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Th8a

CD-0001-22 (BOEM)

APRIL 7, 2022

EXHIBITS

EXHIBITS LIST

Scope of Federal Consistency Review

1-1 Humboldt WEA Vicinity Map
1-2 Representation of Current Existing Cable Tie, Cover Designs, and Anchor Types
1-3 Schematic of a Full-scale Floating Wind Energy Development
1-4 Potential Oregon Call Areas

Marine Resources and Water Quality

2-1 Humboldt Wind Energy Area Seafloor Habitat
2-2: Seafloor Bathymetry within the WEA
2-3 Whale Density/Presence Maps off West Coast
2-4 Leatherback Sea Turtle Distribution off the West Coast in Humboldt WEA
2-5 California Offshore Wind Energy Gateway Bird Density Maps
- 2-5a. Marbled Murrelet - Spring
- 2-5b. Ashy Storm-Petrel – Fall
- 2-5c. Tufted Puffin – Spring
- 2-5d. Pink-footed Shearwater - Fall
- 2-5e. Black-legged Kittiwake - Winter
- 2-5f. Bonaparte Gull - Fall
- 2-5g. California Gull - Fall
- 2-5h. Cassin Auklet - Winter
- 2-5i. Iceland Gull - Spring
- 2-5j. Jaeger - Fall
- 2-5k. Pomarine Jaeger – Fall
- 2-5l. Rhinoceros Auklet – Fall
- 2-5m. Sabine Gull – Spring
- 2-5n. South Polar Skua – Fall
- 2-5o. Western Glaucous-winged Gull – Spring
- 2-5p. Seasonal Bird Density Maps

2-6 Marine Frequency Hearing Ranges

Commercial and Recreational Fishing

3-1 North Coast Fishermen’s Mapping Project
3-2 CDFW WEA Impact Area
3-3 Non-catch Share Hook and Line Fisheries Data near the WEA
3-4 NOAA Observed Fishing Effort 2011-2017, Non-catch Shares Pot Fishery
3-5 CA Halibut Trawl Density Data from CDFW
3-6 VMS Data for Salmon Trolling 2010-2017 (uploaded by CBI)
3-7 North Pacific Albacore Trolling Point Density 2011-2016
3-8 Shortfin Mako Predicted Monthly Presence 1988-2016
3-9 VMS 2010-2017 Dungeness Crab Density Data
3-10 VMS Density of Pink Shrimp Fishing
3-11 Essential Fish Habitat Conservation Areas
3-12 Pacific Coast Habitat Areas of Particular Concern
3-13 Management Closures and Conservation Areas
3-14 VMS Bottom Trawl Data and Observed Fishing Efforts in the Pacific Coast Groundfish Fisheries-Catch Shares Bottom Trawl

CD-0001-22 (BOEM) EXHIBITS

3-15 EEMS Model for High Ocean Use Trawl Activity
3-16 Humboldt Wind Energy Areas to Port

Coastal Hazards
4-1 Map of Faults in and Around Humboldt WEA
4-2 Map of Tsunami Risk in WEA

Scenic and Visual Resources
5-1 Visual Simulations

Public Access and Recreation
6-1 Humboldt Bay Water Trails
6-2 Public Coastal Access Points in WEA

Tribal and Cultural Resources
7-1 North Coast Offshore Wind Tribal Map
7-2 Cultural Resource Prediction Map within WEA

Environmental Justice
8-1 Population Characteristics near WEA
8-2 Location of Analyzed Census Tracts and CalEnviroScreen 4.0 near WEA
8-3 Households with Incomes Below Twice the Federal Poverty Level
8-4 AB 1550 Low-income Communities near WEA
8-5 Humboldt Bay Harbor, Recreation, and Conservation District Conceptual Master Plan for Redwood Marine Terminal

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SCOPE OF FEDERAL CONSISTENCY REVIEW EXHIBITS

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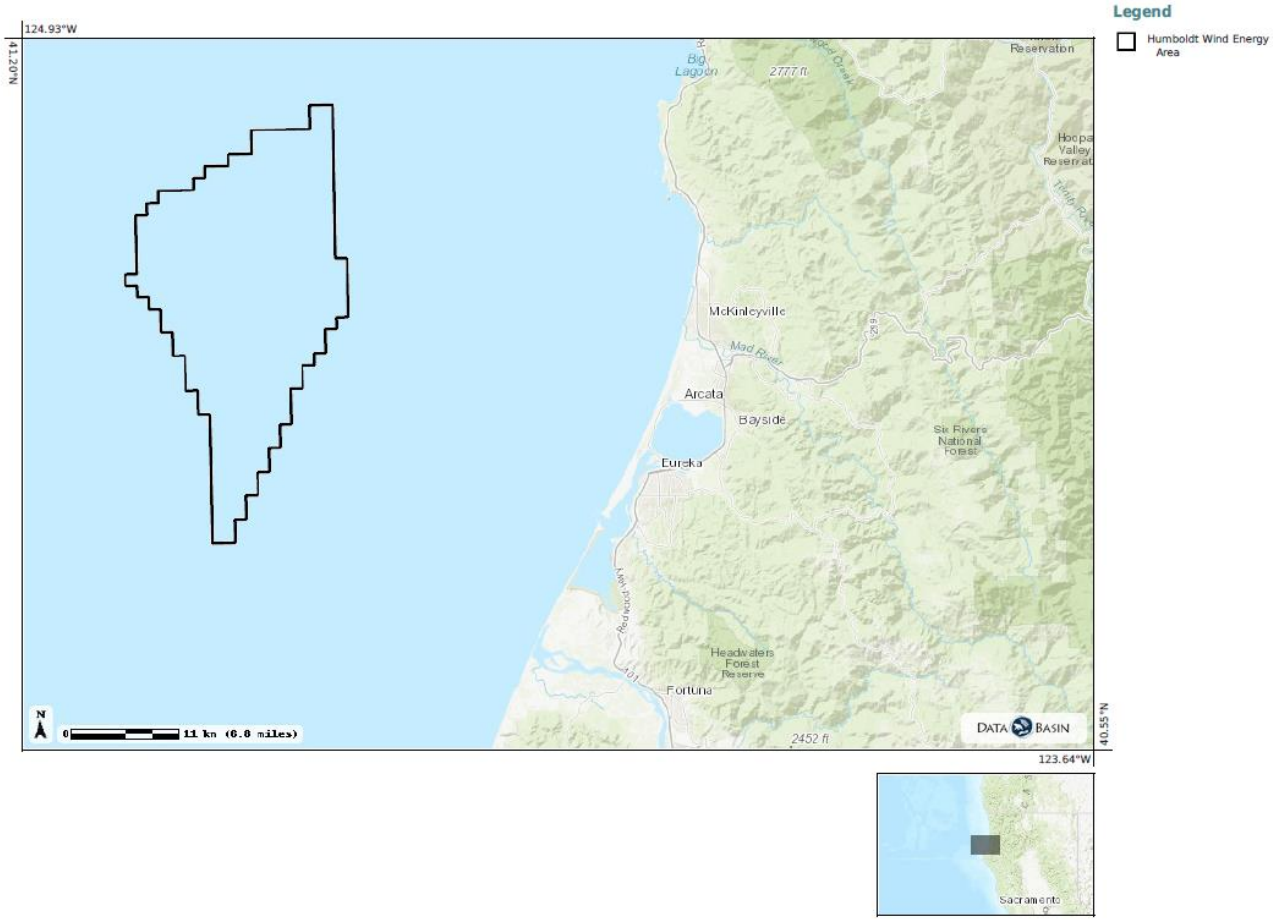
Exhibit 1-1



