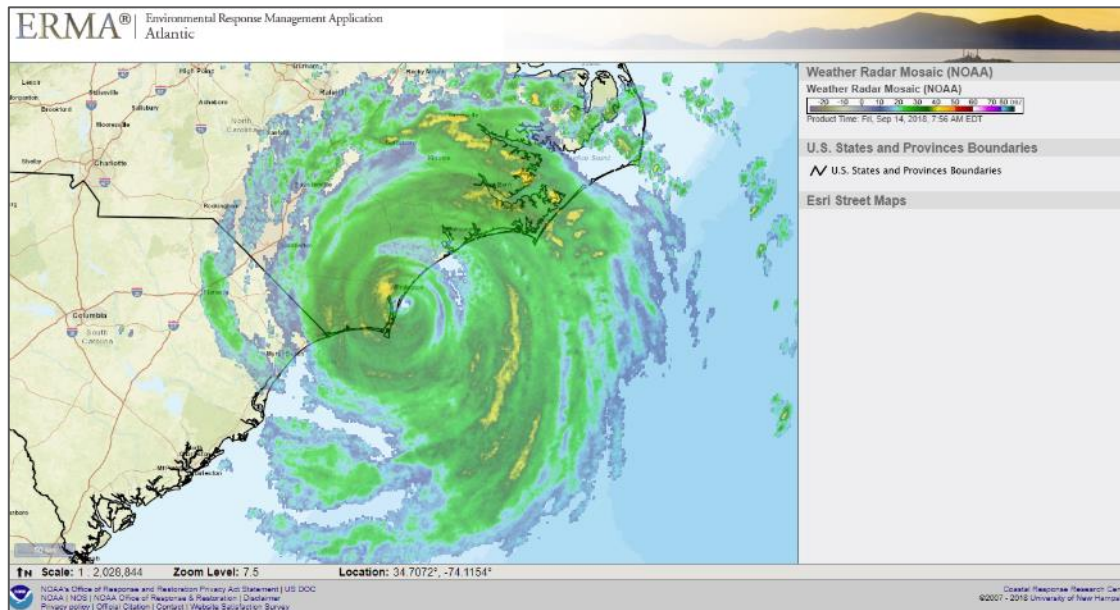


# The Environmental Response Management Application ERMA®



Robb Wright  
Office of Response & Restoration  
Assessment and Restoration Division  
Spatial Data Branch

<https://erma.noaa.gov/atlantic>



# Continuum of “Response” Framework for The Office of Response & Restoration

Response  
(24 hours)

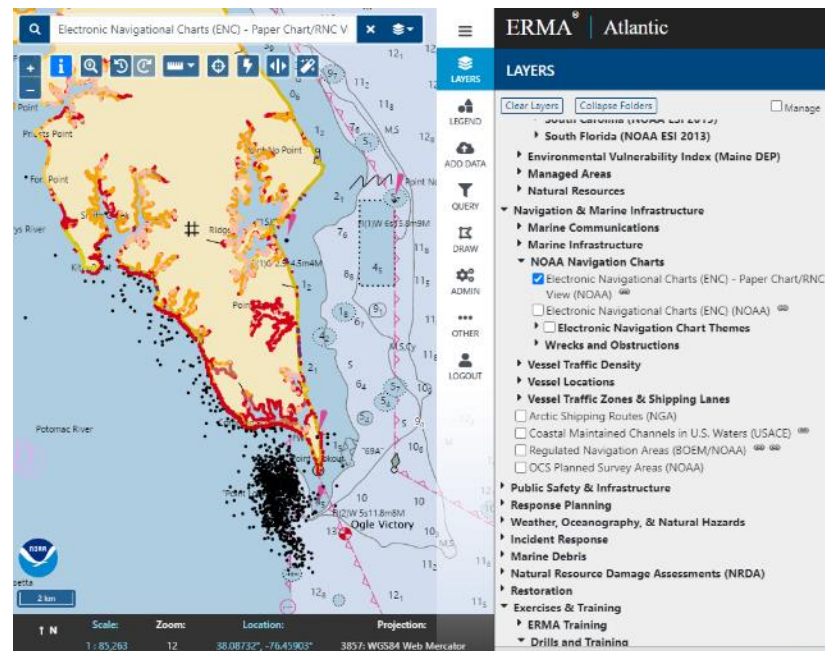


Recovery or  
Restoration  
(Years/Decades)



# Key Functionality

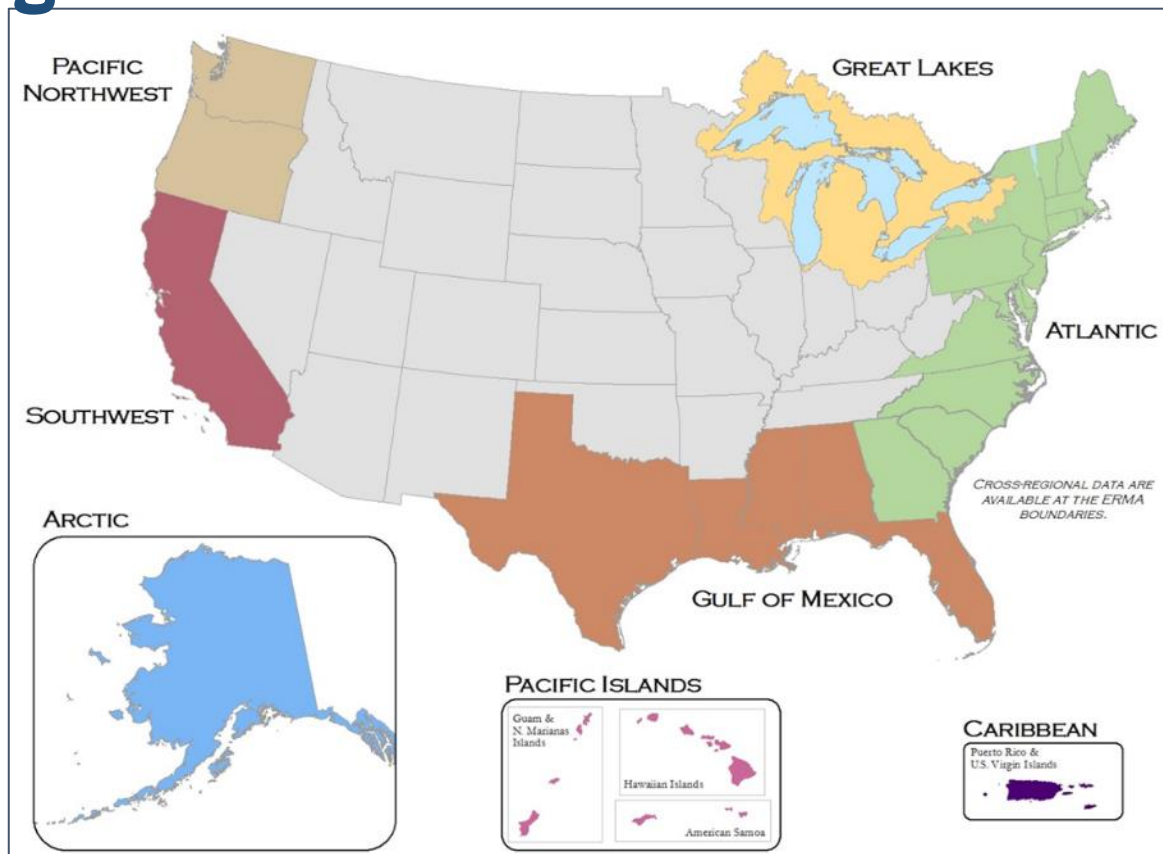
- ERMA is an online mapping tool for visualizing environmental information relevant to oil spills and natural disasters
- Provides centralized access to information
- Tiered system security that protects data
- Build customized maps using layers
- Create and view customized sets of layers quickly with bookmarked views
- Investigate and compare data quickly with Dashboards and Query Tools
- Data Interoperability with RP and other agencies
- Internal and external audience





