

GIS Enhances Restoration of Northern Assateague Island

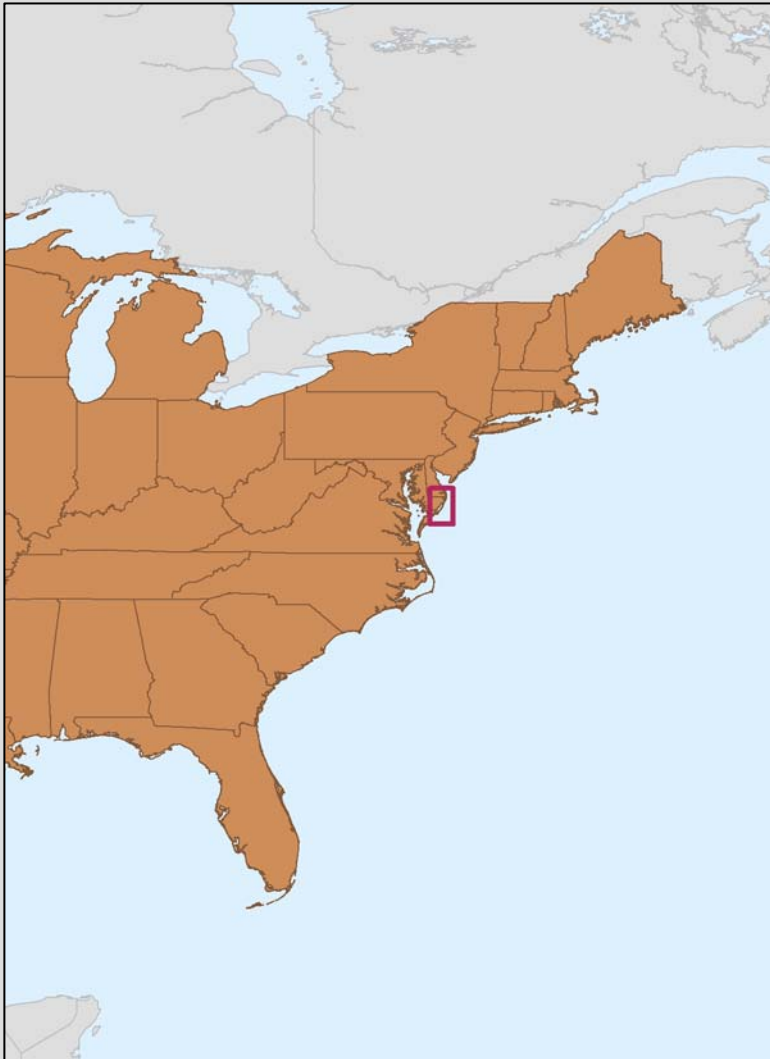


Jane Thomas, IAN Image Library
(www.ian.umces.edu/imagelibrary/)

Andrew Roach (andrew_roach@nps.gov)
Assateague Island National Seashore

ESRI International Users Conference
National Parks Track, August 2006

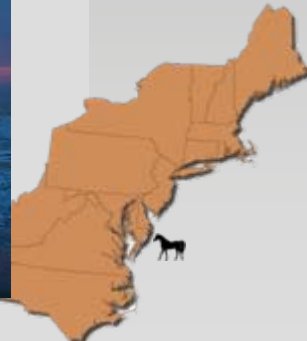
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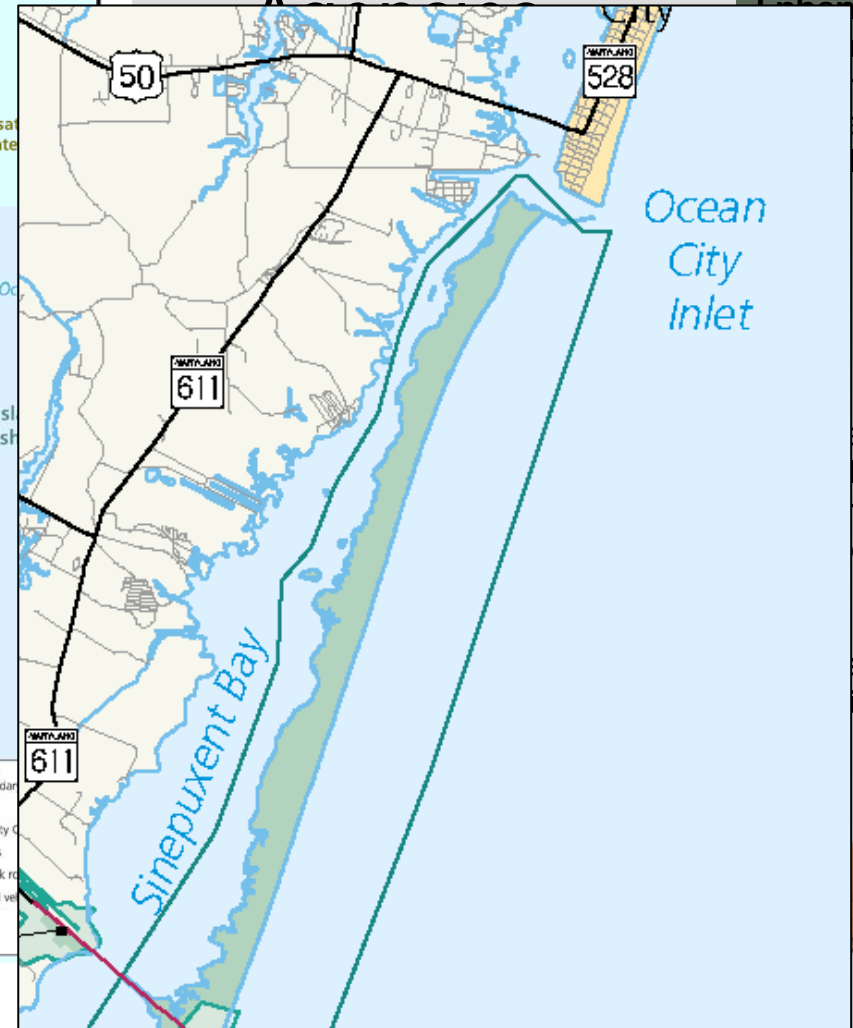
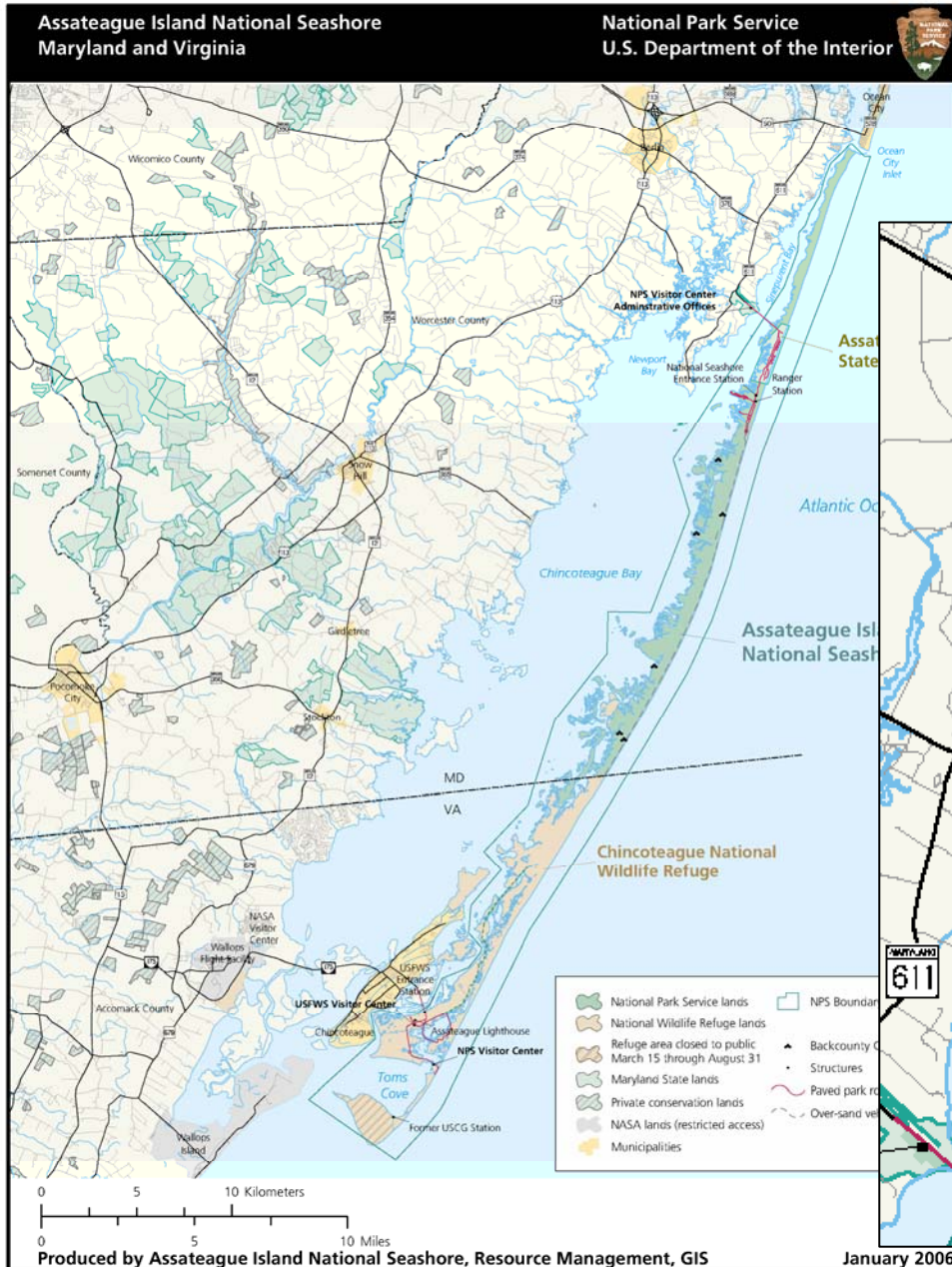
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Integration
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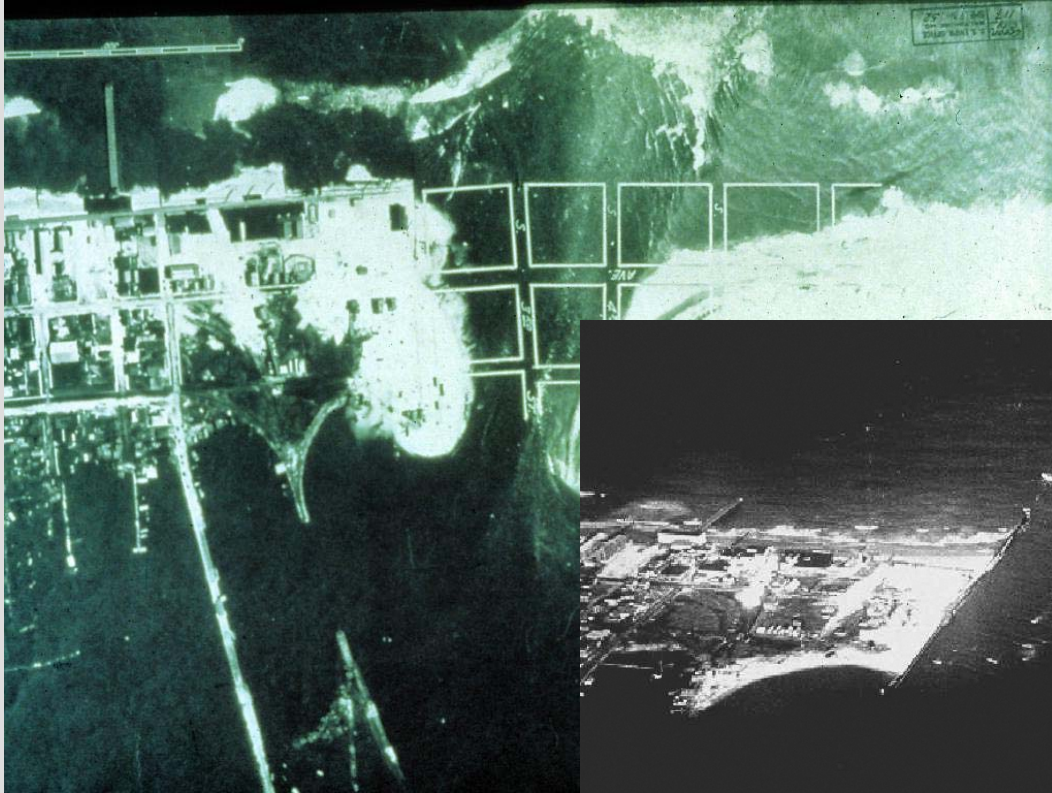
- Three Management



