



NOAA DAMAGE ASSESSMENT, REMEDIATION, AND RESTORATION PROGRAM

**Delaware Estuary Watershed**  
Database & Mapping Project



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## **Presentation to the Mid-Atlantic Joint Assessment Team Meeting**

Simeon Hahn, NOAA Regional Resource Coordinator  
September 26, 2007  
DuPont Chestnut Run Plaza, Wilmington DE



NOAA DAMAGE ASSESSMENT, REMEDIATION, AND RESTORATION PROGRAM

## Delaware Estuary Watershed Database & Mapping Project



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### Background

- Developed via a 2006 Interagency Agreement between NOAA and the EPA Hazardous Site Clean Up Division through a Land Revitalization Grant
- The objective was to showcase the Urban Delaware Estuary (River) as a regional Brownfield area and identify restoration and land revitalization opportunities and initiatives



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## Delaware Estuary Watershed Database & Mapping Project



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### Background continued

- The project was also intended to facilitate natural resource damage assessment (NRDA) settlements
- The project provides a basis for watershed level environmental management using a multi-stakeholder approach through various regulatory, voluntary, and community based mechanisms



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## Delaware Estuary Watershed Database & Mapping Project

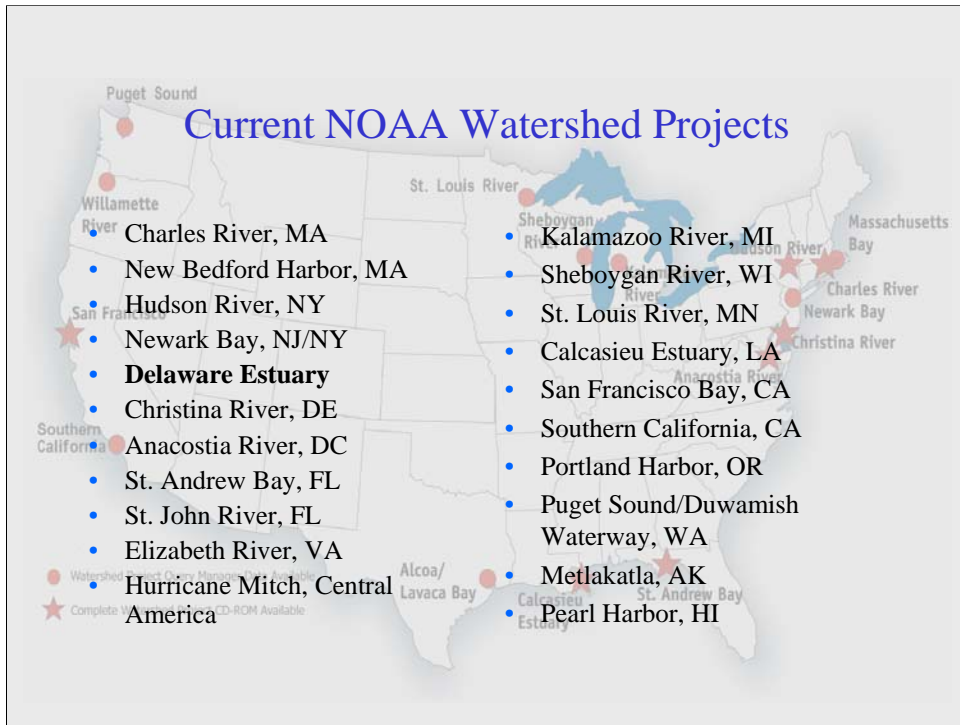


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### ORR Watershed Database & Mapping Projects

#### Watershed Project objectives:

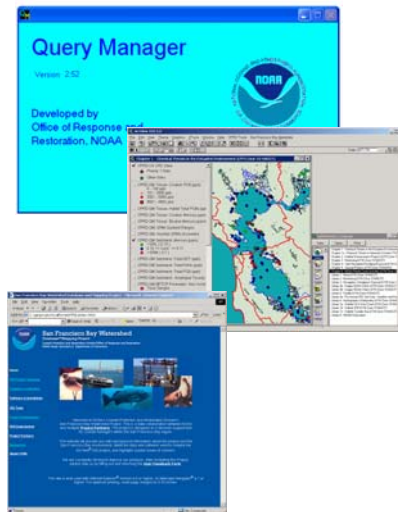
- Provide data and tools to users in an easy to use package
- Integrate *site specific* and *watershed wide* data
- Facilitate data sharing among external partners



Watershed Projects have been/are being developed all across the country using a standard approach...