# ERM A Regions

<https://erma.noaa.gov/atlantic>



## ERMA is a USCG MER COP

**USCG and NOAA Agreement  
signed in 2018, renewed in 2024**

**Agreement Purpose:**

**“Standardize the use of NOAA’s  
Environmental Response  
Management Application (ERMA®)  
as the Common Operating Picture  
(COP) for USCG-led training,  
exercises, oil spill responses and  
releases of hazardous substances,  
pollutants, and contaminants”**

## NRT Data Sharing Plan

**The National Response Team  
formally adopted the NOAA Data  
Sharing Plan (DSP) for operational  
response data sharing  
(December 2022)**

### **Posted Resources:**

- NRT Data Sharing Plan Landing page
- Posted DSP (Document and Spreadsheet)
- Posted examples, signed plans from previous responses

# ERMA Layout

The screenshot displays the ERMA web application interface. The main map area shows the North Atlantic region, including parts of North America, the Atlantic Ocean, and the Gulf of Mexico. The map is overlaid with various data layers, including the Environmental Quality & Monitoring, Imagery & Remote Sensing, and Natural Resources, Habitats, & Managed Areas. The interface includes a search bar at the top left, a menu bar at the top right, and a layer list on the right side. The map controls and tools are located on the left side of the map. The map key at the bottom left shows the scale (1:19,566,297) and the location (43.81320°, -100.50855°). The map projection is 3857: WGS84 Web Mercator.

**Map Controls**

**Map Tools**

**Search**

**Menu Bar**

**ERMA® | Atlantic**

**LAYERS**

**LEGEND**

**ADD DATA**

**QUERY**

**OTHER**

**LOGIN**

**Shortcut Menu**

- ☐ Environmental Quality & Monitoring
- ☐ Imagery & Remote Sensing
- ☒ Natural Resources, Habitats, & Managed Areas
  - ☐ Coastal Resources & Habitats
  - ☐ Critical Habitat
  - ☐ Cultural Resources & Human Use
  - ☐ Essential Fish Habitat (NOAA NMFS)
  - ☒ Environmental Sensitivity Index (NOAA ESI)
    - ☐ ESI Atlas Index
    - ☐ ESI Biology PDF Map Index
    - ☐ ESI Human Use PDF Map Index
    - ☐ National ESI Shoreline - General Type (NOAA)
    - ☐ National ESI Shoreline - Most Sensitive (NOAA)
    - ☒ Chesapeake Bay (NOAA ESI 2016)
    - ☒ Eastern Florida (NOAA ESI 1996)
    - ☒ Delaware Bay (NOAA ESI 2014)
    - ☒ Georgia (NOAA ESI 2015)
    - ☒ Long Island Sound (NOAA ESI 2016)
    - ☒ Maine and New Hampshire (NOAA ESI 2016)
    - ☒ Massachusetts and Rhode Island (NOAA ESI 2016)

**Map Key**

**Bookmark Views:** **Bookmark Panel**



# Finding Data

The screenshot displays the ERMA® Gulf of Mexico web application. The interface includes a search bar at the top left, a toolbar with various map controls, and a map of the Gulf of Mexico coastline. A red box highlights the 'Layers / Views / Folders' dropdown menu, which lists options: Geographic Locations, Latitude and Longitude, Recent Data, and Vessel Search. Another red box highlights the 'Layers' panel on the right, which contains a list of background layers and a table of contents. A blue callout box on the left lists the 'Search Tool' and 'Table of Contents'.

- Search Tool
- Table of Contents

**ERMA® | Gulf of Mexico**

**LAYERS**

Clear Layers Collapse Folders Manage

**Background Layers**

- ☐ Esri Street Maps
- ☐ Esri World Imagery
- ☐ Esri Ocean
- ☐ Esri National Geographic
- ☐ Esri World Topo
- ☐ Esri Light Gray Canvas
- ☐ Esri Dark Gray Canvas
- ☐ MapBox Hybrid Imagery
- ☐ OpenStreetMap
- ☒ OpenStreetMap Voyager (CARTO) <sup>GO</sup>
- ☐ OpenStreetMap Light Gray (CARTO) <sup>GO</sup>
- ☐ OpenStreetMap Dark Gray (CARTO)
- ☐ National Map Topo (USGS)
- ☐ Blank Base Layer <sup>PDF</sup>

