

Thin-Layer Placement at the Mouth of the Columbia River South Jetty Site

Thin-Layer Placement Meeting

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Jacksonville Beach, FL



US Army Corps of Engineers
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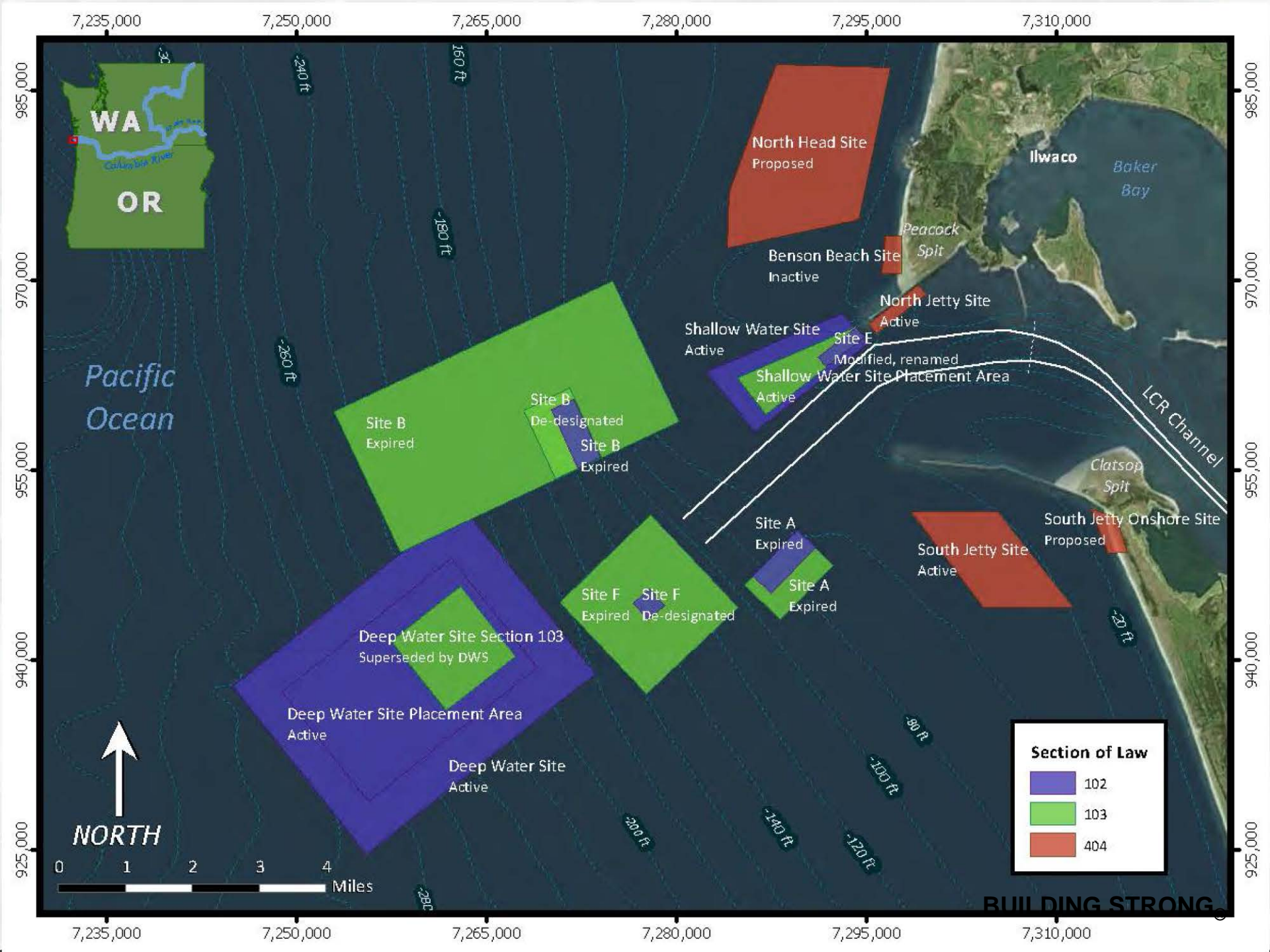


