



Green Infrastructure in Hampton Roads

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Structure of Presentation

- ★ Southern Watershed Area Management Program
 - Brief Project Overview
 - Implementation Actions
- ★ Regional Green Infrastructure Project
 - Brief Project Overview
 - Implementation
 - Future Directions



*Southern Watershed Area
Management Program*





SWAMP Overview



The Southern Watershed Area Management Program (SWAMP) is a collaborative effort involving:



- the Cities of Chesapeake and Virginia Beach,**
- the Hampton Roads Planning District Commission (HRPDC),**
- the Virginia Coastal Program,**
- and the National Oceanic and Atmospheric Administration (NOAA).**



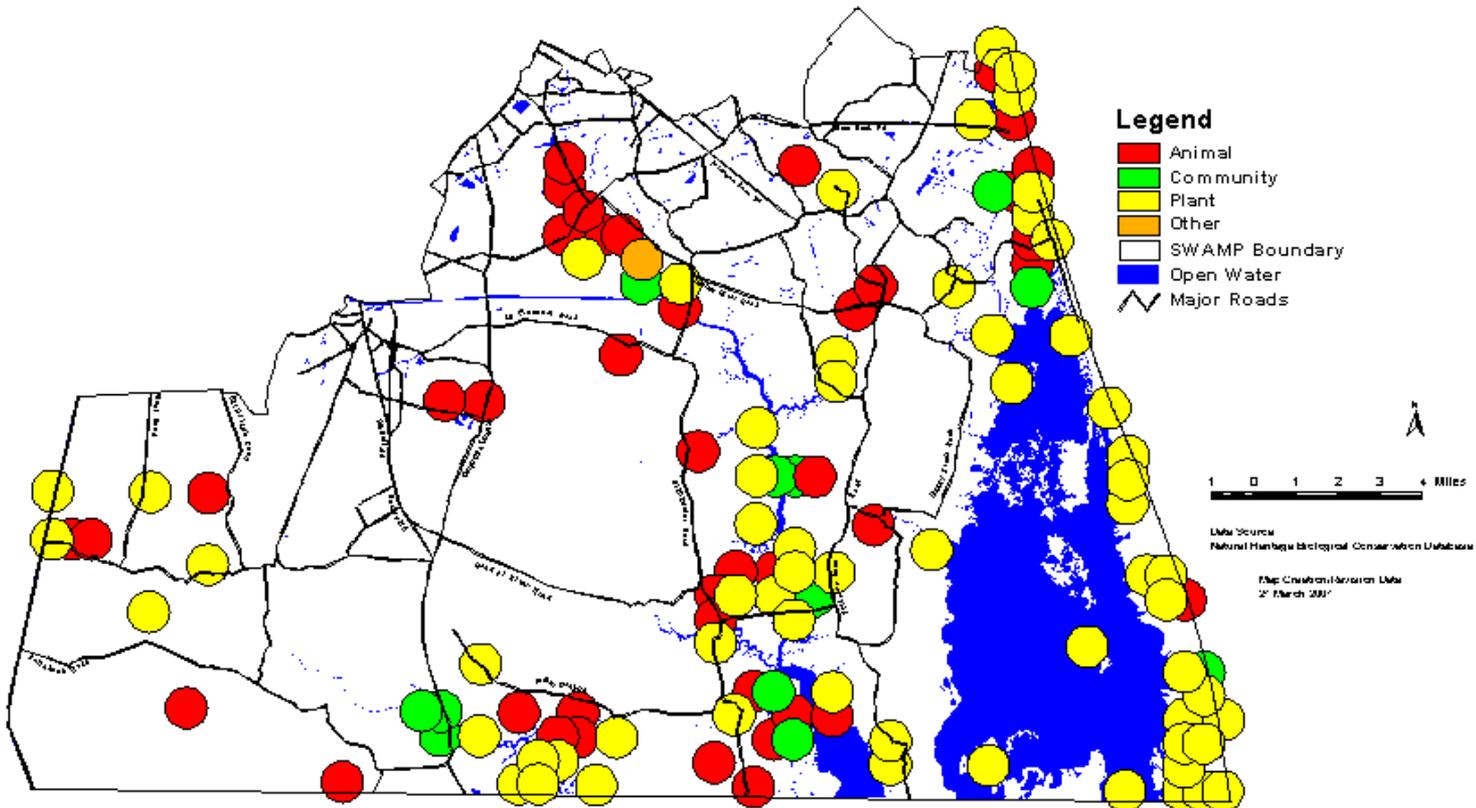
Location of the Southern Watershed Area





Natural Heritage Element Occurrences

Figure 2. Locations of natural heritage element occurrences in the Southern Watershed Area

