fixed criteria, exclusion of Perkins from this Study did not affect the results in any way. (Applicant's Phase I Siting Study, Staff Exhibit 10; see also PID-3, 11 NRC at 314). The Staff asked Applicant to analyze Perkins using the criteria of the Phase I Study and Applicant complied. Perkins was thus compared to the same fixed criteria as the other sites had been and a value was derived. When this value was measured against the values previously derived for other sites, it was found that Perkins was tied for the highest site value. (Applicant's August 8, 1978 Response, p. 2 and Attachment 2, Staff Exhibit 10; see also PID-3, 11 NRC at 316). Since both Perkins and the other sites were measured against the same fixed criteria, it made no difference when the evaluation of Perkins took place. All that was important was that the same criteria were used. It is thus clear that Intervenors' contention that the Phase I Study was biased is totally without merit and should be dismissed.

NRC at 315-16). 17/ Staff essentially agreed with the criteria used to produce the Applicant's final list of possible alternative sites but added one additional site and disagreed with Applicant's reasons for eliminating

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17/ Intervenors contend that the Staff's procedure of visiting only one site on a body of water (specifically in regard to Lake Norman) violated NEPA requirements. (Intervenors' Brief at 10). In the process of site selection, the Applicant chose what it felt to be the 38 best sites in the Piedmont Carolinas from an initial slate of 100 available sites. Included in those 38 sites were three on Lake Norman, referred to as Lake Norman "D," "E" and "N-18." Additional screening reduced the total number of sites under consideration to 10. One criteria for elimination in the fine screening process was that if two or more sites were located near each other on the same body of water, only the best site was carried forward for further study. The Lake Norman "E" site received the greatest number of Total Site Quality Points and so it was included in the later evaluation while Lake Norman "D" and "N-18" were not. (Applicant's August 31, 1978 Response, pp. 6-25 through 6-28, Staff Exhibit 10). Staff testified that it visited the best site on a given body of water when there was more than one and that it specifically did visit the Lake Norman "E" site. (Tr. 3106). If the best site on a given body of water is not obviously superior to the Perkins site, it would be logically impossible for a lower quality site on that body to be obviously superior to Perkins. Accordingly, a requirement to examine such sites would be a waste of time and resources. NEPA evaluation of alternatives is subject to a "rule of reason" and application of that rule "may well justify exclusion or but limited treatment" of a suggested alternative. Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 & 2), ALAB-422, 6 NRC 33, 100 (1977) (citing CLI-77-8, 5 NRC 503, 540 (1977)). It is clear that the Staff's exclusion of these less well-qualified sites is entirely in keeping with this rule. Thus, Intervenors' argument should be dismissed as contrary to both established precedent and the efficient use of Staff resources.

two of its eight sites. (PID-3, 11 NRC at 321-22). On the basis of the above it is clear that the Staff properly reviewed Applicant's site selection information and that the sites it determined to further examine were representative and did not omit a potentially obviously superior site.

Once these sites were chosen, the Staff independently evaluated each of them. Each site was visited by all of the Staff members involved in the analysis, and a thorough reconnaissance was made. (PID-3, 11 NRC at 323; Tr. 3050-51, 3069-70, 3124 and 3240-42). The Applicant's information on each site was examined and, after its accuracy verified, it was factored into the Staff's analysis. The Staff also examined numerous outside sources of information relevant to an alternative site analysis; the Staff testified that it used a computer data file on land use by county for the Southeastern United States (Tr. 3056), a population data bank (Tr. 3056), information obtained from the State of North Carolina (Tr. 3056-57), information concerning the general limnology of Piedmont streams and reservoirs (Tr. 3052), maps and aerial photographs (Tr. 3057) and streamflow data of the United States Geological Survey. (Tr. 3099-3100). 18/ It is obvious that these sources of information are the

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18/ See, Supplementary NRC Staff Testimony following Tr. 3049 at pp. 12, 21-24 and attached references.

best available and that a contention that Staff should be penalized for using them rather than acquiring all of its information de novo is simply untenable. Indeed, even Intervenors' own witness stated that the information used by Applicant and Staff was very good and that he only disagreed with how it was used, not with its quality. (Tr. 3614-15, 3623, 3631-33, 3635-36).

On the basis of the above it can be seen that the Staff acquired sufficient information to adequately analyze alternative sites.

