



USS *Yorktown* Phase 2 Remediation Plan

September 4, 2024



Purpose of the Meeting and Agenda

Purpose: To give stakeholder and interested agencies the opportunity to provide input regarding the Phase II Remediation Plan

1. Introduction
2. Project Background
3. Project Approach
4. Remediation Approach
5. Projected Timeline
6. Contractor Requirements

Purpose and Need:

Overview

- The USS *Yorktown* was commissioned on April 15, 1943, and decommissioned in 1970.
- It was accepted by South Carolina “as is” and became a museum in 1975.
- At the time of the *Yorktown*’s deactivation, the extensive procedures prescribed by the Navy today were not in place to remove contaminants such as heavy oils, fuels, and equipment.
- Past studies and small remediation efforts have been conducted. However, contaminants remain onboard the USS *Yorktown*.
- It is the State’s most popular tourist attraction with over 300,000 annual visitors.



Purpose and Need:

Environmental Assessment & Plan

Executive Order #2022-20

On July 11, 2022, Governor McMaster authorized and directed the SCOR and Patriots Point Development Authority to:

- Complete an updated comprehensive environmental assessment of any and all remaining legacy contaminants within the USS *Yorktown*,
- Develop plans to remove or remediate any such hazardous or potentially hazardous materials, and
- Provide an updated estimate of the remediation costs.

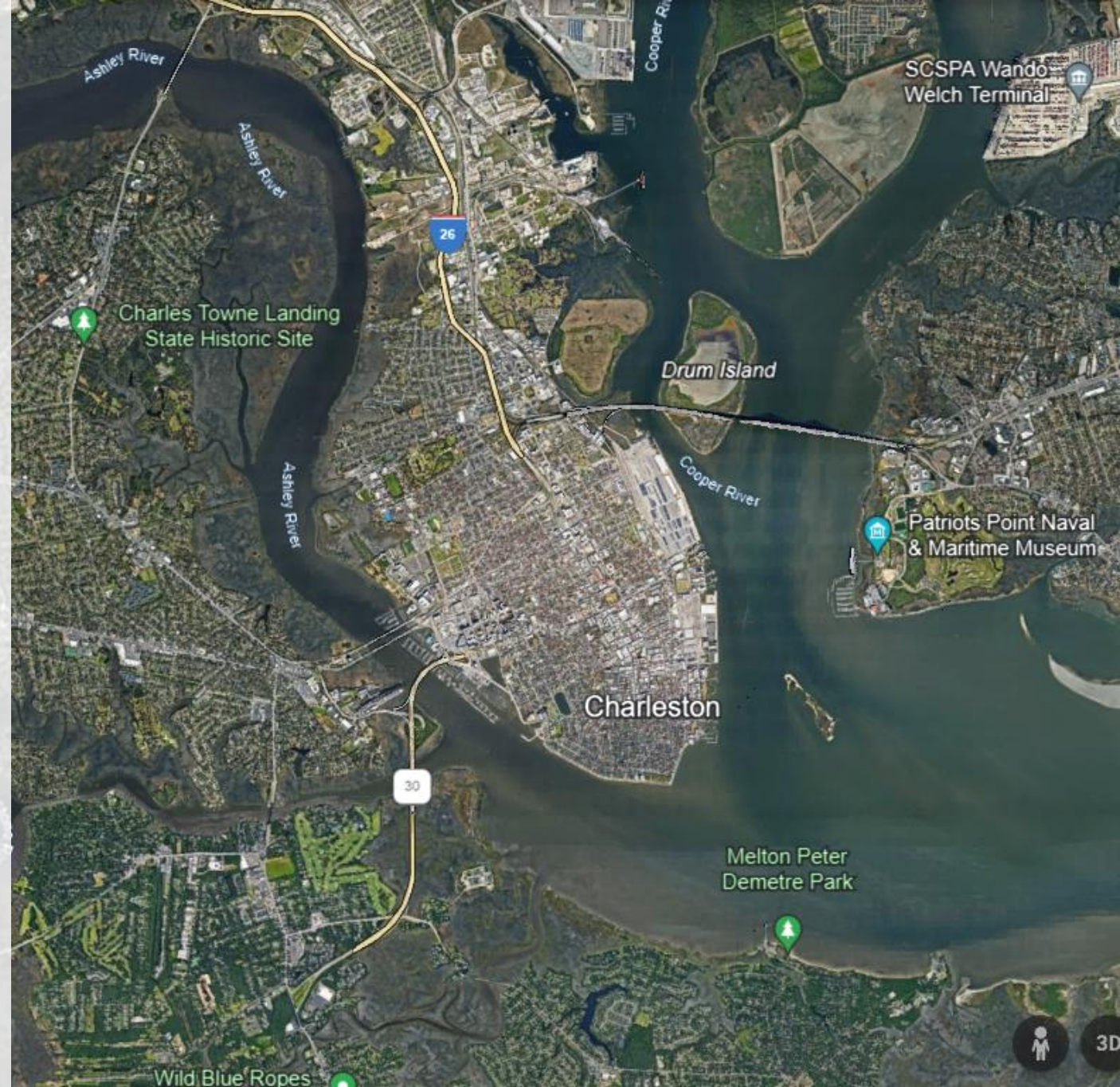
This study is funded with American Rescue Plan Act (ARPA) funds through SCOR.