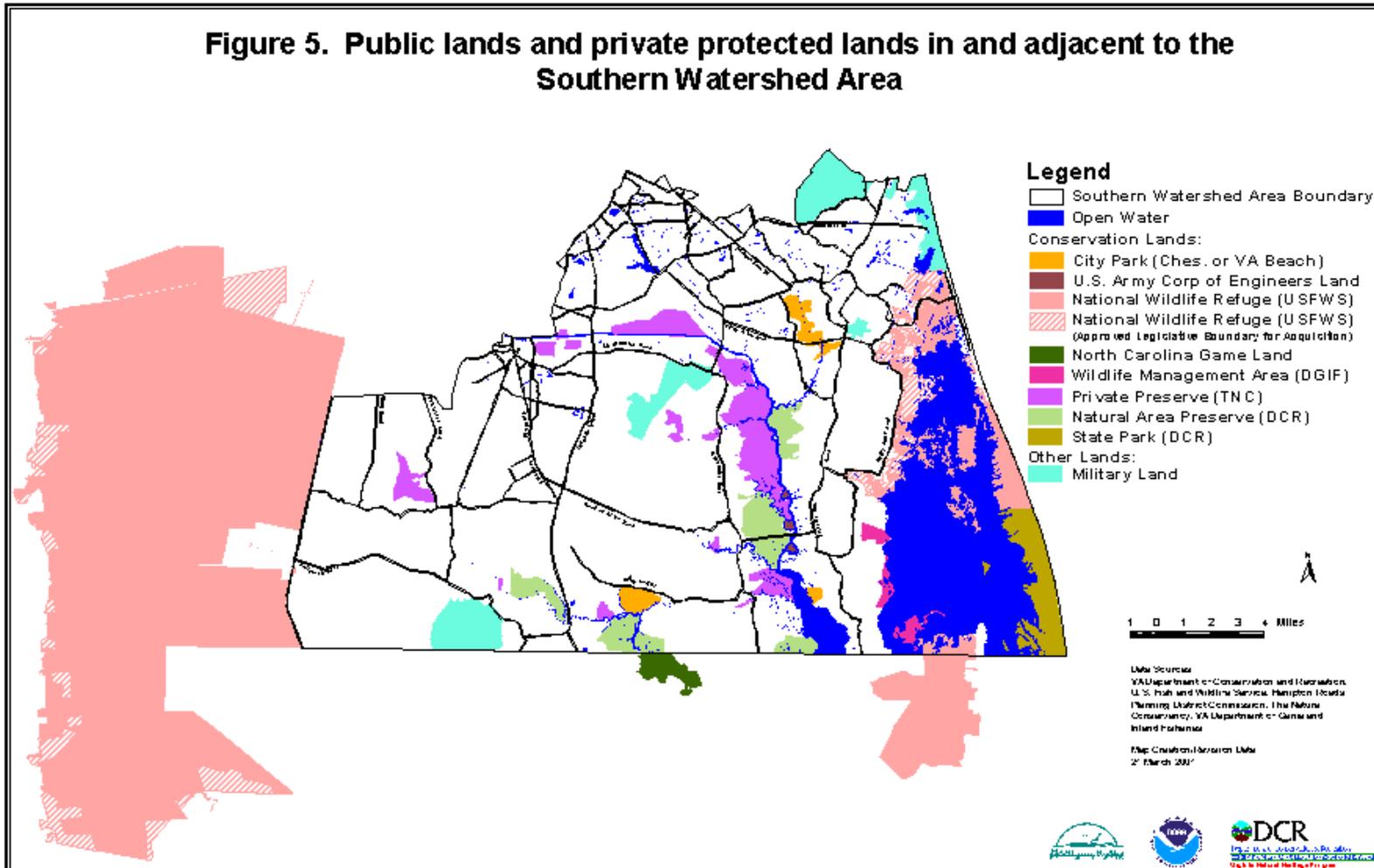




Protected Lands



Figure 5. Public lands and private protected lands in and adjacent to the Southern Watershed Area





Multiple Benefits Approach

- ★ Riparian corridors providing multiple benefits:
 - Water quantity management and water quality protection
 - Wildlife habitat enhancement and Natural Heritage Resource protection
 - Compatible recreation and tourism opportunities
 - Environmental education opportunities
 - Potential wetlands compensation capability



Implementation

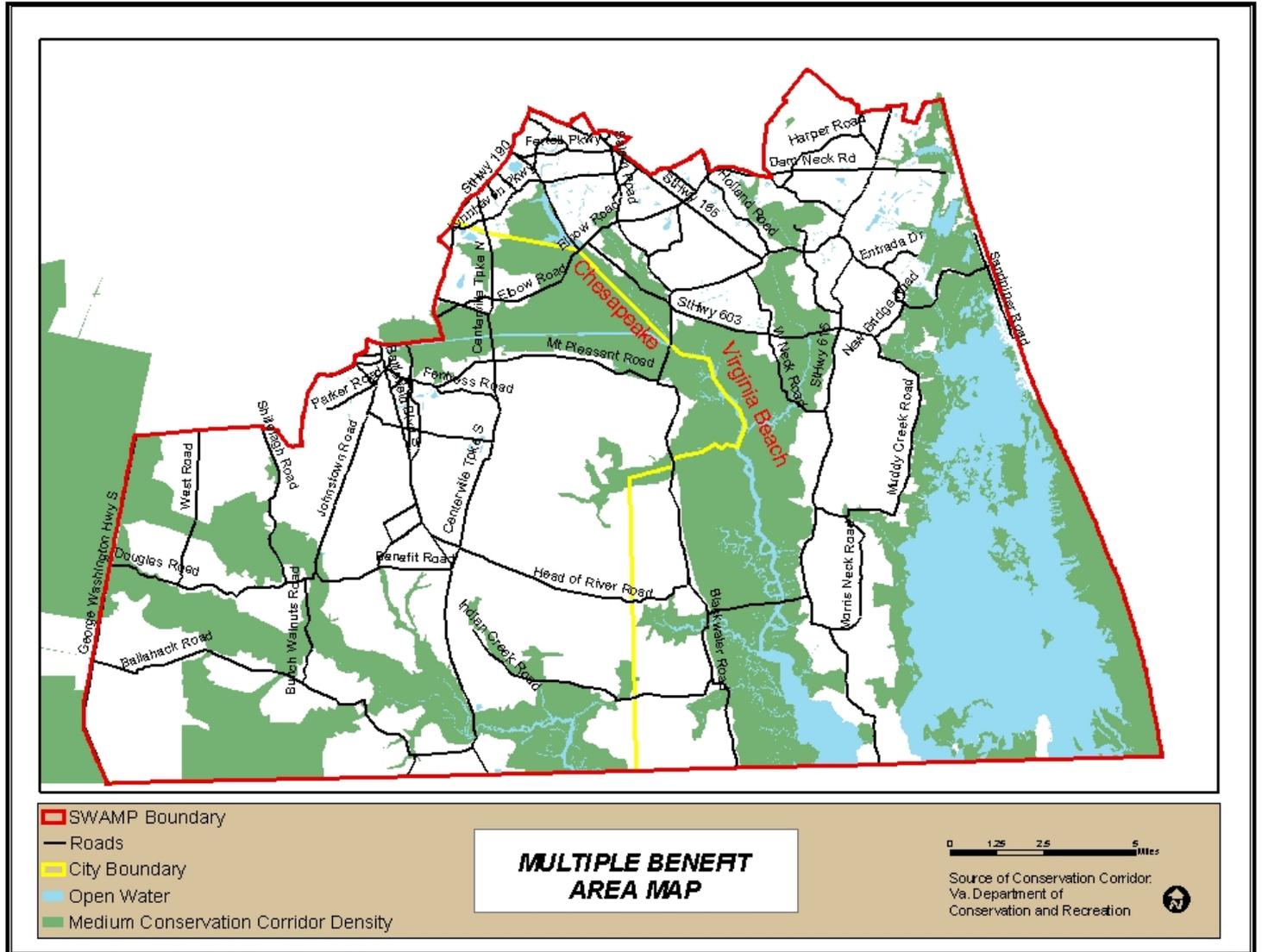
- ★ Wetlands Mitigation MOA
- ★ Chesapeake PDR Program
- ★ Chesapeake and Virginia Beach Comprehensive Plans
- ★ Land Purchase to Augment Corridor System



