

# HARBOR WETLAND AT THE NATIONAL AQUARIUM

BALTIMORE, MD



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## OVERVIEW

Located between Piers 3 and 4 of Baltimore's Inner Harbor, National Aquarium Harbor Wetland is a 10,000-square-foot floating wetland that allows visitors to immerse themselves in a salt marsh habitat like those that existed in the area hundreds of years ago. Utilizing over 30,000 grasses and shrubs combined with water aeration technology, the project acts as green infrastructure to promote clean waters, attract native species, and provide a variety of habitats to support a strong ecosystem. A free outdoor exhibit and civic anchor, the wetland serves as a natural oasis in the midst of the city, with an attached learning dock where visitors can observe and learn about the many native species that call the Chesapeake Bay home.

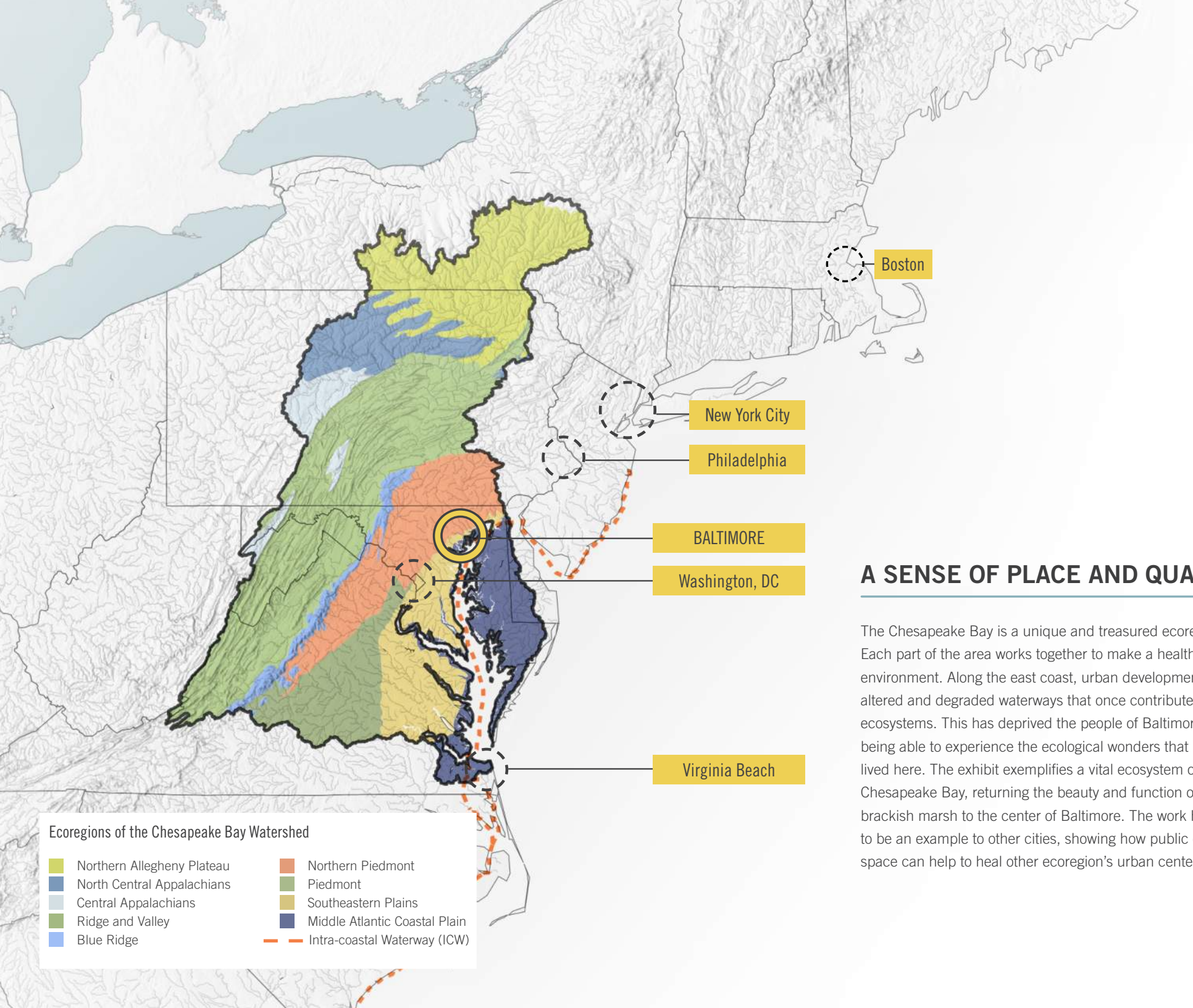


## COMPLETENESS

The addition of Harbor Wetland provides a free immersive experience that supports the work of the National Aquarium as both a civic anchor and a notable research and conservation institution. The dock and floating wetland combine to create an educational community resource that serves Baltimore City residents, as well as visitors from all over the state of Maryland and the world. This investment in the Aquarium Campus is an investment in the Baltimore Inner Harbor.

