GOVERNMENT OF THE DISTRICT OF COLUMBIA

District Department of the Environment

January 27, 2015

Jon M. Capacasa, Director
Water Protection Division
U.S. Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19103

RE: EPA's Approval of Washington Aqueduct's Bypass Request – NPDES Permit No. DC0000019

Dear ~~Mr. Capacasa~~ Jon:

The District Department of the Environment (DDOE) is concerned about the recent authorization by the US Environmental Protection Agency (EPA) to the Washington Aqueduct for a bypass to discharge from Outfalls 003 and 004 and requests that EPA Region 3 conduct another review and amend the approval. This letter details DDOE's understanding of the background and legal requirements, observations and findings from field inspections, and recommendations regarding this and future authorizations.

DDOE believes that the bypass does not meet the requirements of the Washington Aqueduct's National Pollutant Discharge Elimination System Permit No. DC0000019 (NPDES permit) or the 2003 Federal Facility Compliance Agreement (FFCA.) Therefore, DDOE requests that EPA Region 3 verify whether or not authorization of the bypass meets the conditions of the NPDES permit and the FFCA. DDOE also requests that EPA Region 3 determine if there any other conditions of the FFCA with which the Washington Aqueduct is currently not in compliance.

Background

The NPDES permit limits the discharge of residual solids to the Potomac River. The Washington Aqueduct was required to develop an alternative to manage and dispose of the residual solids produced during the drinking water treatment process. These residual solids include solids removed from the Potomac River water and aluminum sulfate, a flocculent used for enhanced settling.

After a number of studies and significant stakeholder interactions, the construction of a Residuals Processing Facility (facility) was selected as the alternative to discharge. As part of this facility

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construction, a dredging system was designed to collect the residual solids from the sedimentation basins and move them to the processing facility. The NPDES permit provides that "the permittee is not authorized to discharge from Outfall 003 or 004 upon the completion of the Residuals Processing Facility or after November 30, 2010, whichever comes first." Prior to the installation of the Residuals Processing Facility, the Washington Aqueduct's NPDES permit authorized the discharge of residual solids to the Potomac River twice per year or approximately every six (6) months. These discharges were routinely conducted by the Washington Aqueduct as part of normal operations. Since its original installation in July 2011, and the re-installation in July 2012, the dredge system installed at the Georgetown Sedimentation Basins has not functioned sufficiently to handle residual solids meant for processing at the facility. The failure of the dredge system in July 2011 caused a need for a bypass in July 2012, which included the discharge of approximately twelve (12) months of accumulated solids.

Since the last bypass approval, a design flaw in the dredging system has again allowed for the accumulation of solids; approximately 6.5 million pounds as reported by the Washington Aqueduct. Therefore, on September 15, 2014, the Washington Aqueduct applied for a bypass to discharge two years of accumulated residual solids. EPA Region 3 approved the requested bypass on November 10, 2014.

DDOE Observations and Findings

Draining of Sedimentation Basin #2

Between December 1 through December 3 2014, DDOE inspectors observed the initial draining and stages of the final flushing and cleaning of the Georgetown Reservoir Sedimentation Basin #2. The initial draining of the basin to Outfalls 003 and 004 was observed as clear and containing minimal suspended solids. DDOE inspectors returned on December 2nd to find thick, heavy sediment loads covering the entire bank leading to the river, including the rocks and adjacent grass. At some locations, the sediment was observed overflowing the banks of the small discharge channel. The effluent flowing from the outfall and through the channel was very dark, viscous, and highly turbid. A plume was observed extending ten (10) feet into the Potomac River. The observed discharge effluent did not mix with upstream river water and had a heavy, viscous appearance.

DDOE and EPA Region 3 convened a conference call with the Washington Aqueduct. The Washington Aqueduct agreed to increase the water used to flush the sedimentation basins in an effort to dilute the effluent discharge. Additionally, the Washington Aqueduct agreed to begin monitoring the effluent discharge by collecting and analyzing samples for Total Suspended Solids (TSS). DDOE also requested that an estimate of the volume of accumulated sediment be provided.