2. The Staff's Analysis Methodology Fully Complied With All Applicable NRC Guidance

Intervenors contend that the Staff's failure to use a matrix format to analyze the alternative sites issue fatally flaws the Staff's conclusion. (Intervenors' Brief at 2-4). They rely on a matrix format published in the March 1974 issue of Power Engineering at page 56, developed by Mr. David Joplin of Florida Power & Light Company (Tr. 3143-46, 3172) and contend that this (or a matrix format very similar to this) is the acceptable way to perform an alternative site analysis. There is no merit to such a contention. The short answer to this argument is that there was substantial uncontradicted testimony that the format, methodology and analysis used by the Staff was consistent with the current NRC guidance on alternative site evaluation contained in Regulatory Guides 4.2 and 4.7 and the Draft Environmental

Standard Review Plan. (3084-89, 3185, and 3232-34). As noted, this type of format, methodology and analysis has received Appeal Board and judicial approval. 19/ There is simply no requirement that a matrix format be used.

Staff explained that it did not use a matrix format because it considered a discussion of the relevant parameters better than a simple table with numbers (Tr. 3186) and stated that there was no inherent advantage to using a matrix format. (Tr. 3782, 3802-04, and 3809-14). Intervenors' witness, Dr. Lipkin, agreed that there was more than one way to compare sites, (Tr. 3523) and stated that he did not think the NRC had to use the Joplin matrix. (Tr. 3634). Even Mr. Joplin, the author of the matrix format relied on by Intervenors, had cautioned that the numbers and results were to be used only as a general guide and that it is up to management to make the final decision between possible sites. (Tr. 3781).

There was unanimous agreement that alternative site analyses must of necessity be largely subjective and based on judgement. 20/ So postured, it is difficult to see

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19/ See n.10 supra.

20/ Tr. 3090, 3144-45, 3608-16, and 3846-47. The Court in New England Coalition on Nuclear Pollution v. United States Nuclear Regulatory Commission, 582 F.2d 87 (1st Cir. 1978) also recognized that NEPA analyses are necessarily imprecise. Id. at 95.

how putting subjective evaluations into a supposedly objective format converts them into objective evaluations.

Intervenors also assert that the Staff failed to fulfill its NEPA obligations in that Staff's analysis utilized "pass/fail" criteria which rated one site as highly as another if both met the given requirements regardless of how much better one site was in absolute terms. (Intervenors' Brief at 16). This assertion is primarily, if not exclusively, directed to Staff's consideration of the adequacy of makeup water for the cooling towers and the "advantage" the Lake Norman site supposedly should possess due to the greater water volume of that lake in comparison to High Rock Lake. (See Intervenors' Brief at 16-17). The Staff was of the view that virtually all the other factors considered by Staff (i.e., pollution, population density, accessibility, existing and potential recreation uses) were capable of being measured on a continuum. But, water availability or the potential to assure its availability, including consideration of future water needs, was an absolute: either there would be enough water at a potential site or there would not. (Tr. 3110-3112, 3119-3120, 3122-3123, 3146-3149). In this regard the Staff stated:

> ...once a satisfactory arrangement for water makeup has been established which the Staff finds environmentally acceptable, that [sic] other sites are essentially equal in terms of the same water availability and situation. [Tr. 3149].

The advantage excess water might have, if any, would be reflected in environmental impacts such as water quality, effects on biota, etc. Regardless, the Staff testified that it had rated the Lake Norman site superior to the Perkins site in terms of water quantity but had downgraded it for other reasons (Tr. 3348-51, 3765-67) 20a/ and had thus determined that the Lake Norman site was not obviously superior when all factors were considered. (Tr. 3765-67; PID-3, 11 NRC at 327 and Supplementary NRC Staff Testimony following Tr. 3049 at pp. 13-14, and 20-25).

