

COMPARISON TABLE Conowingo Hydroelectric Project
FERC Project No. P-405 / MDE 2018 17-WQC-02 vs. 2025 REVISED 17-WQC-02 (R1)

Topic/Theme	2018 WQC	2025 Revised WQC	Net effect
Flow regime	<p>Requires a minimum Flow Regime + more protective Year 10 Flow Regime with specific minimum flows, ramping limits as ecological protection measures, and adaptive management study to reevaluate Year 10 after independent peer review. (pp. 14, 15, Attachment #4-1)</p>	<p>Interim Flow Regime + Year 4 Flow Regime with explicit provisions allowing modification for “Detrimental Economic Impact” (p12)(see "adaptive management" row) and broad deviation allowances (see "deviation from flow requirements" row) (pp. 6-13, 19)</p>	<p>Weakened / more flexible to Constellation, less anchored to ecological objectives and requirements and more to catered to their economic criteria and benefit</p>
Dissolved oxygen (DO) & nutrients: Chesapeake Bay	<p>Requires annual reduction of 6M lbs Nitrogen + 260K lbs Phosphorous from Project discharges beginning 2025, plus Nutrient Corrective Action Plan (NCAP) and Sediment & Nutrient Monitoring Plan aimed at DO non-attainment area in the Bay. (pp. 15-16)</p>	<p>No NCAP; Requires only payments and reservoir monitoring, with elimination of numeric reduction obligations; Licensee pays fixed annual “Water Quality Mitigation Payments” to MDE’s Clean Water Fund and performs chlorophyll / nutrient monitoring only in the reservoir, not in the Bay; emphasizes reservoir chlorophyll-A and DO monitoring and quality-assured reservoir data, not explicit nutrient load reductions from the dam to meet Bay DO standards. In a MDE has committed to perform dredging with funds from Mitigation payments. (pp. 28-32)</p>	<p>Moves from project-specific load reductions to a general funding mechanism without requiring the dam to actually achieve the prior quantified reductions; the 2018 WQC’s core numeric nutrient reduction requirement (6M/260K) is abandoned in favor of a finite payment schedule plus monitoring.</p> <p>Effectively trades enforceable tonnage limits for a funding mechanism whose actual impact on Bay DO depends on how MDE uses funds, not on the project’s own discharge performance. This new framework ensures the operator will not be held liable for downstream DO impairment, cannot be required later to do nutrient reductions, can argue that payments “fully resolve” DO impacts due to Section 2.8.</p>

DO: river downstream	Direct and enforceable DO protections immediately below the dam for no adverse impact to downstream DO; requires continuous DO monitoring of the tailrace (Station 643) , with corrective action plan within 30 days of any exceedance of standards (pp-16-17)	Eliminates all downstream DO protections; replaces them with monitoring only in the reservoir , 2025 focused on DO/chlorophyll monitoring, DO at multiple depths, nutrient sampling, seasonal sampling windows; there is no requirement to protect downstream DO at all and no Station 643 (tailrace) monitoring mentioned or corrective-action required. \$55,000/year cap on monitoring costs. Fish kill monitoring eliminated. (pp.29-32)	Turbine discharges with low DO can now occur regularly, as reservoir monitoring does not capture DO impacts after turbine passage, adversely affecting marine life downstream by worsening algal blooms, worsening DO non-attainment conditions, violating Bay TMDL expectations, harming SAV habitat , crabs, oysters, etc.
Sediment & nutrients	2018 mandates a Sediment & Nutrient Monitoring Plan explicitly aimed at quantifying sediment/nutrient discharges and storm-event impacts on Bay living resources. (p.16(vi))	2025 requires a Sediment Management Plan keyed to prior FERC sediment plans and periodic bathymetric surveys; the focus is more on reservoir bathymetry than on Bay DO criteria. (p. 35)	Shift from Bay-impact focus to internal reservoir management; reduced direct linkage to Chesapeake Bay water quality.
Trash & debris	Requires weekly clamming (≥ 40 events/year) and daily skimmer barge operation, removal of all visible trash and debris, 48-hour response to marina complaints, and 2 annual community cleanups. (pp.17-18)	Requires a Debris Management Plan with hotline, complaint response, and 2 cleanups, but expressly states licensee is not required to remove more than 450 “loads” per year (20-yd dumpsters), excluding certain events (pp.32-35)	Converts the open-ended obligation to remove all visible trash weekly, to cleaning up capped annual loads, allowing significant debris to remain with no responsibility to conduct cleanups based on realistic need once passed capped amount
Financial obligations	Settlement valued at \$7B; Combination of corrective action strategies, such as in-lieu fees tied to actual nutrient reductions (\$/lb N and P) as one option within NCAP, among other restoration/management/dredging measures (pp.16(iv))	Settlement valued at \$340M; Introduces a fixed Water Quality Mitigation Payment schedule (50 years, tiered annual amounts) to MDE’s Clean Water Fund; year 1-5: \$1,215,000 / year 6-25: \$1,515,000 / year 26-29: \$800,000 / year 30-50: \$900,000 (p28(12)(a))	Structural shift from paying for specific reductions to generalized payments decoupled from the dam’s own pollution performance; Payment is the same no matter what the dam releases; MDE cannot increase the payment due to Section 2.8(b) in 2025 Settlement Agreement