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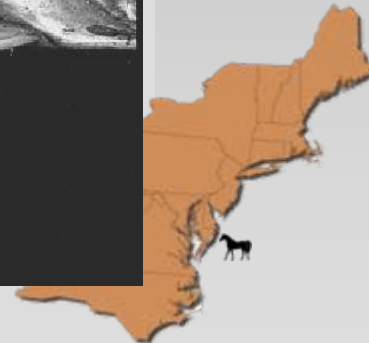


1933 Hurricane:
Creation of Ocean City
Inlet



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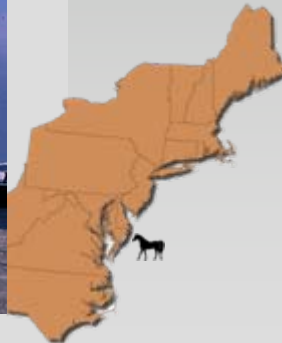
1962 Nor'easter: Island-Wide Devastation



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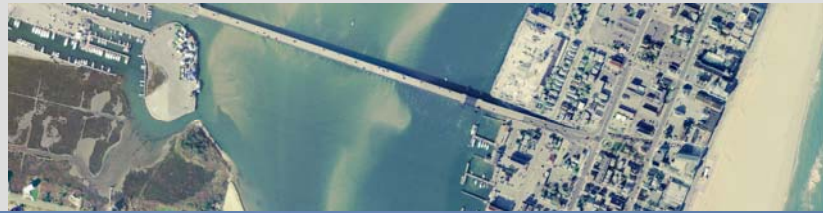
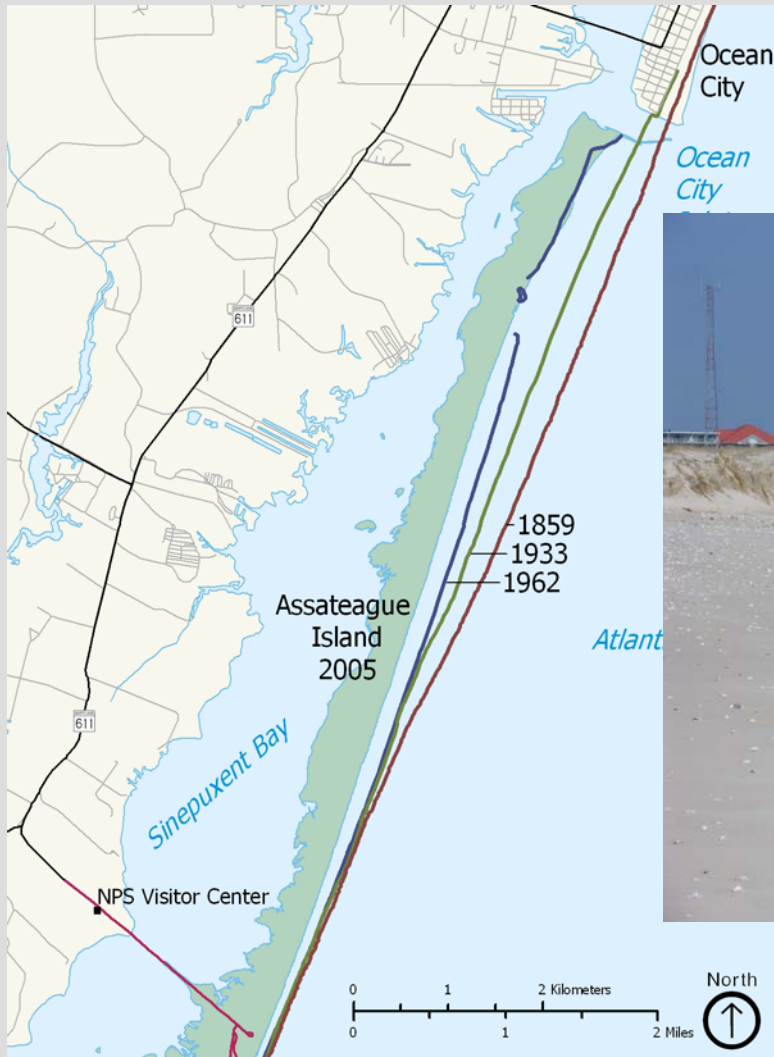
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Natural Processes Interrupted



