

Restoration of a Watershed





NASA Satellite photo of the
Chesapeake Bay after
Hurricane Irene — Virginian-Pilot
September 16, 2011



Watershed Area: 64,000 mi²

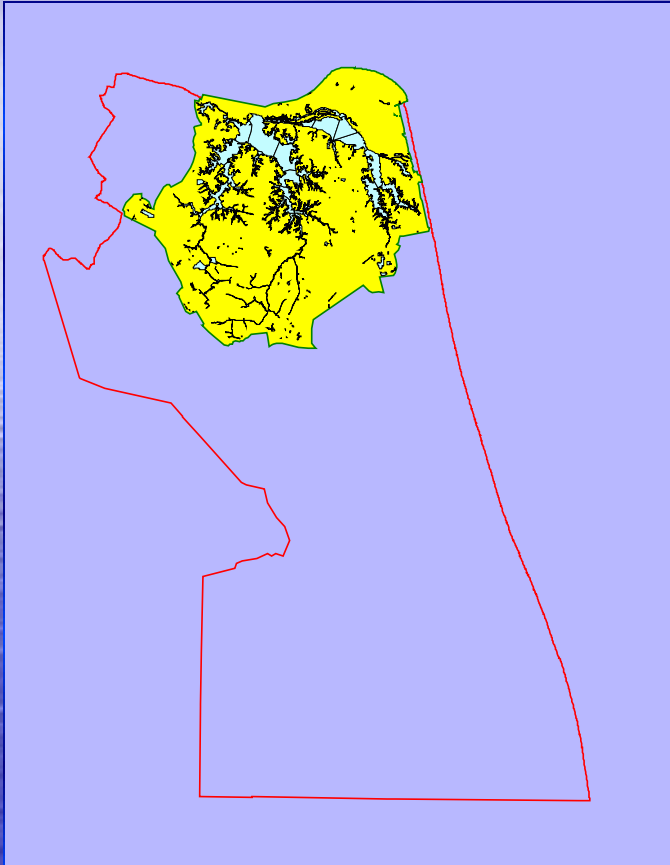
16 x Area Bay

Save the Bay

vs.

Save the Watershed 2

Lynnhaven River Watershed



- **64 Square Miles – 21% of the city's land area**
- **240,000 people – more than half of the city's population**
- **Includes Broad Bay, Linkhorn Bay, Crystal Lake, and the Eastern and Western Branches**

Chesapeake Bay:

Lynnhaven – Green

Little Creek – Orange

Eastern Branch of the

Elizabeth River – Yellow

Atlantic Ocean:

Rudee/Owl Creek – Dark Green

Southern Watershed:

North Landing River – Tan

Back Bay – Red

Northwest River -- Salmon

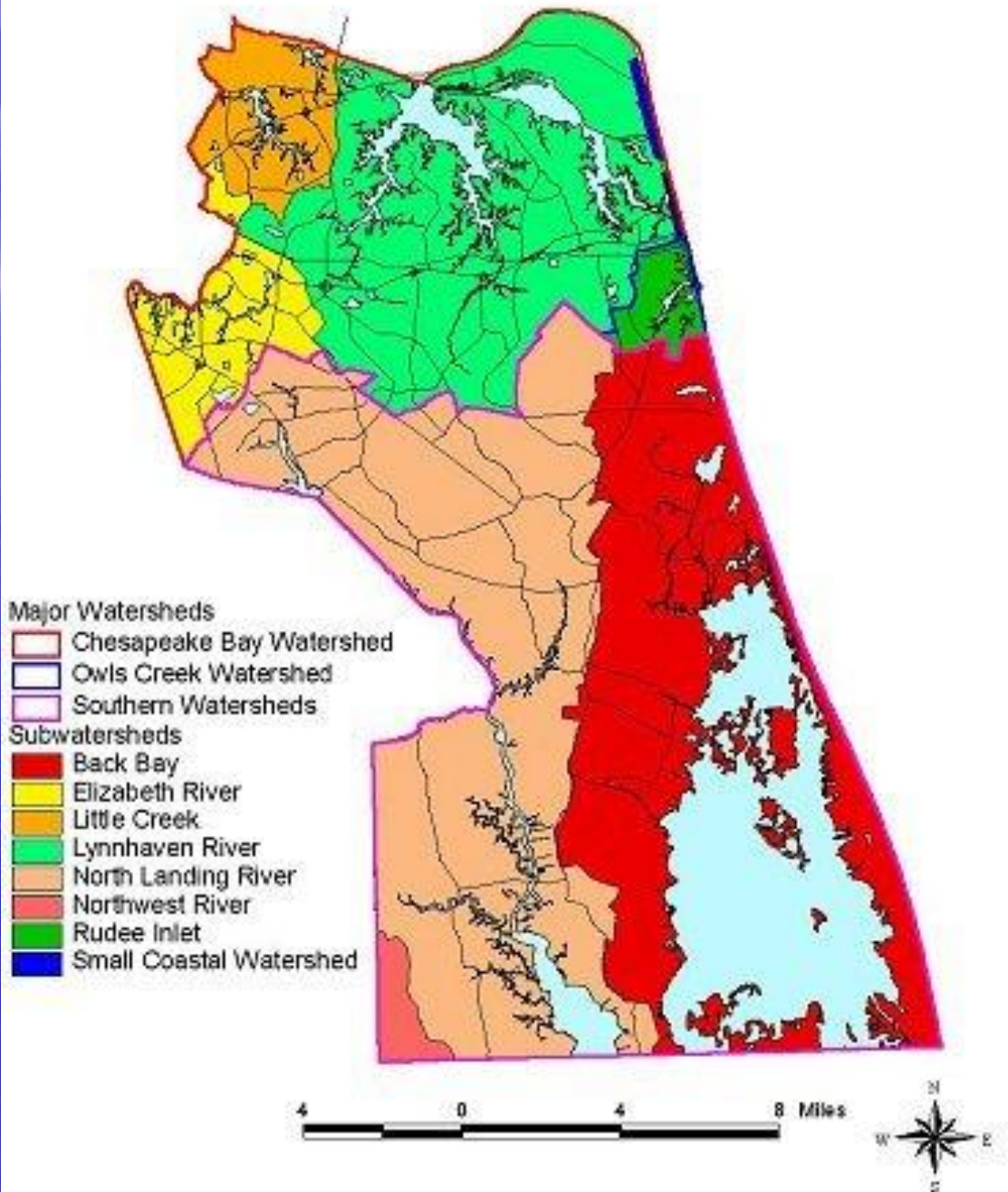
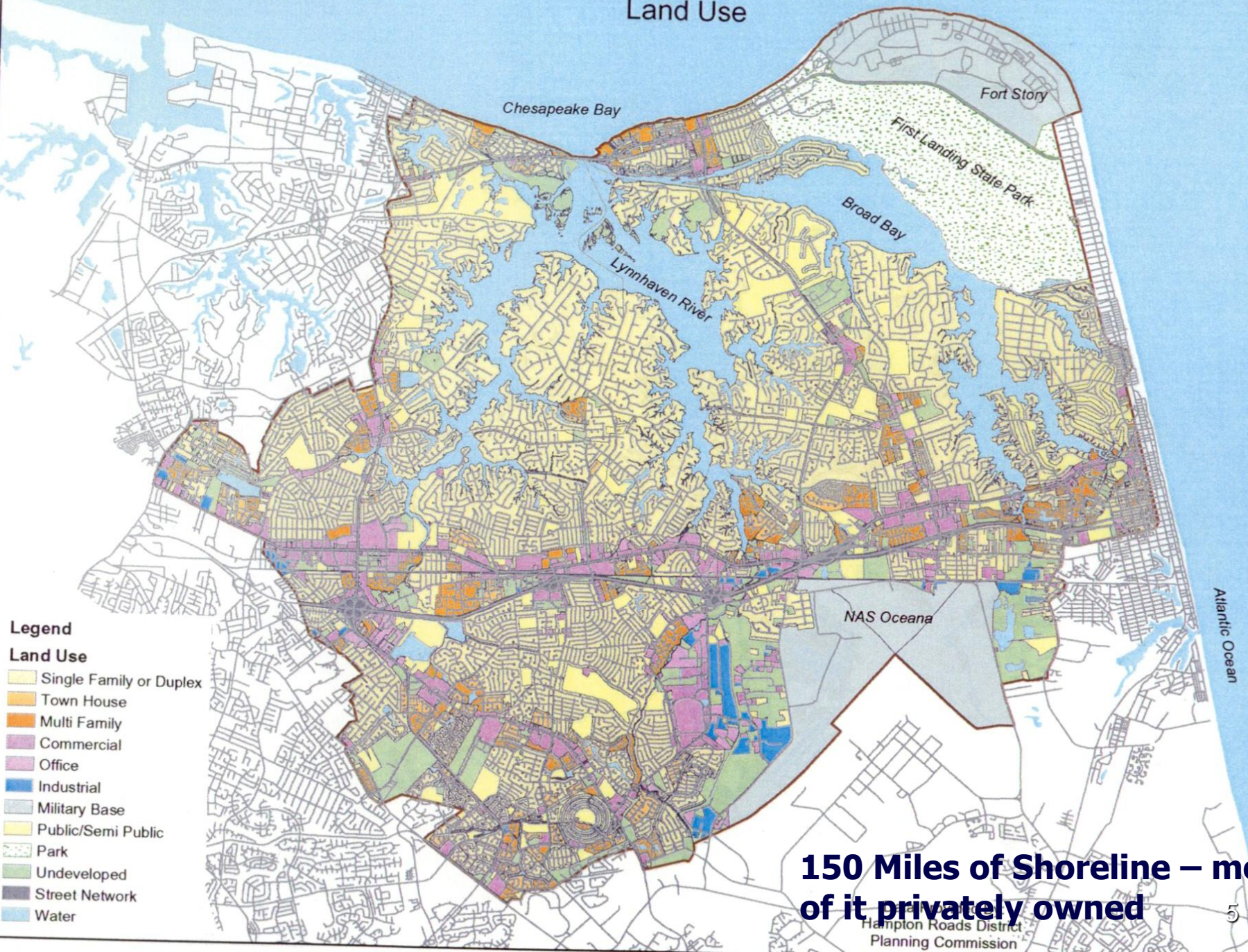