Wetlands Mitigation MOA

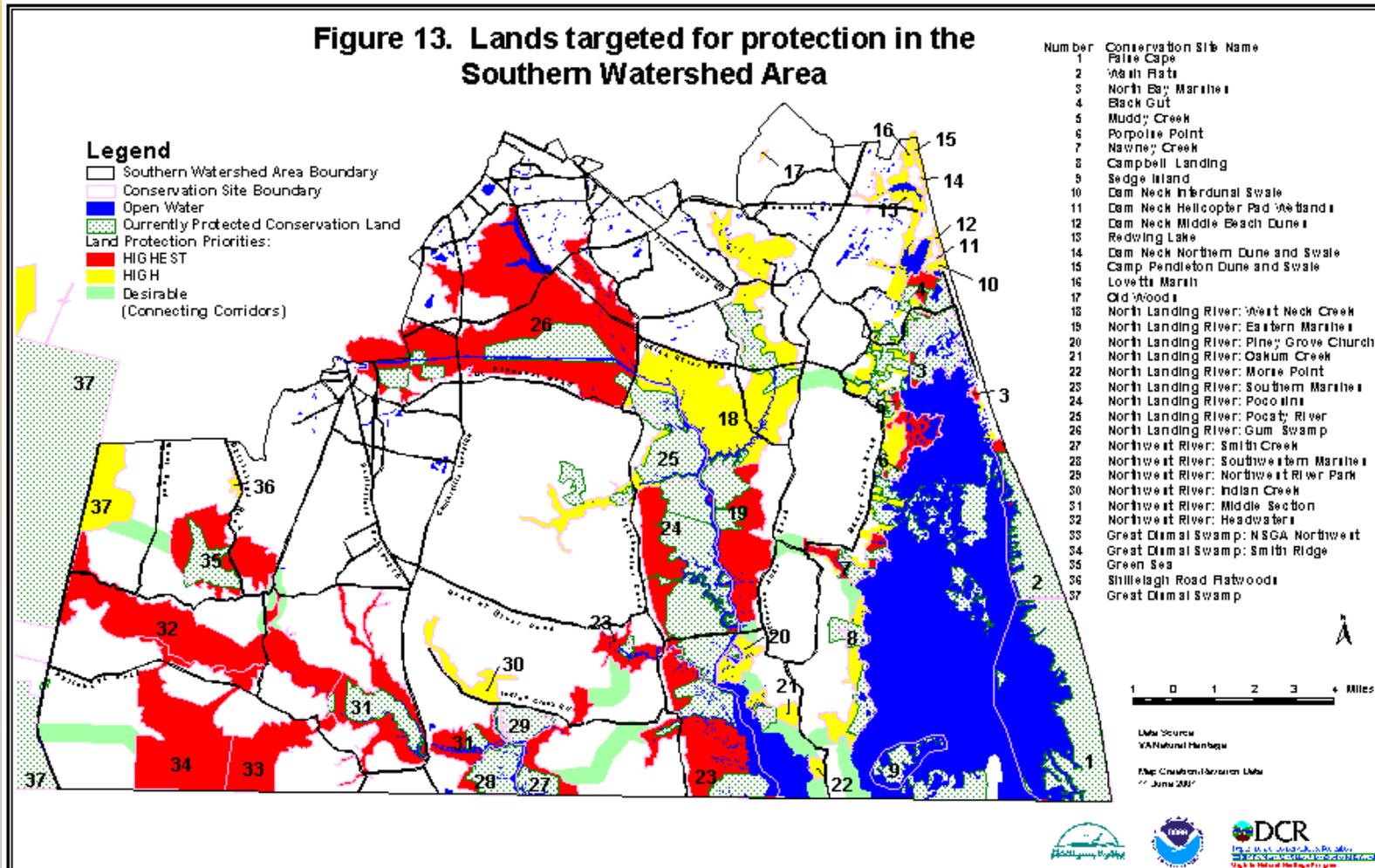
- ★ Identify a set of riparian based conservation corridors and benefits associated with proper management
- ★ Employ the shared methodology for selecting wetlands compensation sites
- ★ Continue to refine the multiple benefits site selection process based on experience in analyzing mitigation site options
- ★ Improve coordination and sharing of information among the agencies involved in the wetlands mitigation process

Corridor System





Land Protection Priorities





Signatory Agencies



- ★ **Cities of Chesapeake and Virginia Beach**
- ★ **HRPDC** – Hampton Roads Planning District Commission
- ★ **Virginia Dare SWCD** – Soil and Water Conservation District
- ★ **VDCR** – Department of Conservation and Recreation
- ★ **VDEQ** – Virginia Department of Environmental Quality
- ★ **VDGIF** – Virginia Department of Game and Inland Fisheries
- ★ **VMRC** – Virginia Marine Resources Commission
- ★ **VDOT**- Virginia Department of Transportation
- ★ **NRCS** – Natural Resources Conservation Service
- ★ **NMFS** – National Marine Fisheries Service
- ★ **USACE** – U.S. Army Corps of Engineers
- ★ **USFWS** – U.S. Fish and Wildlife Service
- ★ **TNC** – The Nature Conservancy





Southeastern Parkway Mitigation Package

- ★ Evolving mitigation package uses the multiple benefits approach developed in SWAMP
- ★ Primary goals include augmentation of the conservation corridor system and buffering of Oceana and Fentress



Chesapeake 2026 Comprehensive Plan



- ★ Future Land Use map includes the majority of the conservation corridor system as conservation land
- ★ Natural Resources chapter uses the conservation corridor system as the basis for identifying conservation areas



Chesapeake 2026 Comprehensive Plan



“Conservation corridors will be preserved based on the recommended conservation corridors contained in the City’s Southern Watershed Conservation Plan and Chesapeake Bay Preservation Area program. This action would provide a logical, scientifically-based approach to conservation corridor design, because these programs have identified the most environmentally sensitive areas.”





Chesapeake PDR Program

- ★ The City of Chesapeake Open Space and Agricultural Preservation Program (OSAP) uses proximity to the conservation corridor system as one element in evaluating parcels submitted to the program.
- ★ The OSAP Program is funded through roll back taxes, street closure fees, sale of surplus properties and excess mosquito control funds.



