



# **Environmental Response Management Application (ERMA®)**

**Washington State Best Achievable  
Protection Conference  
May 20-21, 2015**

*Ben Shorr, George Graettinger, Nicolas Eckhardt*

*Office of Response and Restoration | Assessment and Restoration Division*

*Spatial Data Branch*

*Seattle, WA*





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# Presentation Overview

- Requirements for Common Operational Picture (COP)
- What is ERMA?
- Standards and Data Exchange
- Data/Information Management Plans
- Data Sharing

# COP Fundamentals

## Data Sharing and Common Access

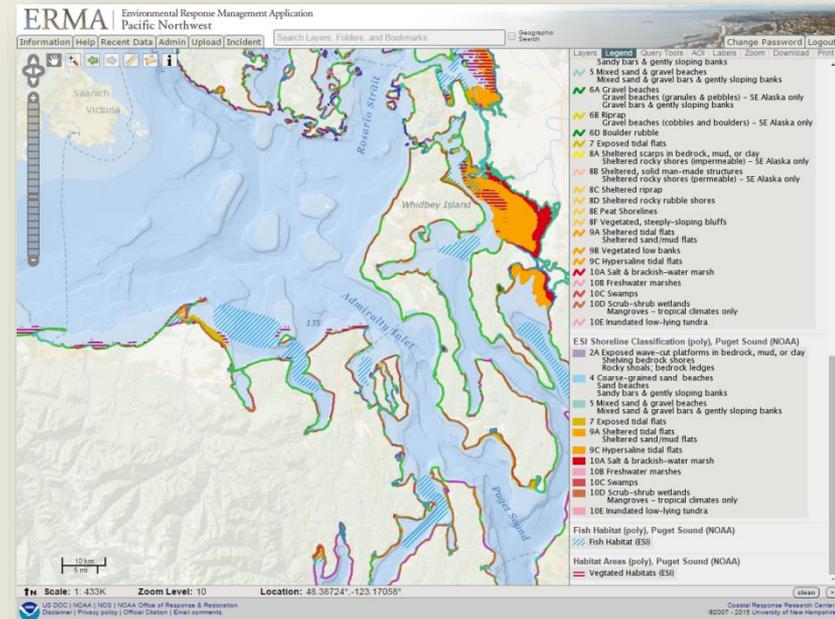
- Incident specific data sharing and access
- Data sharing means a copy of the data and not just data viewing during response
- Data sharing includes Environmental and Operational data
- Data ownership is retained by source
- Data ownership is NOT transferred

## What is Required for a Good COP?

- Current, accurate operational and environmental data for an incident
- Secure access control (data/users)
- Standard interface and symbology
- Consistent presentation of data and products
- Support Planning and Response needs
- Ability to support on-scene (Incident Command) and off-site (HQ/NIC) information needs

# What Is ERMA?

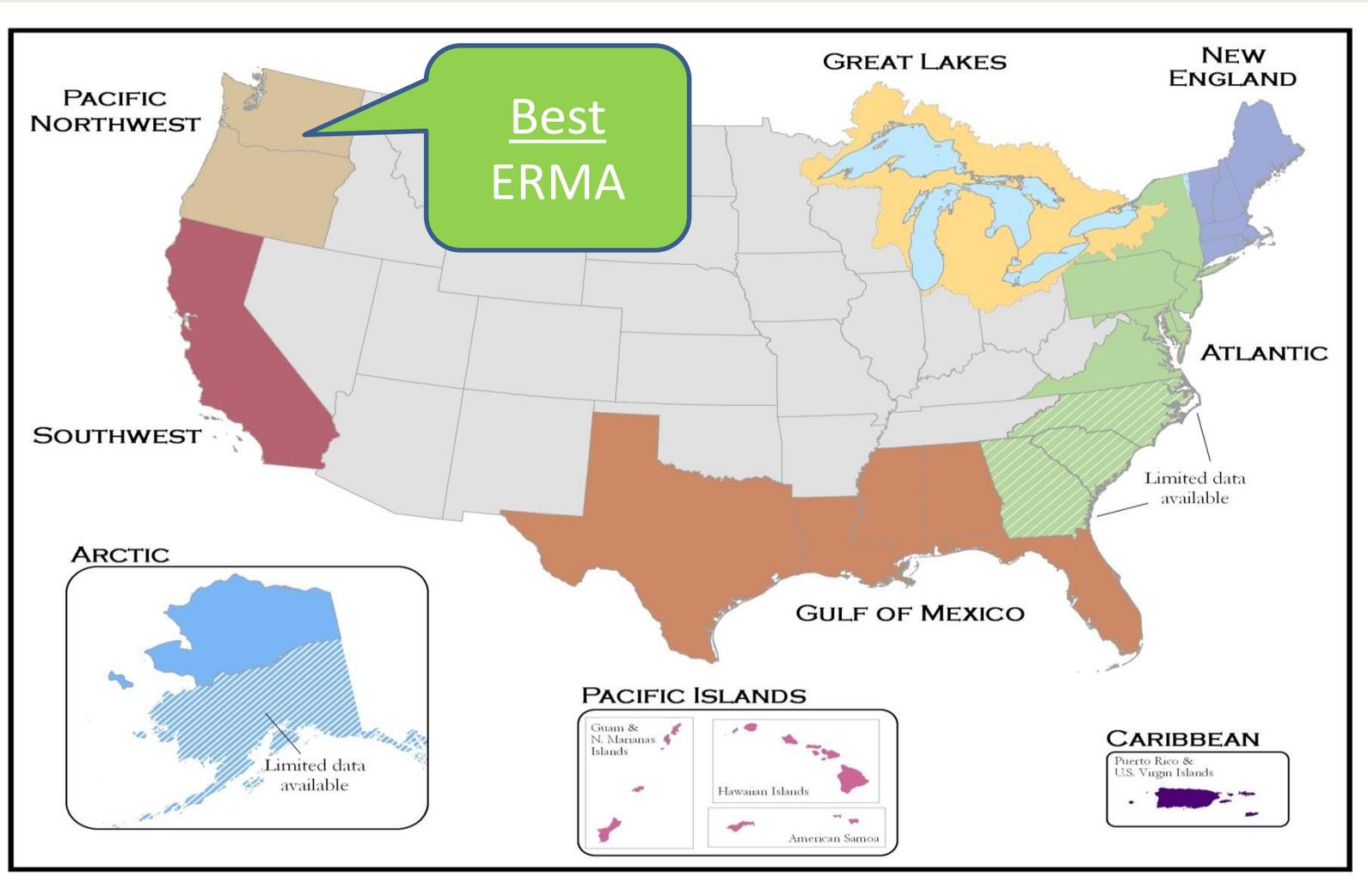
- Common Operating Picture (COP)
- Web-based mapping tool
- Centralized access to information
- Increases communication, coordination, and efficiency
- Prepare for, respond to, assess impacts from incidents or conditions
- Analyze and visualize environmental information relevant to all hazards



# ERMA Application Areas

- Regional response planning
- Data/Information management plans and data sharing
- Federal oversight of incident data
- On-scene GIS and data management
- Hazardous waste site remediation (CERCLA)
- Natural Resource Damage Assessment (NRDA) case support
- Restoration planning and implementation

# Where is ERMA?



# Key ERMA Functionality

- Access from any (modern) Web browser
- Tiered system security
- Build customized maps, save as Bookmarks
- Open source technology allows for customization
- Interoperability with external systems



## Key ERMA Functionality continued

- Multiple (authorized) user upload
- Metadata, links, attachments (PDF, JPG, etc.)
- **Testing** – data review before promoting
- Ingest feeds (WMS/REST); load GIS data (shapefiles/KML)
- Bookmarks (Saved views)

# ERMA is used to...

Visualize the situation status during an oil spill drill



Assess damage and plan for restoration



Analyze threats from climate change, drilling, and hurricanes



Create a Common Operational Picture in a disaster response



# How ERMA is Used in Response

- Operations Section
- Environmental Unit
- Situation Unit
- Unified Command
- Joint Information Center
- Public Communication



# How ERMA is Used in NRDA



- Explore existing data
- Sampling plan development
- Field planning/logistics
- Visualize data & analysis
- Restoration Planning

## ERMA Account Access

- **Public Access** (for publicly available data)
- **Restricted accounts for Planning & Response**
  - Username/password required
  - Verified by NOAA or partners
  - Various levels of access
    - Active incidents
    - Sensitive datasets
    - Training
    - Drills
- **Data available only to appropriate users**



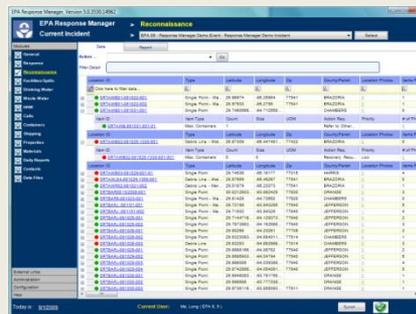
# ERMA COP Interoperability & Standards

Data Collection,  
Visualization, Query  
and Reporting

Mobile/form field data  
Collection and Delivery



**Response Manager,  
Flex Viewer, NDOW**



Mobile field data  
Collection, QA,  
Database  
Ingestion  
and Delivery

# ERMA Layout

The screenshot displays the ERMA Pacific Northwest web application interface. The main map area shows a topographic view of the Pacific Northwest coast of the United States, with numerous colored markers representing different environmental response management units. The interface includes a top navigation bar with 'Information', 'Help', 'Recent Data', 'Admin', 'Upload', and 'Incident' tabs. A search bar is located at the top center. On the right side, there is a 'Layers' panel with a tree view of various data layers, and a 'Context Menu' is open over one of the layers. At the bottom, there is a 'Bookmark Views' panel and a 'Scale' bar. The map itself shows labels for 'WASHINGTON' and 'OLYMPIC MOUNTAINS'.

**Map Toolbar**

**Map Controls**

**Find/Geographic Search**

**Map Key**

**Bookmark Views Panel**

**Display Controls**

**Table of Contents**

**Context Menu**

**Tool Tabs**

**Login/Password**

**ERMA** Environmental Response Management Application  
Pacific Northwest

Information Help Recent Data Admin Upload Incident Search Layers, Folders, and Bookmarks Geographic Search Change Password Logout

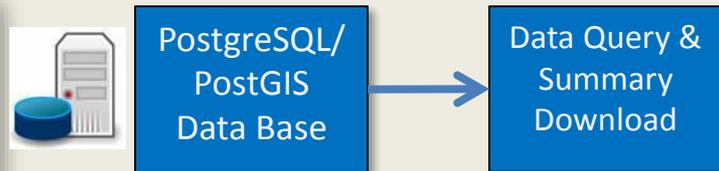
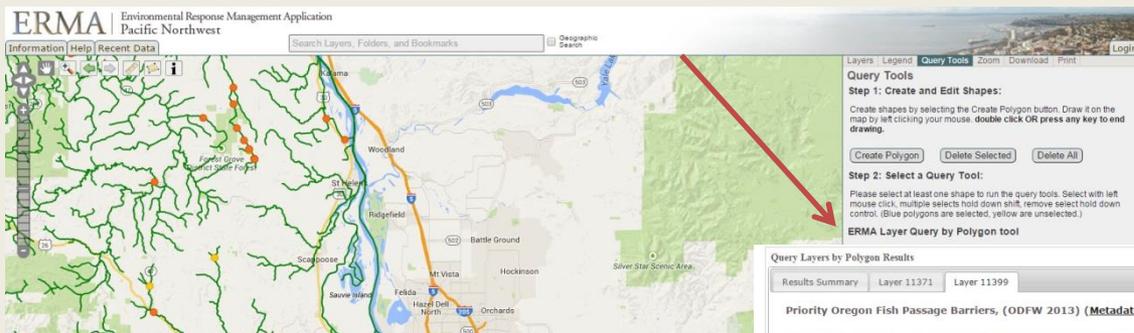
Layers Legend Query Tools AOI Labels Zoom Download Print

- Background
- Climate Assessment Proactive Response Initiative
- Admin Boundaries & Reference Features
- Bathymetry & Hydrology
- Environmental Quality & Assessment
- Marine Debris
- Imagery & Remote Sensing
- Natural Resources, Habitats, & Managed Areas
- Navigation & Marine Infrastructure
- Public Safety & Infrastructure
- Response Planning
  - Area Contingency Plans
    - Sector Puget Sound | MSU Portland
      - Washington Geographic Response Plans Boundaries (WDOE)
      - Washington Geographic Response Plans Boundaries (WDOE)
      - Washington Geographic Response Plans Boundaries (WDOE, 2009)
      - Interim Washington Geographic Response Plans Strategies (WDOE, 2014)
      - DRAFT Marine Response Plans (MESA) (WA DOE, 2014)
    - Cherry Point Sample Collection Plan
  - Flood Zones
  - Regulated Facilities
  - Restoration
  - Weather, Oceanography, & Natural Hazards
  - Incidents & Drills
  - ERMA Tools

Scale: 1:2M Zoom Level: 8 Location: 49.04382°,-123.39017°

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# Data Queries in ERMA



Query Layers by Polygon Results

Results Summary Layer 11371 Layer 11399

**Priority Oregon Fish Passage Barriers, (ODFW 2013) (Metadata)**

You may drag column headings to reorder them, or click on the arrows (↕) to sort by a column.

Showing 1 to 21 of 21 records Show 100 entries

2 Filters Enabled

fbprevidt (reset) Selected Range: 2009-06-17 - 2012-04-10 Apply

fbpsiteid (reset) Selected Range: 4175 - 29416 Apply

objectid	fbpbftrid	fbpsiteid	fbprevidt	fbpoftrid	fbponum	fbpsiteid	fbplocmd	fbplocaccu	fbplocdct	fbpbftry	fbpbftrnm	fbpbfmvd	fbpbfmtr	fbpfpassta
13	4533	4533	2012-04-10	842	ODFW	842	FieldQuad	150	19990900	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	unknown	Partial
18	4558	4558	2012-04-10	840	ODFW	840	DigDerive	40	20081210	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	unknown	Partial
47	7587	7587	2012-04-10	943	ODFW	943	DigDerive	40	19990900	Culvert	Unnamed culvert	unknown	unknown	Partial
70	10122	10122	2011-12-08	55130	ODFW	55130	Unknown	9999	00000000	Unknown	Unnamed barrier	no	no	UnkAnad
87	11728	11728	2009-06-17	1006	ODFW	1006	FieldQuad	150	19990900	Culvert	Unnamed culvert	unknown	unknown	Partial
97	4175	4175	2012-04-10	50915	ODFW	50915	Unknown	9999	00000000	Dam	Unnamed dam	no	no	Partial

Search all columns:

fbplocaccu	fbplocdct	fbpbftry	fbpbftrnm	fbpbfmvd	fbpbfmtr	fbpfpassta
150	19990900	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	unknown	Partial
40	20081210	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	unknown	Partial
40	19990900	Culvert	Unnamed culvert	unknown	unknown	Partial
9999	00000000	Unknown	Unnamed barrier	no	no	UnkAnad
150	19990900	Culvert	Unnamed culvert	unknown	unknown	Partial
9999	00000000	Dam	Unnamed dam	no	no	Partial

# Environmental Sensitivity Index data and Query Tool

Environmental Response Management Application

https://www.erna.unh.edu/northwest/erna\_esi.html - Google Chrome

https://www.erna.unh.edu/northwest/erna\_esi.html



Environmental Sensitivity Index: Resources at Risk

Background and Instructions

Species listed in **Red** are either listed as Threatened (T) or Endangered (E) by the State (S) or Federal government (F)

**Notes:** Click on column headers to sort rows; hover or click on species link to get more information.

Summary Results

AOI total area: 84447 acres

**Puget Sound Bird Habitat**

9 unique species: Caspian tern, Cormorant, Gulls, Harlequin duck, Pacific loon, Pigeon guillemot, Rhinoceros auklet, Scoters, Waterfowl

**Puget Sound Fish Habitat**

Selected 1 features

**Puget Sound Shoreline Classification (lines)**

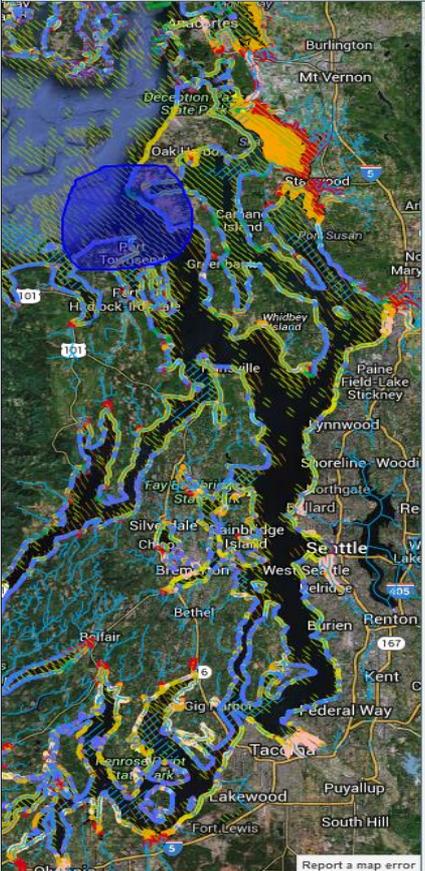
Summary Length (miles) by type:

- 5: Mixed sand and gravel beaches: 34
- 7: Exposed tidal flats: 15
- 6A: Gravel beaches: 4
- 6B: Gravel beaches and riprap: 3
- 8C: Sheltered riprap: 2
- 4: Coarse-grained sand beaches: 1
- 9A: Sheltered tidal flats: 1
- 1B: Exposed, solid man-made structures: 0.5
- 10A: Salt and brackish-water marshes: 0.1

**Puget Sound Shoreline Classification (poly)**

Summary Area (acres) by type:

- 7: Exposed tidal flats: 890184
- 9A: Sheltered tidal flats: 69903



Layers Legend Query Tools AOI Labels Zoom Download Print

**ESI Table Tool**

Puget Sound ESI	
Biological	Other
<input checked="" type="checkbox"/> Bird Habitat	<input checked="" type="checkbox"/> Shoreline Classification (lines)
<input type="checkbox"/> Fish Lines	<input checked="" type="checkbox"/> Shoreline Classification (poly)
<input checked="" type="checkbox"/> Fish Habitat	<input type="checkbox"/> ESI Index Grid
<input type="checkbox"/> Vegetation Habitat Lines	<input type="checkbox"/> Management Areas
<input type="checkbox"/> Vegetation Habitats	<input type="checkbox"/> Socioeconomic (line)
<input type="checkbox"/> Invertebrates	<input type="checkbox"/> Socioeconomic (point)
<input type="checkbox"/> Marine Mammal Points	
<input type="checkbox"/> Nests	

Months of Interest

J  F  M  A  M  J  J  A  S  O  N  D

Report Area Intersection Summary

# Trajectory Models

- Example: NOAA GNOME Trajectory
- Can ingest any trajectory (oil, airborne, other hazardous material) model or output

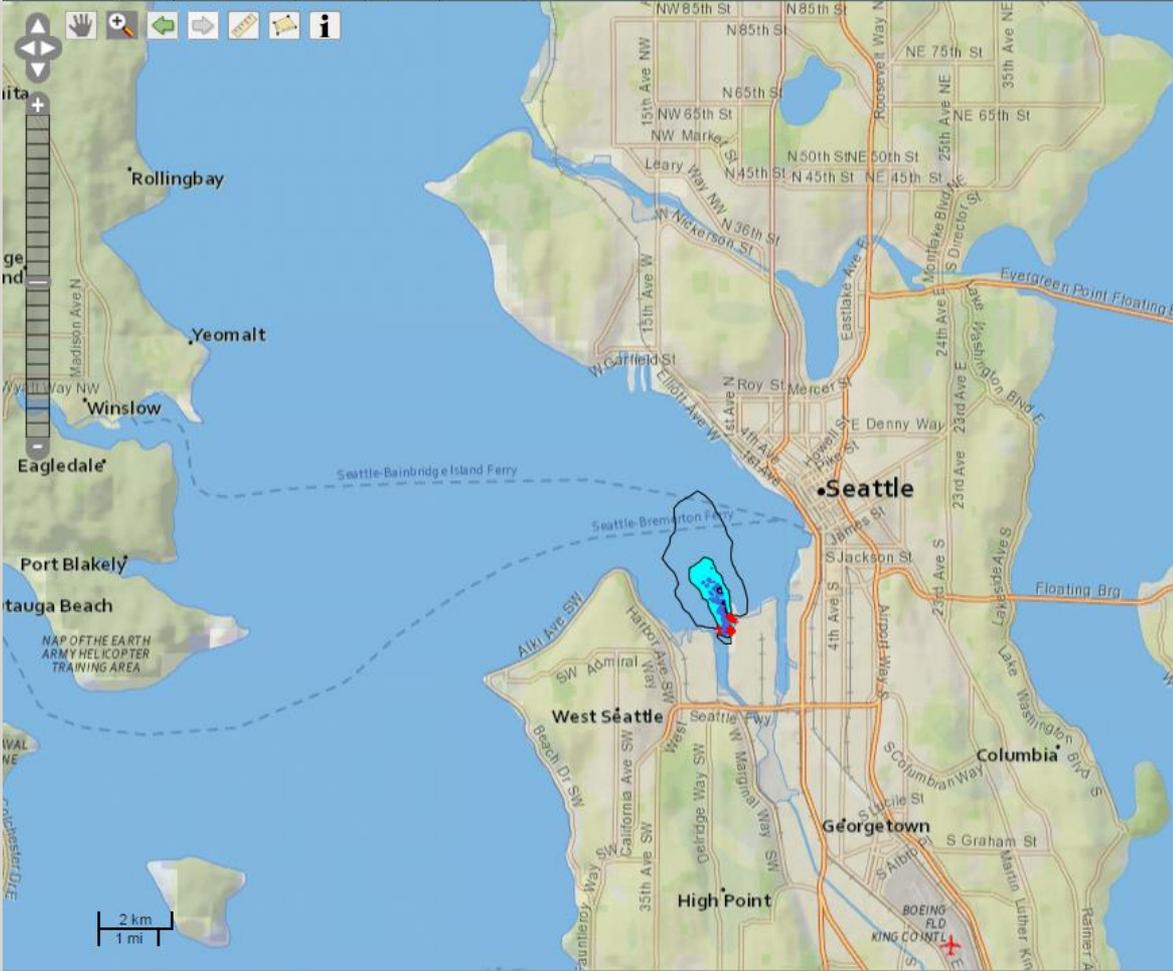
## ERMA | Environmental Response Management Application Pacific Northwest