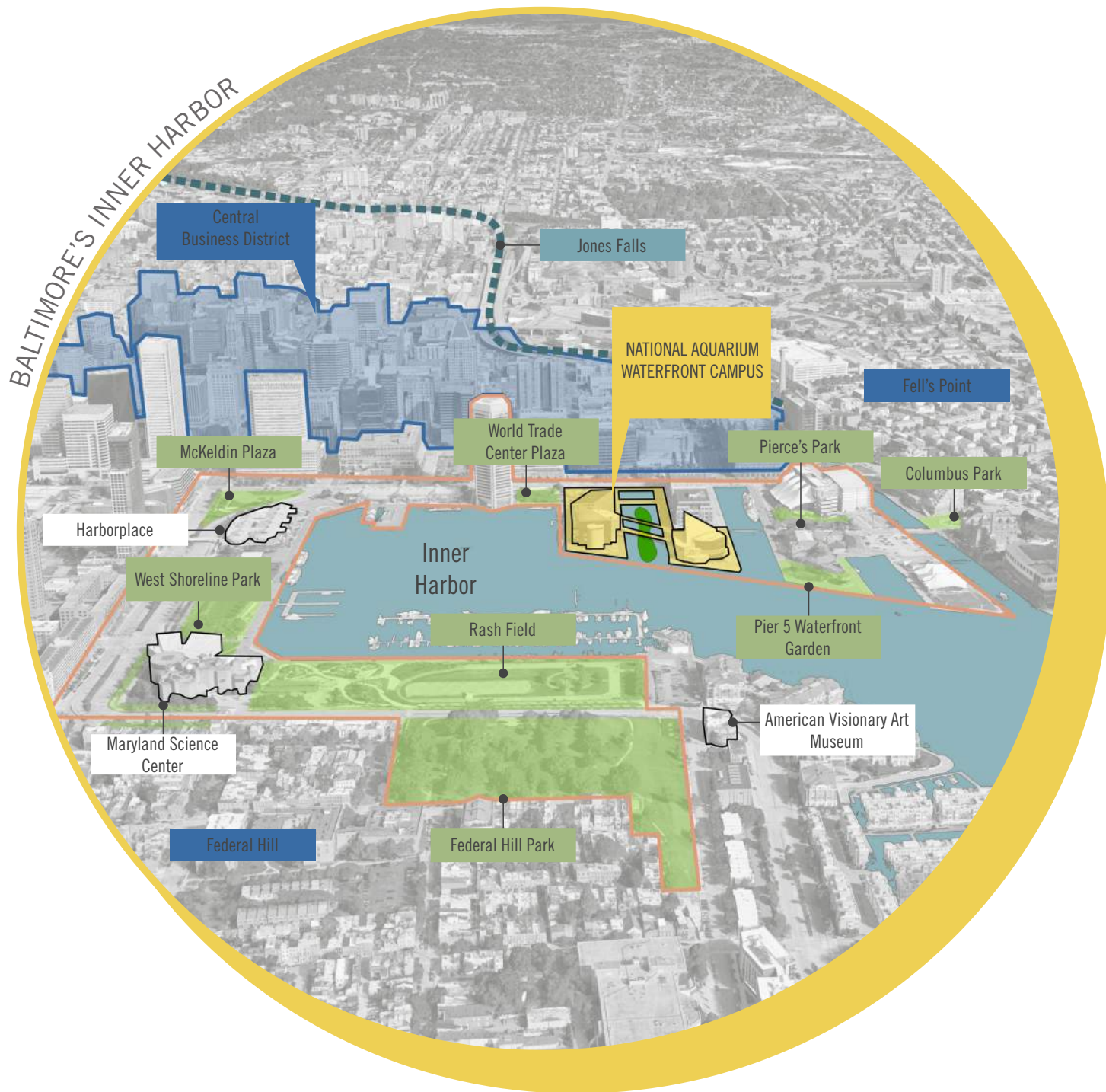
The financial investments provided by Baltimore City, the State of Maryland, Baltimore County, The Maryland Heritage Areas Authority, and private funding through donations to the National Aquarium came together to create this unique open space that educates visitors and helps make the Inner Harbor a healthier body of water for all to enjoy.





## A SENSE OF PLACE AND QUALITY

The Chesapeake Bay is a unique and treasured ecoregion. Each part of the area works together to make a healthy environment. Along the east coast, urban development has altered and degraded waterways that once contributed native ecosystems. This has deprived the people of Baltimore from being able to experience the ecological wonders that historically lived here. The exhibit exemplifies a vital ecosystem of the Chesapeake Bay, returning the beauty and function of a brackish marsh to the center of Baltimore. The work here hopes to be an example to other cities, showing how public open space can help to heal other ecoregion's urban centers.