**Admin Boundaries & Reference Features**

**Bathymetry & Hydrology**

**Environmental Quality & Monitoring**

**Imagery & Remote Sensing**

**Natural Resources, Habitats, & Managed Areas**

**Navigation & Marine Infrastructure**

Bookmark Views: New >

Search layers, folders and bookmarks

Layers / Views / Folders

Geographic Locations

Latitude and Longitude

Recent Data

Vessel Search

50 km

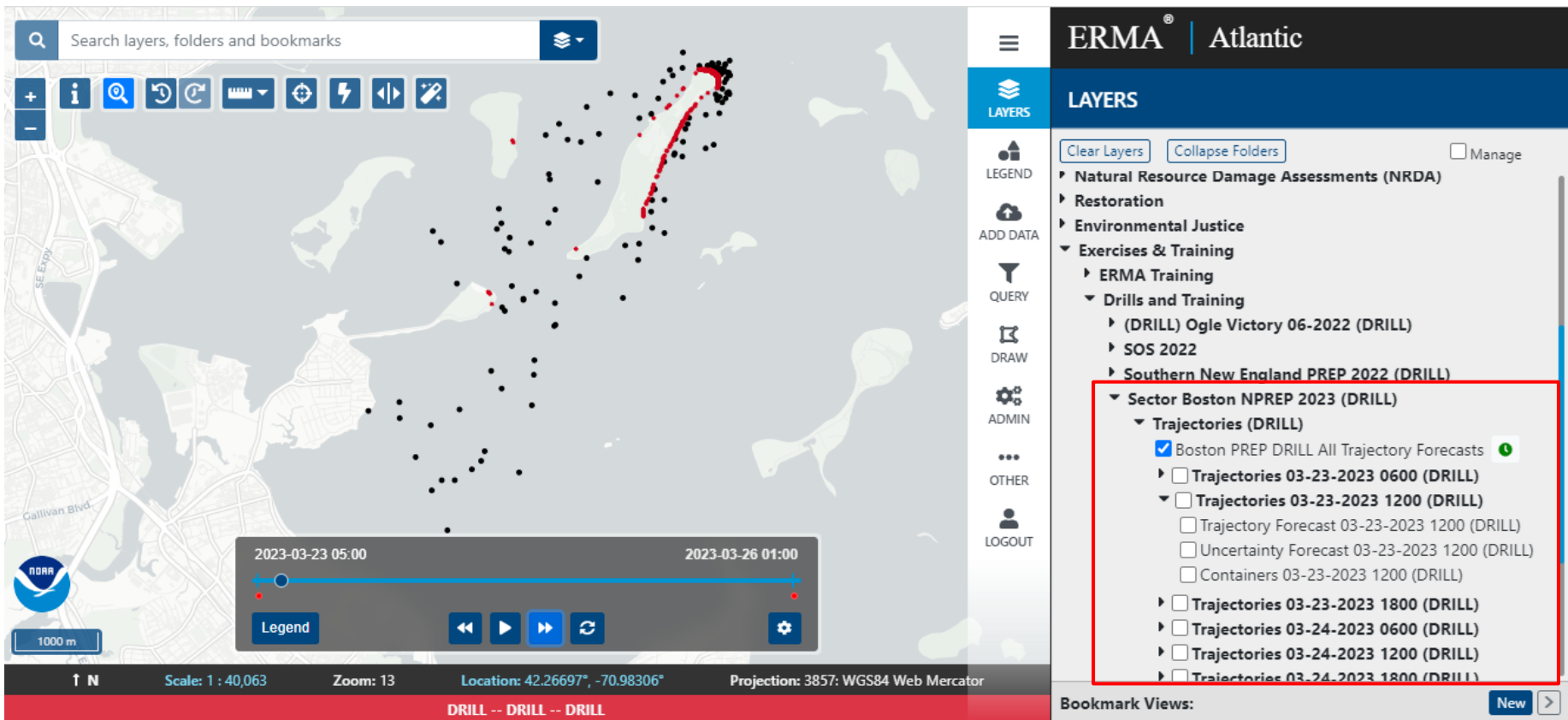
Scale: 1 : 1,761,604

Zoom: 7.8

Location: 29.15210°, -82.79866°

Projection: 3857: WGS84 Web Mercator

# Oil Spill Trajectories






# ERM A's Time Slider

Clock icon indicates a time-enabled layer

## ▼ Sector Boston NPREP 2023 (DRILL)

### ▼ Trajectories (DRILL)

- ☒ Boston PREP DRILL All Trajectory Forecasts 
- ▶ ☐ Trajectories 03-23-2023 0600 (DRILL)
- ▶ ☐ Trajectories 03-23-2023 1200 (DRILL)
- ▶ ☐ Trajectories 03-23-2023 1800 (DRILL)
- ▶ ☐ Trajectories 03-24-2023 0600 (DRILL)
- ▶ ☐ Trajectories 03-24-2023 1200 (DRILL)
- ▶ ☐ Trajectories 03-24-2023 1800 (DRILL)
- ▶ ☐ Trajectories 03-25-2023 0600 (DRILL)
- ▶ ☐ Trajectories 03-25-2023 1200 (DRILL)
- ▶ ☐ Trajectories 03-25-2023 1800 (DRILL)

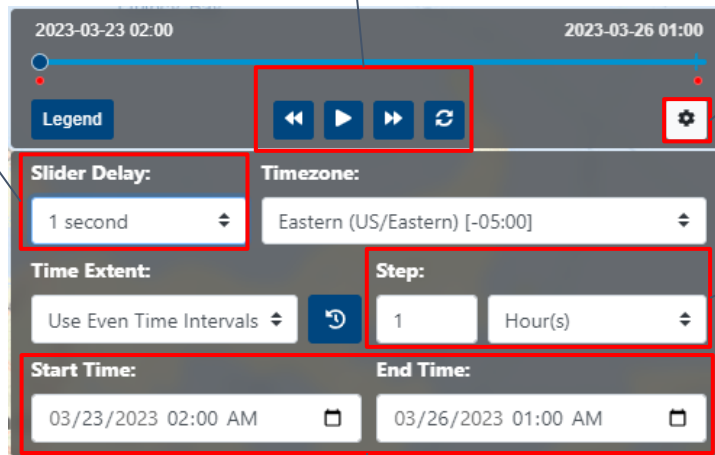
Multiple enabled layers will share the same date range and animate in unison

Animation speed

Movement controls

Tools

Change default "time step"



Modify start and end times

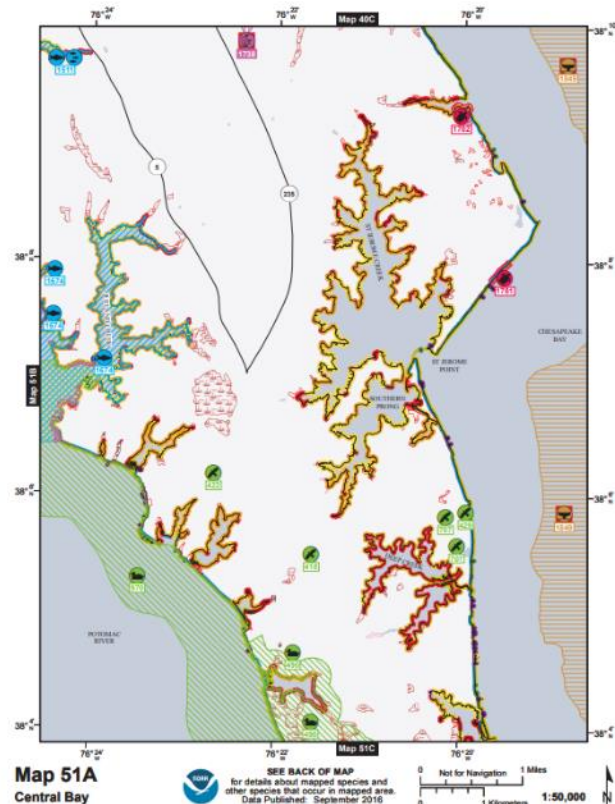
# Environmental Sensitivity Index (ESI)