3. Staff Adequately Considered All Relevant Data

Apart from the question of the sufficiency of its methodology, Intervenors contend that Staff failed to consider many important factors in their analysis which they state were included in Intervenors' witness Dr. Lipkin's use of the Joplin matrix and which required a finding of obvious superiority for at least one other site (Intervenors' Brief

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20a/ In terms of land use the Staff stated that the Lake Norman site had a moderate population with business and new homes (i.e., a higher land use value than Perkins) and thus was rated lower (Tr. 3349-50; see also Tr. 3109-10). The Staff stated that the population density, the amount of forest clearing and the acres dedicated to rail access were similar between the two sites (Tr. 3350); the Staff stated that with respect to terrestrial ecology, there was a difference, with the Lake Norman site getting a lower ranking (Tr. 3350-51); with respect to socioeconomic impacts, including aesthetics and recreation, the Staff ranked the Lake Norman site lower (Tr. 3352).

at 6-7 and 14). 21/ The record clearly reveals both that the Staff did consider all the relevant factors and that Dr. Lipkin made numerous very serious errors in his attempt to use the Joplin matrix.

The Staff described the factors which they had considered in some detail (Tr. 3271-77) and stated that they had considered all of the relevant factors addressed by the

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21/ Intervenors contend that it was error for the Licensing Board to admit the Staff's evidence because the Staff failed to consider dollar costs in its analysis of environmental factors. Cost factors were not ignored in the selection of the Perkins site. These factors were examined by the Applicant prior to its decision in siting the plant. The Applicant utilized a mathematical matrix with each criterion it considered being assigned either a cost factor or a numerical rating factor. The criteria assigned a cost factor were totaled to yield a dollar penalty, with a lower dollar penalty indicating a better plant site alternative. (Applicant's Phase-I Siting Study at pp. 6-8, Staff Exhibit 10.)

The Staff did not concentrate heavily on economic costs: environmental factors were considered first. (Tr. 3186). This is consistent with prior NRC policy relating to its mandate under NEPA. NEPA requires a consideration of environmentally preferable alternatives and, if there are any, they are to be implemented if that can be accomplished at a reasonable cost. Consumers Power Co., (Midland Plant, Units 1 and 2) ALAB-458, 7 NRC 155, 162 (1978). The economic aspects are left to the business judgment of the utility companies and to the wisdom of the State regulatory agencies (Id., 162-163). Unless the proposed nuclear plant has environmental disadvantages in comparison to possible alternatives, differences in cost are of little concern in the NRC NEPA review (Id., 162). See also, Rochester Gas and Electric Corporation, et al. (Sterling Power Project, Nuclear Unit No. 1), ALAB-502, 8 NRC 383, 395, n. 25 (1978); Public Service Company of Oklahoma (Black Fox Station, Units 1 & 2), LBP-78-26, 8 NRC 102, 161 (1978).

Joplin matrix. (Tr. 3172-73). Applicant stated that all of the factors mentioned by Dr. Lipkin had been considered in its analysis along with several which were not. (Tr. 3831-35). Thus, both the Applicant in its matrix analysis and Staff in its analysis considered all the relevant factors as required by the NRC. 22/

Dr. Lipkin admitted that he was not well acquainted with the problems of siting a nuclear plant (Tr. 3423, 3429-30) and his testimony concerning use of the Joplin matrix was thoroughly discredited. He admitted unfamiliarity with many, if not all, aspects of the Applicant's operations (Tr. 3540-42), he double-counted several parameters in his matrix (Tr. 3559-71, 3574-79, 3586), he misconstrued the meaning of several data items he used (Tr. 3580-81, 3584-85, 3588-89, 3624-30), he had arbitrarily assigned values to certain parameters (Tr. 3538-39, 3548-49, 3588-89, and 3608-14), and he incorrectly used cost figures as environmental parameters (Tr. 3825-27). In light of all this, it is very difficult to see how Intervenors can assert that Dr. Lipkin's analysis clearly demonstrates the existence of an obviously superior site.

It is thus clear that Staff had the proper information to perform its analysis, used proper methodology, and considered

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22/ See NRC Regulatory Guide 4.2 and the Standard Environmental Review Plan.

all of the relevant factors. There is thus no basis for reversing the Licensing Board's decision on the premise that Staff failed to perform its duties adequately.