Humboldt WEA Vicinity Map
Source: California Offshore Wind Energy Gateway

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Exhibit 1-2

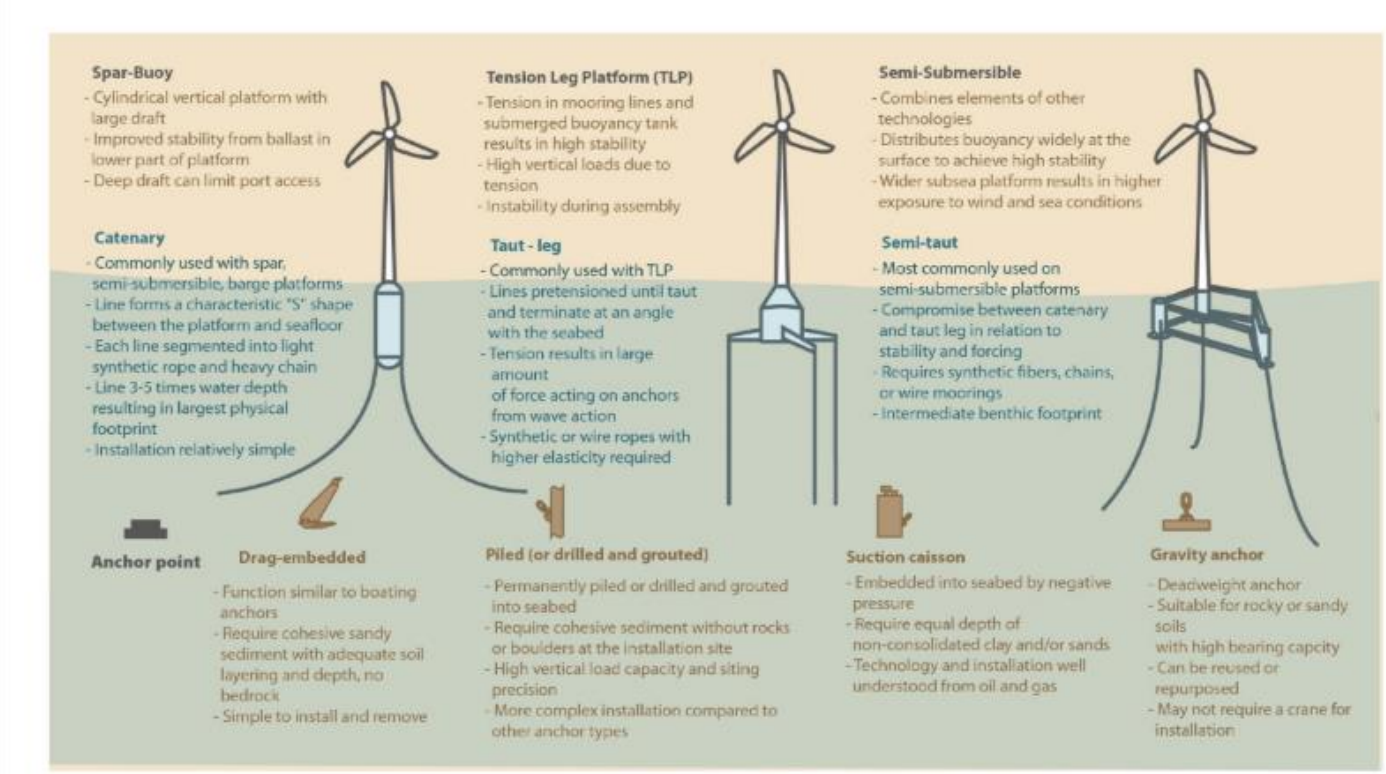

Diagram of current mooring, anchoring, and floating foundations from Maxwell et al., 2022.

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Exhibit 1-3

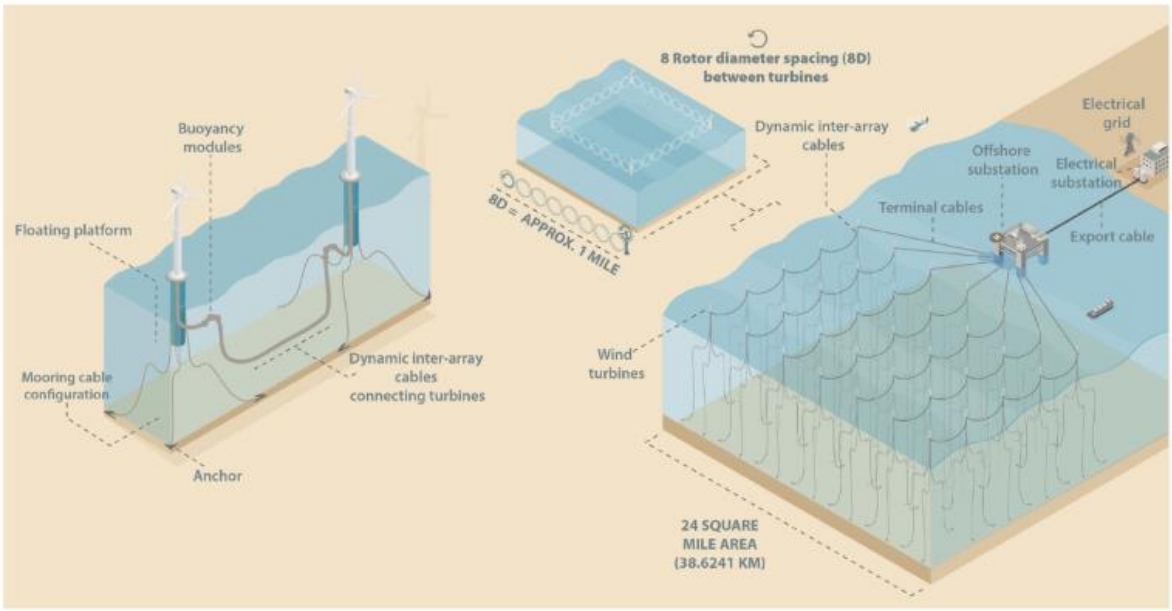

Fig. 2. Schematic of a full-scale floating wind energy development. Floating offshore wind turbines (FOWT) differ from fixed-foundation turbines primarily in the types of platform and anchoring system used to support the turbine. FOWT employs buoyant 'floating substructures' which are submerged or semi-submerged platforms anchored to the seabed by mooring lines and a variety of anchor types, and connected to one another by dynamic inter-array cables.

Schematic of a full-scale floating wind energy development from Maxwell et al., 2022.

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Exhibit 1-4

Proposed Oregon Call Areas
Source: BOEM

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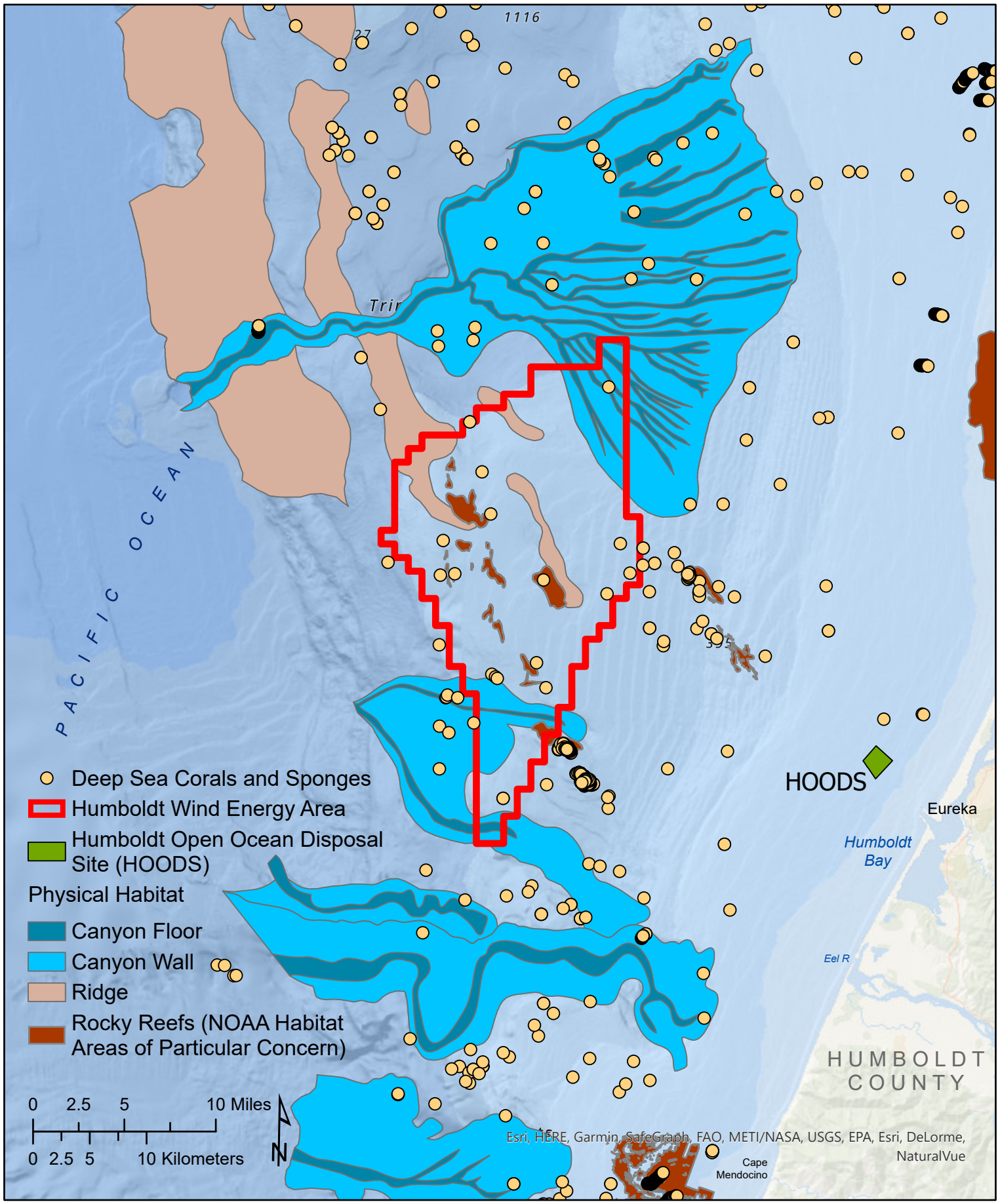
MARINE RESOURCES AND WATER QUALITY EXHIBITS

