

BellBendCOLPEm Resource

From: Canova, Michael
Sent: Friday, June 05, 2009 10:56 AM
To: Sgarro, Rocco R; BBNPP@pplweb.com; jennifer.mcqueeney@unistarnuclear.com; Katie.Thurstin@unistarnuclear.com
Cc: BellBendCOL Resource; Cook, Christopher; Raione, Richard
Subject: Bell Bend COLA - Draft Request for Information No. 19 (RAI No. 19)- RHEB - 2845
Attachments: Letter 19 - RAI 2845 RHEB.doc

Attached is DRAFT RAI No. 19 for the Bell Bend COL Application. You have ten working days to review this request and to decide whether you need a conference call to discuss it. Please notify me of your decision in this regard.

After the call, or after ten days, the RAI will be finalized and sent to you. You will then have 30 days to respond. These durations are factored into your review schedule. If additional time is required to respond, please inform me of your proposed schedule to respond at your earliest opportunity.

If you have any questions, please contact me.

Michael A. Canova

Project Manager - Bell Bend COL Application
Docket 52-039
EPR Project Branch
Division of New Reactor Licensing
Office of New Reactors
301-415-0737

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Request for Additional Information No. 19 Revision 1
DRAFT
6/2/2009

Bell Bend
PPL Bell Bend LLC.
Docket No. 52-039
SRP Section: 02.04.03 - Probable Maximum Flood (PMF) on Streams and Rivers
Application Section: FSAR 2.4.3

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.03-1

A requirement to consider physical site characteristics in site evaluations is specified in 10 CFR 100.20(c). In addition, General Design Criterion 2 and 10 CFR 52.79(a)(1)(iii) require consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated. Staff review of the information provided in FSAR Section 2.4.3 indicates that additional information is needed to complete its review and to determine if applicable regulations have been met regarding flooding associated with Walker Run and the unnamed tributary #1. The following information is requested.

1. To evaluate the accuracy of the water surface profiles and the sensitivity of the analyses to certain input parameters, the applicant should provide the input and output files for the HEC-RAS models used to determine the water surface profile for Walker Run, unnamed tributary #1, and unnamed tributary #2.
2. To determine flow profiles for the site drainage ditches, the applicant is requested to provide calculations, and analyses of peak water levels expected to occur in the various drainage ditches that surround the power block area.
3. Because the access roads may have a significant impact on the flood profile, the applicant is requested to provide calculations and analyses of the maximum water levels expected to occur over the access roads. These water level analyses should include potential impacts from debris blockages, ice blockages, sediment, and channel diversions.
4. To document the evaluation of potential impacts of the storm water pond located between Walker Run and the power block area on water surface profiles, the applicant is requested to provide additional information and analyses related to whether or not the storm water pond is an effective flow area.
5. Based on information obtained during the site audit, the staff understands that some changes may be made to the alignment of Walker Run, based on environmental and wetlands concerns. Drawing No. 12198-004-CSK-A was examined during the site audit. This drawing indicates that the relocated Walker Run will employ principles of 'natural channel design'. The applicant should provide details of the redesigned channel including estimation of Manning's n values, cross sections and the resulting water surface profiles. The applicant should provide a design drawing which maps the post-construction alignment and should provide files as discussed in (1) above.
6. Staff review of the calculation packages indicates that supercritical flows will occur along some of the channel reaches and in some locations in the site drainage

system. The applicant is requested to provide detailed analyses of these hydraulic jumps and locations where flows might transition from supercritical to sub-critical. The applicant should describe how these jumps were accounted for in the design of protective structures such as berms and erosion protection.

7. Based on review of site drawings and observations made during the site tour, there appears to be a potential for high-velocity flows to enter the drainage ditch immediately north of the power block area. The steep slopes immediately upstream of the drainage ditch and berm could produce such high velocities, and the channel and the berm may need to be protected to avoid breaching and resultant overflow onto the site. The applicant shall provide analyses and discussions to address the following: (a) peak concentrated flows (not sheet flows) should be calculated for the drainage area above the north ditch; (b) peak shear stresses should be calculated for the concentrated flows down the steep slope; (c) hydraulic jumps should be accounted for, and shear stresses should be increased accordingly to account for the energy dissipation; (d) riprap sizes, if needed, should be determined based on peak shear stresses; (e) detailed post-construction design drawings and cross-sections should be provided for staff's review of the slopes, berms, and riprap; (f) the potential for large amounts of sediment and debris to enter the channels during a large storm event shall be addressed, since the lower velocities directly in the channel may not be sufficient to flush the deposited sediment and debris that entered the channels at a much higher velocity down the steep slope; and (g) the calculation packages associated with the design.

02.04.03-2

Staff review indicates that a quantitative estimate of the maximum discharge and water surface elevation associated with the Probable Maximum Flood (PMF) for the North Branch Susquehanna River (NBSR) was not provided in Section 2.4.3 of the FSAR. The PMF computed for the neighboring Susquehanna Steam Electric Station (SSES) was referenced, however details were not provided. In accordance with the requirements of 10 CFR 100.20(c), 10 CFR 52.79(a)(1)(iii), and General Design Criterion 2, the applicant is requested to provide a full evaluation of the PMF for the NBSR as it applies to the Bell Bend site. The FSAR shall also be updated to include this analysis.