## Major Components of NOAA Watershed Projects

- Query Manager database-mapping application
- ArcView Watershed GIS Project and Custom Tools
- Watershed Project Webguide



Watershed Projects are made up of 3 major components...

## Query Manager Application

- Based on standard relational database structure
- Menu of flexible, built-in database queries to facilitate
  - Data integration and management
  - Data exploration
  - Data delivery/export
  - Data sharing



*noaa*

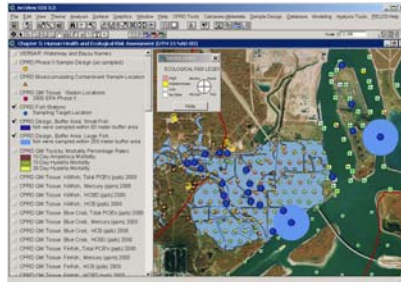
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## QM Tools: *Data Export*

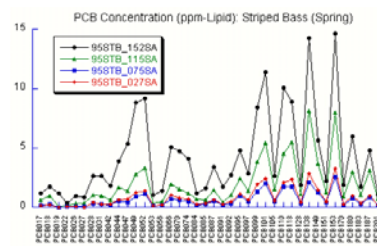
Extract data for  
ArcView  
Graphics  
Statistical analysis

## Output Data Table

## ArcView



## Graphics



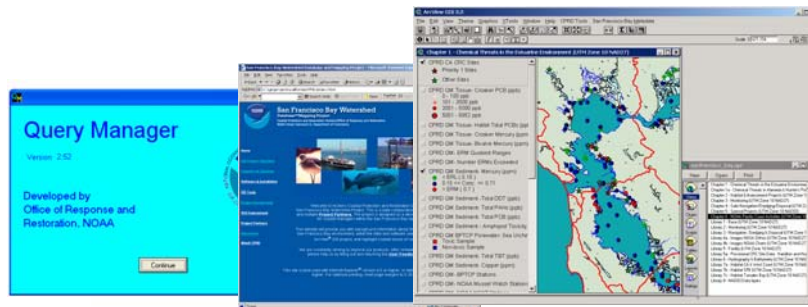
Multiple options for how the users uses data retrieved from QM

Easily outputs to other packages...(standard files...)



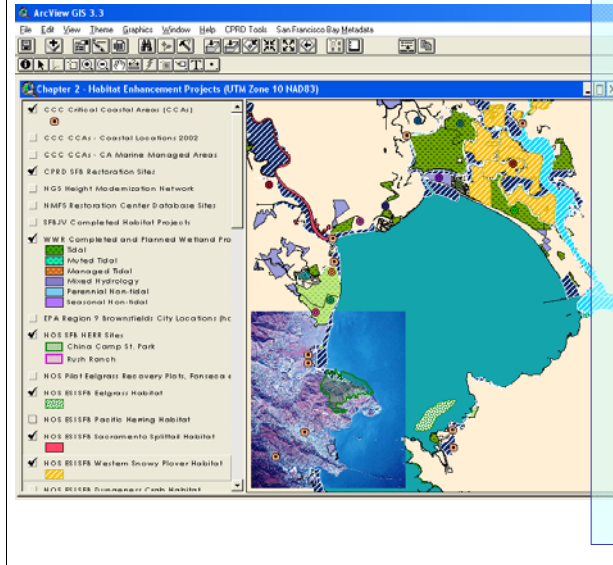
## Major Components of CPRD Watershed Projects

- Query Manager Database-Mapping application
- ArcView Watershed GIS Project and Custom Tools
- Watershed Project Webguide