Exhibit 2-1

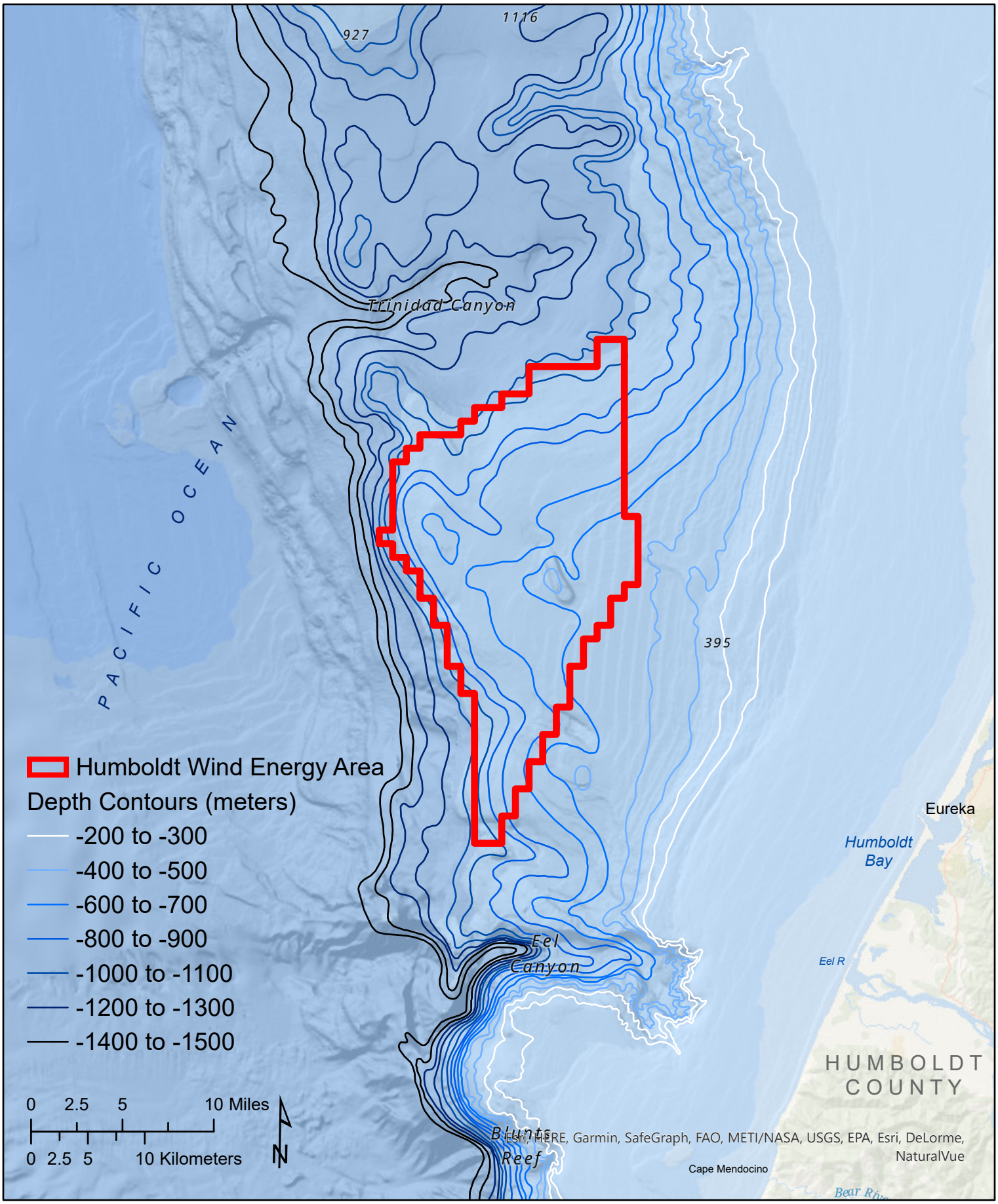
Humboldt Wind Energy Area Seafloor Habitat



Data sources: Oregon State University, National Oceanic and Atmospheric Administration

