

Metro12 Development

Middlesex County, New Jersey

Property Owner:

Rahway Arch Properties, LLC.

Contact:

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Purpose:

Remediation and Capping

History:

The Rahway Arch Properties site is a 125 acre brownfield located in Carteret, New Jersey along the Rahway River. The site was previously used for disposal of a mixture of Alum and yellow prussiate of soda sludge from an American Cyanamid manufacturing facility on the opposite banks of the Rahway River. The disposal activities began in the early 1930's and continued into the mid 1970's. Approximately 2.5 million tons of cyanide laden sludge was disposed at the site by mixing the sludge with river water and pumping through pipes onto the site. In the 1950's six impounds were created through the construction of berms at the site.

The property owner desired to remediate the site and develop a small area, and dedicate the remaining large portion of the property to habitat creation. The challenge, however, was designing a remedy to cap over very soft cyanide sludge exhibiting the consistency of toothpaste. Based on Soil Safe's experience with designing and building caps over soft sub-strata using their manufactured Soil Product, Soil Safe was contacted by the property owner and, ultimately teamed with the owner to tackle this project.

Soil Safe, in concert with the property LSRP, developed a plan to cap the site using the engineered fill material produced by an on-site Class B soil recycling facility. An extensive geotechnical investigation was conducted throughout the site to identify the loading characteristics and required monitoring to ensure safe and compliant construction of the cap. A detailed Remedial Action Work Plan (RAWP) was developed for the site; based on the results of both the geotechnical and site remedial investigations. Permitting for the project included land use permits, waterfront development permits, jurisdictional determination from the US Army Corps of Engineers, Recycling and Air permits, along with several local and county permits.

The project (known as the "Metro12" Development) was fully permitted in late 2014 and is under construction, with over one million tons of manufactured Soil Product already processed and placed on site. All soil received and recycled at the Metro12 project remains on-site to construct the cap.



Soil Safe Capping Project:

The site presents significant geotechnical challenges and all site loading is constantly monitored through a complex system of real-time geotechnical instrumentation including; settlement plates, vibrating wire piezometers, and inclinometers. All subsurface movement is monitored in real-time so both loading and pore pressure adjustments can be made as necessary during the capping project. A detailed soil placement plan was developed that includes lag time for placement by area to allow migration of pore water.

Engineered Fill:

Soil Safe recycles and repurposes non-hazardous contaminated soil to make the capping material used at the Metro12 development. Through its stabilization recycling process, Soil Safe manufactures a recycled engineered Soil Product that has received Green Approved Product certification to the ICC 700 National Green Building Standard for recycled sub-base and other engineered soil material applications. The Soil Product used in the Metro12 cap must meet compaction and permeability specifications pursuant to the design.



Prior to the remediation project, the site was estimated to discharge over 20 million gallons per year of cyanide laden water to the groundwater and surface waters. The capping system prevents infiltration and eliminates contact between precipitation and the cyanide laden sludge; decreasing discharge to ground water to 1,500 gallons per year.

Permitting, Engineering and Review:

Due to the contaminants, sludge material, proximity to the Rahway River and the bathtub configuration of the old impounds, Soil Safe followed a strict permitting and engineering protocol to gain approval from the State for the remedial action and development. This required a detailed hydro-geologic study, a nine month component review of the capping plan, a flood plain waiver, and a significant alternative capping plan analysis. Through the soil recycling process, the Soil Product maintains uniform and consistent geotechnical properties that are superior to standard fill in terms of grain size distribution, moisture density relationship, permeability, shear and compressive strength. These geotechnical characteristics are critically important to successfully cap and contain the cyanide sludge material.