- NOAA maintains the ESIs to provide information about sensitivity to oil spills.
- Spill planning, spill response
- Plants, animals, shoreline, ecosystems and human use data

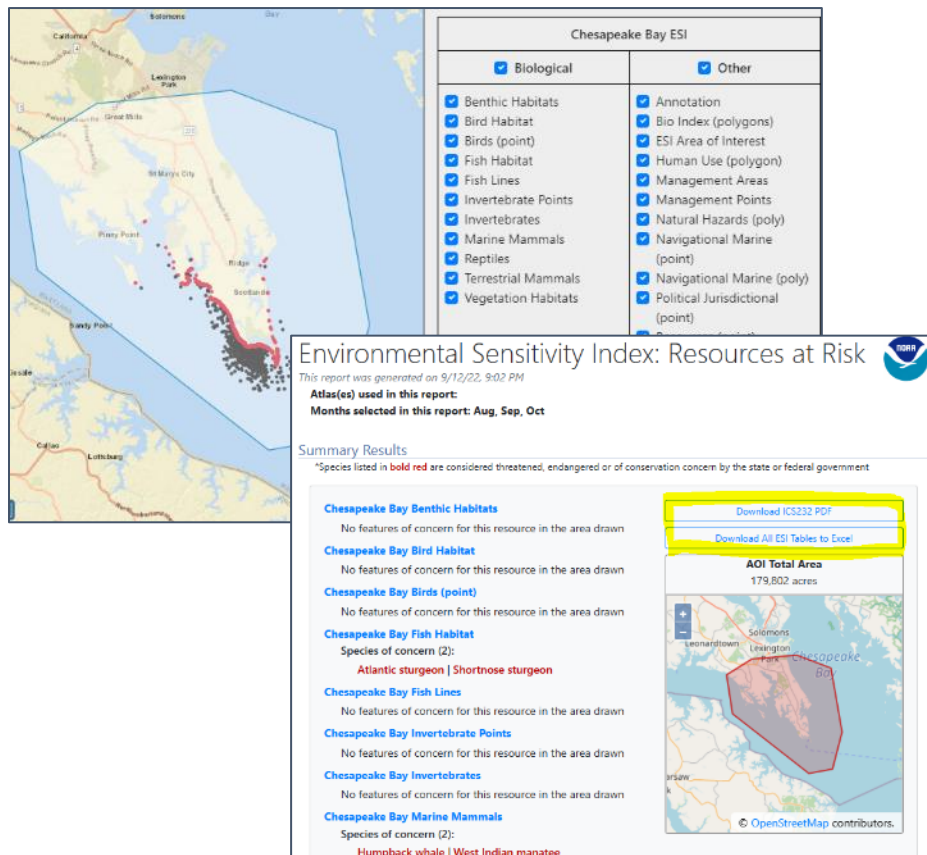
NOAA Site: [Link](#)

ERMA provides:

- [Links](#) to all pdf maps
- Map display within ERMA
- ESI custom AOI report



# Querying ESIs



ESI query allows for specific data to be queried based on a user-defined AOI

- Output report appears in a new window.
- Can be printed to a PDF
- URL is static and retains info: [link](#)

Use the same AOI for the USFWS IPaQ tool query option for dry-side T&E species

**IPaC Information for Planning and Consultation** U.S. Fish & Wildlife Service

**Explore location**  
 LOCAL OFFICE: CHESAPEAKE BAY ESFO

**Resources**

ENDANGERED SPECIES	2
BALD & GOLDEN EAGLES	2
MIGRATORY BIRDS	45
COASTAL BARRIERS	15
FACILITIES	
WETLANDS	1

[PRINT RESOURCE LIST](#)

**Endangered species**  
 Listed species and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries).

Species and critical habitats under the sole responsibility of NOAA Fisheries are not shown on this list. Please contact [NOAA Fisheries](#) for species under their jurisdiction.

Additional information on endangered species data is provided [below](#).

The following species are potentially affected by activities in this location:

**Mammals**

**Proposed Endangered**

What's next?  
 Define a project at this location to evaluate





\*\*\* Provisional DRAFT Report \*\*\*

ESI query run at 12/10/2024, 11:35:35 (UTC)

DEPARTMENT OF HOMELAND SECURITY  
U.S. COAST GUARD

## RESOURCES AT RISK SUMMARY (ICS 232-CG)

1. Incident Name:		2. Incident Location:		3. Operational Period (Date/Time): From: To:	
4. Environmentally Sensitive Areas and Wildlife Concerns:					
Site #	Priority	Site Name and Physical Location		Site Issues	

## Narrative:

Threatened, endangered and species of special concern are listed below. For the full species listing, see the full report =>

<https://prod-esi-api.orr.noaa.gov/ui/query/c14cd8f-eb99-48dc-940b-e5bbfe7a293b/>

BIRD | Sedge wren | MD: Endangered/VA: -

FISH | Atlantic sturgeon | MD: -VA: Endangered | Federal: Endangered | Adults: Jan-Dec

INVERT | Northeastern beach tiger beetle | MD: Endangered/VA: Threatened | Federal: Threatened |

Concentration: POTENTIAL | Spawning: Jun-Aug | Eggs: Jun-Aug | Larvae: Jan-Dec | Adults: Jun-Aug

M\_MAMMAL | Fin whale | MD: Endangered/VA: Endangered | Federal: Endangered | Concentration: COMMON

M\_MAMMAL | Humpback whale | MD: Endangered/VA: Endangered | Federal: Endangered | Concentration: COMMON

M\_MAMMAL | North Atlantic right whale | MD: Endangered/VA: Endangered | Federal: Endangered |

Concentration: RARE

HERP | Green sea turtle | MD: Threatened/VA: Threatened | Federal: Threatened | Concentration: RARE |

Stage4: May-Dec\*

HERP | Kemp's ridley sea turtle | MD: Endangered/VA: Endangered | Federal: Endangered |

Concentration: UNCOMMON | Stage4: Nov-Dec

HERP | Leatherback sea turtle | MD: Endangered/VA: Endangered | Federal: Endangered | Concentration: RARE |

Stage4: Mar-Dec\* | Stage5: Mar-Dec\*

HERP | Loggerhead sea turtle | MD: Threatened/VA: Threatened | Federal: Threatened | Concentration: COMMON |

Stage4: Nov-Dec | Stage5: Nov-Dec

HABITAT | Seabeach amaranth | MD: Endangered/VA: Threatened | Federal: Threatened | Concentration: VERY RARE

