

# ***Balancing the Development and Maintenance of Waterways with Ecosystem Protection and Restoration***

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**US Army Corps of Engineers®**  
New England District



# Theme of This Session - Balance

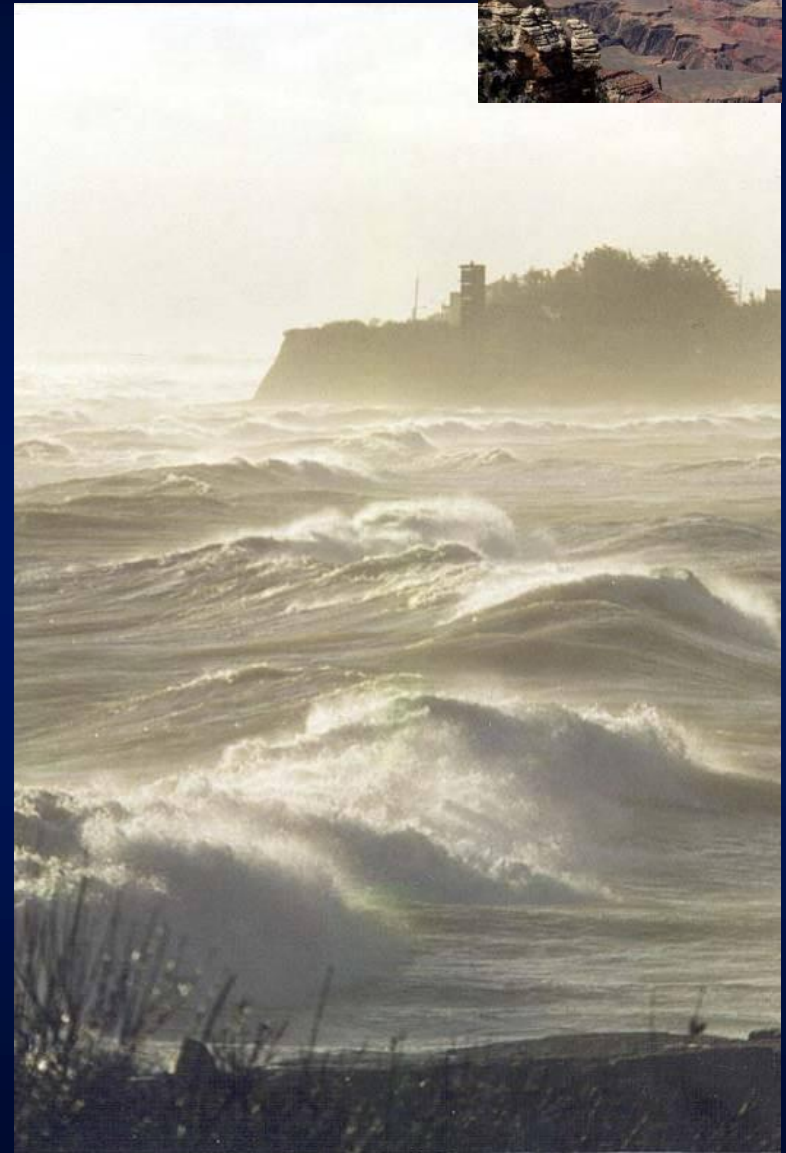
**Maintenance  
&  
Development**

**Ecosystem  
Protection &  
Restoration**



# Long Term Balance Considerations

- continued need for waterway maintenance
- added consideration of water level changes