C. The Perkins Site Is A Fully Acceptable Site And The Lake Norman Site Is Not Obviously Superior

The question of site analysis has had a long history in this docket. The NRC Staff determined in its FES that there was no obvious superiority in any of the alternate sites and, therefore, did a detailed analysis of the Perkins site. (Tr. 1651; FES §§9.1.2.2 and 9.1.2.3, Staff Exhibit 3). The result of this analysis was a finding that the Perkins site was fully acceptable and would not have unreasonable adverse environmental consequences. 23/ However, Intervenors contend that the combined effect of certain water-related factors such as (1) future water use, (2) level of eutrophication at High Rock Lake, (3) greater water regulation in the Catawba River Basin than in the Yadkin Basin and (4) substantially greater quantity of water at

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23/ See FES, Summary and Conclusions, pp. i-iii. The Licensing Board affirmed this finding in its October 27, 1978 Partial Initial Decision. See 8 NRC at 499 wherein it is stated:

> Based on the entire record, the Board finds that the environmental and economic benefits from the construction of Perkins, Units 1, 2 and 3, will be greater than the environmental and economic costs which will necessarily be incurred by construction and operation of the facilities.

Lake Norman should have compelled the Licensing Board to conclude that a Lake Norman site is clearly superior to the Perkins site. (Intervenors' Brief at 7 and 14). An examination of both the Perkins and Lake Norman sites demonstrates that there is no substance to this claim.

At the outset, it should be noted that when the Staff analyzed the Applicant's site studies, it was demonstrated that approximately 63% of the consideration in weighing various siting factors was directly related to water, water quality and current and projected water use. (Tr. 3372-75). In evaluating potential aquatic impacts, appropriately qualified staff personnel visited the Perkins site and nine other candidate sites capable of supporting a 4,000 MWe nuclear station with cooling towers. (Tr. 3050-51, 3069-70, 3124 and 3240-42; PID-3, 11 NRC at 325). The Staff complied fully with its obligations under NEPA to search for a more environmentally acceptable alternative to the Applicant's proposal and their indepth review and analysis of Applicant's siting studies has not been impeached by the testimony of Intervenors' two witnesses neither of whom has ever sited a power plant and neither of whom had visited any of the candidate sites until after he prepared and submitted his testimony. (Tr. 3390, 3423, 3429-30, 3444, and 3514-16).

1. Future Water Use

The Licensing Board inquired about the FES statement (FES §5.2.1.3) to the effect that future growth in the

Yadkin Basin may lead to water shortages due to increased demand. (Tr. 3739, 3767-78). The Staff responded that hypothetically critical water shortages could develop on any flowing water body if future water needs grow significantly enough. It was noted that the possible water shortage concern was a matter initially raised by the Staff (Tr. 3284-85, 3769, 3773, 3775) and that the North Carolina Utilities Commission and the North Carolina Environmental Management Commission subsequently determined that the potential use of the Yadkin would not be significantly impacted by the operation of Perkins. (See State Exhibits 1 and 2 admitted at Tr. 1455-56). 24/ Applicant took issue with the FES statement and referred to the State's determination that consumption of water by Perkins was consistent with projected future water needs. (Tr. 3739). It was noted that State regulations authorize the State to impose requirements for permits to withdraw water. However, to require such a permit the State must first declare the area a Capacity Use Area. Significantly, after inquiries and exhaustive analysis of projected water uses in the Yadkin

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24/ Applicant submits that state determinations in this regard should be heavily relied upon. See the Appeal Board's decision in Sterling, 8 NRC at 388-89 citing Carolina Power & Light Company (Shearon Harris Nuclear Power Plant, Units 1, 2, 3 and 4), ALAB-490, 8 NRC 234, 241 (1978). It should be noted that Intervenors unsuccessfully contested both state decisions in the courts.

Basin, the State determined that it was unnecessary to declare the Yadkin River Basin a Capacity Use Area. In its determination, the State assumed that the Perkins plant would be constructed at the Perkins site (Tr. 3835-40). It should also be noted that in its Phase I Siting Study, the Applicant had considered the possibility of water shortage by assigning it its highest weighting factor. Additionally, Applicant recognized the potential growth in municipal and industrial water use and examined the percent reduction in streamflow which could result from a Perkins-type plant. (Tr. 3834).

The Staff, making reference to existing and planned facilities, maintained that future water demands on the Catawba River system were similar to that on the Yadkin (Tr. 3778). The Staff stated that it was cognizant of Applicant's treatment of future water use (Tr. 3094-96) and explained to the Board how such was taken into consideration (Tr. 3212-14); and that while it did not perform an actual analysis of future water use, it subjectively considered the above future water use information. (Tr. 3141, 3285).