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Mitigation Efforts



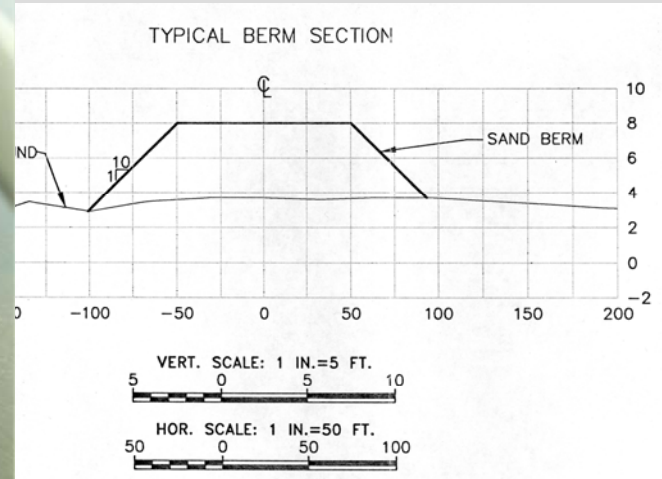
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Data

- Shorelines
- Cross-Island Elevation Profiles
- Lidar
- Aerial Photography
- Bathymetry
- Near-shore Profiles
- Biological Monitoring



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Shorelines

- Ocean
 - ATV Mounted Trimble ProXR GPS (sub-meter)
- Bay (Inlet to KM 9)
 - Backpack mounted



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Cross-Island Profiles



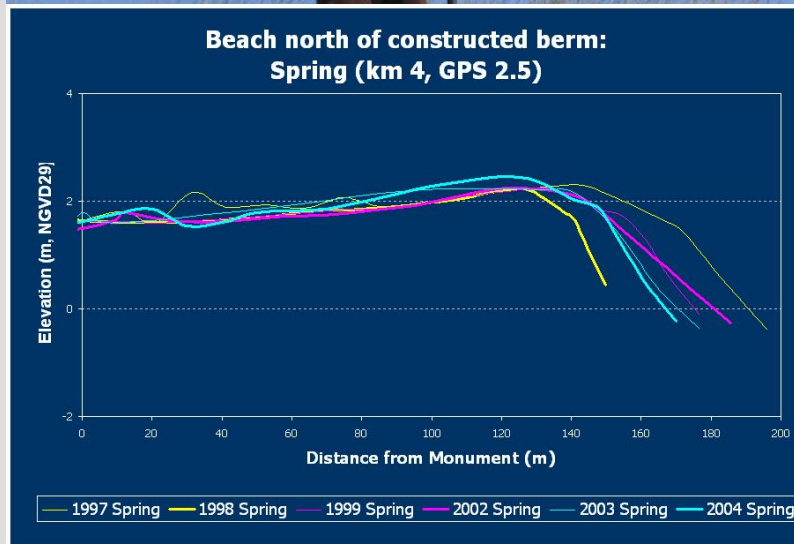
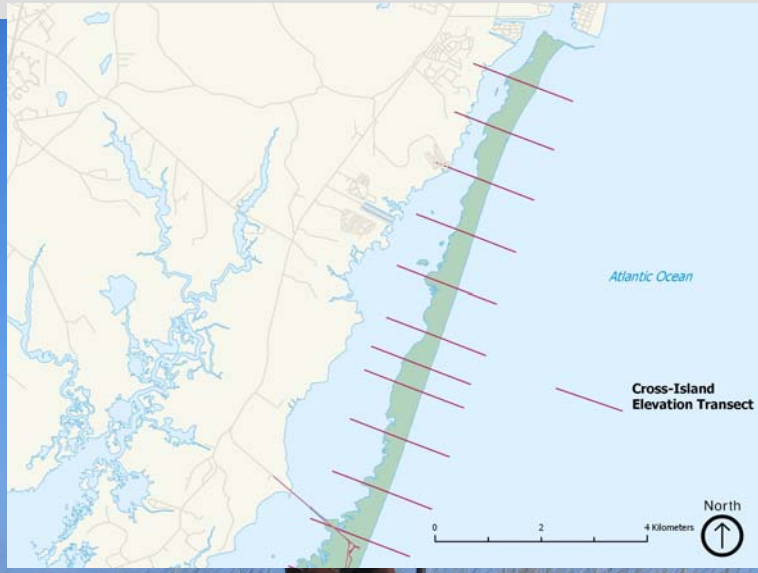
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- Perpendicular to shoreline
- 23 Transects
- Total Station: 1993-2003
- Trimble 5700 RTK GPS: 2004 – present



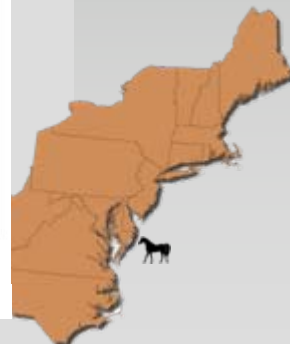
PAR and Experimental Flightplan Enhanced Airborne Research LiDAR