Draining of Sedimentation Basin #1

On January 14, 2015, DDOE inspectors observed "sludge like" discharge from the Washington Aqueduct's Outfall 004 flowing directly to the Potomac River. The discharge was a combination of residual solids and water accumulated within Sedimentation Basin #1 at the Georgetown

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Reservoir and appeared extremely viscous. Based on the observations made by DDOE inspectors the discharge did not appear to represent the intended dilution outlined by the FFCA or what was agreed upon during the draining and cleaning of Sedimentation Basin #2. DDOE collected and analyzed two effluent samples from the outfall. Analysis of the sample collected within the discharge channel, approximately 30 feet from the outfall, found TSS of 25,279 mg/L. The lab at Ft. Meade was unable to analyze the second sample, collected from the outfall, for TSS because of the high content of solids within the sample. The lab advised that this sample will have to be analyzed as sludge for percent solids.

Reccomendations

First, as required by ***Part II (B)(3)(c)(iv)*** of the NPDES permit, in addition to notifying DDOE, the Washington Aqueduct must provide notification of the anticipated bypass to the US Fish and Wildlife Service (US FWS), National Park Service (NPS), Interstate Commission on the Potomac River Basin (ICPRB), and National Marine Fisheries Service (NMFS.) The Washington Aqueduct should immediately notify these agencies and provide all the details of the discharge of residual solids from Sedimentation Basin #2 and Sedimentation Basin #1, including but not limited to volume, location, time, duration, and any sampling or monitoring data available.

Second, DDOE recommends that EPA consider the adverse effects or potential alternatives as required by ***Part II (B)(3)(d)(i)(2)*** and ***Part II (B)(3)(d)(ii)*** of the NPDES permit. The Washington Aqueduct should not be allowed to accumulate such a significant volume of solids over a period of two (2) years. Consequently, the increased accumulation of solids resulted in concentrations of the discharge effluent approximately three (3) times greater than the effluent discharge used in the 1993 discharge impact study and the 2001 water quality study to evaluate the acute and chronic toxicity to aquatic biota. The bypass should meet the original intent of the dilution requirements outlined in the FFCA.

Therefore, the Washington Aqueduct should develop and implement a plan to ensure the residual solids from the sedimentation basin are not discharged to the Potomac River in concentrations that may create an acute or chronic threat to the river. Washington Aqueduct personnel indicated to DDOE inspectors that because of the recent reconfiguration of Sedimentation Basin #1, they were unsure how the basin would be flushed and whether the appropriate volume of water could be used to do so. To ensure the Washington Aqueduct meets the FFCA intent for the dilution requirement, DDOE requests that a limit for TSS and turbidity be established based on the following formula:

- Mass of residual solid remaining in the basin / 12 million gallons (volume of dilution based on 2 years of solids accumulation according to FFCA) x 119,826.42 (lbs/gal to mg/L conversion factor.)

This formula applies the mass of residual solids remaining in the basin diluted by four (4) times the volume of water defined by the FFCA, considering the FFCA dilution factor was determined by the accumulation of solids of a period of six (6) months.

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TSS should not exceed this limit, measured at the point where the discharge channel meets the Potomac River. Continued monitoring of this limit should be verified by measuring for turbidity and by periodic collection of confirmation samples for TSS. Turbidity correlation can be measured by the following formula, developed by the 2001 EA Water Quality Study for the Washington Aqueduct.

- TSS (mg/L) = 1.542 Turbidity(NTU) – 2.40

Finally, the Washington Aqueduct should be required to demonstrate that the delayed repairs to the sedimentation basin dredgers have been completed and that dredgers function adequately to process the solids from the Georgetown Sedimentation basins. Any analysis or reports should be submitted to both DDOE and EPA Region 3.

DDOE is available to discuss our ongoing concerns at your earliest convenience. In keeping with NPDES permit provisions, DDOE asks to be involved during the review, comment, and approval of all future bypass requests where District water quality standards are expected to be exceeded. Please have your staff contact Joshua Rodriguez at Joshua.Rodriguez@dc.gov or (202) 535-2226.

Sincerely,

Hamid Karimi, Ph.D
Deputy Director
Natural Resources Administration

CC: Thomas Jacobus, P.E. (Washington Aqueduct)
David McGuigan, Ph.D (EPA Region 3)
Stefania Shamet (EPA Region 3)
Joshua Rodriguez (DDOE)

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