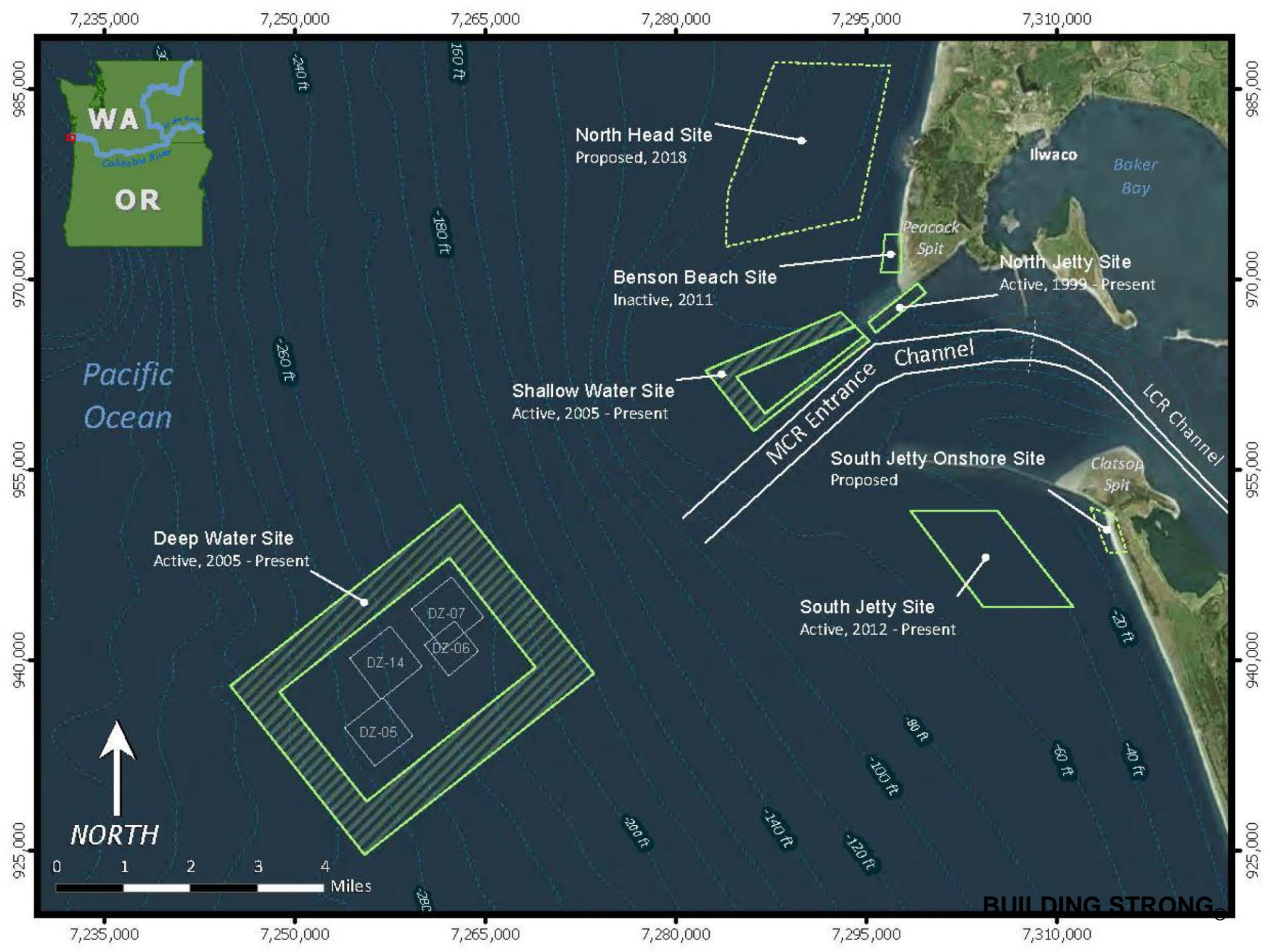
Mouth of the Columbia River– Gateway to the Columba-Snake River System

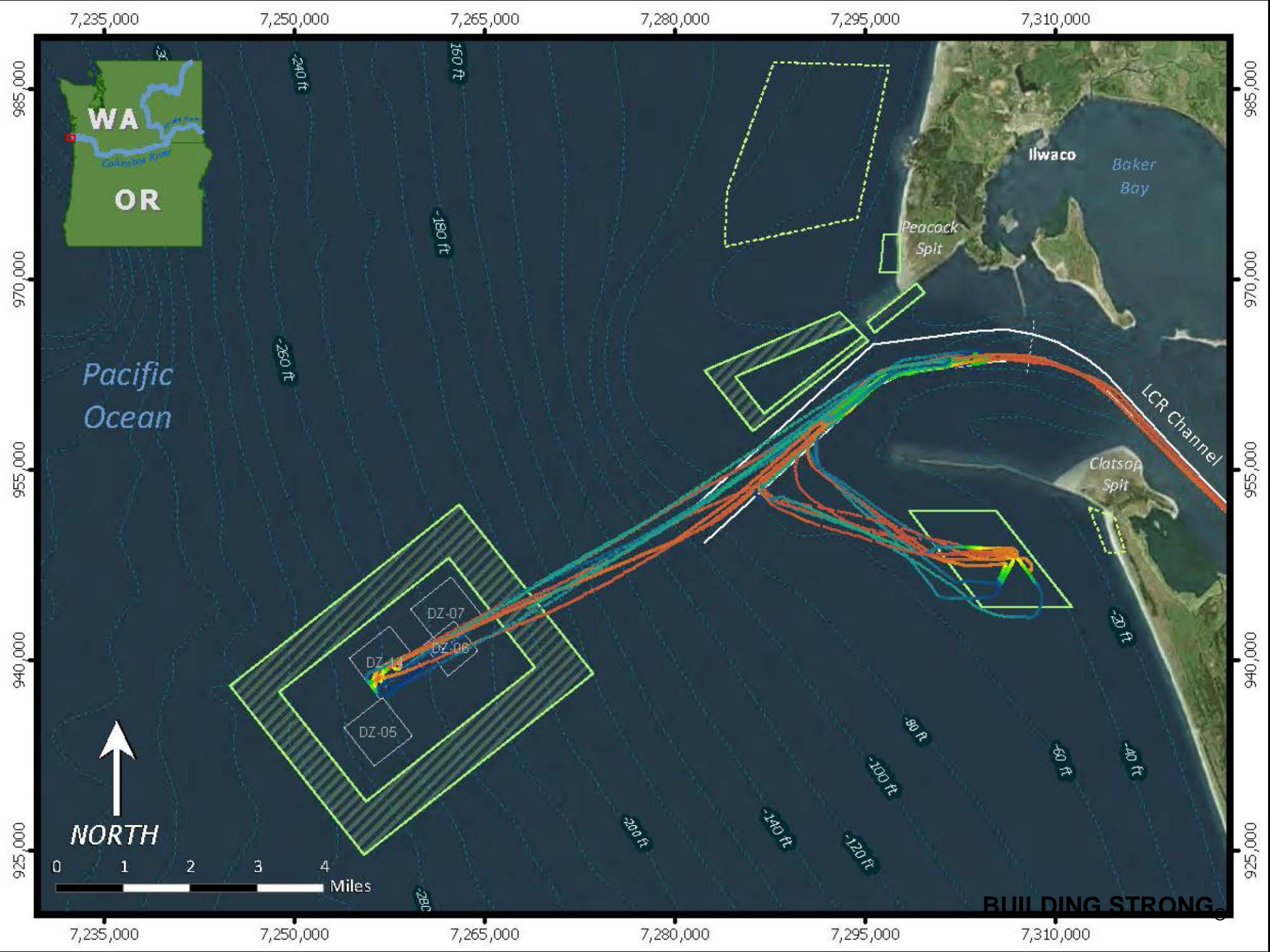
Columbia River at the Mouth, WA & OR

Entrance channel 55/48 feet deep, 2640 feet wide, and 6 miles long.