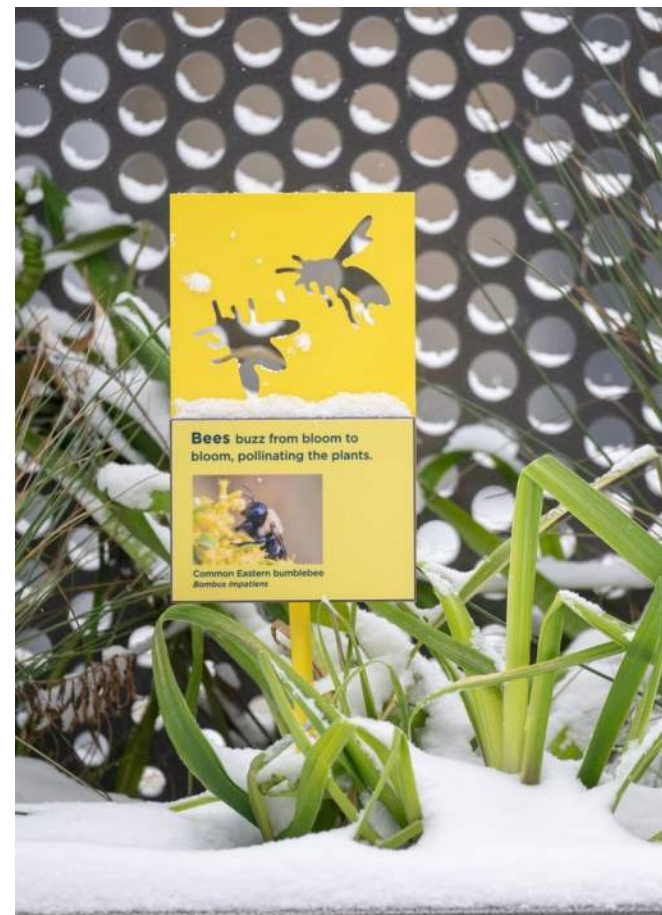


A natural oasis in the center of Baltimore's tourism district, Harbor Wetland also serves as a free outdoor landmark and park where community members and visitors of all kinds can foster a connection to nature and the local environment. Throughout the design process, the design team and the National Aquarium worked closely with businesses, schools, and the broader community to ensure the wetland would meet the needs of local residents.

By integrating natural systems into the urban fabric, Harbor Wetland represents a new paradigm for urban development – restoring ecologic balance while also creating space for education, recreation, and community engagement.



School groups learn from staff about the roles plants and animals play in the health of the city and Chesapeake Bay in a tactile experience. Educational signage and volunteer events, including volunteer planting of the wetland, engage and connect the community to Harbor Wetland.