# Similar Overall Goal for Dredging Projects

**Maintenance  
&  
Development**

**Ecosystem  
Protection &  
Restoration**



# Considerations for All Dredging Projects



- dredging impacts
- disposal impacts



- suitable material
- unsuitable material



# Suitable Dredged Material - Determination

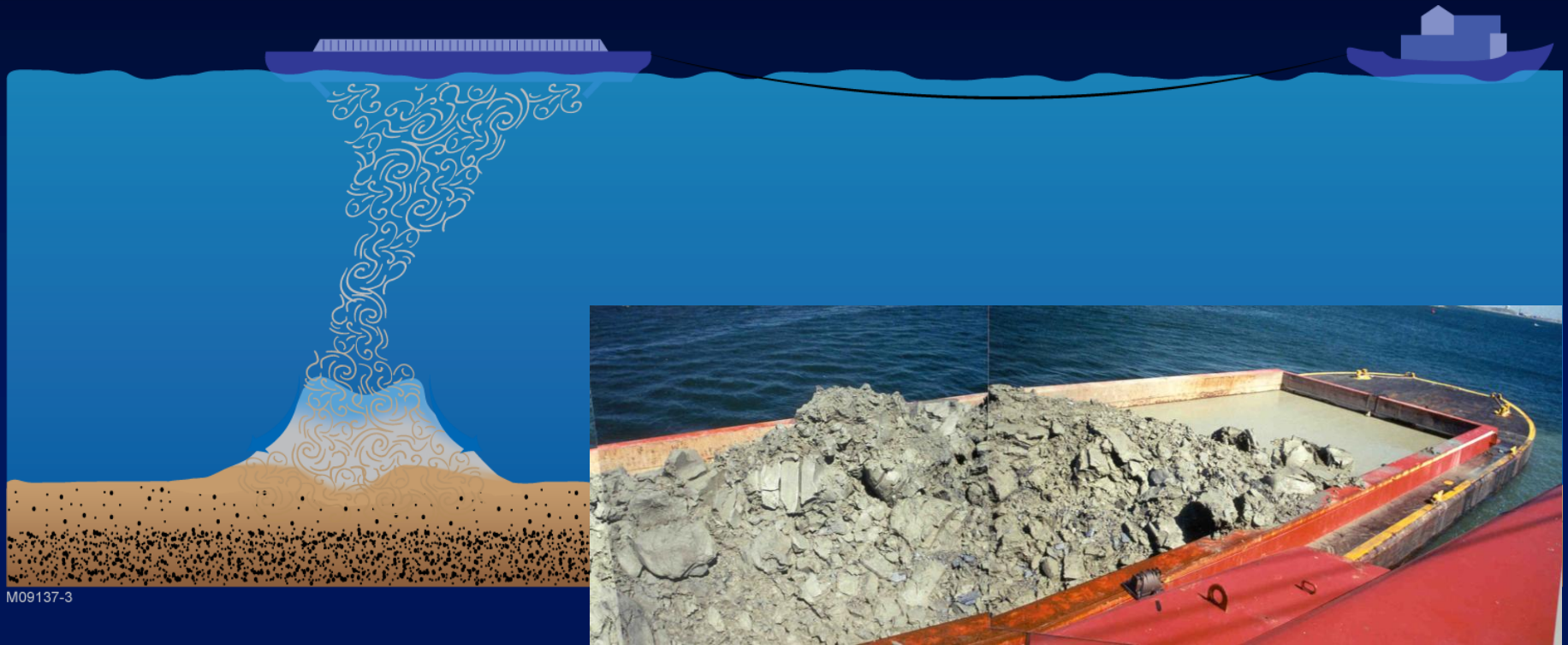


**testing:**

- **physical**
- **chemical**
- **biological**



# Suitable Dredged Material - Determination

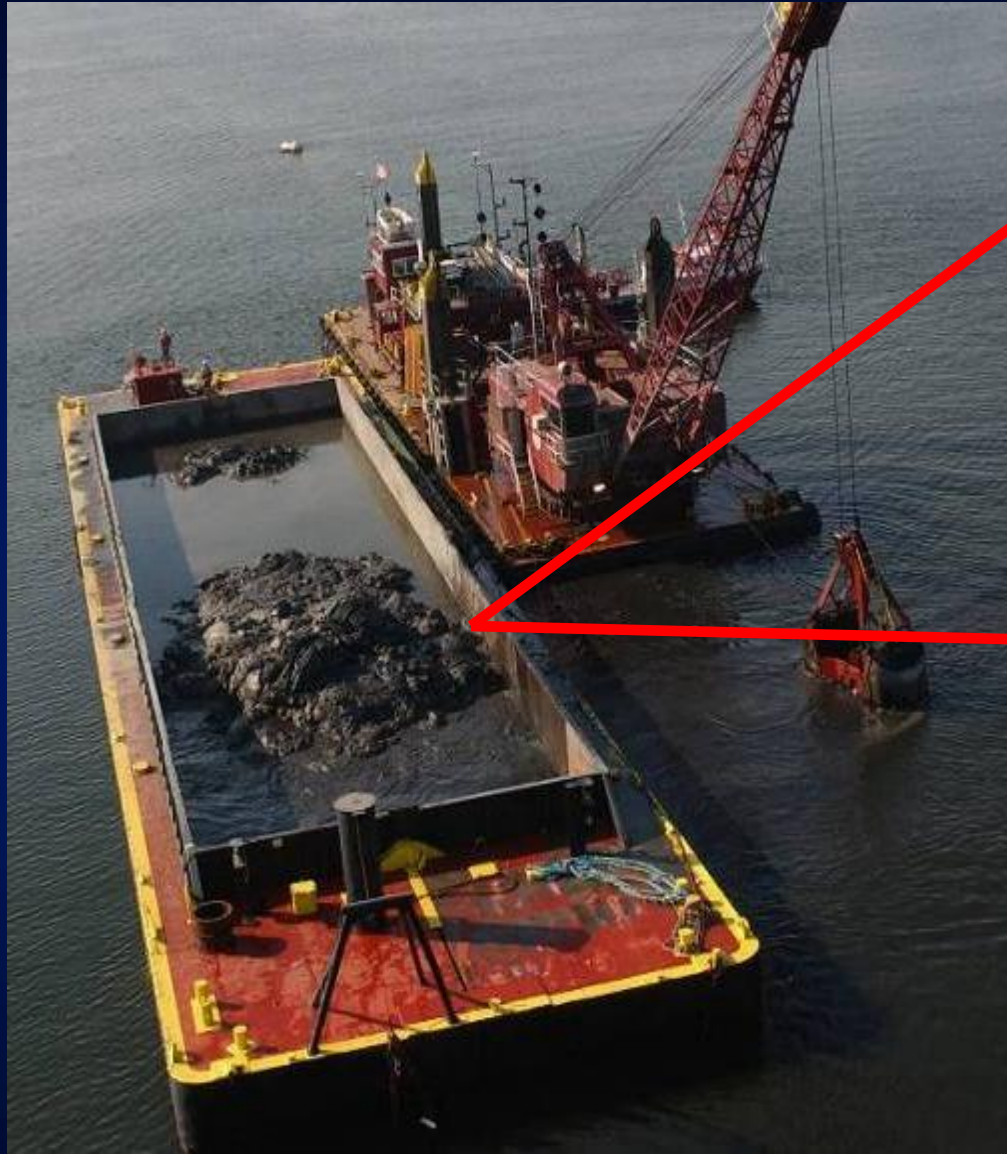


M09137-3