- Average annual dredging 3.5-4.5 MCY, June-Sept work window.
- Support Columbia-Snake River Navigation System
 - \$24 Billion worth of U.S. products and 46 million tons of cargo annually.
 - Largest wheat and barley export gateway in the Nation.
 - Third largest grain export gateway in the World.
 - Over \$930M in commercial investments-to-date because of the deepening.
 - Supports 40,000 local jobs.
- Large group of stakeholders (CRCFA), varying concerns cause Wicked Problems.
- Focus on the beneficial use of dredged material and Engineering with Nature to prevent 'wasting' clean sediment resources.
- Innovative monitoring program to build stakeholder trust, leverage opportunities, and collect baseline data for the addition of nearshore beneficial use sites.
- Disposal Mission, responsible use of the placement sites to maximize efficiency.

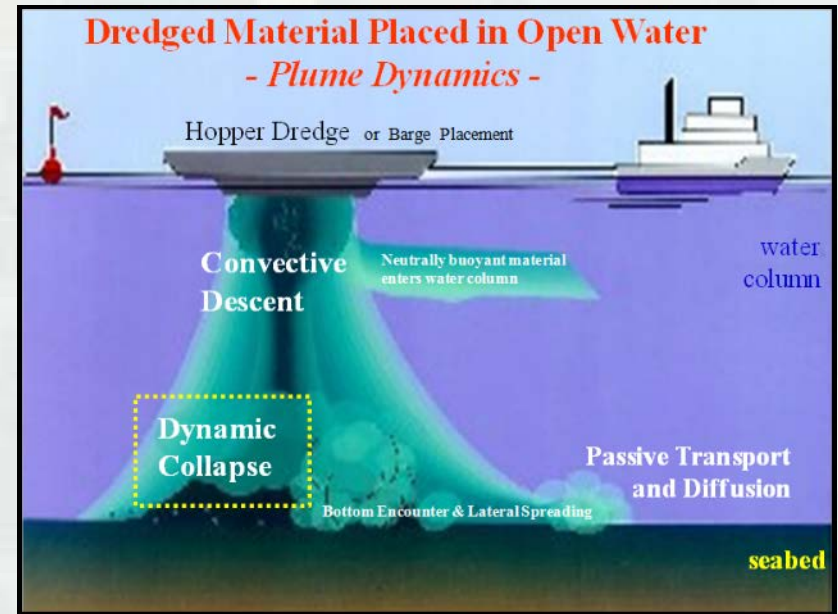






Stakeholder Concerns

- Impacts to Commercially Sensitive Species
- Permitting
- Wave Amplification
 - Mounding
 - Safety concerns for fishing fleet
- Historic USACE Relationships
 - Distrust
 - Previous Projects
 - Views of the Federal Government
 - Litigation
- Sediment Quality
 - Place like on like material
- Public Perception
 - Proximity of placement area to the beach
 - Ft. Stevens State Park



Addressing Stakeholder Concerns

Methods used to meet concerns

- Thin-layer placement with the Dredge ESSAYONS
- Benthic Video Sled
 - Presence/Absence of species
- Deposition Monitoring Instruments (CamPods)
 - Deposition
 - Acute crab response
- Acoustic Doppler Current Profiler (ADCP)
 - Dredge plume velocity, turbidity, etc
 - Deposition
- Multi-beam surveys
 - Deposition
- Acoustic crab tags
 - Crab mortality
 - Crab motility
 - Cumulative impacts
- Environmental Buoy
 - Real-time conditions to inform monitoring team
 - Provide the public with a tool to monitor the conditions in the site
- Automated Video Event Detection and Classification (AVEDac)
 - Software to track species ID and abundance
 - Classification and Counting species