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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-21-2014 0830 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∨ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-21-2014 0830 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.64979°,-122.24520°

clean >

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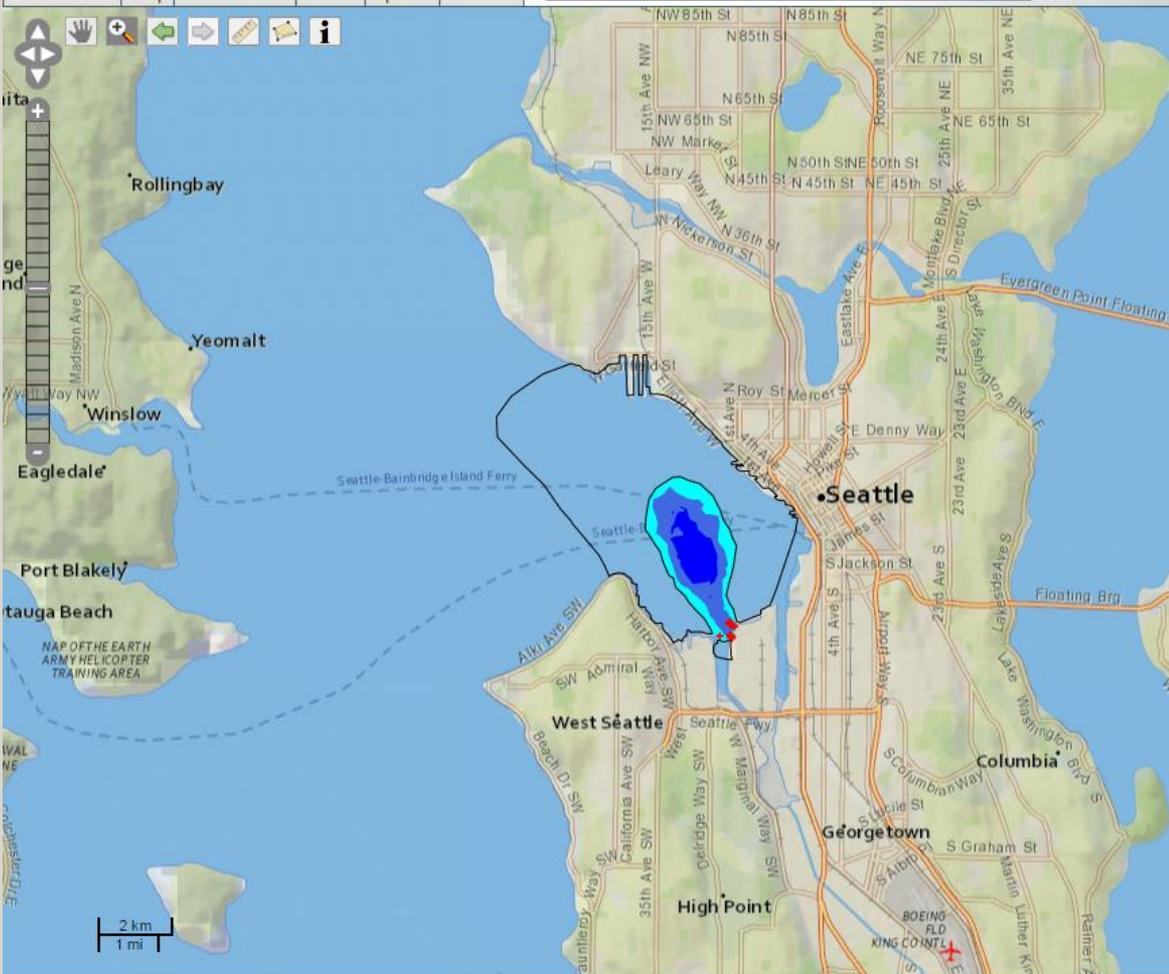
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-21-2014 1200 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∨ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-21-2014 1200 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.64979°,-122.24520°

clean >

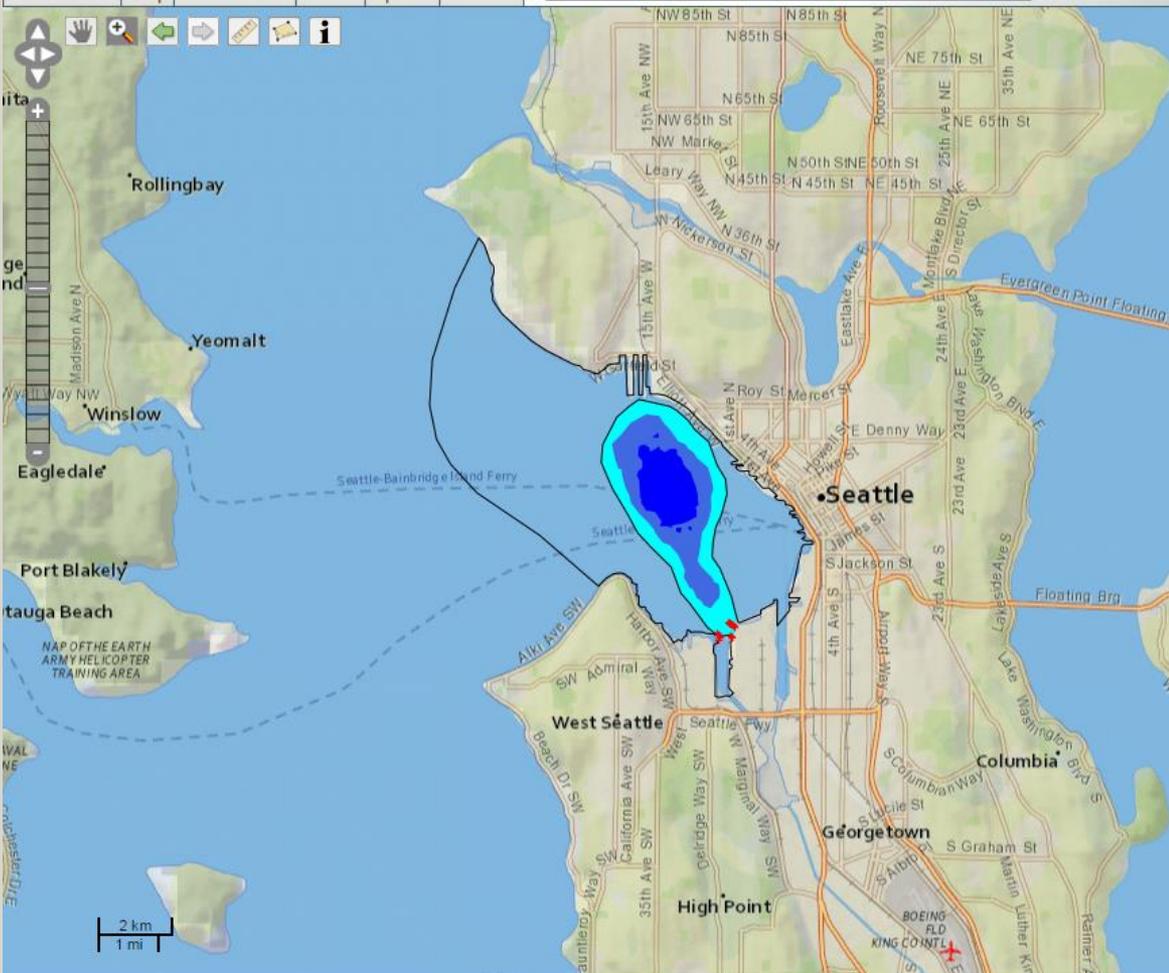
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-21-2014 1800 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ★ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-21-2014 1800 Hours

- ★ Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

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clean >

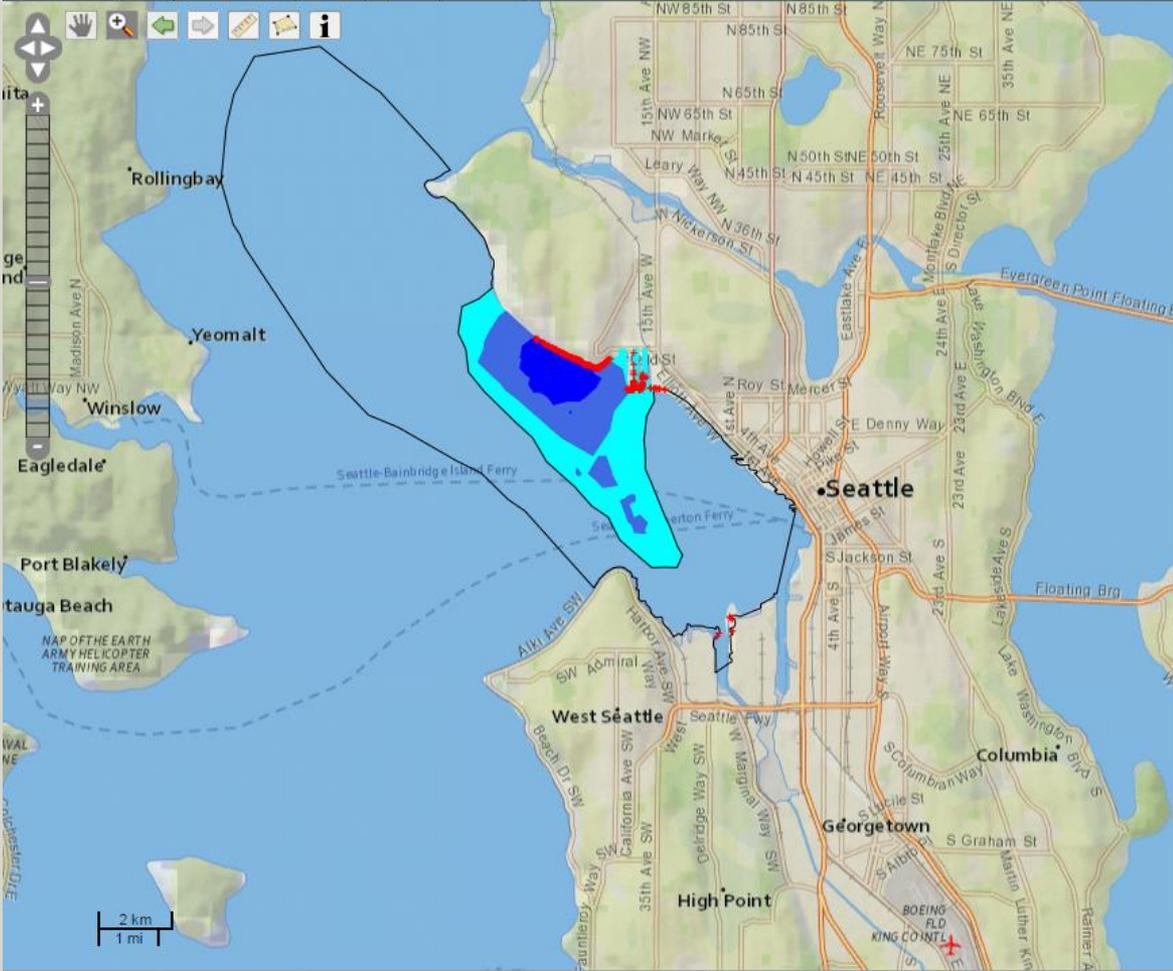
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-22-2014 0600 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∧ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-22-2014 0600 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.60606°,-122.31421°

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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-22-2014 1200 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-22-2014 1200 Hours

- Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.60606°, -122.31421°

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Trajectory Forecast for 8-22-2014 1800 Hours

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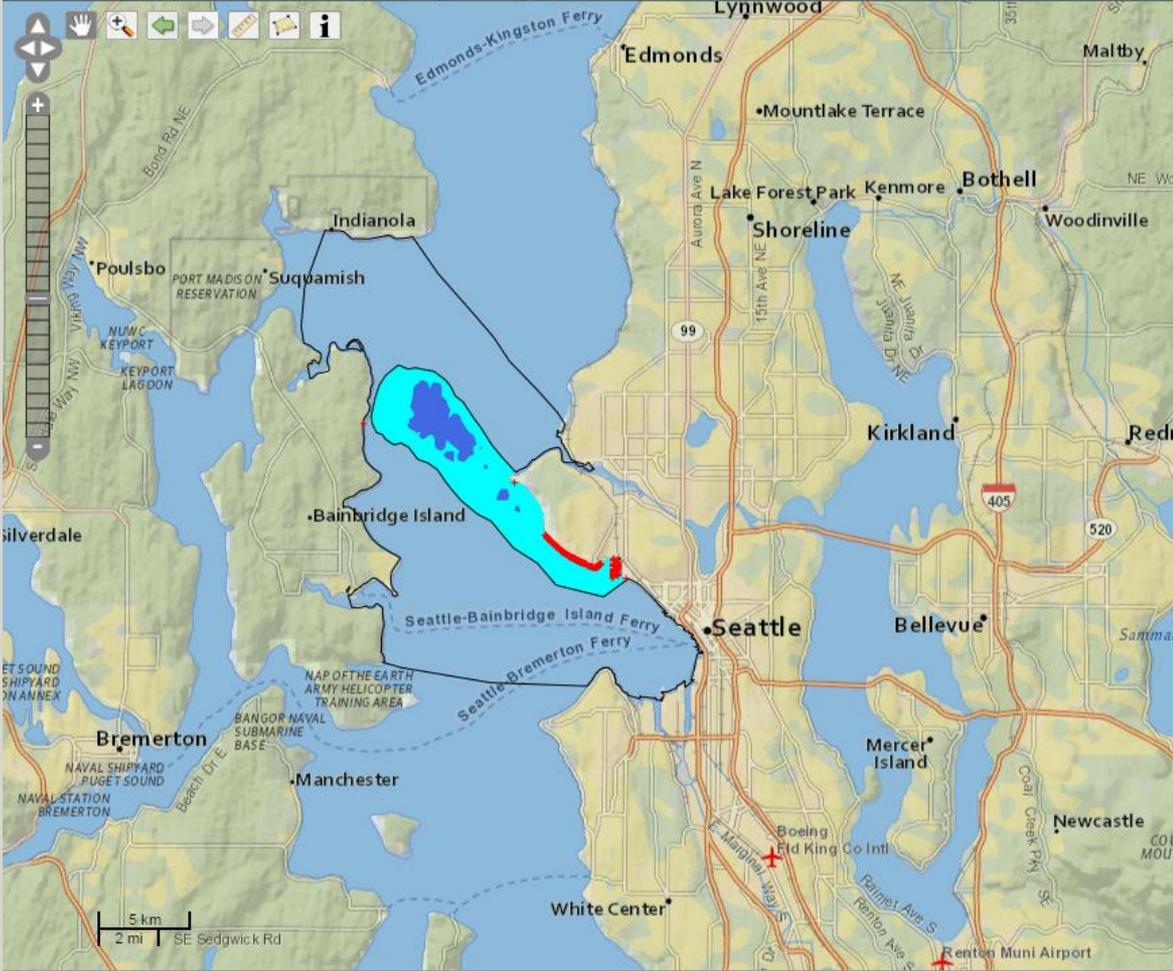
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-23-2014 0600 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-23-2014 0600 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 217K Zoom Level: 11 Location: 47.63498°,-122.44948°

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- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∨ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-23-2014 1800 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 217K Zoom Level: 11 Location: 47.62064°,-122.16589°

clean >

# Area Contingency Plan Data

ERMA | Environmental Response Management Application  
Pacific Northwest



Identify

Washington Geographic Response Plans Boundaries (WDOE)

gid	objectid	sub	strty_nm	map_nm	map
66	66.0000000000	OC	Outer Coast	Cape Flattery	1
67	67.0000000000	STR	Strait of Juan de Fuca	Neah Bay	1

Washington Booming Strategies (WDOE, 2009)

gid	site_id	mapscale	i	strategy_o	objective
401	3532	1			keep oil out of Waatch Creek. Deploy boom present, and
402	3534	1			keep oil out of Waatch River. Deploy boom as weather stakes on and rocks access side. Diffic need Jon

Geographic Response Plan x

www.ecy.wa.gov/programs/spills/preparedness/GRP/OuterCoastGRP/outer\_coast.htm

DEPARTMENT OF ECOLOGY  
State of Washington

A-Z Index | Contact Us | Search  GO

Ecology home > Spills > Preparedness Section > GRP Introduction > Outer Coast

## Outer Coast Geographic Response Plan (GRP)

- **Entire GRP:** Outer Coast - Complete GRP (16.7MB)
- **Chapter 1:** Introduction (March 2003)
- **Chapter 2:** Site Description (March 2003)
- **Chapter 3:** (Reserved)
- **Chapter 4:** Oil Spill Response Strategies and Priorities (June 2008) (13.3MB)
- **Chapter 5:** Shoreline Information (Jan 1996) (1.1MB)
- **Chapter 6:** Sensitive Resources (Jan 1996) (1.5MB)
- **Chapter 7:** Logistics (Jan 1996)
- **Appendix A:** Protection Techniques (March 2003)
- **Appendix B:** Original Contributors (March 2003)
- **Appendix C:** Comments, Corrections, & Suggestions (March 2003)

**Note 1:** Depending on your connection speed, GRP files can take several minutes to download.

**Note 2:** GRP files are provided in pdf format and require Adobe Reader (version 5.0 or later) to view. You can download the latest version of Adobe Reader from Adobe's website at <http://get.adobe.com/reader/otherversions>.

