Partnership between the U.S. Army Corps of Engineers New York District and The Nature Conservancy of Long Island:

The Fire Island Inlet to Montauk Point Reformulation Study and Coastal Restoration Opportunities

USACE and TNC CONFERENCE

Presentation

Lake Tahoe, California

November 2004

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Presentation Overview

- USACE/TNC Partnership on Long Island
- FIMP History, Evolution, and Vision
- FIMP Today
- USACE/TNC Partnering Opportunities for Coastal Restoration

TNC-USACE Partnership

- TNC- LI Chapter and USACE-NY District discuss Non-Structural Strategies for the Fire Island to Montauk Point (FIMP) Project (1998-9) and Co-host Workshop (November 2000)
- TNC/USACE National Memorandum of Understanding (December 2000)
- USACE Environmental Operating Principles (2002)
- New York District and the Long Island Chapter Memorandum of Understanding (August 2004)

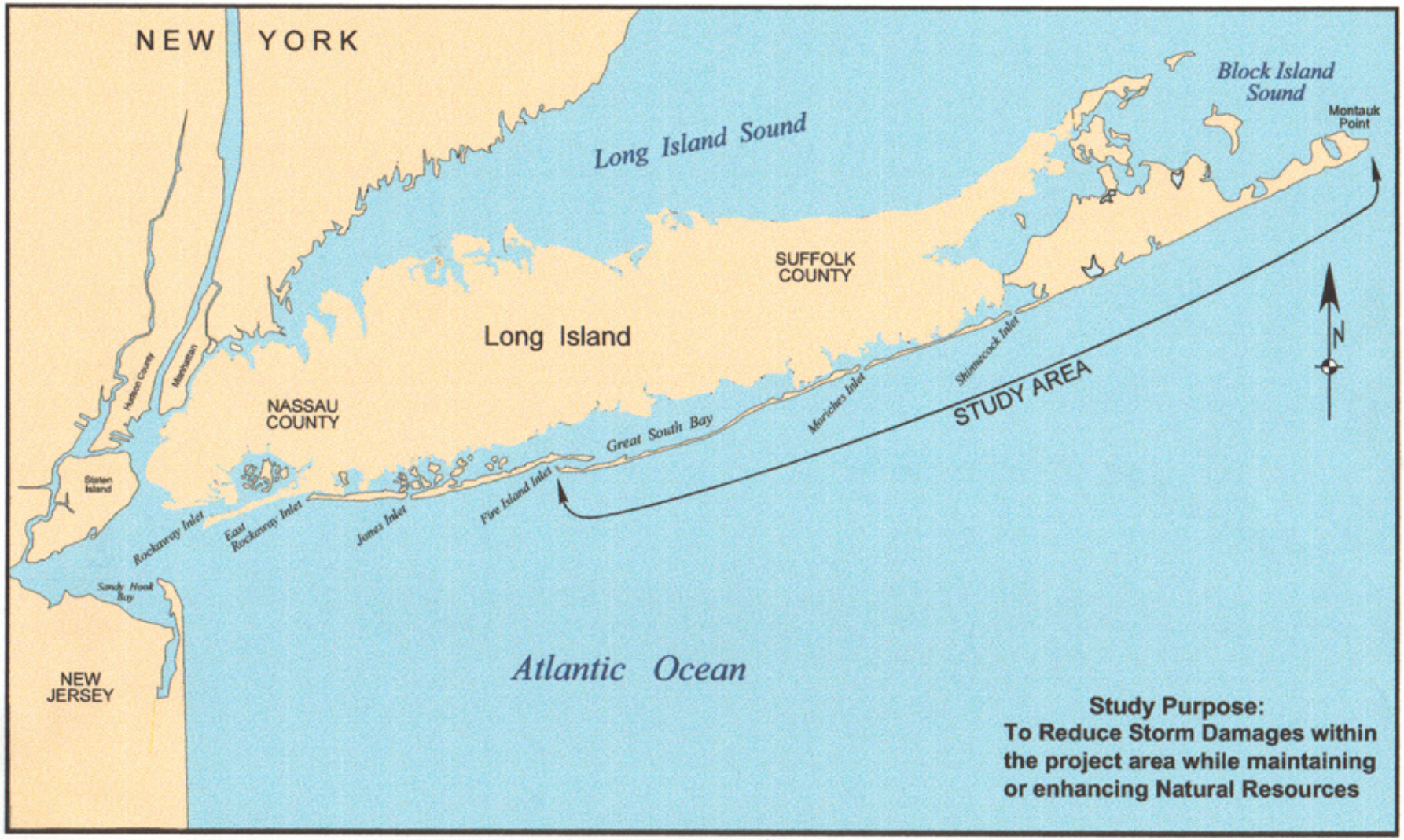
Memorandum of Understanding

- Establishes Coordination and Cooperation in FIMP Reformulation and Other Restoration Projects
- Facilitates Collaboration in Communication Strategies
- Promotes the Gathering and Sharing of Scientific and Spatial Data and Research

Fire Island Inlet to Montauk Point, New York Reformulation Study

US Army Corps of Engineers
New York District

New York State Department of Environmental Conservation



Study Purpose:
To Reduce Storm Damages within the project area while maintaining or enhancing Natural Resources

NYSOUTH - 7/97

FIMP is a Legacy Project

- Authorized by Congress in 1960
- Construction Initiated in 1965
- EIS Published in 1977
- CEQ Recommends Reformulation 1978
- Reformulation I 1980-1984
- Four Interim Projects Evaluated 1984-1993
  (Three Approved, Two Constructed)
- Reformulation II 1993-present

