

EXHIBIT A
PROJECT DESCRIPTION

Grantee: Hanover County, Totopotomoy

Grant: #440-S-13-05

The Hanover County – Totopotomoy Wastewater Treatment Plant (TWWTP) is subject to the requirements of the Virginia Department of Environmental Quality (DEQ) Chesapeake Bay Program (CBP). Total nitrogen (TN) and total phosphorus (TP) waste load allocations (WLAs) have been revised for the TWWTP and are based on an effluent TN concentration of 6.0 mg/L and TP concentration of 0.4 mg/l at the planned future installed capacity of 10.0 MGD. Hanover County has aggregated its WLA for three facilities (TWWTP, Ashland, and Doswell) and optimizes the treatment processes to maintain aggregate compliance.

As the TWWTP influent flow increases from current levels (approximately 2.5 MGD) and approaches 7 MGD, it will become more challenging to maintain compliance with the total phosphorus target concentration using the County's aggregate compliance strategy. Currently, the TWWTP has the capability to feed alum upstream of the secondary clarifiers to precipitate phosphorus. Although the alum feed facilities will typically provide adequate phosphorus trim capabilities, tertiary filtration of a portion of the flow is planned in order to provide operational flexibility. The filters will be deep bed, monomedia sand filters that will be suitable for expansion. In order to minimize capital cost in the near term two filter cells will initially be provided. The proposed filter facility will allow the current average flow of 2.5 MGD to undergo complete tertiary treatment, improving the quality of plant effluent. As flows approach 7 MGD, the addition of more filter cells would provide the County with capability to remove additional phosphorus associated with TSS in secondary effluent. An equalization tank is required for filter backwash storage and to attenuate sidestream flows from solids thickening and dewatering. Tertiary filters are recommended in order to provide operational flexibility at current flows and to provide enhanced capabilities to meet limits at future flows. The initial installation of two filters will allow the County operational flexibility to maintain compliance with the total phosphorus target using the County's aggregate compliance strategy but is not intended to provide tertiary treatment for the full 7 MGD flow.

The proposed NRT upgrade for TWWTP includes the following components:

- The addition of two sand tertiary filters – eligible for grant funds
- Air Scour Blower Building – eligible for grant funds
- EQ Tank – eligible for grant funds
- Improve SCADA Controls For Existing NRT – ineligible for grant funds
- Replace Existing Blowers– ineligible for grant funds
- Add Clarifier Launderers – ineligible for grant funds