PROPOSED
SIXTH EXPLANATION OF SIGNIFICANT DIFFERENCES

OPERABLE UNIT 1 (OU1) AND THE OUTER HARBOR
NEW BEDFORD HARBOR SUPERFUND SITE

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June 27, 2017

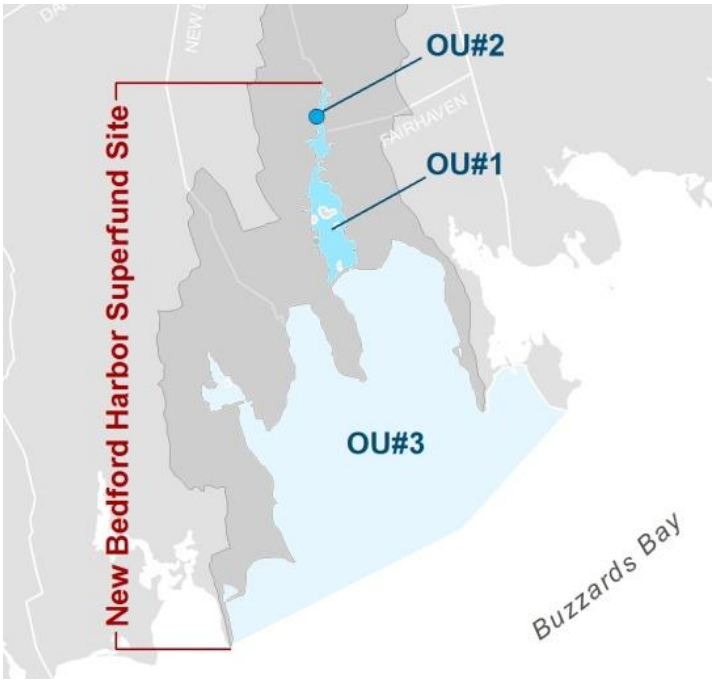
OVERVIEW

- Purpose of Explanation of Significant Difference (ESD)
- Basis for Proposed Change
  - Completed Remediation
  - Remedial Investigations (RI) and Major Finding of 2017 RI
- Addressing Remaining Risk
- Reviewing Files Associated with the ESD
- Submitting Comments on the ESDs

PURPOSE OF 6TH ESD

- **Modify the 1998 Record of Decision (ROD) to:**
  - **Expand the OU1* Area to include the Outer Harbor (OU3)**
  - **Eliminate the designation of "OU3"**

- Continue to perform the OU1 Remedy, including:
  - Implementation of institutional controls on seafood consumption
  - Performing long-term seafood monitoring
  - Monitoring the effect of the remedy on the entire Site, including the Outer Harbor
  - Conduct Five-Year Reviews to evaluate the remedy



*Operable Units (OUs)

BASIS FOR PROPOSED CHANGE
Completed Remediation

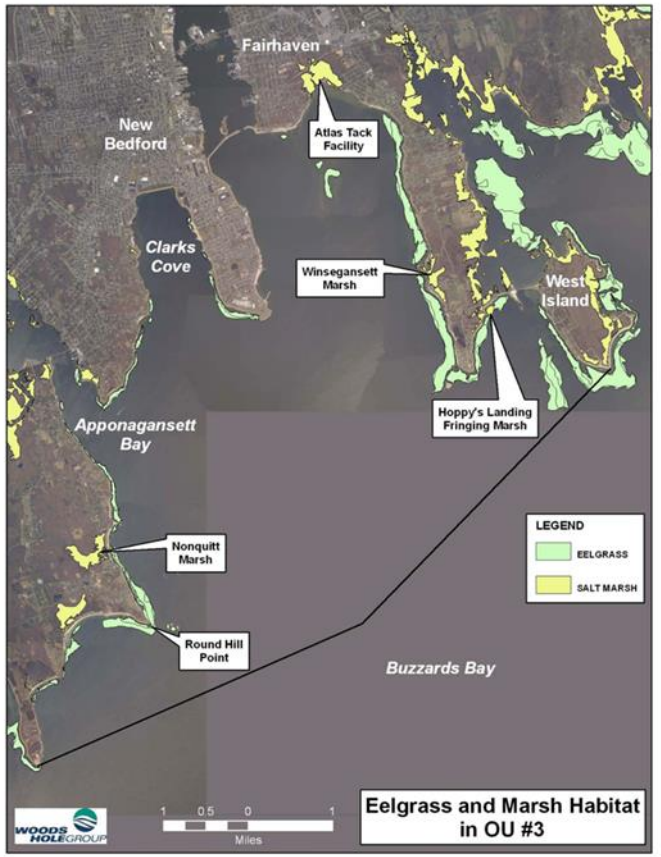
- Areas in Outer Harbor with elevated sediment PCB concentrations addressed, as part of:
  - The OU1 ROD – *Pilot Cap covered areas over 50ppm in 2005*
  - State Enhanced Remedy - *Mitigation Project covered area in 2015*