Although the Licensing Board had found that both the Applicant and the State of North Carolina had made extensive studies of the Yadkin River Basin's ability to meet future demands, it criticized the Staff's approach to this issue in Finding of Fact 47. (PID-3, 11 NRC at 329-30). The

Licensing Board would have apparently preferred that the Staff conduct a totally independent analysis of the future water needs rather than relying upon information developed by the State of North Carolina and the Applicant. However, such criticism seems misplaced. Applicant had stated that:

> New generating stations must be sited consistent with and compatible with existing and future municipal and industrial water uses. This compatibility requirement led to Duke's use of "Reduction in Streamflow" as a major criterion in the evaluation of sites in the Phase I study. As a guideline in the use of this criterion, consumptive water use was limited so the development of a site would cause a "Reduction in Streamflow" no more than 10 percent of the average flow. The 10 percent criterion was used to help determine potential station sizes, particularly for major river sites. (Applicant Response to NRC Request for Additional Information of August 18, 1978 at p. 6-1, Staff Exhibit 10; Tr. 3094-95).

Staff considered this an explanation of Applicant's consideration of future water use (Tr. 3095) and Staff also concluded that Duke's information concerning streamflows in its service area was based on United States Geological Survey figures which Staff considered to be the most reliable information available. (Tr. 3096).

Intervenors' witness, Dr. Medina, was unable to show that future water needs in the Yadkin River Basin would be jeopardized by the operation of the Perkins facility. Relying upon the North Carolina Water Resources Framework Study, developed by the North Carolina Department of Natural and

Economic Resources 25/ he stated that future water needs would grow in the Piedmont Basin and contrasted that statement with the FES (§5.2.1.3, Staff Exhibit 3) language indicating that if future water needs on the Yadkin River grow significantly, critical water shortages could develop due to the consumption by the Perkins Nuclear Station. He suggested that the Lake Norman sites would be better suited for Perkins since the Framework Study indicated that water supply sources in the Catawba River Basin were expected to meet 1990 water demands and that no additional supply sources were planned or needed. (Medina Testimony following Tr. 3436 at p. 6). When questioned, Dr. Medina stated that he did not know the size of the drainage area of the Catawba or Yadkin River Basins (Tr. 3683); that he had not analyzed drainage area population (Tr. 3683); that he did not know the amount of water presently consumed upstream of High Rock Lake Dam, the Cowans Ford Dam or even Lake Wateree (Tr. 3479, 3684); that he did not know the amounts of water projected to be consumed downstream of Lakes Norman and Wateree and Perkins (Tr. 3479-80); and that such factors were important to his analysis (Tr. 3684). He also alleged that interbasin transfer of water

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25/ Due to a limited number of copies, the Framework Study was not introduced into evidence. However, the document was the subject of extensive cross-examination and such is part of the record.

from the Yadkin would be necessary to alleviate shortages projected in counties in the Upper Cape Fear Basin (Medina Testimony following Tr. 3436 at p. 3). However, under cross-examination, he read from pp. 4-7 and 4-8 of the Framework Study, and, based on the information contained therein, he acknowledged that the statement in his testimony should be corrected to read that interbasin transfer of water from the Yadkin "might be necessary." (Tr. 3475). Continuing, he also indicated that the Yadkin was but one of several sources of potential interbasin transfers, not as he had stated, the sole source. (Tr. 3462, 3466-67, 3476). The record also reflects that intervenors had failed to show that interbasin transfer is a reality. Indeed, when asked the direct question, Dr. Medina could only say:

> "As far as I know, I have no knowledge of actual occurrence of these interbasin transfers. I have no knowledge, either, that it is not permissible." (Tr. 3474).

Although he had alleged that the Catawba River Basin was better suited for "wet industries" than the Yadkin Basin, after prolonged questioning he finally admitted that there was a wet industry area on the Yadkin River downstream of Perkins that was much larger than the wet industry area projected for the Catawba River downstream of Lake Norman. (Tr. 3480-84, 3683-91). This admission reflects that the expert body within the State with respect to water usage, has determined that, with Perkins in operation, there will be more water in the Yadkin downstream of Perkins which can be used for further industrial development

than there will be in the Catawba downstream of Lake Norman.

On the basis of the above, it can be seen that future water use was adequately considered and such does not militate against the Perkins site so as to render other sites obviously superior.