**Please submit comments and requests for paper copies to:**

Washington Department of Ecology  
Spills Program - GRPs  
P.O. Box 47600  
Olympia, WA 98504-7600  
360-407-7455  
Voice  
360-407-7288 Fax  
[GRPs@ecy.wa.gov](mailto:GRPs@ecy.wa.gov)  
Email

**Paper copies are available on request.**

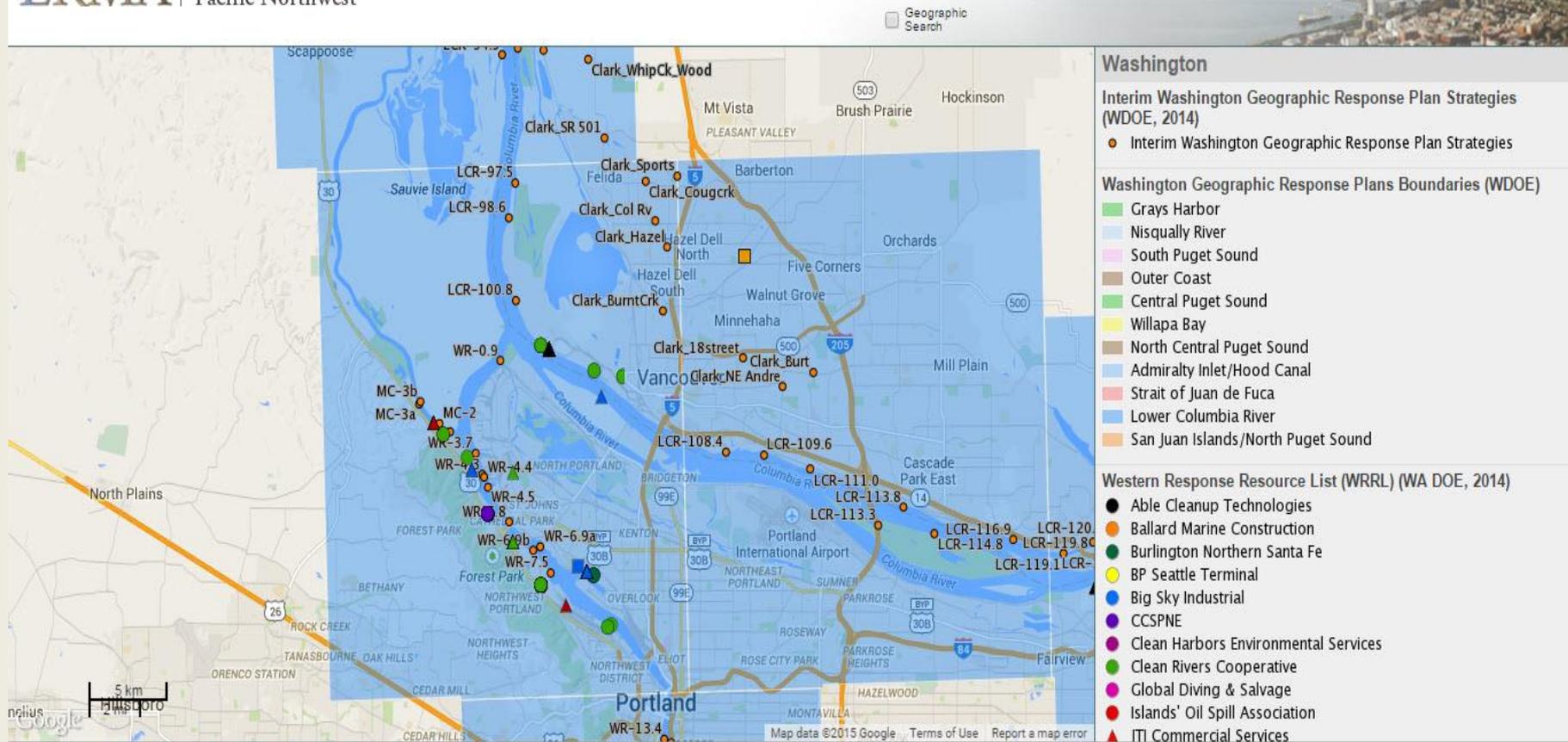
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One Front Door  
to Washington's outdoors

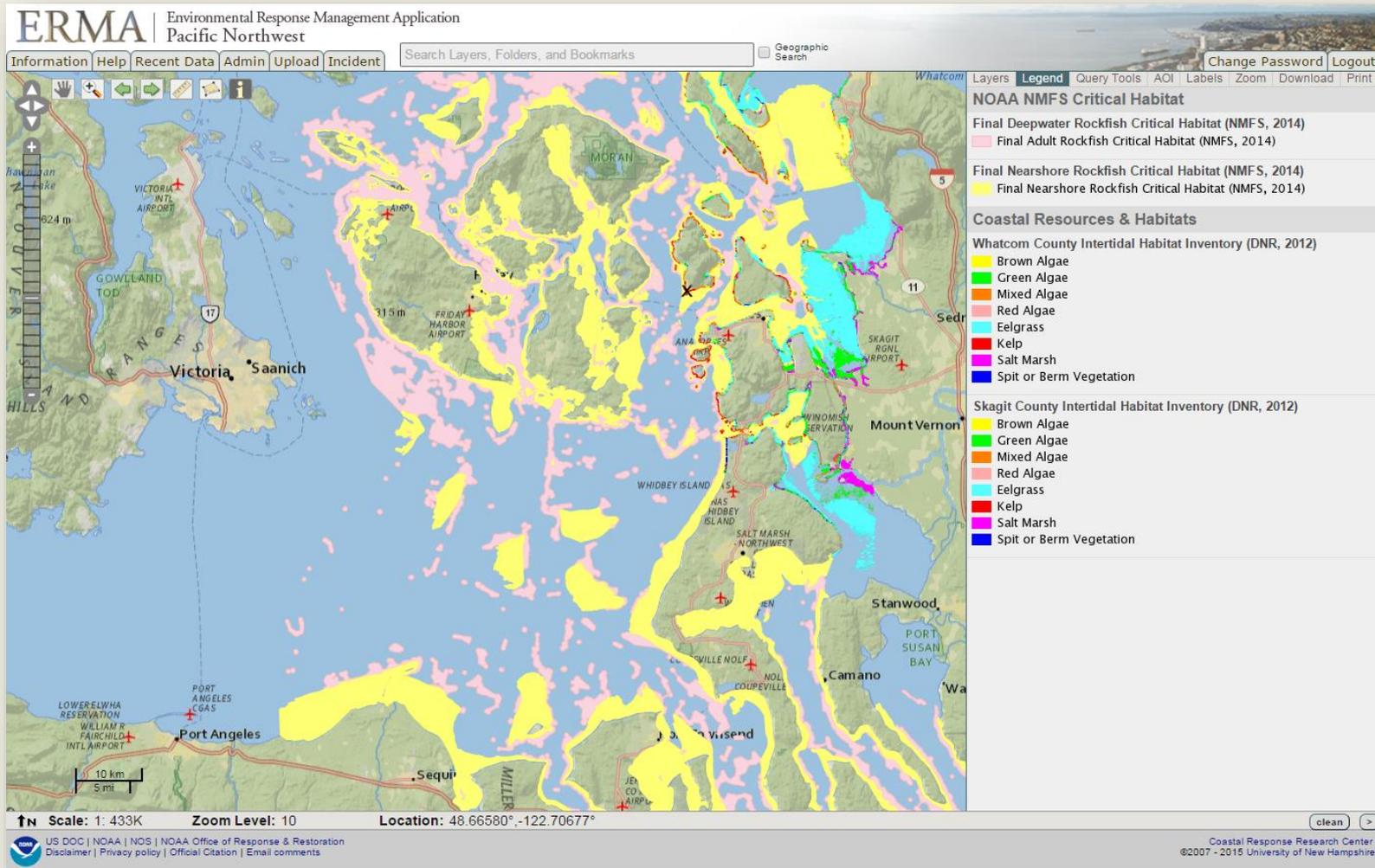
# Geographic Response Plan Data

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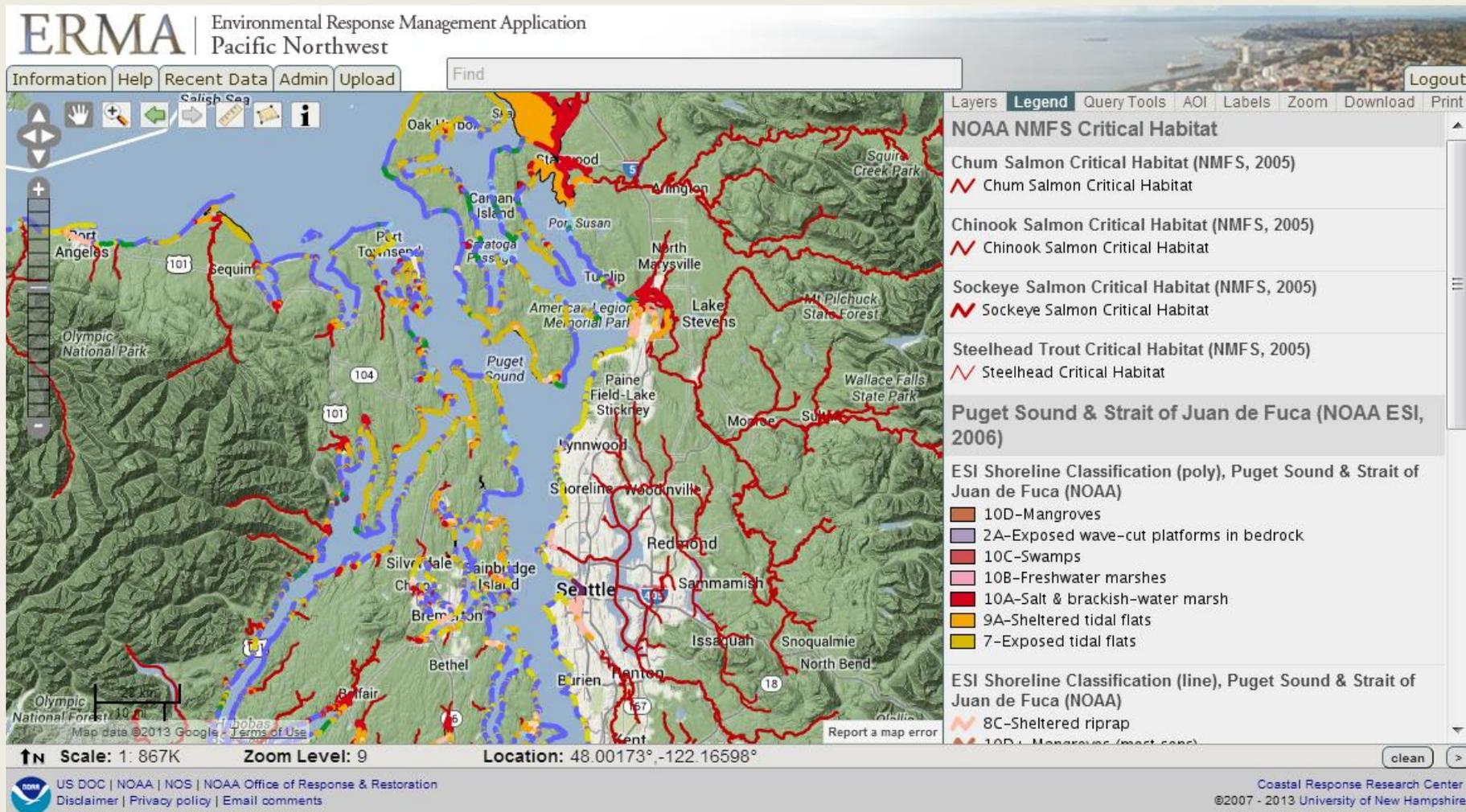


Scale: 1: 217K    Zoom Level: 11    Location: 45.71542°,-122.52741°

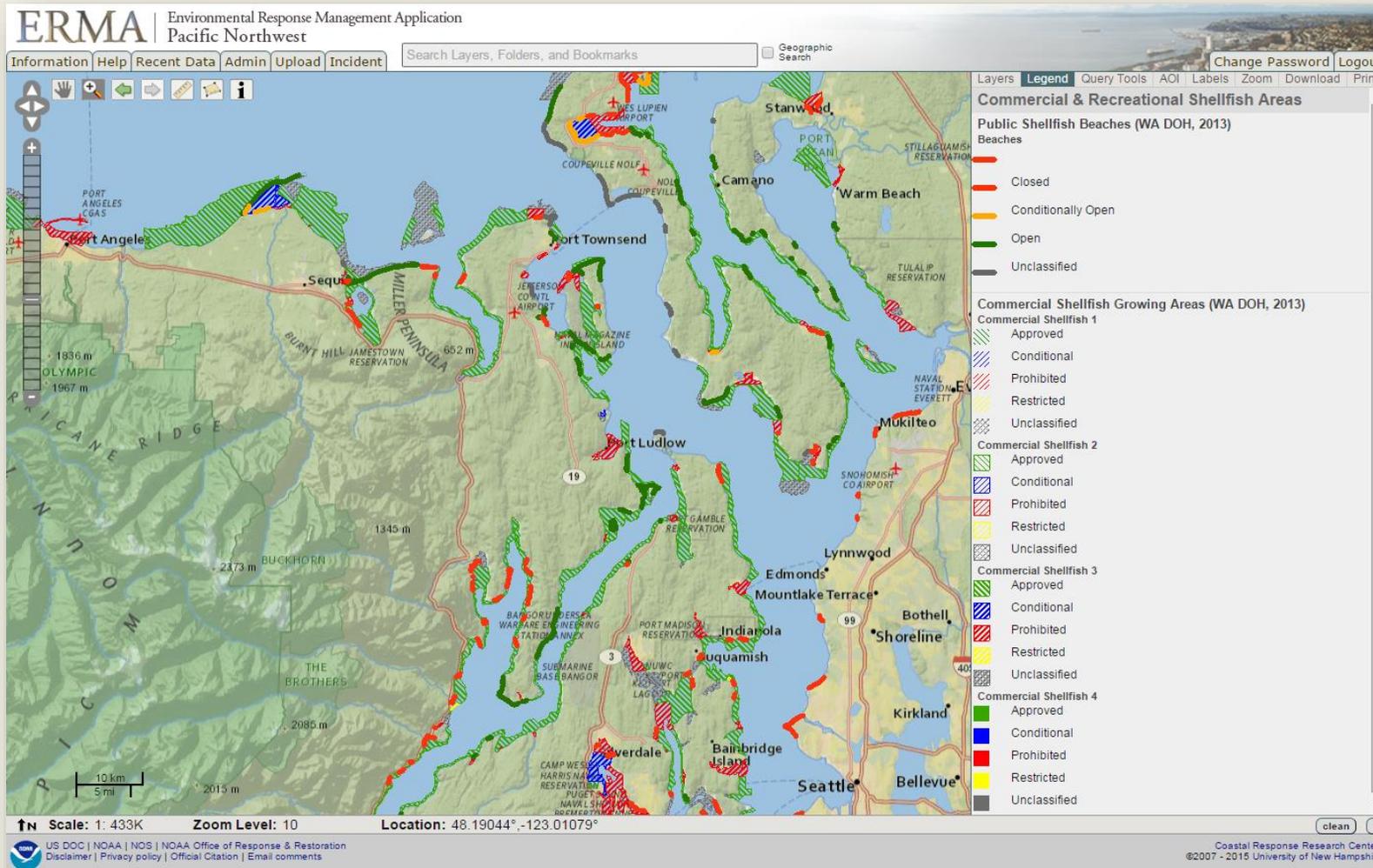
# Habitats (Critical/Inventory)



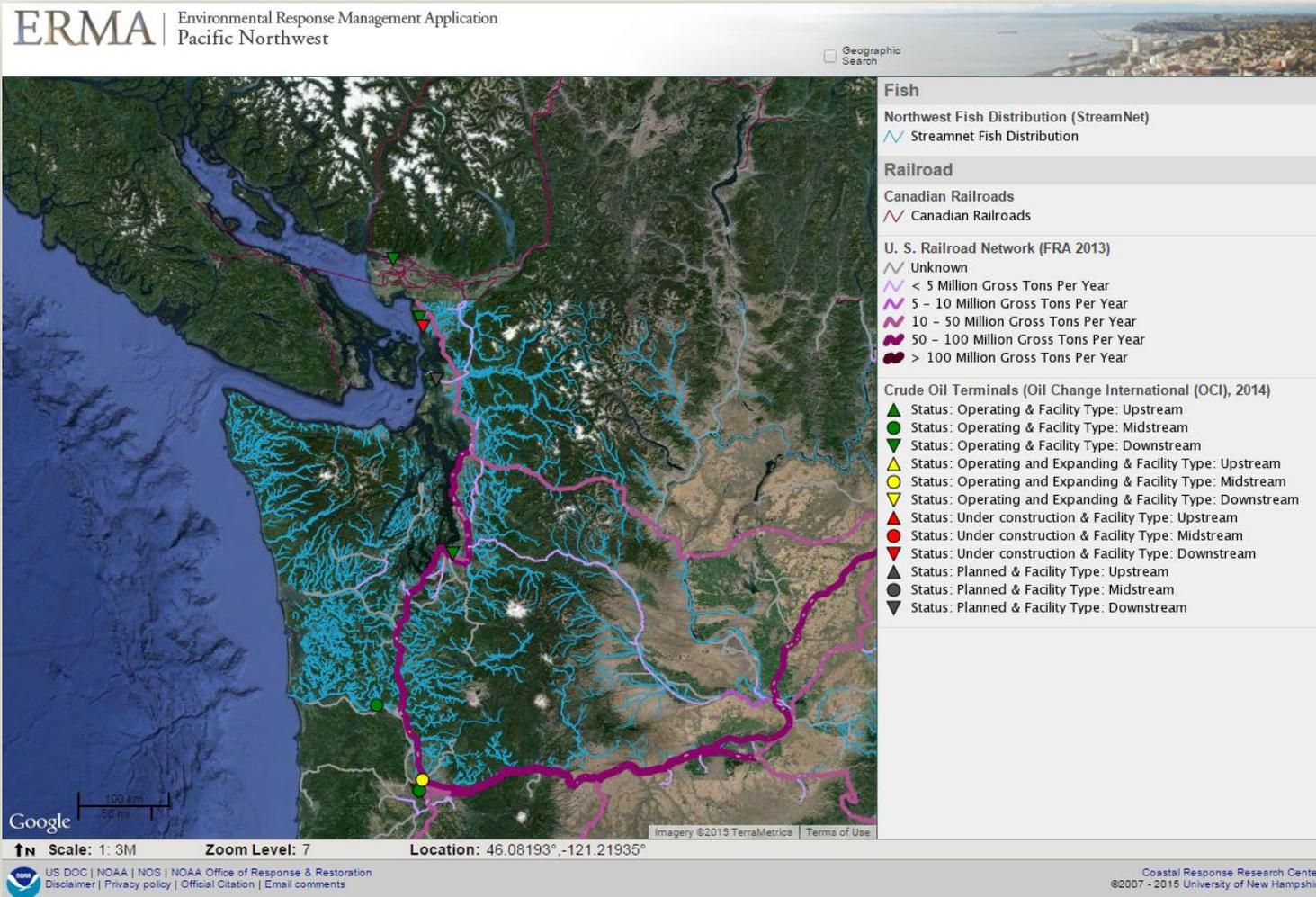
# Resources at Risk



# Resources at Risk



# Preparedness



# Response & Research Ship Tracking

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**Identify**

**SAIS Vessel by Type (exactEarth)**

**POLAR PIONEER**

Type: Pilot	Flag: Marshall Islands
Class: A	Source: S-AIS
IMO: 8754140	MMSI: 538003659
Call Sign: V7SI4	Size: 40.0m x 30.0m
Latest Position at:	2015-05-19 21:18:55
Latitude: 47.581057	Longitude: -122.360432
Course: 199.0°	Speed: 0.0kn
Heading: 0.0°	Rate of Turn: 0.0° /min
Status: Not Defined	
Latest Report at:	2015-05-19 06:34:59
Destination:	Est. Arrival: Dec-01 01:00
Cargo:	Draught: 0.0m

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**SAIS (exactEarth)**

**SAIS Vessel by Type (exactEarth)**

- ▲ Reserved, Spare, Other, Unknown
- Reserved, Spare, Other, Unknown (Map Scale-Based)
- ▲ Wing In Ground Crafts
- Wing In Ground Crafts (Map Scale-Based)
- ▲ Fishing
- Fishing (Map Scale-Based)
- ▲ Towing, Dredging, Military, Sailboat
- Towing, Dredging, Military, Sailboat (Map Scale-Based)
- ▲ Diving
- Diving (Map Scale-Based)
- ▲ Pleasure Crafts
- Pleasure Crafts (Map Scale-Based)
- ▲ High Speed Crafts
- High Speed Crafts (Map Scale-Based)
- ▲ Pilot
- Pilot (Map Scale-Based)
- ▲ Search and Rescue Crafts
- Search and Rescue Crafts (Map Scale-Based)
- ▲ Tug
- Tug (Map Scale-Based)
- ▲ Port Tender Crafts
- Port Tender Crafts (Map Scale-Based)
- ▲ Anti-Pollution, Law, Medical, Non-Conflict
- Anti-Pollution, Law, Medical, Non-Conflict (Map Scale-Based)
- ▲ Passenger
- Passenger (Map Scale-Based)
- ▲ Cargo
- Cargo (Map Scale-Based)
- ▲ Tanker
- Tanker (Map Scale-Based)

**NOAA Navigation Charts**

Electronic Navigational Charts (ENC) (NOAA)

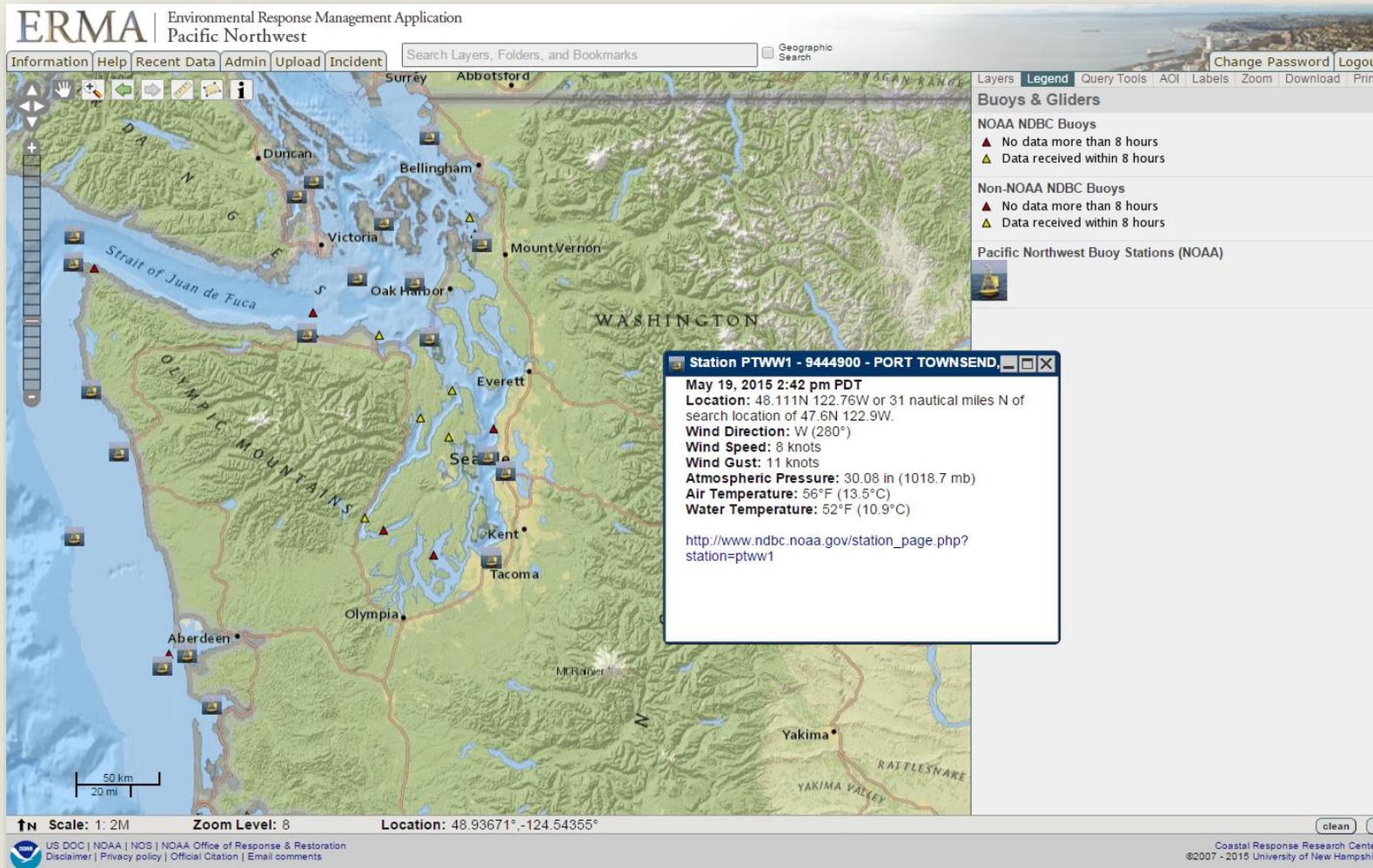
Scale: 1: 217K    Zoom Level: 11    Location: 47.76605°,-122.81555°

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# Marine Observations



# Marine Observations

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Information Help Recent Data Admin

Station ID Search  
Station List

Observations  
Mobile Access  
Obs via Google  
Maps

Classic Maps  
Recent  
Historical  
DART@  
Oil & Gas ADCP  
Obs Search  
Ship Obs Report  
Gliders  
BuoyCAMs  
TAO  
DODS  
OceanSITES  
HF Radar  
OSMC  
Dial-A-Buoy  
RSS Feeds  
Obs Web Widget  
Email Access

Station Status  
NDBC Maintenance  
NDBC Platforms  
Partner Platforms

Program Info  
Find us on Facebook  
NDBC on Facebook  
About NDBC  
Met/Ocean  
Moored Buoy  
C-MAN  
TAO  
DART@  
VOS  
CSP  
IOOS@ Program  
IOOS@ DAC

Publications  
NDBC DQC  
Handbook  
Hurricane Data  
Plots

Mariners Weather  
Log  
Observing  
Handbook No. 1  
Science Education

National Oceanic and Atmospheric Administration's  
**National Data Buoy Center**  
Center of Excellence in Marine Technology

Home News Organization Search NDBC Web Site Search

**Station PTWW1 - 9444900 - Port Townsend, WA**

Owned and maintained by NOAA's National Ocean Service  
Water Level Observation Network  
48.111 N 122.760 W (48°6'40" N 122°45'35" W)

Site elevation: 5.09 m above mean sea level  
Air temp height: 2.71 m above site elevation  
Anemometer height: 8.87 m above site elevation  
Barometer elevation: 5.06 m above mean sea level  
Sea temp depth: 2.8 m below site elevation

Wind data from PTWW1 is subject to obstruction by ferries docking at the pier during the daytime hours.