Land Purchase

- ★ The City of Virginia Beach purchased the land surrounding Stumpy Lake protecting one of the highest priority sites in the corridor system.
- ★ The Cities of Chesapeake and Virginia Beach currently have an application pending for CELCP funding to purchase a set of six parcels in and adjacent to the corridor system.
- ★ Back Bay National Wildlife Refuge continues to purchase land in the Back Bay watershed.
- ★ The Nature Conservancy continues to purchase land in the Northwest River watershed.

Southern Watershed Area Management Program

Map 2

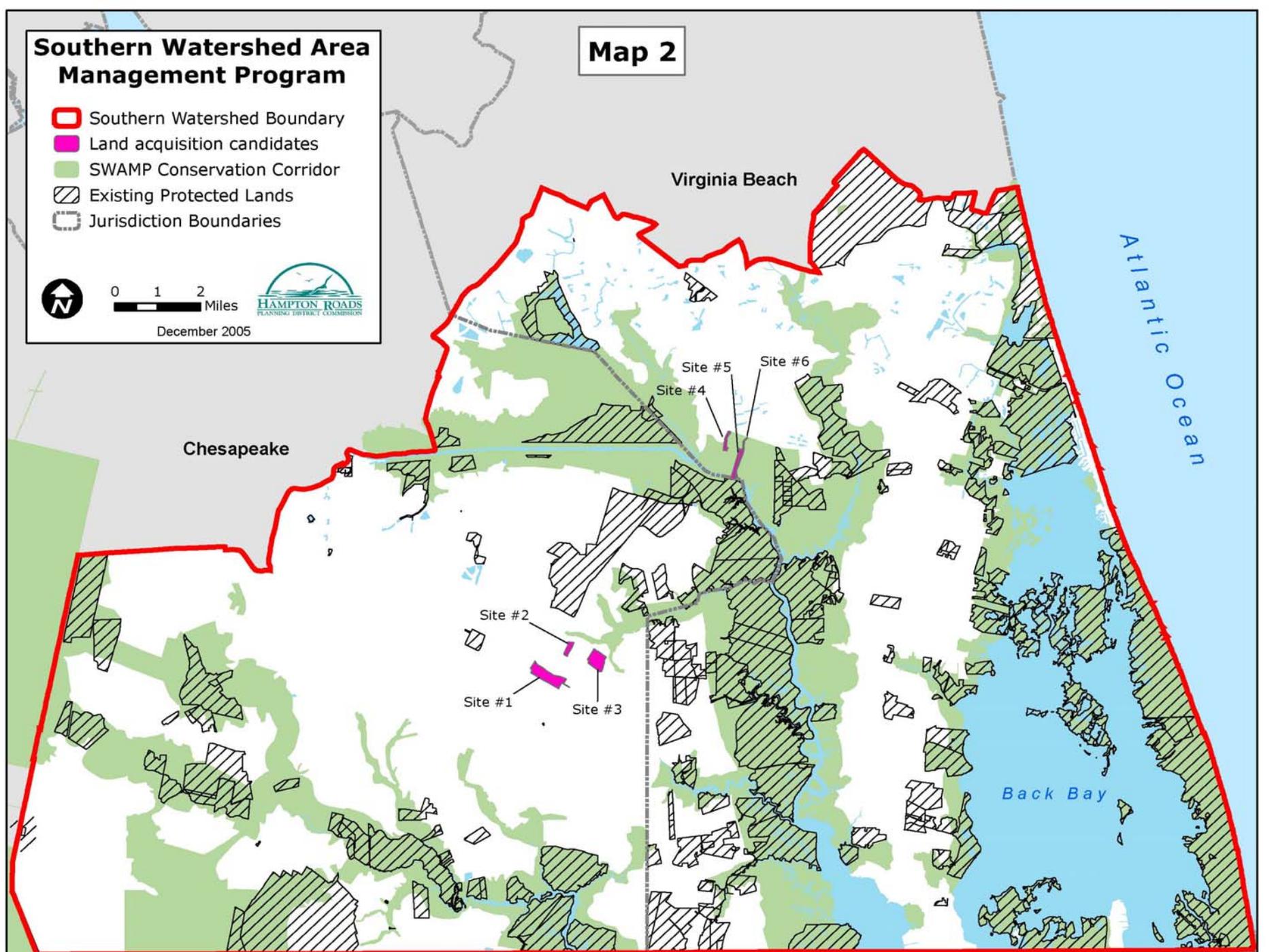
-  Southern Watershed Boundary
-  Land acquisition candidates
-  SWAMP Conservation Corridor
-  Existing Protected Lands
-  Jurisdiction Boundaries



0 1 2 Miles



December 2005





Regional Green Infrastructure Project



Project Overview

- ★ Obtained grant from the Virginia Coastal Program based on the success of the SWAMP project
- ★ Worked with all localities in the HRPDC to develop a corridor system that fits with local planning goals
- ★ Corridor system is a framework to prioritize and potentially link several categories of open lands



Goals for the Project



- ★ Determine local planning needs
- ★ Identify a corridor system that provides multiple benefits:
 - Habitat protection
 - Stormwater management
 - Wetlands Mitigation
 - TMDL & Tributaries Strategy compliance
 - Comprehensive Planning
 - Recreation/Tourism
- ★ Provide GIS mapping of corridor system to localities
- ★ Educate public on benefits of the corridor system



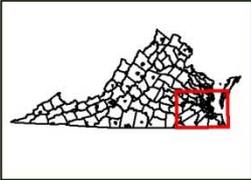
Figure 7 The Hampton Roads Conservation Corridor Study

Legend

 Opportunities for Connectivity

Suitability for Conservation

-  Low suitability
-  High suitability - WATER QUALITY
-  High suitability - HABITAT
-  High suitability - BOTH



Notes:

The Suitability for Conservation information identifies areas that are potentially most suitable for protection based on a wildlife habitat or water quality protection perspective. The suitability information was derived through weighted overlay analysis in GIS using the following data sources: National Land Cover Database, National Wetlands Inventory, riparian corridors, and the Virginia Land Conservation Needs Assessment habitat cores. The map was refined based on the input from natural resource experts in the Hampton Roads region.

The Opportunities for Connectivity information highlights areas where there are opportunities to create a linked network of green infrastructure in Hampton Roads. Protected and unprotected green spaces can be linked to each other, as well as to existing recreational areas.