BASIS FOR PROPOSED CHANGE (Cont'd)
Remedial Investigations

- OU1 ROD, noted: ***Further investigation of the outer harbor area of the Site will be undertaken as part of operable unit three to determine whether additional remediation is appropriate for this area.*** (Section IV of 1998 ROD)

- Remedial Investigations (RI) in the Outer Harbor (OU3), began in 2009

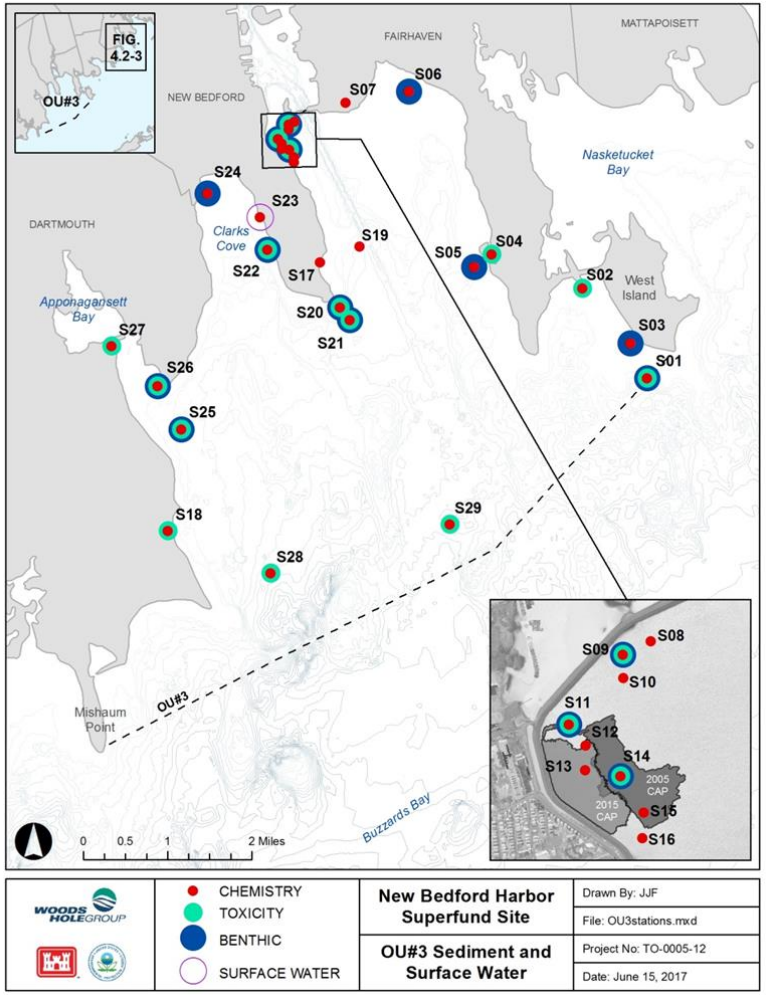
    - Included the collection of samples from 4 habitat types in OU3 and in corresponding habitats in the reference areas
        - salt marshes,
        - nearshore environments,
        - cap and hurricane barrier stations, and
        - offshore areas.

