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United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In reply refer to:
ER-73/868

OCT 18 1973

Dear Mr. Muller:

Thank you for your letter of June 26, 1973, transmitting copies of the Atomic Energy Commission's draft statement, June 1973, on environmental considerations for Dresden Nuclear Power Station Units 2 and 3, Grundy County, Illinois.

Summary and Conclusions

We suggest that the area of land purchased for the operation of Dresden 1 be indicated on page i in addition to the approximately 1,573 acres purchased for the operation of Units 2 and 3. We also suggest that the area involved in the approximately four miles of new transmission line right-of-way be identified.

According to Condition a. to the operating license, Units 2 and 3 will be allowed to operate on a once-through condenser cooling basis in "unusual circumstances." We suggest that "unusual circumstances" be defined to the extent possible. The potential adverse impacts relating to these exceptions should be described in the appropriate sections of the statement.

Condition e. to the operating license requires the applicant to implement Environmental Technical Specifications that are acceptable to the AEC staff. Identification and implementation of these programs is needed, however, we do not believe it is proper to defer detailed discussions of major programs for environmental protection to the Environmental Technical Specification phase of AEC licensing procedure.

Most programs identified in this paragraph could significantly affect environmental quality and must be described in the environmental statement.

Historical Significance

Since the powerplant is constructed, many effects on cultural (historic, archeological, architectural) resources have already been experienced. We regret that a direct examination of the plant site and vicinity was not performed by trained professionals prior to construction to quantify the impacts on cultural resources.

We request that particular caution be taken during plant operation to insure the integrity of the 1,513-acre Goose Lake Prairie Nature Preserve owned by the State of Illinois. This tract is less than one mile southwest of the Dresden Nuclear Power Station and was recommended as a potential natural landmark in the National Park Service's "Island Wetlands" theme study. It has since been evaluated but not recommended due to the presence of certain unnatural conditions. The evaluator does however, state, "it is hoped that management over the next 4-5 years will upgrade at least some sites to a more original and natural condition, and at that time the area should be reevaluated for this (Natural Landmark) designation." A study of the Central Lowlands Natural Region is scheduled to begin in FY 1974. The Goose Lake Prairie Nature Preserve will be reconsidered in this study.

Geology

The statement is made on page 2-13 that faults and seismic conditions in general are not considered to be of major importance to the environmental effects of nuclear powerplants. We emphatically do not agree. The careful assessment of geologic site characteristics and the proper design of critical structures to accommodate these characteristics and assure structural integrity is essential to preventing or mitigating the consequences of potential accidents, including the class 9 accident, which could result in the release of radioactive materials to the environment. Therefore, we strongly recommend that the environmental statement present a more comprehensive summary of the regional and local site geology,

and specify how the geologic and seismologic analyses have been taken into account. In this respect, we note that the AEC has published "Seismic and Geologic Siting Criteria for Nuclear Power Plants" (Proposed Appendix A, 10 CFR 100, Federal Register, November 25, 1971) which prescribes the nature of required investigations. The impact statement should clearly specify whether these criteria have been applied to the Dresden site.

The necessity for careful geologic investigations and engineering design and construction to accommodate the natural characteristics is illustrated by problems that have been experienced with the cooling lake, including the failure of a 50-foot section of the cooling lake dike on October 13, 1972, that resulted in a total loss of the impounded water. Although the soil conditions were taken into account in the repair of the dike, we note that the dike was not analyzed for the effect of a seismic event. The draft statement indicates on page 5-4 that "it is felt an acceleration factor of 0.1 to 0.15g would not imperil the integrity of the cooling lake." In our view, such an assertion requires additional explanation and justification.

An analysis should be presented to show what consequences a postulated massive dike failure would have on the reactors or on their operations if it occurred after the lake becomes an integral part of the cooling system. It has not been made clear whether dike failure could result in loss of coolant to the reactors, and how serious the consequences of such an accident would be. We believe the document should be amended accordingly.

In analyzing possible causes of dike failures, internal causes resulting in overflow of the cooling lake appear to have been fully considered on pages 7-9 through 7-11. We recommend that the statement include an evaluation of the possible impacts that flooding of the Kankakee River may have on the integrity of the north dike. This seems advisable and appropriate since parts of the cooling lake occupy the former floodplain of the river, and the top of the dike is within 22 feet of the average river level at its eastern end. We are concerned that there may be increased backwater or flooding for a given river flow now, which did not exist under pre-construction conditions, due to the encroachment of the dikes on the floodplain. The applicant could determine this by comparing before-and-after flood profiles through this region and in the upstream reach

of the river. It may well be that the railroad embankment also encroaches on the left floodplain.