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## CPRD ArcView Watershed GIS Project



### Standard Project Layers

- NOS program data
  - Digital raster navigation charts (1:10K – 1:500K)
  - Electronic Navigation Charts (ENC)
  - Shoreline (1:20K – 1:70K)
  - HAZMAT ESI
- FWS National Wetlands Inventory (NWI)
  - Older, 1:24K dataset
- EPA BASINS data
  - EPA Regulated facilities
  - USGS Hydrology, historic landuse, gage stations
  - other basic features
- Project specific datasets (Federal, state, municipal, NGO)
  - Contaminant data
  - Habitat/Species
  - Aerial photography

Watershed Projects are all built with a common structure and common set of base-layer data

NOS Program data (Charts, ENC, Shoreline)

FWS National Wetland Inventory (NWI Wetlands)

EPA Regulated Facilities (CERCLA, RCRA, PCS, etc)

Project Specific Data

Contaminant data (non-QM -Water Quality)

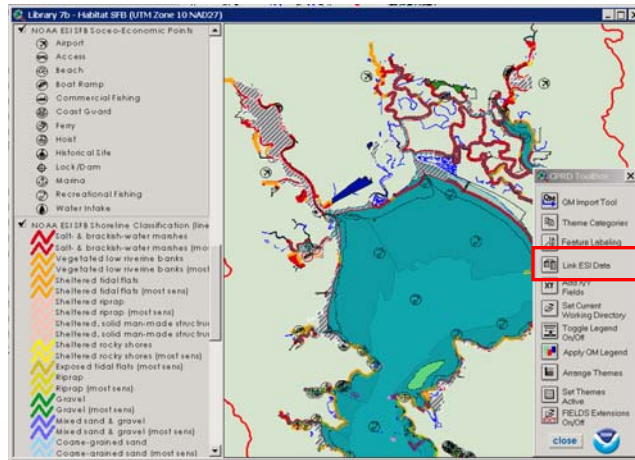
Habitat

Aerial Photography

## Custom GIS Tools – Environmental Sensitivity Index (ESI) Mapping Support

ESI data provide information on living resources and potential sensitivity to an oil spill

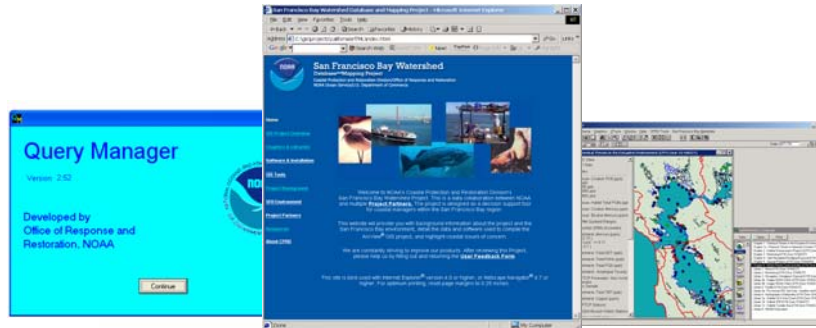
- Shoreline Ranking
  - Classified Shoreline
  - Sensitivity to oiling
- Biological Resources
  - Birds, fish, marine/terrestrial mammals & reptiles
- Human-use Resources
  - Marinas, port facilities, significant socioeconomic features



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## Major Components of CPRD Watershed Projects

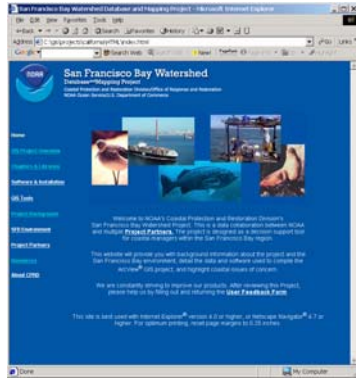
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## Watershed Project Webguide

- HTML Project Guide for CD-ROM and Web distribution



- Project History
- Environmental Setting
- GIS project structure/metadata
- Application Guide/help
- Integrated support to ArcView Project