Exhibit 2-2

Humboldt Wind Energy Area Location



Data source: United States Geological Survey

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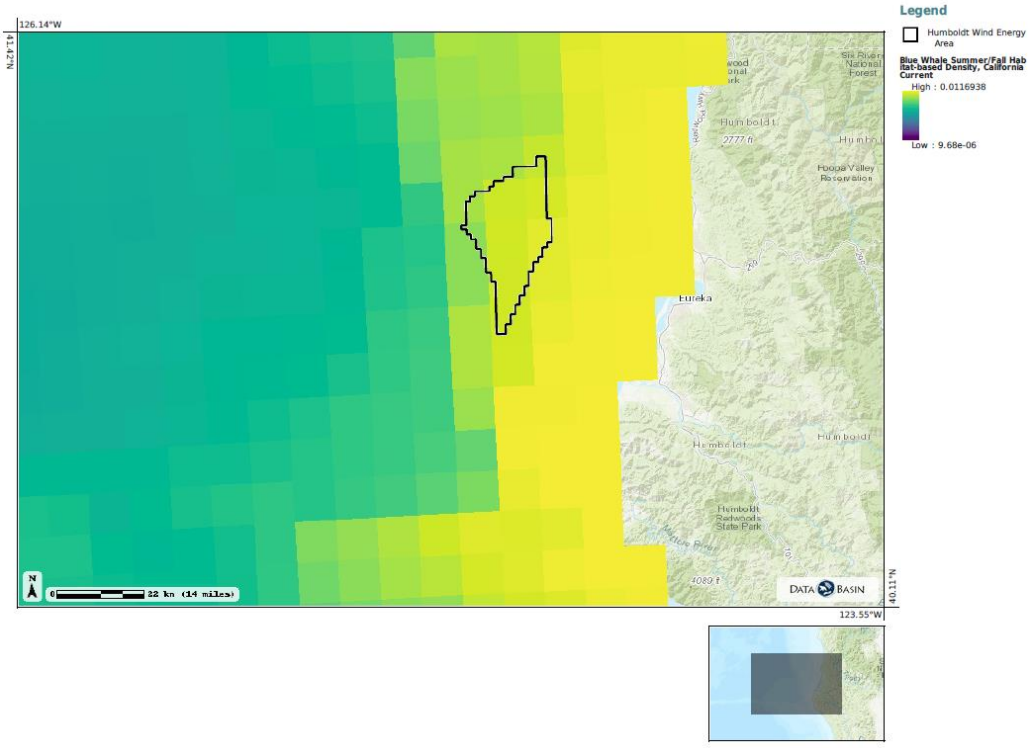
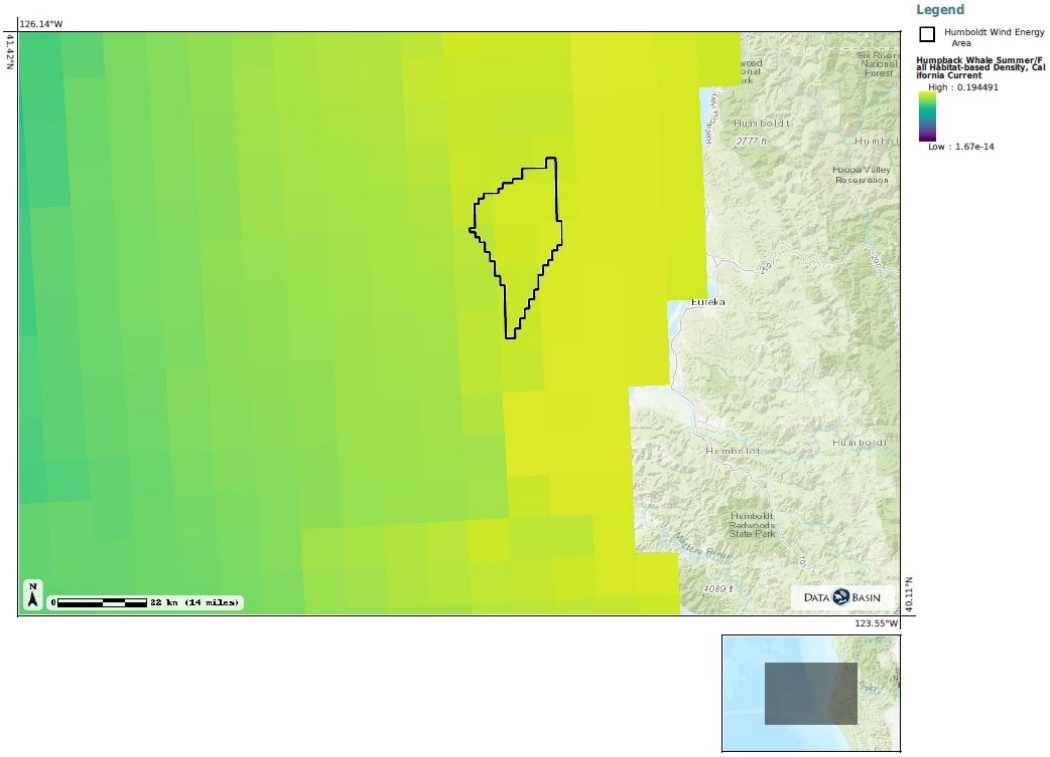
Exhibit 2-3

Blue Whale Summer/Fall Density (number of whales per km^2) in the Vicinity of the Humboldt WEA



Humpback Whale Summer/Fall Density (number of whales per km^2) in the Vicinity of the Humboldt WEA



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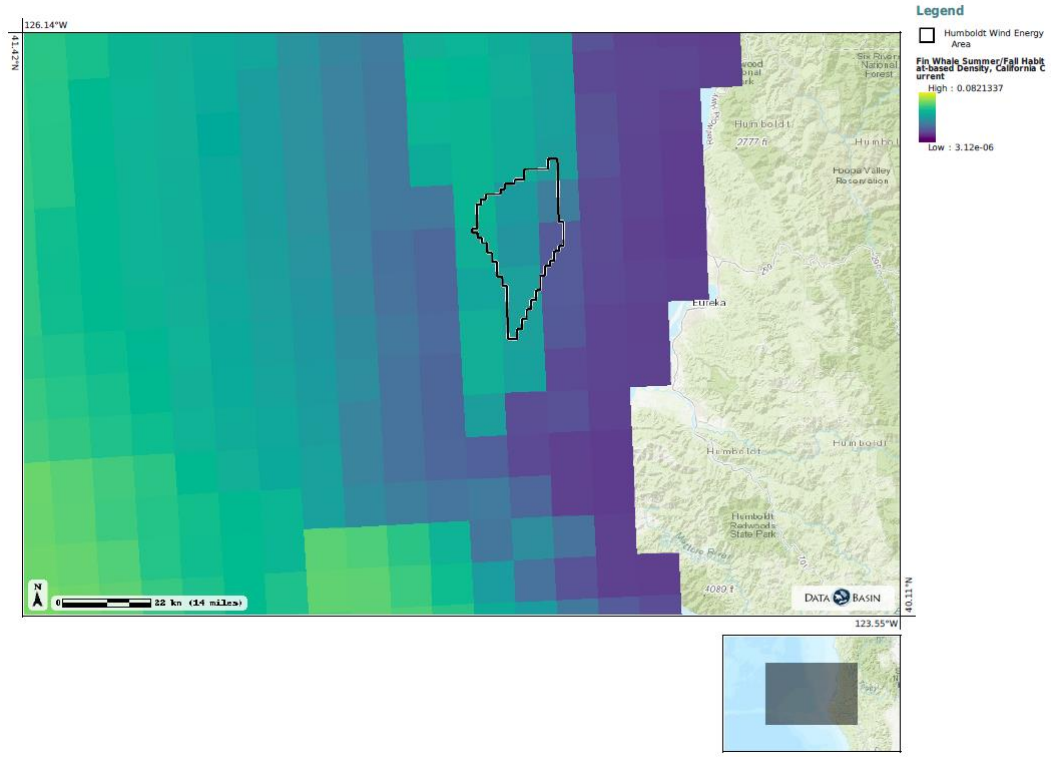
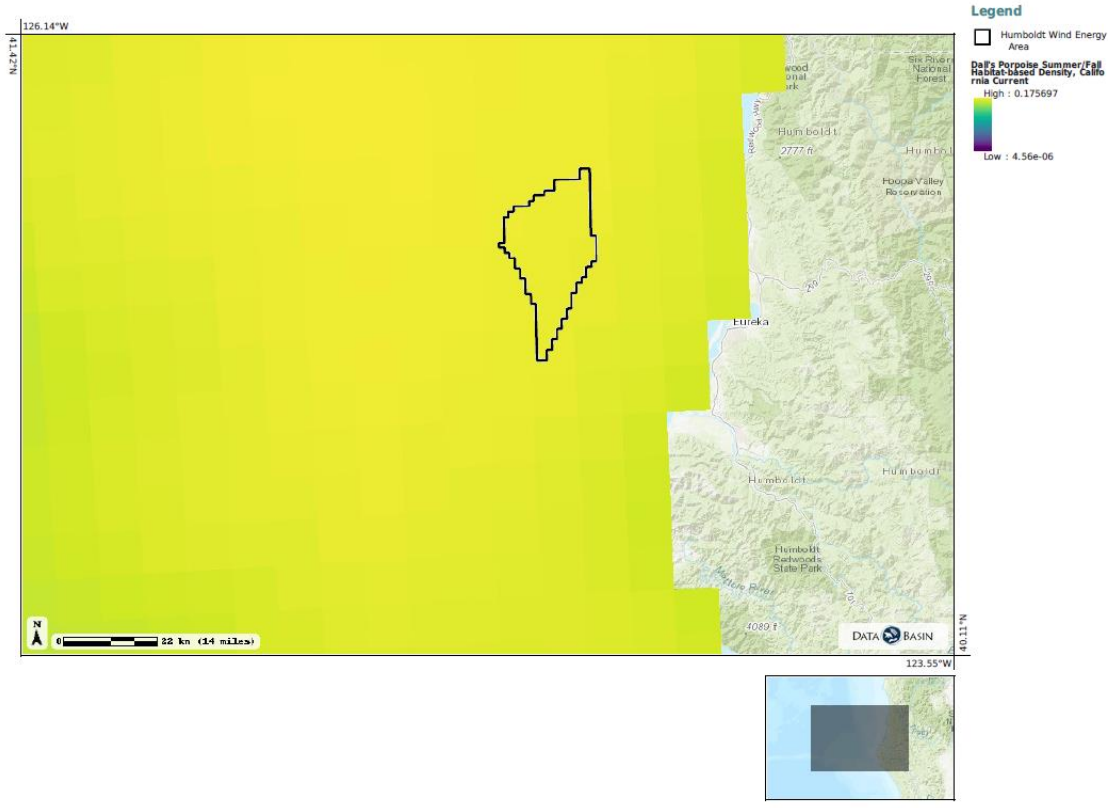
Fin Whale Summer/Fall Density (number of whales per km^2) in the Vicinity of the Humboldt WEA