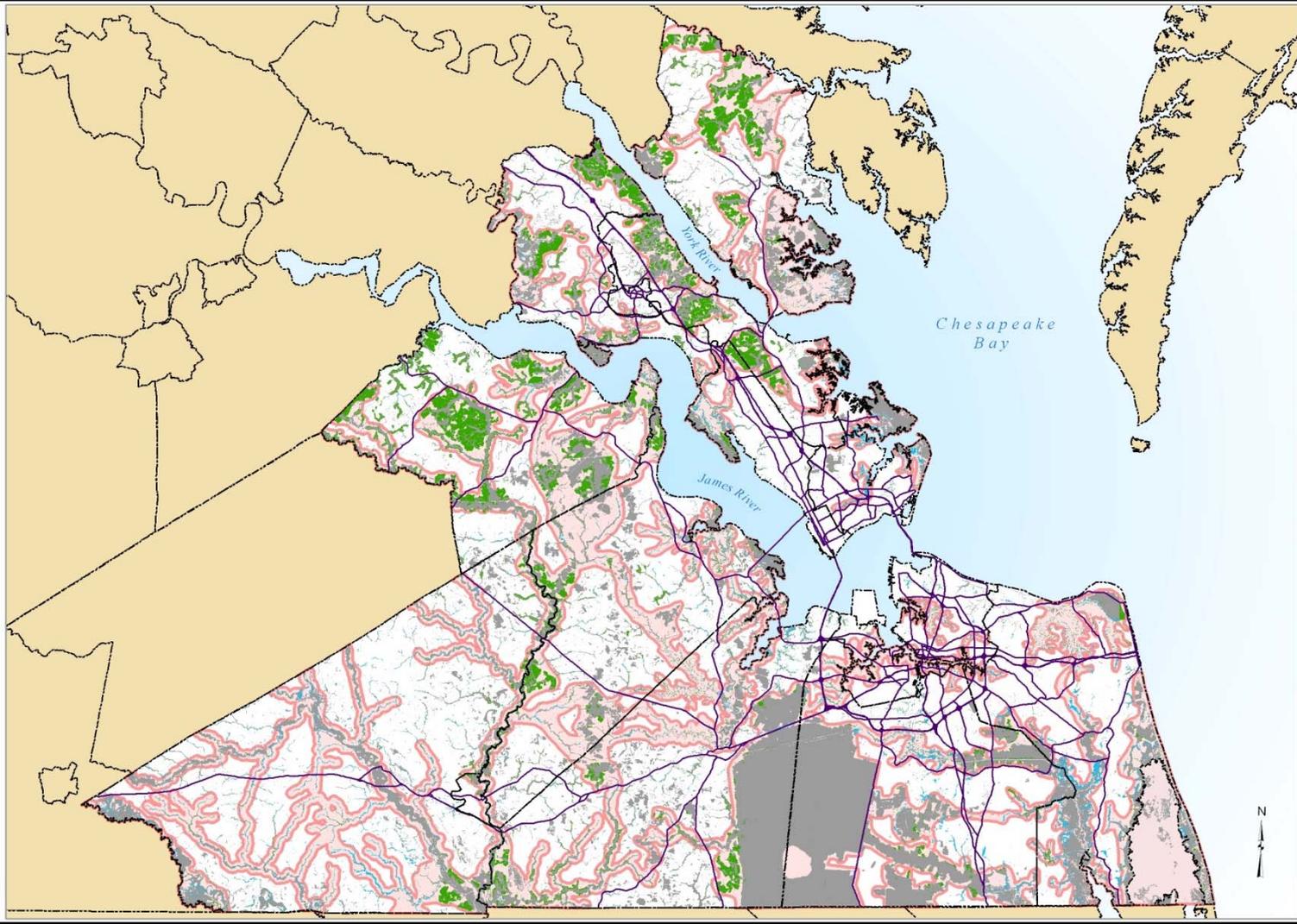
This map is intended as a tool to aid the regional planning process and does not necessarily reflect the actual future land use plans of individual Hampton Roads localities.



Virginia Coastal Zone
MANAGEMENT PROGRAM

0 5 10 20 Miles

May 2006





Implementation

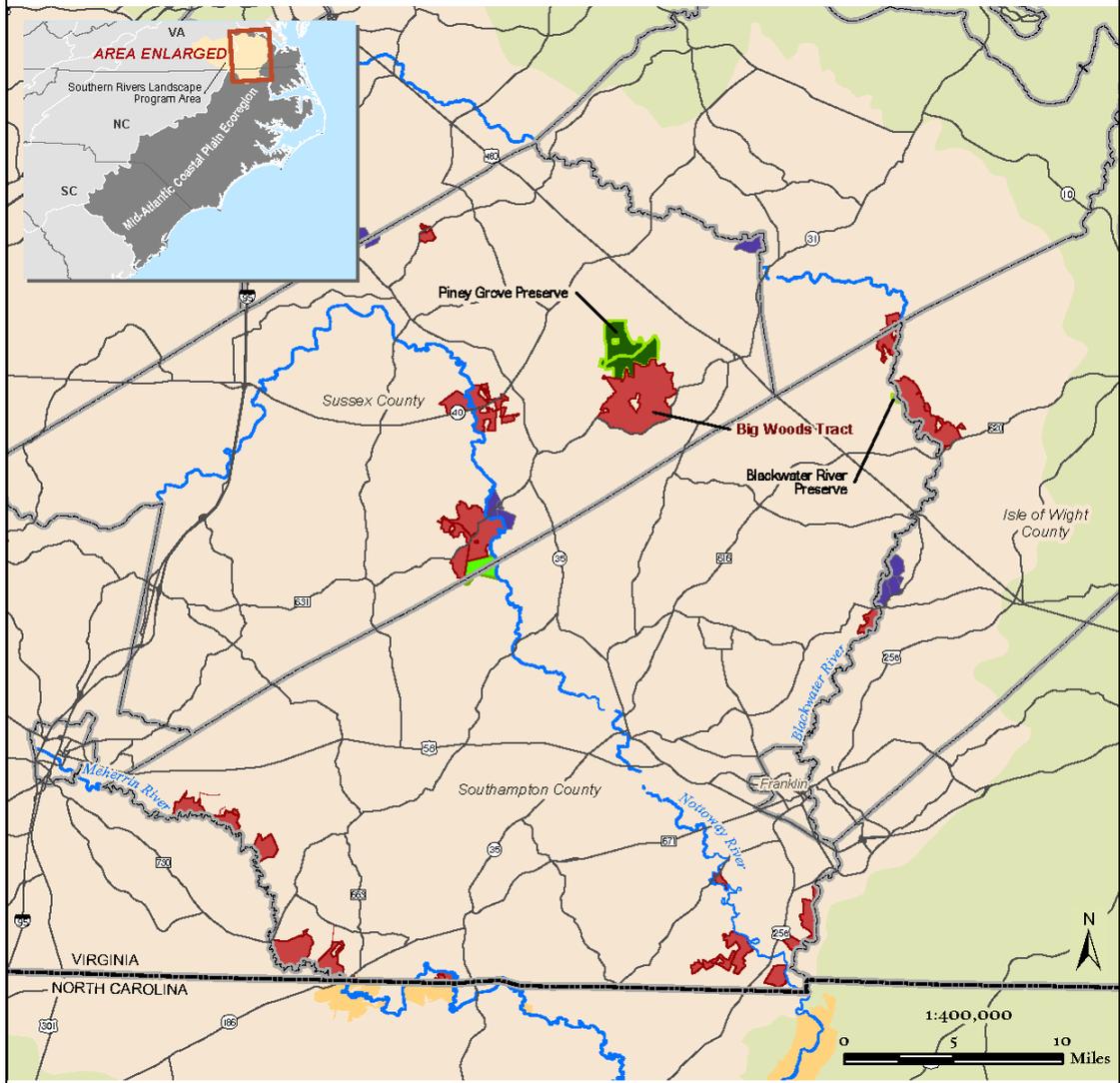
- ★ Land Acquisition
- ★ Green Infrastructure Workshops
- ★ Total Maximum Daily Load Implementation Plans
- ★ Stormwater Management Programs
- ★ Military Base Encroachment
- ★ Southampton County Comprehensive Plan
- ★ Green Infrastructure Summary Report
- ★ Future Actions