2. Eutrophication

Intervenors have complained that the Licensing Board did not properly consider the current level of eutrophication at High Rock Lake, 26/ and the possible exacerbation of this situation by the discharge of additional nutrients into the Yadkin River. (Intervenors' Brief at 7 and 15).

The eutrophication issue was extensively discussed by all of the parties. (Tr. 3277-81, 3360-39, 3360-61, 3371-72, 3525-26, 3708-14, and 3819). The Licensing Board considered the effect that operation of the Perkins facility would have upon High Rock Lake in its previous Partial Initial Decision and had found that such operation would not significantly add to the eutrophication of that body of water. 27/ (Tr. 3330-31). Thus, although

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26/ Intervenors would have this Board believe that High Rock Lake is "only a few miles" from Perkins. (Intervenors' Brief at 15). The FES lists the distance as 16 river miles (FES 2-15, Staff Exhibit 3).

27/ See 8 NRC at 491-92 wherein it is stated:

> The Board finds that the Testimony of Staff and Applicant biologists is probitive and convincing; that the operation of Perkins will not significantly add to the eutrophication of High Rock Lake or appreciably add to the fish kill.

Staff acknowledged that High Rock Lake was more euthrophic than Lake Norman (Tr. 3330), this was not a primary consideration in its analysis.

Intervenors asserted that phosphorous loading was a prime cause of eutrophication and that phosphorus discharged from Perkins would contribute to the eutrophication. (Tr. 3321, 3331, 3336-38). The Staff acknowledged that High Rock Lake is more eutrophic than Lake Norman (Tr. 3330), but stated that such was not a primary consideration because the FES established that there would be no significant impacts on eutrophication from the operation of Perkins. (Tr. 3330-31). Referring to FES Table 3.6, the Staff demonstrated that phosphorus would not be discharged from Perkins once actual operation commenced. (Tr. 3371-72). With respect to eutrophication, Intervenors made reference to an EPA study indicating that High Rock Lake is more eutrophic than Lake Norman. However, it was pointed out that the model relied upon in the EPA study does not reflect the true situation that occurs in High Rock Lake, namely, its short retention time (i.e., a high flushing rate). (Tr. 3332-36).

The Board questioned the adequacy of the Staff's review (which did not include the EPA report although Staff is familiar with the EPA studies on eutrophication), in light of the Board's finding in the October 27, 1978 Partial Initial Decision that Perkins would have an impact on the

assimilative capacity of the Yadkin River during low flows (Tr. 3224-26, 3675). In this regard, the Staff stated that Perkins' impact on the Yadkin would be minimal due to the downstream control of water releases, as well as the doubling of the average flow within a relatively short distance from the Perkins discharge point (Tr. 3774-75, 3777).

In terms of aquatic ecology, the Staff maintained that the Lake Norman site was not obviously superior to Perkins. It was noted that the water quality may be somewhat better than the Yadkin at the Perkins site (Tr. 3126, 3344) and, therefore, impact on the aquatic environment may be greater at Lake Norman. (Tr. 3192, 3218-19).

With respect to water quality, the Staff stated that it had made use of the United States Geological Survey STORET data base which contains water quality and stream flow information for streams in the Piedmont Carolinas (Tr. 3099-3100) and that it subjectively considered future water quality and its potential impact on ecosystems (Tr. 3129-36). The Staff affirmed that water quality at Perkins was a major consideration (Tr. 3129); that water quality was a factor in contrasting Perkins with Lake Norman because water quality determined the important matters of diversity and abund nce

of aquatic biota (Tr. 3129); and that there are no significant impacts at the Perkins site or in High Rock Lake in terms of aquatic ecology (Tr. 3181, 3189-91, 3215-16).

The Staff also stated that based on reconnaissance level information, it reviewed aquatic ecology and maintained that the Lake Norman site was not obviously superior to Perkins (Tr. 3344-48).

In sum, the Perkins site has been shown to be an acceptable location for the proposed facility in terms of its potential impacts on the aquatic ecology.

3. Water Regulation

Intervenors allege that the greater regulation of the Catawba renders Lake Norman sites obviously superior to Perkins. (Intervenors' Brief at 7, 14 and 22). The Licensing Board also inquired as to whether a Lake Norman site would enjoy an environmental advantage over Perkins as a result of upstream regulation of flows. (Tr. 3671-72). The Staff acknowledged that the Catawba was regulated (Tr. 3110); however, the Staff noted that the planned Carter Creek Reservoir would have the effect of similarly regulating the Yadkin during low flow periods (Tr. 3224-25). Staff had also noted that additional stream inflows and the control of the river by dams would cause the downstream impacts of Perkins to approach zero. (Tr. 3774-75). Even the Intervenors' expert witness admitted that there was

downstream control on the Yadkin River such that the operation of Perkins would not have a great effect downstream (Tr. 3720-28).

