



CASE STUDY

Wares Creek Dredging Project

Bradenton, Florida, USA

Flint Industries TITANTube®

Owner: Manatee County

Consultants: U.S. Army Corps of Engineers

Contractor: Transwest Dredge

Construction: 2011 - 2012

Background

The Wares Creek Project was initiated to prevent flooding in the City of Bradenton during heavy rains. The project was divided into three phases: Phase 1 was to dredge the creek and remove obstructive plants; Phase 2 to widen the creek and rebuild sea walls; and Phase 3 to widen the creek.

In June 2011 the U.S. Army Corp of Engineers, Jacksonville District, awarded an approximately \$3.5 million contract for Phase 1 work at Wares Creek to Transwest Dredge. Planned work consisted of dredging approximately 37,000 yds³ (28,288 m³) of sand and silt between 9th Avenue Bridge and Manatee Avenue Bridge in the City of Bradenton, Florida.

Dredging / Dewatering

The dewatering operation was designed to process 1.7 million gallons of water a day from the creek. Sand and silt was dredged from the creek and sent through an array of filtration systems. A lot adjacent to the 32-foot dredge held the heavy equipment designed to carry out the process. Sediment from the dredge was put into a separation tank which started the purifying process. Huge hydrocyclones took the material from the creek and vibrated it through very fine screens to separate the solids from the water.

The sand was screened out and larger matter such as trash and bottles remained. A conveyor deposited the clear beach type sand from the separation tank to an area where it was trucked away to become top soil at the nearby Lena Road Landfill. Water extracted during this process was returned to the creek via pipelines that crisscrossed the lot.

The finest silt from the separation tank was pumped into four clarifier tanks for special treatment. The heavier sediment dropped from the water to the bottom of the tanks where it collected. This material was mixed with a polymer that bound the sediment so it was easier to handle.

The remaining material was then sent to the TITANTube® filters. These large porous tubes made from heavy duty synthetic fabric trapped solids and allowed the water to escape back into the creek. The geotubes were then cut open and the residual solids were trucked to the landfill for disposal. This process ensured that the dredged liquid met strict water quality guidelines when it was returned to the creek.

Dewatering Geotextile Tubes

TITANTube® is the only geotextile tube with geotextile fabric manufactured specifically for dewatering municipal and industrial sludge and animal waste, as well as marine sediment.



Main picture: Aerial View of Dewatering lot

Above first picture: Quality of Water taken from Wares Creek and the water returned to creek after the dewatering process

Above second picture: View over the filtration systems.



Left: TITANTube® geotextile tubes

Above: Pumping the sediment into the TITANTube® dewatering geotextile tubes

By dewatering the dredged material the cost of disposal or recovery is reduced and it enables the water to be returned to the creek. The TITANTube® roll-off tubes are a cost effective way to remove excess water and reduce industrial disposal costs. The geotextile fabric used has a high operating strength and high UV resistance.

TITANTubes® are easy to install and utilise. The tube is lined with either pallets, geonet or a more permanent drainage media. If needed a polymer mix is fed into the sludge stream. The sludge is then pumped into the tube via the fill port on top and the water flows through the pores of the fabric while solids are retained. When the tube is full of dewatered material the solids can be recovered or taken for disposal. The TITANTube® is composed of high-tenacity polypropylene yarns which are woven into a network in such a manner that the yarns retain their relative position to each other for the high demands required.

The fabric is inert to biological degradation and resistant to most naturally encountered chemicals typically found in a marine environment.

Conclusion

The Wares Creek Project has improved the creek significantly. The process has eliminated bad smells and will make the creek a usable area for recreational activities, such as kayaking. The creek is clearly deeper and flowing more with much less visible at low tide, and has proved successful in preventing flooding in the area during heavy rains.

Project specifications

System TITANTube® dewatering geotextile tubes

Finish Sand colour

Structure High tenacity polypropylene yarns

Size 6.7m X 2.4m X 0.9m

Water Flow 408 l/m/m²

UV Resistance 95% (after 500 hrs)

Strength 96 kN/m

Opening Size US Sieve .300mm