Purpose and Need:

Environmental Protection

- The Charleston Harbor is an important ecological resource for S.C.
- Bottlenose dolphins and two species of sturgeon (listed as endangered)
- Spawning areas for many fish species
- Shellfish (oysters, reefs, horseshoe crab, blue crab, shrimp)
- Shoreline habitats composed of salt and brackish marshes, and tidal flats
- Crab Bank Seabird Sanctuary



Purpose and Need:

National Historic Landmark

- The USS *Yorktown* (CV-10) was designated a National Historic Landmark in 1980
 - It is the 10th aircraft carrier to serve in the U.S. Navy
 - It was renamed to USS *Yorktown* while under construction to honor the USS *Yorktown* (CV-5) that sank at the Battle of Midway in June 1942
 - Served in World War II and Vietnam
 - The USS *Yorktown* recovered the Apollo VIII astronauts and capsule in 1968
- SCOR is coordinating with the State Historic Preservation Office regarding the work
- Brings tourism, sense of place, and educational value to South Carolina



Purpose and Need:

Economic Impact

- The Port of Charleston is a world class port with the deepest harbor on the U.S. East Coast
- The Port makes an \$87 billion annual statewide economic impact
- The 2023 SC Ports' Economic Impact Study found that port activities support 1 in 9 jobs in South Carolina
- USS *Yorktown* remediation will prevent an environmental release that fouls the Port and interrupts trade



The Study

- **SCOR procured Research Planning, Inc. (RPI)**
- **RPI is a world-renown authority on environment impact assessments, oil spills, and complex maritime projects**
- **RPI gathered a team of specialized maritime experts including:**
 - T&T Salvage
 - Johnson, Mirmiran & Thompson (JMT)
 - GEL Laboratories
- A copy of the study is available at <https://scor.sc.gov/ussyorktown>