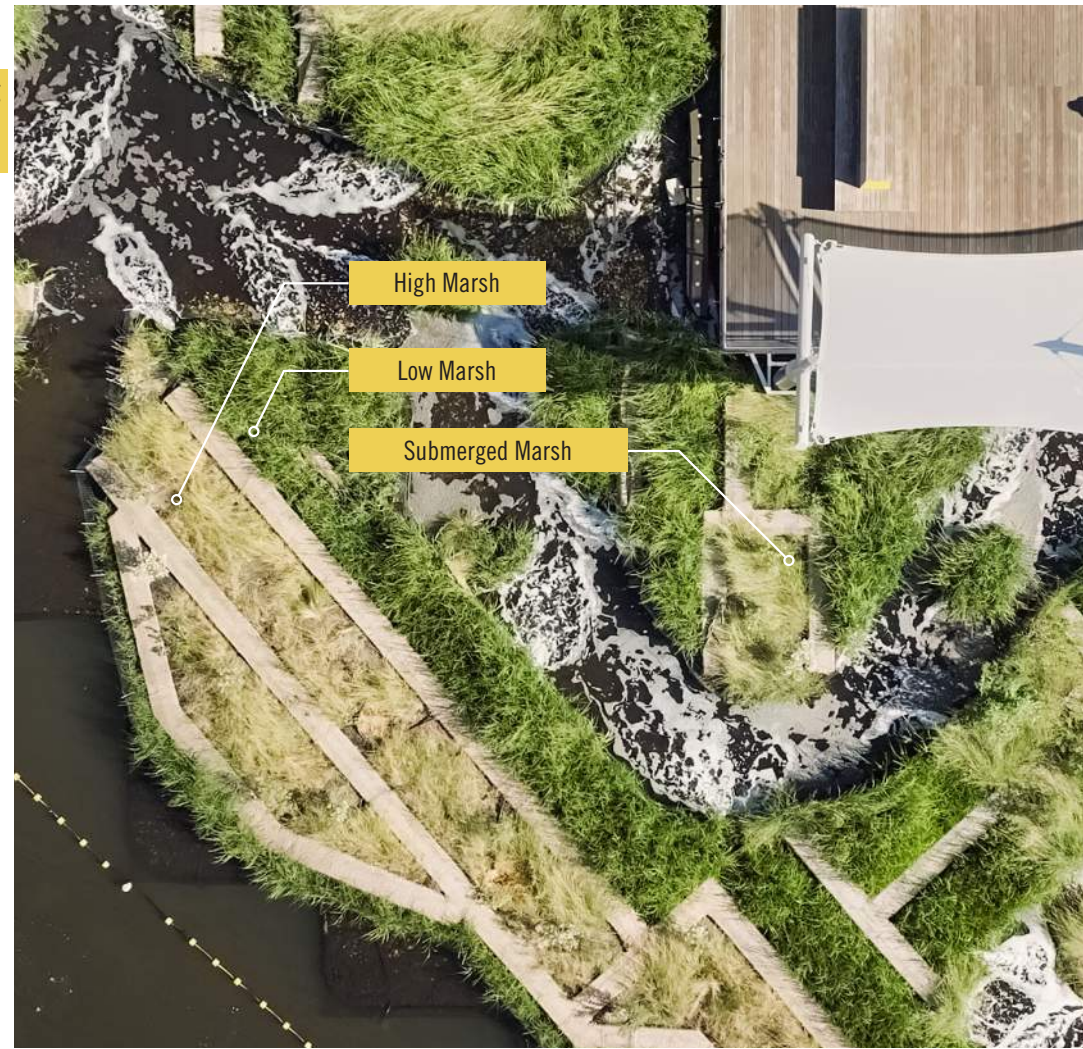
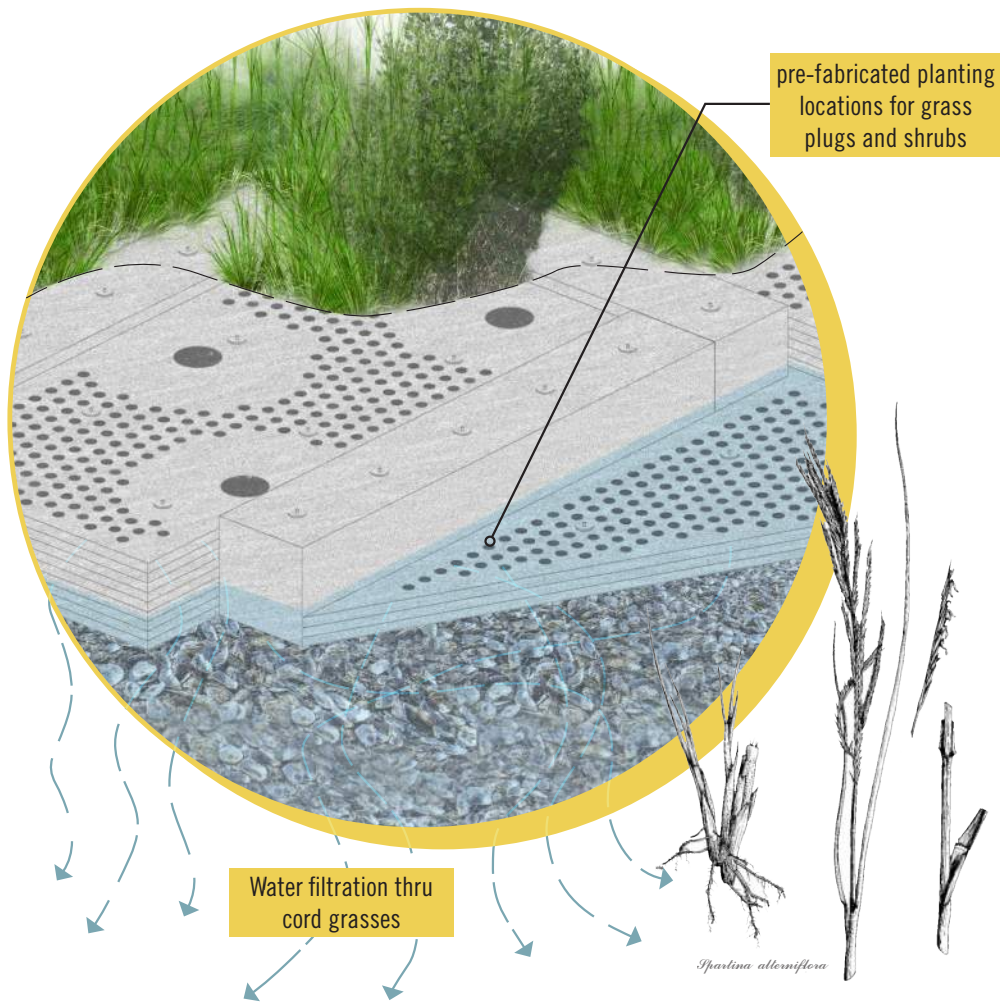
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As a working landscape integrated into public space, system controls are accessible to staff, yet hidden from public view, allowing daily operations and performance and water quality monitoring.



# SUSTAINABILITY

Upon plant maturation, Harbor Wetland acts as green infrastructure to promote healthy clean waters, attract native species, and support a strong ecosystem. Cordgrasses and native shrubs filter excess nitrogen in the water resulting from stormwater runoff discharged upstream in the waterway. Prefabricated modules of PET arrived on site with tens of thousands of holes pre-drilled to accommodate the unique plant pallet for this ecosystem.



