Illinois Department of Conservation
life and land together

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David Kenney, Director • James C. Helfrich, Assistant Director

March 8, 1984

U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Director, Division of Licensing

Dear Director:

The Department has reviewed the Draft Environmental Statement (DES) related to the operation of Braidwood Station Units 1 and 2.

Generally, we are pleased to note that major environmental concerns we had identified during the early 1970s, and appropriate mitigating actions to alleviate these concerns, are adequately reflected in this DES. During our review of the DES, however, we did note the tendency to present general statements relative to impacts without a thorough presentation of data or references to support these statements. It is our opinion much more data relative to aquatic impacts has been collected than is presented or referenced in this DES.

Specific comments on the DES follow:

Section 5.5.2.2 Kankakee River

On page 5-2, last paragraph, it is stated, "The water quality standards also require that the discharge structure must be designed to ensure that the mixing zone allows a reasonable zone of passage for aquatic life and must not encompass more than 25% of the cross-sectional area or volume of flow, except in those instances where the dilution ratio is less than 3:1 (ER-OL Section 5.1)>"

On page 5-13, first paragraph, it is stated, "The thermal plume is projected to extend to 28% of the river width in August, 33% in September, and 22% in December---."

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These two statements appear to be in conflict; therefore, further clarification should be presented in the Final Environmental Statement (FES).

According to the DES (page 5-13, first paragraph), "the thermal plume should not act as a barrier to up or downstream movement by mobile aquatic biota." The DES further states (page 5-13, fourth paragraph) "Larval fish could be stressed on passage through the thermal plume; however, ---larval mortality associated with the thermal plume should not be significant." The DES rationalizes these conclusions on the basis of short residence time in the plume and the statement "natural mortality of larval fish can reach more than 99%." (page 5-13, paragraph 4).

It seems appropriate here to point out that because year class strength is determined by the success in survival of eggs and larval fish and natural factors alone can account for 99% mortality, additional stress on the remaining 1% from removal by entrainment or mortality from a thermal plume should not be so easily dismissed. Here, also, the size and shape of the thermal plume may come into play. If egg and/or larval drift is not evenly or randomly distributed throughout the cross section of the river, then there is a possibility that a disproportionate amount of drift is passing along the shore of the station and subject to entrainment or thermal stress. There may be particular species of fish more affected than others, i.e. species whose entire drift would be concentrated into the river area where it will be entrained or pass through the thermal plume.

For these reasons, we suggest the FES assessment of impacts on eggs and larval fish include a discussion of studies Commonwealth Edison has conducted to determine distribution of larval drift across the cross-section of the river. We are most interested in learning if an analysis by species and percent of drift already dead was conducted so a meaningful comparison can be made by species prior to entering the intake and/or heated water area and after passing through these hazards. If these studies have not been conducted at this site then the FES should include a definite statement relative to the need for such studies after plant start-up.

Based on the information presented in table 5.4 (page 5-16), and contrary to impingement losses at plants on other rivers where numbers of gizzard shad are commonly 50-80% of the loss, sport fish comprised the large share of impinged fish - 17.8% of the total number were rock bass, 11.1% channel catfish, 8.4% bluegill, 8.2% smallmouth bass, 6.1% white crappie, 4.2% black crappie, and 2.4% pumpkinseed for close to 60% of the total number impinged. Gizzard shad numbers were only .4% of the total.

We are aware that impingement mortality of large numbers of forage fish, such as gizzard shad, are dismissed each year without much concern because of their great reproductive potential; however, predator fish do not have that same potential. Gizzard shad females average 375,000 eggs per fish as compared to an average 5,000 per female rock bass. Thus a loss of tens of thousands of shad each year from impingement is of much less concern than the loss of thousands of predator/sport fish such as rock bass. The assumption of highesst mortality in winter (page 5-17, first paragraph), again ignores differences between species or families of fish. During closed cycle operation of the Quad-Cities Station in 1976, 63% of the shad impinged (shad were 86% of total impingement) were lost in December, January, and February. However, only 14% of the annual loss of crappie occurred in the December-February period. It seems logical to expect that impingement at Braidwood may actually be much higher outside the winter period since it includes such a small proportion of shad and large proportions of centrarchids such as crappies.

For the above reasons, we suggest the FES fully discuss Commonwealth Edison's commitment to conduct 12 month impingement entrainment studies after plant start-up. We look to this study to provide answers to the aforementioned concerns.

Section 5.6.2 Aquatic

The DES (page 5-18) discusses the pallid shiner. The document correctly points out that this fish is "a rare species in Illinois" (page 5-18). In fact, according to Smith in The Fishes of Illinois, it "is one of the rarest and least known American fishes." For this reason, the discovery of more than 17 individuals of this species at one of the Braidwood monitoring stations is noteworthy

and deserves further attention and study. The FES should address Commonwealth Edison's specific plans for river monitoring and study of this species prior to and following plant start-up.

The Department appreciates the opportunity to comment on the DES.

Sincerely,

David Kenney

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cc: Commonwealth Edison Co.