Dall's Porpoise Summer/Fall Density (number of whales per km^2) in the Vicinity of the Humboldt WEA



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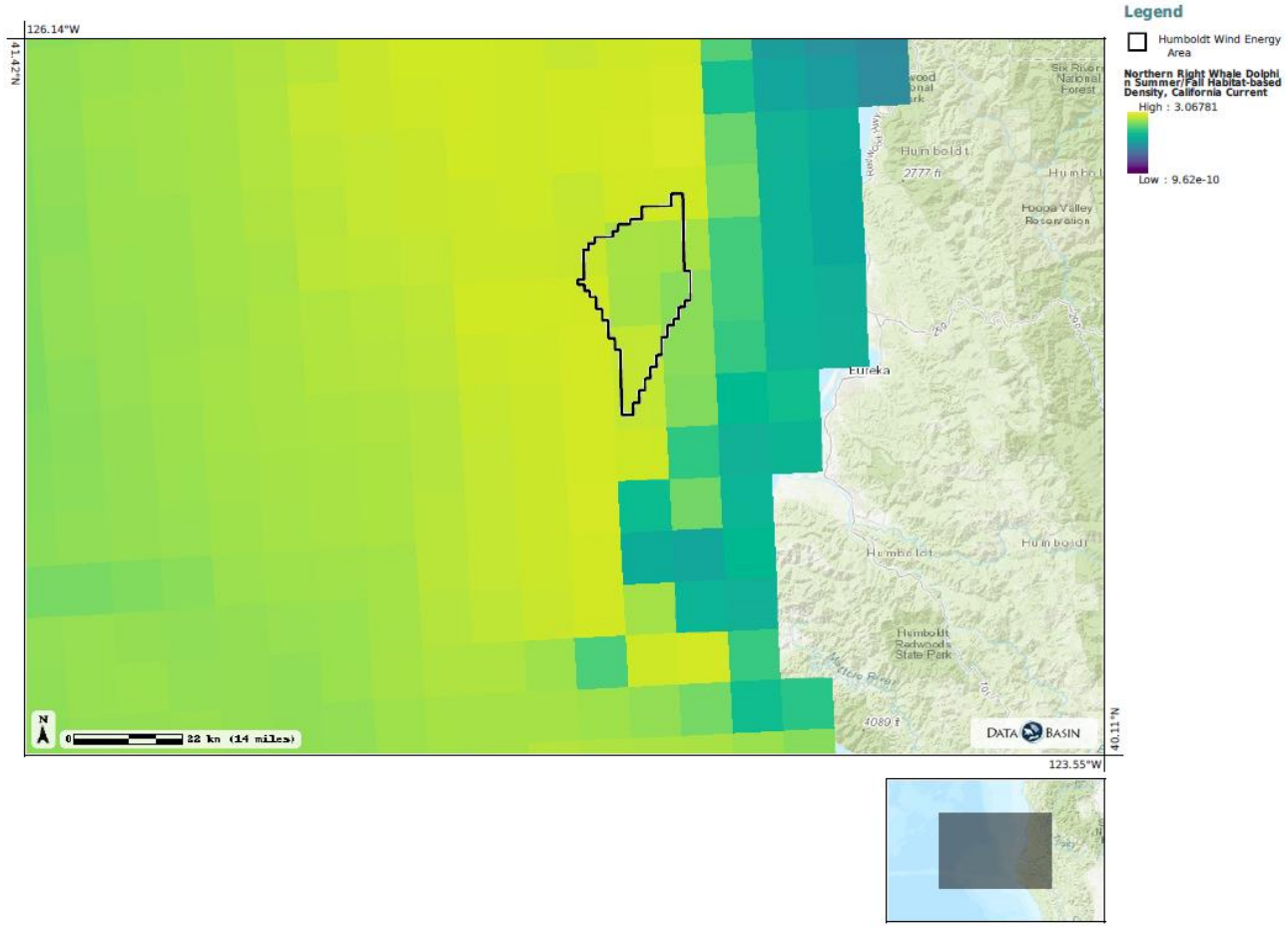
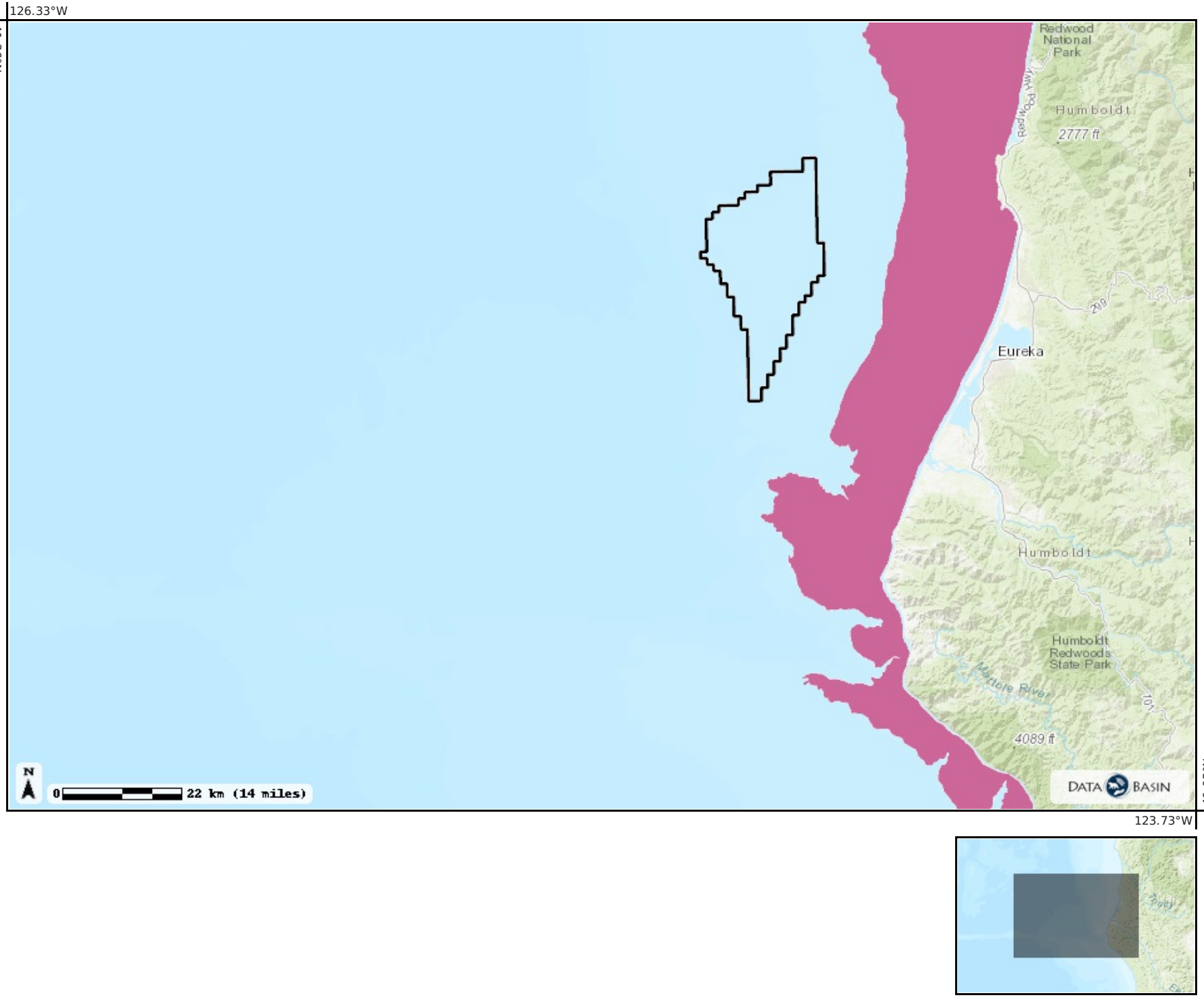
Northern Right Whale Dolphin Summer/Fall Density (number of whales per km^2) in the Vicinity of Humboldt
WEA