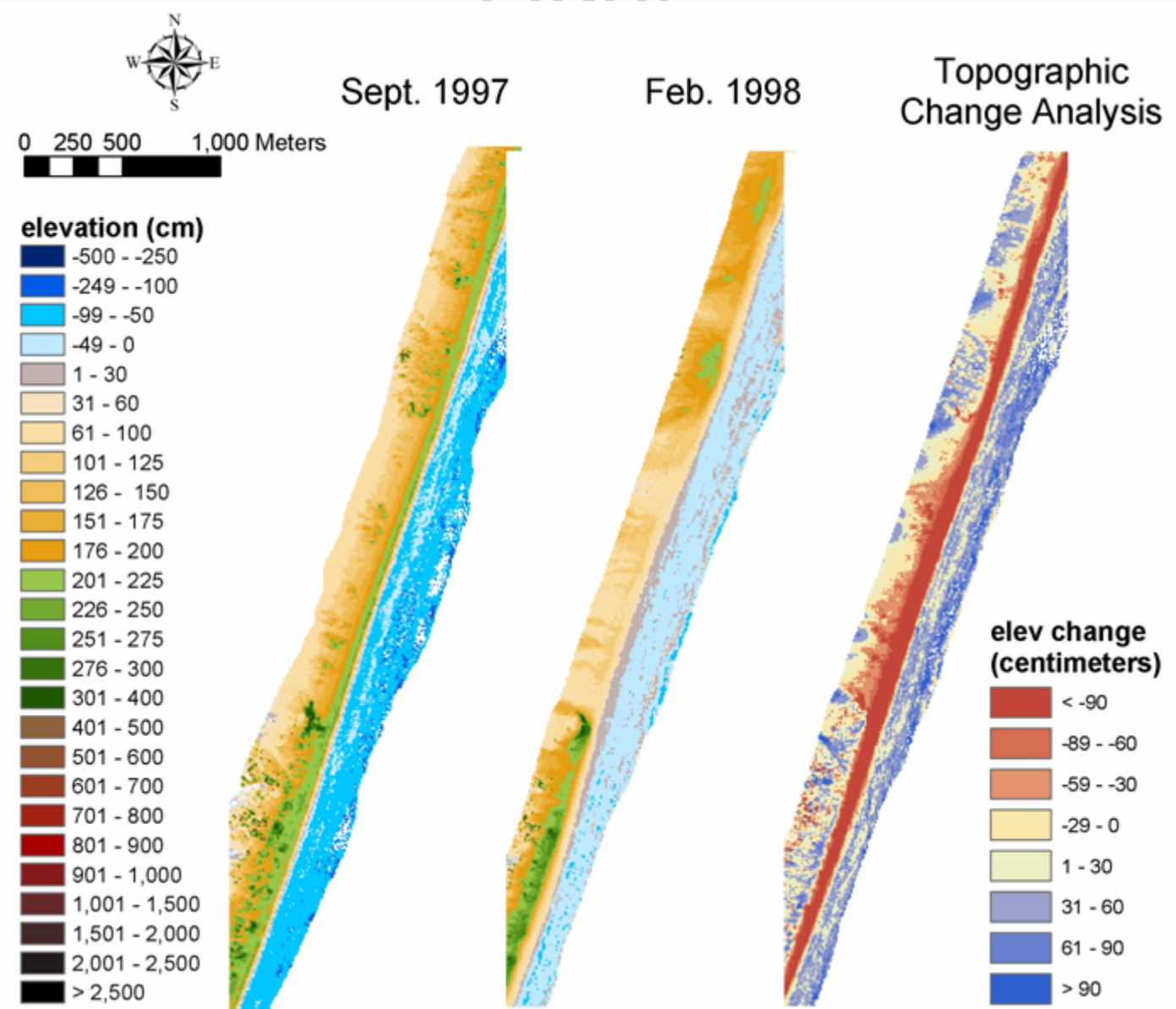
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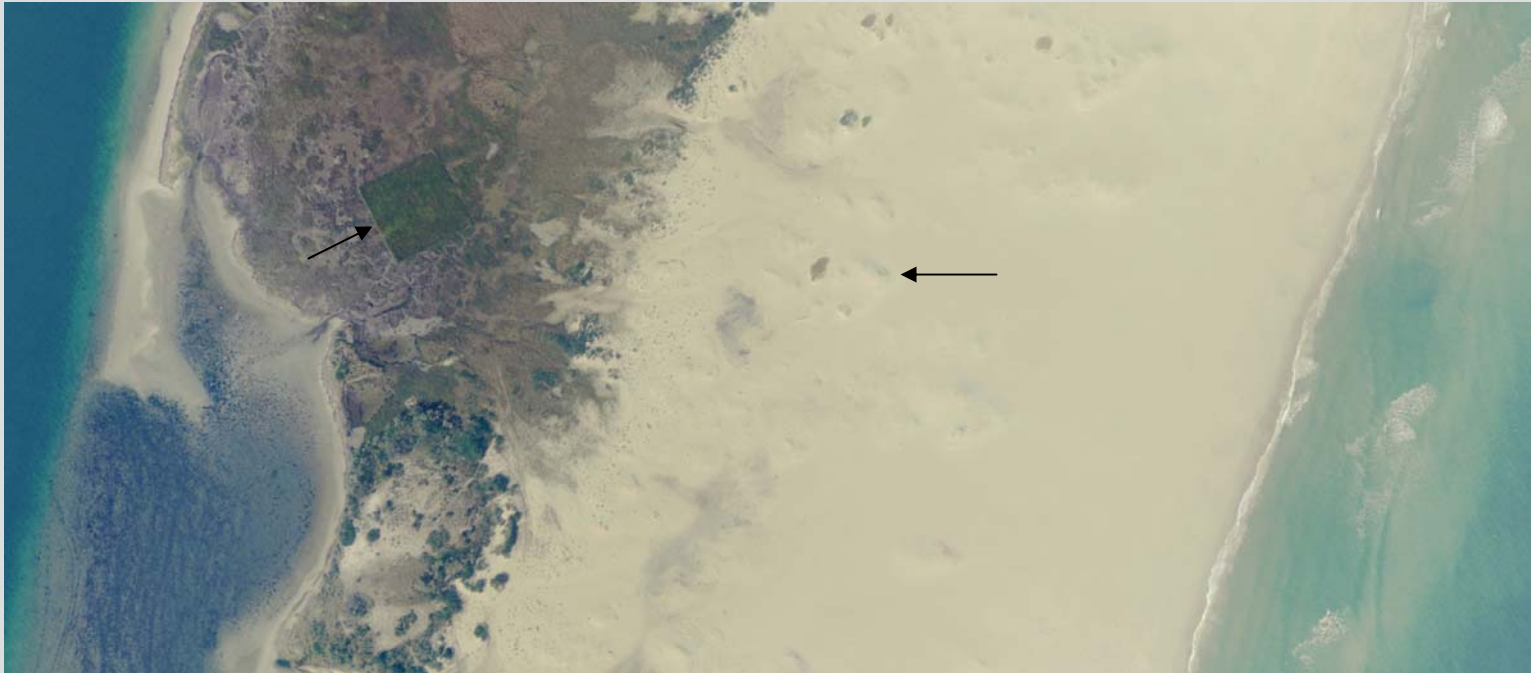


ATM
Top
Map
199



Aerial Photography

- True color
 - Collected October 2003
 - 0.25 m resolution
 - Low Tide
 - Shoreline Delineation
 - Geomorphic feature mapping



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Aerial Photography (CIR)



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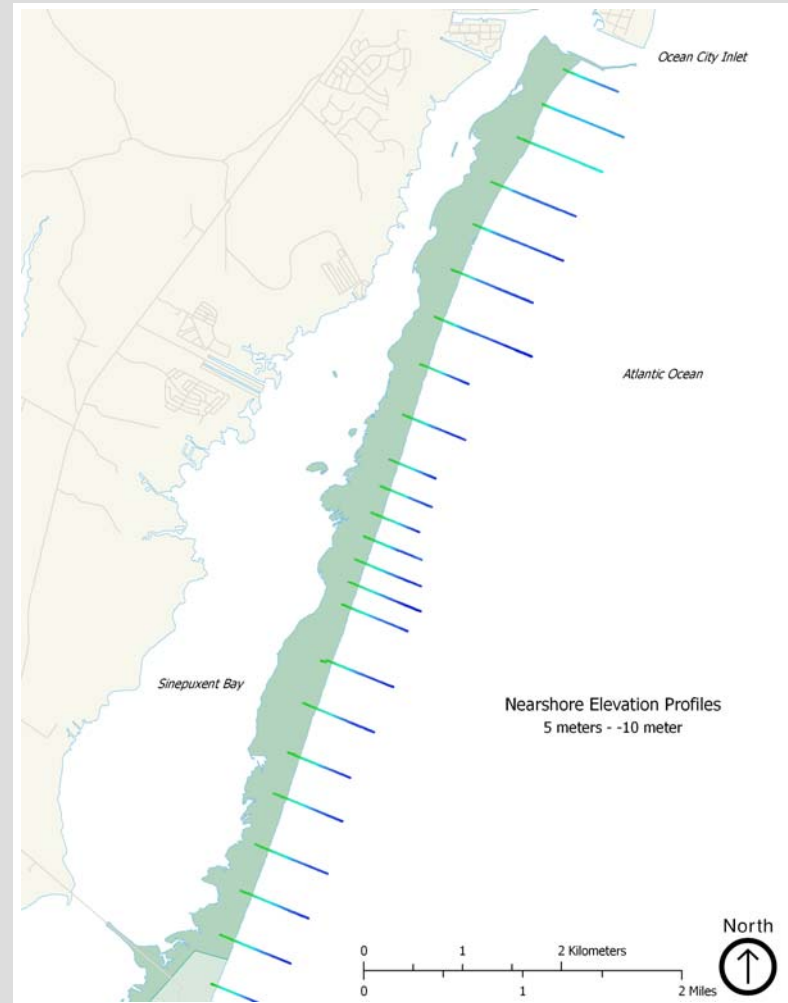
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Bathymetry/ Nearshore Profiles

