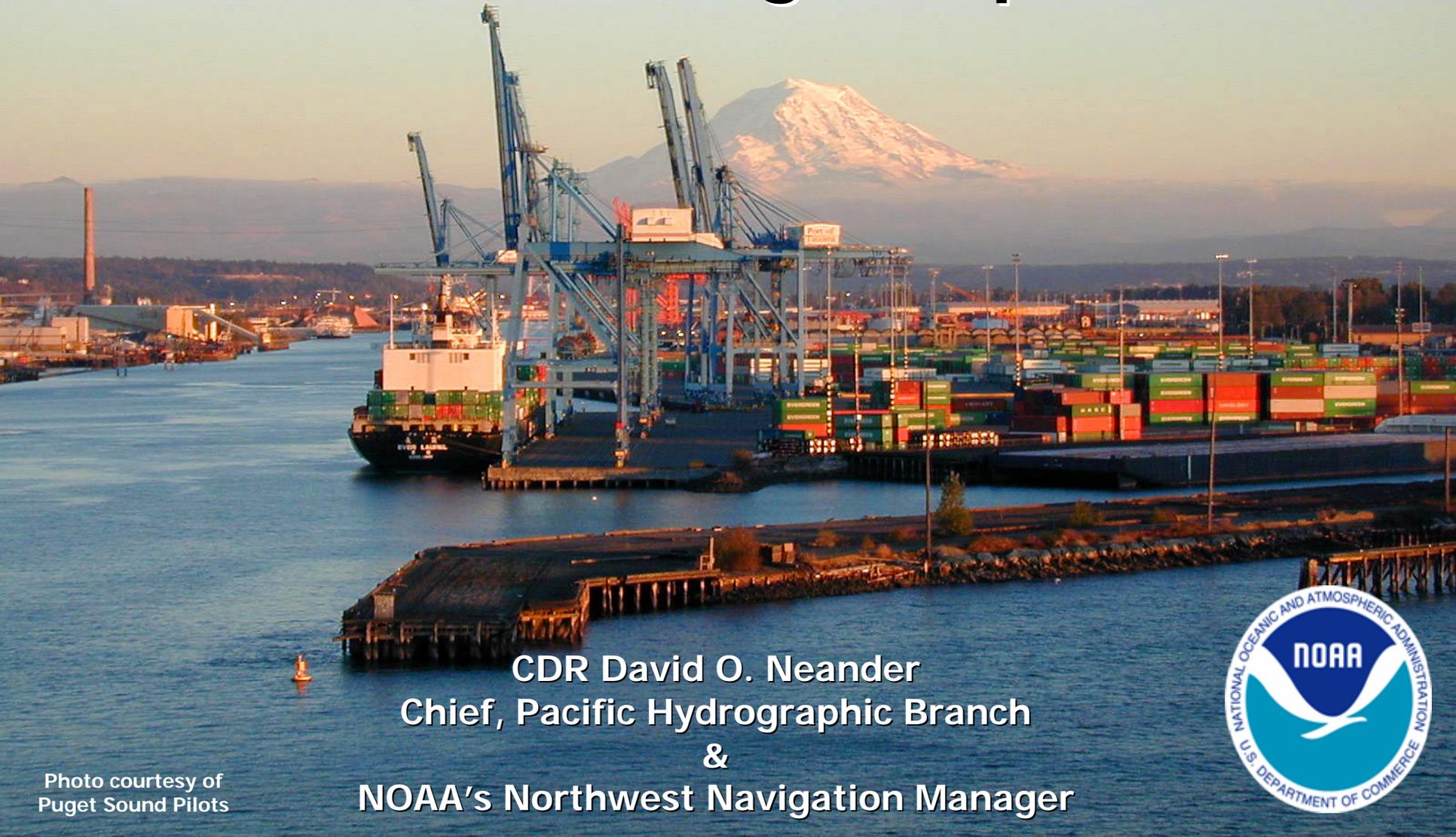


# NOAA's Hydrographic Survey Program Northwest Region Update



CDR David O. Neander  
Chief, Pacific Hydrographic Branch  
&

NOAA's Northwest Navigation Manager

Photo courtesy of  
Puget Sound Pilots



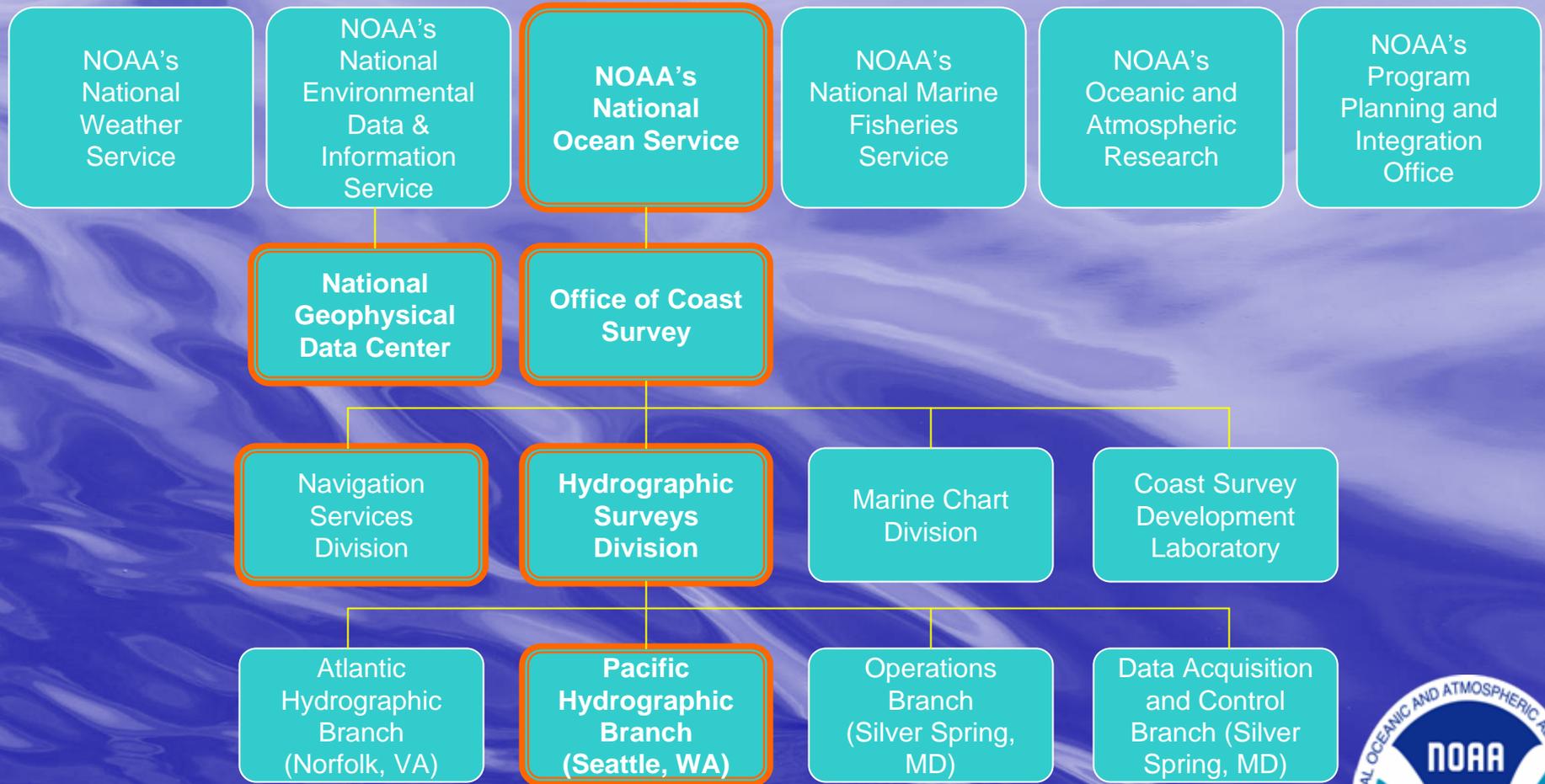


# OUTLINE

- Overview
- Northwest Hydrographic Surveys
  - Planning
    - ❖ NOAA's Office of Coast Survey Hydrographic Survey Priorities
  - Acquisition
    - ❖ NOAA's Northwest Survey Assets
  - Processing, Quality Assurance and Application to Nautical Chart
  - Data Archiving and Data Dissemination
- Northwest Survey Activities
  - Past, Present and Future