**“Suitable” for open water placement based on testing**



# Suitable Material - Placement Options



## Upland

- construction base
- landfill cover
- beach nourishment

## In Water

- beach nourishment
- marsh/mudflat
- open water placement



# Suitable Material – Dredging Considerations

- water column and benthic habitat
- fisheries
- endangered species





# Suitable Material - Placement Examples



- beach nourishment
- mudflat creation





# Challenges of Urban/Industrialized Sites

Development projects may uncover legacy issues





# Unsuitable Dredged Material - Determination

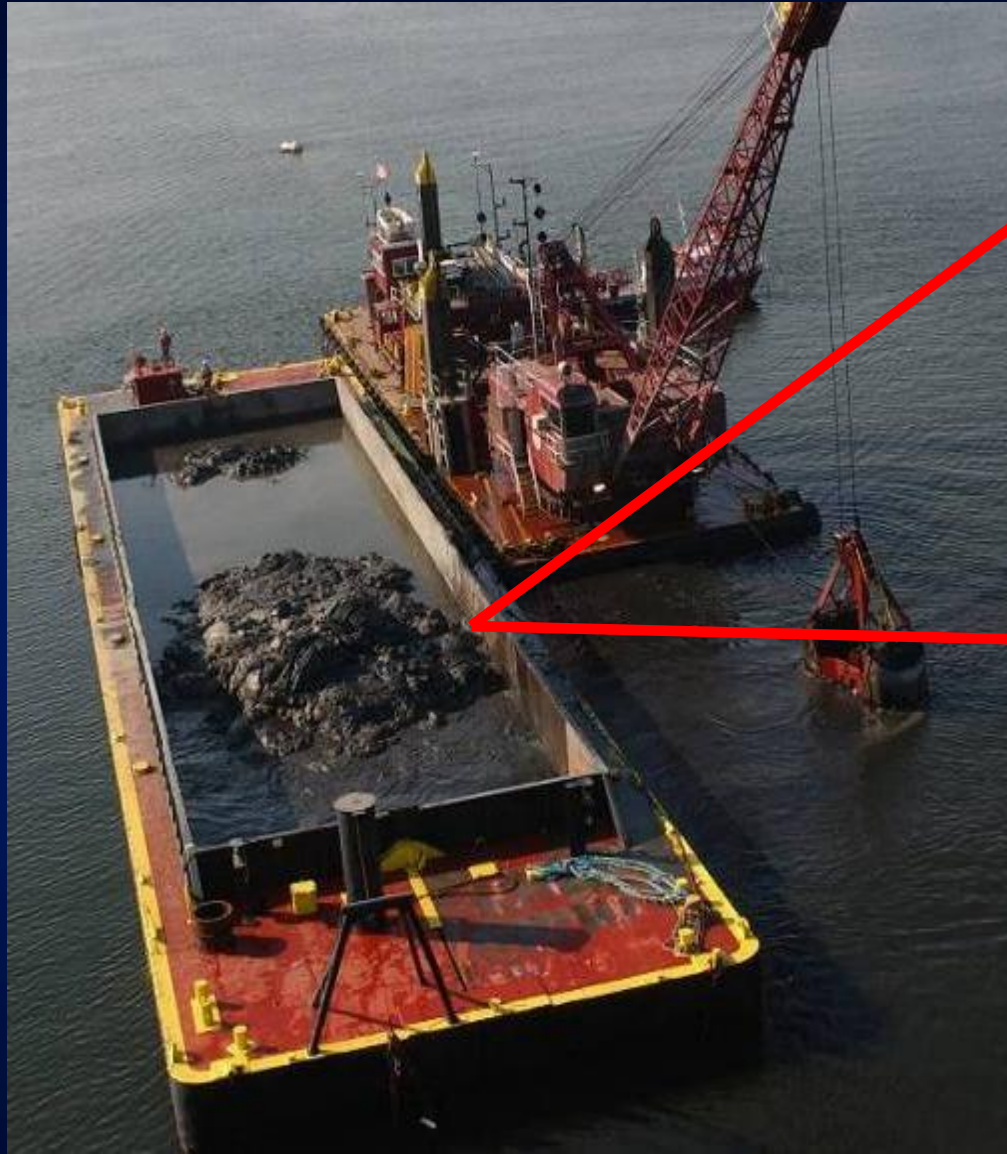
testing:

- physical
- chemical
- biological

Assessed as “unsuitable” for  
unconfined open water  
placement



# Unsuitable Material - Placement Options



## Upland

- landfill
- confined disposal facility
- treatment and reuse

## In Water

- confined open water placement
- confined aquatic disposal (CAD) cell

# Continued Goal of Balance

**Maintenance  
&  
Development**

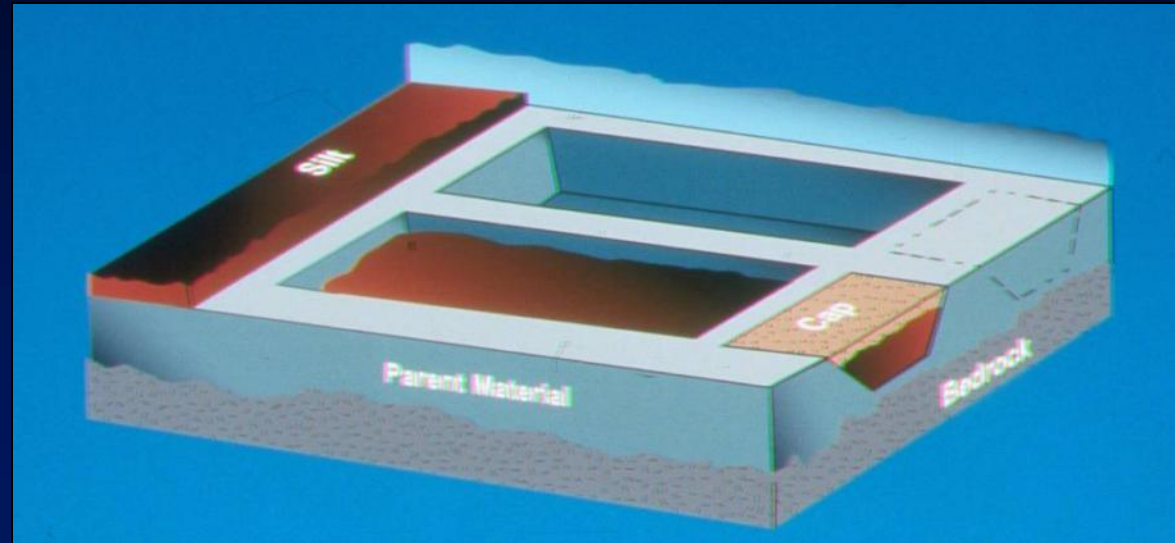
**Ecosystem  
Protection &  
Restoration**