- Bathymetry collected near areas of sediment dredging
 - Once per dredge session (7 since 2003)
- Nearshore profiles
 - 2003-present
 - Once per year
- USACE



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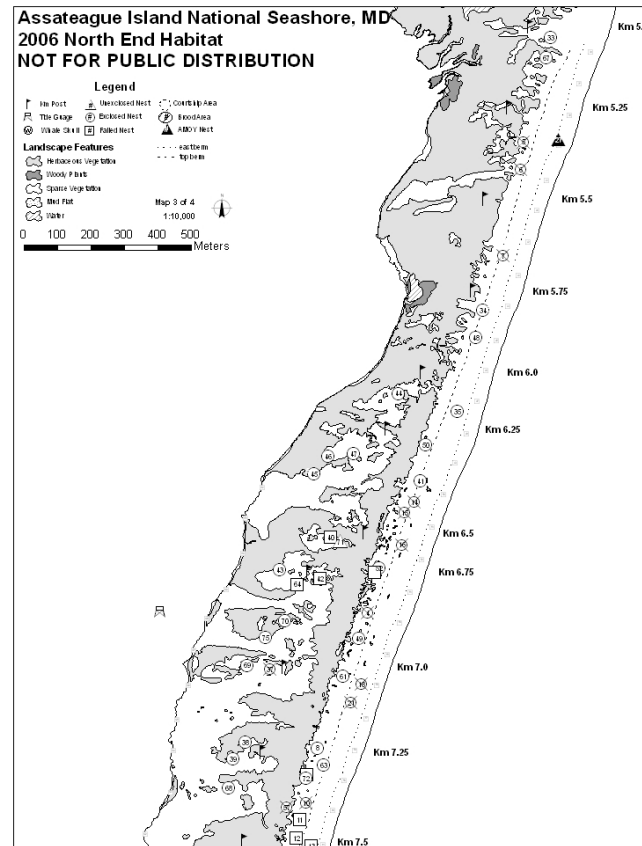
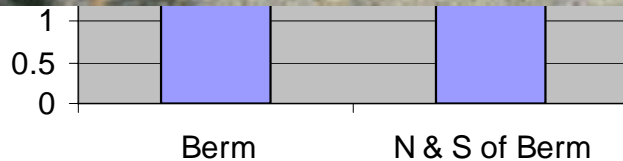
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Biological Monitoring

- Piping Plover
- North End Vegetat
- Se

Percent Sparsely Vegetated Area on the No



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Application



- Ongoing Sediment Bypassing
- Berm Alteration
- Shoreline Erosion
- Data Management/
Data Sharing



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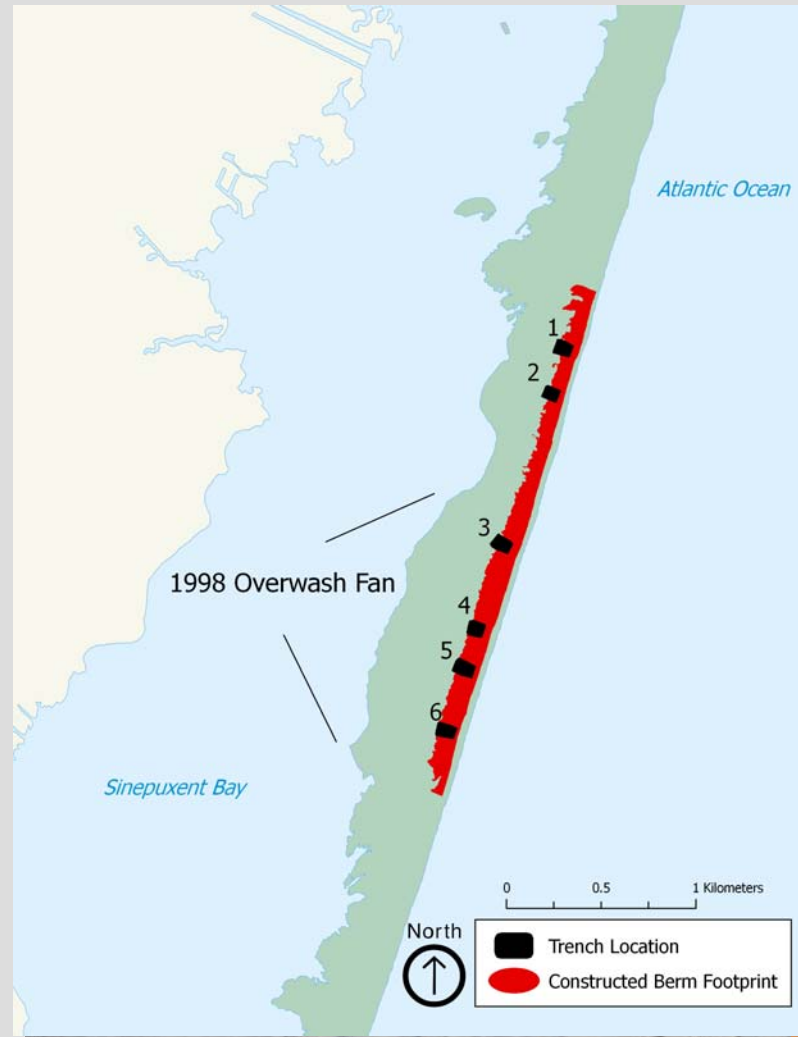
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Berm Alteration

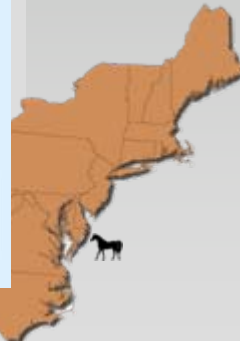
- Piping Plover Monitoring
- Vegetation Monitoring