# Where PHB and NSD are located in the big NOAA picture



# Support Safe and Efficient Marine Transportation

- Statutory Mandate authorizes NOAA to:
  - Provide nautical charts and related hydrographic information for the safe navigation of maritime commerce
  - ...as well as provide *basic data* for engineering, scientific and other commercial and industrial activities
- Covers all U.S. territorial waters and U.S. EEZ
  - 500,000 sq. nautical miles of EEZ are navigationally significant
- NOAA's role in supporting safe and efficient marine transportation depends upon the availability of up-to-date, reliable hydrographic survey data



# NOAA's Charting Responsibility

1,000+  
Charts

NORTHERN

MARIANA ISLANDS

WAKE ISLAND

MIDWAY ISLAND

GUAM

HAWAII

JOHNSTON ISLAND

HOWLAND ISLAND

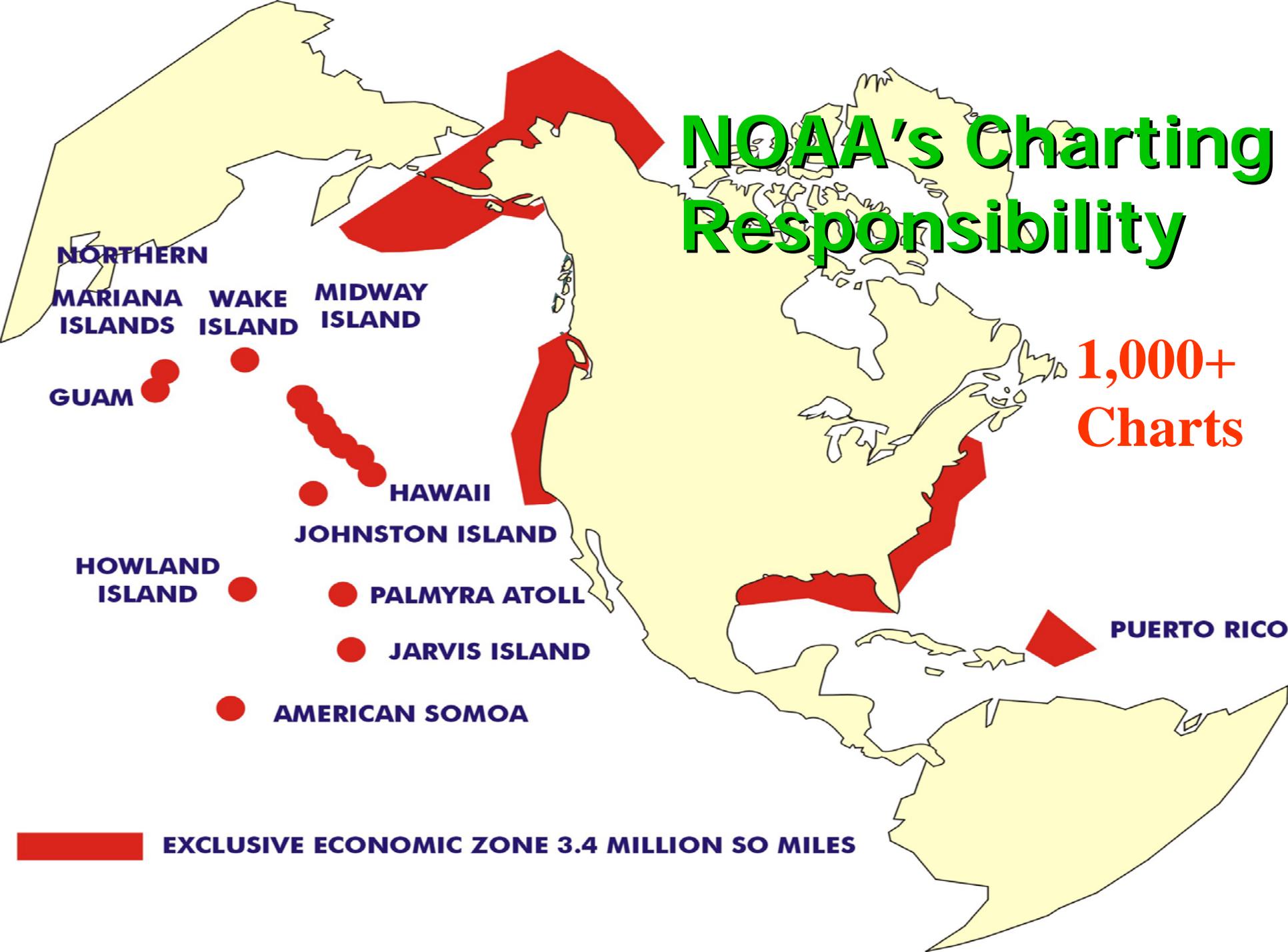
PALMYRA ATOLL

JARVIS ISLAND

AMERICAN SOMOA

PUERTO RICO

EXCLUSIVE ECONOMIC ZONE 3.4 MILLION SO MILES



# Regional Navigation Managers

LCDR David Zezula, *Alaska Region*

CDR Dave Neander, *Northwest Region*

Brian Link, *Great Lakes Region*

LT Matt Wingate, *Northeast Region*

Howard Danley, *Mid Atlantic Region*

LCDR Todd A Haupt, *South Atlantic Region*

Alan Bunn, *West Gulf Coast Region*

Tim Osborn, *East Gulf Coast Region*



Gerry Wheaton, *California and Pacific Islands*

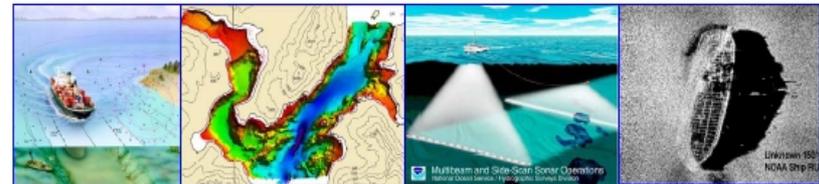
# Hydrographic Survey Priorities

- Local stakeholder meetings
  - PS Pilots, CR Pilots, USCG, USN, Port Authorities, local maritime constituents
  - Harbor Safety Committees
    - PSHSC
    - CRHSC
- Leads to prioritization of planned survey activities



Office of Coast Survey

NOAA Hydrographic Survey Priorities  
2007 Edition



This document can be viewed online at:  
<http://nauticalcharts.noaa.gov>



## Critical Areas Remaining

334 Total Square Nautical Miles

High Commercial Traffic Volume  
Inadequate Charts  
Compelling Request  
Extensive Petroleum/Hazmat material transport  
Low Under Keel Clearance

## Priority 1

116 Total Square Nautical Miles

Navigation Significant: < 20 fathom depth  
Survey vintage pre-1940  
Petroleum transport > 1,000,000 tons  
or Coal transport > 600,000 tons  
or Chemical/Waste transport > 100,000 tons  
or Cargo > 5,000,000 tons  
or Passenger transport > 10,000