New Conservation Lands Acquired in HR

- ★ Agreement between International Paper, The Nature Conservancy & The Conservation Fund to protect 218,000 acres in the southeastern U.S.
- ★ 20,000 acres protected in Sussex, Surry, Southampton, and Isle of Wight Counties by TCF
- ★ All tracts fall into the HR Conservation Corridor





- IP Tract
- IP Tract (North Carolina)
- TNC Preserve
- TNC Easement
- State Natural Area Preserve
- River
- County Boundary
- State Boundary
- Primary Road
- Southern Rivers Landscape Program Area

Map Created by C. Bruce, Charlottesville Office, VA

Data Sources:
 IP Tract, IP (2005);
 TNC Preserve/Easement, TNC (2005)
 State Natural Area Preserve, (VA-DCR, 2005)
 State/County Boundary, USGS (2002)
 Roads, ESRI (2005); Stream/River, USGS (2005)

Projection: UTM zone 18, NAD83

March 23, 2006



Total Maximum Daily Loads

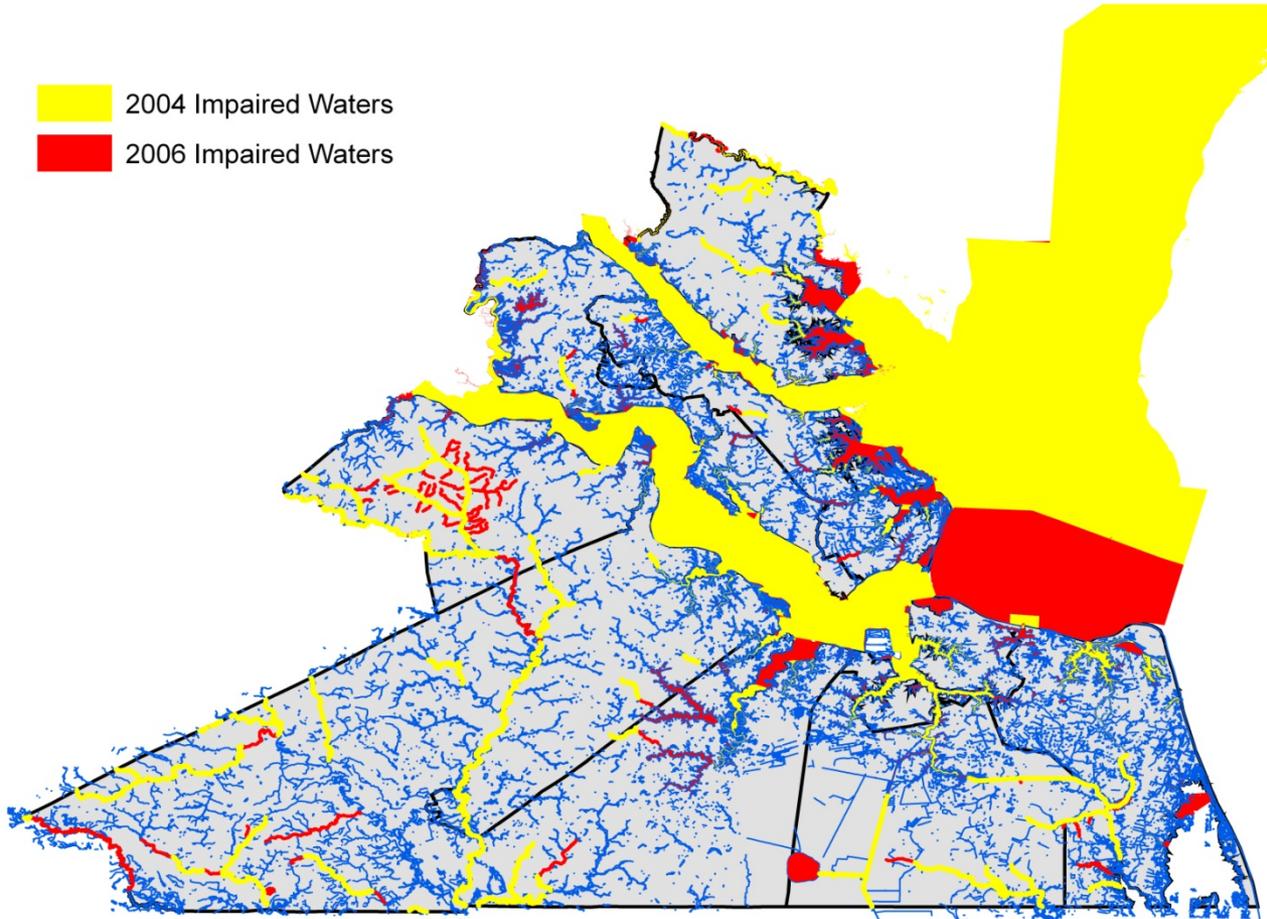


- ★ **Total Maximum Daily Load**
- ★ **Definition:** Maximum amount of a pollutant that a waterbody can receive and still maintain its designated use.
- ★ **In effect:** Planning tool to develop pollution reduction goals in order to improve water quality in impaired waterbodies.



