

Bayport Berm: A Living Wall Connects Unlikely Neighbors

Category: MITIGATION

1) Summary of the Project

The Port of Houston Authority made a commitment to surrounding communities in 2009 to build a sight and sound berm to preserve the quiet and beauty of the nearby natural areas. The Port had a mission at the time to expand container terminal capacity by building the Bayport Container Terminal, but the Port also had a vision to be a good neighbor and community member.

The Houston Ship Channel supports more than 1.2 million Texas jobs and \$2.3 billion in stimulus to the Texas economy alone. Port Houston is committed to stimulating the local, state, and national economy and wants to work to positively impact local communities.

The Cost Effectiveness of the Activity (Item 5)

Port Houston has spent nearly \$4 million to design, construct, and vegetate this multi-purpose natural area. In return, Port Houston and the Houston area gained the Bayport Container Terminal, a modern, LEED-certified, container terminal that has created jobs and stimulated the local, regional, and national economy, bringing in millions of dollars on a yearly basis. The investment in the sight and sound buffer enabled this terminal to be built while keeping the local community thriving. That community is populated by people who work in new, neighboring facilities. The berm represents a win-win-win for industry, residents, and environment.

The Transferability of the Technology or Idea to the Port Industry (Item 6)

Other ports can use this case study or project example to help in their future endeavors. Ports working to expand their footprint may want to consider the multitude of benefits presented by a sight and sound buffer. Ports whose adjacent communities have concerns about preserving and enhancing the beauty and character of their local area may consider a sight and sound buffer as an opportunity to engage and give back to those communities, as well as beautify their own properties or borders.

Level of Independent Involvement and Effort by the Port (Item 2)

Port Houston chose to keep its 2009 commitment with a natural berm that blends with and enhances local habitat. The Bayport Sight and Sound Berm is 20 feet tall with a 130-foot-wide base, and 3.1 miles long, with space for a trail area along the top. Made from ~856,000 cubic yards of dredged material donated by local private partners, this native soil from Galveston Bay made a good foundation.

To enhance the local natural area, the berm was built along Pine Gully and planted with an estimated 5,640 native trees, 7,755 native shrubs, and 11,750 native herbaceous plants over the years. The plants, in combination with the permanent check filter dams placed at intervals along the base of the berm, will improve storm water entering Pine Gully and the Bay by providing a natural conveyance and filtration system for storm water between Bayport Terminal and the City of Seabrook.

A designated stretch of land along the top of the berm will also serve as a jogging path and nature trail, augmenting the City of Seabrook's existing trail system so that community members can enjoy a greatly extended and self-sustaining natural area.

2) Goals and objectives

Goals of this project were:

- a. To keep Port Houston's commitment to City of Seabrook,
- b. Stimulate the economy,
- c. Build a self-sustaining vegetated buffer,
- d. To foster and continue harmonious relationships between industry and local communities,
- e. To maintain and potentially improve quality of storm water entering local water bodies as well as the larger impaired water body of Galveston Bay, and
- f. Protect aquatic and marine ecosystems through storm water best management practices.

3) Discussion

- BACKGROUND

Port Houston's dialogue with the surrounding community spanned several years as the need for an additional container terminal became apparent. The community wanted to maintain its beautiful view of the bay and wanted something more than just a wall to buffer development.

Port Houston worked with the City of Seabrook to turn a simple berm into added space to enjoy coastal views and recreational activities.

Level and Nature of Community Involvement (Item 1)

Ongoing dialogue with city officials and community members ensured that, as the project took shape, ideas from the community were integrated into the final plan. Additionally, a volunteer event was held where community members joined business and Port Houston volunteers to finish the last portion of the planting. The planting team also dedicated two benches installed along the designated area that will become a jogging trail.

- OBJECTIVES AND METHODOLOGY

Level and Nature of Benefits to Environmental Quality and Beautification (Item 1)

As a vegetative buffer, the berm is the ideal solution for preventing local sediment pollution and soil erosion from entering the bay. Any metals dissolved in the sediment will also be reduced. Reduced sediments lead to improved water quality parameters, such as decreased bacteria and nutrients and increased dissolved oxygen levels. As the vegetation matures, Pine Gully will benefit from tree shade, reducing water temperatures—another avenue for improving dissolved oxygen levels.

The permanent rock berm/check filter dams spaced alongside the berm, along with the minimally-invasive landscaping plan and the special mix of native trees, shrubs, and grasses, were all best practices in action. These practices combine to achieve a successful and long-surviving self-sufficient and multi-purpose vegetative sight and sound buffer. Port Houston

worked closely with Yellowstone Landscaping to ensure that the native species pallet was well-suited to the planting area. Yellowstone will monitor for 12 months following the planting to ensure survival and berm self-sufficiency.

The Creativity of the Solution or Program (Item 3)

With a living wall that serves myriad purposes, Port Houston and local partners met community needs for some separation from industry development. A simple yet elegant piece of green architecture, the berm camouflages industry's addition to the landscape and protects the community from sound. In addition, it serves as a biofilter for storm water management, reducing silts and sediments, heavy metals, phosphates, and nitrates. The City of Seabrook plans to incorporate this long, green buffer into their existing pedestrian trail system. Solutions to many challenges were achieved with this one installation.

A more comprehensive and innovative approach to planting was devised, as the berm's vegetative pallet posed a challenge to become self-sufficient. After one particularly dry summer resulted in an extremely high mortality rate, the planting methods, maintenance period, and vegetative pallet had to be reconsidered. A revised and more drought-tolerant vegetative pallet was put in place. Additionally, planting methods for sloped areas, close monitoring of invasive wildlife and closer and more prolonged work with the planting contractor are expected to improve survival rates and ultimately, achieve self-sufficiency for the natural area.

Apparent Project Results (Item 4)

The entire berm is now vegetated, with space for the adjoining trail system laid out. The final section is in maintenance phase for the vegetation. The City of Seabrook can see the berm and enjoy the beautiful natural horizon line it creates as the vegetation grows. The plants and berm will also continue to buffer the city from the sometimes-overwhelming sights and sounds of the neighboring economic activity.