## Priority 2

2,429 Total Square Nautical Miles

Navigation Significant: < 20 fathom depth  
Survey vintage pre-1940  
Not Priority 1

## Priority 3

991 Total Square Nautical Miles

Navigation Significant: < 20 fathom depth  
Survey vintage pre-1970  
Not Priority 1 or Priority 2

## Priority 4

801 Total Square Nautical Miles

Navigation Significant: < 20 fathom depth  
Survey vintage 1970-1993

## Full Bottom Coverage Era

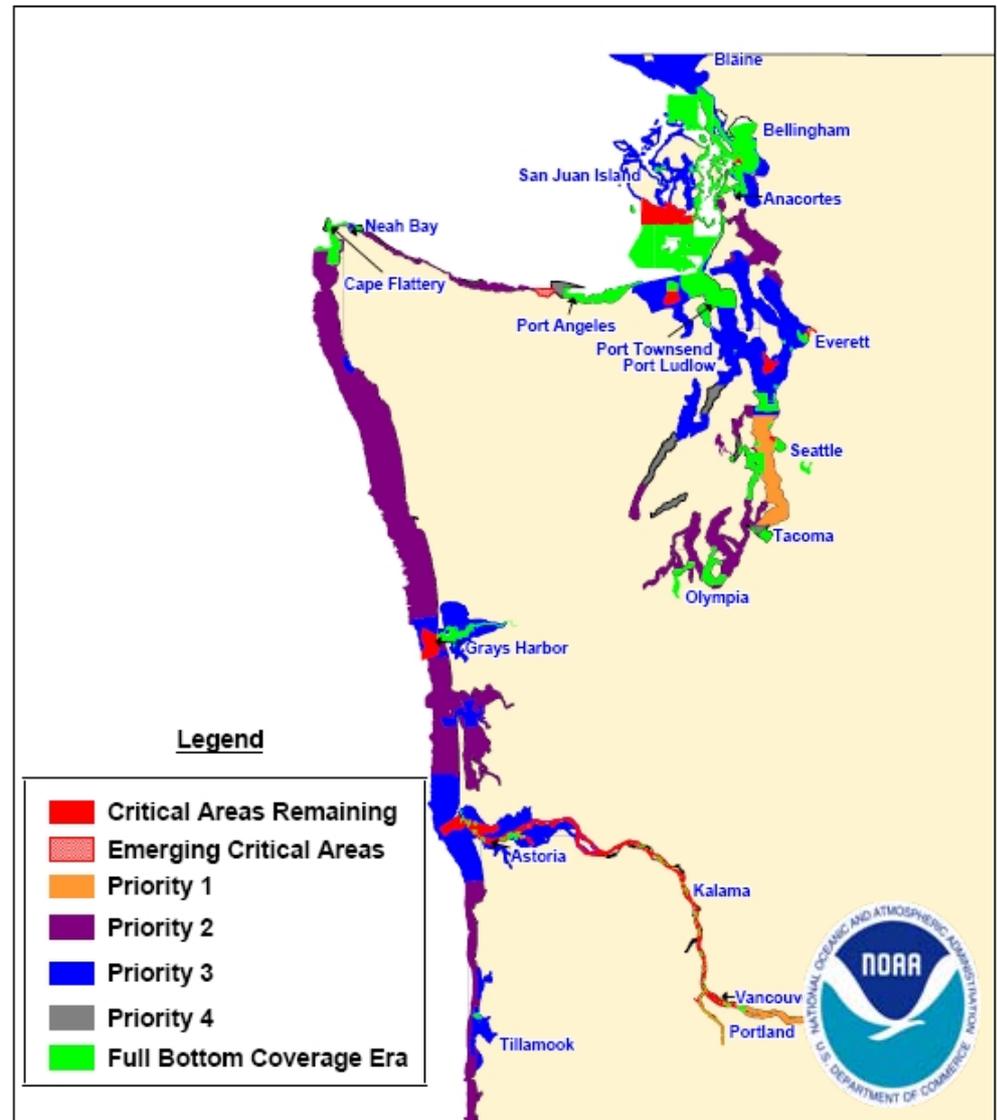
601 Total Square Nautical Miles

Completed Critical/Navigational Significant Areas  
Survey vintage post-1993

# NOAA Hydrographic Survey Priorities - West Coast

Washington

2007



# Hydrographic Survey Data Acquisition

- Northwest Survey Assets

- NOAA Ship RAINIER



- Navigation Response Team 3

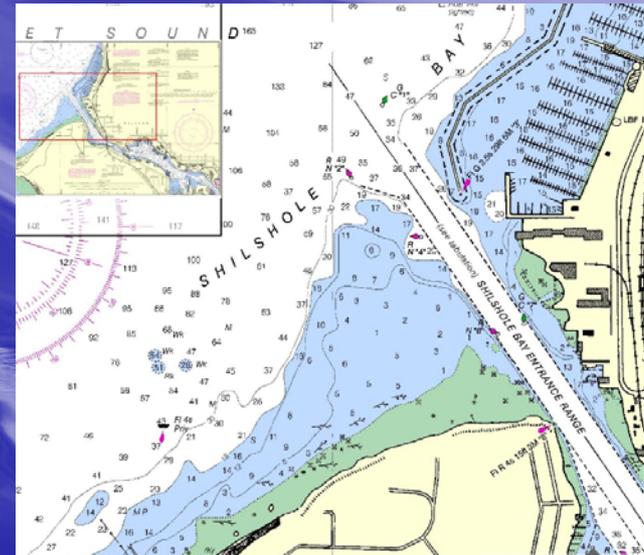
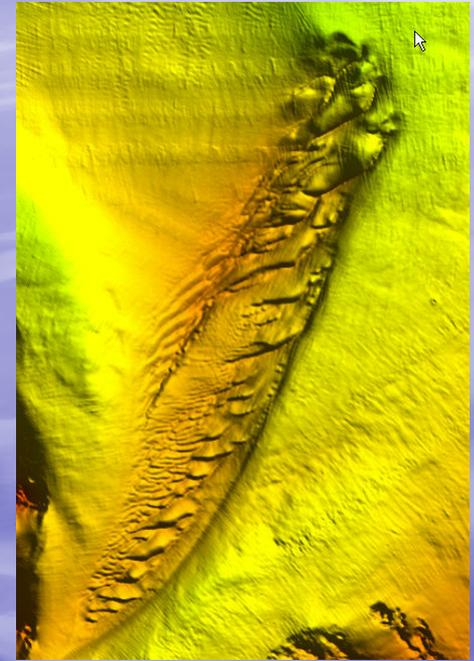