## Chesapeake Bay Shoreline Classification (lines)

Summary Length (miles) by type

1: Armored: 17

3: Beaches (Sand/Gravel): 17

4: Flats (Mud/Sand): 1.23

5: Vegetated (Grass/Marsh/Mangroves/Scrub-Shrub): 259

## Draft ICS 232 (Resources at Risk) Form

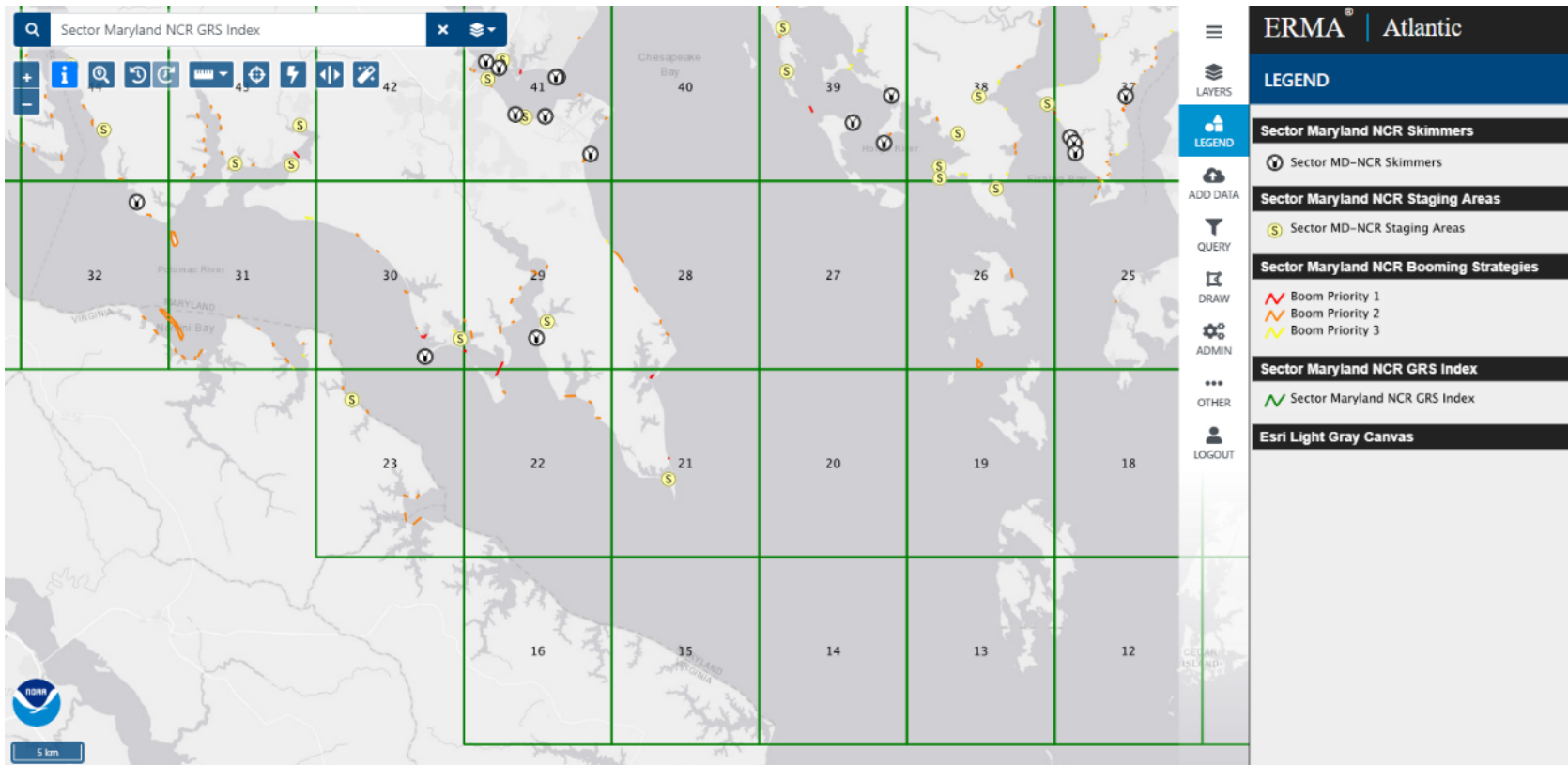
- Summarizes for an AOI:  
T&E species
  - Name / state-fed / abundance / life-stages
- Shoreline lengths
- Human Use counts
- Places info into a fillable PDF 232 form
- \*Not currently tied to GRS - goal

response.restoration.noaa.gov



# Geographic Response Strategies

[ERMA Link](#)



# Geographic Response Strategies

[ERMA Link](#)

Search: Sector Maryland NCR GRS Index

ERMA Identify - Google Chrome

erma.noaa.gov/identify?point=38.15839,-76.42992

ID Location: 38.15839, -76.42992

Add Selected Features To Query Tools Tab

Sector Maryland NCR ... Sector Maryland NCR ... Sector Maryland NCR ...

Sector Maryland NCR GRS Index [Layer 40168-wms internal]

gid	104
objectid	104
tile_name	29
topo_name	SAINT MARYS CITY, MD.
page_name	SAINT MARYS CITY
qrc	<a href="https://sds.erma.noaa.gov/GRPs/D5_MarylandNCR/QRCs/MD 29.docx">https://sds.erma.noaa.gov/GRPs/D5_MarylandNCR/QRCs/MD 29.docx</a>
ics_232	<a href="https://sds.erma.noaa.gov/GRPs/D5_MarylandNCR/ICS 232/ICS 232_GRP29.docx">https://sds.erma.noaa.gov/GRPs/D5_MarylandNCR/ICS 232/ICS 232_GRP29.docx</a>
ics_204	<a href="https://sds.erma.noaa.gov/GRPs/D5_MarylandNCR/ICS 204/ICS 204_GRP 29.docx">https://sds.erma.noaa.gov/GRPs/D5_MarylandNCR/ICS 204/ICS 204_GRP 29.docx</a>
grs_pdf	<a href="https://prod-erma-api.orr.noaa.gov/api/v1/data_layer_file/8714/download/#page=46">https://prod-erma-api.orr.noaa.gov/api/v1/data_layer_file/8714/download/#page=46</a>
boom_s_pdf	<a href="https://prod-erma-api.orr.noaa.gov/api/v1/data_layer_file/8714/download/#page=47">https://prod-erma-api.orr.noaa.gov/api/v1/data_layer_file/8714/download/#page=47</a>
boom_c_pdf	<a href="https://prod-erma-api.orr.noaa.gov/api/v1/data_layer_file/8714/download/#page=48">https://prod-erma-api.orr.noaa.gov/api/v1/data_layer_file/8714/download/#page=48</a>