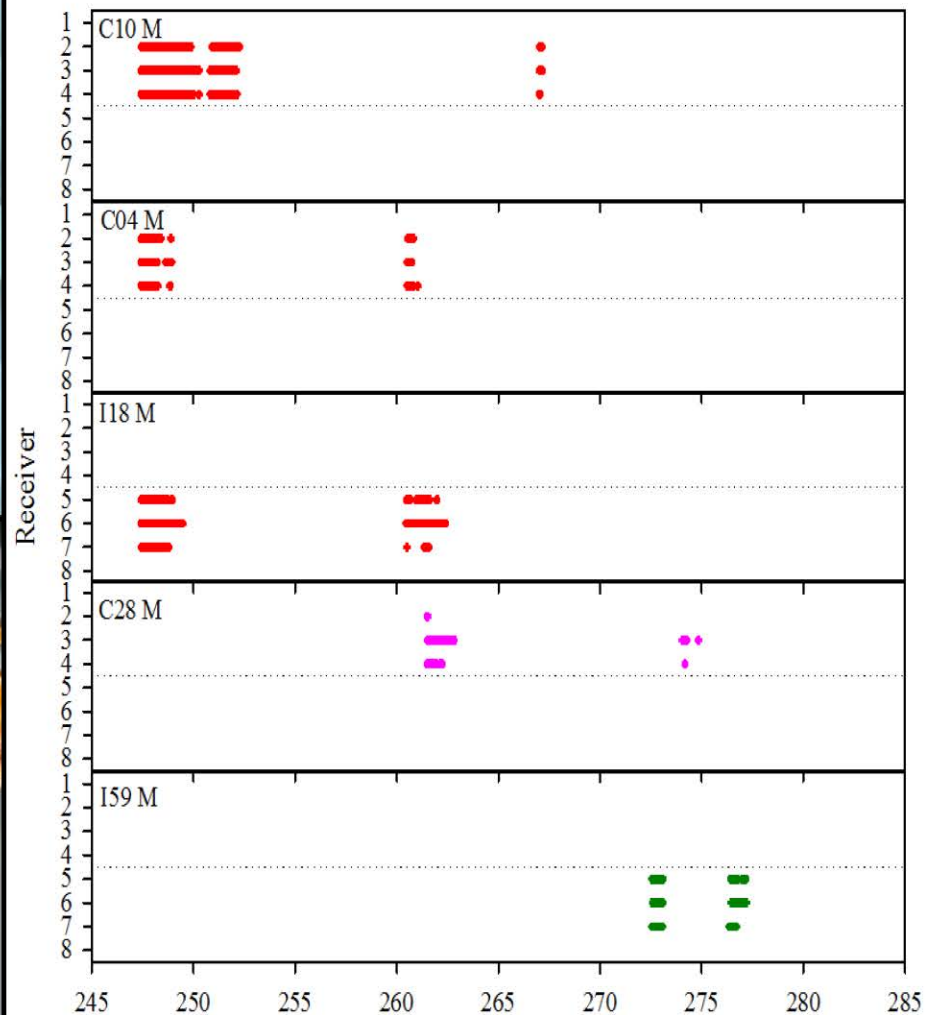
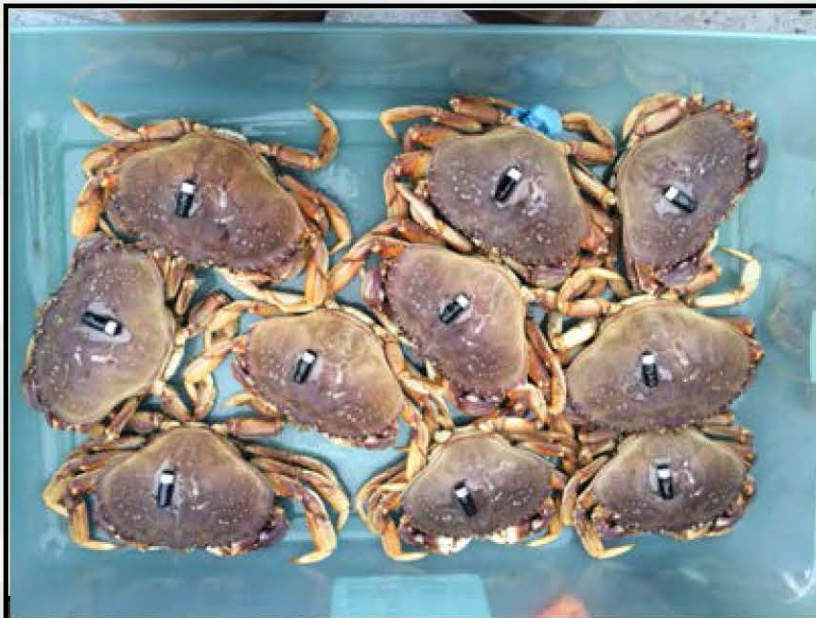
Benthic Video Sled/AVEDac Software

- Replaces trawls
 - Less invasive than traditional methods, no take
- MBARI/ERDC developing Automated Event Detection and Classification (AVEDac) Software