- Contractors



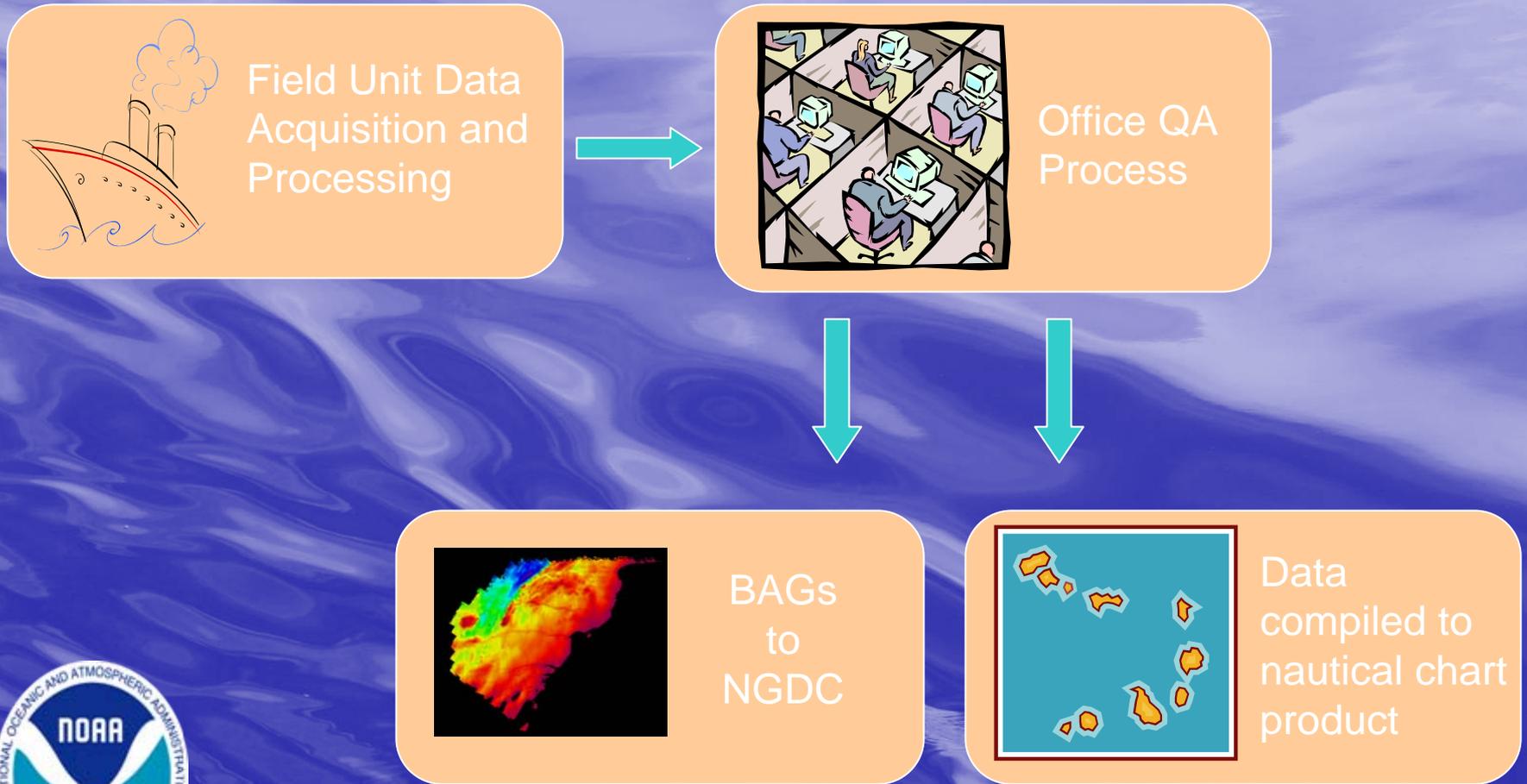
# Pacific Hydrographic Branch

- Quality assurance and certification for West Coast hydrographic data
- Product compilation and creation
- Hydrographic field support
- Outreach and education
- Process development



# Current Data Flow

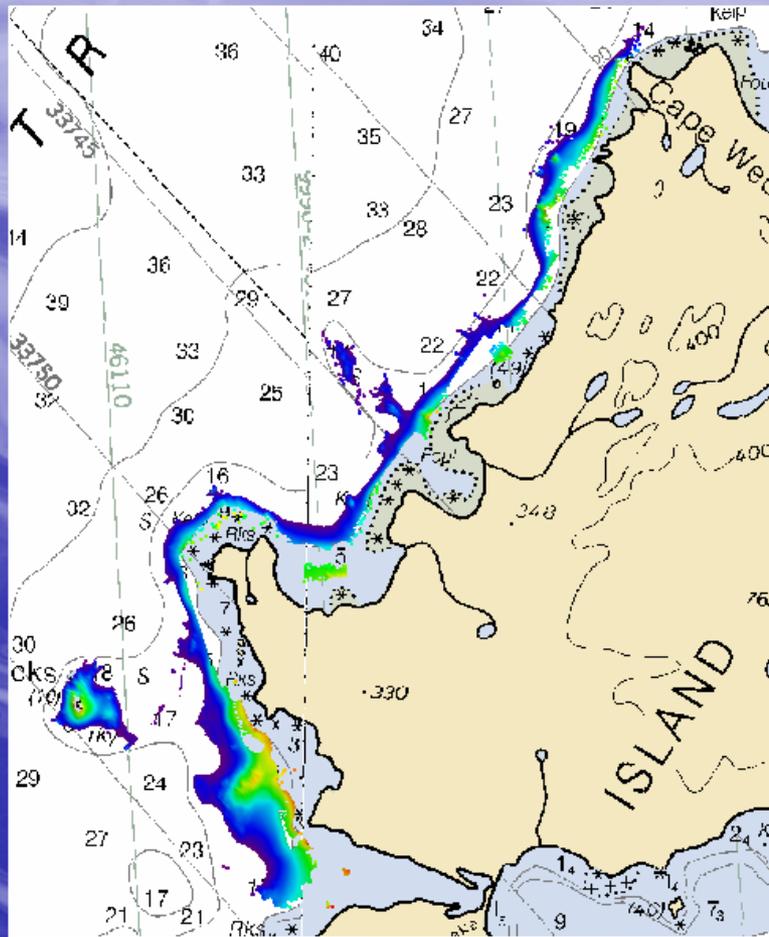
(VERY broad overview)



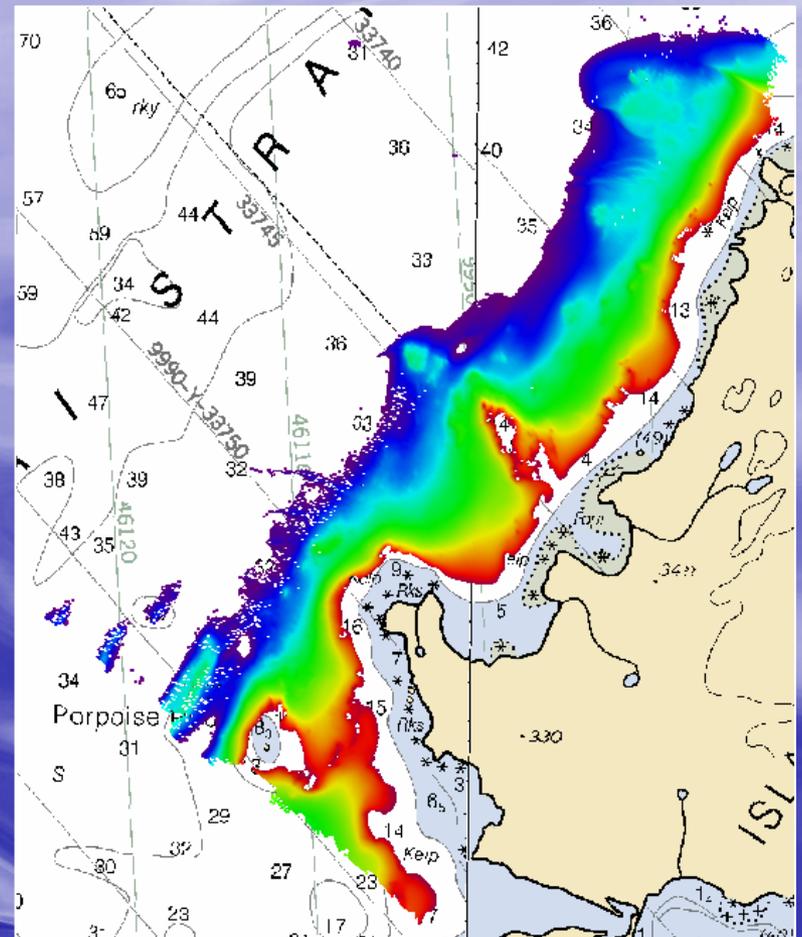
# BAGs

- **Bathymetric Attributed Grids**
  - Non proprietary
- **Established by the Open Navigation Surface Working Group**
- **BAGs contain**
  - Metadata
  - Two grids, depth and uncertainty
  - Operator mandated overrides (designated soundings)
- **Single resolution only (currently)**
- **NGDC is repository for NOAA BAGs**