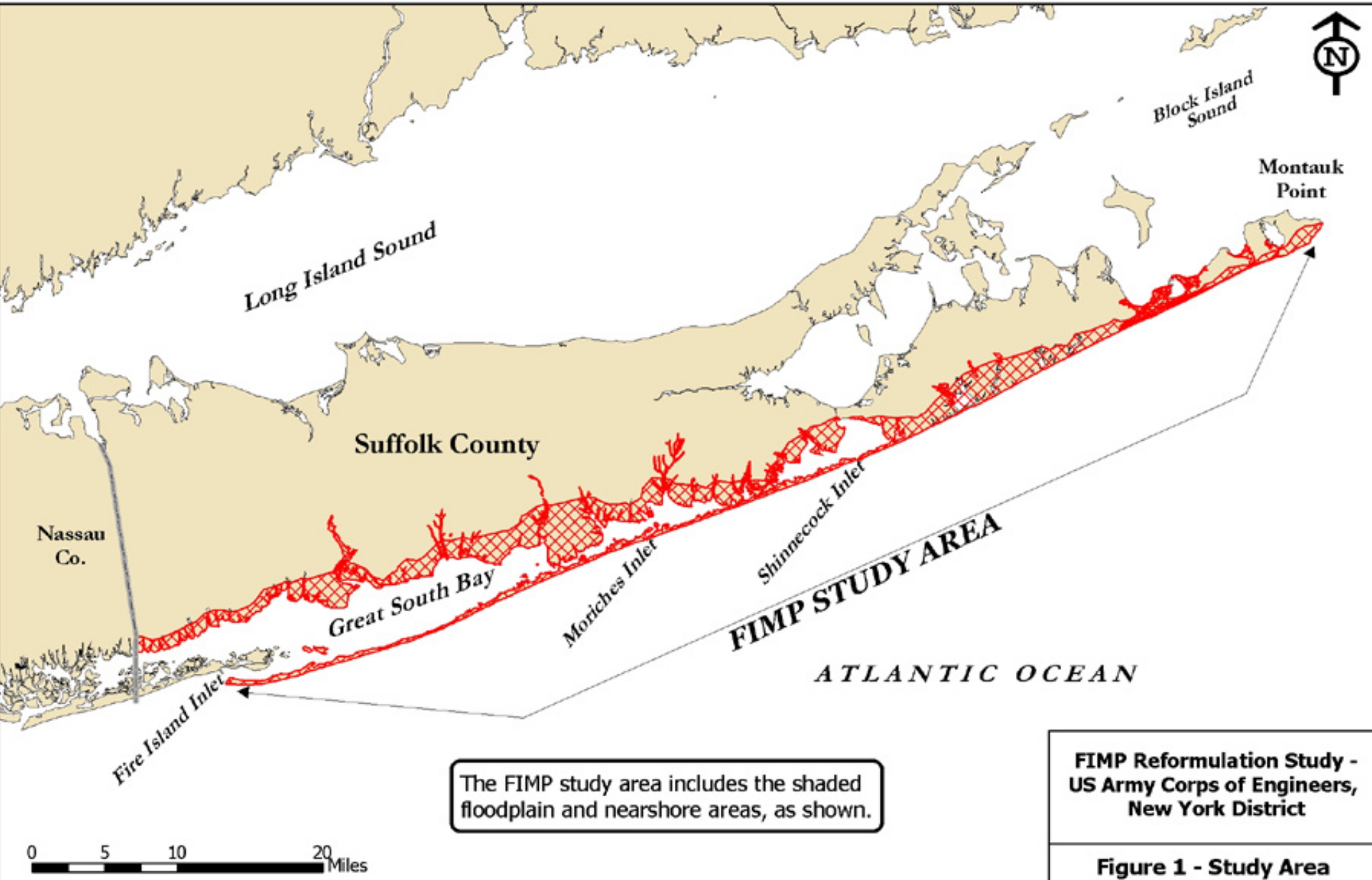
Challenge:
Planning for a Complex Coastal System

- Erosion, Flooding & Wave Damage to Structures on Ocean Shoreline
- Barrier Island Breaching and Overtopping
- Coastal Flooding along Bay Shorelines

US Army Corps of Engineers
New York District

Fire Island Inlet to Montauk Point, New York Reformulation Study

NYS Department of Environmental Conservation



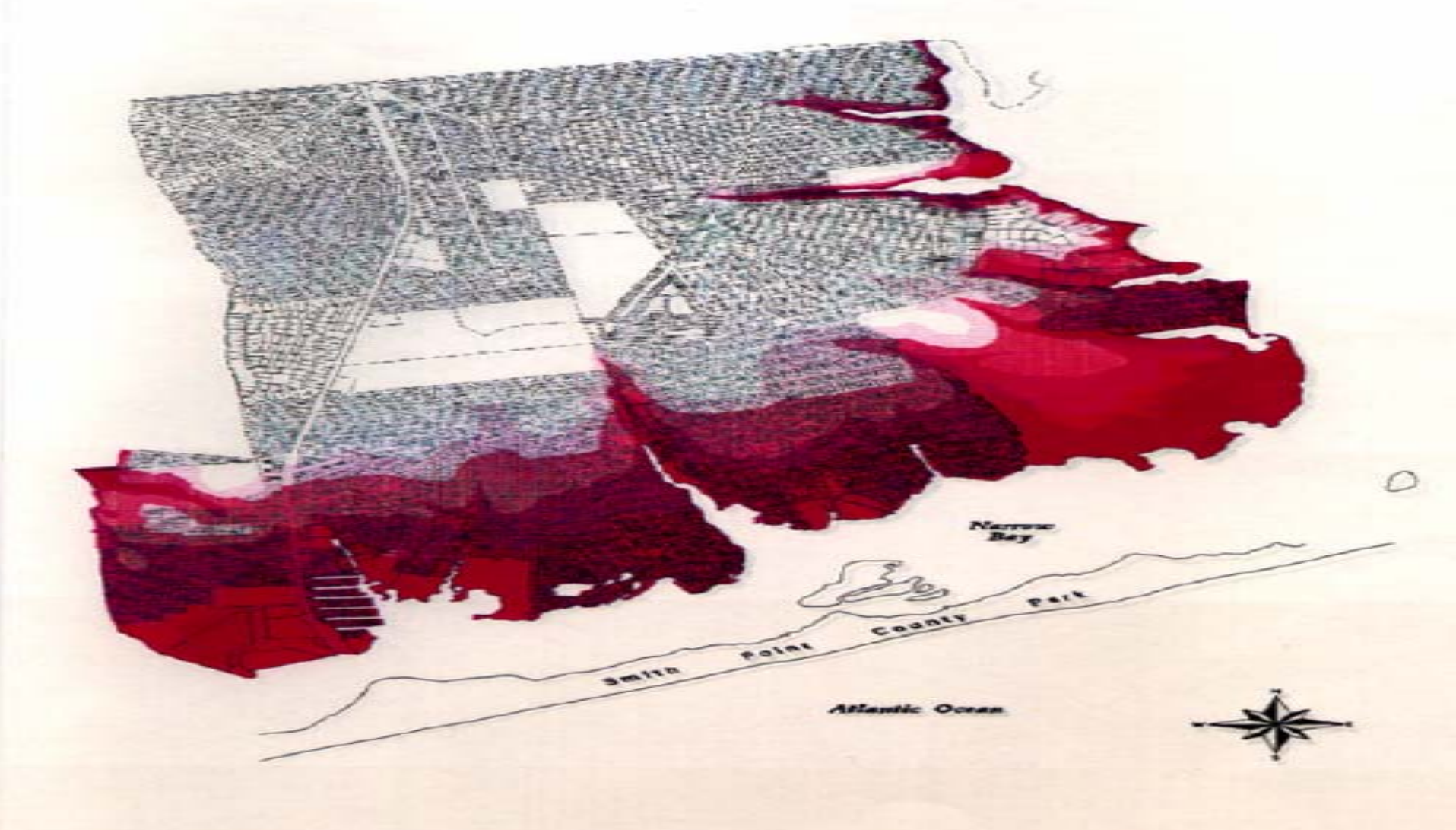
The FIMP study area includes the shaded floodplain and nearshore areas, as shown.