5 km

<https://erma.noaa.gov>

ERMA<sup>®</sup> | Atlantic

LEGEND

Sector Maryland NCR Skimmers

- Sector MD-NCR Skimmers

Sector Maryland NCR Staging Areas

- Sector MD-NCR Staging Areas

Sector Maryland NCR Booming Strategies

- Boom Priority 1
- Boom Priority 2
- Boom Priority 3

Sector Maryland NCR GRS Index

- Sector Maryland NCR GRS Index

Esri Light Gray Canvas



# Layer Slider

Search layers, folders and bookmarks

Select the dynamic layers to swipe

- Right ▾ Seamless ESI Biologic Maps for Chesapeake Bay (NOAA ESI 2016)
- Both ▾ Sector Maryland NCR Booming Strategies
- Both ▾ Sector Maryland NCR Staging Areas
- Both ▾ Trajectory Forecast 06-07-2022 at 0600

ERMA® | Atlantic

LEGEND

Trajectory Forecast 06-07-2022 at 0600

- Floating
- Beached

Sector Maryland NCR Staging Areas

- ⑤ Sector MD-NCR Staging Areas

Sector Maryland NCR Booming Strategies

- ✓ Boom Priority 1
- ✓ Boom Priority 2
- ✓ Boom Priority 3

Seamless ESI Biologic Maps for Chesapeake Bay (NOAA ESI 2016)

MapBox Hybrid Imagery

1000 m

Scale: 1 : 49,247

Zoom: 13.5

Location: 38.05754°, -76.36160°

Projection: 3857: WGS84 Web Mercator

## Hurricane Milton Pollution Targets

Total Targets

652

Threat:  
Mitigate

0

Threat:  
Monitor

0

No Action - LIP

58

Target Remov...

4



Total Targets in  
Map

73

Pollution  
Threat

1

Not Assessed

0

Action Compl...

2

Hotspots

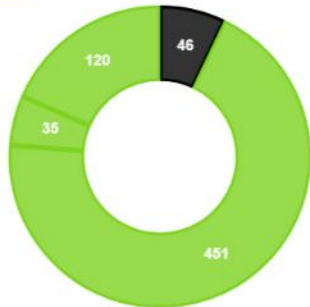
0

UAV Needed

0

Total Targets by Status

- 4. Assessed - Target Not Found
- 5. No USCG Action - Leave in Place (final action)
- 6. USCG Action Complete - Leave in Place (final act)
- 7. Target Removal Complete (final action)



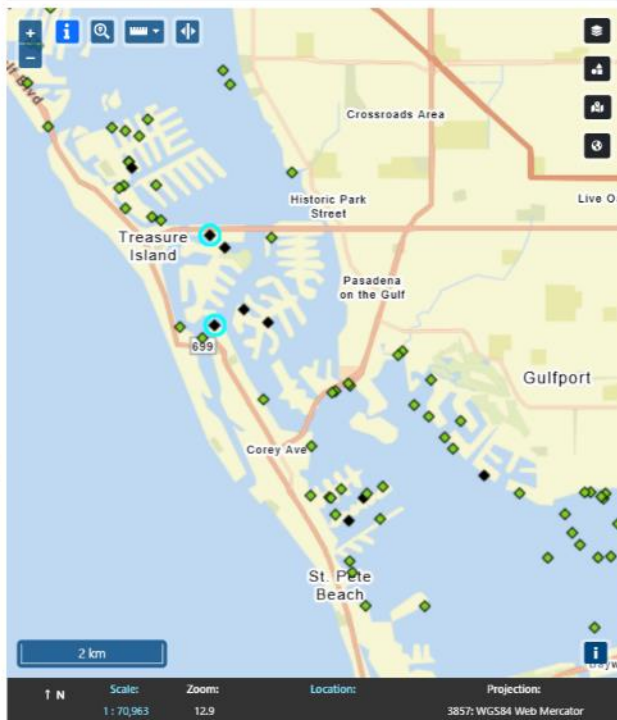
Target Not  
Found

9

Vessel Type Count

recreational 73

Hurricane Milton Targets



Location: 36.0180°, -75.2426°

Debris Targets in View

9 of 73

Status

4. Assessed - Target Not Found

Photos



Target Type

Vessel

Unique ID

251072\_004

assessmentdate

2024-10-15T15:35:56Z

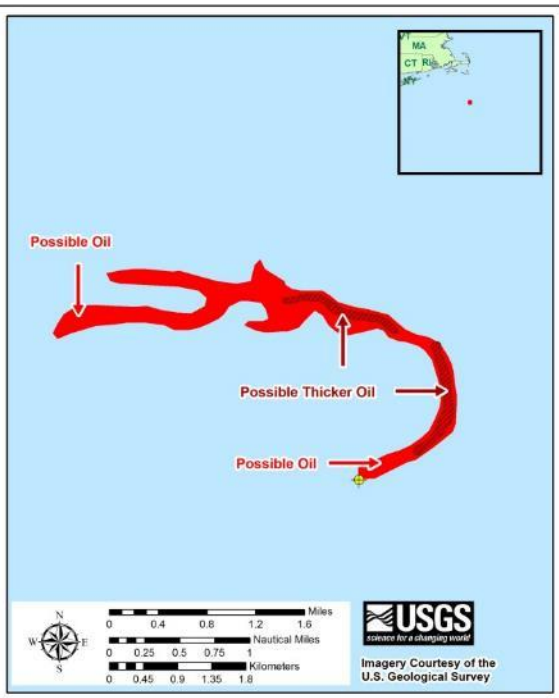
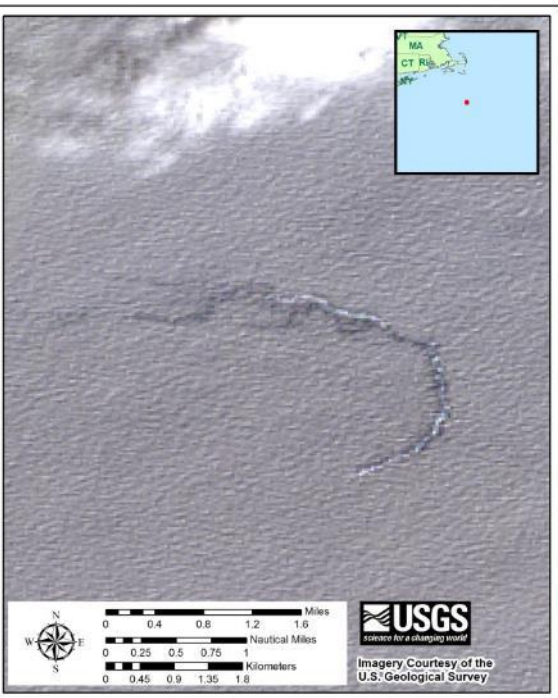
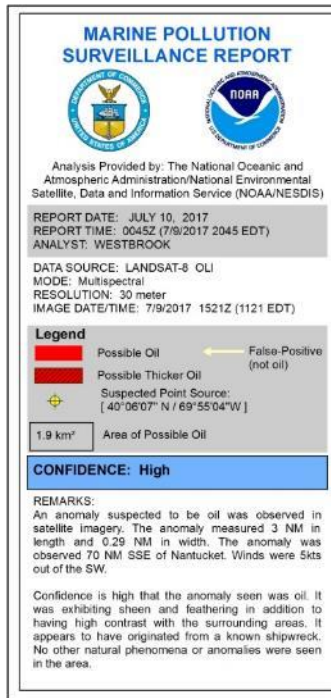
hotspot