Figure 4
Land Use

N



- Legend**
Land Use
- Single Family or Duplex
 - Town House
 - Multi Family
 - Commercial
 - Office
 - Industrial
 - Military Base
 - Public/Semi Public
 - Park
 - Undeveloped
 - Street Network
 - Water

150 Miles of Shoreline – most of it privately owned

View of Town Center



38% Impervious Surface
30% Managed Turf



©2006 Simmons & Riley Aerial Photography

Virginia Beach Population Growth

- 1905 -- 11,000
- 1940 -- 19,000
- 1950 – 42,000
- 1960 -- 84,000
- 1970 – 172,000
- 1980 – 262,000
- 1990 – 393,000
- 2000 – 425,000
- 2006 – 445,000
- 2012 – 447,000

***For 30 years, from 1960 to 1990,
28 people A DAY moved into the
Lynnhaven River watershed.***



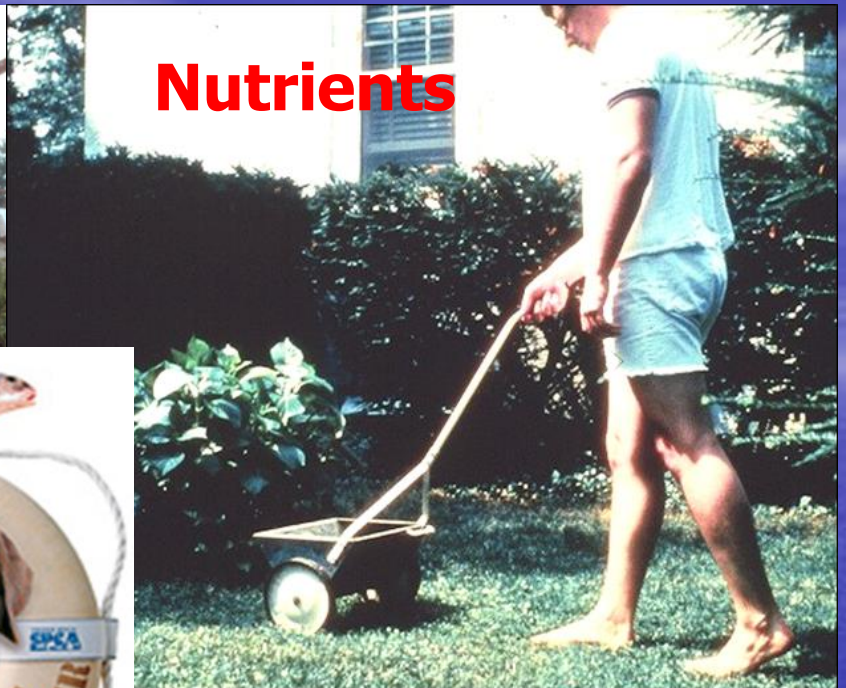
**Currently 240,000 people
live in the Lynnhaven
River Watershed**

