

Department of Interior
Washington, D. C. 20240
Mr. Lyon

2-18-72

2-18-72

LTR. MEMO: EPORT: OTHER:
x

TO: **Muntzing**

ORIG.: CC: OTHER:
1 signed

ACTION NECESSARY CONCURRENCE DATE ANSWERED:
NO ACTION NECESSARY COMMENT BY:

CLASSIF: **U** POST OFFICE REG. NO:

FILE CODE: **50-265 (ENVIRO FILE)**

DESCRIPTION: (Must Be Unclassified)
Ltr re our 12-13-71 ltr..furnishing
comments on Draft Detailed
for Oconee Nuclear Station, Unit # 1..

REFERRED TO	DATE	RECEIVED BY	DATE
Keppler W/2 cys for ACTION	2-22-72		

ENCLOSURES:

DISTRIBUTION:

- Reg Files
- AEC FDR
- Compliance (2)
- Paulus
- M. Fitzpatrick
- DeYoung
- N. Dube
- Morris/Schroeder

REMARKS:
(1) Local FDR(Walhalla, S.C.)

Schwencer Karas		DO NOT REMOVE	
Kastner DiNunno, A-170	GT	ACKNOWLEDGED	

846 fod

U.S. ATOMIC ENERGY COMMISSION

MAIL CONTROL FORM FORM AEC-3265 (8-60)

U.S. GOVERNMENT PRINTING OFFICE: 1971-424-962

7912300 232 0



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

FEB 18 1972



Dear Mr. Muntzing:

This is in response to Mr. Rogers' letter of December 13, 1971, requesting our comments on the Atomic Energy Commission's draft detailed statement on the environmental considerations for Oconee Nuclear Station, South Carolina.

The report is the result of substantial coordination by the applicant, AEC, and several other State and Federal agencies. It shows the results of good planning based on analyses of much research and investigations by the applicant alone and by the applicant in cooperation with other organizations. However, in order to be most effective, our comments will generally relate to those areas of the report which we feel are deficient or can be improved.

General

In order for reviewers and decision makers to have a more complete understanding of the cumulative and secondary effects of this proposal, we believe that the applicant's plan to construct two additional steam-electric plants as a part of this project should also be discussed in this environmental statement. We are aware that these plants may have cooling towers or some other type of cooling system; however, since it was the applicant's intention at the time he applied for a license from the Federal Power Commission to use the lakes for these additional plants, we believe your statement should reflect these intentions and their environmental implications.

The minimum flow of 30 cfs should be included in the third paragraph of page 13 since this will usually be the minimum discharge when the Keowee hydroelectric plant is not operating. Since Keowee is expected to operate on a 5% plant factor, this minimum discharge will be the actual discharge most of the time.

The analysis of a sample of Keowee River water, given on page 21, has limited value unless a better description of the conditions is given. The date and location of the sample with respect to the river and discharge rate are needed. Some indication as to the normality of these parameters should be included.

Existing Ecology

The statement that no endangered species inhabit the project area may not be correct. The area may be visited by the southern bald eagle since it is well within the known range of these birds. It is suggested that the following sentence be substituted: "The southern bald eagle is the only endangered species which may inhabit the area."

Several species of birds and fishes are omitted from the faunal lists. As we discussed, the Bureau of Sport Fisheries and Wildlife has agreed to furnish the data necessary to complete the inventory upon your request.

Section II should discuss the amount and type of hunting and fishing which occurred in the area prior to the project and that expected when the project is operating.

Chemical Discharges

Table III-6 lists the types, amounts, and concentrations of chemical wastes from Oconee Nuclear Station. Another column should be added to this table with the concentrations of these chemicals released to the Keowee tailwater during minimum release of 30 cfs. This is particularly important since the discharge from the Keowee hydro plant will be 30 cfs most of the time.

The AEC environmental statement did not show a detailed evaluation of possible environmental effects of chemicals on aquatic biota in Hartwell Reservoir. Since chemical and radioactive discharges as well as some of the waste heat from the Oconee Nuclear Station will be discharged into Hartwell Reservoir, further study is desirable to more adequately assess the environmental impact on this downstream development. The report mentioned that biological data on the Hartwell Reservoir have been requested from Georgia Fish and Game Commission, South Carolina Wildlife Resources Department, and the Army Corps of Engineers. The final environmental statement should also include a discussion of the possible effects on the trout fishery below the Hartwell Dam.

Since Hartwell is several years old, time was available for the applicant to perform inventory and population studies. Consequently, it is recommended that AEC require the applicant to make the necessary studies to allow it to assess the effects on the aquatic life in this portion of Hartwell Reservoir as rapidly as possible.

Thermal Effects

The waste heat load when all three units are operating is expected to give Keowee Lake a homogenous thermal condition in August which is several months prior to the normal fall turnover for lakes in this region. The probable effects of this early homogenous condition on the aquatic life should be analyzed. The taking of the cooling water from the hypolimnion and discharging the effluent into the epilimnion along with the pumped storage condition will cause a more homogenous condition year round by the mixing action.