The Board inquired as to the possible environmental impact at Perkins when flow was just above the 1,000 cfs mark. (Tr. 3673-74). Applicant acknowledged that there will be some impact at that level, but that in order to properly assess the matter, extensive studies have been undertaken, which studies are a part of this record and which show that any impact will be minimal. (Tr. 3674). Applicant further stated that 1,000 cfs stream flows are exceeded 97% of the time; that 1,100 cfs stream flows are exceeded 96.2% of the time, which means the Board's concern is directed to a situation which will occur 8/10ths of 1% of the time (Tr. 3735). It is projected that Perkins would evaporate 2.4% of the average streamflow of the Yadkin, while if the facility were located on the Catawba, at Lake Norman, it would evaporate 2.9% of the average streamflow. (Tr. 3736).

Intervenors have argued that the Carter Creek Reservoir would provide only limited water regulation, whereas the Catawba River contains more than a half million acre feet of regulated water. It is not denied by the Applicant that there is more regulation on the Catawba than on the Yadkin.

(Tr. 3672-73). However, this fact does not have the effect on the alternative site analysis that Intervenors suggest. The more important factor is that Perkins' impact downstream will be minimal. (Tr. 3672-73, 3774-75). Thus, it matters little whether the minimal impact is accomplished with massive water regulation or limited water regulation. Thus, the Carter Creek Reservoir will mitigate the minimal impacts of concern to the Intervenors and any other impacts are not sufficient to render the Perkins site unacceptable in comparison with other sites.

4. Water Availability

Intervenors allege that the size of Lake Norman renders sites located thereon superior to Perkins and the Staff and Licensing Board's failure to recognize this fact renders such in error. (Intervenors' Brief at 11, 14, 17-18). The Licensing Board specifically considered issues related to water availability. (PID-3, 11 NRC at 318-19 and 332-35, see also pp. 20-21 supra). These findings show that the operation of Perkins would result in the evaporation of a smaller percentage of the streamflow of the Yadkin than of the Catawba, that the average flow of the Catawba was less than that of the Yadkin, that further siting on Lake Norman should await the outcome of planned studies evaluating the interaction

of presently existing facilities thereon, 28/ and that the construction and operation of Perkins on the Yadkin would be relatively less stressful to the Yadkin River Basin than would construction on Lake Norman be to the Catawba River Basin. 29/ Intervenors' unsupported statement that the size alone

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28/ Intervenors take exception to Applicant's postponement of the use of the Ryan-Harleman model to determine if there would be adequate heat dissipation on Lake Norman for additional generating capacity. (Tr. 3701). (Intervenors' Brief at 11-12). Intervenors allege that there was no reason to postpone this study.

Applicant has a 2,000 megawatt steam station (the Marshall plant) on Lake Norman and is in the process of adding a second station, the McGuire Nuclear Plant, with 2,360 megawatts. A physical model and the Ryan-Harleman computer model have been utilized to determine the impact of station operation on lake water temperatures. A decision was made to stop the study after results made it obvious that additional heat input would increase the discharge temperature beyond the currently allowed NPDES discharge permit levels (Tr. 3842). Adding a third plant would give rise to a "marginal situation" (Tr. 3842). Applicant plans to conduct studies on the interaction of Marshall and McGuire after McGuire Unit No. 2 is placed in operation, sometime after March of 1983 (Tr. 3680). There was therefore no point in completing the study on a hypothetical third plant at that time.