***...and their pets, lawn
fertilizers, yard waste,
leaky cars, etc., etc., etc.***

Sediments



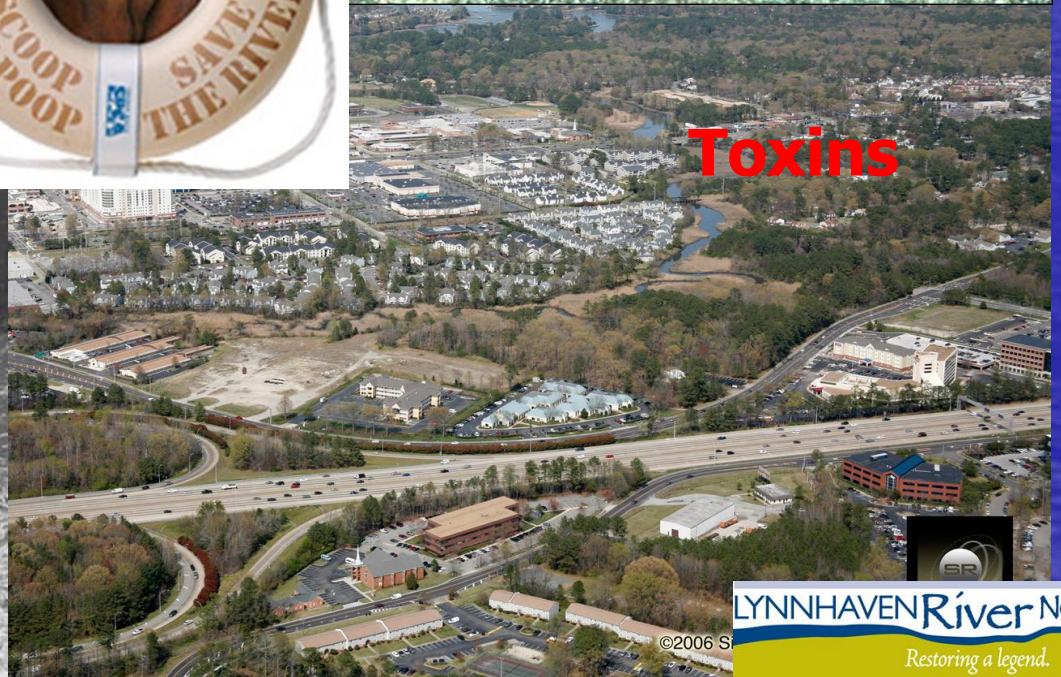
Nutrients



Bacteria



Toxins



Condition of the Lynnhaven

- Water Quality Problems:
 - Excess Nutrients
 - Sediment
 - Toxins
 - Bacteria
- Habitat Loss:
 - Oyster Reefs
 - Wetland & Buffer Habitats
 - Underwater Grasses

TMDL'S

The Easy Wins are Over

For Urban/Suburban Areas particularly, the
next step involves retrofits on
private property



To Restore the River we must Restore the Watershed



LYNNHAVEN *River* NOW

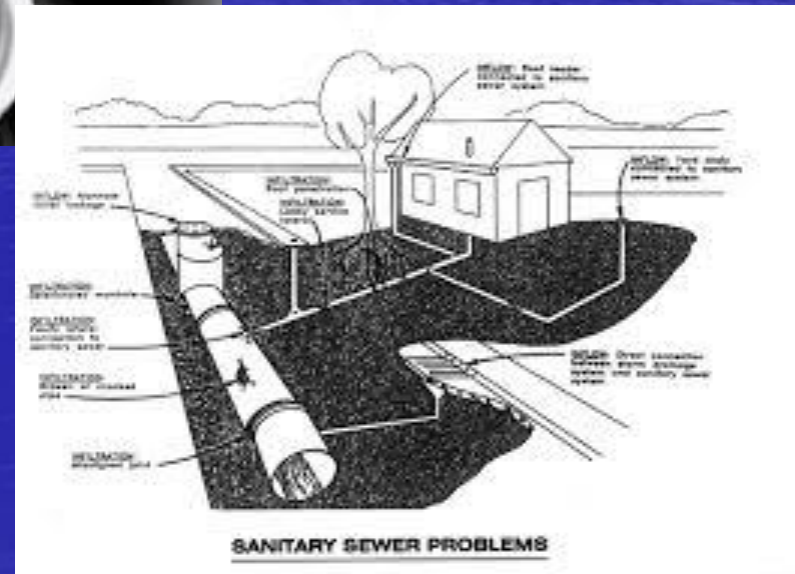
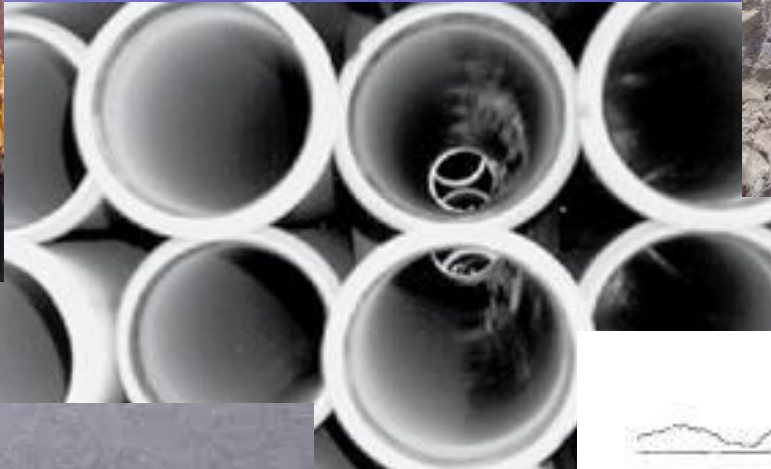
Restoring a legend.

- 1. Identify and reduce sources of pollutants.**
- 2. Restore vital habitat like oyster reefs, riparian buffers, wetlands and underwater grasses.**
- 3. Educate and engage the public and partner organizations in this work.**

Reducing Sources of Pollutants



Sanitary Sewer Expansion and Upgrades



Improved Stormwater Management



FEB 15 2006

Promote Clean Boating



NOTICE
THIS WATERWAY
IS A
NO DISCHARGE ZONE



THE DISCHARGE OF
SEWAGE FROM ANY BOAT
IS STRICTLY PROHIBITED
9VAC25-71

The Lynnhaven River is a No Discharge Zone

Monthly River Clean-ups



Take responsibility for keeping your gutters clean and be careful about what goes down the storm drain



SCOOP THE POOP



LRNOW.ORG • 757-962-5398
WWW.VBSPCA.COM • WWW.VBGOV.COM

Education and Outreach

How do you get 445,000 people to change their behavior?