Impaired Waters in Hampton Roads

-  2004 Impaired Waters
-  2006 Impaired Waters





Use of Green Infrastructure in TMDL Implementation Plans

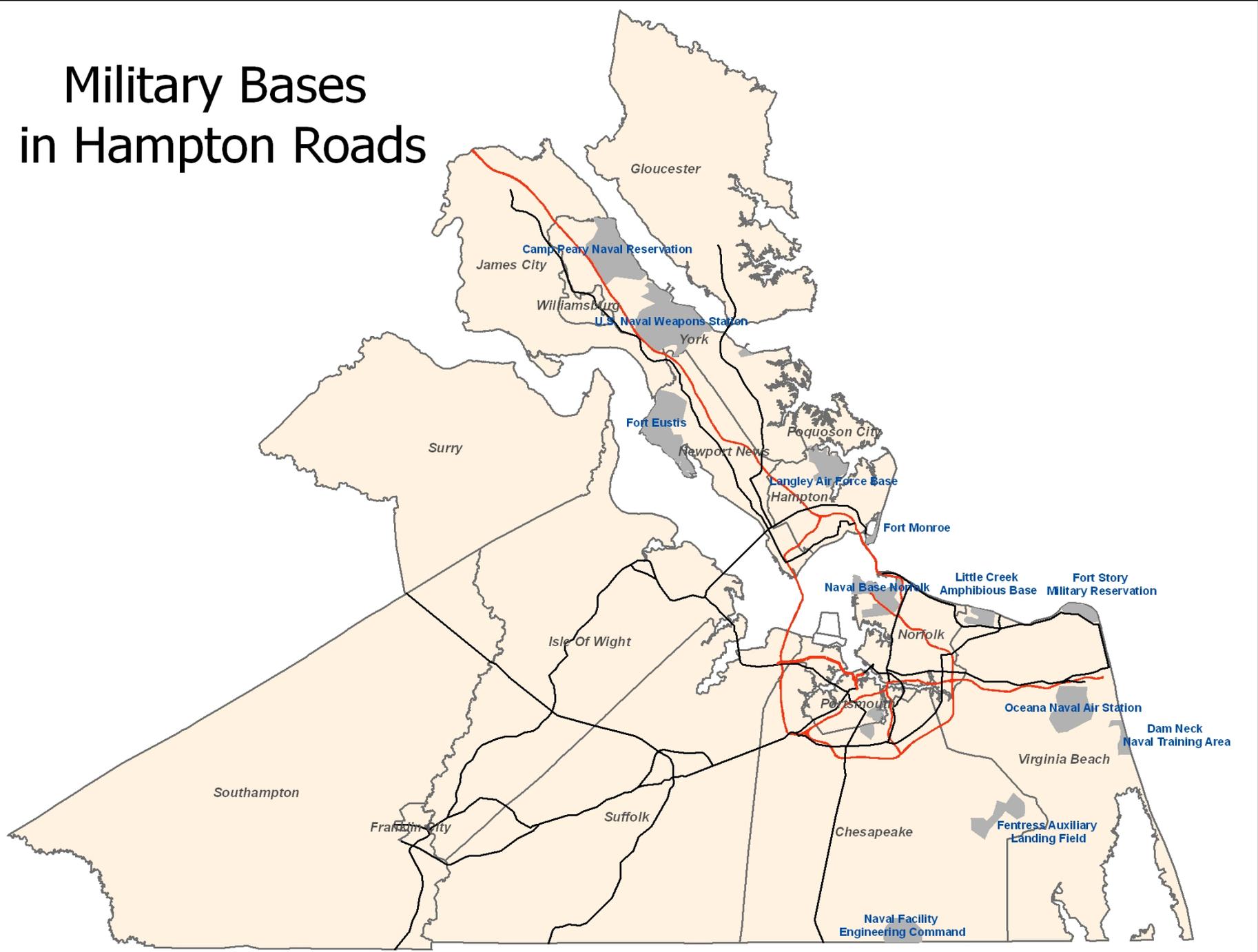
- ★ Non-point source pollution is a large part of the problem in Hampton Roads
- ★ Both structural and non-structural methods will be required
- ★ In many cases green infrastructure provides a cost effective alternative to engineered stormwater BMPs



Military Base Encroachment

- ★ Hampton Roads is home to a large number of military facilities
- ★ Military employment and associated business and industry are mainstays of the economy
- ★ Long term viability of these facilities is threatened by encroachment of development

