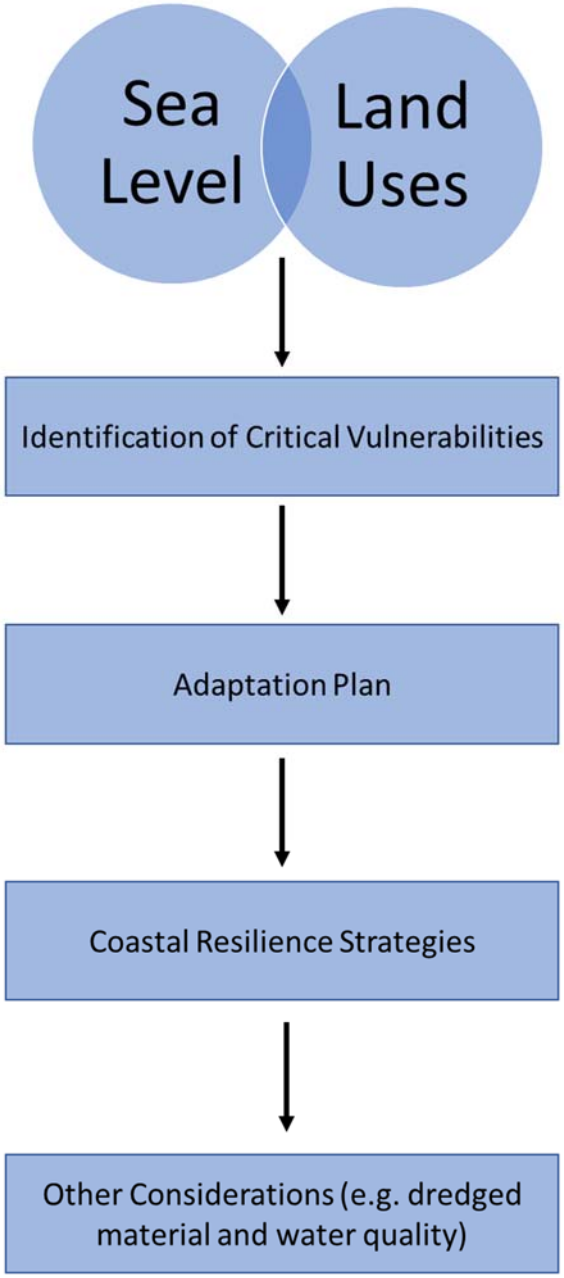
# 1. BACKGROUND AND PURPOSE OF DOCUMENT

## 1.1 INTRODUCTION AND BACKGROUND

This report was prepared by EA Engineering, Science, and Technology, Inc., PBC for the Harford County and Aberdeen Proving Ground (APG) Chesapeake Science and Security Corridor (CSSC) Joint Land Use Study (JLUS) Committee. The purpose of this report is to provide guidance to APG (Aberdeen Area and Edgewood Area) and the surrounding counties of Harford (City of Aberdeen and City of Havre de Grace [(Havre de Grace]), Cecil, and Kent regarding management strategies to alleviate issues from sea level rise and storm events that threaten the military mission and the Susquehanna Flats region. The boundaries of the project study area (Project Area) are provided in **Figure 1-1**. This report: (1) identifies areas to focus management efforts, termed critical vulnerabilities (Chapter 2); (2) provides information needed to develop an adaptation plan (Chapter 3); (3) provides information to inform selection of coastal resilience strategies (Chapter 4); and (4) describes additional considerations (e.g., dredged material [Chapter 5] and water quality [Chapter 6]). The conceptual model outlining this approach is presented on the following page. Coastal areas of Maryland have been identified as particularly susceptible to sea level rise because there is a dense population of people along the coast and the Maryland coast is impacted by land subsidence in addition to sea level rise (Boesch et al. 2013; Eggleston and Pope 2013).

APG is a military installation owned by the Department of Defense, Department of the Army (Matrix Design Group 2015). APG is located on the northwestern shore of the Chesapeake Bay in Harford County, Maryland. The area within and surrounding APG serves many mission-critical roles, such as testing of weapons, equipment, and supplies, as well as research and development. APG has a significant economic impact on surrounding counties as more individuals are employed by APG than the next 20 major employers combined in the area. County populations have grown by 5 percent (%) (Kent County), 12% (Harford County), and 18% (Cecil County) from 2000 to 2010 and are expected to continue to grow. In addition to jobs from APG, important industries in Harford County include healthcare and industry. Havre de Grace is located within Harford County and is known for tourism and historical sites. Job types in Cecil County include manufacturing, education, health services, retail, transportation, utilities, and local government. Kent County is relatively rural, although currently the largest job sector is management, business, science, and arts.

APG and each county have different land uses (Matrix Design Group 2015) to support their economies, housing, and environment.