FIMP Reformulation Study - US Army Corps of Engineers, New York District

Figure 1 - Study Area

Challenge:

Reducing Flood Hazard Risks in a Densely Populated Watershed with Diverse Stakeholders



Fire Island Stakeholders

- Department of Interior, National Park Service, Fire Island National Seashore

- New York State
- Suffolk County
- Towns and Villages
- Fire Island Communities
- Environmental Advocates
- Recreational Visitors
- Commercial Interests

Challenge:

- Ecological Significance and Fragility

- Dynamic, Diverse Ecology
- Barrier Islands, Beaches, Marshes and Bays

- The FIMP Ecosystem Supports 42 Rare and Federally and State Designated Threatened and Endangered Species

FIMP Evolution: Achieving a Watershed Perspective

- Interagency Scoping of Data Requirements
- State of the Art Modeling of Coastal and Ecological Systems
- Evaluation of Full Range of Alternatives
- Regional Planning for Environmental Sustainability
- Stakeholder Involvement in Decision-Making Process

VISION STATEMENT

A Framework for Successfully Completing the Reformulation Study

- Recognizes that no plan can reduce all risks
- Decisions are based upon improved understanding of the system
- Flooding will be addressed with site specific measures that address the variety of causes of flooding
- Priority given to measures which both provide protection, and restore and enhance coastal processes and ecosystem integrity
- Preference given to measures that protect and restore coastal landforms and natural habitats
- Seeks to avoid or minimize adverse environmental impacts and address long-term demands for public resources,
- Balances dune and beach replenishment considering storm damage reduction and environmental considerations.
- Considers alteration of existing shore stabilization structures, inlet stabilization measures, and dredging practices

FIMP Today

- Strategic Communication Plan
- Developing a Long-Term, Regional Management Plan for Piping plover and other Coastal T&E Species
- Examining Management of Navigation Inlets
- Evaluating Non-Structural Alternatives
- Incorporating Coastal Process Restoration
- Comprehensive Recommendations

Strategic Communication: Public Outreach as a Process of Mutual Learning and Understanding

- Explain, Finalize, and achieve endorsement of VISION
- Understanding of the Science, System and its Functioning
- Understanding of Possible Alternative Measures
- Input into Alternatives specific to each area

FIMP Alternatives

	IMPLEMENTATION
Non-Structural Plans	
– Land Management Strategies	long-term
– Acquisition and Relocation	long-term
– Raising and Flood Proofing	short / long-term
Inlet Modifications and Sand Bypassing	
– Modification of Channel / Dredging	short-term
– Modification of Inlet Structures	short-term
– Inlet bypassing (multiple scenarios)	long-term
Removal / Modification of Groins	
– Groin Shortening, notching, removal	short-term
Coastal Process Restoration	long-term
Beach Restoration	
– Breach Closure	short-term
– Minimal Cross-Section (Post-Storm Response)	short-term
– Beachfill and Dune Restoration	short-term
Beach Restoration w/ Structures	
– Beachfill with groins or T-groins	short-term
– Beachfill with reinforced dune	short-term

Inlet Management

Shinnecock Bay, before and after inlet formation following Great New England Hurricane, 1938

Inlet Management

Evaluate Operation and Maintenance of Three Authorized Inlets: Shinnecock, Moriches, and Fire Island

Non-Structural Alternatives for the Long Island Mainland

- Flood-Proofing and Raising of Structures
- Utilities Protection
- Free-Standing Barriers – Ring levees, Road Raisings

Non-Structural Alternatives: Land Management, Acquisition, and Relocation

- Land Use Policies – Zoning/Infrastructure Controls
- Transfer of Development Rights
- Voluntary Post-Storm Buyout
- Relocation and Property Exchange (NPS and Suffolk County)
- Legislative – Unify Dune District (NPS-FIIS) and Coastal Erosion Hazard Area (NYS)

FIMP Today: Restoring Natural Coastal Processes to Provide Storm Damage Reduction

- Restore Coastal Features
- Re-establish Self-Regulating System Attributes
- Maximize Protective Qualities and Processes

Restoration of Natural Protective Features

Activities over the last 50 years have impaired the ability of the system to sustain itself and its important natural protective capabilities over time.