uscg\_comments

10/15 MO Jet ski floatable dock found where satellite image was detected. No

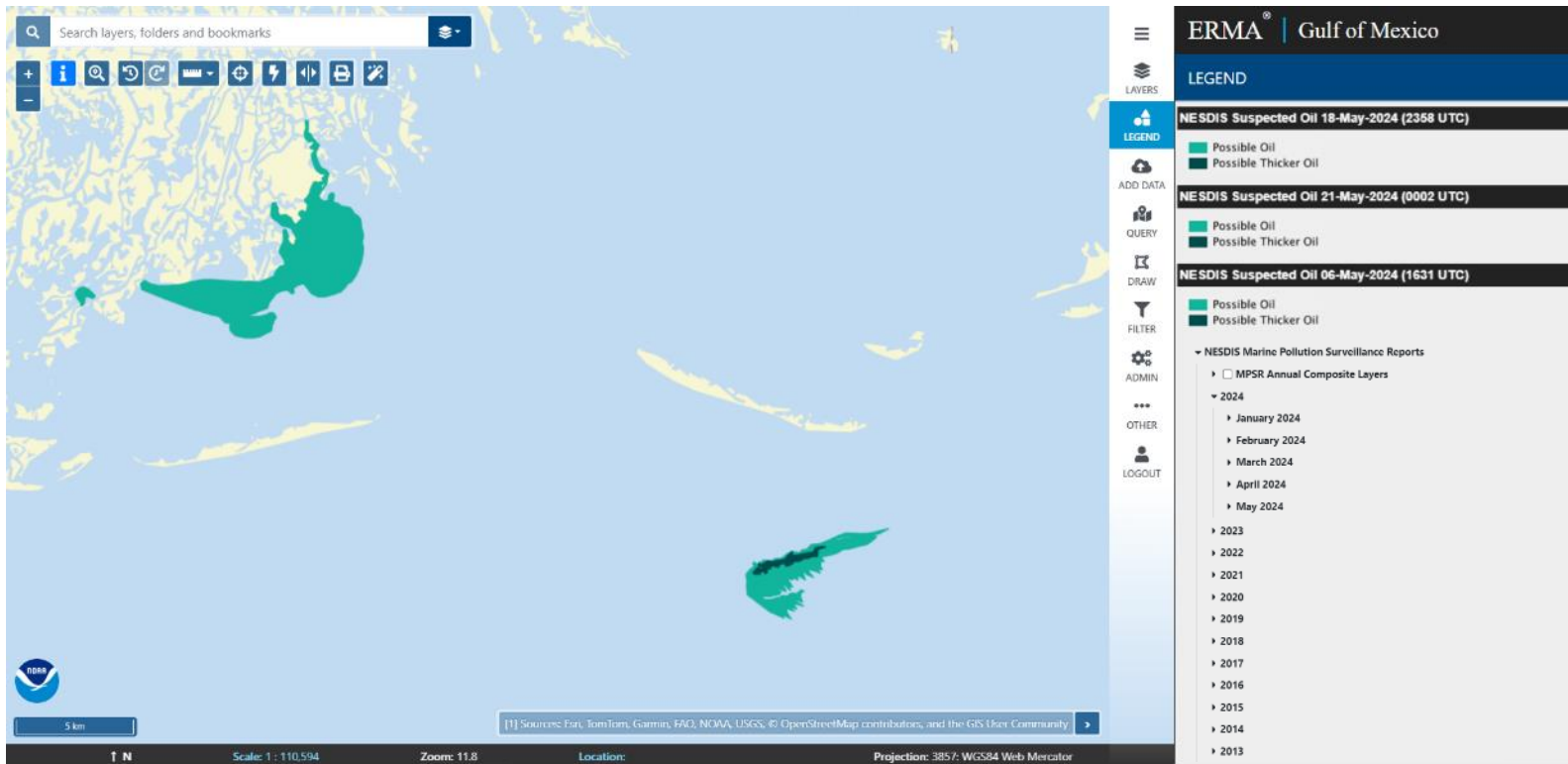


# Marine Pollution Surveillance Reports (MPSR)





# Marine Pollution Surveillance Reports (MPSR)



## ERM A Layer - Data View

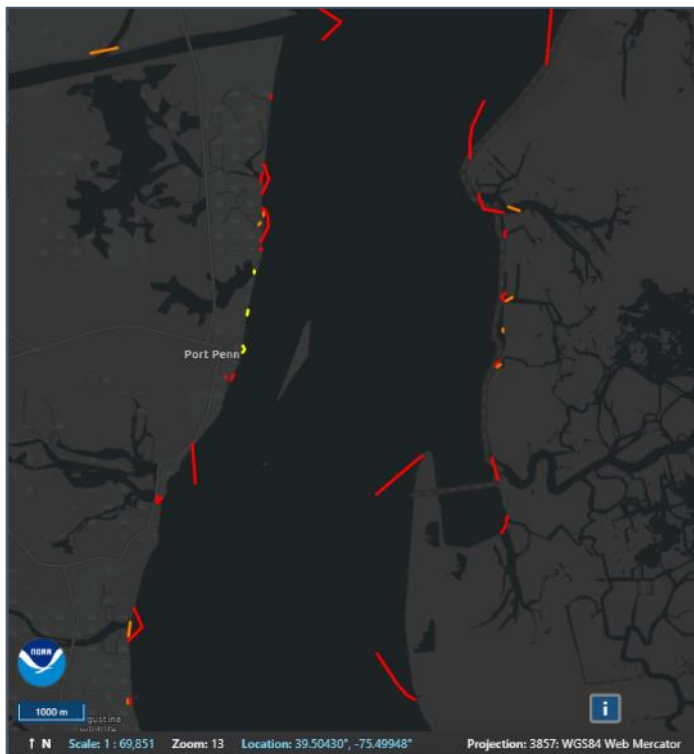
## Right-click “view data”

- Columns
- Clear All Filters
- Refresh
- View Summary Stats
- Create Temporary Layer