During the hottest months of the year oxygen levels can drop in the harbor waters causing algal blooms that suffocate animals and cause foul odors for visitors. Aerators both direct the flow of water in the channel and add oxygen to the water to support aquatic life during these anaerobic water events.



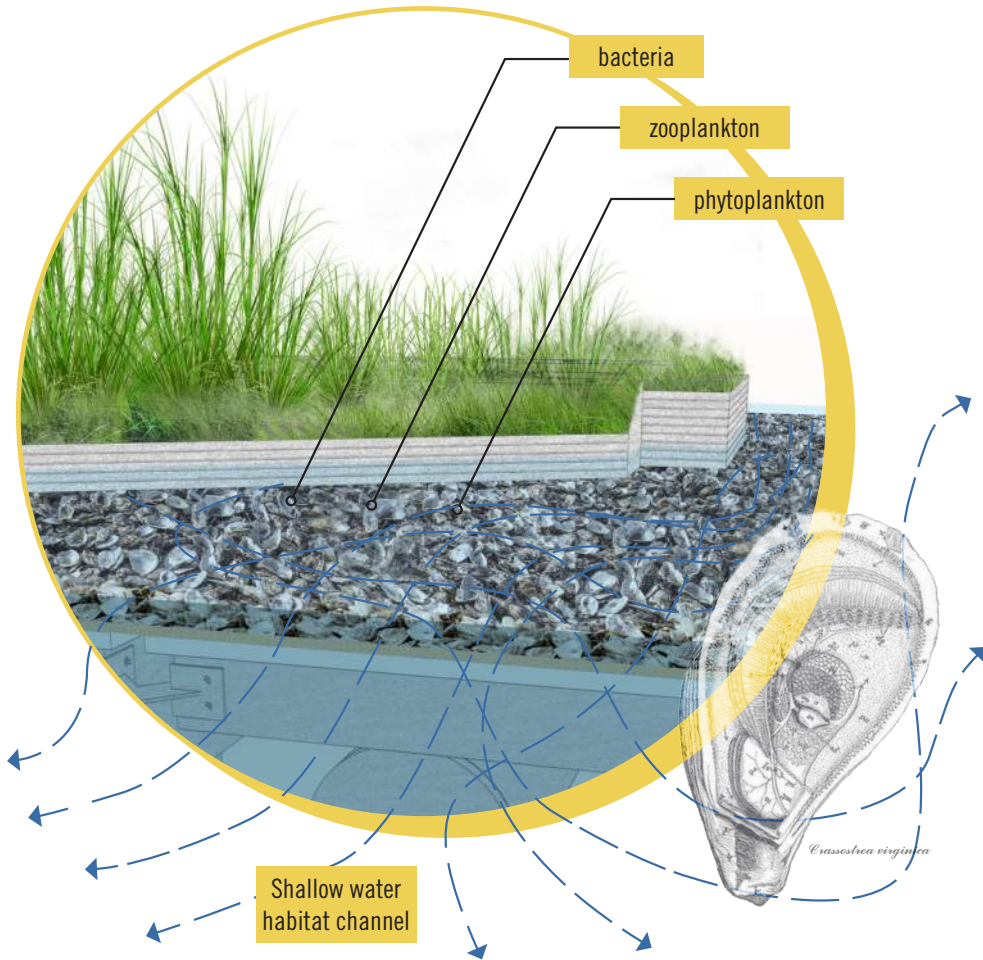
shallow channel aerators