FIMP Restoration Framework

- Longshore Sediment Transport
- Cross-Island Sediment Transport
- Dune Growth and Evolution
- Bayside Shoreline Processes
- Circulation and Water Quality

- Coastal Pond Restoration

Longshore Sediment Transport:
Inlet By-Passing

- Shinnecock Inlet showing wave refraction, flood and ebb shoals, and erosion of Tiana Beach

- The flood and ebb shoals are large sediment sinks

Cross Island Sediment Transport: Overwash

- Creates and Maintains Early Successional and Important Shorebird Foraging Habitat
- Provides Sediment to Bayside Marshes

Coastal Process Restoration Challenges

Achieving a Balance among User-Groups and between Stakeholders and the Ecosystem

FIMP SCHEDULE

• Meetings with Stakeholders	Ongoing
• Public Outreach/Workshops	Fall / Winter 05
• Preliminary Recommendations	Spring 06
• Draft Report/EIS	Fall 06
• Public Meeting(s)	Winter 06
• Final Report/EIS	Summer 07

FIMP Reformulation
Watershed Perspective:
Comprehensive Coastal Management Plan

- Storm Damage Reduction
- Navigation - Inlet Management
- Ecosystem Restoration - Landscape Scale

MOU and Coastal Management

- Promotes Non-Structural Measures for Flood Protection
- Seeks to Advance our Understanding of the Distribution and Condition of Coastal Ecosystems and Biological Diversity
- Advocates Maintenance and/or Restoration of Natural Ecosystem Functions at Sustainable Levels
- Encourages Management Measures that Benefit Native Animals, Plants, and Natural Communities while Meeting Human Needs

USACE/TNC Partnership on Long Island

- Shoreline and Tributary Restoration
- Shellfish Habitat Restoration

Partnering for Shoreline and Tributary Restoration

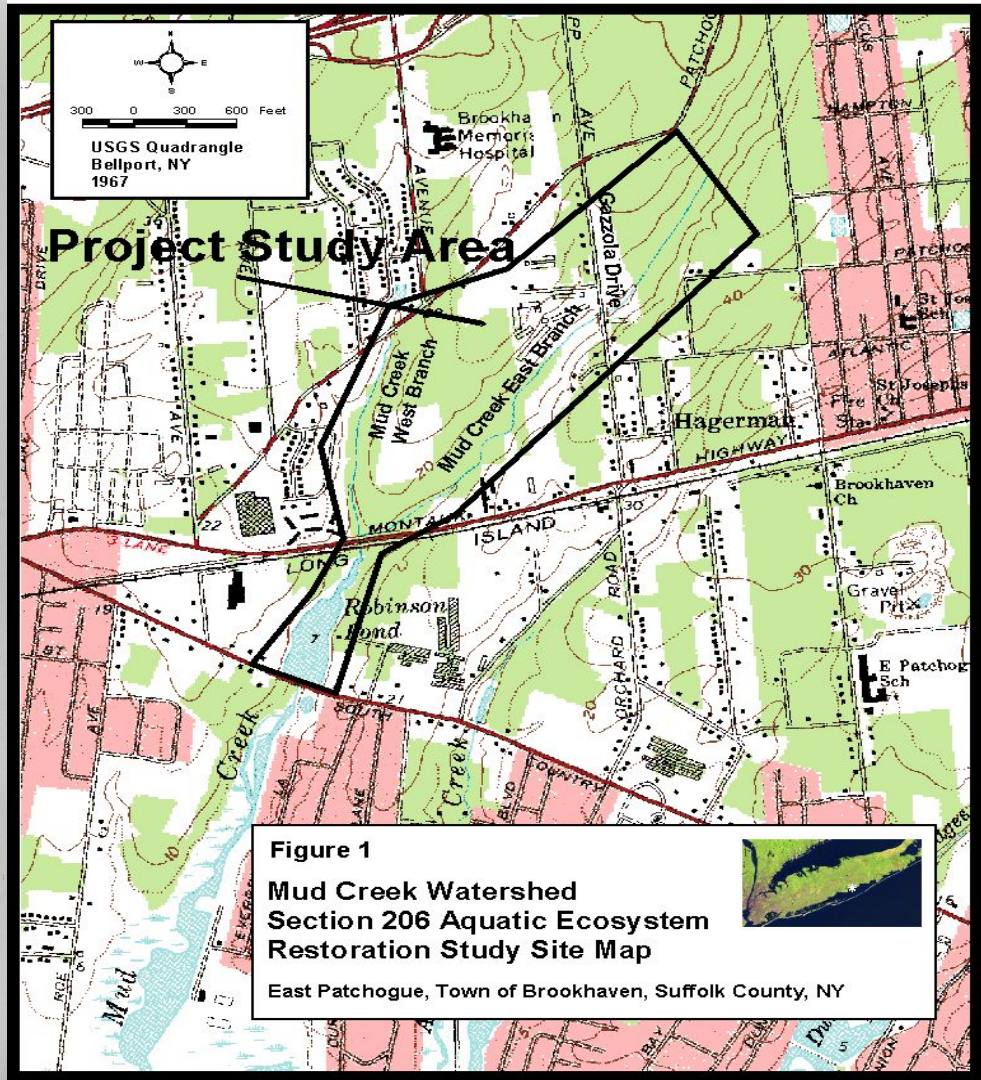
- TNC: Inventorying Shoreline and Tributary Restoration Needs
- Prioritizing Sites Based on Ownership, Proximity to Preserved Lands and Other Criteria

- USACE: Working with Suffolk County to Restore Components of the Watershed
- Mud Creek, site of a former Duck Farm, is a Priority Sub-basin

- USACE/Suffolk County/TNC: Planning to Team on Additional former Duck Farm Restorations

RESTORING THE WATERSHED'S TRIBUTORIES:

