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FEDERAL ENERGY REGULATORY COMMISSION
Office of Energy Projects
Division of Dam Safety and Inspections – New York Regional Office
Telephone No. (212) 273-5900

October 3, 2025

VIA Electronic Mail

Mr. Brad Zelonis
Constellation Energy Generation
brad.zelonis@constellation.com

Subject: Letter to Constellation Energy Generation regarding the white paper submittal on the review of bedrock conditions dated January 20, 2023, and the June 27, 2025, submission of the BOC review comments on the white paper, for the Conowingo Project under P-405.

Dear Mr. Zelonis:

We have completed our review of the above referenced assessment of rock conditions relating to stress, scour, seepage and uplift during the PMF event, and the associated Board of Consultants (BOC) review comments on the white paper submittal. The rock condition assessment was completed by Gomez and Sullivan Engineers, D.P.C. as part of the ongoing stability evaluation. A piezometer conceptual design, for installation of new piezometers within the spillway and left (east) abutment, has been developed and is being finalized based on the findings of piezometer assessments including the subject assessment of seepage and uplift conditions in the foundation rock.

Based on the review of preliminary stability evaluations, the BOC requested for the subject assessment of bedrock conditions to determine if there are potential failure planes in the rock below the dam or other concerns including seepage and uplift that could negate the assumptions used in the ongoing stability evaluation.

The completed review of bedrock conditions concluded that existing poor-quality rock zones and joints do not pose scour related stability concerns. However, further investigation of seepage condition was considered warranted to investigate uplift in areas away from the existing drains. These recommendations are accounted for in the proposed piezometer design plans. Our review comments on the subject submittals are included in the enclosure.

Your February 28, 2025, responses to address our review comments on the piezometer conceptual design are acceptable. But our review comments in the enclosure include additional suggestions for consideration in the piezometer design and data collection plan.

Submit a plan and schedule to address our and the BOC's review comments and the final scour report. The plan and schedule should include a BOC meeting to discuss your responses and the final scour report.

File your submittal using the Commission's eFiling system at https://www.ferc.gov/ferc-online/overview. For all Dam Safety and Public Safety Documents, select Hydro: Regional Office and New York Regional Office from the eFiling menu. The cover page of the filing must indicate that the material was eFiled. For assistance with eFiling, contact FERC Online Support at FERCOnlineSupport@ferc.gov, (866) 208-3676 (toll free), or (202) 502-8659 (TTY).

We appreciate your cooperation and continued interest in dam safety. If you have any questions, please contact Mr. Krishna Shadakopan at (212) 273-5904 or by email at krishna.shadakopan@ferc.gov.

Sincerely,

JOHN SPAIN

Digitally signed by JOHN SPAIN
Date: 2025.10.03 11:42:39 -04'00'

John Spain, P.E.
Regional Engineer

We have the following comments:

1) It was concluded, based on the available rock coring logs in association with the post-tensioned anchors, that the existing poor-quality rock zones do not represent a laterally extensive plane of weakness. We recommend confirming this conclusion with the additional coring data from the proposed piezometer installation.

2) It was stated in the report that downhole geophysical data that was available during the completed assessment was not sufficient to provide a more definitive conclusion on the likelihood of laterally extensive low angle joints. As such, a structural analysis of a theoretical low angle joint plane beneath the dam is proposed to be performed as part of the ongoing stability evaluation. We recommend considering collecting additional geophysical data, if feasible, as part of the proposed rock coring work, to further investigate the existing rock joints.

3) The erodibility calculations provided in Appendix C-1 of the white paper indicate that an average of the Rock Quality Designation (RQD) value from most of the boring's uppermost 10-feet of bedrock were used in the analysis. Please provide a justification for averaging the RQD for uppermost 10 feet and perform sensitivity analysis by considering the RQD from the first rock core run. Additionally, provide detailed calculations for estimation of mass strength (Ms) including unconfined compressive strength and coefficient of relative density, and discussion and supporting rock core logs for the selection of Joint Alteration Number (Ja).

4) It was stated in section 5.2 of the white paper that at some locations, the average stream power computed from the Computational Fluid Dynamics (CFD) results is higher than that computed by empirical method and at other locations it is lower. Also, elevation of the bedrock downstream of the abutment is not well documented and therefore an assumed bedrock elevation, based on project drawings, was used for the inputs to the CFD model. Thus, we recommend utilizing the bedrock elevations, to be obtained from the proposed drilling and rock coring work, to verify your assumptions in the CFD model and use the higher average stream power from CFD analysis and empirical methods to evaluate the scour potential.

5) As noted in the report, geometry of rock blocks for the completed scour evaluations was estimated using existing rock joint data. But the report also states that the available downhole geophysical data was not sufficient to provide a more definitive conclusion on the likelihood of laterally extensive low angle joints. Please verify and confirm that the rock block geometry parameters used in the analyses are accurate and whether collection of additional geophysical data is warranted.

6) The completed scour evaluation indicated the potential for rock scour that extend below the assumed foundation level in the downstream areas of abutment monoliths AM-02 to AM-04. However, it was concluded that, except for the estimated undermining (about 1.3 feet) in the vicinity of AM-03 and AM-04, the anticipated rock scour will not affect the assumptions used in the ongoing stability evaluations. Please note that such rock scour, even if they do not pose direct undermining risk, could significantly affect the seepage patterns and uplift pressures. As such, it should be further evaluated and accounted for, as appropriate, in the ongoing stability evaluations. Please also confirm that the anticipated scour has no negative impacts on the global stability of relevant monoliths.

7) It is stated in the report that erosion of the west abutment downstream (natural hillside) due to PMF overtopping is not expected to impact the dam's stability. Relatively high rock elevation, potential run-down overtopping rather than several tens of feet of dropped-down flow, and the relative distance of the exposed slope are listed as the reasoning for the above conclusion. We believe that this conclusion should be further justified with additional evaluations of site-specific conditions given that run-down flows could produce significant scour-induced damage depending on the condition of the foundation.

8) Assessment of seepage and uplift conditions concluded that further investigation of seepage potential is warranted to investigate uplift in areas away from the existing drains. Relevant recommendations are presented in the proposed piezometer design. Please clarify if installing additional drains is a potential solution that can also be considered for monitoring the seepage and reducing uplift pressures in areas that are determined to be areas of concern.

Document Content(s)