Identify and Reduce Sources of Pollution

Scoop the Poop



No Discharge Zone

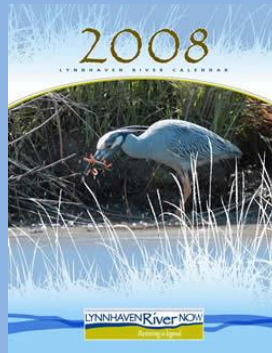
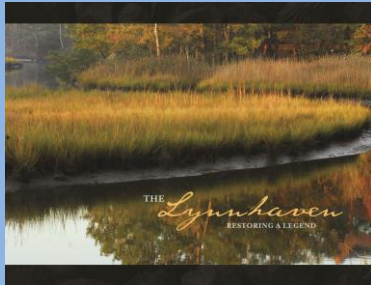
Conservation Landscaping



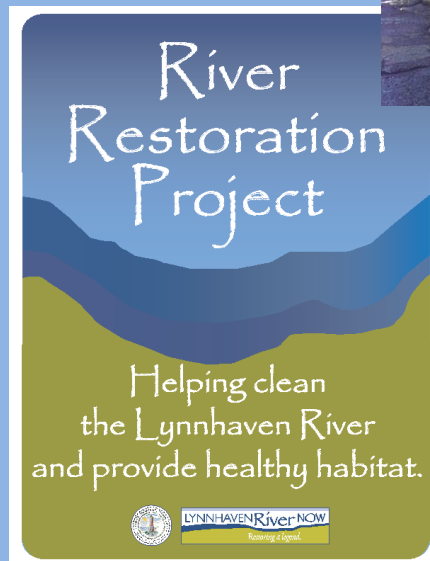
Rain Water Harvesting

Educate and Engage the Community and Partner Organizations

Newsletters and Publications

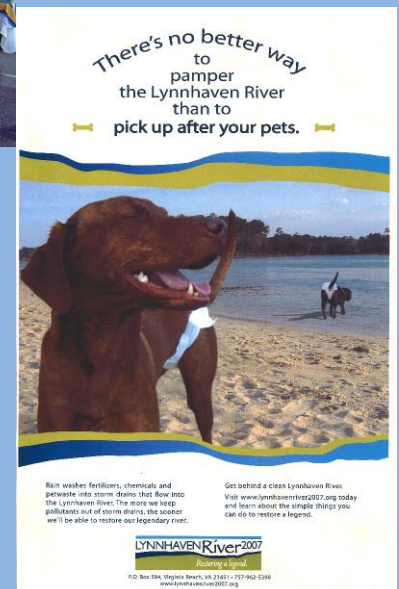


Pearl Homes Program