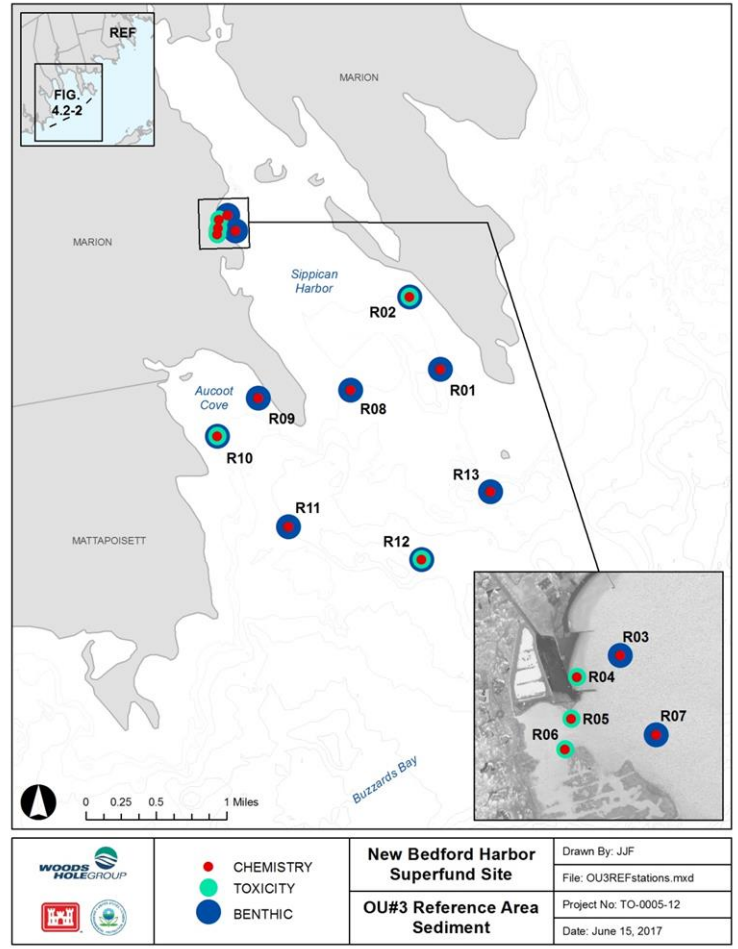


2009 RI Sampling Stations

- 42 Sediment Locations sampled for
  - chemical analysis
  - toxicity testing
  - benthic community analysis
- Surface Water Samples
  - 2009 RI sampling
  - 2010 Flux Study
  - 2015 Passive Sampler Study

