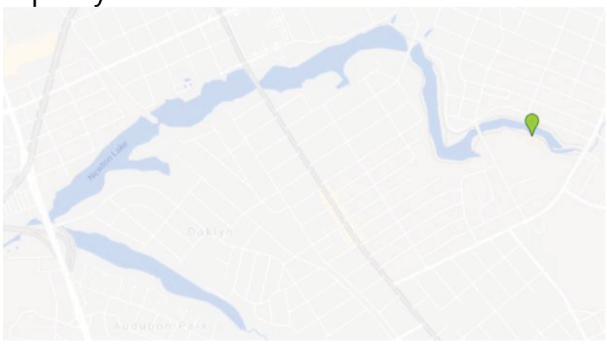
Newton Lake Water Quality Project

Dredging and Dewatering Fact Sheet – Fall 2020

Background

Newton Lake is a man-made, 100-acre lake in Camden County, New Jersey situated between the towns of Audubon Park, Collingswood, Haddon Township and Oaklyn. Created by damming the north branch of Newton Creek, since the park's construction and the lake dredging in the 1930s, Newton Lake has been losing storage capacity due to sedimentation.



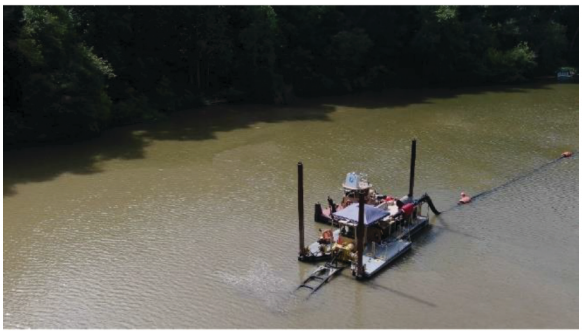
Map of Newton Lake and Peter's Creek

Through the financing from the New Jersey Environmental Infrastructure Trust, Camden County and Camden County Municipal Utilities Authority (CCMUA) are funding the Newton Creek Water Quality Project Dredging Phase to remove sediment from the portion of the lake west of Cuthbert Boulevard to the lake's spillway at Route 168 to improve capacity, flow, and access. Through a competitive, public procurement process, CCMUA has retained Mobile Dredging & Video Pipe, Inc. to perform the dredging operations for Newton Lake. Dredging will begin in fall 2020 and hydraulically remove approximately 41,000 cubic yards of sediment from 2 adjacent ponds and the lake sections between Cuthbert Boulevard to White Horse Pike.

The dredged material will be pumped to a staging area by White Horse Pike where the material will be dewatered, loaded into dump trucks, and transported to Kinsley Landfill in Sewell. The project will restart in July 2021, with a temporary shutdown over winter-spring in 2020-2021.

Dredging

The sediment that has accumulated in Newton Lake since its construction consists of sand, silt, and clay materials. Prior to dredging, physical and chemical analytical tests were performed to evaluate the material properties, of the sediment. The dredged sediments will also be tested throughout the process with methods approved by the New Jersey Department of Environmental Protection.



Hydraulic Dredge

The sediment will be dredged from Newton Lake using a hydraulic cutterhead dredge. A cutterhead uses rotating blades to break up and loosen sediment at the bottom of the lake. The sediment is then mixed with water from the lake, creating a slurry that can be pumped through a pipeline from the dredge and through additional booster pumps to

move the material greater distances. The pipeline will run from the dredge location to the staging area.

Dewatering

Example of Dewatering Location

Dewatering of the dredged material is performed using mechanical processes to separate out the different sizes of sediment particles from the transport water. The dewatering process first removes larger materials by passing the slurry through shaker screens, which capture large debris, rocks, and other materials. Next, the material passes through hydrocyclones which separate out denser sand-sized particles. The remaining slurry contains very fine particles of silt and clay suspended in water and requires additional treatment. After passing through a series of thickening tanks that introduce flocculants to remove excess water, the material is then distributed to belt filter presses where it is physically pressed to squeeze out liquid, leaving a much drier solid called filter cake. Water from this process is sent to a clarifying tank where any remaining particles will settle out. Clear water from the clarifier is discharged by pipe back into Newton Lake, where it is closely monitored to ensure discharge levels do not exceed state water quality standards. The dewatered dredge material is then blended together to form a consistent material that will be transported to the landfill for stockpiling, and later use as cover material.

Shaker Screens

Belt Filter Press

Clarifying Tank

For additional information, please refer to the website below or contact:

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Camden County Municipal Utilities Authority
1645 Ferry Avenue Camden, NJ 08104

https://www.camdencounty.com/service/parks/newton-lake-water-quality/