[Latest NWS Marine Forecast](#)  
[Search And Rescue \(SAR\) Data](#)  
[Meteorological Observations from Nearby Stations and Ships](#)

**Conditions at PTWW1 as of (2:42 pm PDT) 2142 GMT on 05/19/2015:**

Unit of Measure: English Time Zone: Station Local Time Select

Click on the graph icon in the table below to see a time series plot of the last five days of that observation.

	Wind Direction (WDIR):	W (280 deg true)
	Wind Speed (WSPD):	8.0 kts
	Wind Gust (GST):	11.1 kts
	Atmospheric Pressure (PRES):	30.08 in
	Air Temperature (ATMP):	56.3 °F
	Water Temperature (WTMP):	51.6 °F
	Wind Speed at 10 meters (WSPD10M):	7.8 kts
	Wind Speed at 20 meters (WSPD20M):	9.7 kts

[Combined plot of Wind Speed, Gust, and Air Pressure](#)  
[Water Level](#)

Previous observations

MM DD	TIME (PDT)	WDIR	WSPD	GST	WVHT	DPD	APD	MWD	PRES	PTDY	ATMP	WTMP	DEWP	SAL	VIS	TIDE
			kts	kts	ft	sec	sec		in	in	°F	°F	°F	psu	nmi	ft
05 19	2:36 pm	WNW	7.0	11.1	-	-	-	-	30.08	-	56.5	51.6	-	-	-	-
05 19	2:30 pm	W	6.0	9.9	-	-	-	-	30.09	-	56.7	51.4	-	-	-	-
05 19	2:24 pm	NW	8.0	11.1	-	-	-	-	30.09	-	57.9	51.4	-	-	-	-

weather.gov

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Tools AOI Labels Zoom Download Print

hours  
hours  
hours  
hours  
Stations (NOAA)

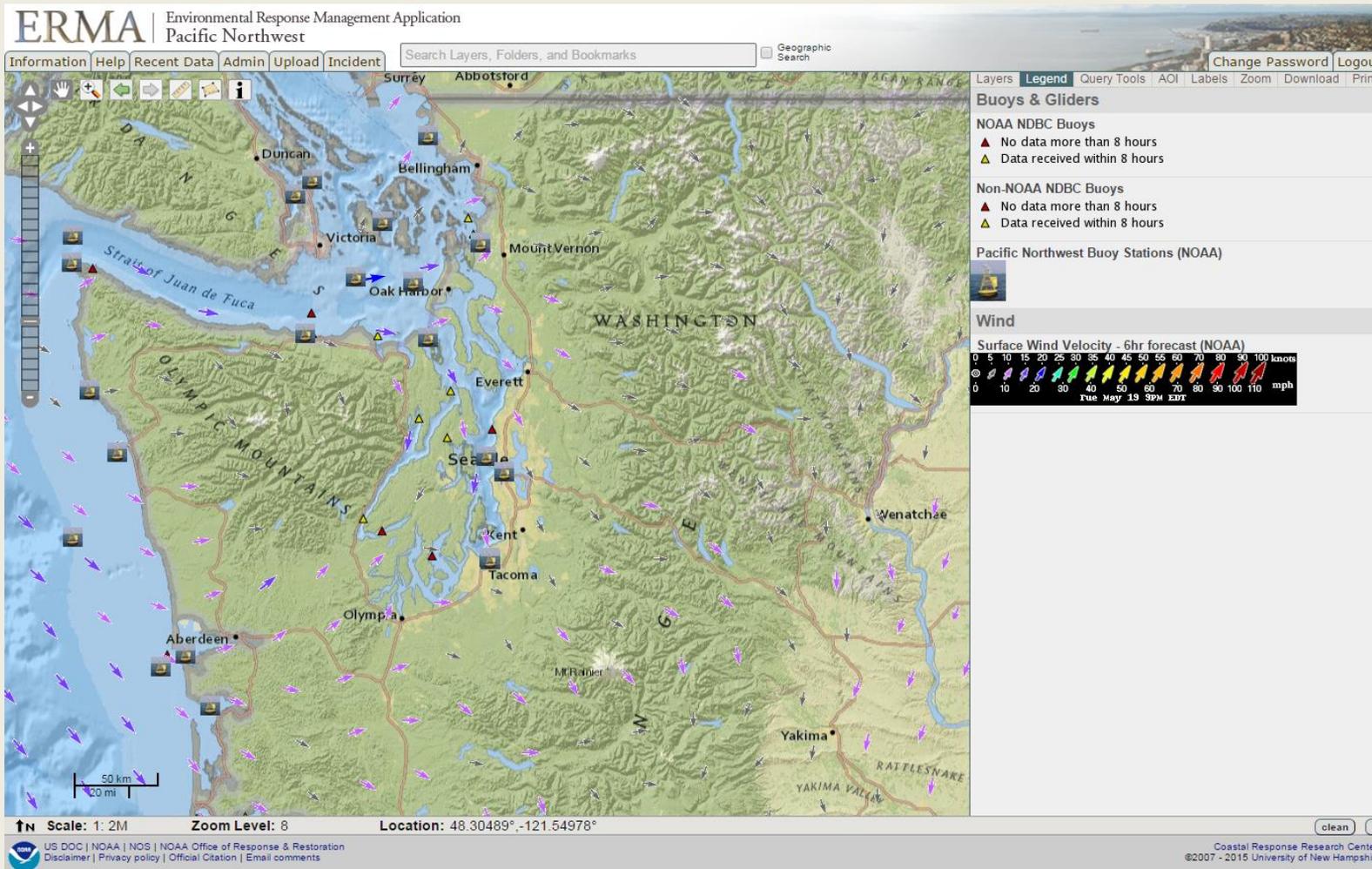
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6/3/2015

35

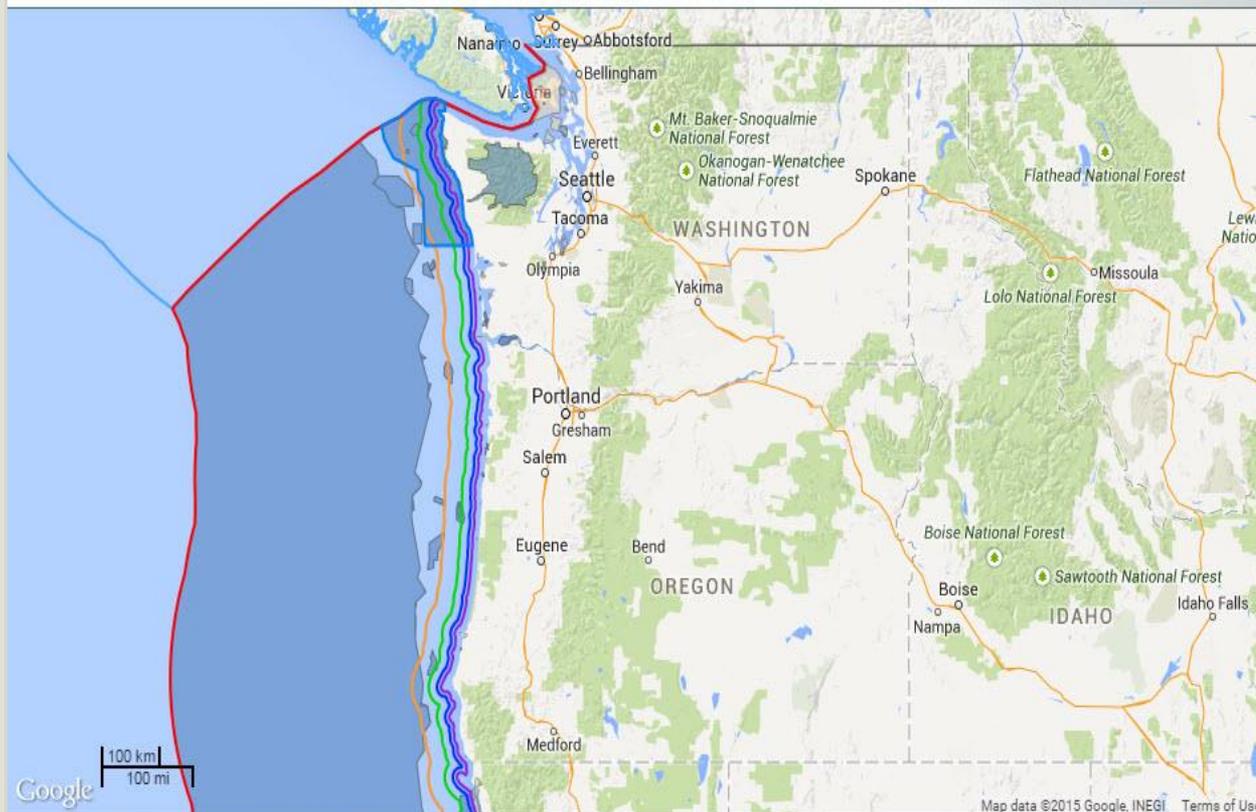
# Marine Observations



# Marine Jurisdictions

ERMA | Environmental Response Management Application  
Pacific Northwest

Geographic Search



## Marine Jurisdictions

### U.S. Marine Jurisdictions (NOAA, 2009)

- Contiguous Zone
- Exclusive Economic Zone
- Revenue Sharing Boundary
- State Seaward Boundary
- Territorial Sea

### Olympic Coast National Marine Sanctuary (NOAA)

- Olympic Coast National Marine Sanctuary (NOAA)

### Canadian Marine Jurisdictions (NRCan, 2008)

- Exclusive Economic Zone
- Offshore Area
- Saint-Pierre et Miquelon
- Shared Boundary

## Marine Protected Areas

### Washington Marine Protected Areas (WDFW)

- Subtidal
- Intertidal

### Marine Protected Areas (NOAA 2012)

- Federal
- Local
- Partnership
- State
- Territorial

Scale: 1: 7M    Zoom Level: 6    Location: 47.58862°, -121.64377°

# ERMA as a Federal Common Operating Picture

- ERMA provides secure, 24/7 access
- Operational and environmental data
- Data interoperability with RP and other agencies
- Feeds can disappear once the incident ends
- Internal and external audience
- Federal COP supports Public access and Government transparency



# Working Together

## Regional Drills, Exercises, Responses

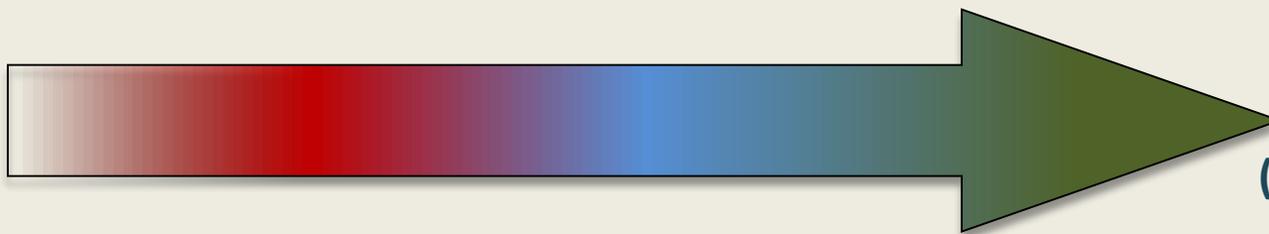
- Harbor Island Drill 2011
- US-CAN Salish Sea 2011
- Shell Puget Sound Refinery (PSR ) 2012
- Navy Bangor Spill
- Phillips 66 Ferndale Refinery 2014
- Harbor Island Diesel Drill 2014

## Collaborations/Partnerships

- WA Department of Natural Resources
- WA Department of Health
- WA Department of Ecology
- WA Counties
- UW Puget Sound Institute  
(Encyclopedia of Puget Sound)
- OR Department of Environmental  
Quality
- Pacific Shellfish Institute
- NOAA Protected Resources
- Makah Tribe

# Continuum of “Response” Framework for the Office of Response and Restoration

Response  
(24 hours)



Recovery or  
Restoration  
(Years/Decades)

Response

Assessment

Restoration



6/3/2015



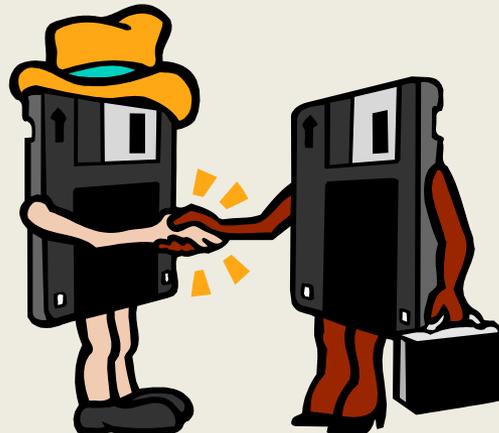
# Data/Information Management Plan

- DMP documents all cooperatively collected and processed data
- Cooperatively developed by Responsible Party, Feds, States & signed by Unified Command



# Why We Need A Data Sharing Plan

- Deepwater Horizon and other spills experience...
- Facilitate partnership between potential RP's and Federal/State Representatives
- USCG 2014 Incident Management Handbook



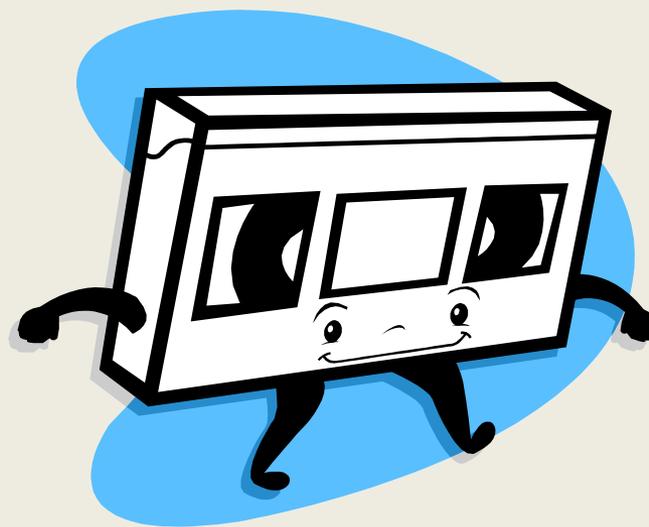
## Data Management Plan Supports:



- Cooperation between all data providers
- Data partners all have access to the same data
- Standard formats & approaches: Interoperability
- Data retention during and after the response
- Continuity of information

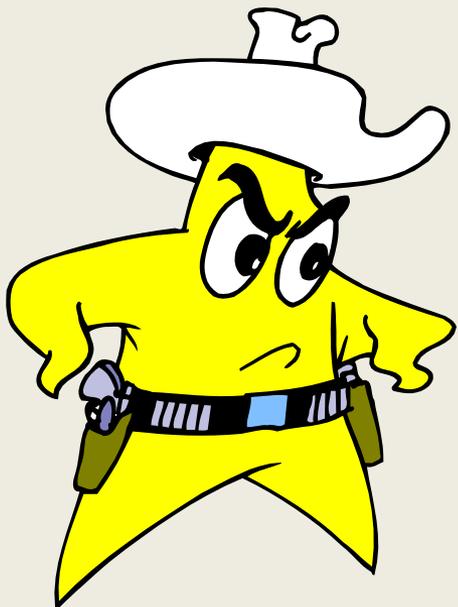
# Data Sharing Plan: Concept

- Part of the Data Management Plan
- Not about data ownership, ownership is not transferred; data are shared
- Everyone gets copies of original, environmental and operational data



## Many COPS: One Data

- Multiple Organizations means Multiple Audiences
- Data Sharing Plan goal is to ensure they're all showing the same data



*“A COP without data is like a gun without bullets”*

Outreach

Partnerships

Planning

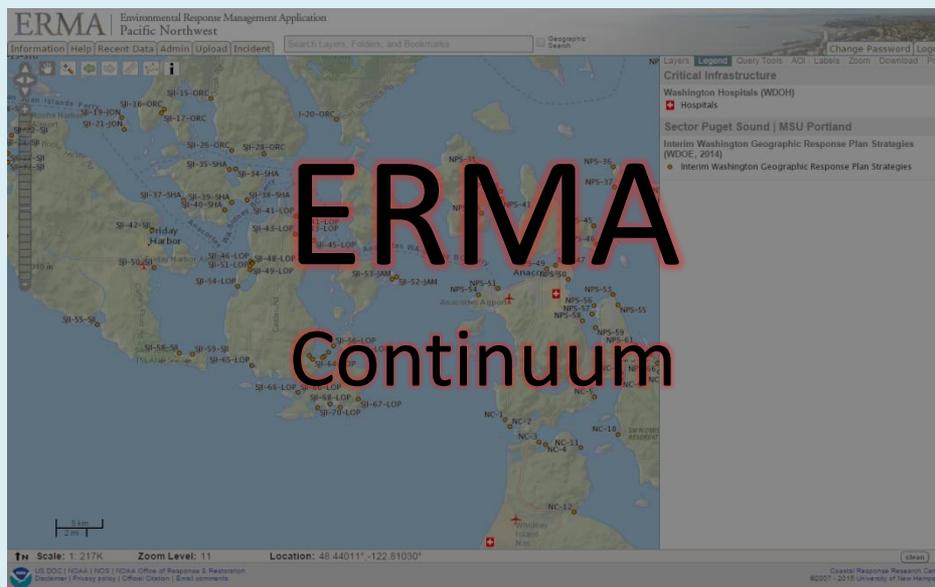
Training

Ongoing Incident  
Support

Incident Notification

Restoration

Assessment



**ERMA**  
**Continuum**

# Acknowledgements

## NOAA

Michele Jacobi  
George Graettinger  
Amy Merten  
Mark Miller  
Kari Sheets  
Ben Shorr  
Robb Wright

## Development Team:

Aaron Racicot, Z-Pulley  
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Chander Ganesan, OTG  
Phillip Collins, UNH  
Robert St. Lawrence, UNH