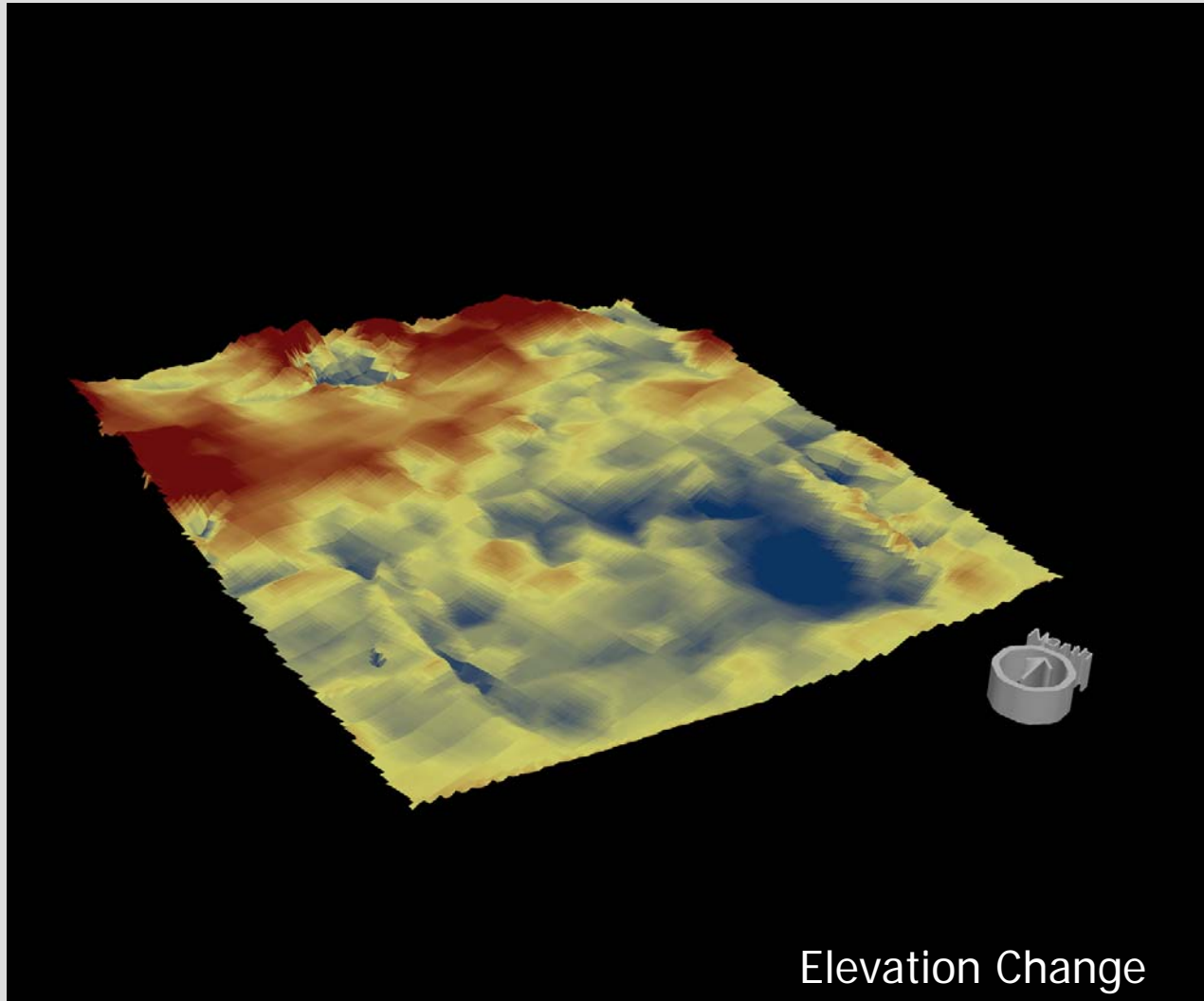
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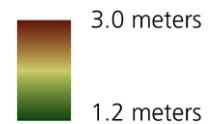


Berm Alteration

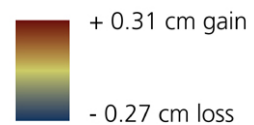


- Monthly Survey
- 4 meter interval
- No significant elevation change

Elevation (NAVD 88)



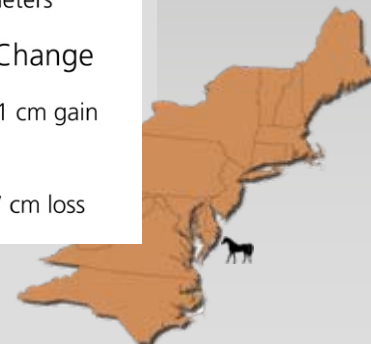
Elevation Change



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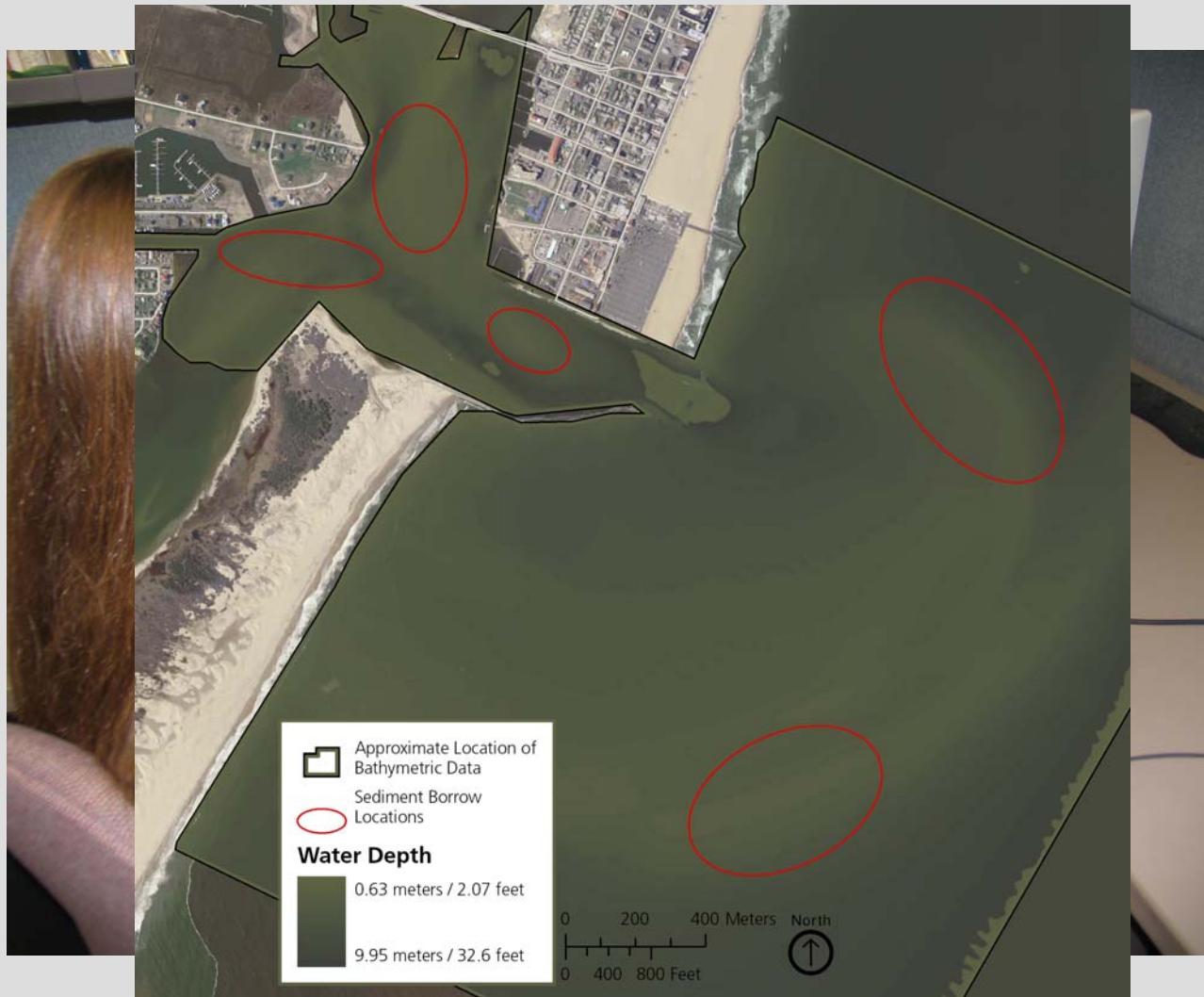
Sediment Bypassing