29/ Applicant presented evidence regarding the relationship of consumptive water use in the five major river basins within its service area. (Tr. 3741). This relationship considered the number of people within a drainage basin area, the average flow in the area, the 7Q10 flow and the amount of water consumed to support thermal power. (Tr. 3675). In comparing the Catawba and Yadkin Basins, Applicant has calculated an index of megawatts (planned and installed) per unit of 7Q10 flow; Catawba has 12.1 MWe per cfs based on the 7Q10 flow and the Yadkin River has 4.9 MWe. (Tr. 3675-78). The Board correctly viewed this index as demonstrating that there are less than half as many megawatts on the Yadkin (with Perkins) per unit of 7Q10 flow, as on the Catawba. (Tr. 3677).

of Lake Norman required a finding of obvious superiority does not take any of these factors into account. It is thus clear that the Licensing Board was correct in determining that Lake Norman was not obviously superior to the Perkins site when all factors regarding water availability were evaluated. The Board was similarly aware of the eutrophication, future growth and water needs, and upstream regulation issues and correctly determined that none of these required a finding of obvious superiority for the Lake Norman site. Intervenors' contention that Perkins is not adequate and that Lake Norman is an obviously superior site thus must fail. 30/

Two final issues require comment. First, Intervenors assert that the Lake Norman site should have been considered for once-through cooling and that the Licensing Board erred in finding that there was no possibility of using once-through cooling at Lake Norman. (Intervenors' Brief at 6,7, 9-14). Intervenors assert that the Licensing Board was impermissibly swayed by the letter from Mr. L. Page Benton in reaching this conclusion and that it was error for the Board to even consider this letter. There is simply no merit to this contention. The actual position of the State of North Carolina is contained in a letter of November 28, 1979 from the Director of the Division of Environmental Management,

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30/ See n.20a supra, which discusses the non-water related criteria which act to downgrade the Lake Norman site.

State of North Carolina, to Mr. Charles A. Barth, NRC; and the letter of October 19, 1978 from Mr. L. Page Benton, Chief, Environmental Operations Section, Division of Environmental Management, State of North Carolina to Mr. Charles A. Barth, NRC. These positions were discussed and reaffirmed by William Raney, Esq., Assistant Attorney General, State of North Carolina who was present at the January-February, 1979 hearings. Assistant Attorney General Raney had seen the Staff evidence and made no objection to its admission (Tr. 3032). The State, in its opening remarks, reflected the opinion of the Staff of the Department of Natural Resources and Community Development that Lake Norman was not a suitable site with once-through cooling (Tr. 2955-57). In its Order of August 14, 1980, the Licensing Board stated, inter alia,

> The Board was fully aware from the statement of the Assistant Attorney General, William A. Raney, Jr., Esq. (sic), at the hearing that there would not be an "official" position of the State of North Carolina until an application was filed for once-through cooling on Lake Norman (Tr. 2956-2957). He further stated that the North Carolina Utilities Commission granted a certificate of convenience and necessity for the Perkins' site. He also stated that it was the opinion of the staffs of the Environmental Management Commission and the Water Quality Division of the Department of Natural Resources and Community Development that Lake Norman is not suitable for once-through condenser cooling.
>
> We were, therefore, well aware that until there is an application for a permit to construct once-through cooling on Lake Norman, there will be no "official" State position but we did have before us the best evidence available reflecting the determination of North Carolina Utilities Commission and the opinion of the Staffs of the relevant agencies. We based

> our decision on the only information available, furnished by a credible source. We were not misled into believing an "official" position existed on the part of the State of North Carolina. [Id. at 8].

Second, throughout their brief, Intervenors allege that Applicant's land holdings on Lake Norman prejudiced the review of that site. (Intervenors' Brief at 7-10). Intervenors' attempt to convey the impression that such was a hotly contested issue. To the contrary, there is no evidence in this regard; rather, such consists of statements of Intervenors' counsel which were rebutted by the Staff (Tr. 3150-52). Regardless, the record reflects that the NRC took land utilization into consideration in its evaluation of all alternative sites, including Lake Norman. (Tr. 3109-10, 3349-51; See also, Supplementary NRC Staff Testimony following Tr. 3049 at pp. 9-16). Accordingly, there is no basis for Intervenors' allegation in this regard.

Conclusion

On the basis of the above, Applicant submits that Intervenors' exceptions should be denied and the Licensing Board's decision should be affirmed.

Respectfully submitted,

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December 31, 1980

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	Docket Nos. STN 50-488
	)	50-489
DUKE POWER COMPANY	)	50-490
	)	
(Perkins Nuclear Station, Units 1, 2 and 3)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicant's Brief in Opposition to Exceptions," dated December 31, 1980 in the above captioned matter have been served upon the following by deposit in the United States mail this 31st day of December, 1980.

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