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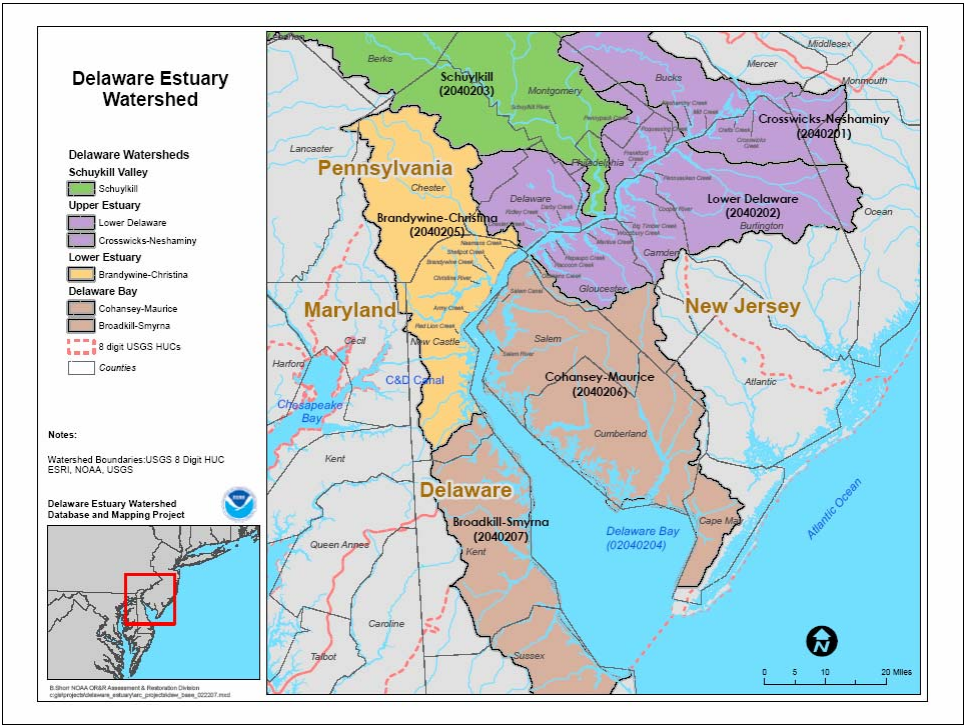
## Delaware Estuary Watershed