Outer Harbor



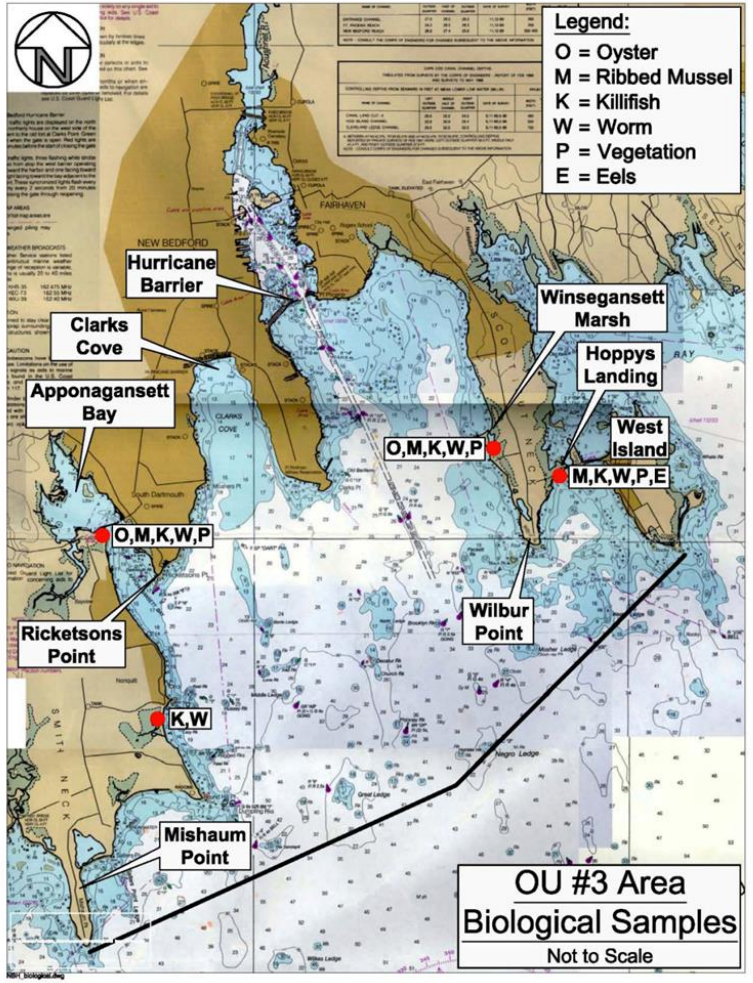


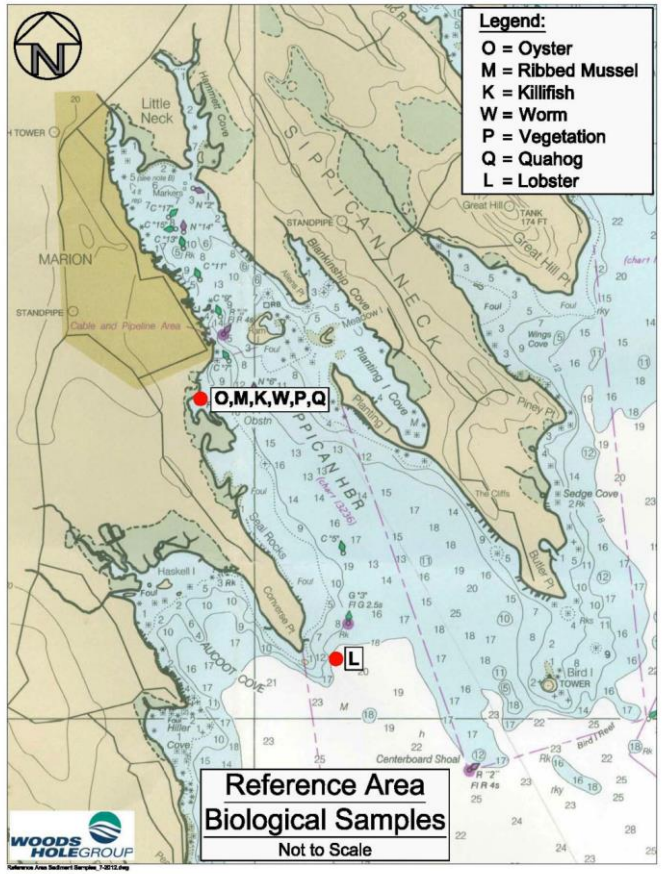
Reference Area

2009 RI Tissue Sampling Stations

- Biological tissue samples
  - Oyster
  - Ribbed Mussel
  - Killifish
  - Worm
  - Vegetation (i.e. Eel grass)
  - Eel
  - Quahog
  - Lobster