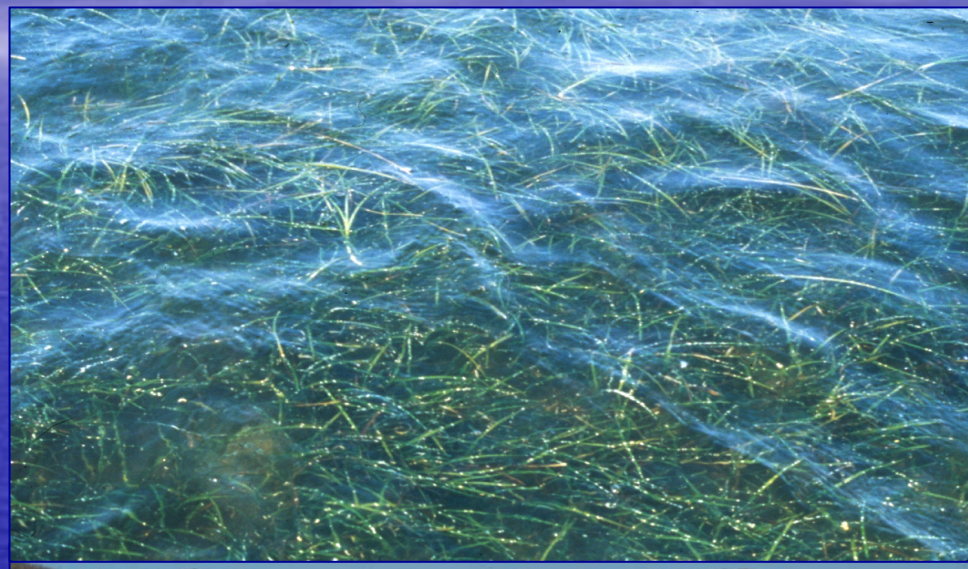
Mud Creek Ecosystem Restoration Project



Shellfish Restoration in the Great South Bay

Importance of Estuaries and Bays

- Productive estuaries that export food & energy to greater Atlantic Ocean
- Important spawning, feeding, nursery & migratory habitats
- 6^{+} endangered species, 36 global & state rare species



Ecological Targets

Hard Clams

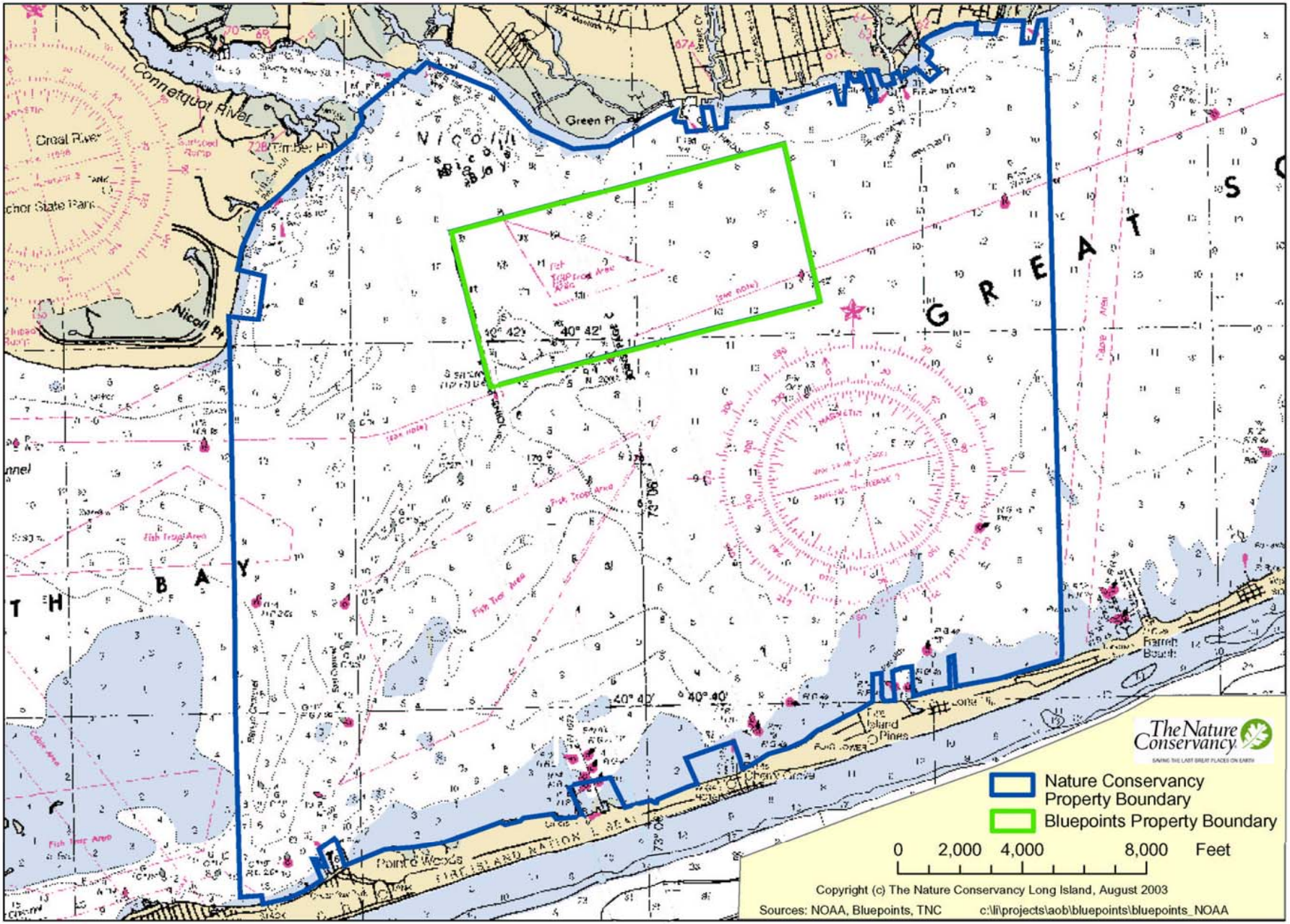
Seagrass Meadows

Oysters ?