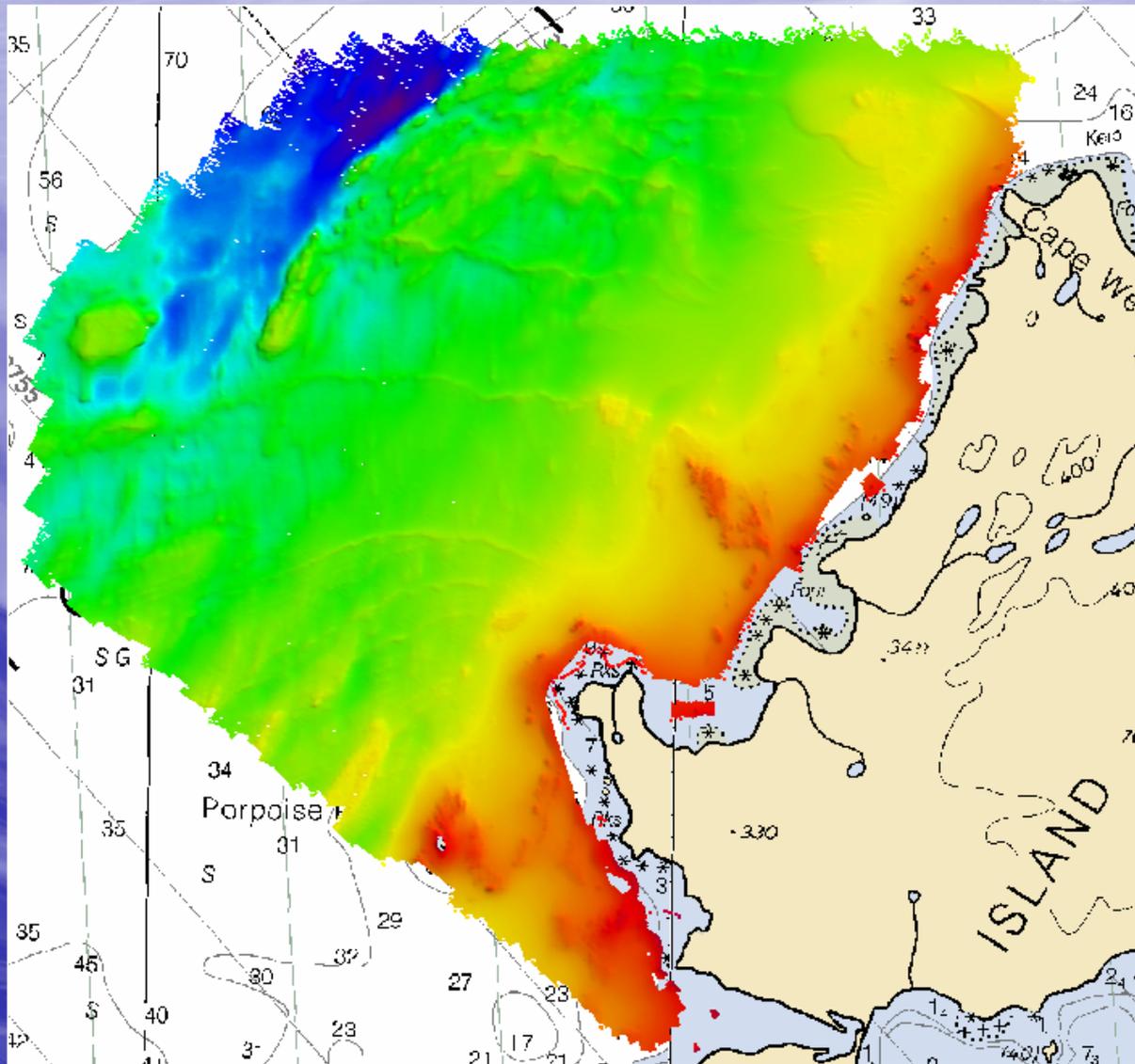


1 m resolution BAG, 0 m – 30 m depth



2 m resolution BAG, 29 m – 60 m depth





Combined BAG, 5 m resolution, 0 – 140 m depth range



# Sawmill Cove, Alaska



0.8 meter resolution

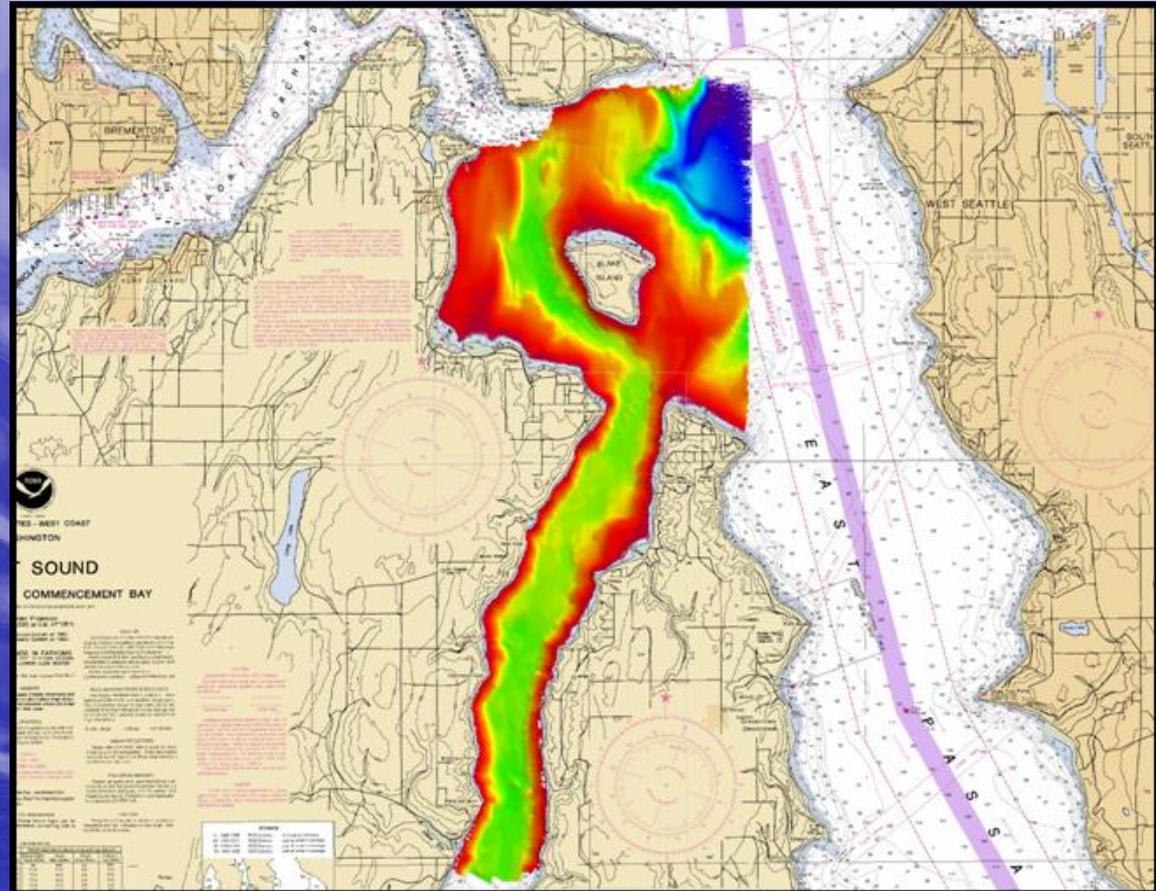


5 meter resolution

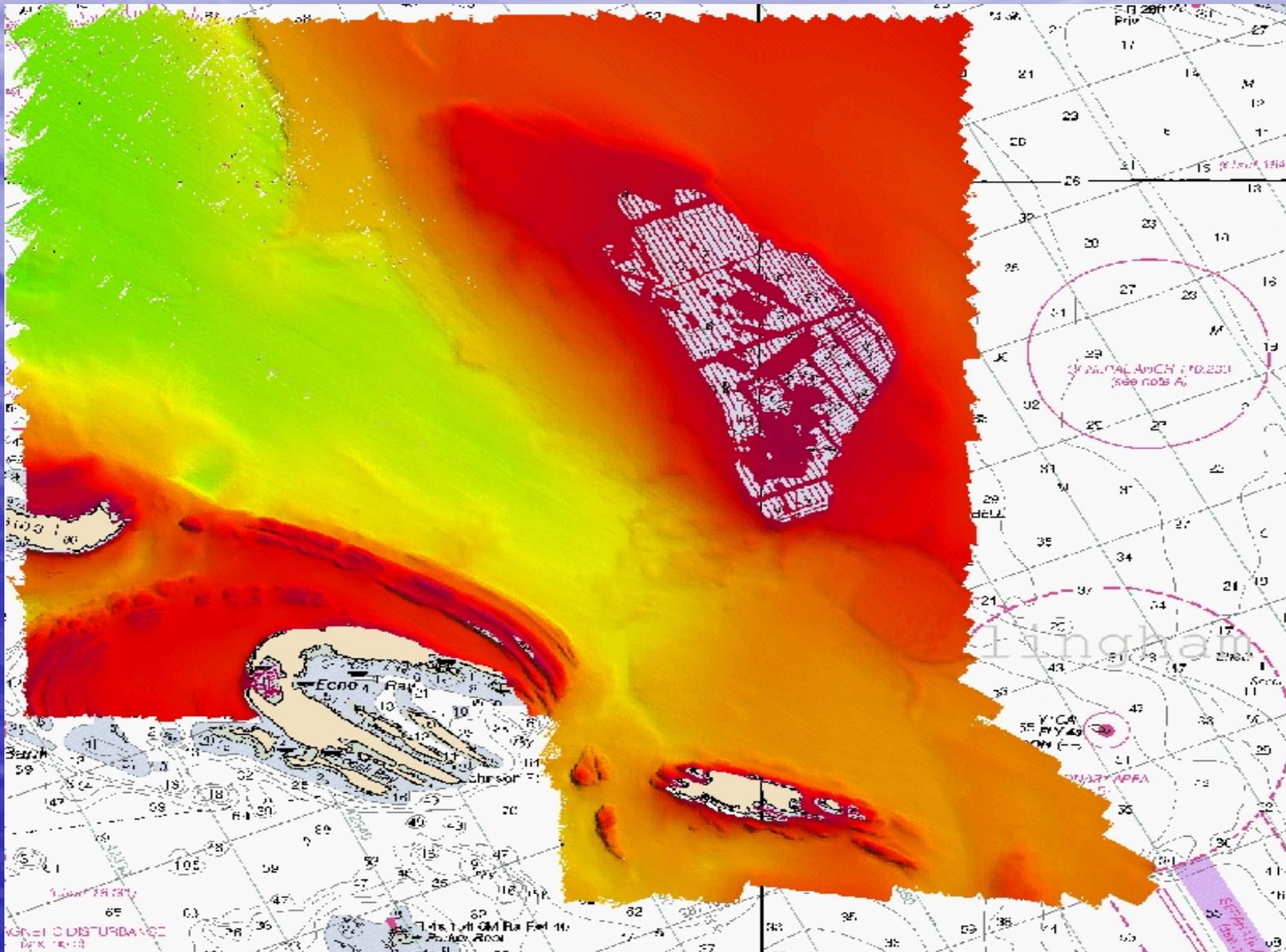


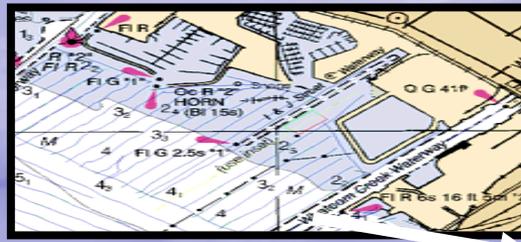