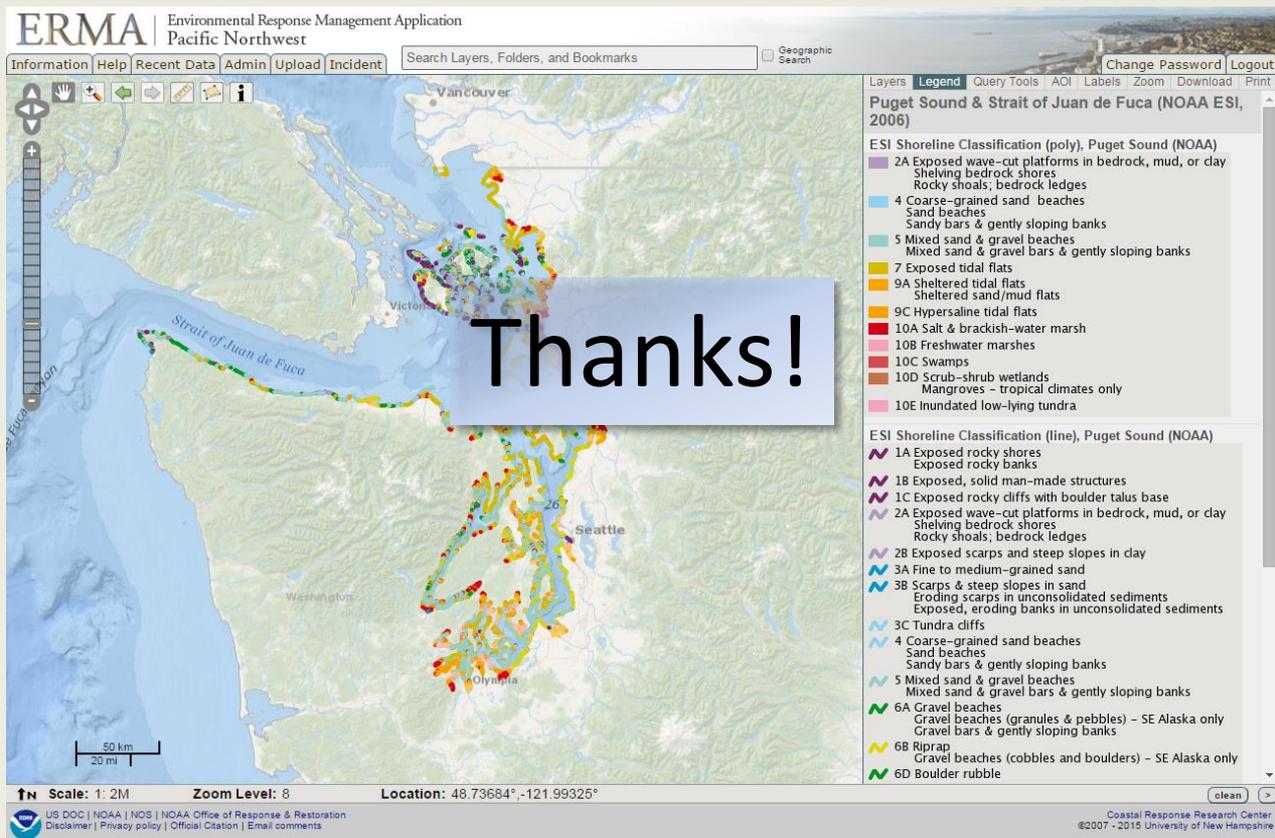
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Ryan Ulsberger  
Rachel Fox

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<https://erma.noaa.gov/northwest/erma.html>

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[Nicolas.Eckhardt@noaa.gov](mailto:Nicolas.Eckhardt@noaa.gov)

# Presentation Overview

- Requirements for Common Operational Picture (COP)
- What is ERMA?
- Standards and Data Exchange
- Data/Information Management Plans
- Data Sharing

# COP Fundamentals

## Data Sharing and Common Access

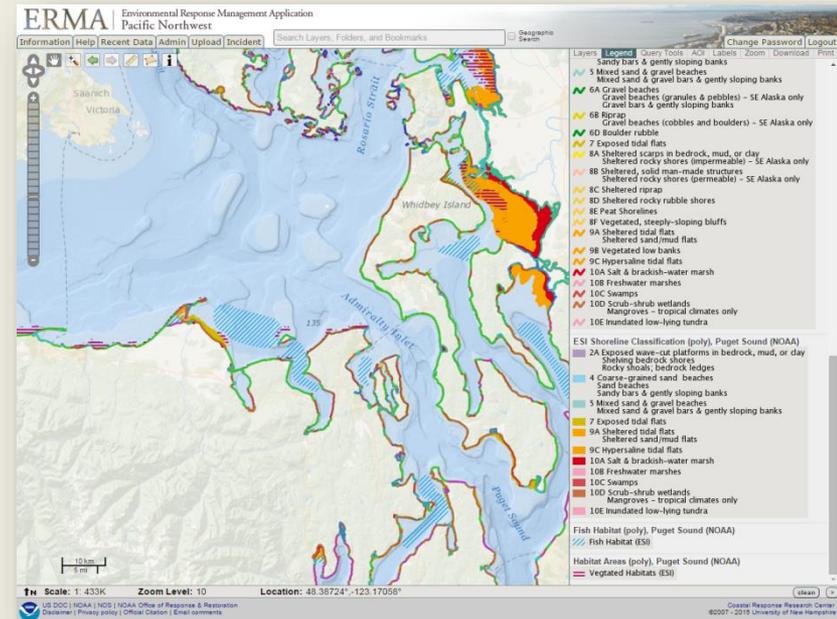
- Incident specific data sharing and access
- Data sharing means a copy of the data and not just data viewing during response
- Data sharing includes Environmental and Operational data
- Data ownership is retained by source
- Data ownership is NOT transferred

## What is Required for a Good COP?

- Current, accurate operational and environmental data for an incident
- Secure access control (data/users)
- Standard interface and symbology
- Consistent presentation of data and products
- Support Planning and Response needs
- Ability to support on-scene (Incident Command) and off-site (HQ/NIC) information needs

# What Is ERMA?

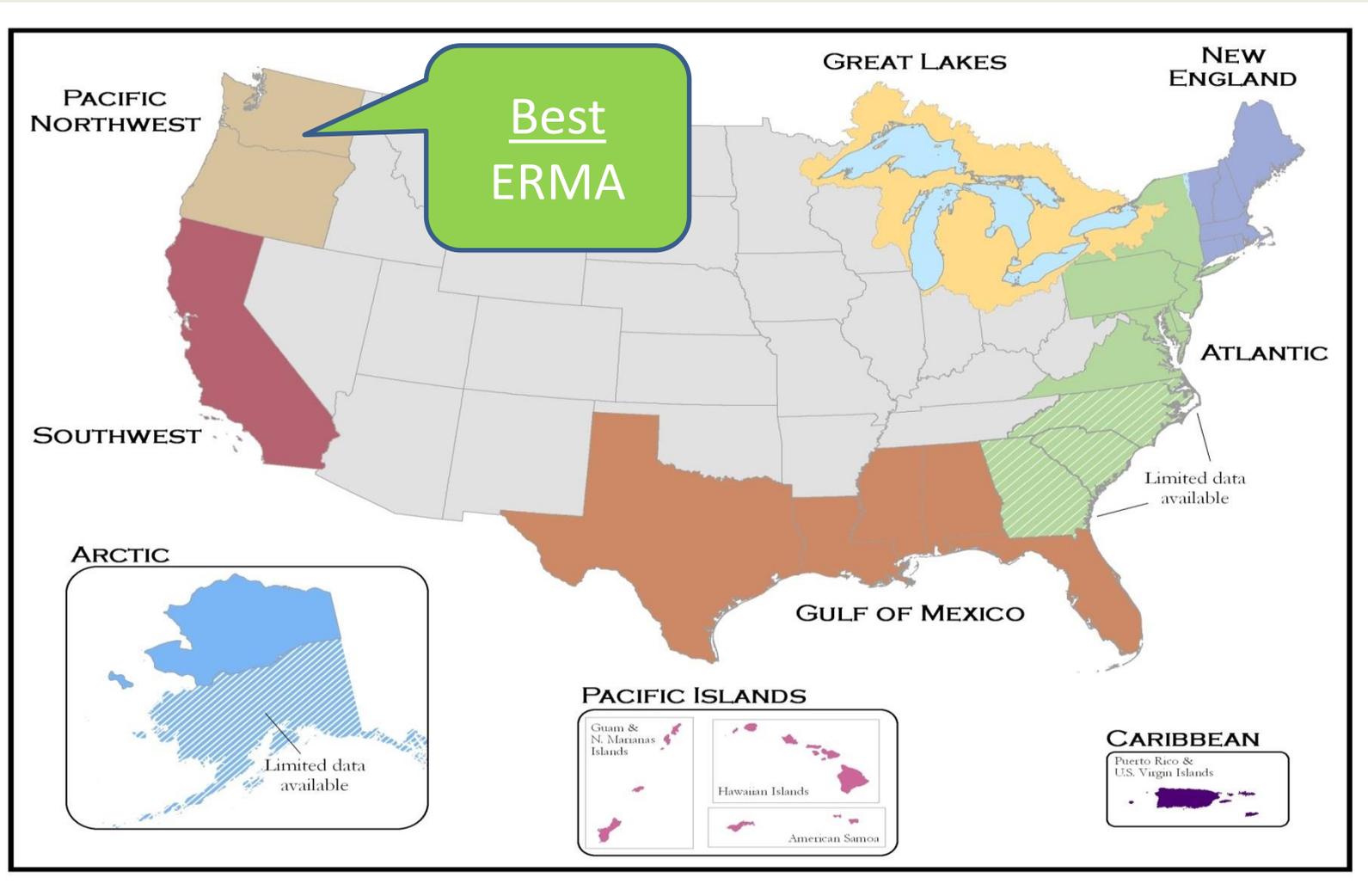
- Common Operating Picture (COP)
- Web-based mapping tool
- Centralized access to information
- Increases communication, coordination, and efficiency
- Prepare for, respond to, assess impacts from incidents or conditions
- Analyze and visualize environmental information relevant to all hazards



# ERMA Application Areas

- Regional response planning
- Data/Information management plans and data sharing
- Federal oversight of incident data
- On-scene GIS and data management
- Hazardous waste site remediation (CERCLA)
- Natural Resource Damage Assessment (NRDA) case support
- Restoration planning and implementation

# Where is ERMA?



# Key ERMA Functionality

- Access from any (modern) Web browser
- Tiered system security
- Build customized maps, save as Bookmarks
- Open source technology allows for customization
- Interoperability with external systems



## Key ERMA Functionality continued

- Multiple (authorized) user upload
- Metadata, links, attachments (PDF, JPG, etc.)
- **Testing** – data review before promoting
- Ingest feeds (WMS/REST); load GIS data (shapefiles/KML)
- Bookmarks (Saved views)

# ERMA is used to...

Visualize the situation status during an oil spill drill



Assess damage and plan for restoration



Analyze threats from climate change, drilling, and hurricanes



Create a Common Operational Picture in a disaster response



# How ERMA is Used in Response

- Operations Section
- Environmental Unit
- Situation Unit
- Unified Command
- Joint Information Center
- Public Communication



# How ERMA is Used in NRDA



- Explore existing data
- Sampling plan development
- Field planning/logistics
- Visualize data & analysis
- Restoration Planning

## ERMA Account Access

- **Public Access** (for publicly available data)
- **Restricted accounts for Planning & Response**
  - Username/password required
  - Verified by NOAA or partners
  - Various levels of access
    - Active incidents
    - Sensitive datasets
    - Training
    - Drills
- **Data available only to appropriate users**



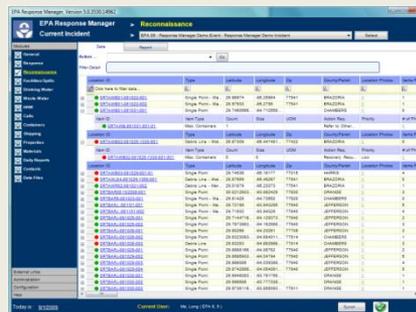
# ERMA COP Interoperability & Standards

Data Collection,  
Visualization, Query  
and Reporting

Mobile/form field data  
Collection and Delivery



**Response Manager,  
Flex Viewer, NDOW**



Mobile field data  
Collection, QA,  
Database  
Ingestion  
and Delivery

# ERMA Layout

**ERMA** Environmental Response Management Application  
Pacific Northwest

Information Help Recent Data Admin Upload Incident Search Layers, Folders, and Bookmarks Geographic Search

Map Toolbar

Map Controls

Find/Geographic Search

Map Key

Bookmark Views Panel

Display Controls

Context Menu

Table of Contents

Layers Legend Query Tools AOI Labels Zoom Download Print

- Background
- Climate Assessment Proactive Response Initiative
- Admin Boundaries & Reference Features
- Bathymetry & Hydrology
- Environmental Quality & Assessment
- Marine Debris
- Imagery & Remote Sensing
- Natural Resources, Habitats, & Managed Areas
- Navigation & Marine Infrastructure
- Public Safety & Infrastructure
- Response Planning
  - Area Contingency Plans
    - Sector Puget Sound | MSU Portland
      - Washington Geographic Response Plans Boundaries (WDOE)
      - Inland Washington Geographic Response Plans Boundaries (WDOE)
      - Washington Puget Sound Geographic Response Plans Boundaries (WDOE, 2009)
      - Interim Washington Geographic Response Plans Boundaries (WDOE, 2014)
      - DRAFT Marine Response Plans Boundaries (WDOE, 2014)
    - Cherry Point
  - Flood Zones
  - Regulated Facilities
  - Restoration
  - Weather, Oceanography, & Natural Hazards
  - Incidents & Drills
  - ERMA Tools

Bookmark Views: new Expand

Scale: 1: 2M Zoom Level: 8 Location: 49.04382°, -123.39017°

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# Data Queries in ERMA



Query Layers by Polygon Results

Results Summary Layer 11371 Layer 11399

Priority Oregon Fish Passage Barriers, (ODFW 2013) (Metadata)

You may drag column headings to reorder them, or click on the arrows (↕) to sort by a column.

Showing 1 to 21 of 21 records

Search all columns:

objectid	fbpbftrid	fbpsiteid	fbprevidt	fbpoftrid	fbponum	fbpositeid	fbplocmd	fbplocaccu	fbplocdct	fbpbftry	fbpbftrnm	fbpbfmvd	fbpbfmfltr	fbpbfpassta
13	4533	4533	2012-04-10	842	ODFW	842	FieldQuad	150	19990900	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	Partial	
18	4558	4558	2012-04-10	840	ODFW	840	DigDerive	40	20081210	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	Partial	
47	7587	7587	2012-04-10	943	ODFW	943	DigDerive	40	19990900	Culvert	Unnamed culvert	unknown	Partial	
70	10122	10122	2011-12-08	55130	ODFW	55130	Unknown	9999	00000000	Unknown	Unnamed barrier	no	UnkAnad	
87	11728	11728	2009-06-17	1006	ODFW	1006	FieldQuad	150	19990900	Culvert	Unnamed culvert	unknown	Partial	
97	4175	4175	2012-04-10	50915	ODFW	50915	Unknown	9999	00000000	Dam	Unnamed dam	no	Partial	

Search all columns:

fbplocaccu	fbplocdct	fbpbftry	fbpbftrnm	fbpbfmvd	fbpbfmfltr	fbpbfpassta
150	19990900	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	Partial	
40	20081210	Culvert	Beaver Creek Fishways at Troutdale Rd & Stark St	unknown	Partial	
40	19990900	Culvert	Unnamed culvert	unknown	Partial	
9999	00000000	Unknown	Unnamed barrier	no	UnkAnad	
150	19990900	Culvert	Unnamed culvert	unknown	Partial	
9999	00000000	Dam	Unnamed dam	no	Partial	

# Environmental Sensitivity Index data and Query Tool

Environmental Response Management Application

https://www.erma.unh.edu/northwest/erma\_esi.html - Google Chrome

https://www.erma.unh.edu/northwest/erma\_esi.html



Environmental Sensitivity Index: Resources at Risk

Background and Instructions

Species listed in **Red** are either listed as Threatened (T) or Endangered (E) by the State (S) or Federal government (F)

**Notes:** Click on column headers to sort rows; hover or click on species link to get more information.

Summary Results

AOI total area: 84447 acres

**Puget Sound Bird Habitat**

9 unique species: Caspian tern, Cormorant, Gulls, Harlequin duck, Pacific loon, Pigeon guillemot, Rhinoceros auklet, Scoters, Waterfowl

**Puget Sound Fish Habitat**

Selected 1 features

**Puget Sound Shoreline Classification (lines)**

Summary Length (miles) by type:

- 5: Mixed sand and gravel beaches: 34
- 7: Exposed tidal flats: 15
- 6A: Gravel beaches: 4
- 6B: Gravel beaches and riprap: 3
- 8C: Sheltered riprap: 2
- 4: Coarse-grained sand beaches: 1
- 9A: Sheltered tidal flats: 1
- 1B: Exposed, solid man-made structures: 0.5
- 10A: Salt and brackish-water marshes: 0.1

**Puget Sound Shoreline Classification (poly)**

Summary Area (acres) by type:

- 7: Exposed tidal flats: 890184
- 9A: Sheltered tidal flats: 69903

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**ESI Table Tool**

Puget Sound ESI	
Biological	Other
<input checked="" type="checkbox"/> Bird Habitat	<input checked="" type="checkbox"/> Shoreline Classification (lines)
<input type="checkbox"/> Fish Lines	<input checked="" type="checkbox"/> Shoreline Classification (poly)
<input checked="" type="checkbox"/> Fish Habitat	<input type="checkbox"/> ESI Index Grid
<input type="checkbox"/> Vegetation Habitat Lines	<input type="checkbox"/> Management Areas
<input type="checkbox"/> Vegetation Habitats	<input type="checkbox"/> Socioeconomic (line)
<input type="checkbox"/> Invertebrates	<input type="checkbox"/> Socioeconomic (point)
<input type="checkbox"/> Marine Mammal Points	
<input type="checkbox"/> Nests	

Months of Interest

J  F  M  A  M  J  J  A  S  O  N  D

Report Area Intersection Summary



Report a map error

# Trajectory Models

- Example: NOAA GNOME Trajectory
- Can ingest any trajectory (oil, airborne, other hazardous material) model or output

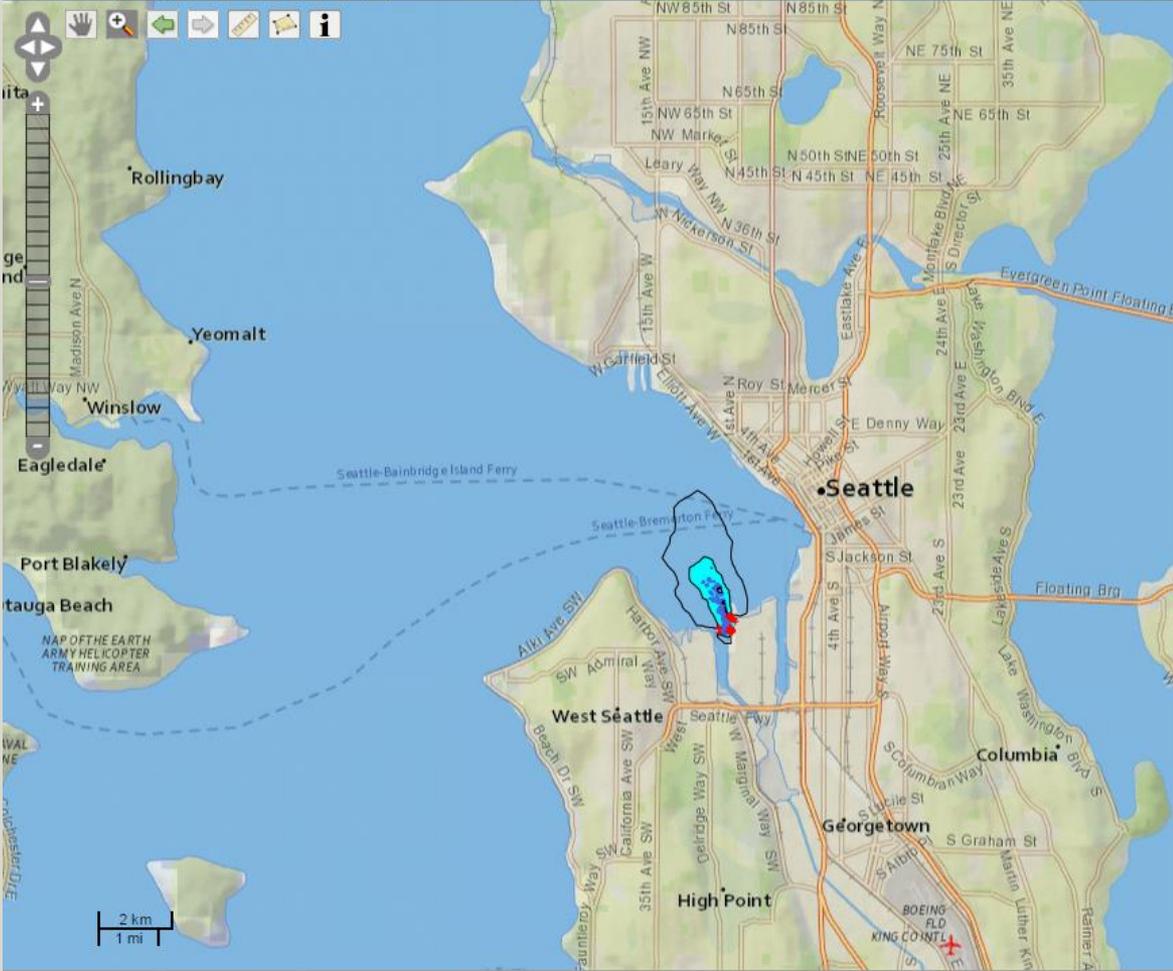
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-21-2014 0830 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ▮ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-21-2014 0830 Hours

- Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.64979°,-122.24520°

clean >

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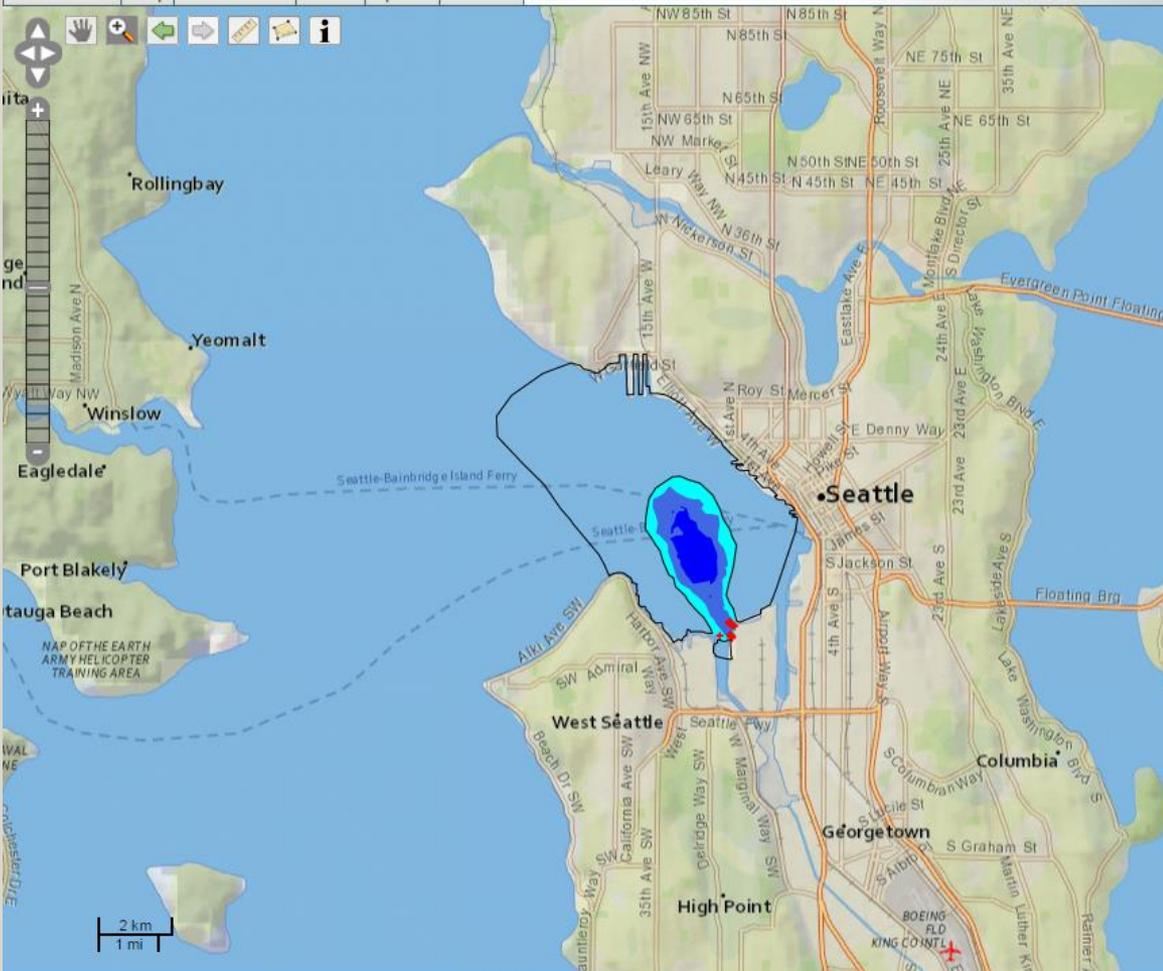
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-21-2014 1200 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ▲ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-21-2014 1200 Hours

- Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.64979°,-122.24520°

clean >

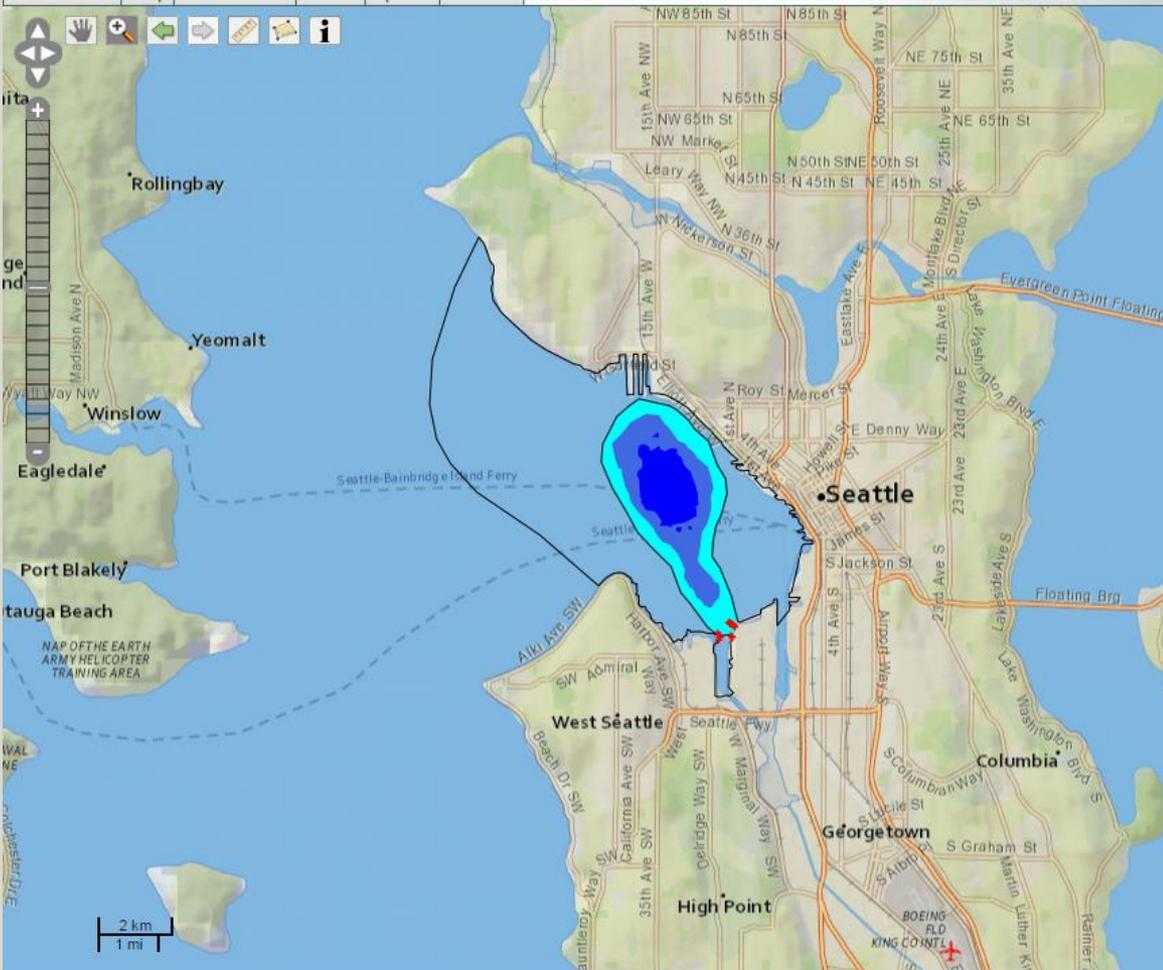
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-21-2014 1800 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∨ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-21-2014 1800 Hours

- Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K Zoom Level: 12 Location: 47.67592°,-122.24829°

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**Trajectories - THIS IS A DRILL**

Trajectory Forecast for 8-22-2014 0600 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-22-2014 0600 Hours

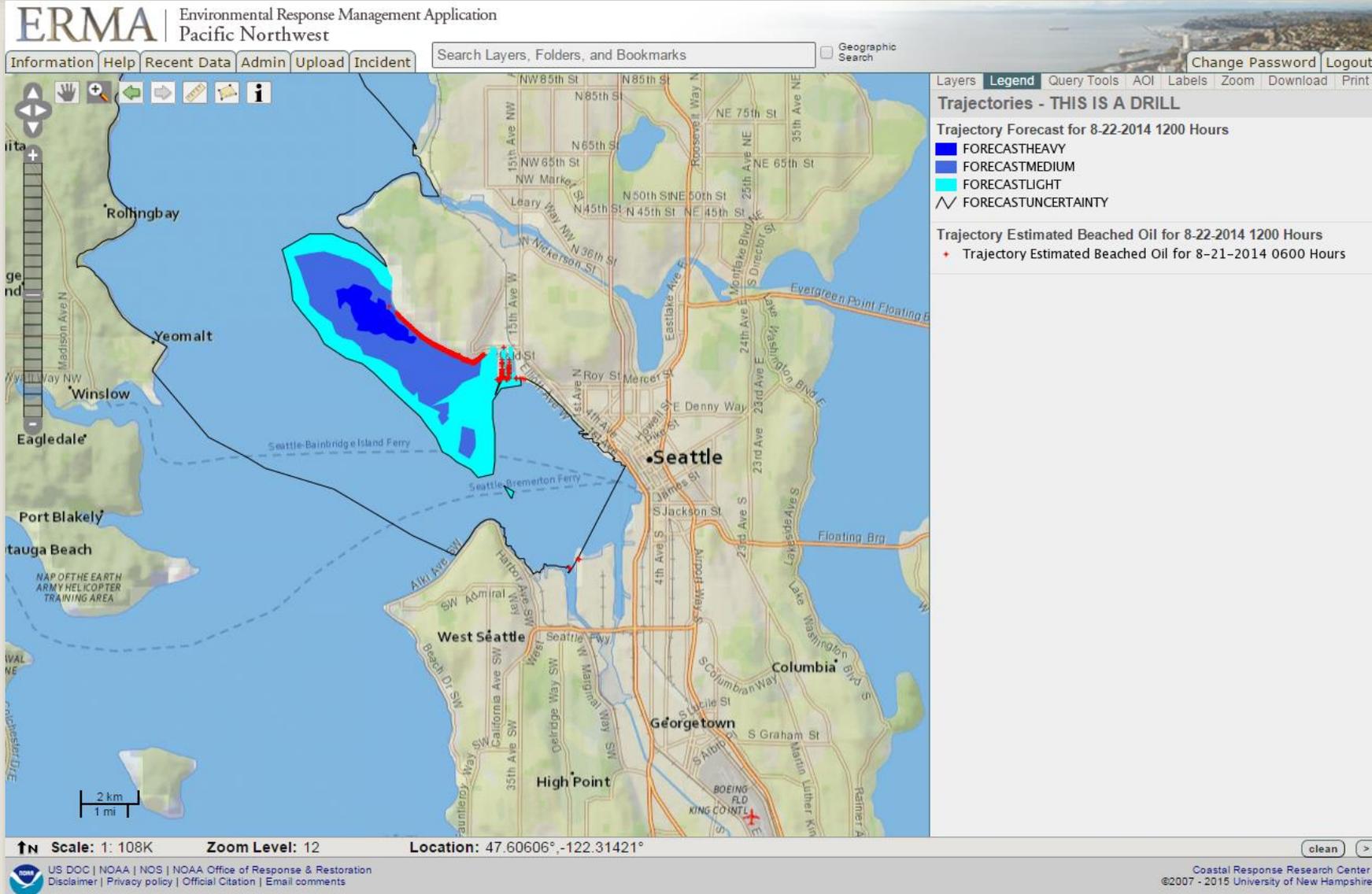
- Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K | Zoom Level: 12 | Location: 47.60606°,-122.31421°

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**Trajectories - THIS IS A DRILL**

Trajectory Forecast for 8-22-2014 1800 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-22-2014 1800 Hours

- Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 108K    Zoom Level: 12    Location: 47.60606°,-122.31421°

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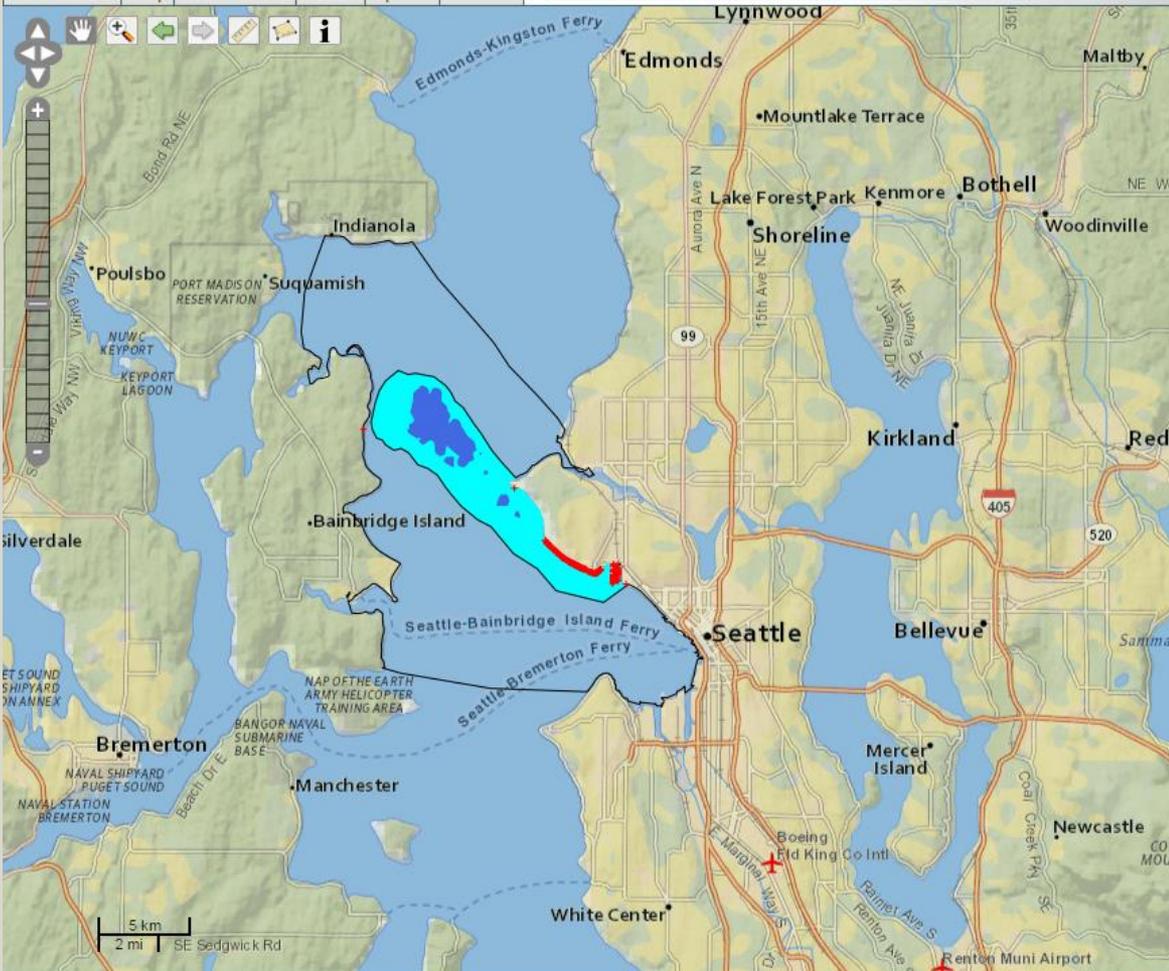
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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-23-2014 0600 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∨ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-23-2014 0600 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 217K Zoom Level: 11 Location: 47.63498°,-122.44948°

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### Trajectories - THIS IS A DRILL

Trajectory Forecast for 8-23-2014 1800 Hours

- FORECASTHEAVY
- FORECASTMEDIUM
- FORECASTLIGHT
- ∨ FORECASTUNCERTAINTY

Trajectory Estimated Beached Oil for 8-23-2014 1800 Hours

- + Trajectory Estimated Beached Oil for 8-21-2014 0600 Hours

Scale: 1: 217K Zoom Level: 11 Location: 47.62064°,-122.16589°

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# Area Contingency Plan Data

ERMA | Environmental Response Management Application  
Pacific Northwest



**Identify**

**Washington Geographic Response Plans Boundaries (WDOE)**

gid	objectid	sub	strty_nm	map_nm	map
66	66.0000000000	OC	Outer Coast	Cape Flattery	1
67	67.0000000000	STR	Strait of Juan de Fuca	Neah Bay	1

**Washington Booming Strategies (WDOE, 2009)**

gid	site_id	mapscale_i	strategy_o	objective
401	3532	1		keep oil out of Waatch Creek. Deploy boom present, a
402	3534	1		keep oil out of Waatch River. Deploy boom as weather stakes on and rocks access side. Diffic need Jon

Geographic Response Plan x

www.ecy.wa.gov/programs/spills/preparedness/GRP/OuterCoastGRP/outer\_coast.htm

DEPARTMENT OF ECOLOGY  
State of Washington

A-Z Index | Contact Us | Search

Ecology home > Spills > Preparedness Section > GRP Introduction > Outer Coast

## Outer Coast Geographic Response Plan (GRP)

- **Entire GRP:** Outer Coast - Complete GRP (16.7MB)
- **Chapter 1:** Introduction (March 2003)
- **Chapter 2:** Site Description (March 2003)
- **Chapter 3:** (Reserved)
- **Chapter 4:** Oil Spill Response Strategies and Priorities (June 2008) (13.3MB)
- **Chapter 5:** Shoreline Information (Jan 1996) (1.1MB)
- **Chapter 6:** Sensitive Resources (Jan 1996) (1.5MB)
- **Chapter 7:** Logistics (Jan 1996)
- **Appendix A:** Protection Techniques (March 2003)
- **Appendix B:** Original Contributors (March 2003)
- **Appendix C:** Comments, Corrections, & Suggestions (March 2003)

**Please submit comments and requests for paper copies to:**

Washington  
Department of Ecology  
Spills Program - GRPs  
P.O. Box 47600  
Olympia, WA 98504-7600

360-407-7455  
Voice  
360-407-7288 Fax  
[GRPs@ecy.wa.gov](mailto:GRPs@ecy.wa.gov)  
Email

**Paper copies are available on request.**

**Note 1:** Depending on your connection speed, GRP files can take several minutes to download.

**Note 2:** GRP files are provided in pdf format and require Adobe Reader (version 5.0 or later) to view. You can download the latest version of Adobe Reader from Adobe's website at <http://get.adobe.com/reader/otherversions>.

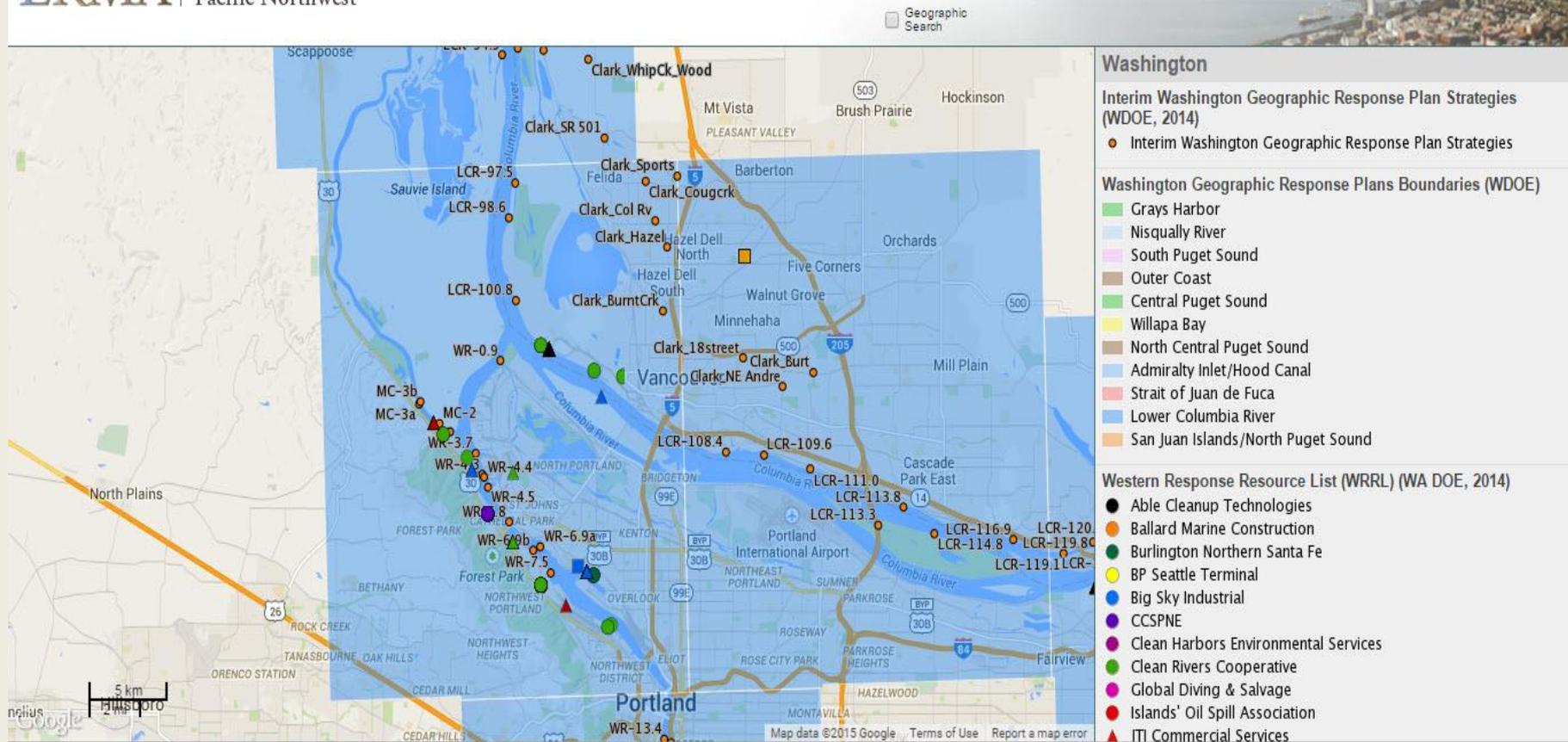
Access Washington®  
Official State Government Web Site