Workshops, Forums Educational Events Television Ads

Monthly Cleanups



Pearl School Programs





Restoring Critical Habitat

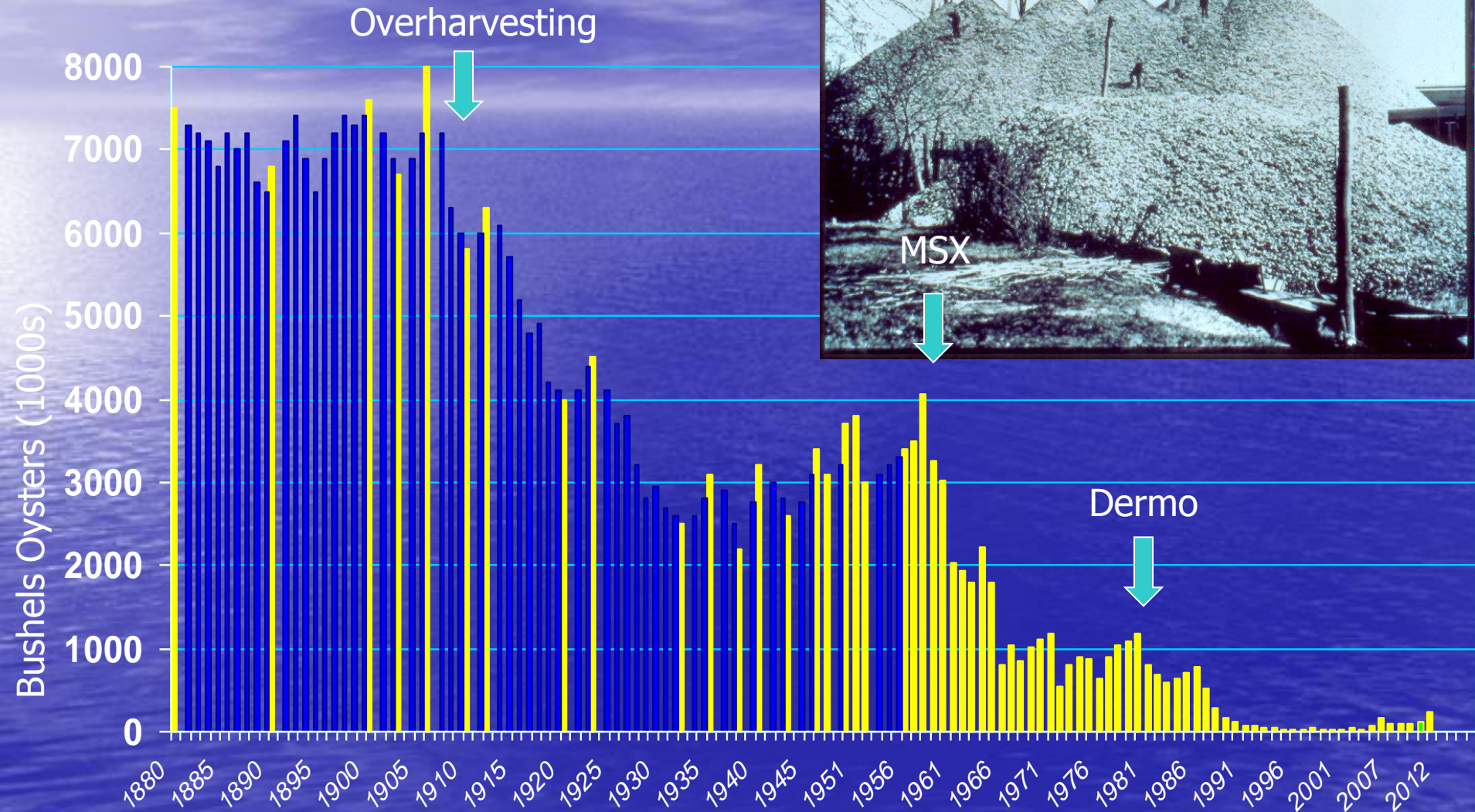
Oyster Reef
Wetlands

Underwater Grasses
Riparian Buffers

Oyster Restoration



Virginia Oyster Decline 1880-2012



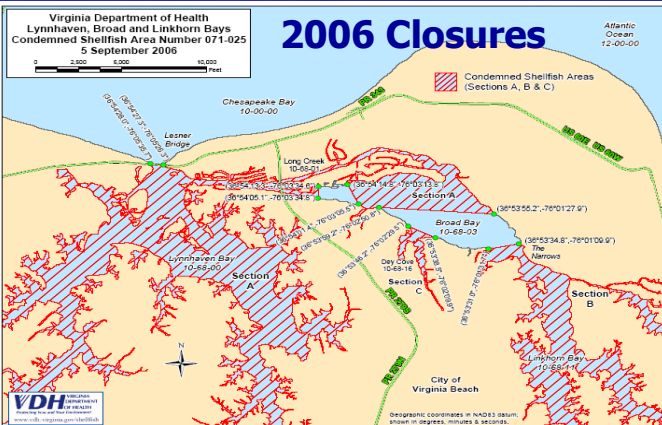
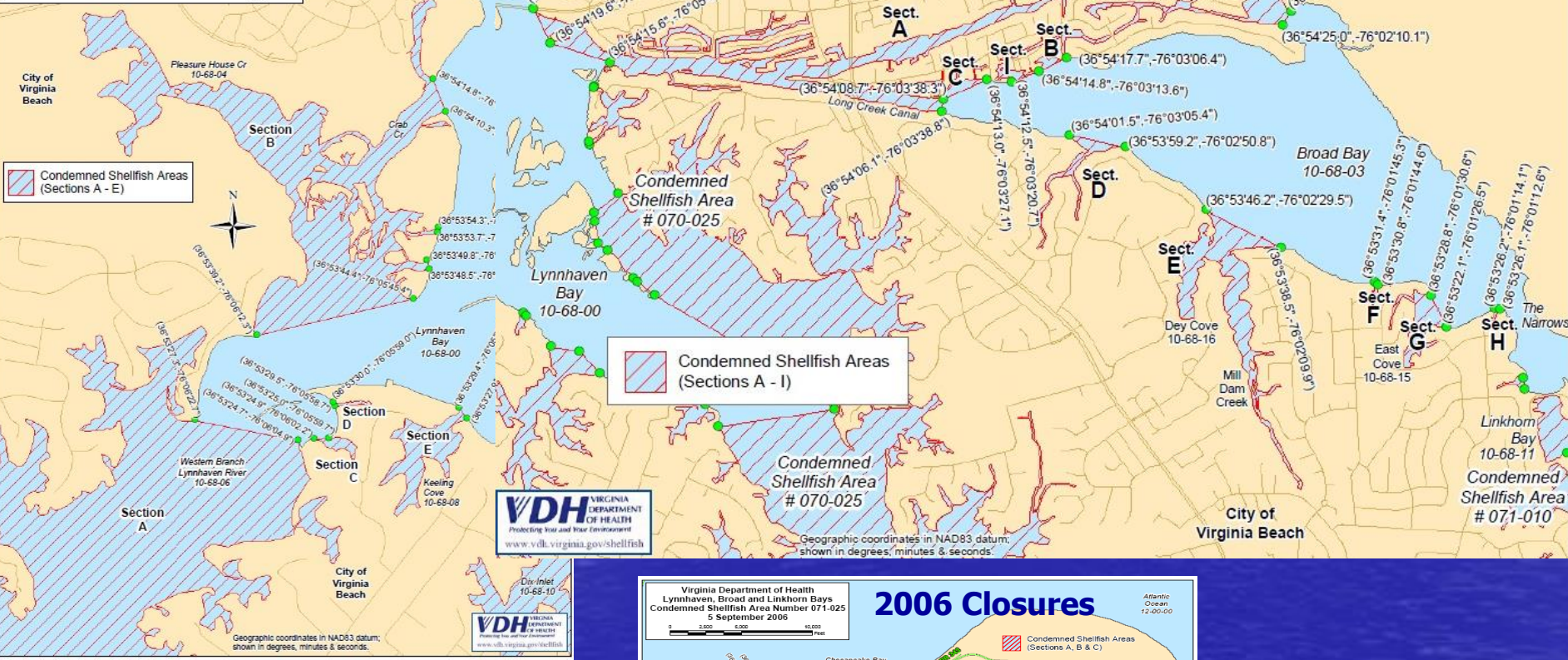
2010 Map of Shellfish Closures