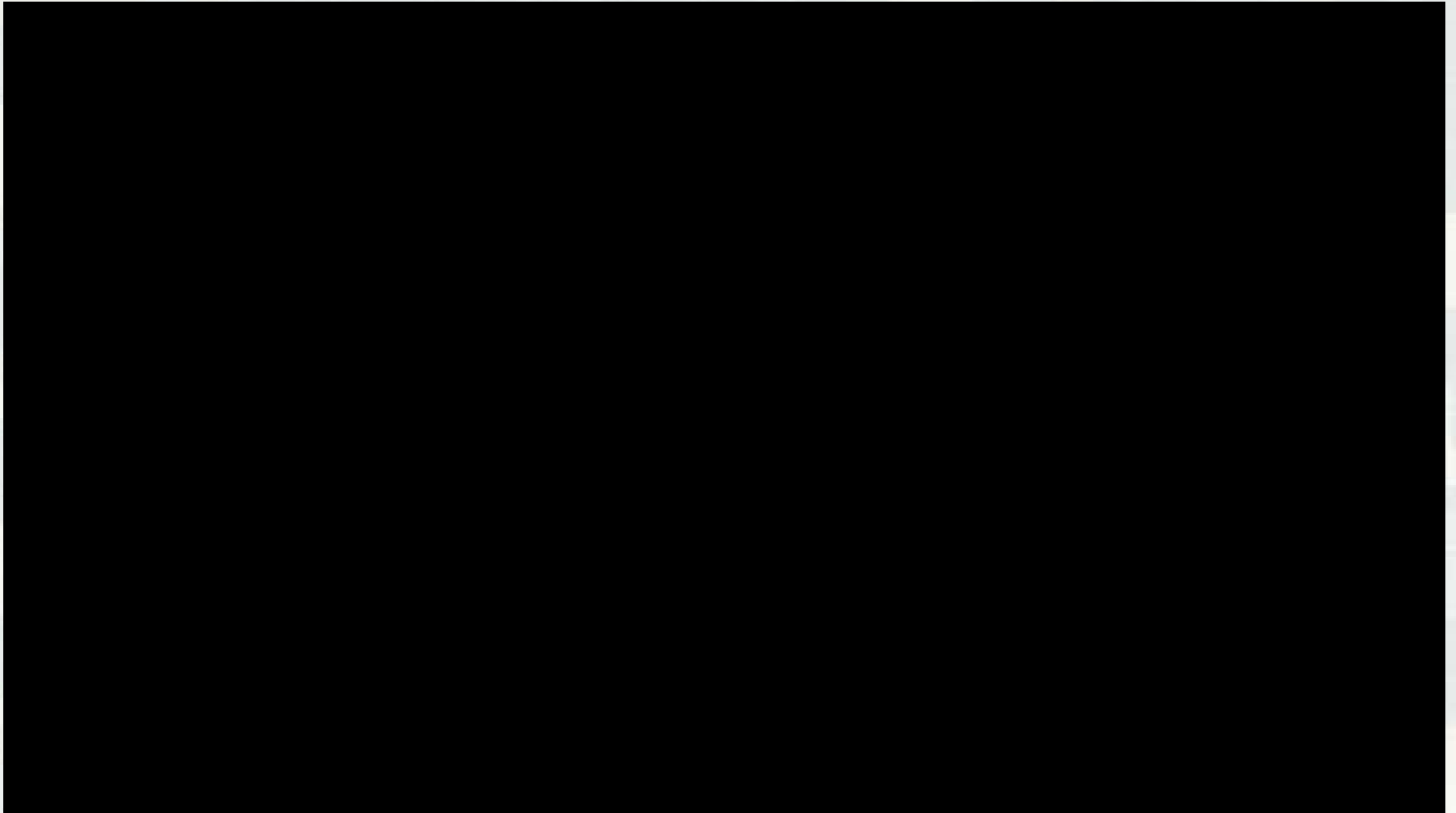


(Photo courtesy of NOAA)