<p>Adaptive management / science</p>	<p>2018 requires Adaptive Management Flow Study, independent peer review by at least five scientists and potential modification of the Year 10 regime based on science. (p.14-15(iv)).</p>	<p>2025 includes additional chlorophyll/DO monitoring and reporting, but flow changes can be driven by "Detrimental Economic Impact" rather than ecological protection requirements; (p.11-12(o)) see: <i>"Unmodified Present Value (UPV)" = the revenue Constellation would earn without the environmental flow restrictions;</i> <i>"Modified Present Value (MPV)" = the revenue Constellation earns with the required environmental flows.</i> <i>If $MPV < UPV$ by a certain amount, Constellation can argue that the required flows cause a "Detrimental Economic Impact."</i> (p.11-12(o)(ii))</p>	<p>Adaptive Management not based on science or ecological need but based on the dam's revenue impacts; dam can ask to weaken or change environmental flow requirements if those requirements reduce power-company revenue</p>
<p>Deviation from flow requirements</p>	<p>2018 allows deviations only to avoid violations of Law/Authorizations with prompt and detailed reporting and documentation of flows and biological impacts. (p.15(v))</p>	<p>2025 expands deviations to cover contracts, PJM tariffs, nuclear license obligations, and public safety, plus monthly quotas of discretionary deviation hours. (p.10(h)(k), p11)</p>	<p>If environmental flows would cause the company to violate any law, any authorization (including nuclear license at Peach Bottom), the FERC license for Muddy Run Pumped Storage, contracts with Baltimore or other government entities, the licensee can break environmental flows instead.</p> <p>Company also gets a set number of hours per month, varying by month, where it can deviate from up ramping, down ramping and maximum flow restrictions.</p>

Notes on flow regime/DO	<p>DO non-attainment area are portions of the Chesapeake Bay where dissolved oxygen (DO) falls below the legally required water-quality standards set under the Clean Water Act and the Bay TMDL; the 2018 requirements were not arbitrary but tied to Chesapeake Bay TMDL, modeling showing Conowingo scour dead zones, the DO non-attainment area and ensuring downstream DO compliance;</p> <p>CWA §401 requires the state to certify that a project “will comply with water quality standards.” 33 U.S.C. §1341(a)(1). Those standards include DO criteria in the Bay, not just in the reservoir. The 2025 WQC lacks any mechanism to ensure compliance with downstream DO standards.</p>
Notes on Section 2.8 of 2025 Conowingo Dam Water Quality Settlement Agreement	<p>Section 2.8 represents a major structural limitation on Maryland’s future enforcement authority. While subsection (a) nominally allows MDE to petition to modify the FERC license if new, more stringent water-quality standards are adopted, subsection (b) sharply restricts that authority by declaring that the annual Water Quality Mitigation Fund payments “fully address and resolve all known or alleged water-quality impacts” from the dam’s presence and operation. In effect, Maryland agrees that absent of undefined “unforeseen, substantially changed circumstances”, it will not impose additional requirements on Conowingo related to chlorophyll-a, dissolved oxygen, PCBs, or any other pollutant originating upstream, even if the dam’s operations exacerbate downstream impacts. This clause functionally converts environmental performance obligations into fixed annual payments and binds the State for the full license term, a highly unusual constraint under Clean Water Act §401, which ordinarily requires continuing assurance of compliance with evolving water-quality standards. Subsection (c) further strengthens Constellation’s position by expressly reserving its right to challenge any future attempt by MDE to modify the license. Together these provisions substantially curtail Maryland’s adaptive regulatory authority over the next 40–50 years.</p> <p>(p13 of 2025 Settlement Agreement between MDE, Constellation, Waterkeepers and Lower Susquehanna Riverkeeper Association)</p>
Notes on reservoir monitoring vs. tailrace monitoring	<p>Reservoir water quality behaves fundamentally differently than river water downstream. A reservoir is slow moving, stratified (layered), temperature and density layered, and nutrient accumulating. By contrast, the tailrace (the area immediately below the dam, where 2018 WQC required Station 643 to conduct continuous monitoring) is highly turbulent, rapidly mixed, oxygen-demanding due to sudden turbulence, and exposed to altered temperatures and lower DO from releases of lower depth in the reservoir; the two systems cannot be used as substitutes for one another. The dam's operations themselves change water quality downstream, effects that reservoir monitoring, even if done at multiple depths, cannot detect. Turbine operations can reduce DO temporarily, especially under high-flow conditions.</p> <p>Sources:</p> <p>https://www1.eere.energy.gov/water/pdfs/doewater-11673.pdf</p> <p>https://www.fondriest.com/environmental-measurements/environmental-monitoring-applications/monitoring-dissolved-oxygen-hydropower-facilities/</p>
Notes on dam safety	<p>MDE did not evaluate multiple dam-safety filings made to and from FERC since 2018, including piezometer and structural monitoring data concerning the integrity of the nearly century-old dam</p>