# Recent Survey Efforts Manchester, Entrances to Rich and Colvos Passages

- RAINIER
- Spring 2006
- Reson
  - 8101
  - 8125
- Elac

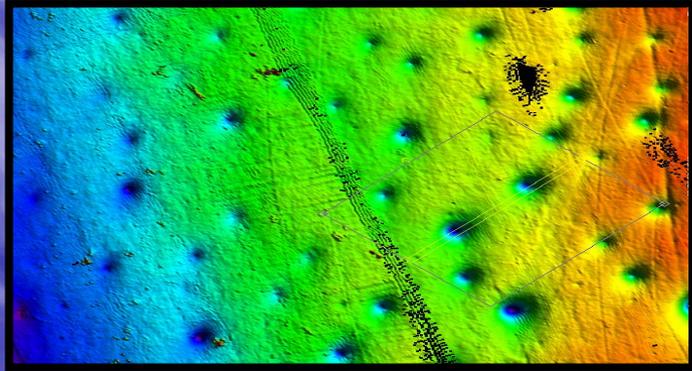


# Alden Bank, Sucia Island

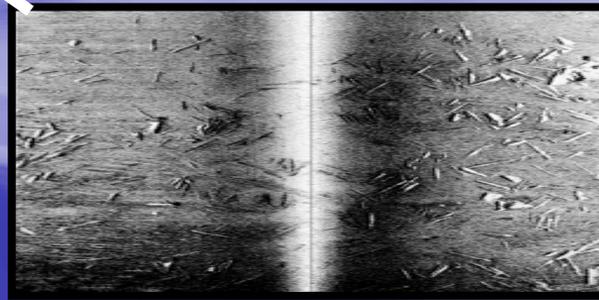




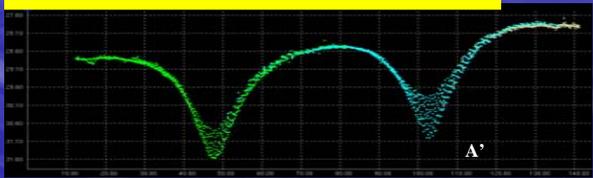
Detail section of the seafloor showing a set of unexplained holes up to 2.0m deep and 20m wide