Outer Harbor

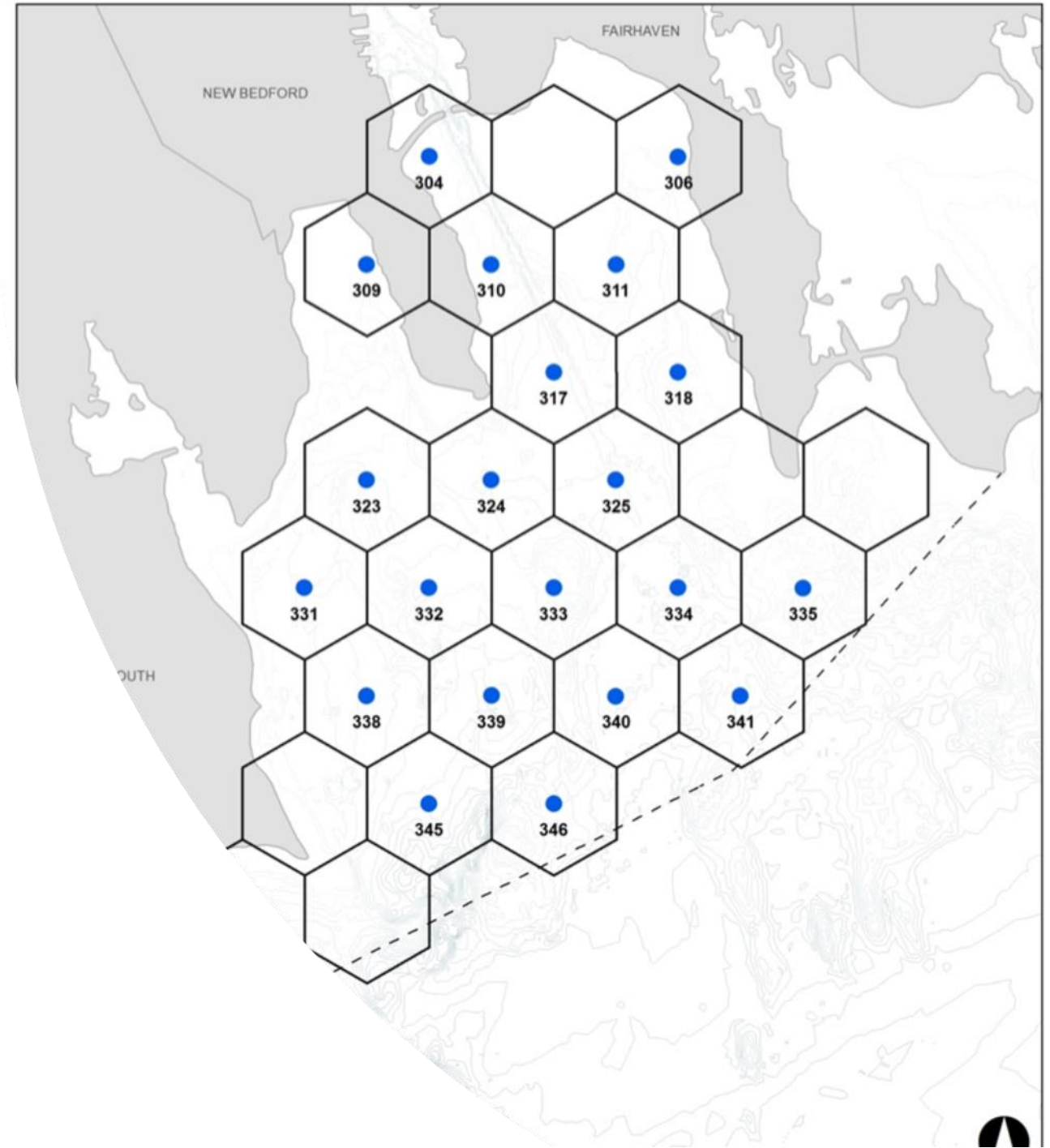




Reference Areas

Long-term Monitoring (LTM) Sampling Stations in Outer Harbor

- Surface sediments collected from 23 sampling locations in 1993, 1995, 1999, 2004, 2009 and 2014
- Among other things evaluated Biological Effect
  - NOAA Effects Range Low (ER-L) = 23 ppb or 0.023 ppm
  - NOAA Effects Range Median (ER-M) = 180 ppb or 0.18 ppm



MAJOR FINDINGS

2017 Remedial Investigation Report

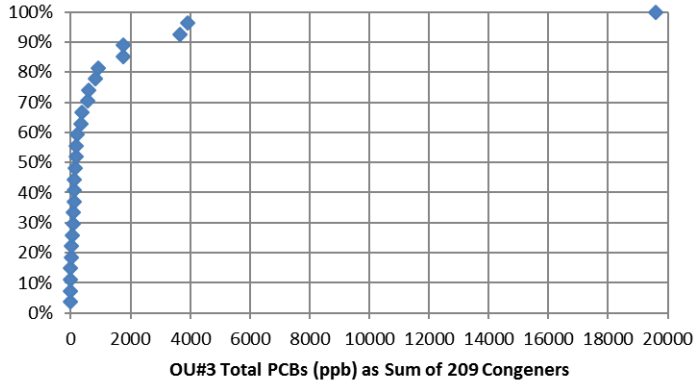
(SERVES AS BASIS FOR PROPOSED CHANGE)

1. PCB concentrations in OU3, Outer Harbor, sediment are generally low and have been decreasing over time
2. PCBs from OU1 contribute a measureable amount of PCBs to OU3 by tidally driven surface water flux
3. There is an unacceptable risk due to potential consumption of PCB contaminated seafood in OU3

Outer Harbor Sediment PCB Concentrations are generally Low and Decreasing

- Comparison of LTM data from 2009 and 2014 events shows
  - mean sediment PCB conc. decreased from 0.24 to 0.17 mg/kg (ppm) over this period
  - samples from 20 of the 23 stations showed a decrease in concentration

