



July 6, 2023

Mary E. Dolan
Executive Director
FDR Memorial Legacy Committee

Subject: Use of Gates to Reduce Flooding around the Washington D.C. Tidal Basin.

Dear Ms. Dolan:

Upon your request, I have reviewed the current and projected state of tidal flooding occurring around the perimeter of the Washington D.C. Tidal Basin and have considered the potential suitability of using hydraulic gates at the inlet to the Tidal Basin to reduce tidal flooding. I have reviewed the various National Park Service (NPS) supporting documents associated with the project's Environmental Assessment (EA) to familiarize myself with the Tidal Basin and associated tidal flooding, and to understand the analysis that have been conducted to date.

The Coastal Modeling Report prepared for NPS clearly demonstrates the frequency of tidal flooding and the increase in flooding frequency associated with sea level rise (SLR). The NPS project proposes only raising the seawall around a small portion of the Tidal Basin and does not address current and increasing tidal flooding adjacent to important national monuments, including the FDR Memorial. Options should be explored that consider a wide range of strategies to limit tidal flooding of these national monuments under both current conditions and projected SLR scenarios with storm surge. Among others, options should include replacing the existing tide gates with gates that can provide increased protection of the monuments from flooding.

The Coastal Modeling Report describes the existing gates at the inlet and outlet of the Tidal Basin and their intended purpose for flushing sediment from the Washington Channel. Using a system of self-operating one-way side-opening gates, the Tidal Basin draws water through the inlet from the Potomac River during each flood tide and discharges this tidal water through the basin outlet and into the Washington Channel during each ebb tide. As currently designed, these side-opening gates allow for the full range of tides and do not provide flood control benefits. However, the inlet structure is equipped with manually operated flood gates (curtain gates) intended to isolate the Tidal Basin during storm surges, but it appears these gates are never operated.

Several gate options are frequently used to control tidal flooding associated with storm surges and increasing sea level that appear well-suited for the Tidal Basin. These gate systems could be designed to allow normal tidal inflow and outflow as originally intended while limiting inflow to the Tidal Basin when river levels exceed a set elevation. Thus, the gates would prevent frequent flooding of low-lying areas around the Tidal Basin perimeter.

Gate systems that could be used to control flooding include (1) electorally operated sluice gates that are automatically activated based on water level and (2) passively operated self-regulating tide gates (SRTs) that close at a set water level, among others. These types of gates have been widely used in recent years as a tool in restoring tidal marshes while limiting storm surges and anticipated SLR to prevent off-site flooding. This includes projects I have overseen in California that create tidal wetlands through reintroducing tidewater to areas behind dikes while employing gates that close once water levels exceed a threshold, thus preventing adjacent properties from flooding.

Unfortunately, the current proposed NPS project fails to be proactive at addressing rising sea levels. I understand that the US Army Corp of Engineers (USACE) is responsible for the inlet and outlet structures and associated gates, and thus would be responsible for design of any gate replacements. As part of addressing current flooding and planning for increasing sea level, the NPS should engage the USACE and work cooperatively at identifying flood hazard reduction solutions. An evaluation of alternatives should undoubtedly include options that employ gates for flood protection. The analysis should include hydraulic modeling and structural assessment of the existing inlet structure to identify the most applicable options. Options that employ gates may also involve raising the seawall along the river to a higher elevation than planned, and thus should be developed as a complete project rather than being done in a piecemeal fashion.

Thank you for the opportunity to review the project and provide my recommendations. Please contact me if you have any questions or would like to discuss further.

Sincerely,



Michael Love, P.E.
Principal Engineer

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