Source: Becker et al., 2020 via the California Offshore Wind Energy Gateway

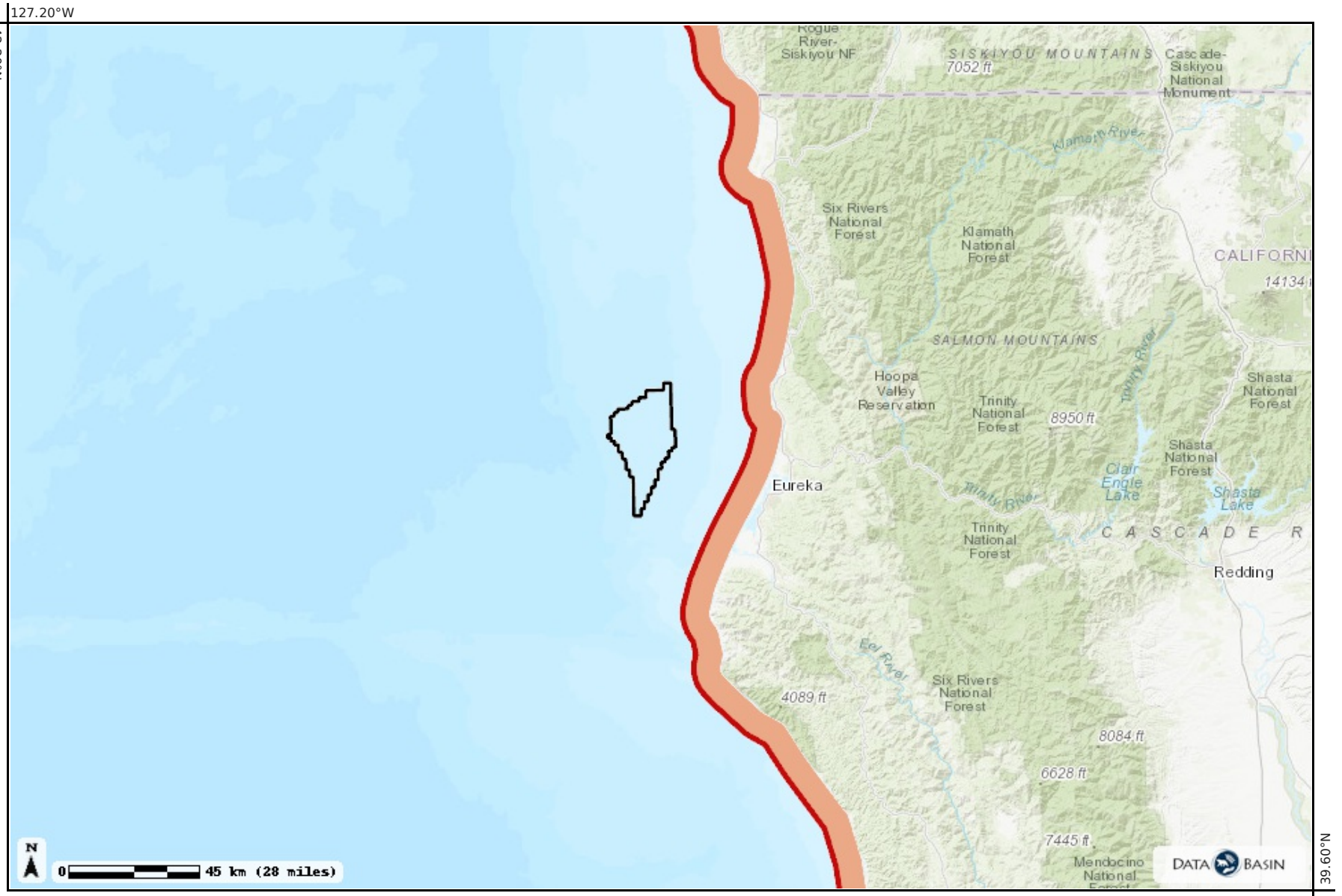
Southern Resident Killer Whale Critical Habitat



Legend

- Humboldt Wind Energy Area, Morro Bay Wind Energy Area
- Southern Resident Killer Whale Critical Habitat

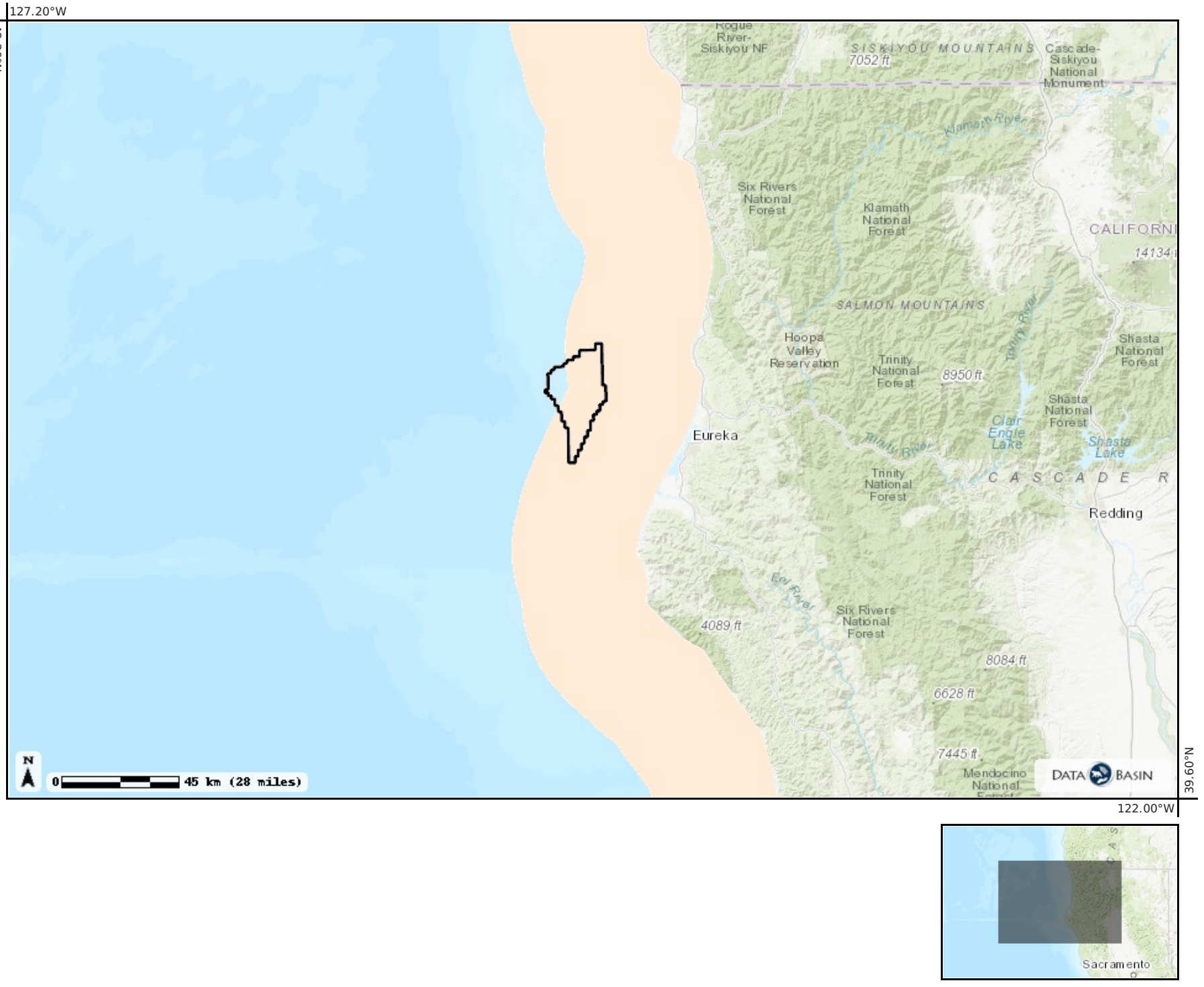
Gray Whale Migration Corridors



Legend

- Humboldt Wind Energy Area
- Northbound - Phase A
- Northbound - Phase B
- Southbound - All

Gray Whale Potential Presence



Legend

- Humboldt Wind Energy Area
- Biologically Important Areas for Gray Whale - Migratory Corridor