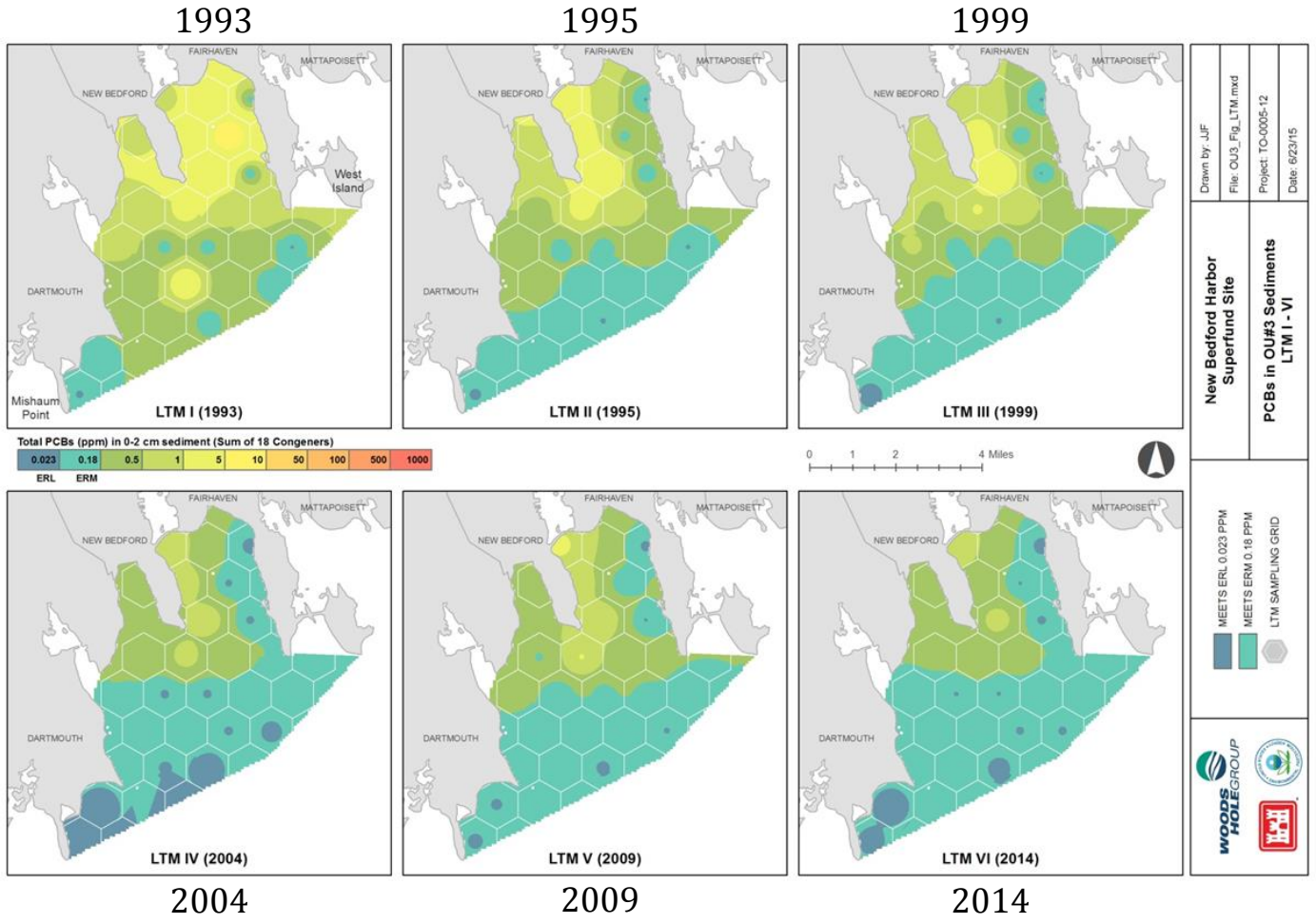
- Approximately 80% of 2009 PCB samples collected outside of the capped area were below 1 ppm
  - Median sediment PCB conc. = 0.166 ppm
  - Mean sediment PCB conc. = 1.33 ppm



- The capped areas in the Outer Harbor range from 0.0347 to 1.19 mg/kg with an average of 0.4 mg/kg

Outer Harbor Sediment PCB Concentrations are generally Low and Decreasing

- Areas below biological effect screening levels expanding
  - Benthic community in OU3 is relatively healthy