The Atomic Energy Commission recognizes that the possible environmental effects related to the abandoned coal mine beneath the cooling lake have not been fully considered and, as a condition to the issurance of the operating license has required the applicant to make additional core borings. We recommend that an analysis be made of the effects of the mine on the structural integrity of the dikes, and also any potential pollutional effects on ground water or surface water on or off the site as a result of impounding water above the mine.

Ecology

As indicated on page 2-8, the State of Illinois has reclassified the Illinois, Des Plaines, and Kankakee Rivers as "Public and Food Processing Water Supplies." This reclassification is expected to provide the impetus for cleaning up the water cources and reclamation of the rivers and their resources. Based on the State's plan to improve the quality of these waters, we believe that this section should describe the anticipated impact that the plant will have on the improved water quality and the associated fish and wildlife of the area.

The relative numbers of coliform bacteria and fecal coliform bacteria given on page 2-28 for the years 1958-1971 are incorrect. The total coliform bacteria should exceed that of fecal coliform bacteria.

The sixth paragraph on page 2-33 should be expanded to indicate the relative quality of the "inputs" to the Dresden Pool. Based on temperature data given on page 3-21 when all units are operating, most of the organisms identified may be eliminated from cooling pond during substantial periods of the year.

River Discharge

We share the concern expressed by the AEC staff on page 3-26 that the thermal plume may seriously restrict free fish passage in the river. We are also concerned with the performance of the spray canal cooling system and believe that careful monitoring of this system and of the heated water discharged to the river should be mandatory.

Solid Radioactive Wastes

The solid wastes that result from operations of Units 2 and 3 are discussed briefly on pages 3-37 and 3-41. The wastes are described in very general terms as being evaporator bottoms, spent resins, filter sludge, filters, miscellaneous paper, rags, and contaminated clothing. Estimates are given that about 2,000 55-gallon drums of solid radioactive waste will be shipped offsite annually to a burial site at Sheffield, Illinois. The draft statement contains an inconsistency in the estimated radioactivity of this waste, the figure being given both as 4,800 and 5,700 curies of activity on pages 3-37 and 3-41 respectively.

We believe that the offsite disposal of the operational solid radioactive wastes from the Dresden Nuclear Power Station constitutes an important long-term environmental impact, and the AEC must satisfactorily solve the problem of these proliferating operational wastes from all nuclear plants before they present a major problem. Therefore, we strongly recommend that the environmental statements for all reactors, including Dresden Units 2 and 3, should specify the kinds of radionuclides their physical states, and their concentrations in the wastes, and the estimated total volume of wastes for the expected operating life of the reactor. Additionally, if an environmental impact statement has not been prepared for the proposed burial or disposal site, or if such a statement does not fully consider wastes of the nature and quantity of those generated at the Dresden station, then we believe it is incumbent on the AEC to include an evaluation of the disposal site in this present environmental statement. We believe such an evaluation should discuss the Federal and State licensing provisions, criteria, and responsibilities for the site in connection with: (1) determination of the hydrogeologic suitability of the site to isolate the wastes of the Dresden station and any other wastes accumulating or expected to accumulate at the site from the biosphere for specific periods of time; (2) current and continuing surveillance and monitoring of the site; and (3) any remedial or regulatory actions that might be necessary throughout a specific period of time in which all the wastes will be hazardous.

In connection with the above, we note that "radioactive wastes other than high-level," which apparently include reactive operational solid wastes, have been discussed on pages G-2 through

G-1 of the AEC document "Environmental Survey of the Nuclear Fuel Cycle." We do not consider the generalized descriptions in that document of the management and disposal of these wastes as being adequate to cover the concerns expressed above because the descriptions on pages G-2 through G-9 and G-12 through G-14 are not specific to a particular site or to the particular wastes being disposed there. Similarly, the environmental considerations on pages G-16 through G-21 are not specific to a particular site or to particular wastes.

Chemical and Biocide Effluents

In view of the recognized detrimental environmental impacts of chlorine on the aquatic environments, the use of this element should be minimized. We suggest that considerable care be given to reducing the use of chlorine and specifically chlorine concentrations in the plant effluent.

Ecological Effects

This section should indicate that 1,573 acres of agricultural land which previously supported wildlife has been converted to an industrial use and that the wildlife associated with this habitat has been lost.

Impacts on Water Use

Based on information available to us, there is a great probability that substantial amounts of chloramines will be discharged to receiving waters. The cumulative effect of chloramines from the cooling pond of Dresden Units 2 and 3, the discharge from Unit 1, and effluent from Collins Electrical Generating Station may individually or in combination cause severe damage to present or future fish and wildlife resources. Therefore, we suggest that the cumulative effects from all sources that would interact with those from this plant should be discussed in this section.