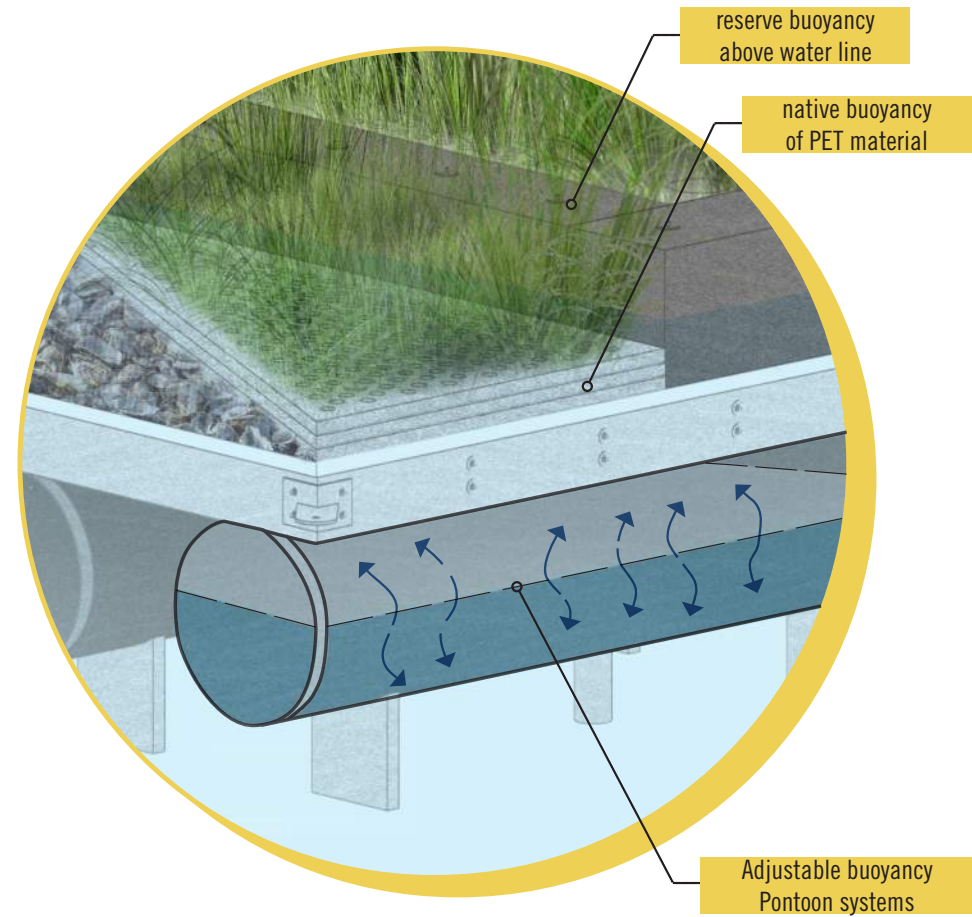
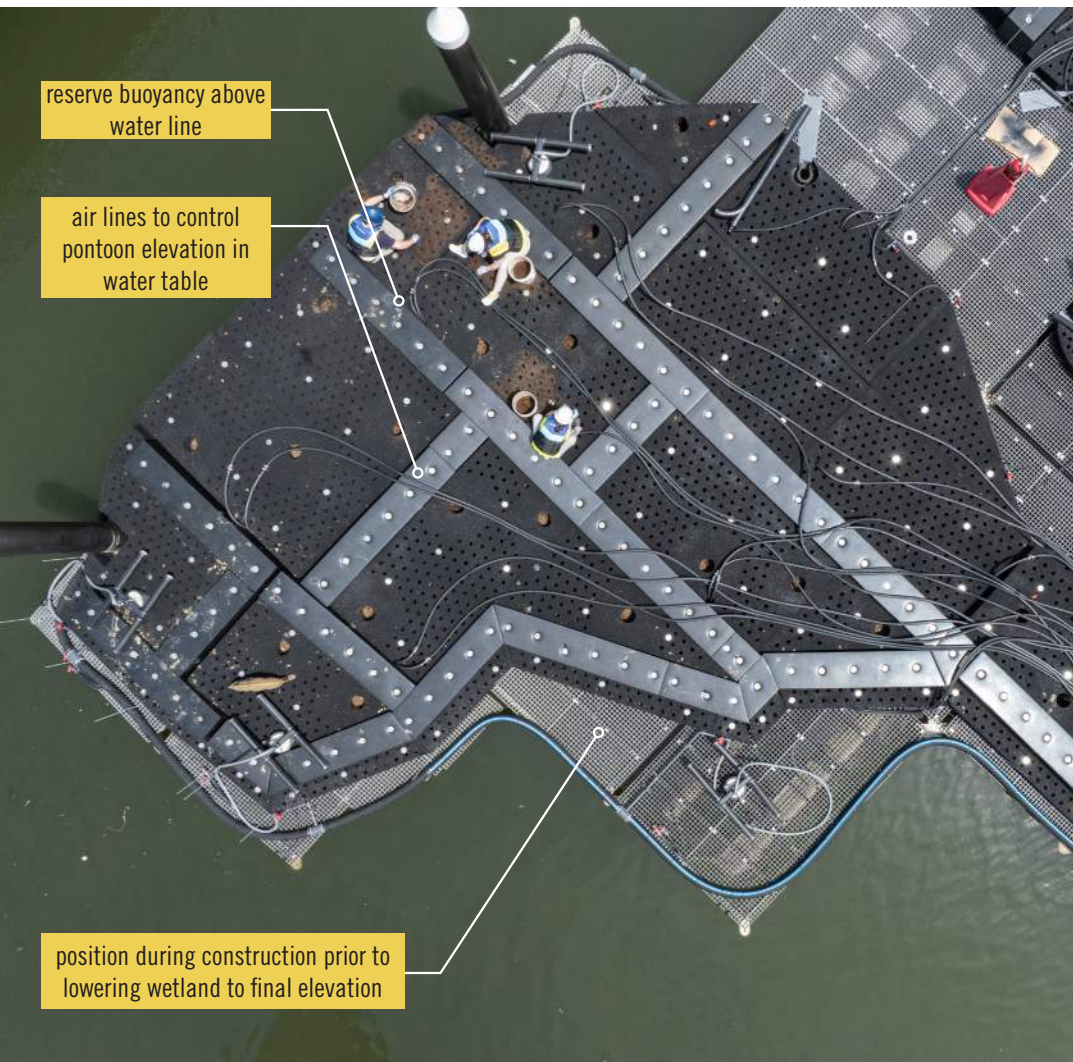
water flowing through channel replicates stream flows



A shallow channel flows through the center of the floating wetland. The channel bed is lined with over 300,000 oyster spat that help to filter the water. This also provides an ideal habitat for small species that are the basis of a healthy ecosystem.

