HydroTurf®

Location
Arlington, TX

Owner
City of Fort Worth

Engineer
CP&Y

Contractor
McCarthy Builders

Project Type
Dam Spillway

Year Completed
2017

Size
23,000 sq. ft.

Product
HydroTurf® CS

Recent upgrades to the award-winning Village Creek Water Reclamation Facility include using HydroTurf® for erosion protection in a large dam spillway.

Owned and operated by the City of Fort Worth, the Village Creek Water Reclamation Facility was built in 1958 and has been expanded over the last 60 years. Its original treatment capacity of 5 million gallons per day (mgd) has grown to over 110 mgd today. The facility now serves more than 880,000 people and numerous industries in 23 communities. The plant is capable of processing 166 million gallons of wastewater each day. In order to handle this large volume, excess wastewater must be stored in staging reservoirs until it can be treated and released. Watershed Geo's HydroTurf is playing a key role in the latest improvement phase of this part of the facility.

Because of its superior erosion protection, HydroTurf was selected over articulated concrete block as a hard armor revetment for the dam spillway located between the main reservoir and the secondary overflow. Typically, wastewater spills over as it reaches a max capacity. Because volumes can sometimes be reached quickly, the spillway was designed to handle a flow rate of 110 million gallons per day and a peak velocity of 15 ft/s. HydroTurf was also selected since it will stand up to vehicle and equipment traffic on an ongoing basis for the required monitoring and maintenance.

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Aerial view of the upper and lower reservoirs.

Up-close view of the HydroTurf® in the dam spillway and stilling basin.

HydroTurf® was used in lieu of articulated concrete blocks in the outfall and inlet structures.

As part of the post-construction sign-off, the contractor was required to perform a traffic loading test over HydroTurf®. A typical maintenance vehicle was driven across the HydroTurf twenty (20) times during dry and wet conditions. No damage to the system was noted due to the vehicle loading.

An overtopping event occurred shortly after the HydroTurf® was installed. During the event, the flow rate reached a flow rate of approximately 75 million gallons per day producing an estimated velocity of 10 ft/s on the HydroTurf. It successfully resisted this velocity. A post event inspection noted no instability, damage or erosion.