When the Keowee hydroelectric plant and the Oconee nuclear-fueled steam-electric plant are both generating under normal operating conditions the temperature of the tailrace water will be raised about 3°F according to the environmental statement; however, the temperature of the tailrace water will probably be raised more than 3°F when the Oconee Nuclear Station is operating at full load and the Keowee hydro plant is operating at less than full load. The steps the licensee would take to keep within the State standards should be listed along with an analysis of this greatly fluctuating discharge and temperature changes on the aquatic life in the upper end of Hartwell Reservoir and in Lake Keowee.

The Keowee River from the Keowee hydro plant to Hartwell Reservoir and the upper reaches of Hartwell Reservoir are expected to receive periodic surges, approximately 11 feet above normal, of warmed water for about 5 percent of the time. A specialized community of organisms is expected to develop in this area according to AEC's environmental statement. The expected types of organisms which would develop in this area should be evaluated. Pages 71 through 78 cite results of many studies on aquatic life under varying conditions. This general background data appears sufficient to allow the applicant to make an evaluation of the probable effects the discharges will have on the aquatic biota in the upper reaches of the Hartwell Reservoir. However, caution should be exercised in the use of laboratory data, such as given in Table V-1, as a basis for determining temperature effects on certain species of aquatic life. Factors such as acclimation to a particular temperature, rate of temperature changes, and the ability of the aquatic life to avoid undesirable environments are sometimes not included in laboratory data.

The applicant has used data from Lake Norman and the Marshall steam-electric plant as a base to project many of the impacts it anticipates in Lake Keowee as a result of the operations of the Oconee nuclear plant. We do not question this since it may well be the best basis from which to make such an assessment; however, we do think it important for the reviewer

to be aware of the differences in the two systems. These differences seem to amplify the need for sufficient monitoring to record the actual effects of the first unit on the lake and its environment as a basis for projecting the effects of the other two units. A comparison of the two systems is given below.

	<u>Lake Norman Marshall Plant</u>	<u>Lake Keowee Oconee Plant</u>
Total waste heat, Equivalent MW	2,640	4,950
Mean fresh water discharge into lake, cfs	2,670	1,140 (675 in Little River)
Cooling water discharge, cfs	1,200 (max. 2,300)	4,733
Lake surface area, sq. mi.	50.7	29
Potential recirculation distance, mi.	4	2
Temperature rise in plant, °F	28	17.6

Dissolved oxygen

Although the use of the water for cooling purposes will not likely result in the release of a significant amount of oxygen from the water, the effects of discharging this water with a dissolved oxygen content below that in the receiving water of the epilimnion could be significant. A great deal of this oxygen-deficient water will also be discharged into the Hartwell Reservoir.

Mechanical Damage to Aquatic Organisms

Mechanical damage to aquatic organisms will undoubtedly occur at the Oconee Station but more mechanical damage to aquatic life will likely occur at the hydroelectric plants as a result of the large amount of water involved and high intake and discharge velocities. It is probable that even more fish and aquatic life will be drawn into the turbines of the Keowee hydroelectric plant as a result of being attracted to the warmed water near the Oconee steam-electric plant. Some assessment of the probable effects the operation of Oconee will have on intensifying these damages by the hydroelectric plants seems in order.

Monitoring

It is not possible to determine accurately the depth and configuration of the epilimnetic and hypolimnetic layers without actual data; consequently, an adequate monitoring system must be established as soon as possible and operational before the first unit goes into operation to obtain this information. This data would also serve as a basis for estimating the effects of the operation of Units 2 and 3 of this plant and future steam-electric plants using the lakes as the medium of waste heat dissipation.

The predicted concentrations of chemicals in water released to Hartwell Reservoir are given in Table III-6. We agree with AEC's statement that the concentrations of these chemicals should be determined from studies at operating conditions. In fact, AEC should require that chemical, thermal, and biological monitoring similar to the radioactive monitoring program given in Table V-4 be performed to the extent necessary to adequately assess the impacts resulting from the operation of the Oconee plant. The locations of stations, frequency and type of data required should be given. We are aware of the water quality monitoring stations shown in Figures 15 and 16 of the applicant's report, but a description of the type and frequency of this monitoring is omitted.

Radiological impact on fish and wildlife is not discussed in Section V. The statement should include such a discussion. Since benthic animals tend to accumulate some compounds, they should be sampled in the monitoring survey to insure that safe levels are not exceeded.

Outdoor Recreation and Fish and Wildlife Habitat

A more complete description of the planned 155-acre recreation complex and a map showing the location of the proposed access points, recreation areas, and residential developments would be useful to the reviewer.

Section IV, Environmental Impact of Site Preparation and Plant Construction, should contain a description of the loss of wildlife and stream fish habitat on the fish and wildlife resources and the environment.

The impact of the managed project areas such as the wildlife management lands and the timber management lands on wildlife resources should be evaluated.

Major Nuclear Accidents

Class 9 accidents were not considered in the statement. This type of accident should be described and the impact on human life and the remaining environment discussed as long as there is any possibility of occurrence. The consequences of an accident of this severity could have far-reaching effects on land and downstream areas and possibly into the ocean.