Side scan sonar view of submerged logs and debris



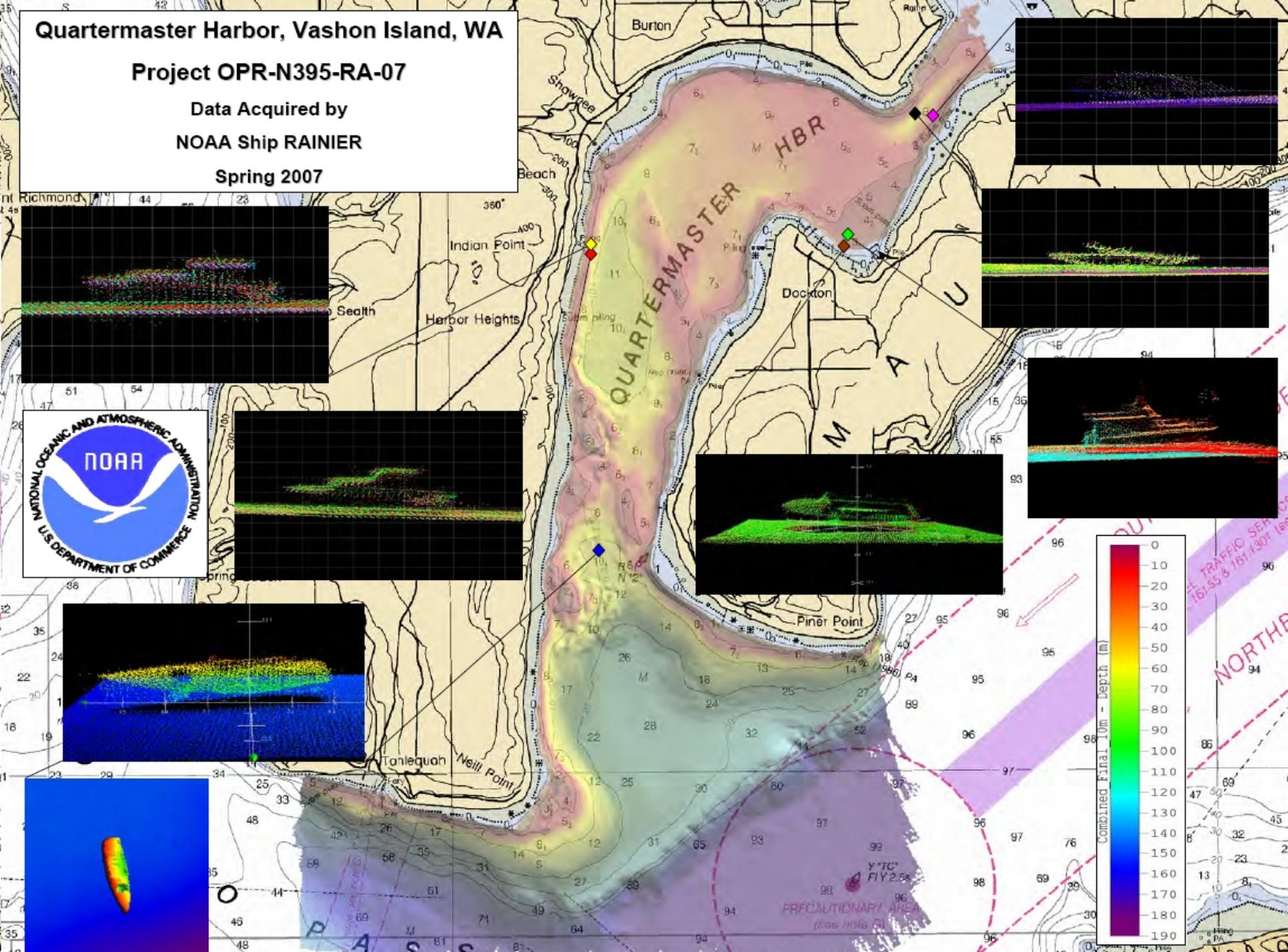
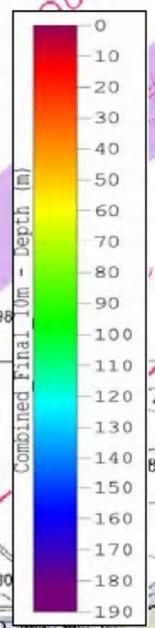
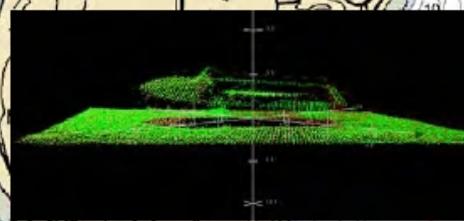
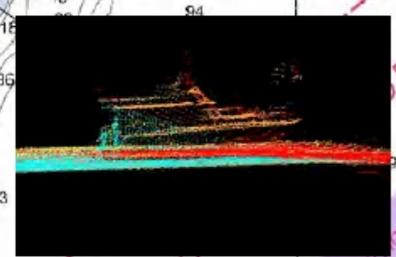
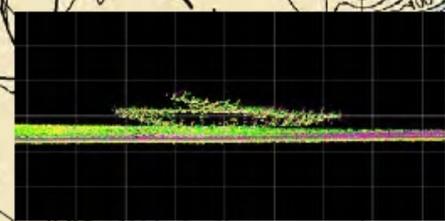
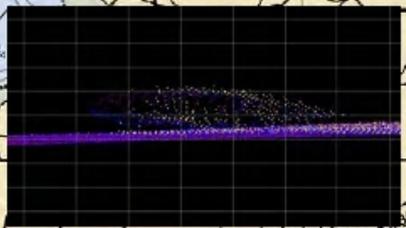
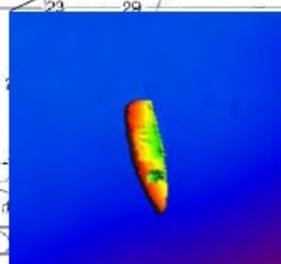
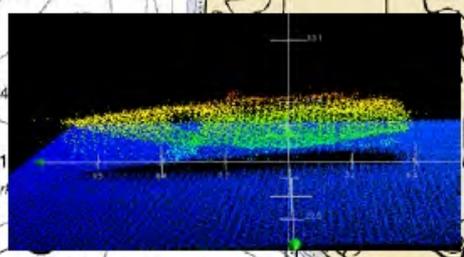
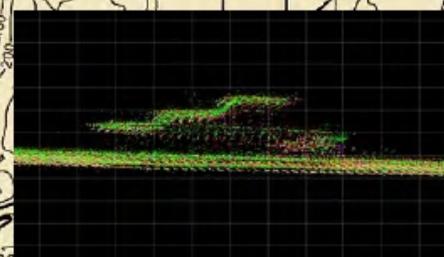
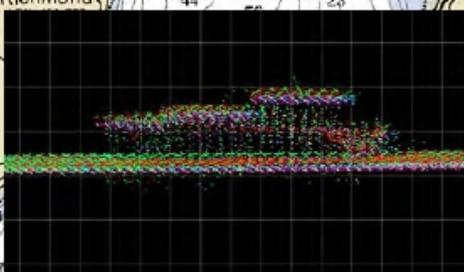
A cross section spanning two holes