TNC Bay Bottom Ownership

- Bluepoints: 13,000 acres --Almost 1/4 of Great South Bay
- Preservation and restoration activities could have ecosystem-wide benefits

The Nature Conservancy Owned Underwater Land (Formerly Bluepoints)



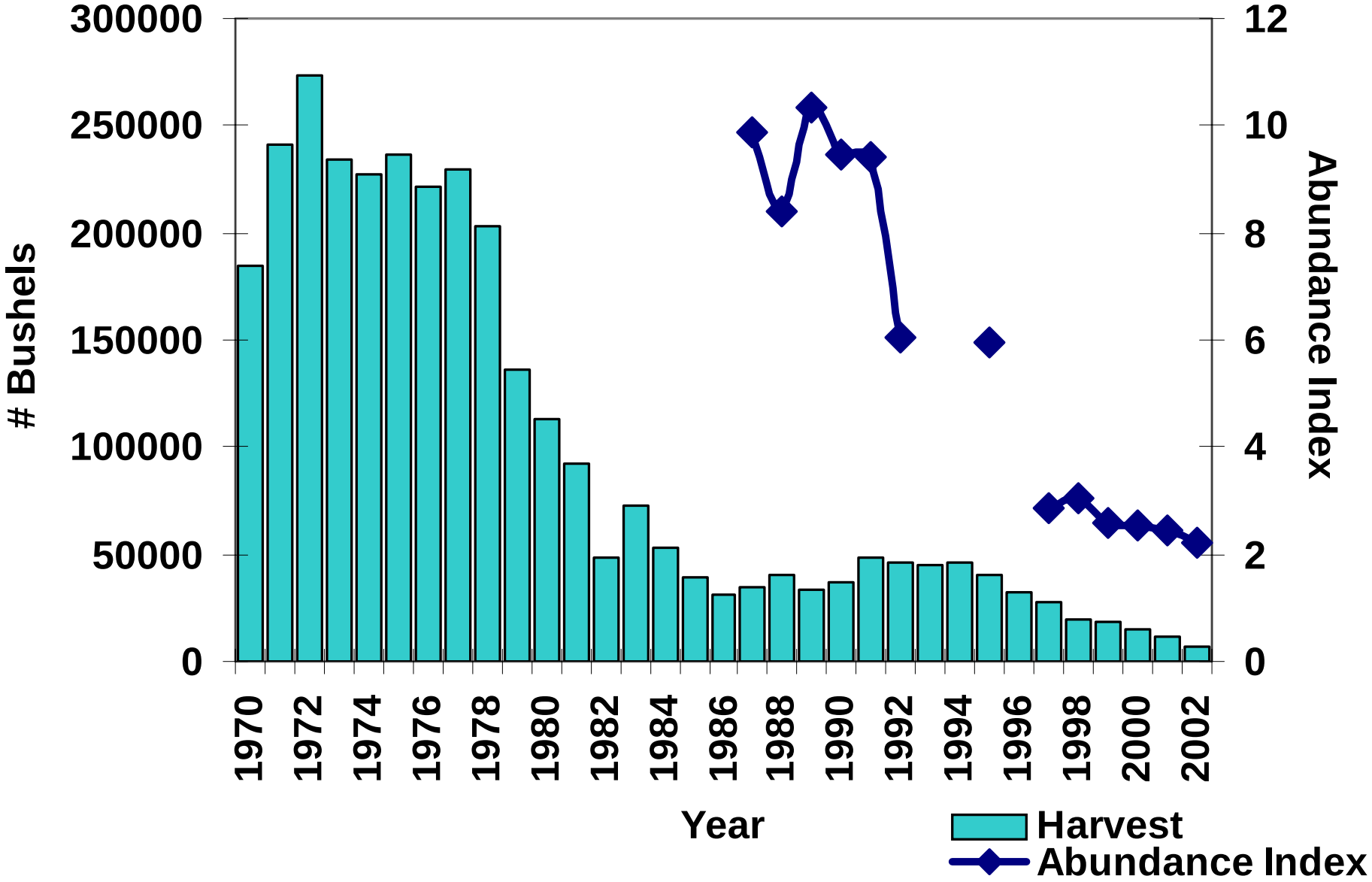
Why Suspension Feeding Bivalves?

- Great South Bay was historically a shellfish driven system "Ecosystem Engineers"

Hard clams:

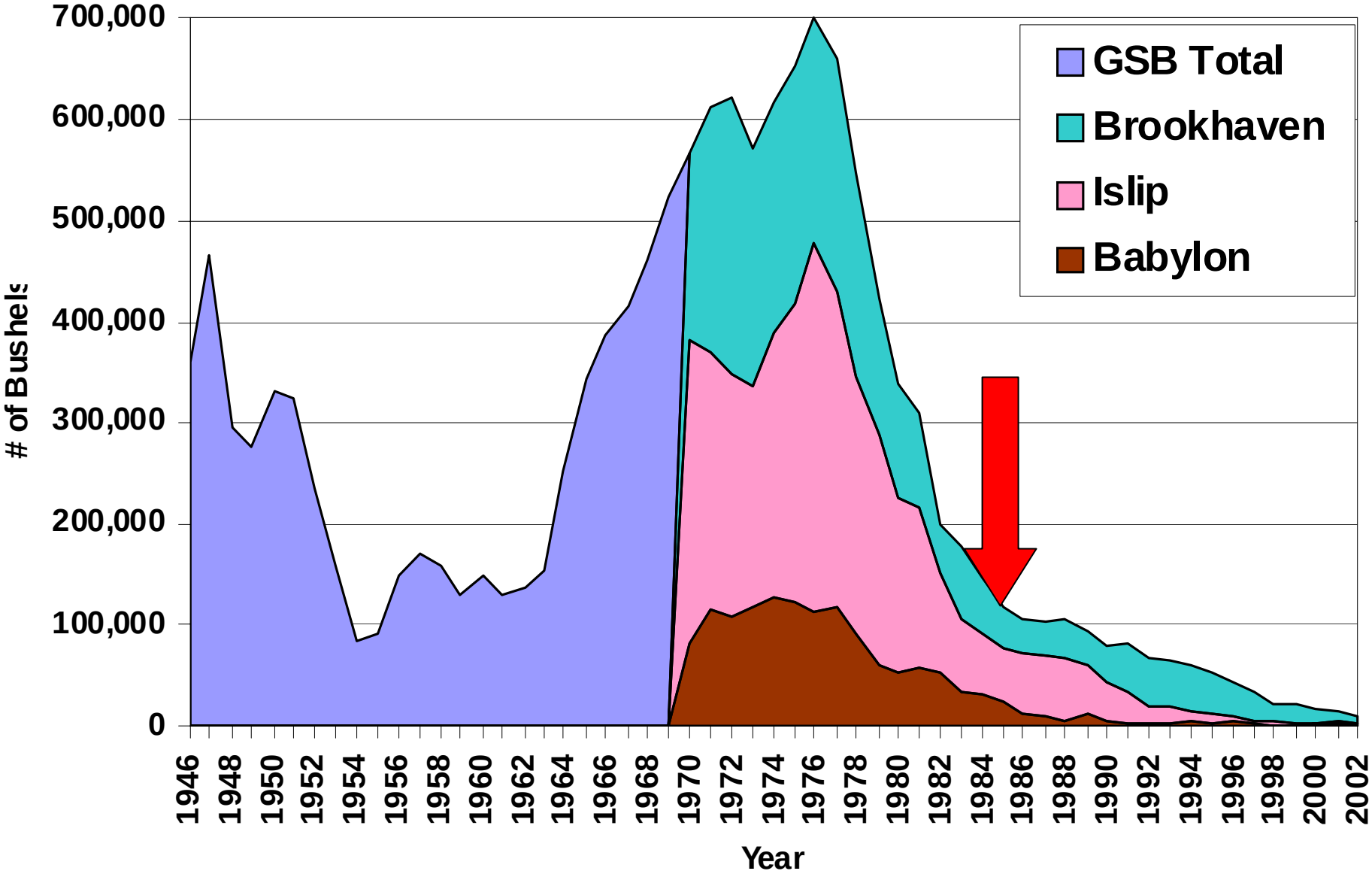
- **Prior to decline they filtered 40% of the bay per day**
- **Today about 1% of the bay per day (Cerrato 04)**

Eastern Great South Bay, Harvest and Abundance of Hard Clams



Annual Hard Clam Harvest from Great South Bay

Data from NYS DEC / NMFS



Recent Research in GSB Shows…

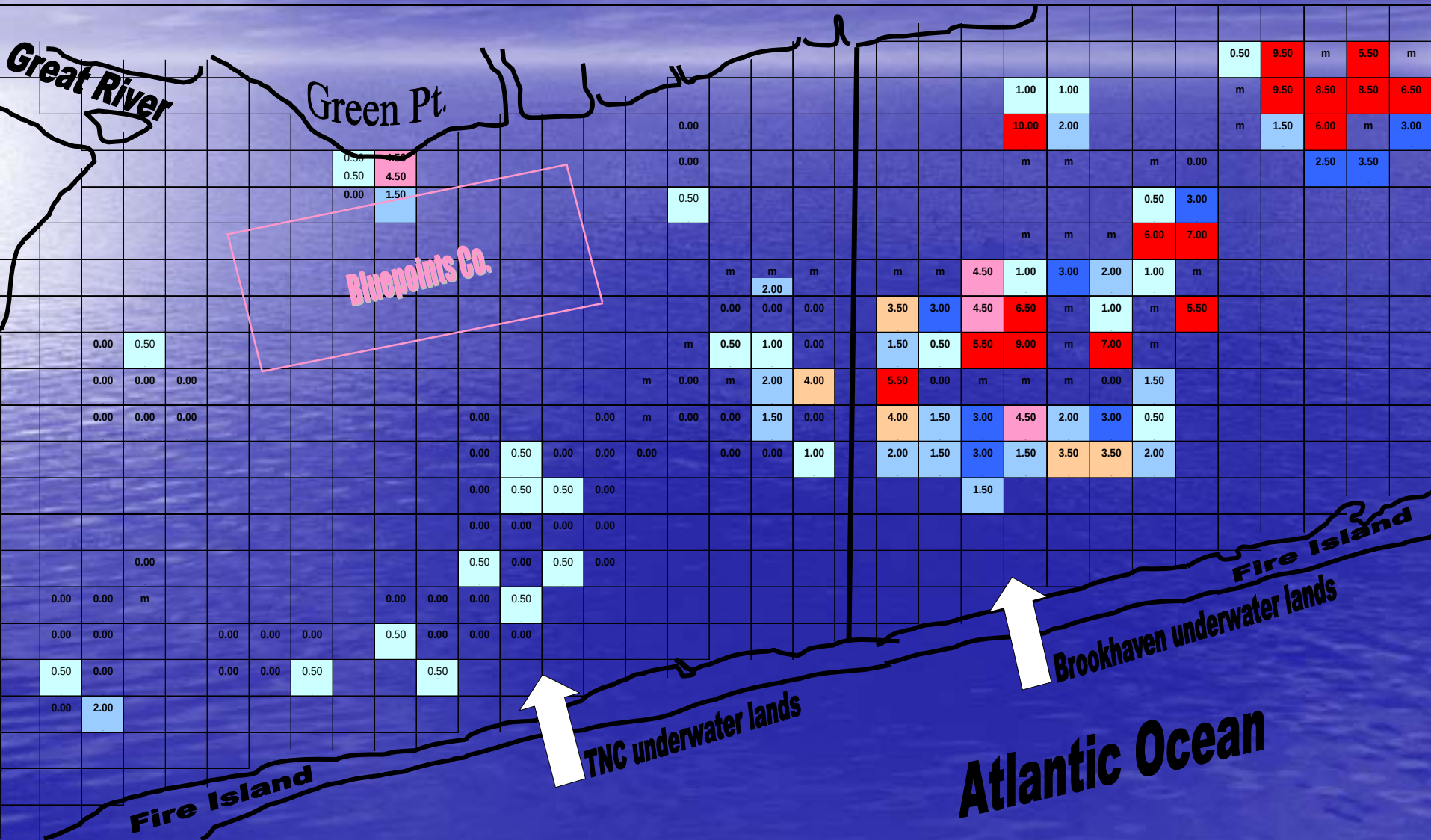
- Hard clams in GSB not replaced by other suspension feeders
- Food quality has been altered (with regional differences), affecting growth and condition of clams
- Changes to historic benthic-pelagic coupling… benthic : planktonic primary production, deposit feeding inverts community, benthic predators