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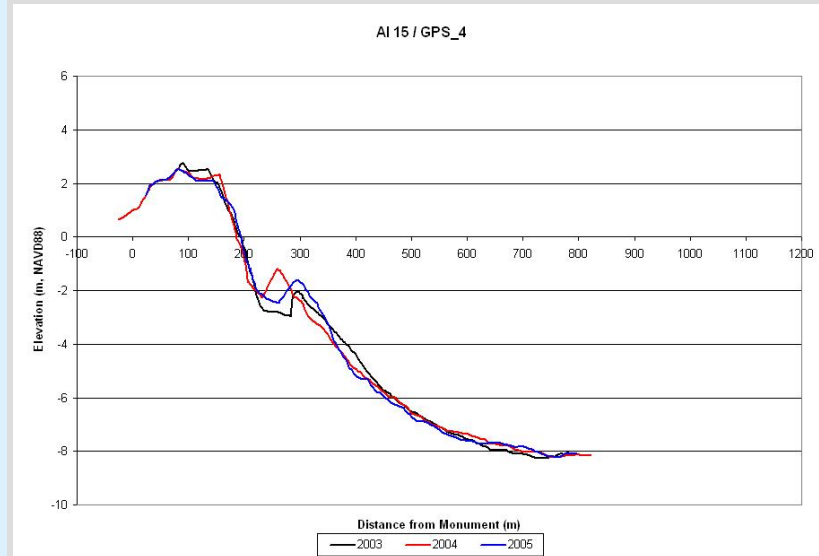
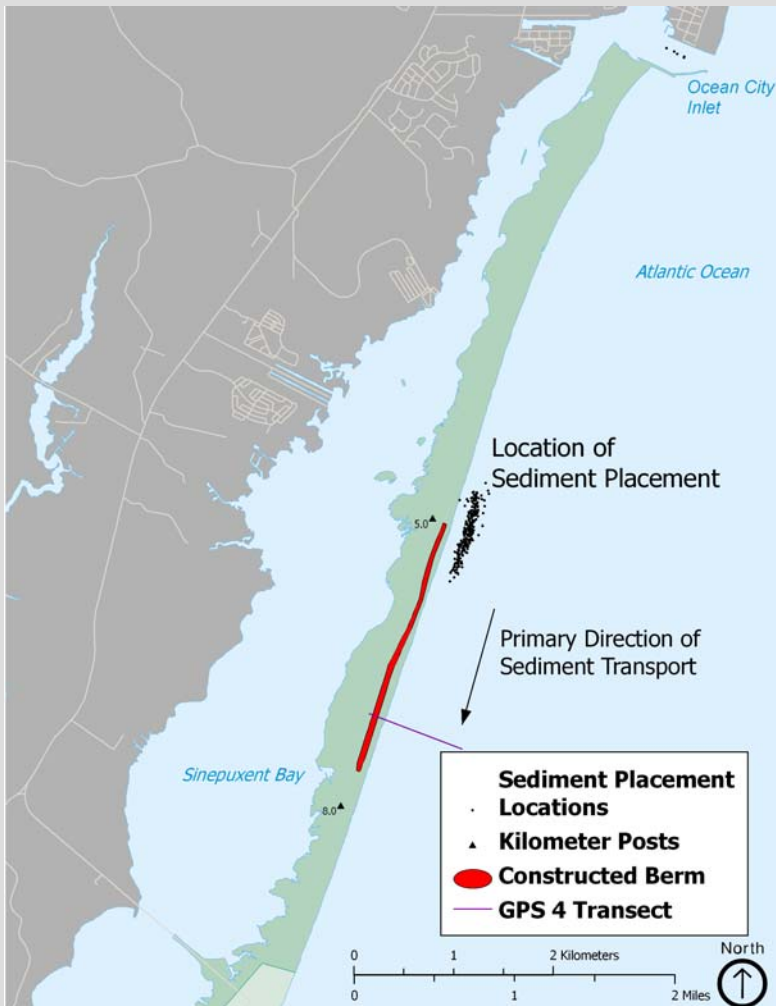
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Sediment Bypassing



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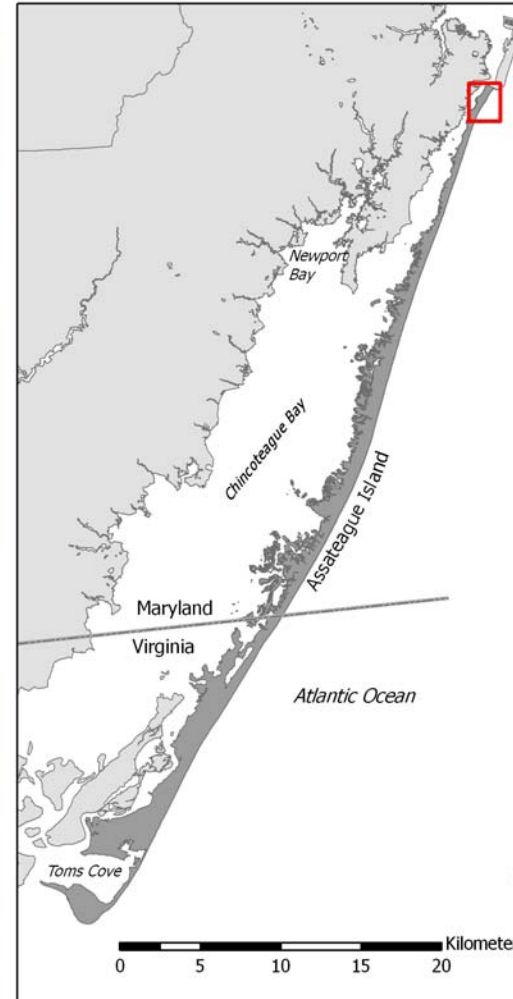
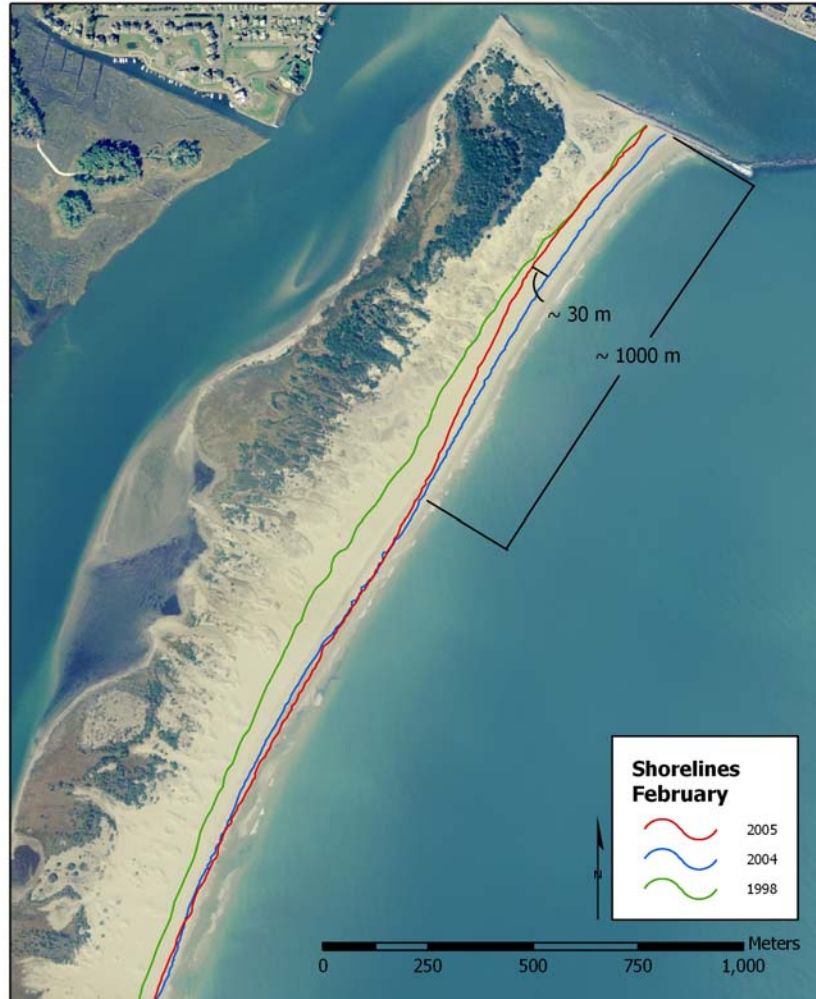


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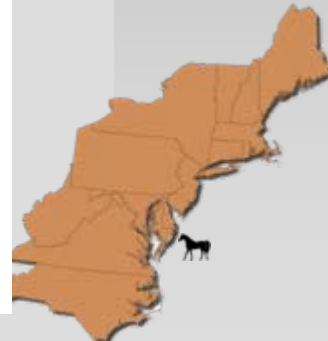
Shoreline Erosion



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Data Management / Data Sharing



