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Texas A&M AgriLife Extension
DISASTER ASSESSMENT AND RECOVERY

CRIS QUINN MEMORIAL SOCCER COMPLEX DETENTION BASIN

Texas Green Infrastructure Case Study

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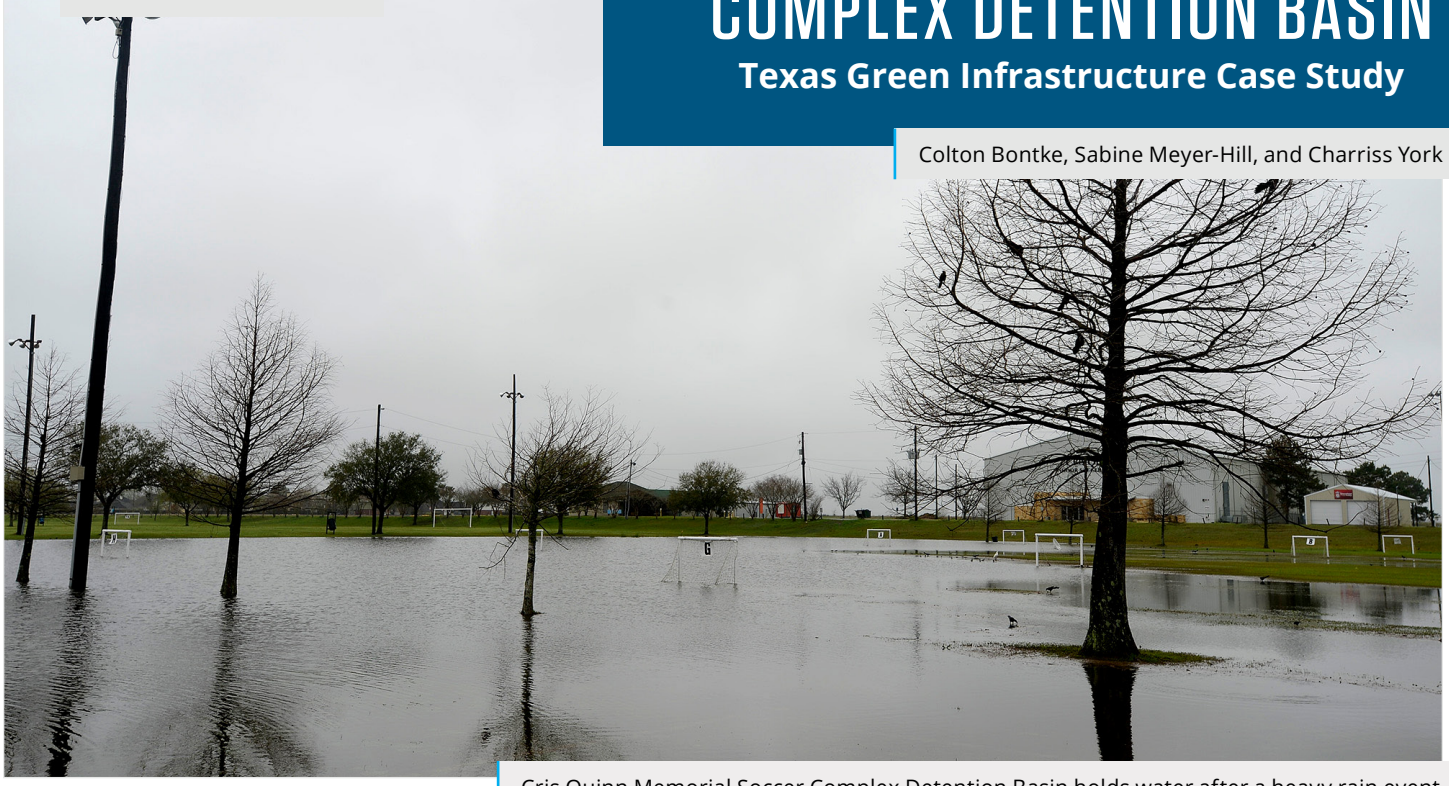

Cris Quinn Memorial Soccer Complex Detention Basin holds water after a heavy rain event.
The Beaumont Enterprise

PROJECT COMPONENTS

Practice

Dry Detention Basin: Designed to capture sheet flow and channel runoff from the surrounding area, then allow the water to infiltrate or drain at a controlled rate. Maintained as dry greenspace in between rainfall incidents.

Scale

Mid: A practice designed to treat larger amounts or areas of stormwater runoff, such as a neighborhood, through various practices. Examples: constructed stormwater wetlands, green streets, and conservation neighborhoods.

Green infrastructure practices are designed and engineered to work with nature to capture, store, and treat stormwater runoff in ways that provide both water quantity and water quality benefits. One example of green infrastructure can be found in Beaumont, Texas, at the Cris Quinn Memorial Soccer Complex, where a detention basin functions as dry-day soccer fields for community use.

PROJECT OVERVIEW

In 1985, Jefferson County Drainage District 6 began designing a detention basin to reduce flooding in Beaumont, Texas. The approximately 100-acre basin was constructed from 1991 to 1993. It employs both green and gray infrastructure practices. Features include a dry detention basin with 6- to 7-foot embankment walls and a control gate to help manage backflow from the neighboring drainage canal. As a dry basin, this area was designed to be multi-functional, serving as a soccer complex for most of the year and a detention basin for floodwaters during heavy rainfall events. The basin is also home to the Cris Quinn Memorial Soccer Complex, with 30 outdoor soccer fields of various sizes that are frequently used by regional teams.

Drainage ditches between fields allow water to flow away from recreation areas efficiently.
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IN PRACTICE

The detention basin was created to hold excess water and relieve the primary drainage system during times of heavy rains and increased flow. It was needed due to upstream development, which taxed the existing system. The basin, in conjunction with other practices, reduces water levels in the drainage system but does not completely prevent flooding downstream.[1] This system typically drains within 24 hours. A detention basin is used to slow the flow of rainwater and decrease drainage system overflows. The intent is not infiltration.[1] If soil infiltration is a project goal, then bioretention or other practices should be considered in addition to detention.

During the design and construction of the basin, representatives from Jefferson County Drainage District 6 and the soccer complex coordinated to ensure the project suited both groups' needs. This collaborative approach helped the drainage district fund the project and allowed the soccer complex to create an outdoor recreation space.

CHALLENGES

One consideration in building a multi-use green infrastructure practice is the overlap of the rainy season with sports seasons. This facility cannot be used during or immediately following heavy rainfall, which is common during summer and fall months in the Gulf Coast region.

Additionally, soccer requires a relatively flat, dry field, creating a challenge for proper drainage. This practice is designed to slow drainage into the surrounding channels and wastewater plants. To expedite drainage from the playing fields after peak flows, drainage ditches were placed between the fields, allowing water to flow from the fields and out of the basin.

FIND OUT MORE

The soccer complex is located in the Neches-Trinity Coastal Basin at 9001 Dishman Rd, Beaumont, TX 77713. View live information, including rainwater accumulation quantities, upstream and downstream data, and more by visiting https://dd6.onerain.com and searching for site 48319.

FINANCING

The Project was funded by the Texas Water Development Board State Revolving Fund.

[1] https://dd6.org/wp-content/uploads/2021/01/Master-Drainage-Plan.pdf

Green Infrastructure for Texas | AgriLife.org/GIFT
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