We believe that this section should also acknowledge the implication of the Federal Water Pollution Control Act as amended in 1972. As stated in the Act "it is the national goal to eliminate the discharge of pollutants into navigable waters by 1985."

The references on pages 5-8 and 5-3-7 to tables 2.8 and 2.5, respectively, should apparently be changed to tables 2.3 and 2.6.

Nonradiological Effects on Ecological Systems

Entrainment of aquatic organisms into the cooling water system is discussed on page 5-21. The magnitude of these effects which occur during low or critical summer flow periods should be mentioned since these periods often coincide with peak metabolic activity for most aquatic organisms. Removal of biomass from the system during critical environmental periods could control the magnitude of downstream fish resources or subject these populations to unacceptable stresses.

Cooling Lake and Spray Canal Effects

It is indicated on page 5-33 that the problem of disposal of the dredged material from the cooling lake and spray canal has not been considered by the applicant. According to condition d., the applicant is required to implement Environmental Technical Specifications including a program for disposal of dredgings.

Since this activity could have a major environmental impact, we recommend that an estimate of dredging requirements and probable disposal methods be included in the final environmental statement.

The warm water of the 1,275 acre cooling lake built for the closed-cycle cooling system scheduled for use after February 1974, is a potential resource the beneficial uses of which should be considered. We recommend that the applicant be encouraged to consider possible uses of the water for such things as aquaculture, which might have the added benefit of helping to maintain the lake free of "nuisance growths of aquatic organisms. Relative to costs of plant construction and operation, any short-term monetary benefits from using the thermal effluents are likely to be insignificant, but long-term benefits may include: (1) increased knowledge gained from experimentation with use of thermal effluents by local educational or other institutions; (2) significant benefits to the small segment of the community involved in use of the water.

The importance of proper care in the use of algicides is discussed on page 5-33. The Department of the Interior's 1967 publication entitled "Biological Associated Problems in Freshwater Environments" is referred to as discussing methods for the physical removal of aquatic weeds and the use of microstrainers for algae. However, the particular methods which will be used to control growths of nuisance aquatic

organisms and procedures for their disposal are not described in the statement. The methods that will be used and the associated environmental impacts of the selected control program should be identified in this section.

We suggest that this section be expanded to include important dissolved gases in addition to effects on dissolved oxygen. For example, supersaturation of nitrogen gas in water has produced fish kills at several steam-electric powerplants.

The potential for the dispersal of viable fecal organisms in aerosols as a result of the spray system is recognized on page 5-34. It is also indicated that if bacterial counts in the spray canals exceed state standards, the applicant will take appropriate action. We suggest that measures which would control this problem should be identified and the potential impacts resulting from implementation of these controls on fish and wildlife resources should be described.

Transmission Line Effects

The fourth paragraph on page 5-35 should be updated by deleting the indication that the Bureau of Sport Fisheries and Wildlife has approved for certain applications the use of 2,4,5-T. This Department's approval for the use of this herbicide was withdrawn in 1970. The Department of the Interior has prohibited the use of 2,4,5-T on lands under its control and has also prohibited its use in any program it funds since 1970.

Although the economical cost is sometimes more for hand or mechanical clearing methods, the cost to the environment is usually must less. Therefore, we suggest that the applicant seriously consider mechanical clearing methods which would eliminate or reduce the need for herbicides.

Chemical Discharge Effects

We suggest that this section identify and describe the impact of heavy metals which will be discharge by the plant.

Nonradiological Studies

The sampling program should be reviewed periodically to determine if sampling equipment and techniques will result in the collection of adequate and quantitative data especially as related to impingement of fish.

Environmental Effects of Accidents

This section contains an adequate evaluation of impacts resulting from plant accidents through class 8 for airborne emissions. However, the environmental effects of releases to water is lacking. Many of the postulated accidents listed in tables 7.1 and 7.2 could result in releases to the Kankakee and Illinois Rivers and should be evaluated.

We also think that class 9 accidents resulting in both air and water releases should be described and the impacts 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 and could persist for centuries. The AEC recognition of the severe consequences of such an accident is indicated in USAEC Regulatory Guide 4.2.

Alternative Energy Sources

The basic assumptions necessary to determine the amount of air pollutants which would be emitted by a comparable sized fossil-fueled powerplant are not given in the text. We think that these data which would allow the reviewer to confirm the appropriateness of such assumptions, should be given in the environmental statement.

We hope these comments will be helpful to you in the preparation of the final environmental statement.

Sincerely yours,

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Regulatory File Cy.