

A scenic view of a rocky coastline with a red and white buoy in the distance. The foreground shows a pebbly beach with several large, smooth rocks. The water is a clear, light blue, and the sky is a pale, hazy blue. In the distance, a red and white buoy is visible on the water's surface. The overall scene is calm and serene.

# National Monitoring Network Progress

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# NMN Background

- The NMN was designed by the Council and more than 80 stakeholders in response to a recommendation by the U.S. Commission on Ocean Policy in 2004 in “[An Ocean Blueprint for the 21st Century.](#)”
- The National Ocean Policy Implementation Plan further charged the NWQMC with implementing the design of the NMN.
  - As part of implementation efforts, NMN promotes collaboration among freshwater and coastal water quality programs and networks.

# NMN Background

- The original NMN Design directed the network to address a variety of water quality issues.
  - Because of resource limitations, a panel convened at the 2012 NWQMC refined the NMN's focus to monitoring and modeling of nutrient levels.
  - In Fall of 2012 the NMN communicated this refinement to the NOP.
- The Appendix to the National Ocean Policy Implementation Plan (2013) states:
  - “Implement the design of the National Water Quality Monitoring Network for U.S. coastal waters and their tributaries through the National Water Quality Monitoring Council.”
  - The delivery date is 2017.



## National Monitoring Network Objectives

1. Define status and trends of key water quality parameters and conditions on a nationwide basis.
2. Provide data relevant to determine whether goals, standards and resource management objectives are being met, thus contributing to sustainable and beneficial uses of coastal and inland water resources.
3. Provide data to identify and rank existing and emerging problems to help target more intensive monitoring, preventive actions or remediation.
4. Provide data to support and define coastal oceanographic and hydrologic research, including influences of freshwater inflows.
5. Provide quality-assured data for use in the preparation of interpretive reports and educational materials.

# NMN plan elements

- Promote use of new sensor technologies
- Increase accessibility of data
- Promote links between freshwater and coastal nutrient models
- Assess how the NMN design can help to address water-quality issues in select estuaries
- Water quality rapid response
  - Initial focus was on oil spills
- Feasibility discussions to increase utility of Water Quality Data Portal
  - Clarification of data requirements to contribute data to portal
  - Investigate possibilities of map-based interface
- Demonstration Studies

# The NMN Design is Ambitious

- Implementing the NMN requires the best of all worlds
  - Resource are extremely limited
- Realistic implementation
  - Leverage existing programs
  - Pilot/demonstration studies



# The NCCA is a Major EPA Program Supporting Implementation of the NMN

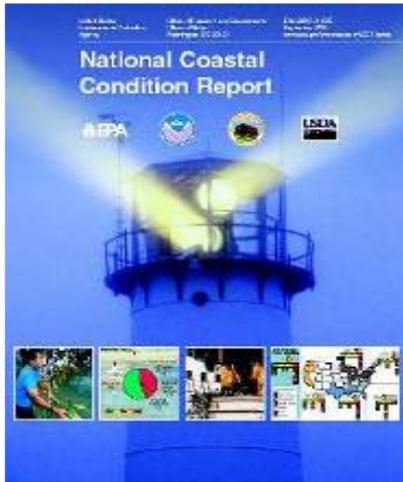
- Large scale, statistically-valid survey of our Nation's coastal waters
- A component of EPA / State National Aquatic Resource Surveys (NARS)
  - Designed to determine status and trends in regional and national water quality conditions
- Promote collaboration across jurisdictional boundaries
- Build state and tribal capacity for monitoring and analysis
  - Shares probabilistic design, monitoring and data analysis techniques



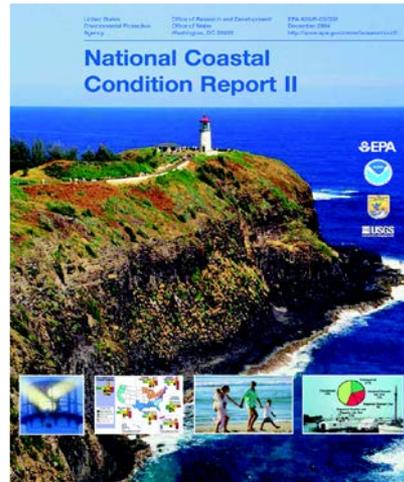
# The NCCA is a Major EPA Program Supporting Implementation of the NMN

- Achieve a robust, consistent, comparable, and statistically valid data set
  - Helps to determine whether goals, standards and resource management objectives are being met.
  - Available for use in interpretive reports and educational materials
- Develop baseline information for use in comparing progress toward achieving to sustainable and beneficial uses of coastal and inland water resources.