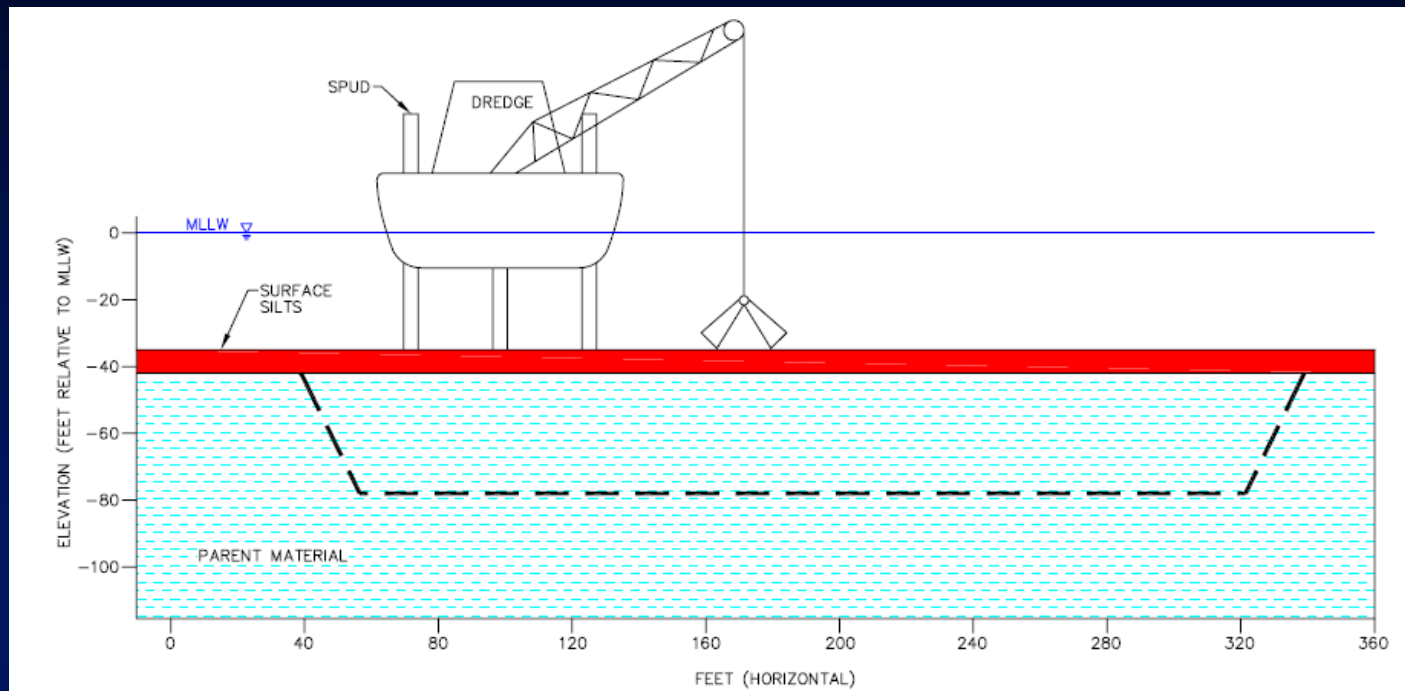
# Confined Aquatic Disposal (CAD) Cell

- cells constructed beneath existing channel or harbor bottom



- alternative to more traditional upland confined cell

# CAD Cell Construction



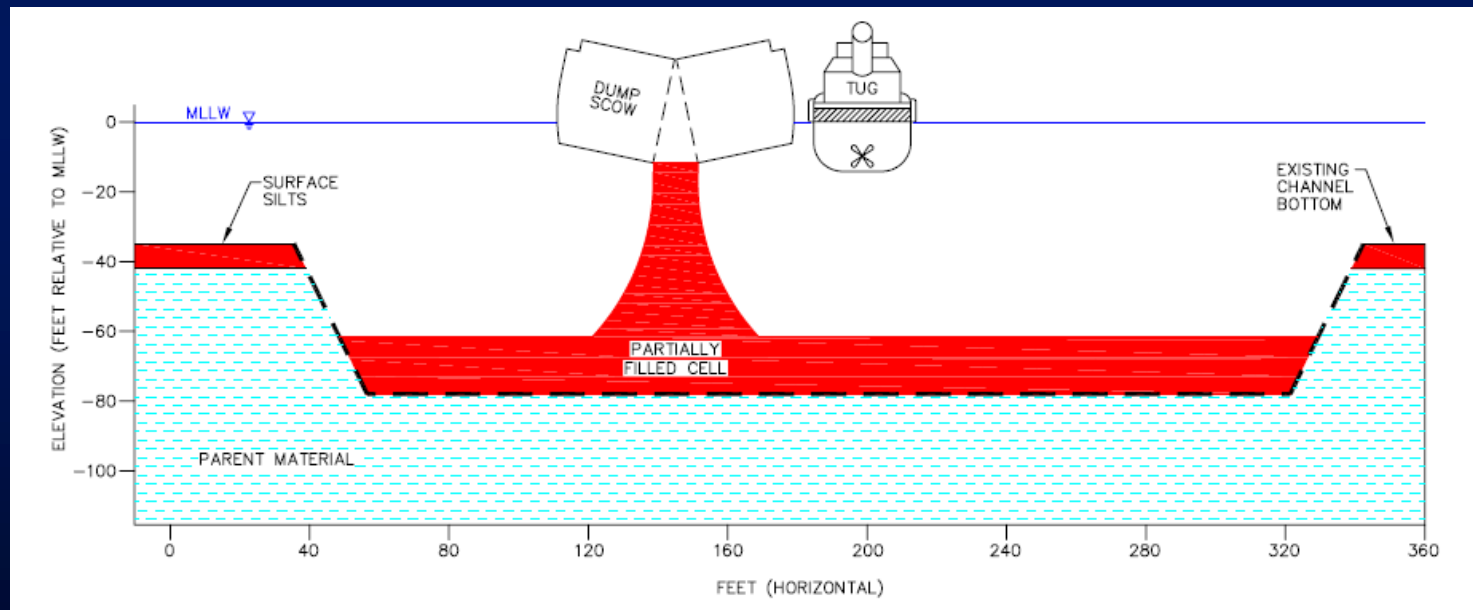