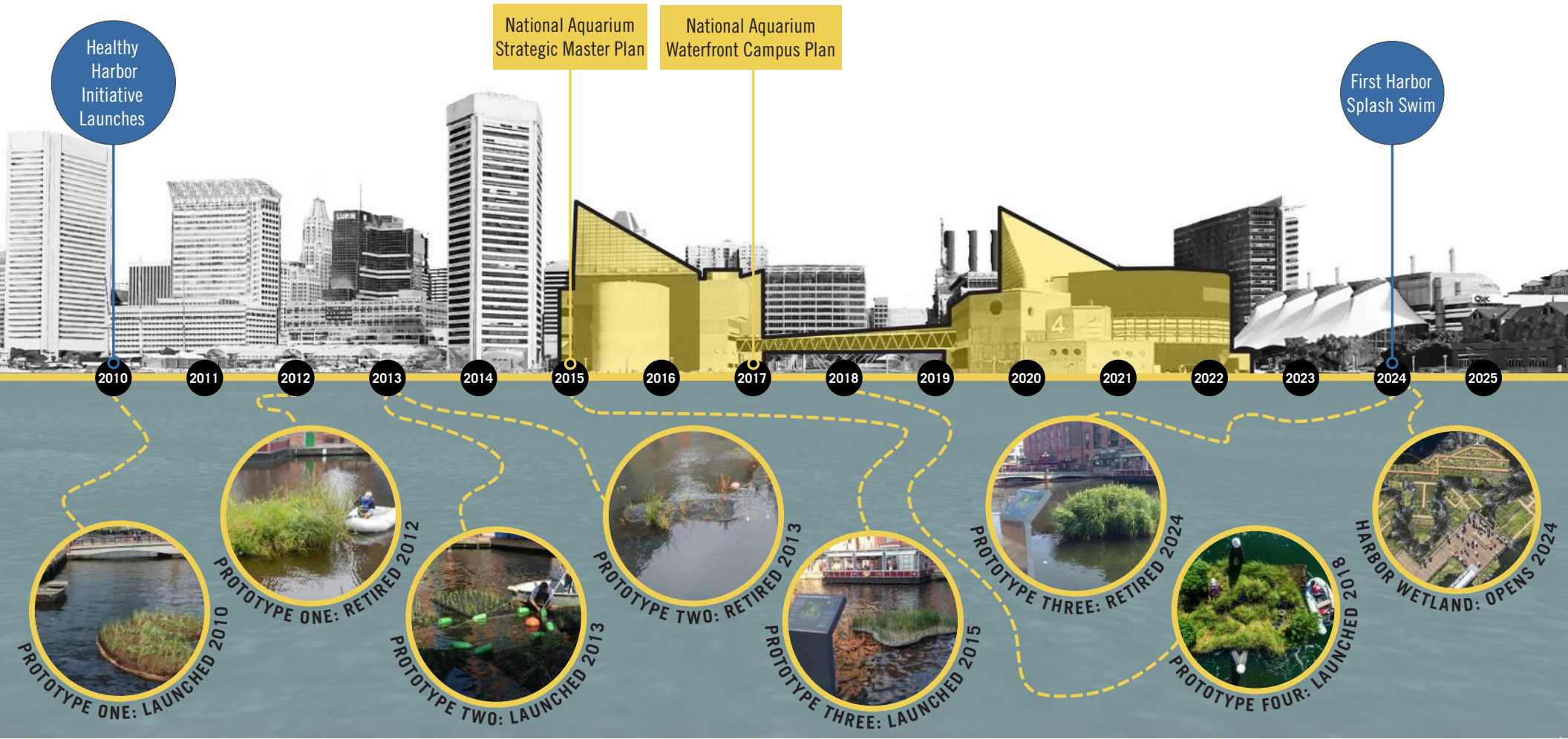


Standard floating wetlands aren't equipped to stay afloat over years and years of biomass build-up. In order to make this project a long term investment in the community and the harbor's health, the design team worked to together with the aquarium to design a system that can be adjusted to match the buoyancy needed as the plants grow. Hidden from view, a layered network of buoyancy ensures the wetland withstand biomass growth, daily tide fluctuation and extreme weather events.