Acoustic Crab Tags

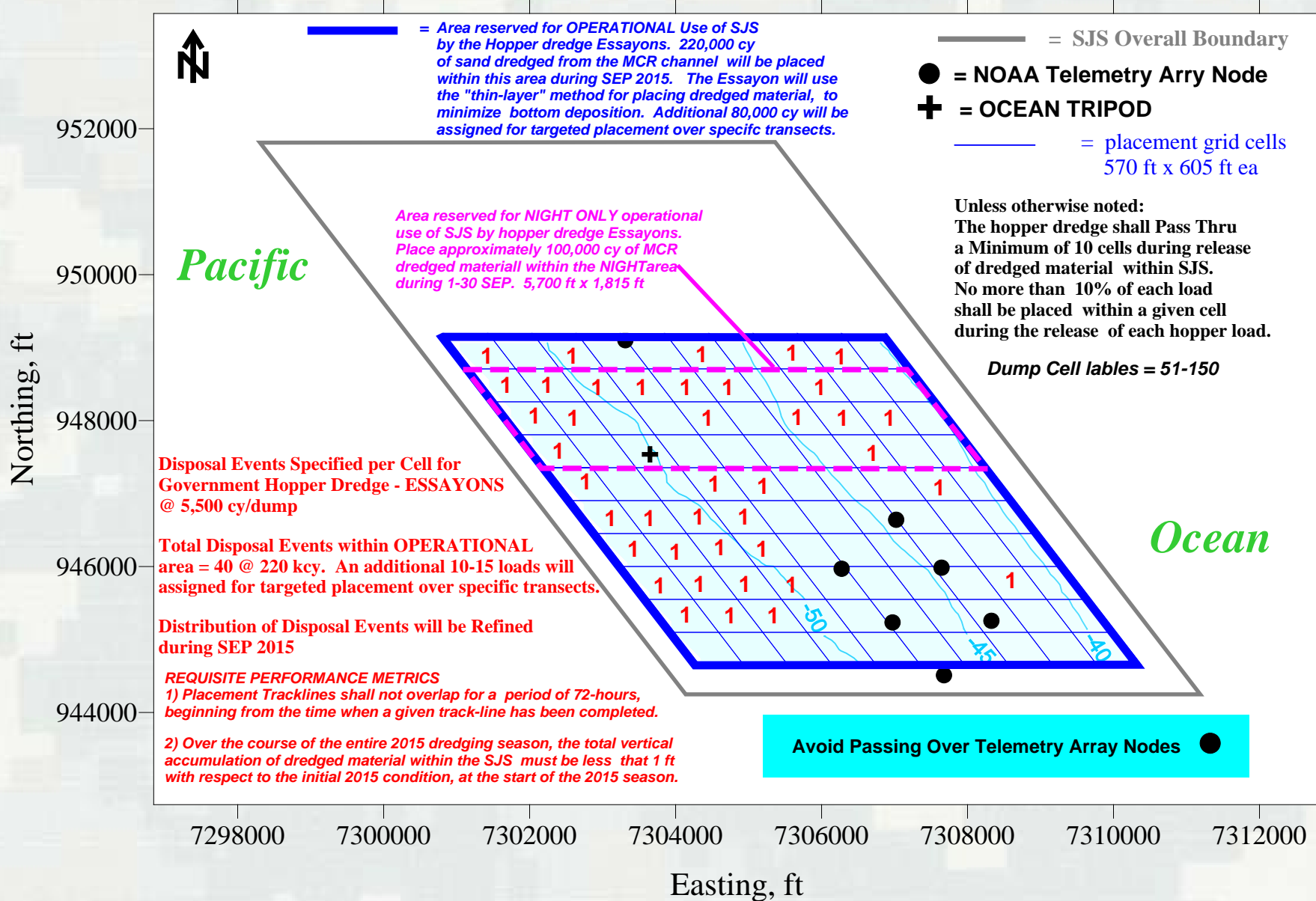


Acoustic Tag Detections

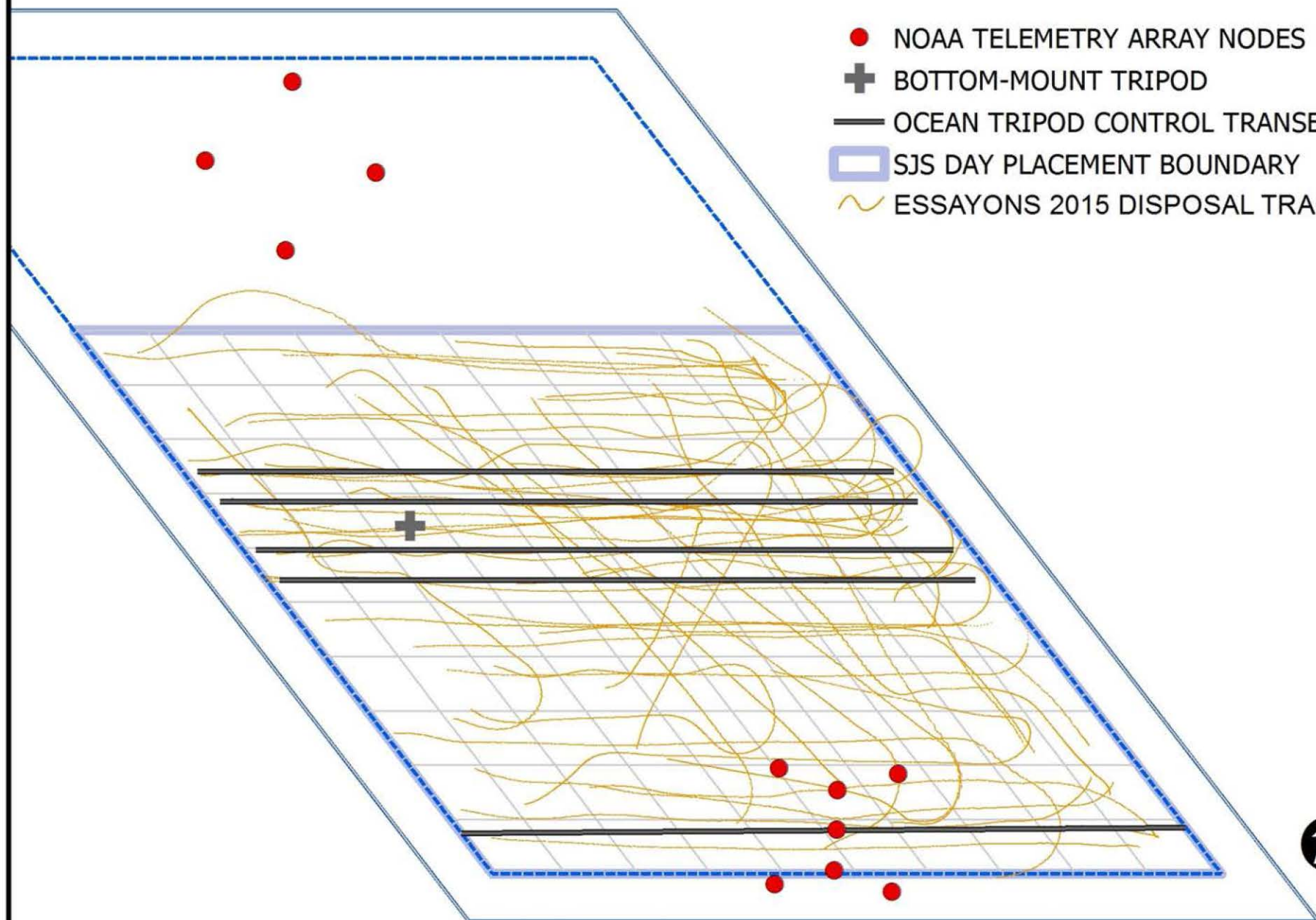


MCR South Jetty Site - SJS (CWA 404)

Operational Site Utilization Plan 1 for 2015: Focus on Using Cells 51-150



- NOAA TELEMETRY ARRAY NODES
- ⊕ BOTTOM-MOUNT TRIPOD
- OCEAN TRIPOD CONTROL TRANSECTS
- ▭ SJS DAY PLACEMENT BOUNDARY
- ~ ESSAYONS 2015 DISPOSAL TRACKS