Hard Clam Abundance in Great South Bay

2003 Survey

All Sizes Combined

0 | ≤ 1 | ≤ 2 | ≤ 3 | ≤4 | ≤5 | >5 | /m²



Bluepoints Management Council

- TNC Created to Develop Long Term Management Strategies for Bluepoints
- Seek to Apply Approach to Surrounding Estuary
- Substantial Progress in Gaining Support of Local Partners

TNC's Next Steps

- **Maintain stewardship of property**
- **Work with towns to incorporate survey data into bay wide GIS layers**
- **Establish and monitor spawner sanctuaries on TNC property**

(Harvest-free areas (not cages) where mature shellfish are congregated in densities appropriate for successful fertilization)

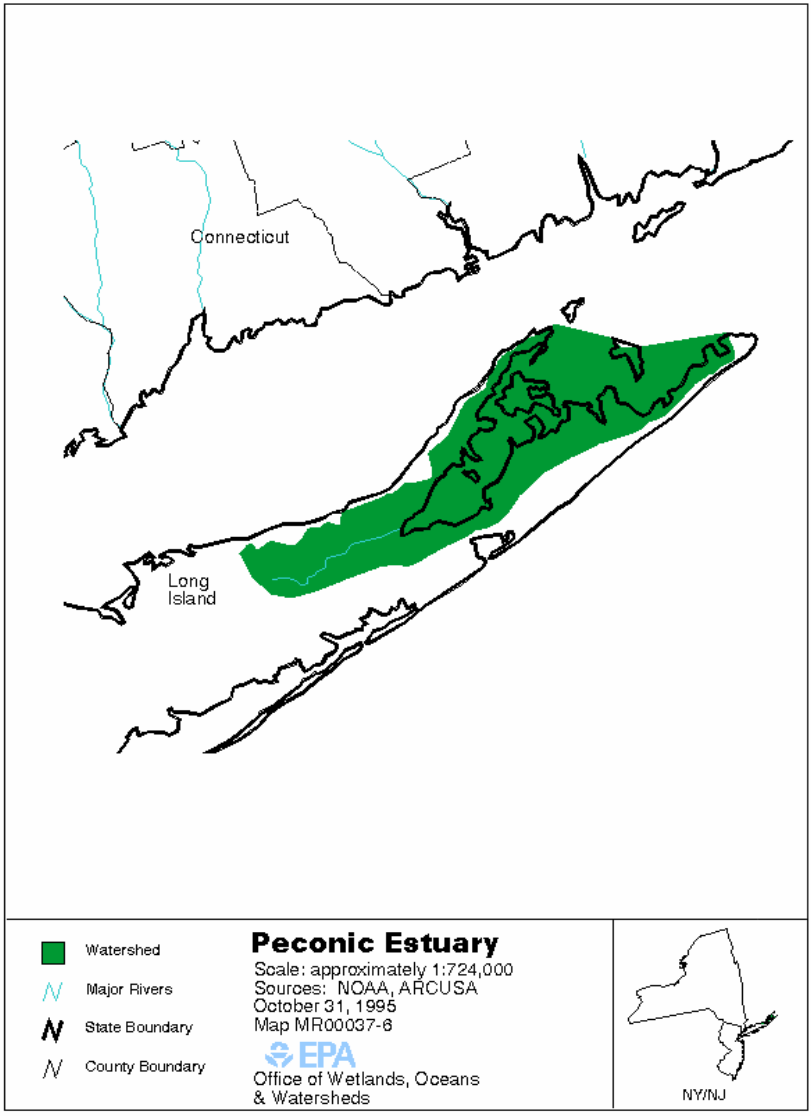
- 500,000 adult cherrystone and chowder clams in 2004-05 (NOAA CRP, private donors)
- Partnership project with Brookhaven ($150K from NYS DOS- additional spawner sanctuaries with ~430K clams)

Role for USACE in Shellfish Restoration

- USACE has Authorized Ecosystem Restoration Study for LI Embayments
- Regional Programs in Chesapeake Provide Lessons Learned
- Expand Scope of Restoration in the System

The Peconic Estuary and Bays

- Former and Active Duck Farms
- Nitrogen Loading
- Scallop Restoration



Ecoregional Assessments

In identifying biological and ecological resources and the threats to them, the Conservancy has substantial experience in regional planning, information integration and dissemination, presenting several opportunities for partnership and info sharing with the U.S. Army Corps of Engineers…

- Integrated data sets
- Decision-support tools
- Portfolio of sites
- Framework for regional planning
- Integrated conservation & restoration strategies
- Engaged stakeholders and partners

**Ecoregional plan for Northwest coast ecoregion in the Pacific Northwest*

Coastal Restoration

The national scope and experience with both planning and execution of shellfish restoration projects would enable TNC to serve as a key partner in ecosystem restoration projects undertaken by the U.S. Army Corps of Engineers...

- **TNC's goal is** Ecosystem Level Restoration

- **TNC's Partnership with the NOAA Community-Based Restoration Program has generated** $4.5 million for 36 marine restoration projects in 15 states

- **Across the U.S., TNC has been involved with restoration of native shellfish – widely considered to be the** keystone species **in many coastal ecosystems**

- **TNC has experience working to restore include the** eastern oyster **(VA, NC, TX & MS),** hard clam **(NY),** bay scallop **(NY & VA) and** Olympia oyster **(WA)**

- A *Shellfish Network* **is being developed to help assemble "lessons learned" and to catalyze and inform large-scale restoration**

THANK YOU
QUESTIONS????