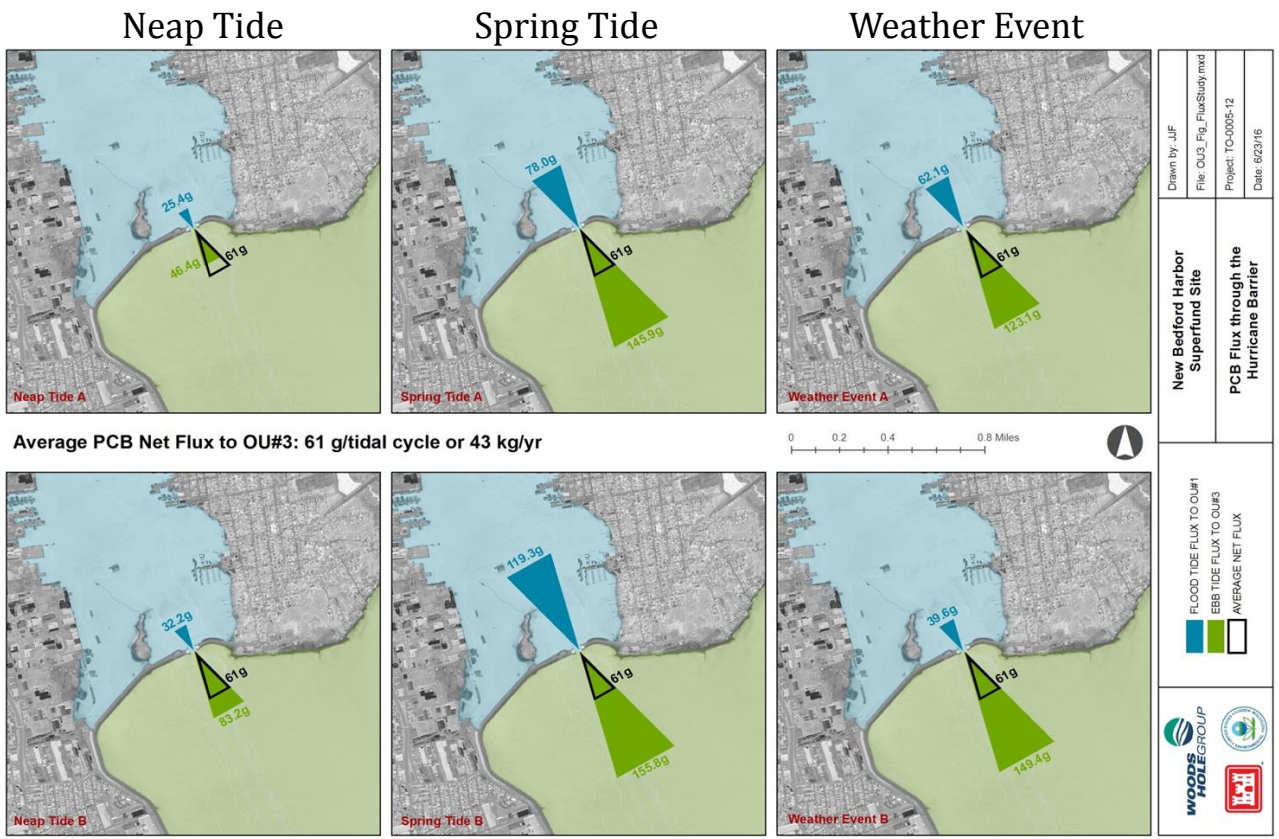
Dark Blue => Meets NOAA Effects Range Low (ER-L) = 23 ppb or 0.023 ppm

Aqua => Meets NOAA Effects Range Median (ER-M) = 180 ppb or 0.18 ppm

Inner Harbor PCBs contribute PCBs to the Outer Harbor by tidal surface water flux

- Flow of PCBs to OU3 is higher than Flow of PCBs into OU1 *(as measured at the hurricane barrier)*
  - Average PCB Net Flux from OU1 to OU3 for the six sampling events was 61g (0.13 lb) per tidal cycle, or 43 kg (95 lb) per year

- Modeling predicts decrease in Surface Water PCBs into OU3 as the OU1 Sediment PCB concentrations decrease