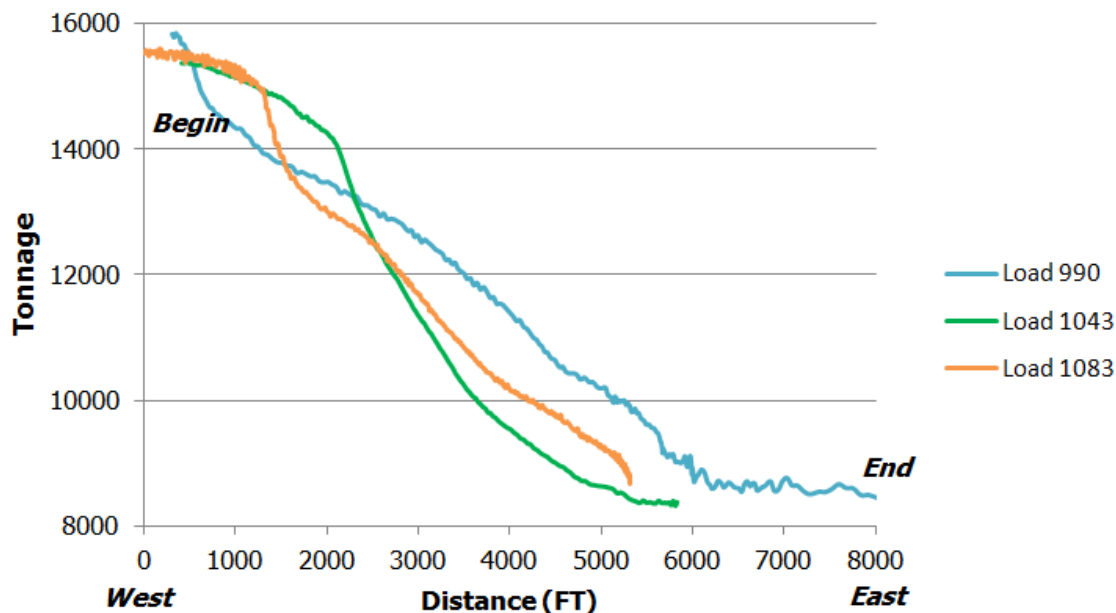


MCR South Jetty Site

0 750 1500 2250 3000 Feet

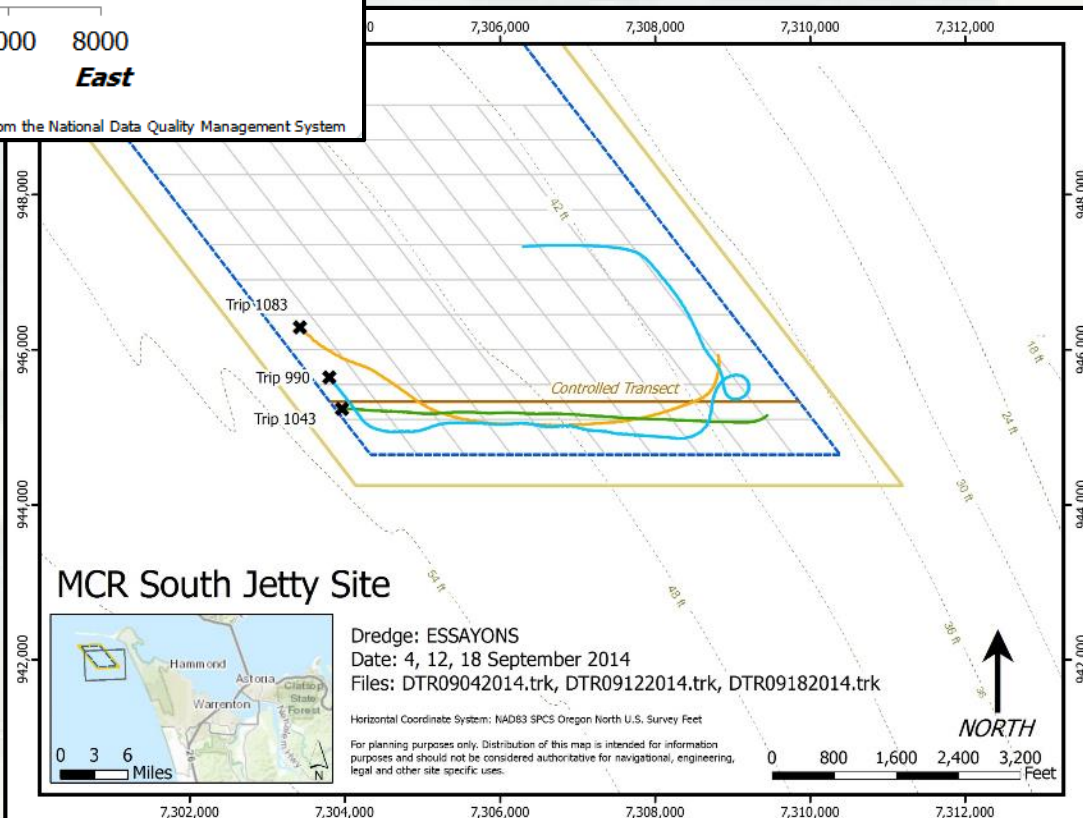
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Displacement vs Distance



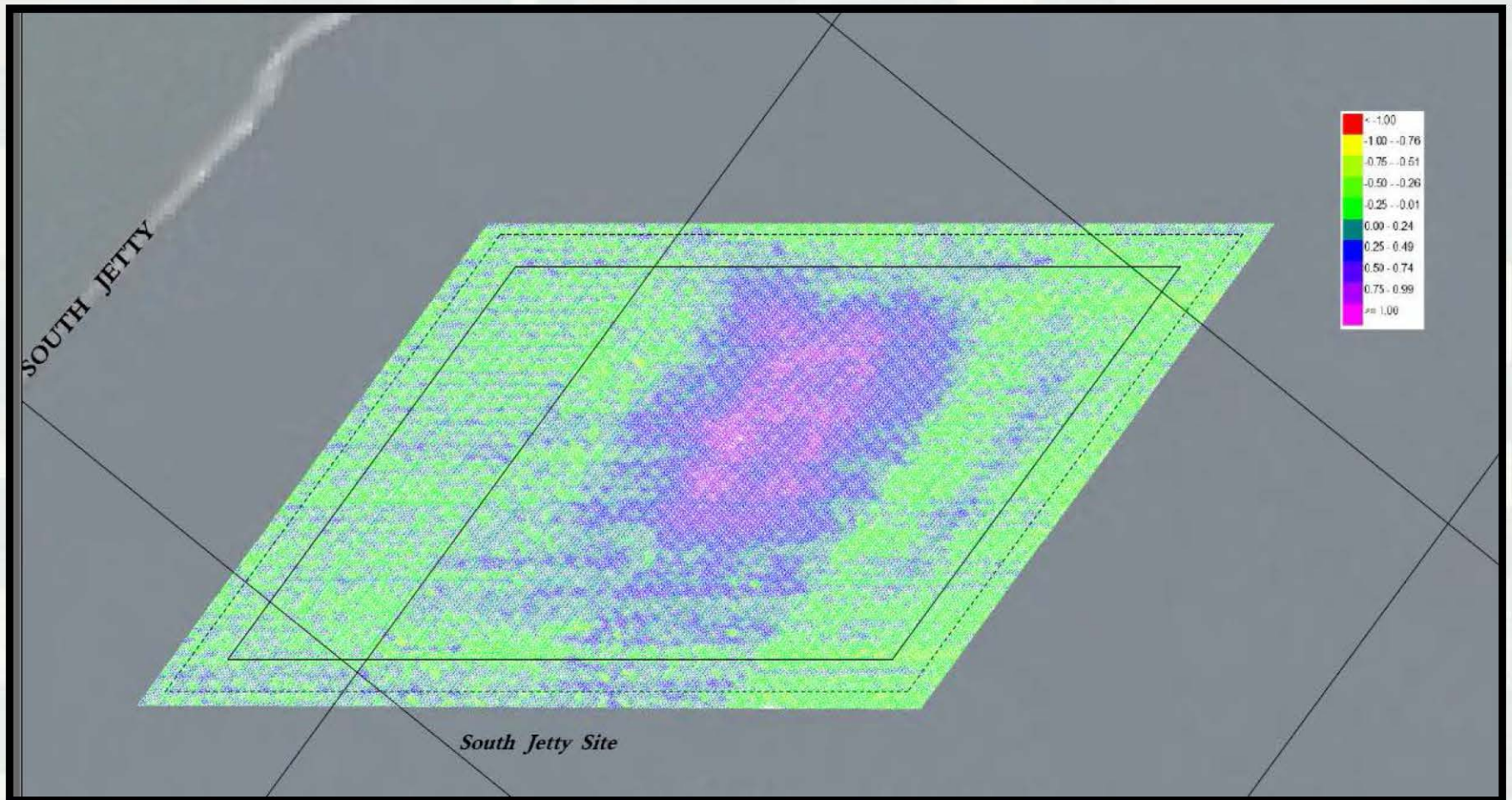
Data extracted from the National Data Quality Management System

- ESSAYONS 2014 placement events along the monitoring line.
- Initial cost of monitoring and data collection to be offset by streamlining the authorization of future thin-layer placement sites.