Virginia Department of Health
Broad Bay
Condemned Shellfish Area
Number 071-095
10 December 2010

0 1,250 2,500 5,000
Feet

Virginia Department of Health
Western Branch of Lynnhaven River
Condemned Shellfish Area Number 070-036
9 December 2010

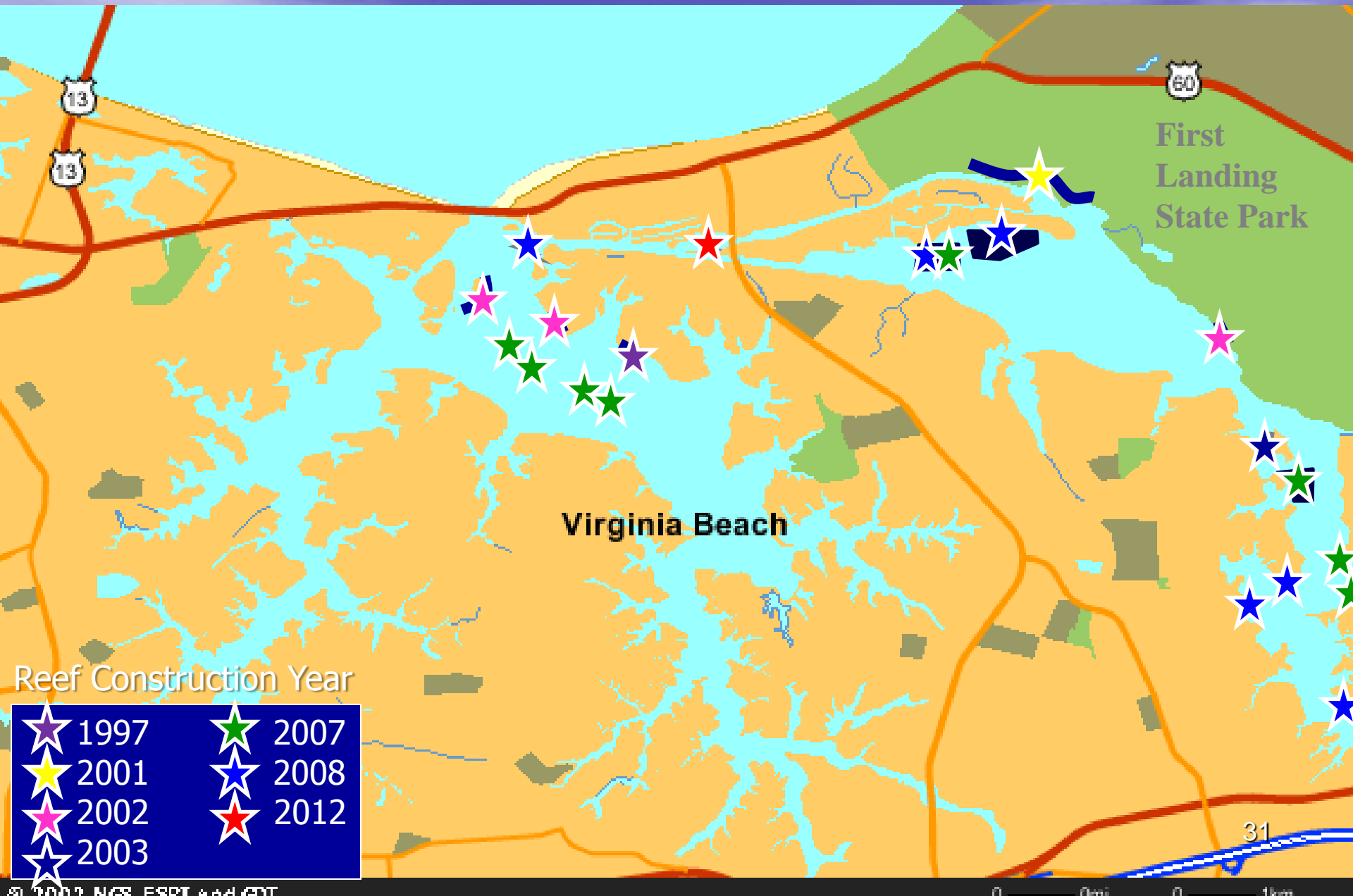
0 750 1,500 3,000
Feet







Lynnhaven River Sanctuary Oyster Reefs





LYNNHAVEN River NOW

Restoring a legend.