Military Bases in Hampton Roads



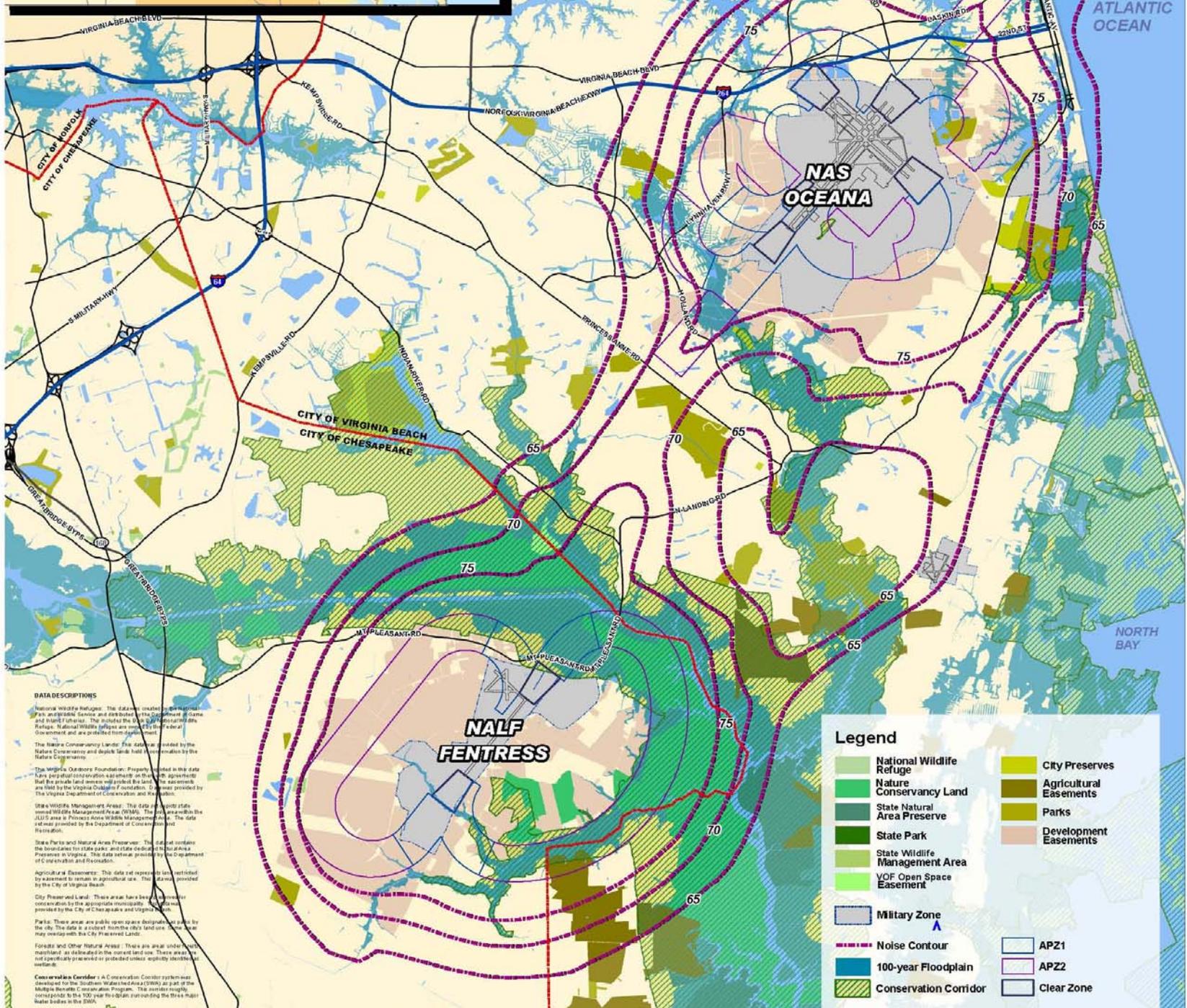


Hampton Roads Joint Land Use Study



- ★ The Hampton Roads Joint Land Use Study (JLUS) was intended to explore solutions to encroachment on several military facilities.
- ★ The JLUS includes a green infrastructure component.
- ★ The conservation corridor network includes critical lands between Oceana Naval Air Station and Fentress.
- ★ Identified actions in the JLUS include purchase of easements and rezoning of these lands to preclude incompatible development.





DATA DESCRIPTIONS

National Wildlife Refuges: This dataset includes the National Park and Wildlife Service and distributed by the Department of Game and Inland Fisheries. This includes the Cape Fear National Wildlife Refuge. National Wildlife Refuges are owned by the Federal Government and are protected from development.

Nature Conservancy Land: This dataset is provided by the Nature Conservancy and depicts lands held in perpetuity by the Nature Conservancy.

The Virginia Outdoors Foundation: Property located in this data have potential conservation significance on the part of the government. But the private land owner will protect the land. The easements are held by the Virginia Outdoors Foundation. The map is provided by the Virginia Department of Conservation and Recreation.

State Wildlife Management Area: This data includes state owned Wildlife Management Areas (WMA). The park area within the JLD area is Princess Anne Wildlife Management Area. The data set was provided by the Department of Conservation and Recreation.

State Parks and Natural Area Preserve: This dataset contains the boundaries for state park and state designated Natural Area Preserves in Virginia. This data set was provided by the Department of Conservation and Recreation.

Agricultural Easements: This data set represents land restricted by easement to remain in agricultural use. This data set was provided by the City of Virginia Beach.

City Preserved Land: This area has been preserved for conservation by the appropriate municipality. This data set was provided by the City of Chesapeake and Virginia Beach.

Parks: These areas are public open space designated and owned by the city. This data is a subset from the other land use data set and may overlap with the City Preserved Land.

Forests and Other Natural Areas: These areas are under forest management as delineated in the forest land use. There are areas not specifically preserved or protected unless explicitly stated in the text.

Conservation Corridor: A Conservation Corridor system was developed for the Southern States and Area (SSA) as part of the Multiple Benefits Conservation Program. This inventory roughly corresponds to the 100 year Floodplain surrounding the three major water bodies in the SSA.

Legend

	National Wildlife Refuge		City Preserves
	Nature Conservancy Land		Agricultural Easements
	State Natural Area Preserve		Parks
	State Park		Development Easements
	State Wildlife Management Area		
	VOF Open Space Easement		
	Military Zone		Noise Contour
	100-year Floodplain		APZ1
	Conservation Corridor		APZ2
			Clear Zone



Southampton County Comprehensive Plan



- ★ The recently completed Southampton County Comprehensive Plan includes a map of the portion of the regional green infrastructure network contained within the County.
- ★ The future land use map includes substantial portions of the green infrastructure as conservation lands.





Green Infrastructure Summary Report



- ★ Report title is Green Infrastructure in Hampton Roads
- ★ Introduction to Green Infrastructure
- ★ Synopsis of previous efforts
 - SWAMP
 - HRCCS
 - Workshops
- ★ Case Studies
- ★ Recommended Future Actions
- ★ (Report is available on the HRPDC web site:
<http://www.hrpdc.org/newpep/HRCCS.shtml>)





Future Actions

- ★ White paper on the integration of green infrastructure implementation with the development approval process
- ★ Workshop on the use of green infrastructure to deal with encroachment of development on military bases
- ★ Integration of green infrastructure implementation with stormwater management and associated regulatory compliance



Future Actions

- ★ Continued refinement of the regional conservation corridor network
- ★ Identification and selection of sub-areas within the regional conservation corridor network for implementation action
- ★ Possible development of a regional parks plan
- ★ Possible development of a regional agriculture and forestry protection plan



Future Actions

- ★ Continue efforts to ensure integration of the Hampton Roads Conservation Corridor network with state and multi-state level initiatives



Future Actions

- ★ Development of a long term financing strategy for green infrastructure in Hampton Roads
- ★ Continue public education efforts