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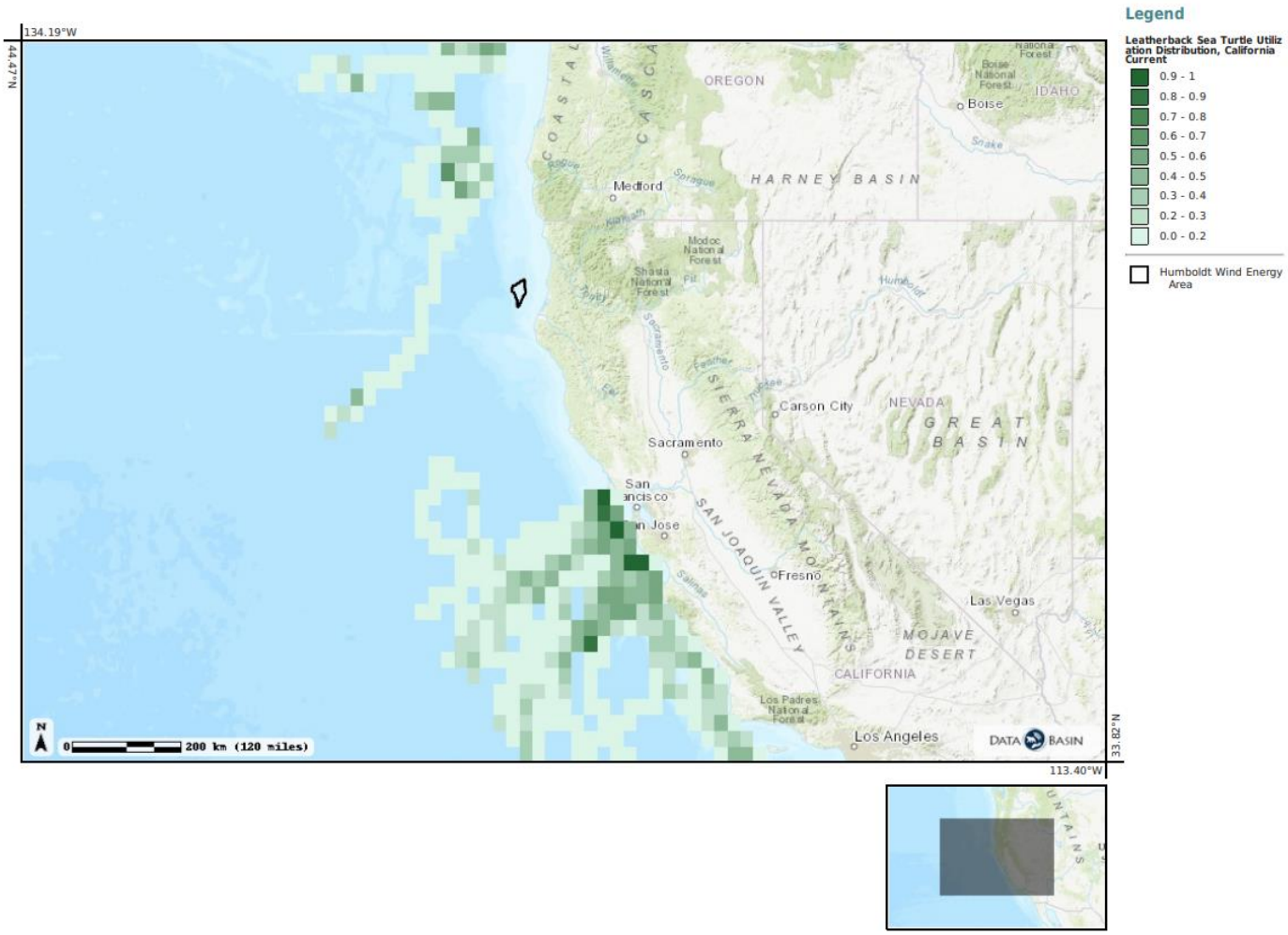
Exhibit 2-4



Leatherback Sea Turtle Distribution off the West Coast in Humboldt WEA.
Source: Maxwell et al., 2013 via the California Offshore Wind Energy Gateway

Maxwell, S., Hazen, E., Bograd, S. *et al.* Cumulative human impacts on marine predators. *Nat Commun* **4,** 2688 (2013). https://doi.org/10.1038/ncomms3688

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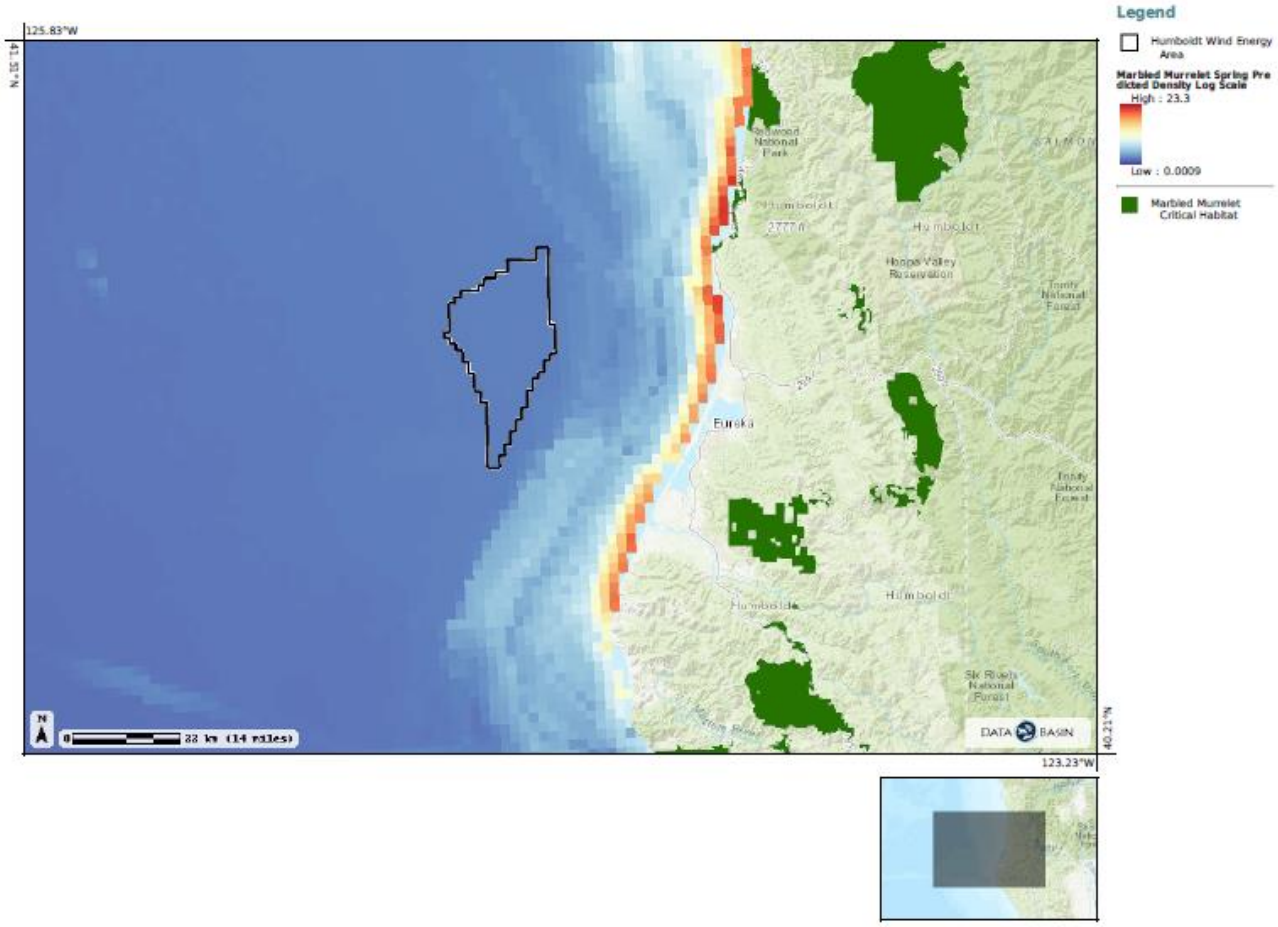
Exhibit 2-5 California Offshore Wind Energy Gateway Bird Density Maps

Exhibit 2-5a*.
Marbled Murrelet Density – Spring, and Critical Habitat



*It is important to note that the predicted densities in Exhibits 2-5a-2-5o are displayed using a logarithmic scale to enhance the differences between different geographic areas, and that the data is meant to inform long-term average density. There is significant interannual variability in seabird density, and modeling results may not reflect the specific seabird density of any specific year.