- surficial layer removed/stored
- underlying parent material may have beneficial use



# CAD Cell – Dredged Material Placement



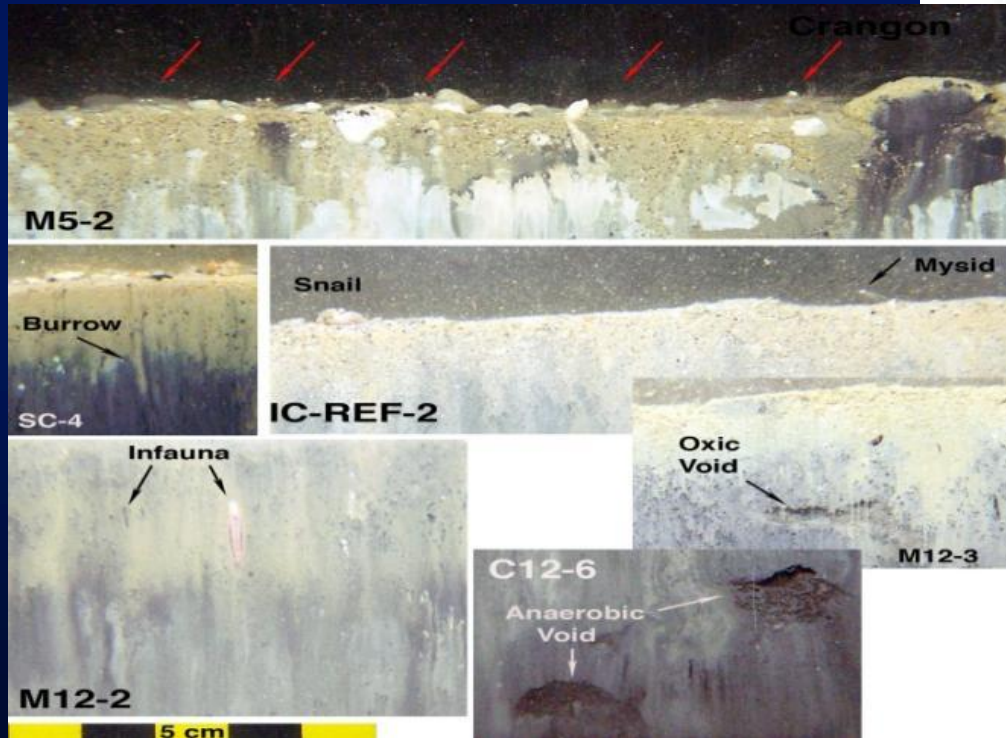
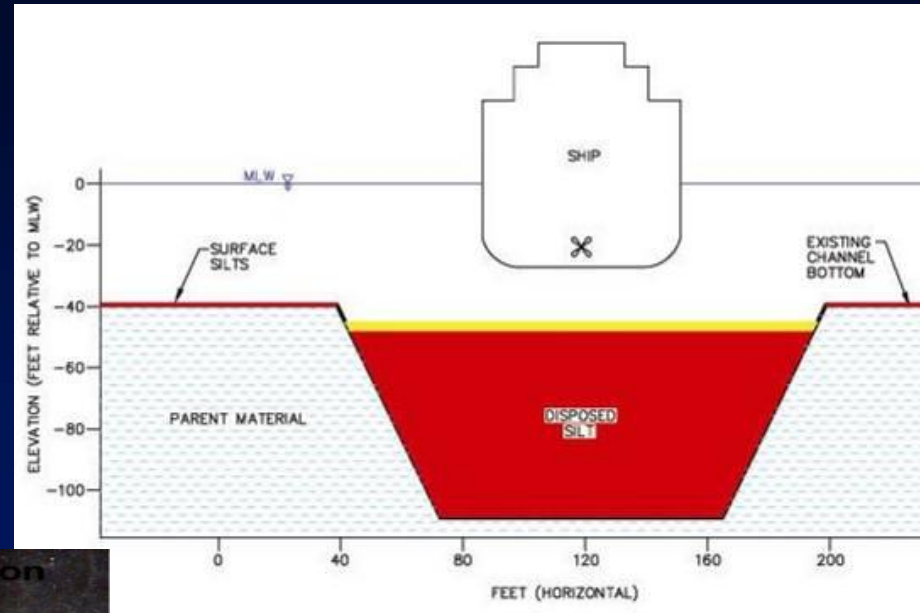
Typical  
split-hulled  
scow  
placement