# Quartermaster Harbor, Vashon Island, WA

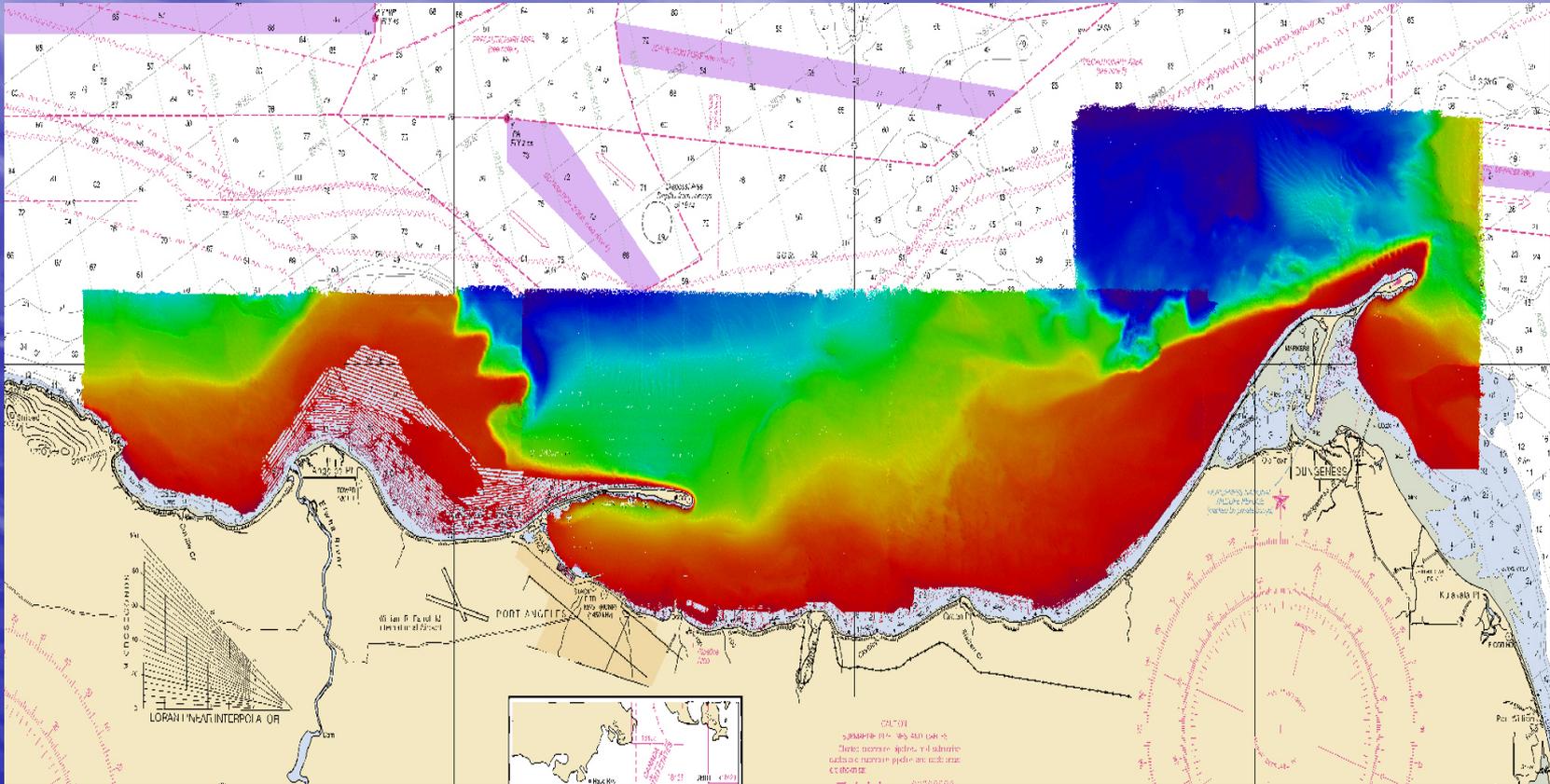
## Project OPR-N395-RA-07

Data Acquired by  
NOAA Ship RAINIER  
Spring 2007



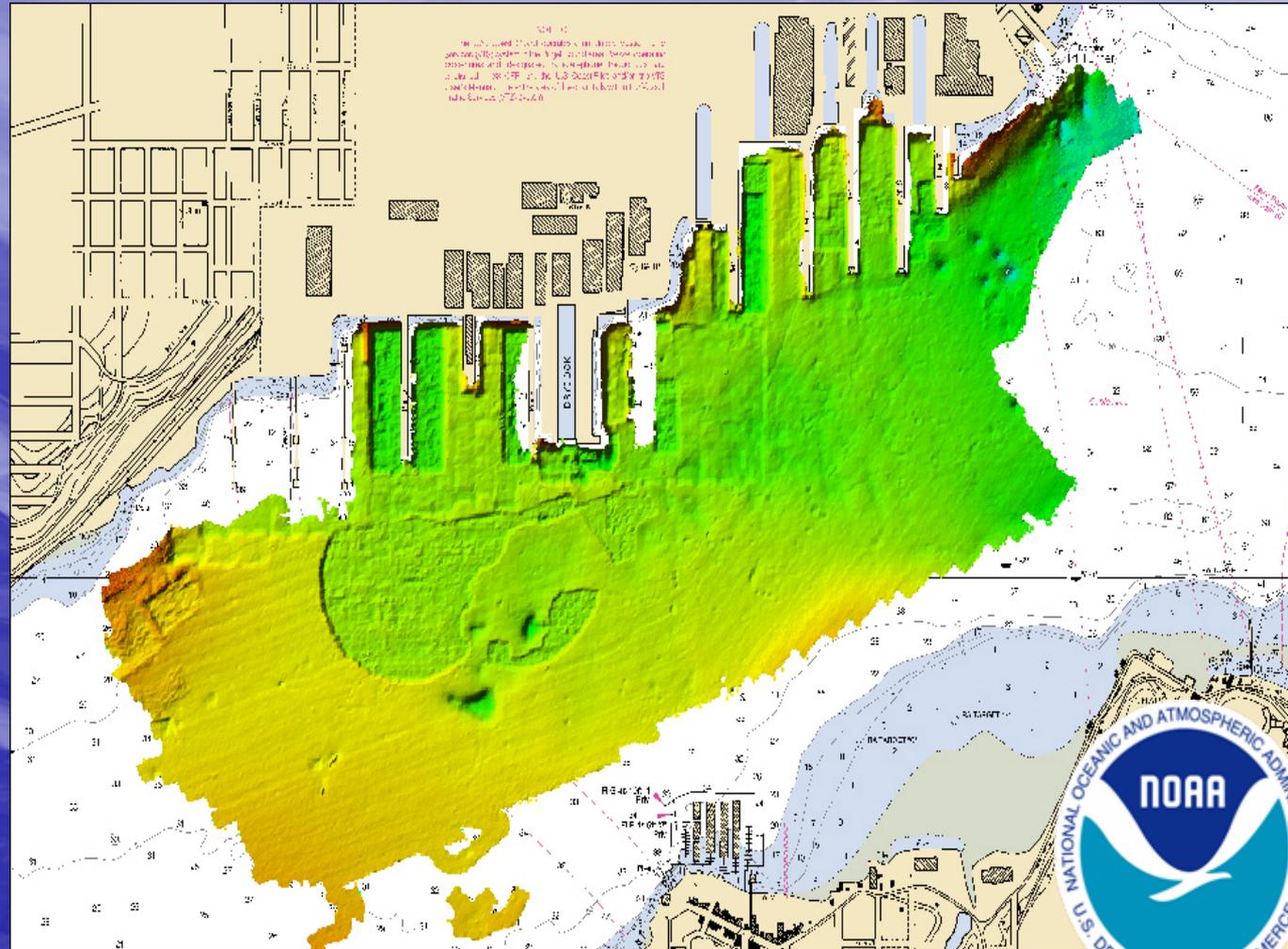
# Port Angeles

- RAINIER
- Fall 2007
- Reson
  - 8101 & 8125
- Elac



# Bremerton

- NRT3
- Spring 2007
- Navy request



# Upcoming Survey Efforts

- Rich Passage (RA)
- Entrance to Grays Harbor (RA)
- East Vashon Island (RA)
- Tacoma (NRT)
- Balch Pass (NRT)
- Columbia River (Contractor)
- Oak and Crescent Harbors (Contractor)



# Washington State Seafloor Mapping Workshop

## Hydrographic Data is multi-use

- Habitat Classification
- Geology
- Tsunami Modeling
- Engineering