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Contact Us | Privacy Notice | Site Info | Accessibility

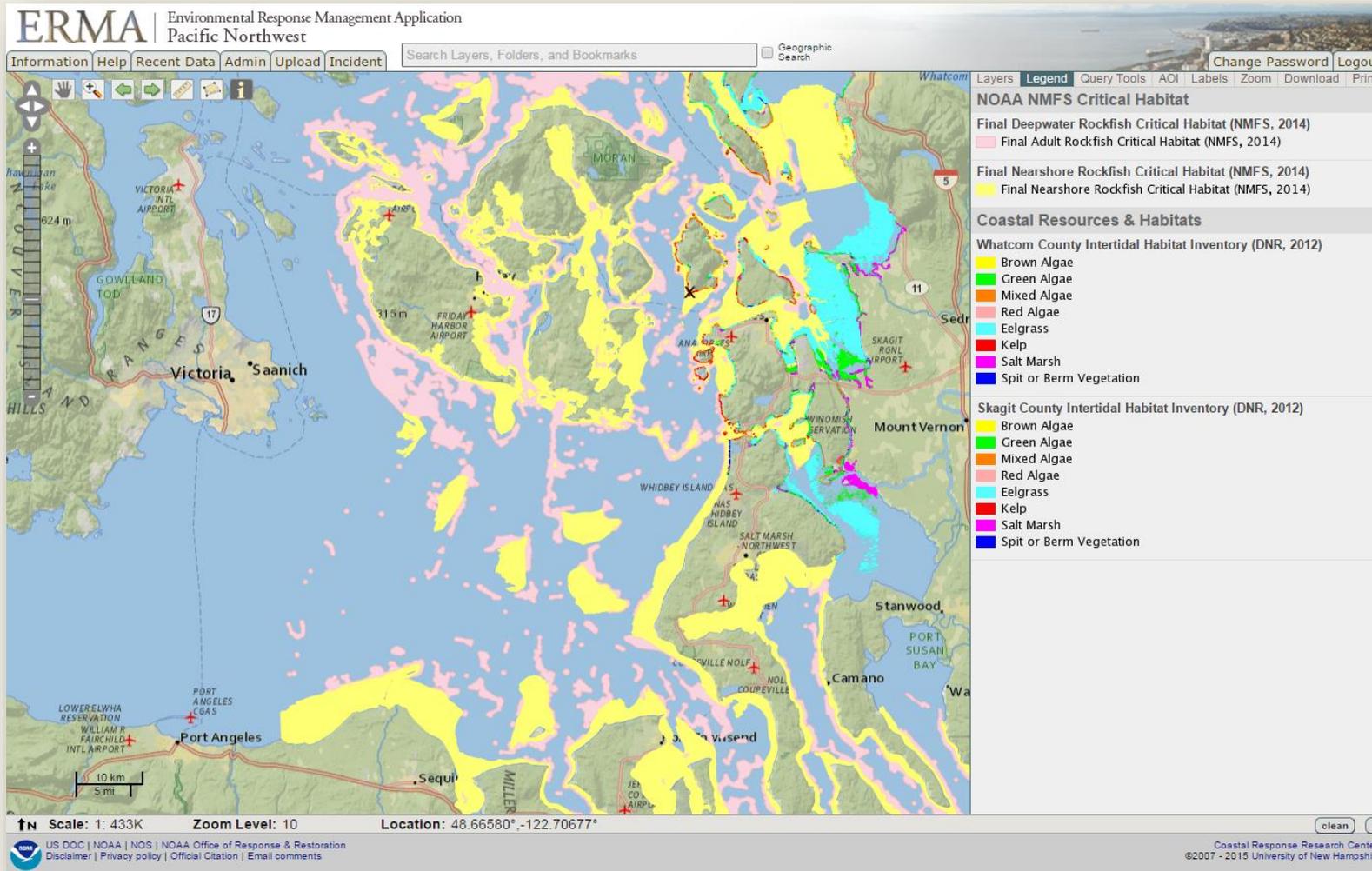
One Front Door  
to Washington's outdoors

# Geographic Response Plan Data

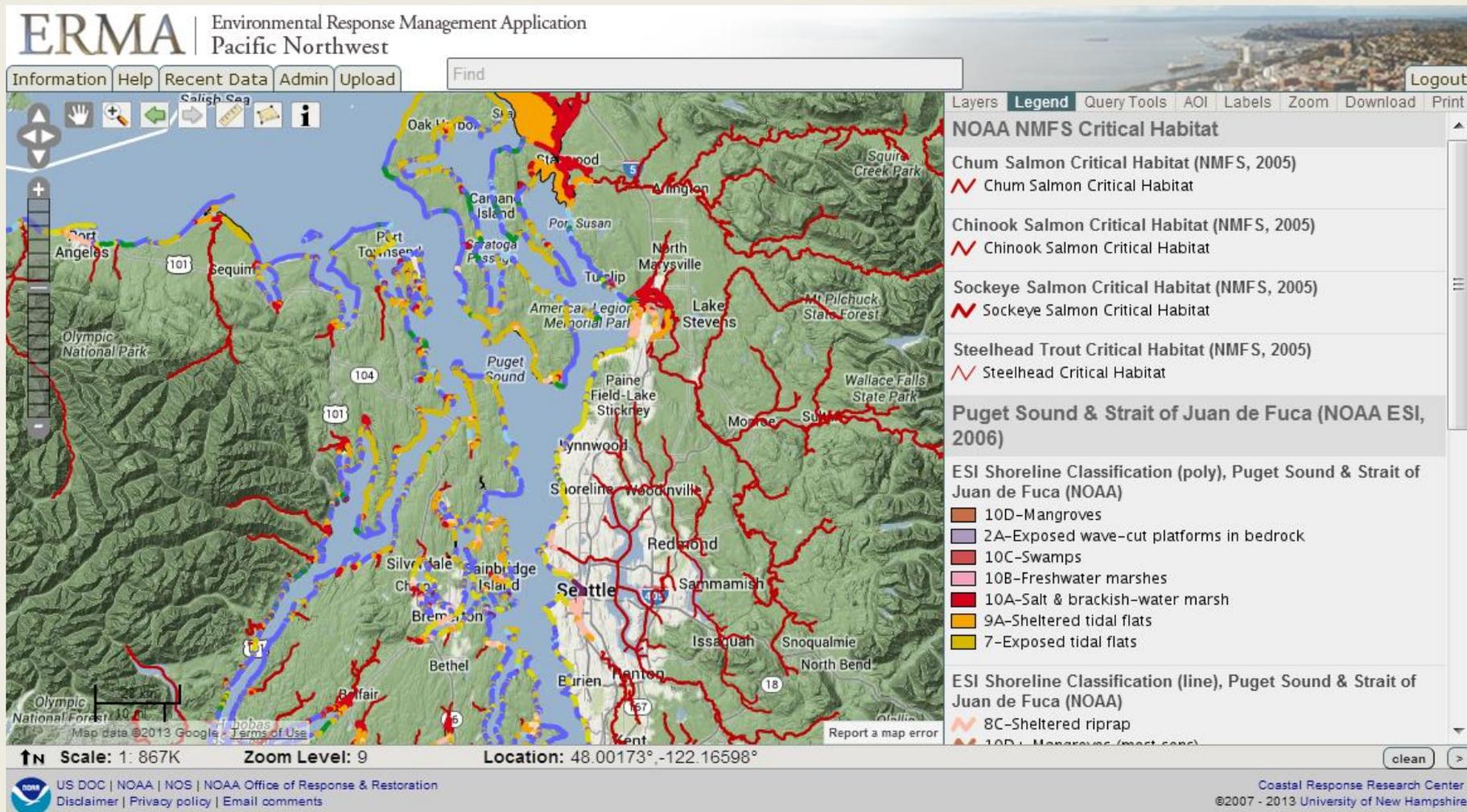
ERMA | Environmental Response Management Application  
Pacific Northwest



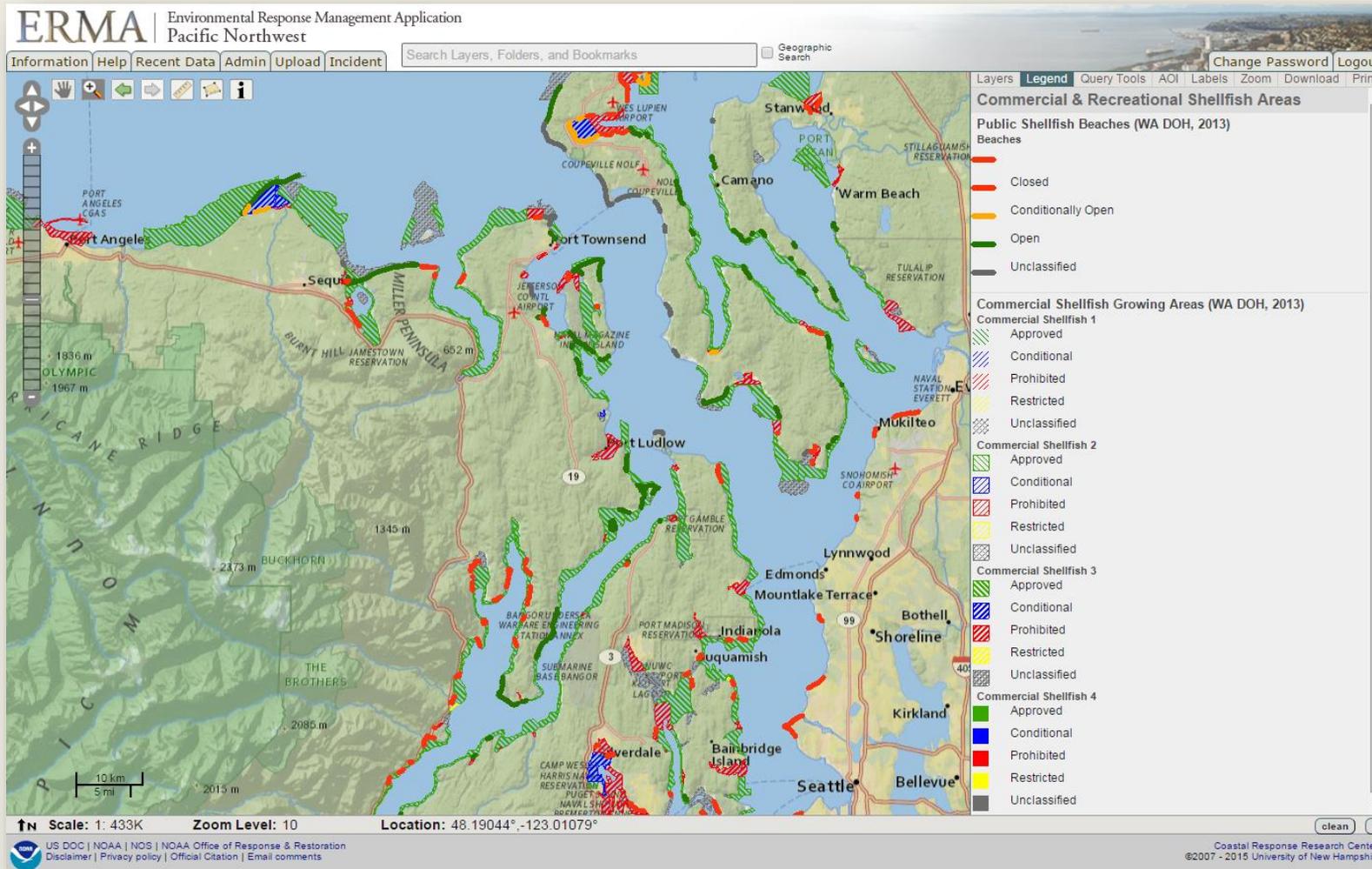
# Habitats (Critical/Inventory)



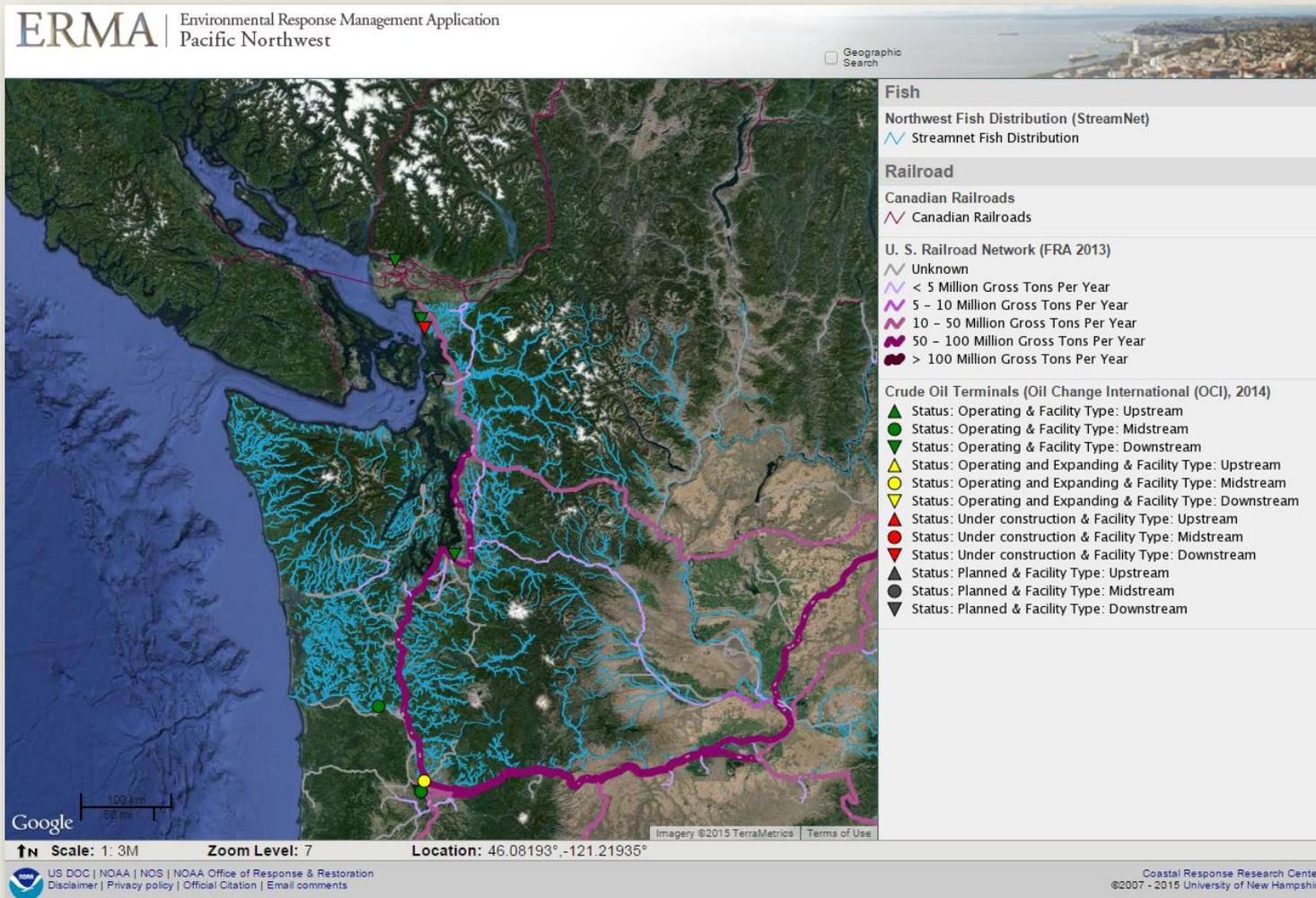
# Resources at Risk



# Resources at Risk



# Preparedness



# Response & Research Ship Tracking

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Information Help Recent Data Admin Upload Incident Search Layers, Folders, and Bookmarks Geographic Search Change Password Logout

Layers Legend Query Tools AOI Labels Zoom Download Print

### Identify

#### SAIS Vessel by Type (exactEarth)

**POLAR PIONEER**

Type: Pilot	Flag: Marshall Islands
Class: A	Source: S-AIS

IMO: 8754140	MMSI: 538003659
Call Sign: V7SI4	Size: 40.0m x 30.0m
Latest Position at:	2015-05-19 21:18:55
Latitude: 47.581057	Longitude: -122.360432
Course: 199.0°	Speed: 0.0kn
Heading: 0.0°	Rate of Turn: 0.0° /min
Status: Not Defined	
Latest Report at:	2015-05-19 06:34:59
Destination:	Est. Arrival: Dec-01 01:00
Cargo:	Draught: 0.0m

exactAIS © 2015 exactEarth Ltd.

#### SAIS (exactEarth)

##### SAIS Vessel by Type (exactEarth)

- Reserved, Spare, Other, Unknown
- Reserved, Spare, Other, Unknown (Map Scale-Based)
- Wing In Ground Crafts
- Wing In Ground Crafts (Map Scale-Based)
- Fishing
- Fishing (Map Scale-Based)
- Towing, Dredging, Military, Sailboat
- Towing, Dredging, Military, Sailboat (Map Scale-Based)
- Diving
- Diving (Map Scale-Based)
- Pleasure Crafts
- Pleasure Crafts (Map Scale-Based)
- High Speed Crafts
- High Speed Crafts (Map Scale-Based)
- Pilot
- Pilot (Map Scale-Based)
- Search and Rescue Crafts
- Search and Rescue Crafts (Map Scale-Based)
- Tug
- Tug (Map Scale-Based)
- Port Tender Crafts
- Port Tender Crafts (Map Scale-Based)
- Anti-Pollution, Law, Medical, Non-Conflict
- Anti-Pollution, Law, Medical, Non-Conflict (Map Scale-Based)
- Passenger
- Passenger (Map Scale-Based)
- Cargo
- Cargo (Map Scale-Based)
- Tanker
- Tanker (Map Scale-Based)

#### NOAA Navigation Charts

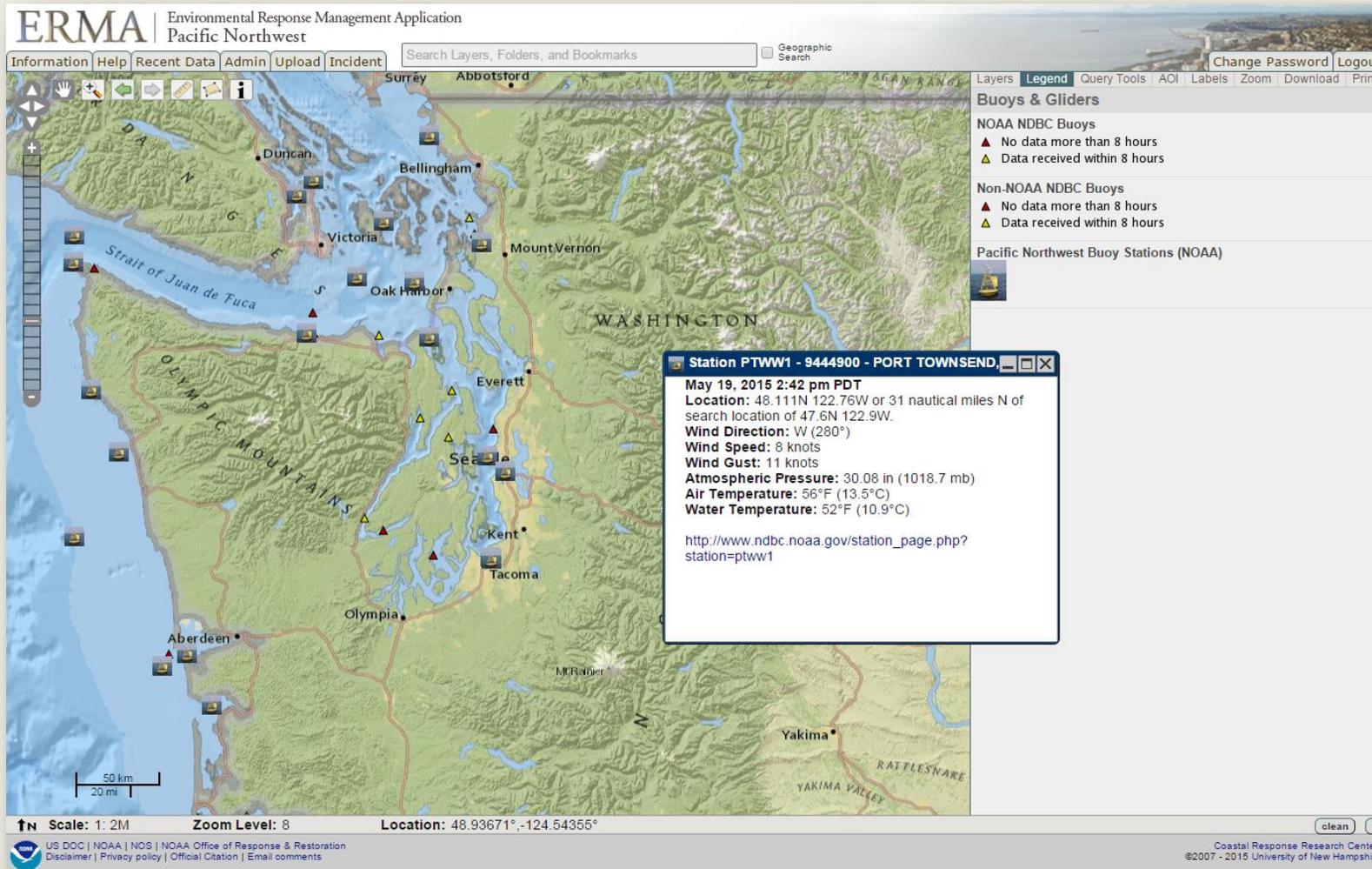
Electronic Navigational Charts (ENC) (NOAA)

Scale: 1: 217K Zoom Level: 11 Location: 47.76605°,-122.81555°

US DOC | NOAA | NOS | NOAA Office of Response & Restoration  
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Coastal Response Research Center  
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# Marine Observations



# Marine Observations

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Information Help Recent Data Admin

Observations  
Mobile Access  
Obs via Google Maps  
Classic Maps  
Recent  
Historical  
DART@  
Oil & Gas ADCP  
Obs Search  
Ship Obs Report  
Gliders  
Buoy CAMS  
TAO  
DODS  
OceanSITES  
HF Radar  
OSMC  
Dial-A-Buoy  
RSS Feeds  
Obs Web Widget  
Email Access

Station Status  
NDBC Maintenance  
NDBC Platforms  
Partner Platforms

Program Info  
Find us on Facebook  
NDBC on Facebook About NDBC  
Met/Ocean  
Moored Buoy  
C-MAN  
TAO  
DART@  
VOS  
CSP  
IOOS@ Program  
IOOS@ DAC

Publications  
NDBC DQC  
Handbook  
Hurricane Data  
Plots  
Mariners Weather  
Log  
Observing  
Handbook No. 1  
Science Education

National Oceanic and Atmospheric Administration's  
**National Data Buoy Center**  
Center of Excellence in Marine Technology

weather.gov

Change Password Logout

Home News Organization Search NDBC Web Site Search

**Station PTWW1 - 9444900 - Port Townsend, WA**

Owned and maintained by NOAA's National Ocean Service  
Water Level Observation Network  
48.111 N 122.760 W (48°6'40" N 122°45'35" W)

Site elevation: 5.09 m above mean sea level  
Air temp height: 2.71 m above site elevation  
Anemometer height: 8.87 m above site elevation  
Barometer elevation: 5.06 m above mean sea level  
Sea temp depth: 2.8 m below site elevation

Wind data from PTWW1 is subject to obstruction by ferries docking at the pier during the daytime hours.