# CAD Cell – Long Term

- cells may be capped with cleaner material or allowed to “self-cap” with ongoing deposition

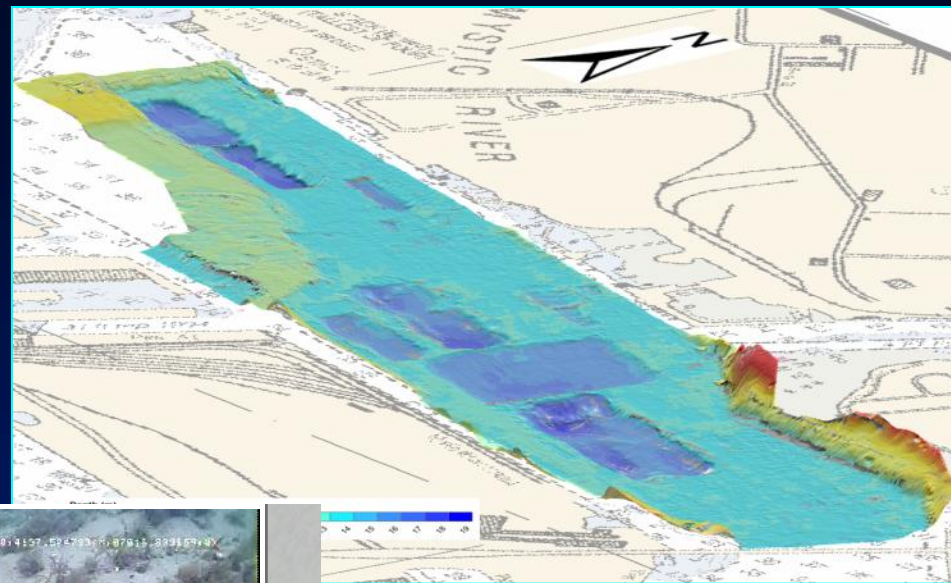


- stability of cells – ensure unsuitable material remains sequestered

- assess biological recovery

# CAD Monitoring Examples

- bathymetry of in-channel cells



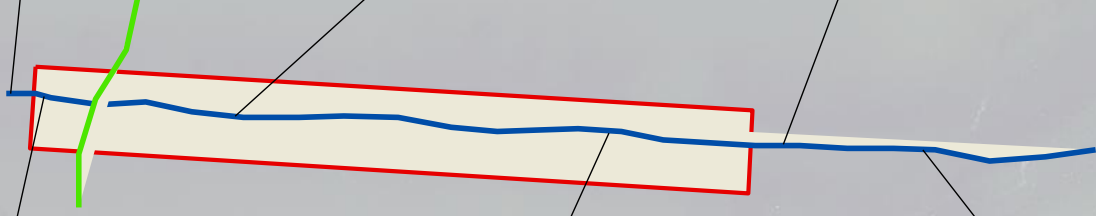
-22:30 Shell hash and crab carapaces on the edge of a Codium sp. field.