**Conceptual Model for Approach**

## 1.2 CURRENT GUIDING POLICIES

The State of Maryland is at the forefront of planning for the eventualities of climate change, including sea level rise. Both efforts to decrease emissions and development of adaptation strategies are part of the State's plan to alter risks from climate change. (https://climatechange.maryland.gov/ 2019). This section provides a summary of the State of

Maryland's efforts to date including recent legislation. The majority of the legislation impacts will impact climate resiliency projects to address climate change.

In 2007, the State established the Maryland Commission on Climate Change and directed the Commission to create a Climate Action Plan including measures to reduce greenhouse gas emissions and prepare for the impacts of climate change. The Climate Action Plan was established under Executive Order 01.01.2007.07. This 2007 executive order established the Adaptation and Response Working Group within the Commission to develop the adaptation portions of the State's Climate Action Plan. The State then developed two climate change adaptation plans: a *Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase I: Sea-Level Rise and Coastal Storms* was published in 2008 (Maryland Department of Natural Resources [DNR], Maryland Department of the Environment [MDE], Maryland Department of Planning 2008); and a *Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change, Phase II: Building Societal, Economic, and Ecological Resilience* was published in 2011 (University of Maryland Center for Environmental Science, Maryland DNR and Integration and Application Network 2011). The 2008 Plan addresses the effects of sea level rise and coastal storms on the existing and future built environment and infrastructure; the economy; human health, safety, and welfare; and natural resources. The 2011 Plan addresses changes in precipitation patterns and increased temperature. It also addresses likely impacts on six sectors: human health, agriculture, forest and terrestrial ecosystems, bay and aquatic ecosystems, water resources, and population growth and infrastructure (https://climatechange.maryland.gov/ 2019).

In 2012, the Governor directed all state agencies to consider the risk of sea level rise, flooding, and extreme weather in the construction or reconstruction of state buildings and facilities under Executive Order 01.01.2012.29, known as the *Climate Change and "Coast Smart" Construction* order. This 2012 executive order also calls for new and reconstructed state-owned structures to be elevated two or more feet (ft) above the 100-year base flood elevation. This requirement was codified and expanded upon with legislation in 2014 under House Bill 615 and again in 2018 under House Bill 1350. The 2014 legislation established a Coast Smart Council and required the development of "coast smart" siting and design criteria for state structures.

The Maryland Commission on Climate Change, originally established in 2007, was expanded in membership and scope in 2014 by Executive Order 01.01.2014.14, which was titled *Strengthening Climate Action in Maryland.* The Maryland Legislature codified the Commission through legislation in 2015 by passing legislation titled *An Act Concerning Maryland Commission on Climate Change.* This legislation specifies the agencies to serve on the Commission, which includes a wide variety including, but not solely limited to, DNR, the State Treasurer, the Secretary of Agriculture, the Secretary of the Environment, the Secretary of Planning, the State Superintendent of Schools, the Secretary of Transportation, the Secretary of General Services, and representatives from the State legislature. This legislation continues the work of the Commission and requires each state agency to review its planning, regulatory, and fiscal programs to more fully integrate emissions reductions and adaptation to the impacts of climate change into agency operations (https://climatechange.maryland.gov/ 2019).

The latest step in Maryland planning for the effects of climate change became effective 1 July 2018 as the State expanded its "Coast Smart" siting and design criteria to better manage sea level rise and improve coastal adaptation efforts ( https://climatechange.maryland.gov/). This 2018 legislation, passed in April, amended the Coast Smart law. The particulars of this legislation Maryland HB 1350/ SB 1006—*Sea Level Rise Inundation and Coastal Flooding – Construction, Adaptation, and Mitigation*—are outlined below:

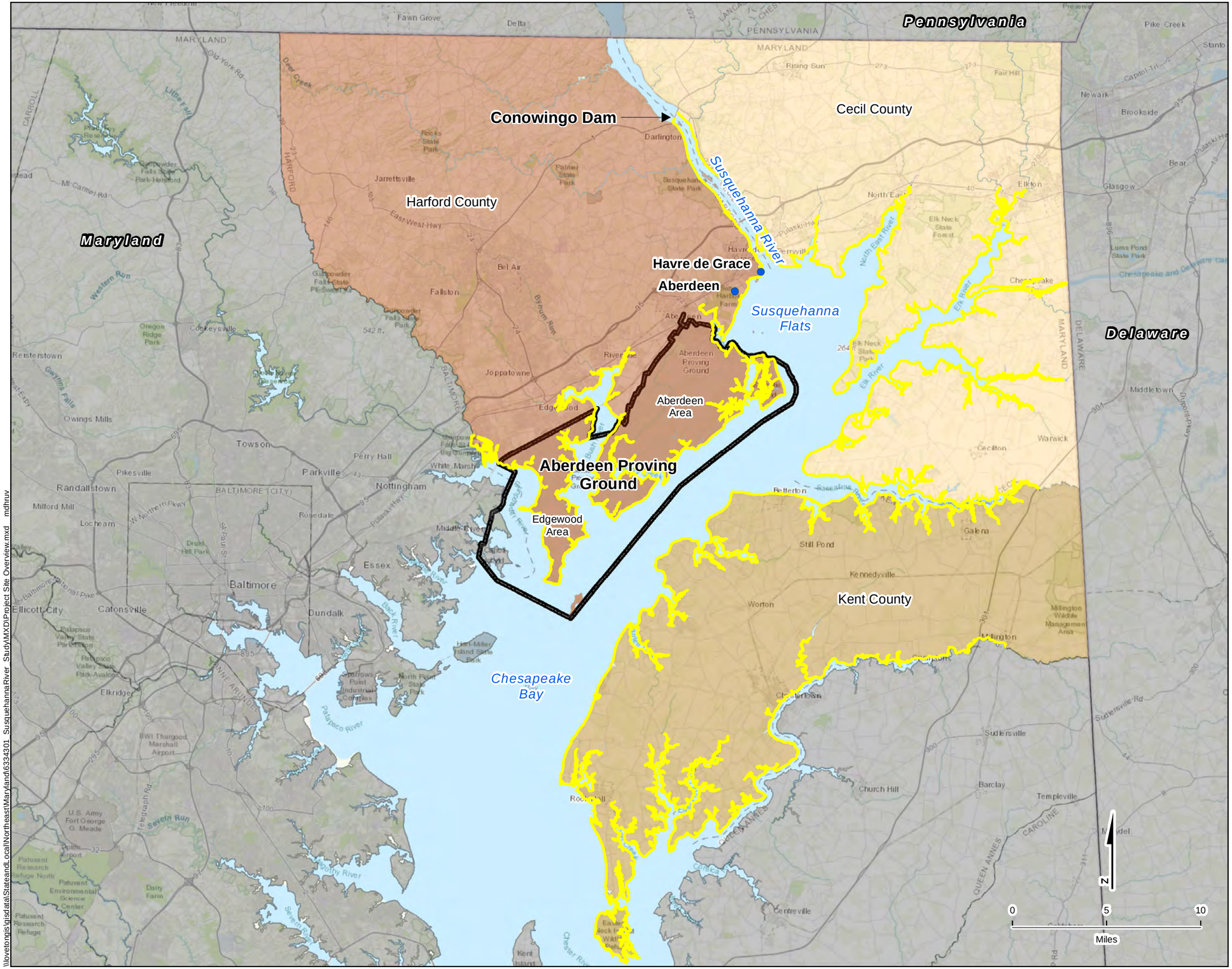
**Coast Smart Siting and Design Criteria—**Under current State law, these criteria apply to State capital projects, and under the new bill, the criteria apply to both state and local projects (not specifically limited to capital projects)—for which at least 50% of the project costs are funded with State funds. The criteria do not apply to a public work contracts of less than $500,000. Also, as specified in the *Fiscal and Policy Note for House Bill 1350*: "Instead of including a requirement that the lowest floor elevation of each structure located within a special flood hazard area be built at an elevation of at least two feet above the base flood elevation, the criteria must include a requirement that a structure be designed and constructed or reconstructed in a manner to withstand the storm surge from a storm that registers as a Category 2 on the Saffir-Simpson hurricane wind scale, including a requirement for structures to be constructed or reconstructed at a minimum elevation above the projected storm surge."

**Plan to Adapt to Saltwater Intrusion—**By 15 December 2019, the Maryland Department of Planning, in consultation with DNR, MDE, and the Department of Agriculture, must establish a plan to adapt to saltwater intrusion, and the plan must be updated at least once every 5 years. Saltwater intrusion is created as sea level rise begin to impact non-saline groundwater resources.

**Criteria for Use of State Funds for Hazard Mitigation—**The Board of Public Works, in conjunction with DNR, MDE, and the Maryland Emergency Management Agency, must establish criteria to evaluate whether State funds may be used to mitigate hazards associated with sea level rise inundation and coastal flooding.

**Local Plans to Address Nuisance Flooding—**By 1 July 2019, a local jurisdiction that experiences nuisance flooding must develop a plan to address nuisance flooding, and the plan must be updated at least once every 5 years. Nuisance flooding is the term used to describe impacts to low-lying infrastructure, such as roads, caused simply by extra high tides without impact from weather. This condition will increase as sea levels rise throughout the region.

Other local jurisdictions within the state have also taken the initiative in preparing plans to address the potential impacts of climate change. These plans vary based upon the particular needs of the local area and state requirements.




VICINITY MAP


**Legend**

- City/Town
- Shoreline Extent of Project Study Area
- APG Boundary
- Cecil County
- Harford County
- Kent County

Map Date: 1/30/2019
Source: ESRI 2017
Projection: WGS 1984 UTM Zone 18N Meter

FIGURE 1-1
Project Site Overview
Planning for Coastal Resiliency in the Northern Chesapeake Bay

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