We understand that you are proposing to amend the AEC's procedures for preparing environmental statements to exclude consideration of Class 9 accidents. We are currently reviewing these proposed procedures and will be providing you with our comments in the near future.

Unavoidable Effects

Section VII is very limited. The expected quantity of fish and wildlife resources and their habitats which are affected should be described. No mention of adversely affected wildlife is provided.

Benefit-Cost Analysis

The Departmental comments on AEC's evaluation of the benefits and costs of Oconee are presented on a preliminary basis since presently proposed AEC guidelines for this analysis are being reviewed by this Department and other agencies. Consequently, these comments are not intended to preclude any future comments which this Department believes warranted following a more complete review of the proposed guidelines.

The statement includes two Summaries of Benefits and Costs, the applicant's summary given as Table X-3 and AEC's summary given as Table X-4. Since AEC apparently does not completely agree with the applicant, it is suggested that only the AEC version be included in the report. A reference to the applicant's version could be made if needed. The two tables merely confuse the reviewer and unnecessarily complicate the analysis.

In general, this Department believes that the summary of environmental benefits and costs can be improved significantly by using quantifications other than dollars. Values expressed in terms such as "trout fishermen days," "acres of small game habitat," "miles of trout fishery," are recommended. Words such as "negligible," "slight," or "very small" should be accompanied by similar quantifications when possible. The benefits and costs should be quantified in dollars only when the market place adequately reflects the value that society places on these benefits and costs. We believe

that appropriate numerical descriptive terms are no less quantifying than dollars and are often more meaningful when dealing with the environment.

Since the applicant may decide at a later date to seek permission to construct additional plants which would use the lakes as a cooling medium, the environmental effects of the potential future plants should also be evaluated as part of the ultimate development.

Many of the dollar benefits are incorrectly derived. On-site fishing, hunting, and other recreational benefits are usually developed and computed for Federal projects in accordance with Supplement No. 1 to Senate Document 97 ("Policies, Standard, and Procedures in the Formulation, Evaluation, and Review of Plants for Use and Development of Water and Related Land Resources"). Although badly out of date, this sets out a schedule of administrative unit-day values which are multiplied by projected man-days of recreation expected to be generated as a result of project construction and operation over the life of the project. Gross expenditures of recreationists have been abandoned as a valid measure of the net value of recreational activities for evaluating Federal water projects. They have not been used in the past decade on the basis that they are properly classified as associated costs of securing such benefits.

The applicant's estimation of 4,100,000 recreation day usage of the Oconee project area has been utilized in the derivation of recreation benefits. The Recreation Development Plan, Exhibit R, included as part of the Federal Power Commission license for this project, contains an estimate of initial and ultimate use. The Keowee Reservoir annual user days is estimated at 93,560 initially, increasing to 292,000 by the year 2000, and to 425,000 by the year 2025. Recreation land areas and facility development proposed by the license is based on this projected level of use.

We find that there is a wide discrepancy between the visitation figures used as part of the FPC license proceedings and those now contained in this document. There appears to be a lack of clear understanding of the definitions used in this analysis and no meaningful determinations can be made as to the acceptability of the recreation values used. We believe these differences should be resolved.

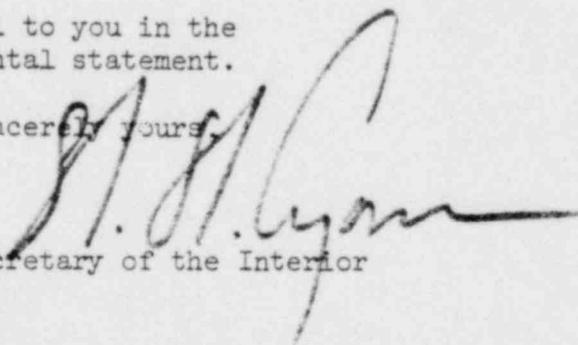
The value of the fishery resources is incorrectly estimated. This value is based on a report, "Monetary Values of Fish" by the Southern Division of the American Fisheries Society. Essentially, this report uses fish replacement costs from hatcheries as value. Its stated purpose is to establish a basis for asking monetary compensation for episodic events of fish kills resulting from pollution or contamination of waters. It has never been used in the Federal establishment for the purpose of evaluating the long-term impact of water resource development projects. We suggest that the fishing resources be evaluated in terms other than dollars.

We believe that the investment cost of \$639,000,000 would be more appropriate in the cost column. If the intention of AEC is to indicate benefits due to the investment, it appears that some of these values could be used. However, many, if not all, of these benefits are already itemized.

It is difficult to determine if all costs and benefits are included in Table X-4, "Benefit-Cost Comparison for Oconee Nuclear Power Station Alternatives," or if the costs or benefits are given as net values. For instance, do the power benefits of \$102,000,000 and \$26,000,000 represent the total retail value of power, or is it the total retail value, less the operating costs?

We hope these comments will be useful to you in the preparation of the revised environmental statement.

Sincerely yours,


Deputy Assistant Secretary of the Interior

Mr. L. Manning Muntzing
Director of Regulation
U.S. Atomic Energy Commission
Washington, D.C. 20545