-17:00 Dense field of Codium (Green Algae)



-6:00 Sandy substratum, shell hash east of CAD Cell



-21:30 Snail trails and small burrows (~0.5cm)



-9:00 Dense field of Codium (Green Algae)

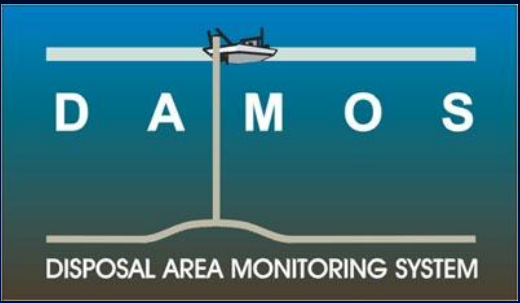


-3:00 Horseshoe Crab on substratum outside of CAD Cell

- video transects over CAD cell

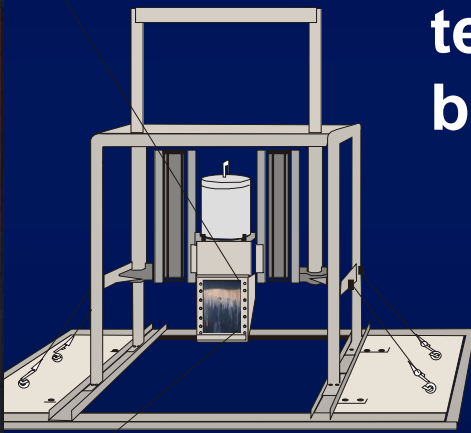
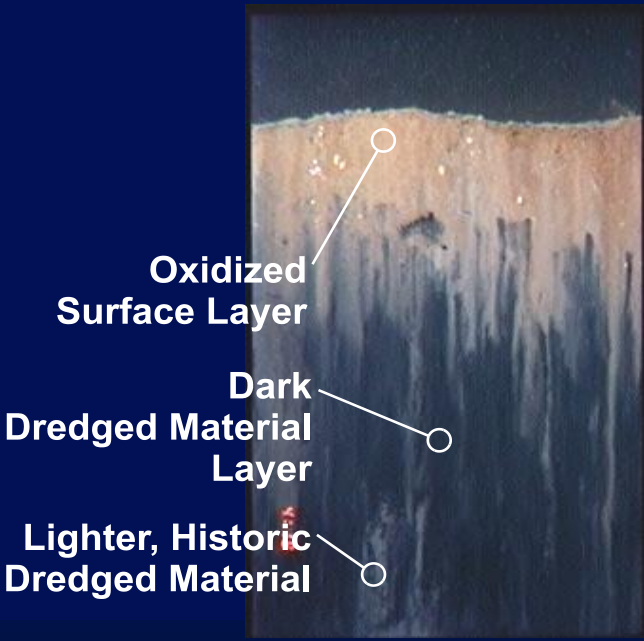


# Disposal Area Monitoring System



- U.S. Army Corps program dedicated to monitoring aquatic dredged material disposal sites

- primary tools include sediment imaging techniques and bathymetry



- site specific and general technique contributions

Baseline Bathymetric Surveys at the Central and Western Long Island Sound Disposal Sites  
July 2005

Disposal Area Monitoring System  
DAMOS

Prepared for  
US Army  
Corps of Engineers  
New England District

2008 DAMOS Data  
Massachusetts E  
Site Capping De

Contribution 177  
November 2007

US Army Corps of Engineers  
New England District

WSPW2007-0-0002  
Task Order 6  
0000-444-520



**Questions? - thanks for your attention**



**Acknowledgements:**

- Jay Mackay (NAE)
- Joe Germano, Ray Valente (Germano & Assoc.)
- Drew Carey (CoastalVision)
- Chip Ryther, Chris Wright (CR Environmental)
- Stephanie Wilson, Aaron Hopkins (AECOM)
- Robert Diaz
- Passaic Historical Society

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