## Excel-style Filtering

## String Filtering

# Filtering Data



### Edit Filters

Sector Delaware Bay Boom Strategies

Select a column to filter:  +

priority 2

Filter choices... X

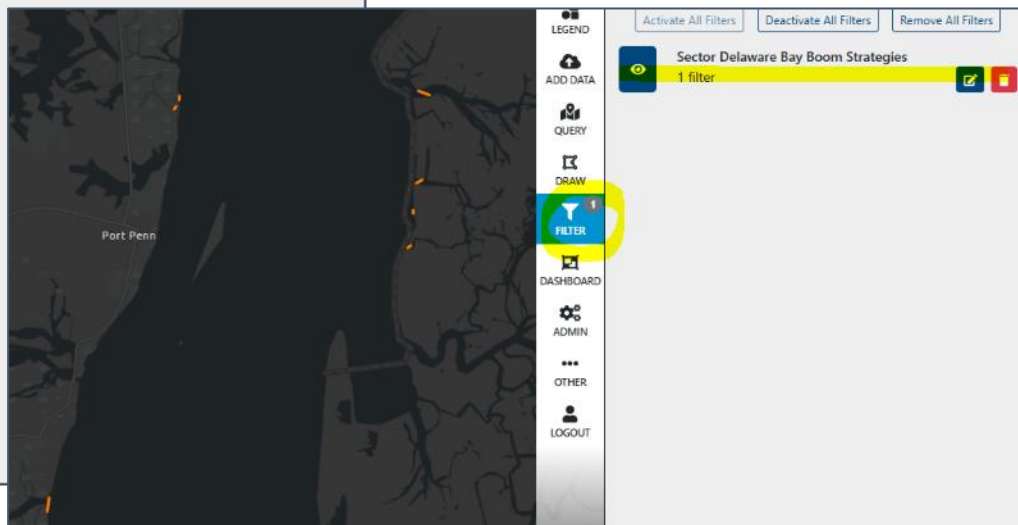
☐ Select All

☐ 1

☒ 2

☐ 3

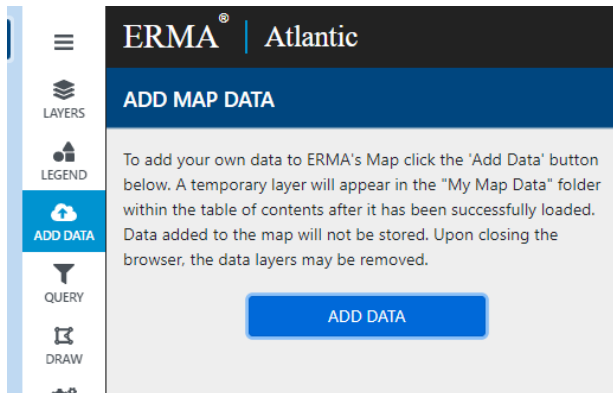
OK Reset Close





# ERMA Tools - Add Map Data

- Add Excel, csv, GIS data to your ERMA session



## Add Map Data

Upload  
Type

File Data

Choose File

Choose a file or drag and drop a file here...

Browse

Files larger than 1mb may cause Microsoft Edge to become slow or unresponsive

### SUPPORTED FILE TYPES

#### 1. Shapefile

- Data must be uploaded with one layer per zip file
- Each layer zip file should contain all the component files of the shapefile

#### 2. CSV or Excel file

- Must contain a header row of column names and spatial data labeled with some form of 'lat','lon' or 'latitude','longitude'
- Only the first sheet in the Excel workbook will be mapped

#### 3. GPX File (.gpx) or KML (.kml)

#### 4. GeoJSON File (.geojson or .json)

- Assumed to be in Geo coordinates (EPSG 4326)

#### 5. Geo Tiff File (.tiff or .tif)

- Assumed to be in Geo coordinates (EPSG 4326)

Cancel

Save Layer

# UAS Oil-on-Water Job Aids

**Working with CG-MER to create SOPs/Job Aids to define UAS sensors, flight parameters, data management, flow into NOAA OR&R systems for oil-on-water**

- **Job Aid #1: UAS for Oil Spill Response Guidance and Training for USCG and OR&R**
- **Job Aid #2: Oil Spill Response Data Management, Storage and Delivery Guidance for USCG and NOAA**

**Release expected in January, 2025**

[response.restoration.noaa.gov](https://response.restoration.noaa.gov)



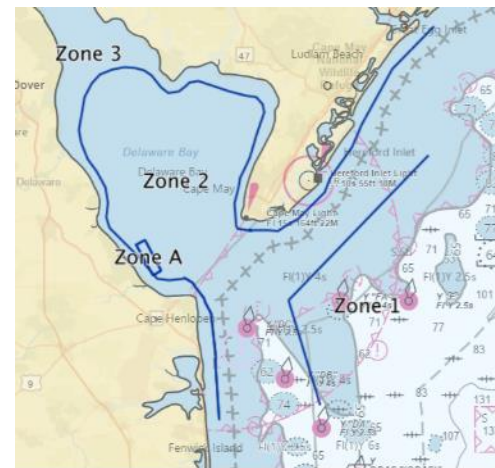
## Discussion items

**Abandoned and Derelict Vessels (ADV) - would like to have these more consistently available throughout the US**

**Some sectors (DelBay) have provided planning/response data (burn/dispersant pre-auth areas/shoreline assessment zones) - we welcome more**

**GRS - would be nice to have consistent symbology/attributes throughout the US**

## MISLE / CART / EEIs? Subset would fit into ERMA really well





# Summary Overview

## ERMA Availability:

- USCG COP and Data Sharing
- 24/7 Availability
- Reach out to your SSC!

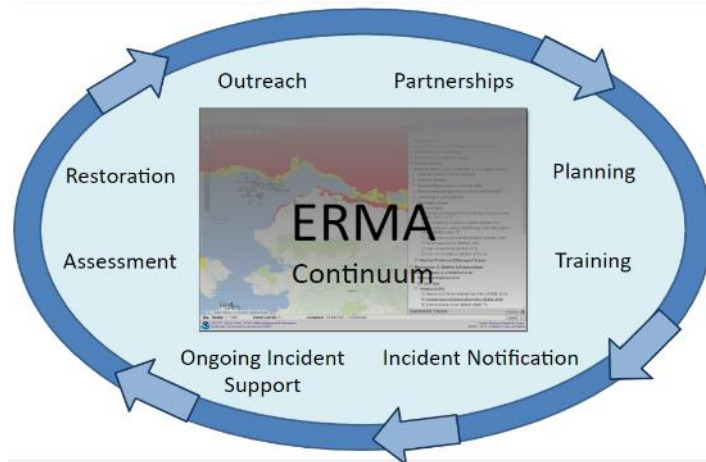
## ERMA Data:

- Proprietary and Public data for and after an incident
- Controlled access to information
- 3 Things! (Search, Recent Data, Bookmarks)

## ERMA Functionality:

- Supports a variety of ICS related activities
- Provides Analysis and Tools
- Dashboards and Reporting
- Always Evolving and Improving!

# Questions?



<https://erma.noaa.gov/atlantic>

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[response.restoration.noaa.gov](https://response.restoration.noaa.gov)