Hazardous Assessment Strategy

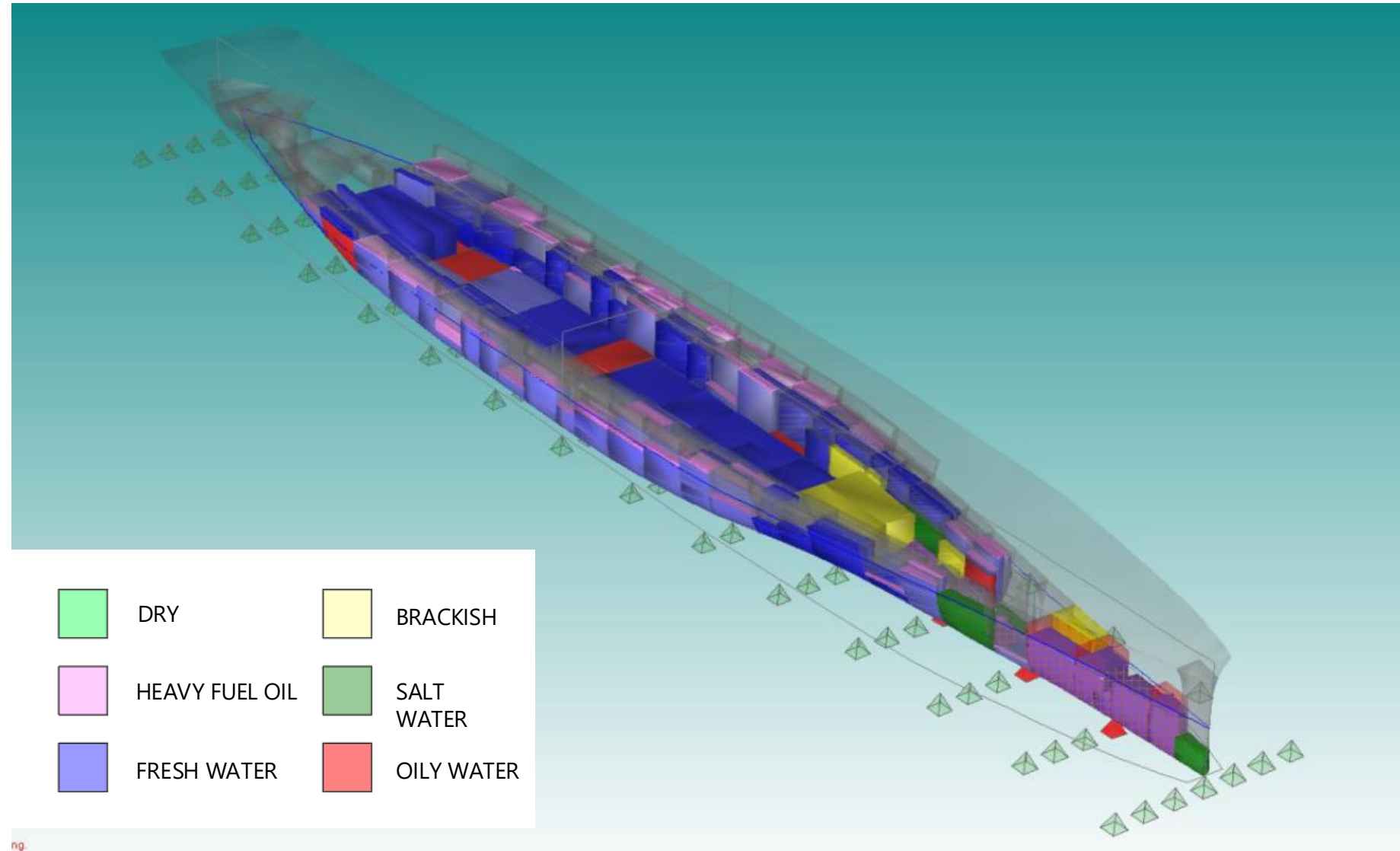
- **Human health: 3 potential exposure populations compared to regulatory standards**
 - Areas open to the general public, including young children
 - Areas accessed by administrative employees and volunteers
 - Areas accessed by maintenance staff, who use personal protection as needed
- **Environmental:**
 - Release of metal-contaminated water
 - Oil spill trajectory modeling and risk to sensitive habitats and animals

Evaluation Method for Suspected Contaminants

- **Fuel oil**: Inspection of all accessible tanks and compartments
- **Contaminated water**: Sampled and tested for oil and metals content
- **Asbestos-containing materials**: Collection of samples for analysis
- **Lead-based paint**: Portable analyzer testing of hundreds of sites
- **Polychlorinated biphenyls (PCBs)**: Surface wipes (focusing on public access areas) and hydraulic oil samples for analysis

Issue: Oil and Water in Tanks

There are **420** tanks on the *USS Yorktown*.



Contaminant Results: Oil & Water



Remediation Plan

Structural Tanks

- 95 tanks contain some heavy fuel oil: 62,324 gallons
 - 50 have <50 gallons
 - 5 have >400 gallons
 - Largest volume is 6,400 gallons
- 1,200,000 gallons of contaminated fluids
- 37 Non-Structural Tanks and Systems
- 14,115 gallons hydraulic oils >50 ppm PCBs

- Restore watertight integrity to hull in the vicinity of the tidal zone, where necessary to perform remediation work.
- De-water flooded compartments and survey condition and contents.
- Treat all pump-off water.
- Remove recoverable bulk heavy fuel oil and hydraulic oil from all tanks.
- Remove fluids and clean the 79 deep tanks to allow inspection and repair.
- Add freshwater ballast to the clean tanks to a minimum of 98% load.

Contaminant Results: Asbestos



Remediation Plan

- Tested negative for asbestos:
 - 12 x 12-inch floor tiles
 - Wall board
 - Textured paint
 - Ceiling tiles
 - Dust
- Tested positive for asbestos:
 - 9 x 9-inch floor tiles
 - Armored cable wiring
 - Pipe insulation
- Patriots Point staff routinely repair damaged areas using certified abatement contractors.

- No areas were identified requiring asbestos remediation in the public areas.
- Periodic air monitoring for asbestos should be conducted as part of an asbestos Operations and Management (O&M) Plan.

Contaminant Results: Lead-Based Paint



Remediation Plan

- Tested for lead throughout the ship.
- 166 locations with positive detections.
- 93 in public areas; of these 18 locations were flaking.
- Of greatest concern for public exposure is the forecastle (fo'c'sle).



- Conduct routine cleanup of paint chips from the floor in public areas.
- Restrict public access to the forecastle area.
- Patriots Point staff to develop and implement written lead-based paint O&M plan to address periodic visual inspections, maintenance, and repairs.

