

## **ASHE Summary**

**Title:** Applying layered resiliency strategies to reduce flooding risks while enhancing the natural, built, and human environments.

**Abstract:** The Hampton Roads area of Virginia is experiencing the highest rates of relative sea-level rise (sea-level rise and land subsidence) on the East Coast. The region is second only to New Orleans, Louisiana, as the largest population center at risk from sea-level rise in the United States. The City of Norfolk serves as the central hub-city of the greater Hampton Roads region, consisting of a population of over 1.7 million people. The Ohio Creek Watershed Project, located in the southern portion of Norfolk along the Eastern Branch of the Elizabeth River, was developed to begin addressing threats to Norfolk's resiliency utilizing grant money obtained by the Commonwealth of Virginia through the US Department of Housing and Urban Development's (HUD) National Disaster Resilience Competition (NDRC). As a subrecipient of the grant agreement, Norfolk conducted a series of 25 public and stakeholder outreach meetings between May 2016 and January 2018. The topics of the meetings included planning workshops, design charrettes, amenities workshops, and general public meetings.

Threats to the city's resilience include flooding and storms, a lack of economic vitality, and a concentration of poverty. The project area's low elevation and proximity to waterways make it vulnerable to both precipitation driven inland flooding and coastal storm and tidal flooding resulting in inundated sidewalks and submerged roadways that cut off ingress and egress within the area. These factors are exacerbated when modeled storm events and projected 2.5-foot sea level rise are evaluated across the project area.

Designed to improve neighborhood quality in Norfolk by strengthening flood resiliency, supporting economic opportunity, and increasing neighborhood connectivity, this project provides Norfolk with an opportunity to demonstrate a layered resiliency approach. Combining several coastal defense strategies such as earthen berms, raised roads, living shorelines, and floodwalls, with innovative stormwater management design will reduce the increased risk of flooding while expanding neighborhood connectivity and improving water management. The Ohio Creek Watershed Project provides a microcosm for planning and implementation strategies that can be applied throughout the city, the nation, and the world.