Save
Oyster
Shell

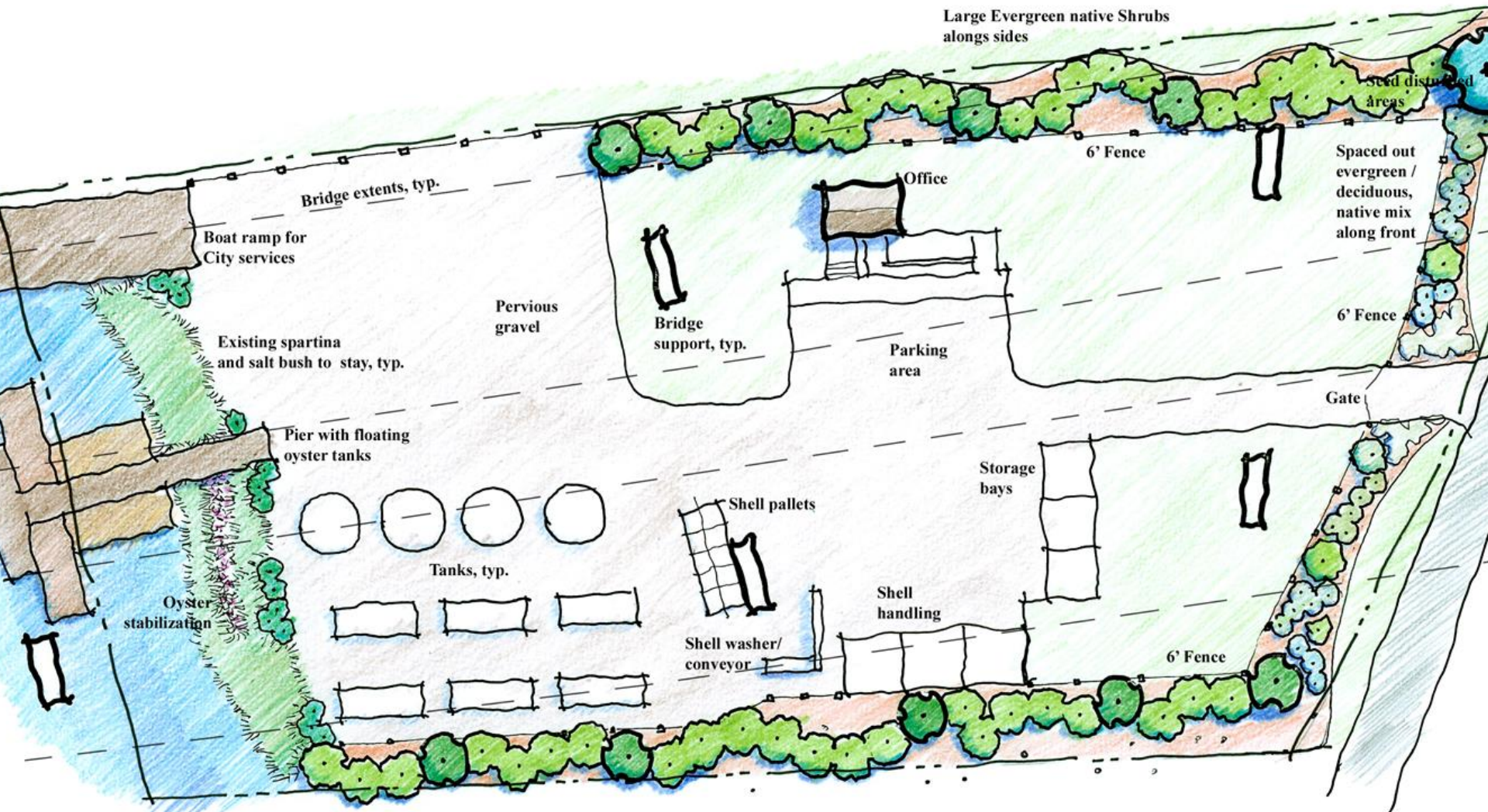
www.LRNow.org

PROGRAM PARTICIPANT

Spat catcher cages after 6 months (Dec 2012)







CONCEPTUAL PLANTING PLAN

LYNNHAVEN AQUACULTURE CENTER

LYNNHAVEN RIVER NOW Virginia Beach, Virginia

WPL LANDSCAPE ARCHITECTS LAND SURVEYORS CIVIL ENGINEERS



March 12, 2013
212-0422M



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Support Wetlands Preservation & Restoration



- Filter Nutrients & Sediment
- Wildlife Habitat
- Erosion Control – dissipates waves



Living Shorelines



Little Haven 2012

Conservation Landscaping



Pearl Homes



Pearl Schools



Pearl Faith Communities

How it all fits together...

Annual State of the River Report

Comprehensive Plan

Outdoors Plan

Urban Forest Management Plan

Lynnhaven Restoration Plan

TMDL Implementation Plans

Sustainability Plan

Economics of Clean Water



Tourism





Clean Water is Good For Business



Is Good For Everyone



Questions?

Together we can
make a difference

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