[Latest NWS Marine Forecast](#)  
[Search And Rescue \(SAR\) Data](#)  
[Meteorological Observations from Nearby Stations and Ships](#)

**Conditions at PTWW1 as of  
(2:42 pm PDT)  
2142 GMT on 05/19/2015:**

Unit of Measure: English Time Zone: Station Local Time Select

Click on the graph icon in the table below to see a time series plot of the last five days of that observation.

	Wind Direction (WDIR):	W (280 deg true)
	Wind Speed (WSPD):	8.0 kts
	Wind Gust (GST):	11.1 kts
	Atmospheric Pressure (PRES):	30.08 in
	Air Temperature (ATMP):	56.3 °F
	Water Temperature (WTMP):	51.6 °F
	Wind Speed at 10 meters (WSPD10M):	7.8 kts
	Wind Speed at 20 meters (WSPD20M):	9.7 kts

[Combined plot of Wind Speed, Gust and Air Pressure](#)  
[Water Level](#)

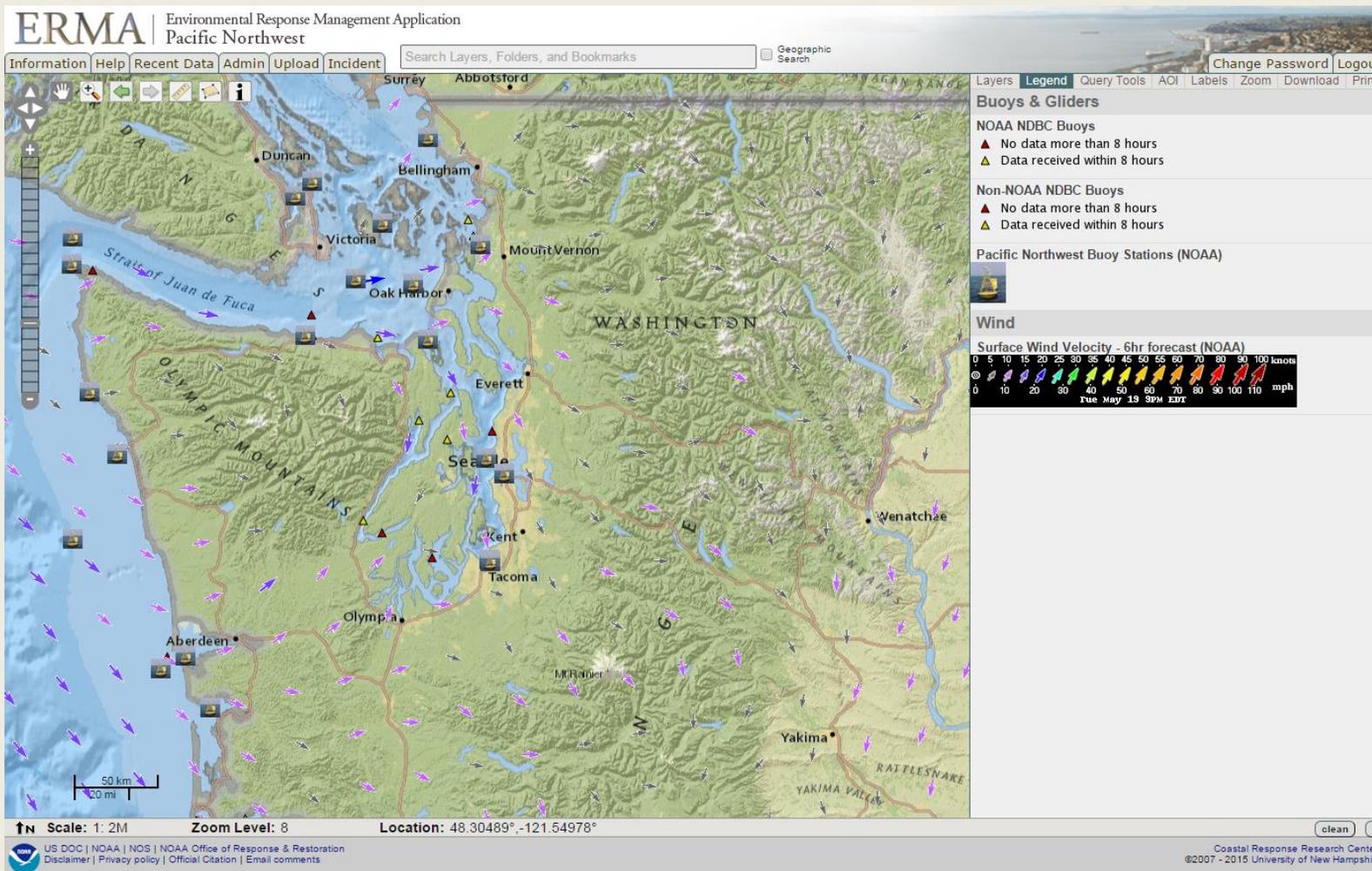
Previous observations

MM DD	TIME (PDT)	WDIR	WSPD	GST	WVHT	DPD	APD	MWD	PRES	PTDY	ATMP	WTMP	DEWP	SAL	VIS	TIDE
			kts	kts	ft	sec	sec		in	in	°F	°F	°F	psu	nmi	ft
05 19	2:36 pm	WNW	7.0	11.1	-	-	-	-	30.08	-	56.5	51.6	-	-	-	-
05 19	2:30 pm	W	6.0	9.9	-	-	-	-	30.09	-	56.7	51.4	-	-	-	-
05 19	2:24 pm	NW	8.0	11.1	-	-	-	-	30.09	-	57.9	51.4	-	-	-	-

6/3/2015

35

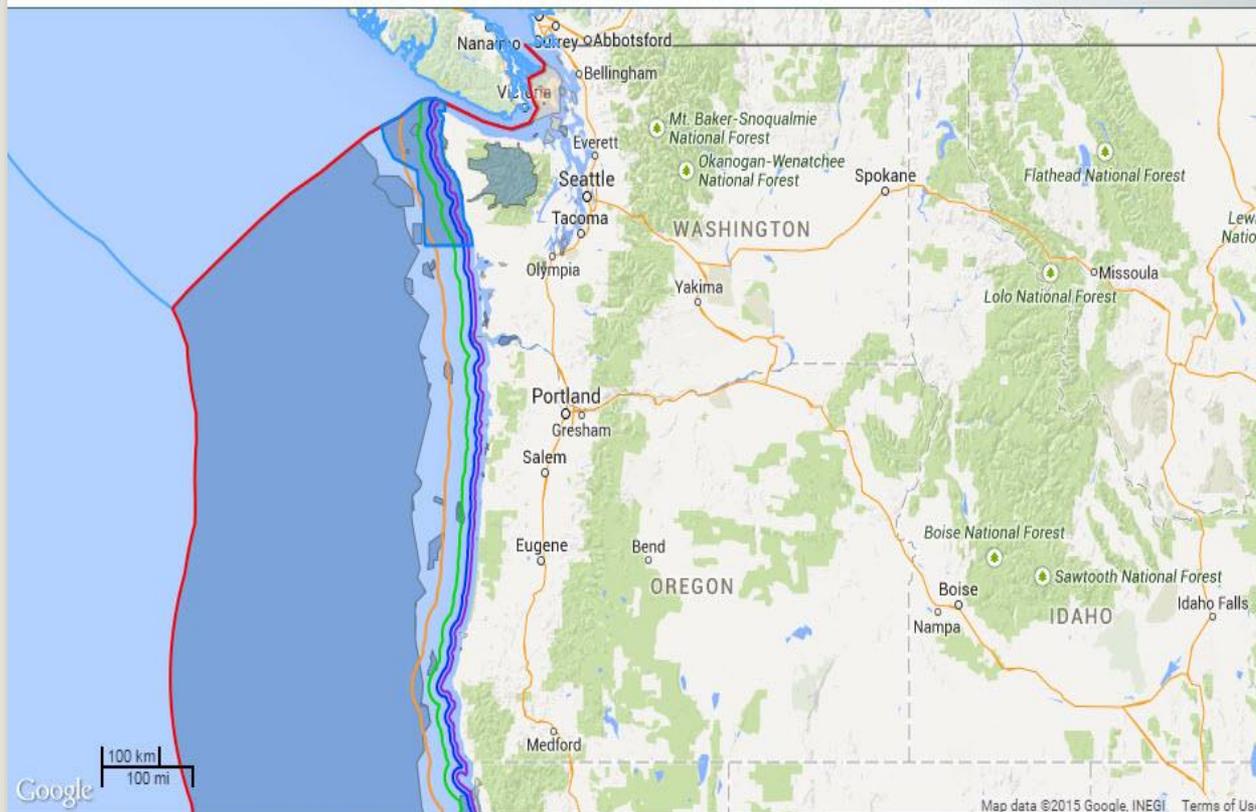
# Marine Observations



# Marine Jurisdictions

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Pacific Northwest

Geographic Search



## Marine Jurisdictions

### U.S. Marine Jurisdictions (NOAA, 2009)

- Contiguous Zone
- Exclusive Economic Zone
- Revenue Sharing Boundary
- State Seaward Boundary
- Territorial Sea

### Olympic Coast National Marine Sanctuary (NOAA)

- Olympic Coast National Marine Sanctuary (NOAA)

### Canadian Marine Jurisdictions (NRCan, 2008)

- Exclusive Economic Zone
- Offshore Area
- Saint-Pierre et Miquelon
- Shared Boundary

## Marine Protected Areas

### Washington Marine Protected Areas (WDFW)

- Subtidal
- Intertidal

### Marine Protected Areas (NOAA 2012)

- Federal
- Local
- Partnership
- State
- Territorial

Scale: 1: 7M    Zoom Level: 6    Location: 47.58862°, -121.64377°

# ERMA as a Federal Common Operating Picture

- ERMA provides secure, 24/7 access
- Operational and environmental data
- Data interoperability with RP and other agencies
- Feeds can disappear once the incident ends
- Internal and external audience
- Federal COP supports Public access and Government transparency



# Working Together

## Regional Drills, Exercises, Responses

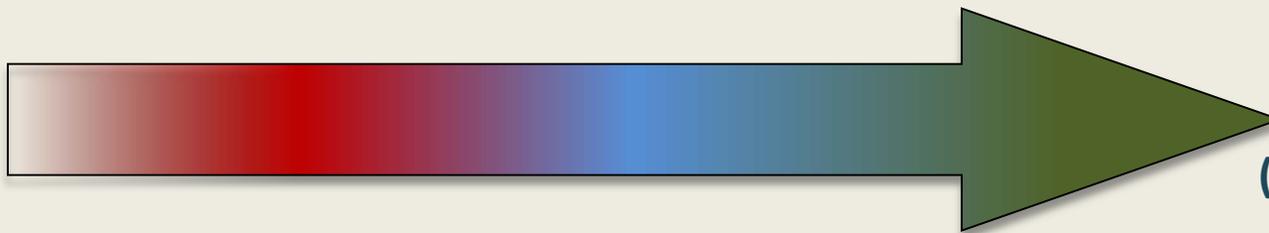
- Harbor Island Drill 2011
- US-CAN Salish Sea 2011
- Shell Puget Sound Refinery (PSR ) 2012
- Navy Bangor Spill
- Phillips 66 Ferndale Refinery 2014
- Harbor Island Diesel Drill 2014

## Collaborations/Partnerships

- WA Department of Natural Resources
- WA Department of Health
- WA Department of Ecology
- WA Counties
- UW Puget Sound Institute  
(Encyclopedia of Puget Sound)
- OR Department of Environmental  
Quality
- Pacific Shellfish Institute
- NOAA Protected Resources
- Makah Tribe

# Continuum of “Response” Framework for the Office of Response and Restoration

Response  
(24 hours)



Recovery or  
Restoration  
(Years/Decades)

Response

Assessment

Restoration



6/3/2015



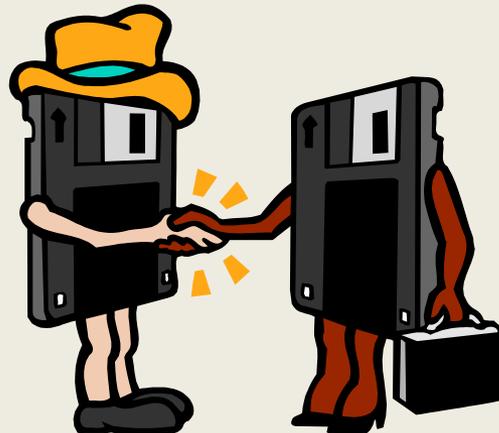
## Data/Information Management Plan

- DMP documents all cooperatively collected and processed data
- Cooperatively developed by Responsible Party, Feds, States & signed by Unified Command



# Why We Need A Data Sharing Plan

- Deepwater Horizon and other spills experience...
- Facilitate partnership between potential RP's and Federal/State Representatives
- USCG 2014 Incident Management Handbook



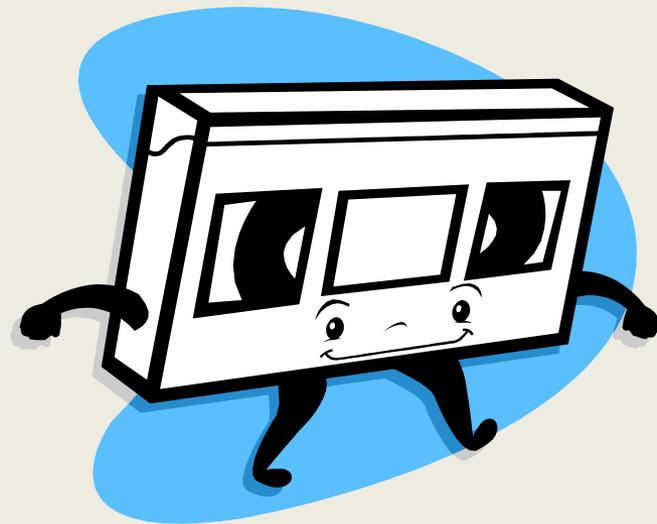
## Data Management Plan Supports:



- Cooperation between all data providers
- Data partners all have access to the same data
- Standard formats & approaches: Interoperability
- Data retention during and after the response
- Continuity of information

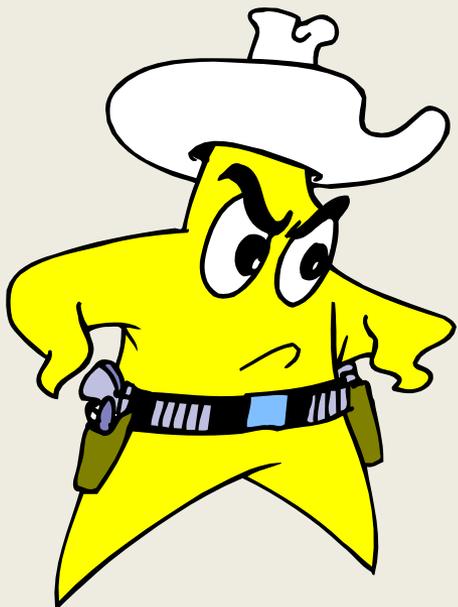
# Data Sharing Plan: Concept

- Part of the Data Management Plan
- Not about data ownership, ownership is not transferred; data are shared
- Everyone gets copies of original, environmental and operational data



## Many COPS: One Data

- Multiple Organizations means Multiple Audiences
- Data Sharing Plan goal is to ensure they're all showing the same data



*“A COP without data is like a gun without bullets”*

Outreach

Partnerships

Planning

Training

Ongoing Incident  
Support

Incident Notification

Restoration

Assessment



**ERMA**  
**Continuum**

# Acknowledgements

## NOAA

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Chander Ganesan, OTG  
Phillip Collins, UNH  
Robert St. Lawrence, UNH

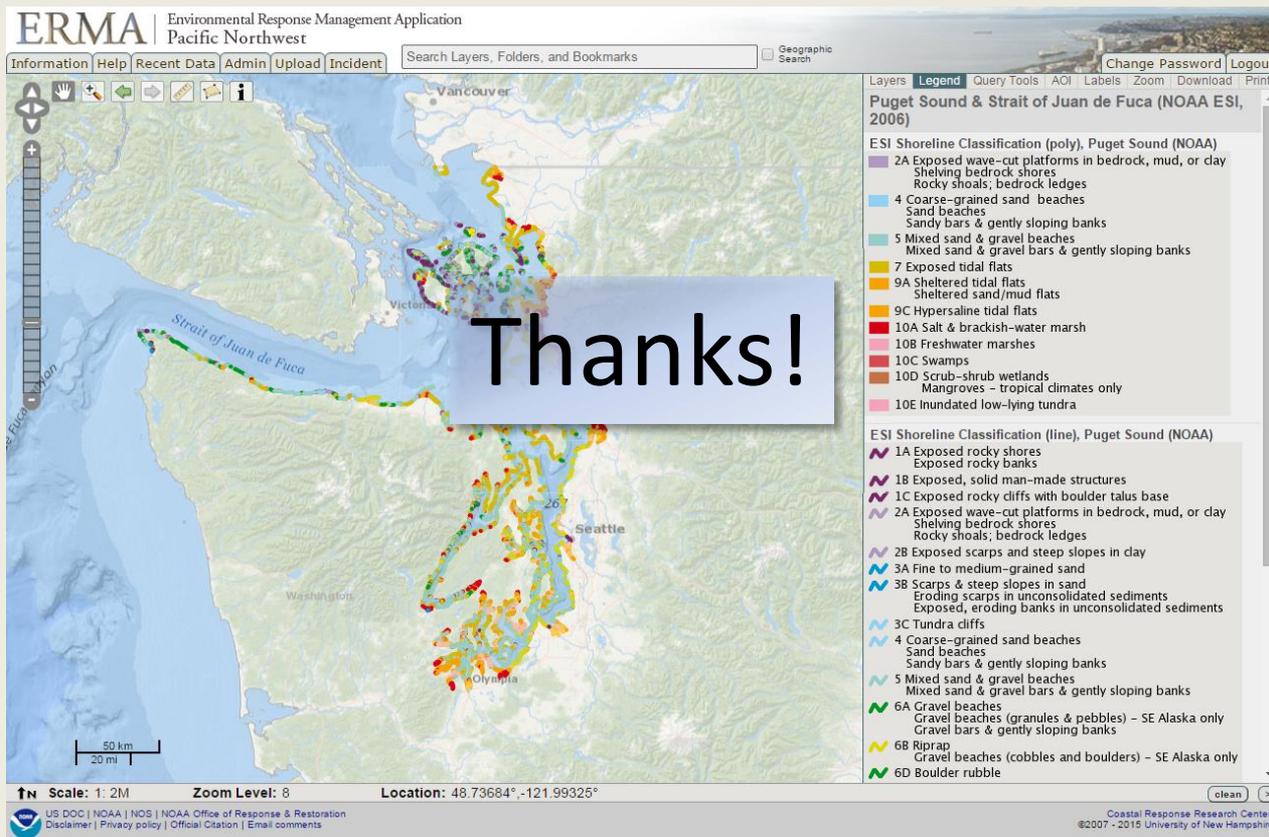
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<https://erma.noaa.gov/northwest/erma.html>

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