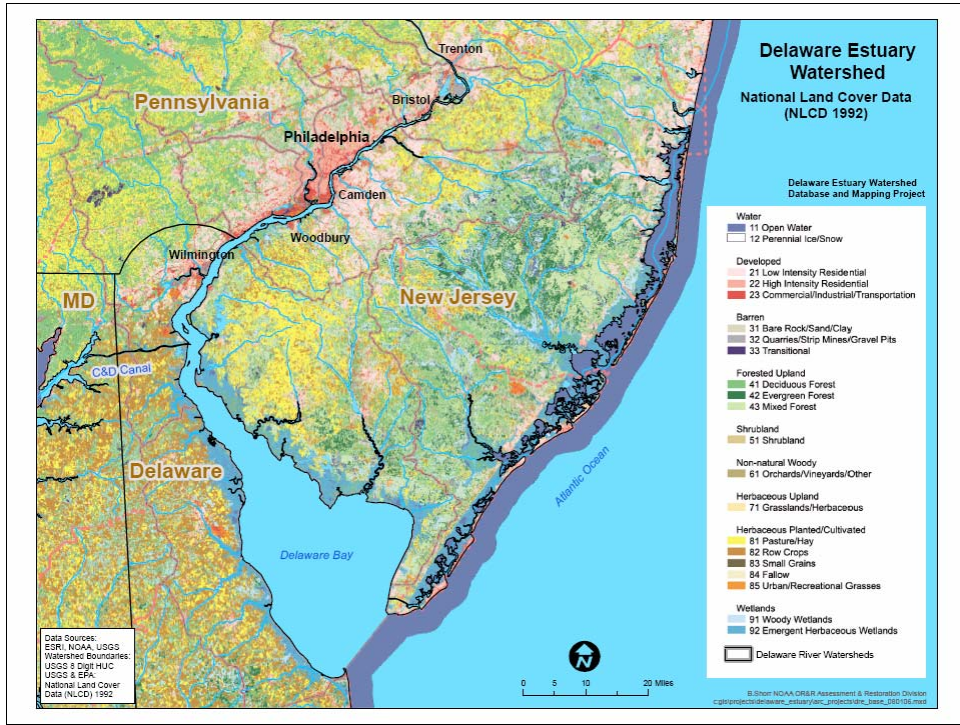
Database & Mapping Project



<http://mapping.orr.noaa.gov/website/portal/Delaware/>

- Provides:
  - Watershed Description
  - Impacted Habitats
  - Species Life Histories
  - Contaminant Sources
    - Waste Sites
    - Brownfields
  - Restoration Techniques
  - Restoration Projects
  - Integrated Mapping Services









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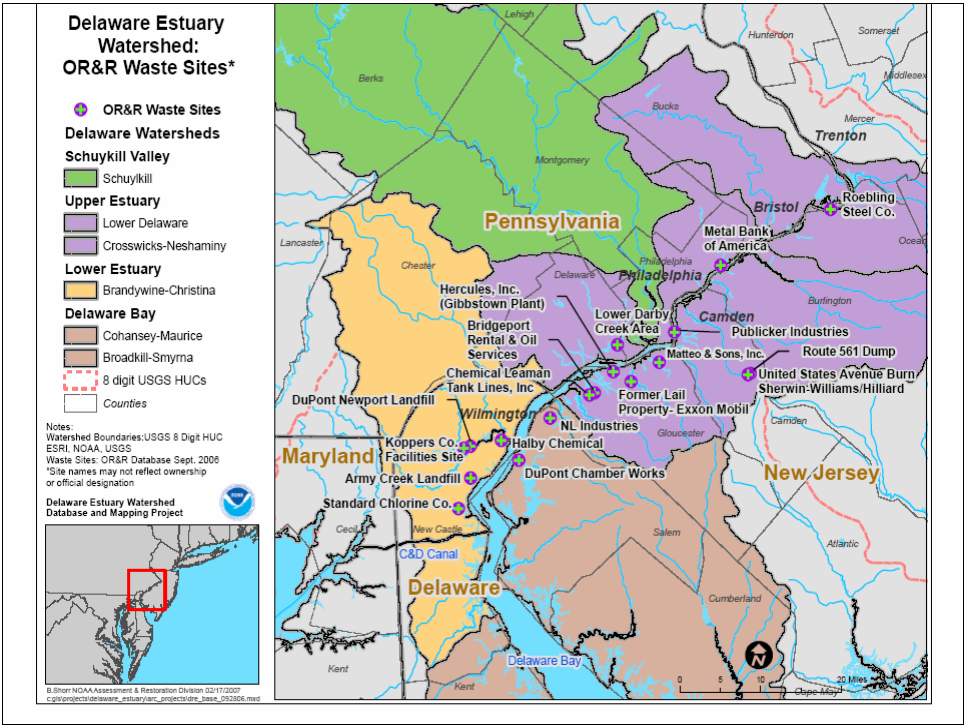
## Delaware Estuary Watershed Database & Mapping Project