# National Coastal Condition Reports



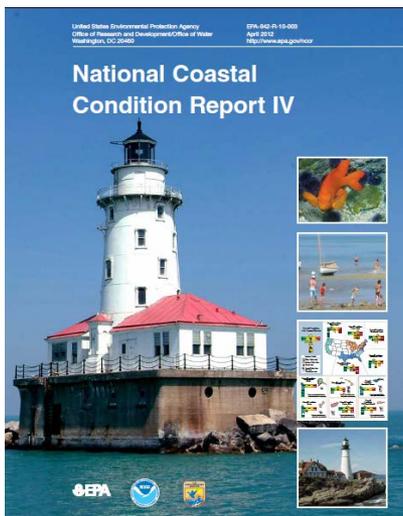
1990 - 1996



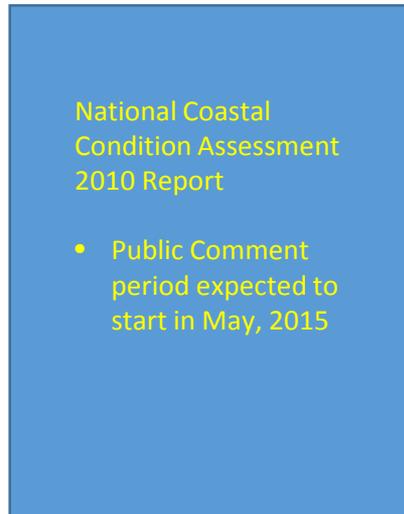
1997 - 2000



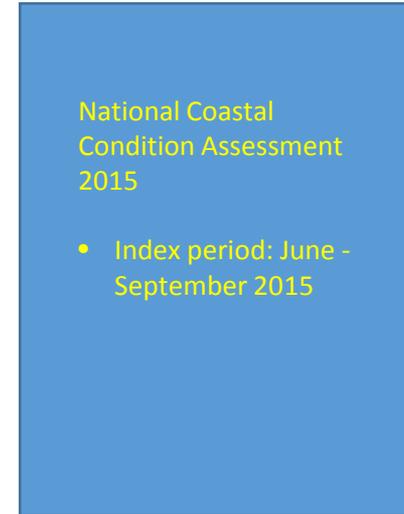
2001 - 2002



2003 - 2006



2010



2015



# Key Questions Addressed by NCCA

- What percent of the Nation's coastal waters are in good, fair, and poor condition for key indicators of ecological health and human influence?
- What is the relative importance of key stressors such as nutrients and pathogens?
- What are the trends in marine coast lines and the baseline conditions of the Great Lakes nearshore area?

# NCCA Design



- Approximately 1000 sites are drawn using a randomized design and sampled every five years
  - 750 coastal marine
  - 250 Great Lakes (New in 2010)
- Sampling Index Period: July – September
- Sample results represent the target population
  - All coastal waters of the US from head of salt to confluence with the ocean
    - Includes inland waters and major embayments (e.g. FL Bay and Cape Cod Bay)
  - For Great Lakes, the US portion of shallow nearshore zones of Lakes Superior, Michigan, Huron, Erie, and Ontario

# Indicators

- Water Column

- Salinity
- Temperature
- pH
- DO
- Light Transmissivity (PAR)
- Water clarity (Secchi)
- DIN, DIP, TN, TP
- chlorophyll *a*
- *Enterococci*
- Phytoplankton & underwater video (Great Lakes)
- Microcystin and other algal toxins (New in 2015)



- Sediment

- TOC
- % silt/clay
- Chemistry
- Toxicity
- Benthic macrofauna



- Fish

- Whole fish tissue contaminants (Ecofish)
- GL human health fish tissue contaminants (New in 2010)
- Hg fish plugs (New in 2015)

# Data availability

- November 2014: Data collected as part of the National Coastal Assessment (ORD Research from 1997-2006) Were loaded to EPA's STORET and are now available from the Water Quality Portal.
- Fall 2015: NCCA 2010 data will be transmitted to STORET and available from the Water Quality Portal when the final report is released.
- Subsequent data (2015, 2020...) will also be made available through STORET and the Water Quality Portal, providing national scale, QAed datasets, in a consistent format for multiple uses.



# Sharing

- Examples of projects using NCCA data
  - VA DEQ used NCCA fish tissue contaminant data to supplement Fish Tissue and Sediment Monitoring Program.
  - Baseline data for Gulf of Mexico Oil Spill
  - NJ used NCCA data for baseline in Superstorm Sandy response.
  - NARS Campus Research Challenge  
<http://water.epa.gov/type/watersheds/monitoring/nars-challenge.cfm>



# Sharing

- Examples of coastal monitoring using probabilistic designs
  - VA DEQ Nearshore monitoring network
  - South Carolina Estuarine and Coastal Assessment Program
  - National Park Service Coastal Monitoring Network (SE, Gulf, GL, American Samoa)
  - EPA Region 2 NY/NJ Harbor Monitoring

# Summary

- Features of EPA's National Coastal Condition Assessment

- Representative Design
- Consistent protocols
- Data quality assurance
- Data analysis, reporting, and sharing

- Contribute to the objectives of the NMN:

- National and regional status and trends
- Progress toward resource goals
- Ranking of key stressors to support follow up monitoring
- Nationally consistent and quality-assured data to support research and reporting