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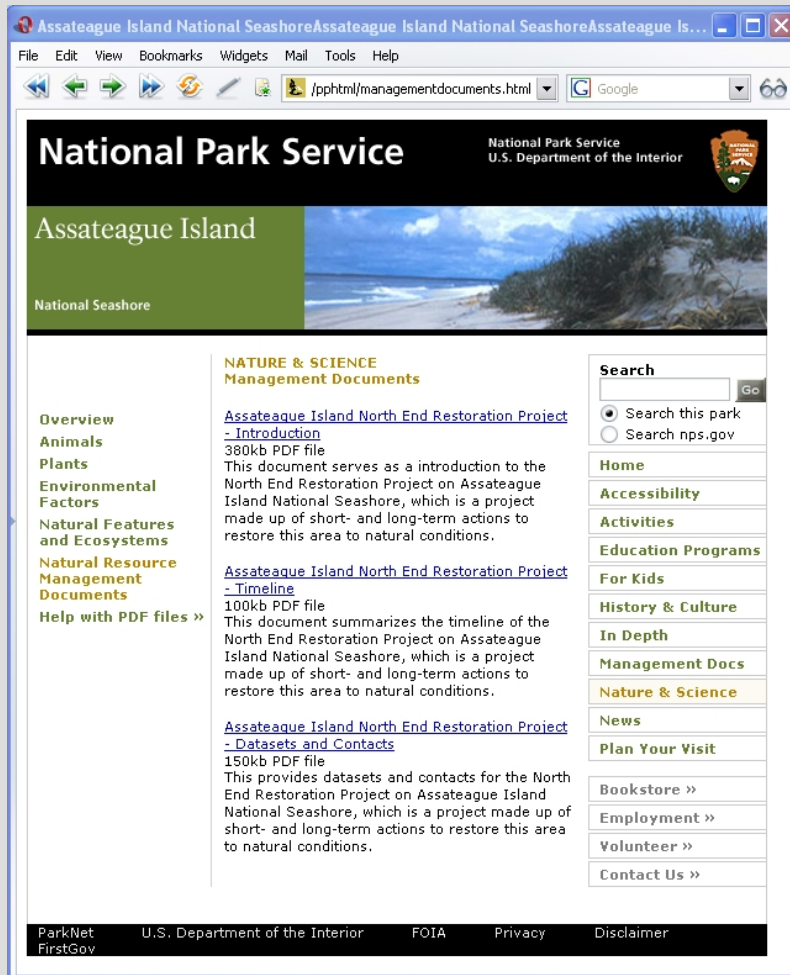
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Northend Restoration Project Website

- Introduction
- Timeline
- Datasets and Contacts



www.nps.gov/asis/pphtml/managementdocuments.html

Data Management / Data Sharing



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NR/GIS Metadata: Search Results - Opera

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http://science.nature.nps.gov/nrdata/quickoutput2.cfm?UnitSearch=&Action=Search&nps_quicksearch=%2B

NR-GIS Metadata and Data Store
NPS Natural Resource and GIS Programs

National Park Service
U.S. Department of the Interior

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NPS GIS Clearinghouse
(search by map)
Legacy NR FTP Search
NPSFocus
NPS I&M Program
NPS Research Permits
NPS Park Planning

SEARCH CRITERIA: 52 RECORDS RETURNED
METADATA PURPOSE: ONLINE DATA
NPS UNIT: ASSATEAGUE ISLAND NATIONAL SEASHORE (ASIS)
Click on column headings to sort records.
Natural Resource Inventory & Monitoring Program: Official Inventory(I) or Monitoring(M) Records

DATASET CITATION TITLE	TIME PERIOD	CATEGORY	DATA (network)
▶ 1972 Assateague Island National Seashore NPS Boundary	1972	BOUNDARY	ASIS_1972_NPS_BNDY.ZIP
▶ 1998 Assateague Island National Seashore NPS Boundary	1998	BOUNDARY	ASIS_1998_NPS_BNDY.ZIP
▶ 1998 locations of boardwalks present in the Maryland District of Assateague Island National Seashore	1998	LANDSCAPE, TRAILS	ASIS_MD_BOARDWALK_1998.ZIP
▶ 1999 Color infrared imagery (CIR) of Assateague Island National Seashore from the northern extent of the island to the Over Sand Vehicle (OSV) zone	19990317	DIGITAL ORTHOPHOTO	ASIS_CIR199903.ZIP
▶ 1999 Color infrared imagery (CIR) of Ocean City, Maryland which is north of Assateague Island National Seashore	19990317	DIGITAL ORTHOPHOTO	OCEANCITYMD_19990317.ZIP
▶ 2001 Low resolution digital color imagery of the Virginia developed zone at Assateague Island National Seashore	20010605	DIGITAL ORTHOPHOTO	ASIS_VADEV_2001.ZIP
▶ 2002 Kilometers Posts on Assateague Island National Seashore	2002	GENERAL MANAGEMENT	ASIS_KMPOSTS2002.ZIP
▶ 2005 Kilometers Posts on Assateague Island National Seashore	2005	GENERAL MANAGEMENT	ASIS_KMPOSTS2005.ZIP
▶ ASIS Road Centerlines in 1996, Collected by GPS	00/00/1996	GENERAL MANAGEMENT, ROADS	MDDEVROADS96.ZIP
▶ Assateague Island National Seashore 1972 Coastline	1972	GENERAL MANAGEMENT, PHYSICAL	ASSATEAGUE_ISLAND_1972.ZIP
▶ Assateague Island National Seashore Coastline based off of GPS collected in 2002 and imagery taken in 1993	200204	BOUNDARY	ASSATEAGUE_ISLAND_1993-2002.ZIP
▶ Assateague Island National Seashore Coastlines Based on October, 2003 Aerial Photography	200506	BOUNDARY, GENERAL MANAGEMENT, PHYSICAL	ASSATEAGUE_ISLAND_2003.ZIP
▶ Assateague Island National Seashore Island Polygon (2003)	10/24/2003	BOUNDARY, GENERAL MANAGEMENT, GEOLOGY	ISLANDPOLYGON2003.ZIP
▶ Assateague Island National Seashore Jurisdictional Boundary 2003-2005	2006	GENERAL MANAGEMENT	ASSATEAGUE_ISLAND_JURISDICTIONAL_2003-2005.ZIP
▶ Assateague Island National Seashore Small-Scale Base GIS Data	01/01/2001	WATER	ASIS_WQGIS.ZIP
▶ Assateague Island National Seashore back country campsites.	199803	RECREATION	ASIS_BACKCAMPS.ZIP
▶ Assateague Island National Seashore shoreline based on digitized data derived from October, 2003 aerial photography and November, 2005 shoreline data	200511	BOUNDARY	ASSATEAGUE_ISLAND_2003-2005.ZIP
▶ Color Infrared (CIR) Imagery taken in October 1998 of Assateague Island National Seashore Maryland Headquarters (high resolution)	199810	DIGITAL ORTHOPHOTO	ASIS_MDHQ_199810_HIGHRES.ZIP
▶ Color Infrared (CIR) Imagery taken in October 1998 of	199810	DIGITAL	ASIS_MDHQ_199810.ZIP

www.science.nature.nps.gov/nrdata

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North End Restoration Plan Team

- Assateague Island National Seashore
 - Arty Rodriguez, Courtney Schupp, Carl Zimmerman, Mark Sturm, Jack Kumer
- US Army Corps of Engineers
 - Gregory Bass, Nicholas Kraus, Robert Blama, Scott Johnson, Chris Spaur
- Maryland Department of Natural Resources
 - Dave Brinker, Darlene Wells, Jordan Loran, Cathy Wazniak
- Offshore & Coastal Technologies, Inc.
 - William Grosskopf
- US Fish and Wildlife Service
 - Andy Moser
- Worcester County, Maryland
 - Sandy Coyman
- Town of Ocean City
 - Terrance McGean



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Thanks also to...

- NASA Wallops Flight Facility
 - Wayne Wright, Bill Krabel
- USGS Center for Coastal and Watershed Studies
 - John Brock, Amar Nayegandhi
- Mark Duffy



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