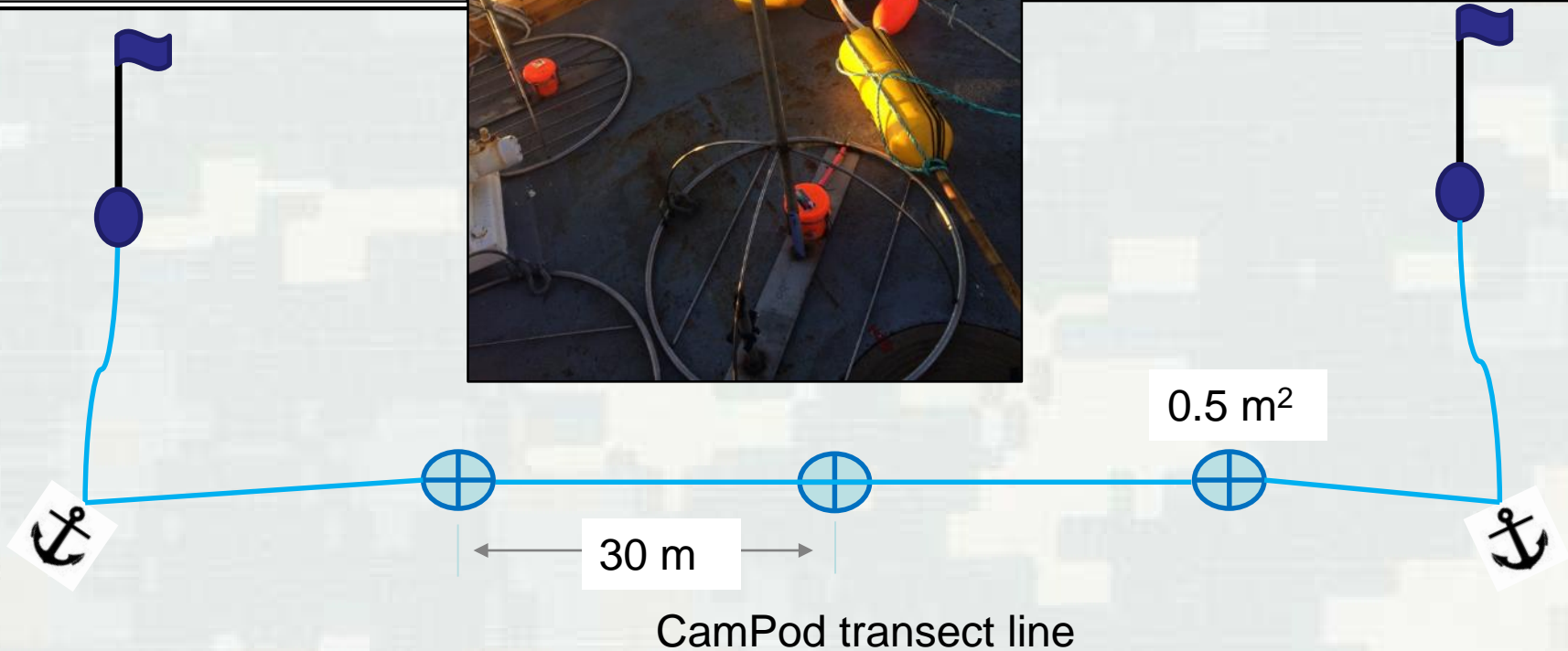
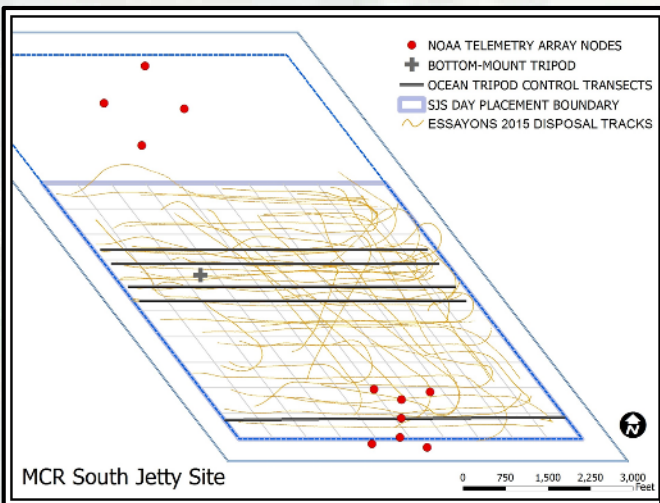
- ESSAYONS required to transit through 10 cells
- Sequencing of opening hopper doors to ensure thin-layer placement

SJS Difference Plot 2014



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Deposition Monitoring Instruments (CamPods)



(Courtesy of Curtis Roegner-NOAA)

Challenges/Lessons Learned

- Need for on-going stakeholder engagement
- Need for better internal/external contracting processes and funding mechanisms
- Need for quantifying benefits of nearshore placement
 - Material remaining in the littoral cell
 - Material moving onshore
- Displaying low impacts, what else can we do?
- Expand network of nearshore sites
 - Reduce localized impacts by having a large network of sites
- AVEDac software work needs to be fully operational
- Cumulative impacts of thin-layer placement
- Passive detections during monitoring
 - Green Sturgeon (*Acipenser medirostris*),
 - Great White Shark (*Carcharodon carcharias*)
 - 20+ detections of species that are unknown