Contaminant Results: PCBs



Remediation Plan

- All areas above EPA standards were associated with oil in/on machinery, drip trays, or lube oil tanks.
- **No** handrails, rest rooms, or ladders in public areas were above EPA standards.

- Clean all identified surfaces in public and administrative areas with PCBs above standard.
- Where this is not possible, isolate the area from any public contact.
- Conduct periodic surface wipe testing and cleaning of public areas.
- Maintenance staff to implement and follow very strict personal protection measures to reduce the potential to track out PCBs when exiting maintenance areas.

Overall Remediation Plan Approach

Remediate

- Remove fuel oil from structural tanks
- Remove hydraulic oils
- Treat all fluids pumped off during dewatering

Mitigate

- PCBs: Clean surfaces in public and administrative areas
- Lead-based paint: Routine removal paint chips
- O&M plan for periodic inspections

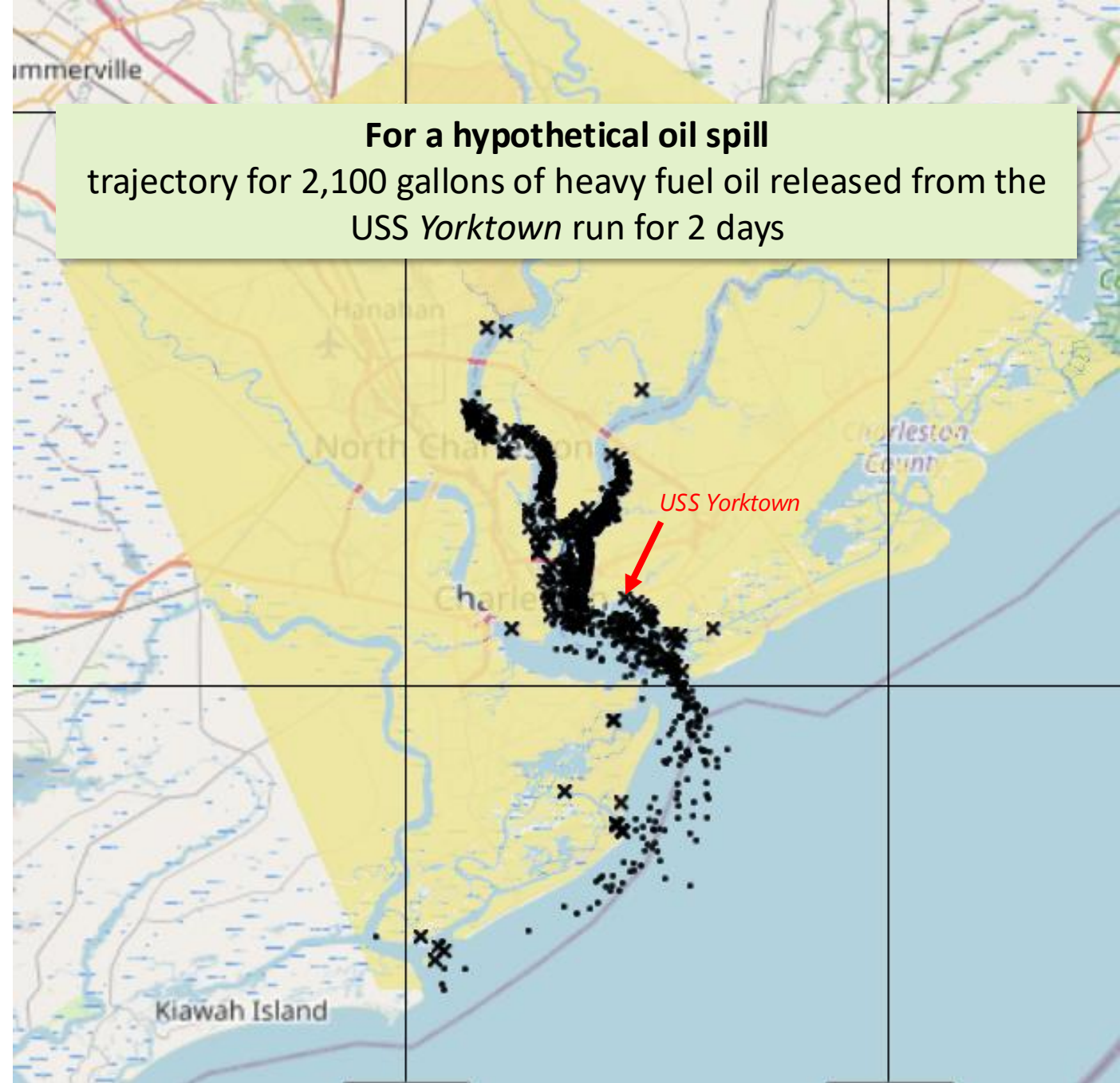
Isolate

- PCBs: Physical barriers to areas along tour routes that can't be cleaned
- Lead-based paint: No public access to forecastle