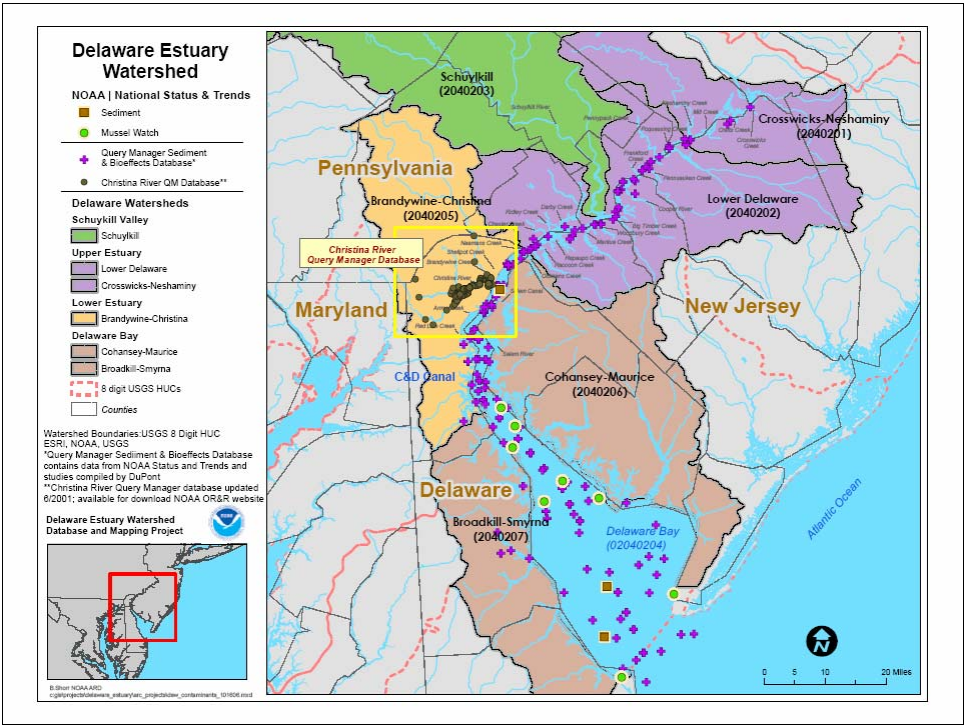


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### Why a Watershed Approach?

- Numerous Superfund Sites, RCRA Correction Action Facilities, state hazardous waste sites and Brownfield Sites
- Contamination from sites has contributed to fishing restrictions and advisories, raised concerns regarding dredging and resulted in injuries to natural resources
- Regional database and mapping project will allow for better coordination and regional restoration planning







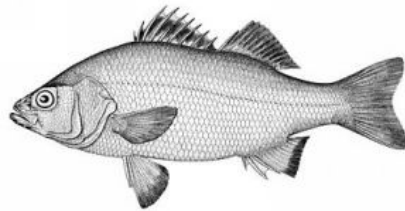
## Examples of Targeted Fish Species



Atlantic Sturgeon



Striped Bass



American Shad



White Perch



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### PA Regional Initiatives



Lardners Point N. Phila Waterfront

- North Philadelphia Waterfront/ North Delaware Greenway and Water Trail



Dam Removal on Ridley Creek

- PA Dam Removal Initiative

## Philadelphia Shorelines...



*Poured Asphalt at Philly Coke Site*



*Failing Bulkheads at Old Phila. Piers*



*Unstable Shoreline at Lardners Point*



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### DE Regional Initiatives

- South Wilmington Brownfield Inventory
- Brownfield Redevelopment Site Compendium for Coastal Communities
- Northern Delaware Tidal Wetland Rehabilitation Program



Christina Waterfront – Wilmington DE



Peterson Wildlife Refuge – Wilmington DE



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### Restored Shorelines and Tidal Wetlands



