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R. C. DeYoung, Assistant Director for Light Water Reactors, Group 1

HYDROLOGIC ENGINEERING QUESTIONS (Q-1)

PLANT NAME: WPPSS 3 & 5
LICENSING STAGE: CP
DOCKET NUMBER: 50-508,509
RESPONSIBLE BRANCH: LWR 1-3
REQUESTED COMPLETION DATE: September 27, 1974
DESCRIPTION OF RESPONSE: Answer questions
REVIEW STATUS: Site Analysis Branch (HES) - Awaiting responses

Enclosed are hydrologic engineering questions for the subject plant, prepared by T. L. Johnson and E. F. Hawkins, for your transmittal to the applicant.

Original Signed by
H. R. Denton

Harold R. Denton, Assistant Director
for Site Safety
Directorate of Licensing

Enclosure:
As stated

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Memo

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SURNAME	EFHawkins/pg	TJohnson	LGHuffert	WPGammill	HRDenton	
DATE	9/20/74	9/20/74	9/23/74	9/23/74	9/23/74	

HYDROLOGIC ENGINEERING QUESTIONS

WPPSS NUCLEAR PROJECT NOS. 3 & 5

DOCKET NOS. 50-508 & 509

321.01
(2.4.1)

(1) Provide a site map showing, in addition to plant facilities and structures, various hydrologic features such as channels, ravines, ditches, culverts, drainage structures, site grading and topography, and drainage patterns.

(2) Locate Wynoochee Dam on Fig. 2.4-1.

(3) Identify on Fig. 2.4-2 the surface water users listed in Table 2.4-2.

(4) Where are the surface water users listed in Tables 2.4-3 and 2.4-4 in relation to the plant site?

321.02
(2.4.2)

Provide the basis for your conclusion that high flows resulting from local PMP will have no effect on plant operation. Specifically provide your conclusion, and summarize your analysis, of whether erosion on the filled areas of the ravines, or of the excavated slopes above the plant, can adversely affect either the drainage system or the foundations of safety-related structures. Provide a topographic map showing the final plant grade, excavated slopes, filled ravines, etc. Correct the table reference on pg. 2.4-3a from 2.4.3-1 to 2.4-11. Cross reference the snow load discussion to Section 2.3.

321.03
(2.4.3)

(1) Describe the site storm-drainage system. Provide preliminary drawings and/or sketches of ravines, channels, and drainage structures in sufficient detail to allow an independent review of their ability to discharge flood flows.

(2) Show on figure 2.4-21 the flood hydrograph reconstitutions, using your selected routing coefficients shown on pg. 2.4-10. What routing interval and how many reaches did you use? Did you use the same parameters when routing the PMF?

(3) There is a discrepancy between the PMF shown on fig. 2.4-11 and that shown on fig. 2.4-22. Furthermore, if the discrepancy is due to the antecedent flood, then the discrepancy is in the wrong direction. Please discuss and correct any errors.

(4) Show the component hydrographs of the PMF from each subarea prior to and after routing. Explain (or show by a figure) how the superposition was performed.

321.04 (2.4.7) Describe any potential adverse effects of icing on safety-related facilities during winter operations.

321.05 (2.4.10) (1) Provide the bases for your determination of a one-inch height of water flowing overland due to local PMP.

Include any flood-routing procedures, rating curves, or design criteria used in your analysis.

(2) What will be the maximum depth of water during a local PMP on the roofs of safety-related buildings? Provide the basis for your estimate. How does this compare with your design-basis roof loading?

321.06 (2.4.13) (1) Include Figure 2.4-28 in your report; it is apparently missing. Also, provide anticipated post-construction groundwater contour maps in both the immediate site vicinity and along probable downgradient flow paths.

(2) Provide further permeability, porosity, and other pumping test data on the soils in the immediate site vicinity. In addition, provide conservative permeability and porosity estimates (and bases therefore) along probable ground water flow paths down-gradient of the site to the surface water discharge points.

(3) Discuss the dilution and dispersion capability of the ground water and surface water at the site in the event of an accidental spill. Discuss travel time to nearest users.

(4) Provide details and drawings of the groundwater collection system showing location, size, withdrawal depths, pump elevations, radial extensions, etc.

(5) Discuss the effects of silting of the river bed or clogging of radial lines with fines on the capacity of the goundwater collection system. Describe any maintenance programs that may be applicable.

(6) Provide the bases for your conclusion that the groundwater table will be lowered by 7 feet during drought conditions with a withdrawal of 30 MGD.

(7) Your description of on-site use from collector wells is not clear. How much water do you intend to withdraw? What is the basis for your claim that 50 percent will come from surface water and 50 percent from ground water? What is the basis for your claim that 30 mgd can be produced from two collectors?

(8) What permits, approvals, etc. will be required for you to withdraw ground water? Are there any limitations imposed by these permits?

(9) At what river level (water surface elevation) will flooding of the pumps occur? What is the frequency of this level?

321.07 (9.2.5)

(1) Discuss your plan to provide sufficient cooling water for maintenance of plant shutdown after the required 30-day period, assuming no water is available from the groundwater collection system.