

PROJECT DESCRIPTION

Grantee: Town of Surry

Grant: #440-S-15-03

The Town of Surry presently operates a wastewater treatment plant (WWTP) with a design flow of 0.06 MGD which was constructed in the early 1980's and provides secondary treatment with discharge to an unnamed tributary of Dark Swamp, a Tier 1 water body in the Lower James River watershed. The treatment consists of a bar screen, a flow splitter box, a clarigester, two Rotating Biological Contactors (RBCs), two final clarifiers, a sludge return pump station, a digested sludge pump station, a plant pump station, two microscreen filters, a laboratory building, sludge drying beds, ultraviolet (UV) disinfection, and an emergency generator. Due to age, most components are in fair to poor condition and the Town has experienced difficulty meeting its VPDES Permit effluent limits. The plant's present average flow rate of 0.075 MGD is also substantially higher than its design capacity. Due to this situation, the Town is under a Department of Environmental Quality (DEQ) Consent Order to upgrade its facilities.

To comply with the DEQ Consent Order and VPDES Permit, the Town plans to expand and upgrade its existing facility to a 0.099 MGD biological nutrient removal (BNR) plant capable of meeting 8.0 mg/l total nitrogen (TN) and 1.0 mg/l total phosphorus (TP) effluent concentrations as outlined in a preliminary engineering report (PER) submitted July 2014. The Town has proposed a plan to replace the existing 0.06 MGD RBC treatment plant with a 0.099 MGD sequential batch reactor (SBR) system. The following major project elements are proposed, along with all necessary piping, wiring, instrumentation, appurtenances, and other attendant costs:

- Demolition of existing treatment units (not grant eligible): The RBC units and other outdated facilities will be demolished to make room for the new treatment scheme.
- Headworks (not grant eligible): A microscreen/auger at the headworks vault will be installed to provide grit removal.
- Pre-Equalization Tank and Equipment (grant eligible): A 50,000 gallon pre-equalization basin with surface aeration and non-clog pumps is proposed to control peak flows to the plant and keep the peak factor at 2.5 or less.
- Sequential Batch Reactor Basin (grant eligible): A 160,000 gallon SBR system will be constructed to replace the existing RBC units. This will include decanting, mixers, blowers with coarse bubble diffusers, and a sludge waste pump.
- Post Equalization Tank and Equipment (grant eligible): A 60,000 gallon post equalization tank will be installed including transfer pumps and a blower with coarse bubble diffusers.
- Sludge Digestion (grant eligible): A new digester tank and equipment will be constructed and installed.
- Tertiary Filtration (grant eligible): Installation of a cloth media drum filter with backwash pump is planned.
- Chemical Addition (grant eligible): Alkalinity and alum feed pumps and controls will be installed.