# VISIONARY AND EMULATION

The installation was informed by more than a decade of on-site research on floating wetlands and their potential for recreating lost ecosystems. The wetland is designed with systems to address the challenges of previous floating wetland installations, including water quality, long-term buoyancy, and habitat creation. These improved systems were first tested in 2017, with the 200-square-foot Floating Wetland Prototype that utilized more than 1,400 native plantings. Building upon that prototype's success, the design team worked in close collaboration with ecologists and marine biologists from the aquarium to adapt the same technology in a larger, more immersive educational setting.

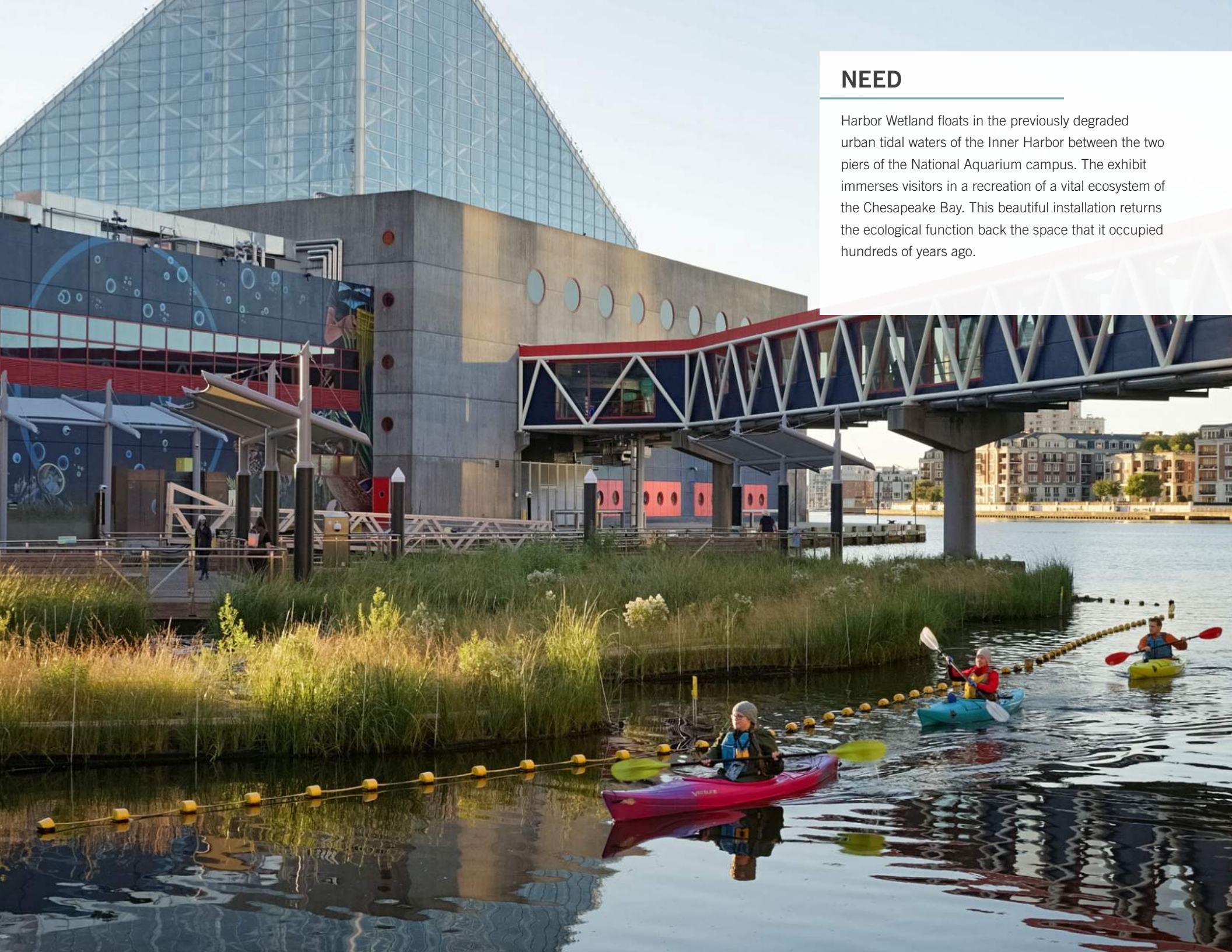






The wetland has already attracted numerous species of fish, reptiles, crustaceans, mollusks, and birds from across the food web, rebuilding the Inner Harbor's native species. Notably, Northern river otters, which had not been regularly seen in the Inner Harbor for over 100 years, frequently visit the habitat several times a week and have been documented sleeping on Harbor Wetland overnight.





## NEED

Harbor Wetland floats in the previously degraded urban tidal waters of the Inner Harbor between the two piers of the National Aquarium campus. The exhibit immerses visitors in a recreation of a vital ecosystem of the Chesapeake Bay. This beautiful installation returns the ecological function back the space that it occupied hundreds of years ago.



As a respite in the city, the wild nature of the cord grasses contrast with the architectural elements surrounding the exhibit making an iconic and memorable experience. In its opening months with more than 58,000 visitors, the exhibit connects Baltimore back to its aquatic roots and brings the Chesapeake Bay back to the Inner Harbor.