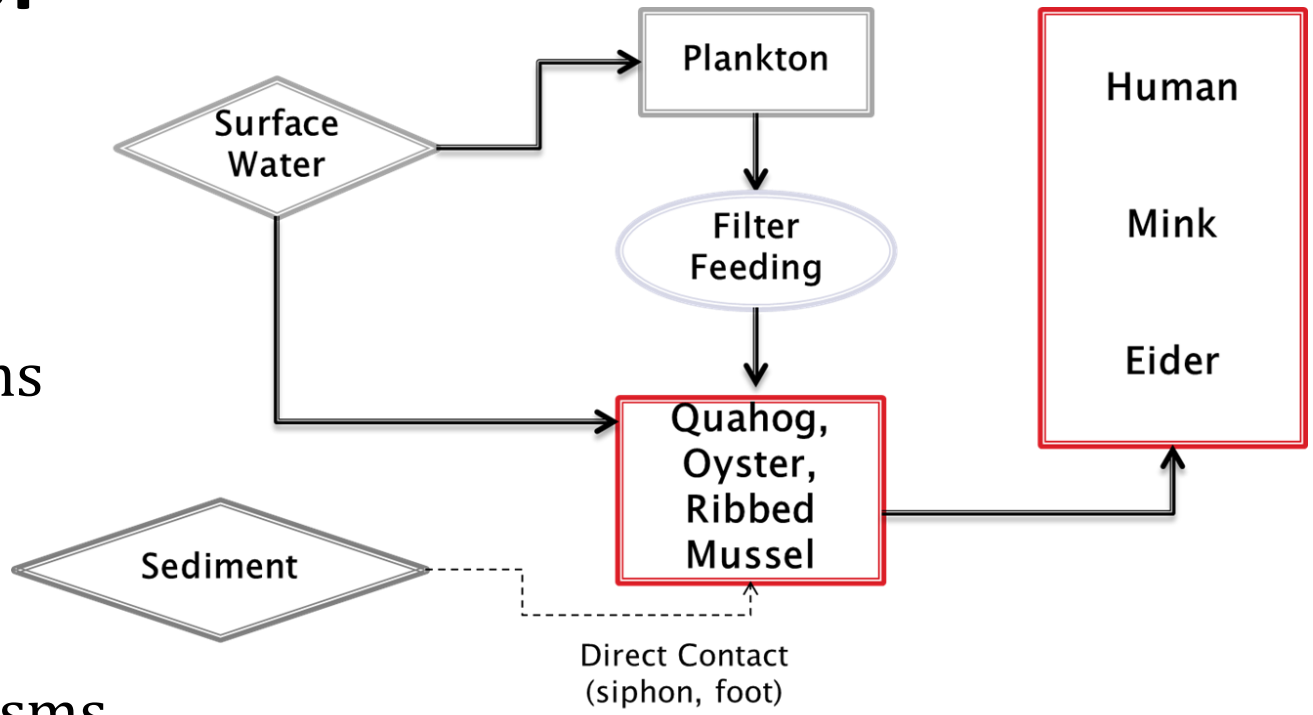


PCB Flux from Inner Harbor to Outer Harbor, 2010 Field Study, 6 Sampling Events

Unacceptable Risk Due To Potential Consumption of PCB Contaminated Seafood

- Surface water PCBs concentrations from OU1 contribute PCBs to receptors in the Outer Harbor

- Risk originates largely through exposure of the consumed organisms to total PCBs or dioxin-like PCB congeners in the surface water, rather than the sediment



ADDRESSING REMAINING RISK

- **Continue to perform the OU1 Remedy, including:**
  - Dredging in the Inner Harbor
  - Implementation of institutional controls on seafood consumption
  - Performing long-term seafood monitoring
  - Monitoring the effect of the remedy on the entire Site, including the Outer Harbor
  - Conduct Five-Year Reviews to evaluate the remedy
- **Merge the OUs – OU1 & OU3**
  - After the Inner Harbor dredging is completed and its impact on the Outer Harbor is evaluated, EPA will determine if additional remedial measures are required

REVIEWING FILES ASSOCIATED WITH THE ESD

- Administrative Record prepared for this Proposed ESD is accessible for public review from:

  New Bedford Free Public Library
  613 Pleasant Street, 2nd Floor Reference Department,
  New Bedford, MA 02740
  (508) 961-3067

  EPA Region 1
  OSRR Records and Information Center, 1st Floor
  5 Post Office Square, Suite 100 (HSC),
  Boston, MA 02109-3912
  (617) 918-1440

  EPA's website: https://www2.epa.gov/new-bedford-harbor

SUBMITTING COMMENTS ON THE ESD

- Comment Period: **June 28, 2017 – July 27, 2017**
- Submit your comments by mail, hand delivery/courier, to:

  Kimberly White
  Remedial Project Manager
  New Bedford Harbor Superfund Site
  EPA Region 1, Office of Site Remediation and Restoration
  MC: OSRR-07-1
  5 Post Office Sq., Suite 100,
  Boston, MA 02119

- Comments may also be submitted electronically to:

  white.kimberly@epa.gov or

  NewBedfordHarbor@epa.gov