Restored Brackish Shoreline



Brackish Tidal Wetlands

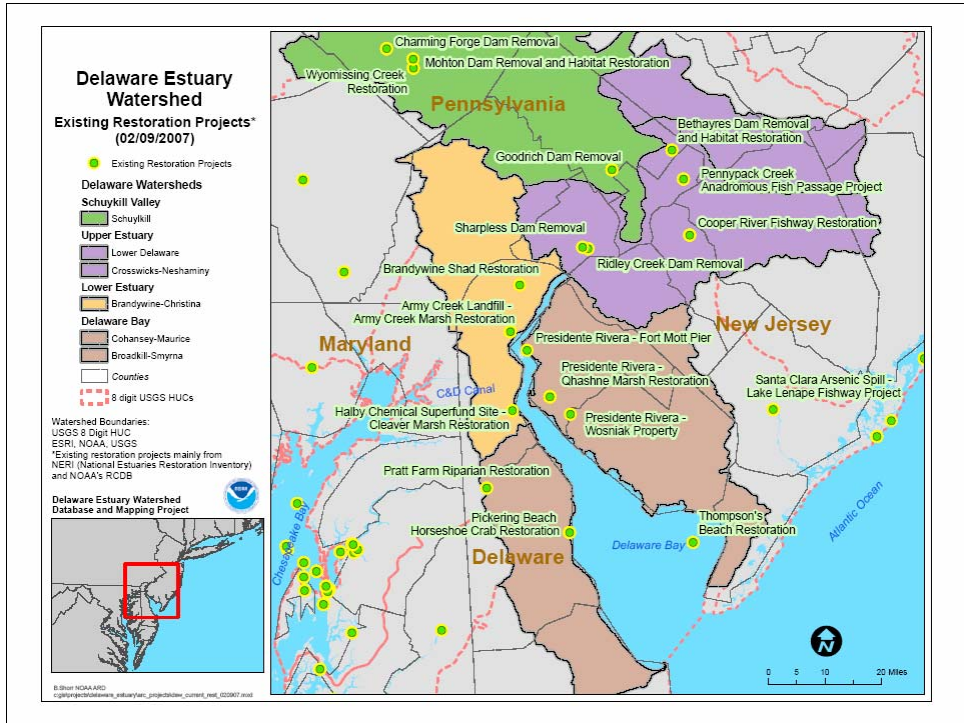


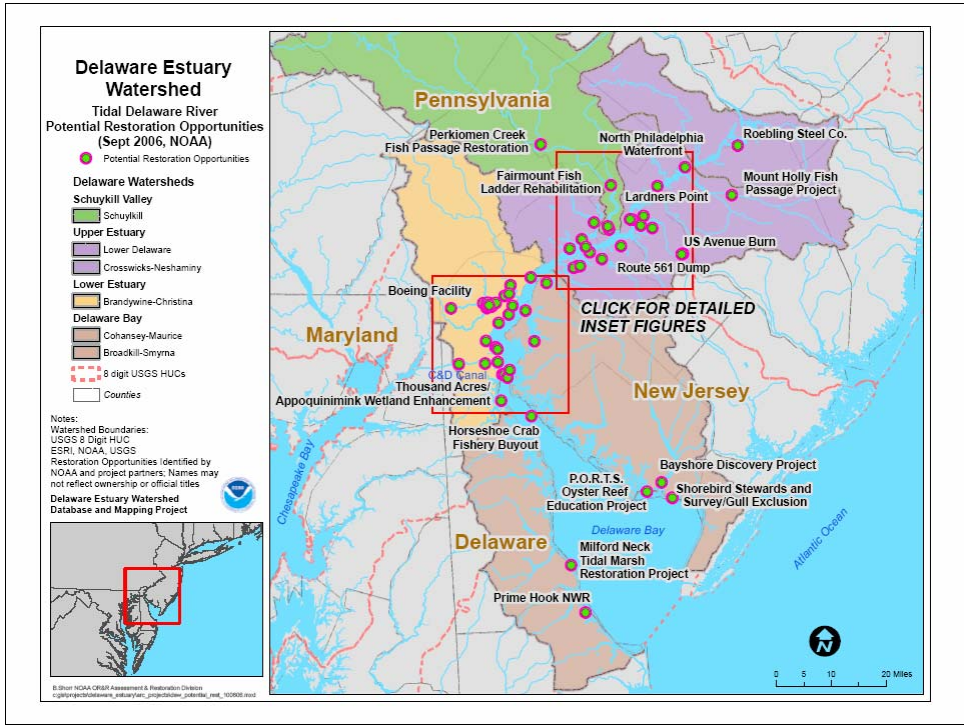
Freshwater Tidal Wetlands

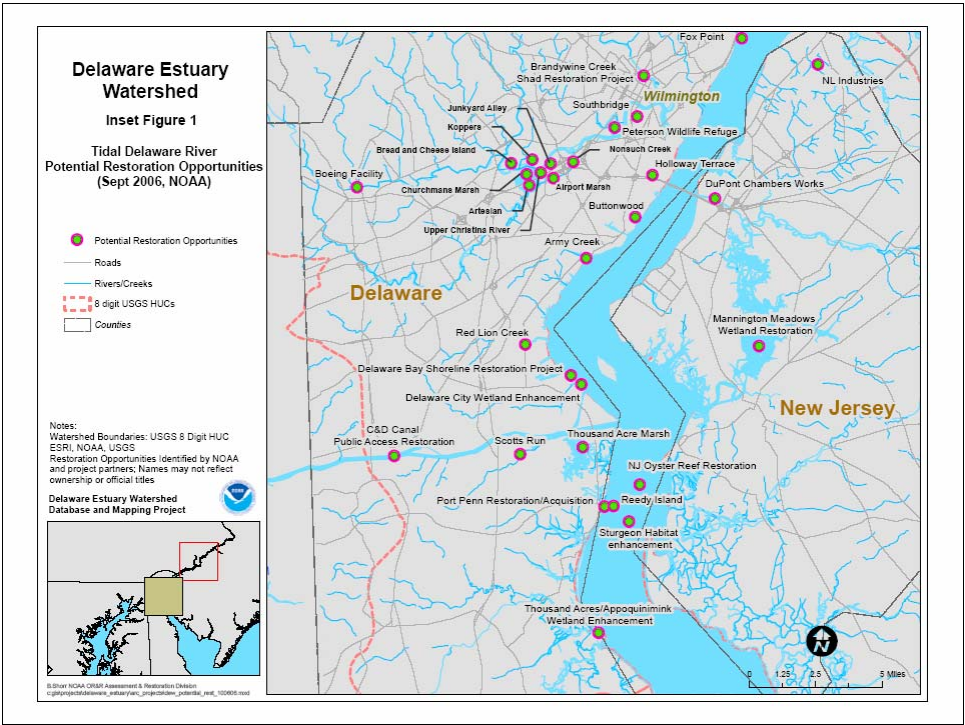


Restored Freshwater Shoreline











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PROJECT NAME	CITY	STATE	PROJECT TYPE	HABITAT TYPE	NATURE OF IMPAIRMENT	RESTORATION TECHNIQUES
<a href="#">Boeing Facility</a>	Ridley Park	PA	Restoration	in-stream		daylighting
<a href="#">Brandywine Creek Shad Restoration Project</a>		PA	Restoration	in-stream	Barrier to fish passage	dam removal
<a href="#">Chester Waterfront</a>	Chester	PA	Public Access	upland	Fill, Lost Use	water rights acquisition
<a href="#">Darby Creek Dam Removal</a>	Upper Darby	PA	Restoration	in-stream	Barrier to fish passage	dam removal
<a href="#">Fairmount Fish Ladder Rehabilitation</a>	Philadelphia	PA	Restoration	in-stream	Barrier to fish passage	fish passage
<a href="#">Hess Project</a>	Philadelphia	PA	Restoration	freshwater marsh		fill removal
<a href="#">John Heinz Salt Marsh Restoration</a>	Tinicum	PA	Restoration	freshwater marsh, in-stream, forested wetland	Habitat Degradation	fill removal
<a href="#">Lardners Point</a>	Philadelphia	PA	Restoration	riparian zone (non-wetland), beach, freshwater marsh	Habitat Degradation	fill removal, invasives removal, vegetation
<a href="#">Little Tinicum Island Salt Marsh Restoration</a>	Philadelphia	PA	Restoration	freshwater marsh, forested wetland	Fill, Development	berm/dike modification (including replacement)
<a href="#">New Camden Park Education Project</a>	Camden	PA	Educational	upland	Fill, Lost Use	signage
<a href="#">North Philadelphia Waterfront</a>	Philadelphia	PA	Public Access	upland	Fill, Lost Use	water rights acquisition
<a href="#">Perkiomen Creek Fish Passage Restoration</a>	Chester	PA	Restoration	in-stream	Barrier to fish passage	fish passage