Natural Resources

Because of the very high sensitivity of animals and habitats that could be affected by an oil release, **removal of remaining oil is of highest priority.**

- Threatened and Endangered species
- Marine mammals
- Birds
- Fish and shellfish
- Sea turtles
- Shoreline habitats, including extensive salt marshes and outer beaches



Consulting with Agencies (Permits, Approvals, Etc.)

- SC Department of Environmental Services (formerly SCDHEC)
- SC Department of Archives and History
- SC Department of Natural Resources
- US Army Corps of Engineers
- US Fish and Wildlife Service
- National Marine Fisheries Service
- US Coast Guard
- National Park Service
- US Environmental Protection Agency
- SC Port Authority

Immediate Repair Operations

Aug-Nov 2023

- In July 2023, when water started to leak into the USS *Yorktown*, which would affect the planned remediation works, SCOR funded immediate repair work.
- The immediate repair consisted of two types of work activities:
 1. Exterior work on the hull: Divers patched breaches in the hull using salvage patches



Immediate Repair Operations

Aug-Nov 2023

2. Interior work on the ship:

- Pumping fluids internally among tanks and compartments to monitor the water levels to determine leaking connections among them.
- Dewatering tanks to allow access to identify and fix leaks.
- Results:
 - Made 35 repairs to the hull and made over 25 internal repairs to isolate tanks;
 - Removed/treated ~570,000 gallons of fluids, regaining access to the forward damage control room;
 - Cleaned 18 tanks and 4 spaces/compartments that contained hydrocarbons; and
 - Completed a temporary repair to bulkhead 26, a vital watertight boundary.



Project Timeline

- **July 2022:** Executive Order issued by Governor directing SCOR to conduct an environmental study
- **July 2022:** SCOR published Request for Qualifications (RFQ) for environmental study
- **November 2022:** Contract signed with Research Planning Inc. (RPI)
- **February 2023:** Completed on-site testing for contaminants
- **March 2023:** Completed detailed cataloging of all areas, tanks, and compartments documented
- **July 2023:** Identification and prioritization of contaminants aboard the ship complete
- **July 2023:** Begin environmental review in accordance with NEPA (in-progress)
- **August 2023:** Joint Bond Review Committee (JBRC) approved immediate repair work
- **August 2023:** Begin immediate repairs to prepare ship for remediation work
- **December 2023:** Completion of immediate repairs

Project Timeline (Continued)

- **March 2024:** Received JBRC Approval for Phase 2 Remediation work
- **March 2024:** Phase 2 Remediation Bid Documents (in progress)
- **July 2024:** Phase 2 Remediation Bid Documents submitted to OSE for review
- **September 2024:** *Estimated* Invitation to Bid for Phase 2 – Remediation
- **November 2024:** *Estimated* Contract Award to Lowest Bidder
- **December 2024:** *Estimated* Start of Phase 2 Remediation Work
- **December 2025:** *Estimated* Phase 2 Remediation Work Completion

Contractor Requirements:

Site Safety and Emergency Response Plans

- Prior to commencing work at the site, the contractor must prepare and submit a site safety plan for approval that complies with Federal and state requirements that includes but is not limited to: 1) confined space entry; 2) FEMA Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) requirements; 3) SCDHEC regulations for design specifications for abatement of asbestos-containing materials that address worker safety, licensed asbestos air samplers for inspection, monitoring, and sampling, and handling/disposal methods; 4) proper disposal of all oil, oily wastes, and hazardous materials generated during the remediation works.
- Prior to commencing work at the site, the contractor must prepare and submit an emergency response plan for approval that includes but is not limited to: 1) procedures to prevent the release of oil, oily wastes, or other hazardous materials to the environment from the vessel; 2) procedures to contain any oil, oily wastes, or other hazardous materials after a release to the environment; and 3) plans for the final disposal of any recovered released materials.

Contractor Requirements: Weekly Reports

1. Summary of the weekly progress, relative to the planned Milestones/Timelines, with an explanation for any changes in progress;
2. Representative photographs of the work accomplished, including before/after photographs of each tank and compartment remediated;
3. Documentation of proper disposal of fluids/solids;
4. Plan of work for the next week; and
5. Concerns or topics for discussion.

Questions?