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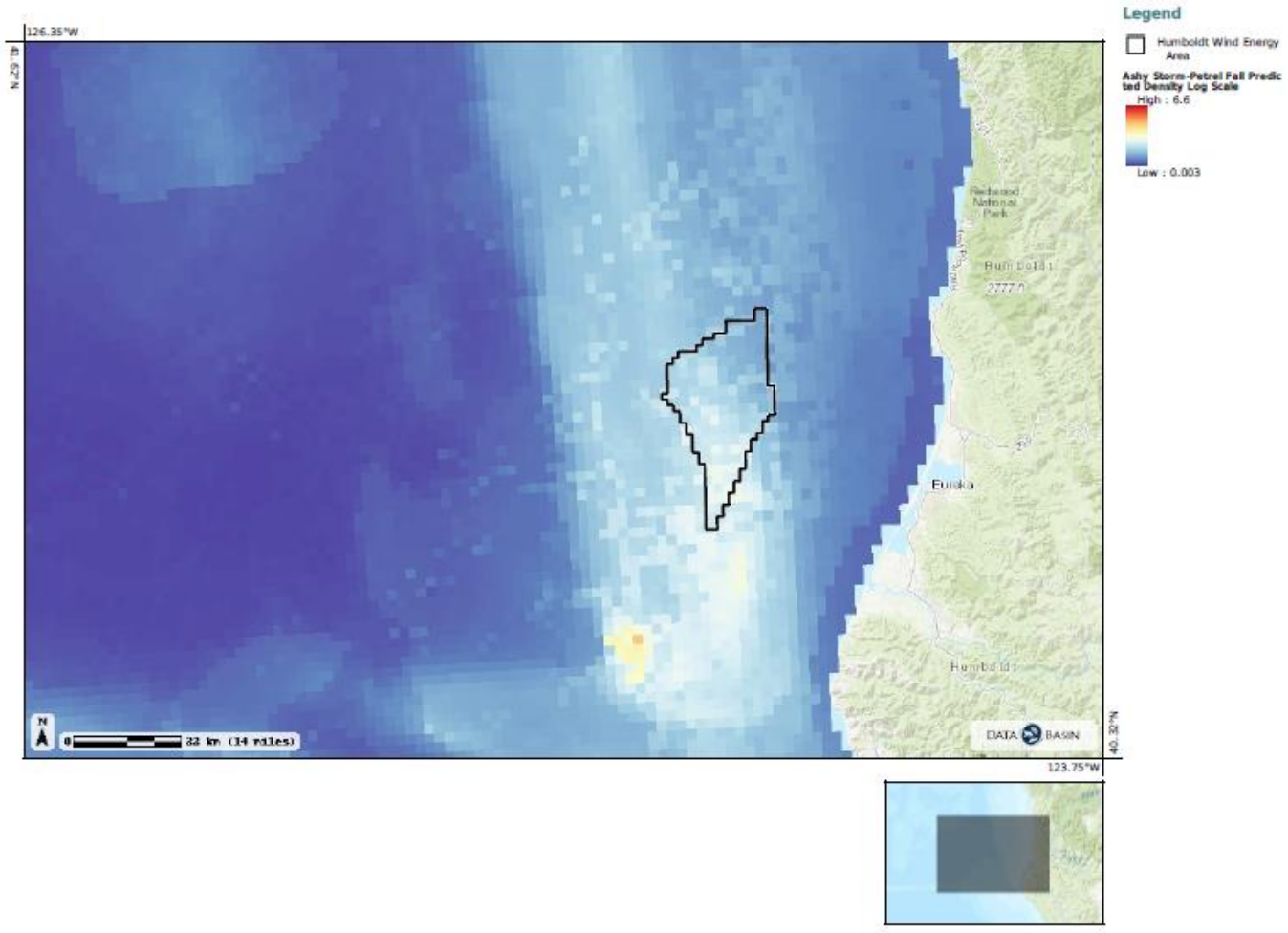
Exhibit 2-5b.
Ashy Storm-Petrel Density – Fall

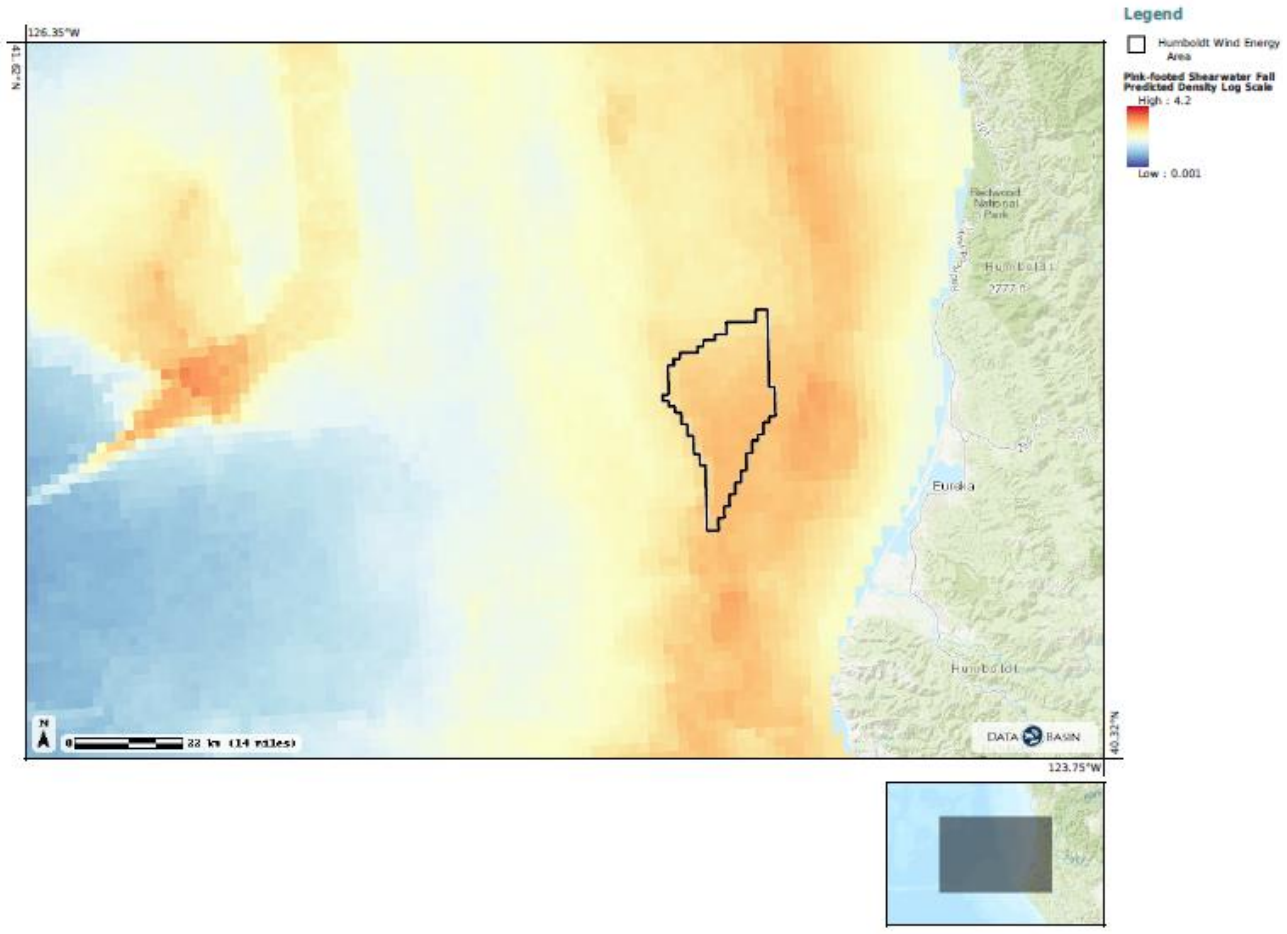


CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5c.
Tufted Puffin Density - Spring

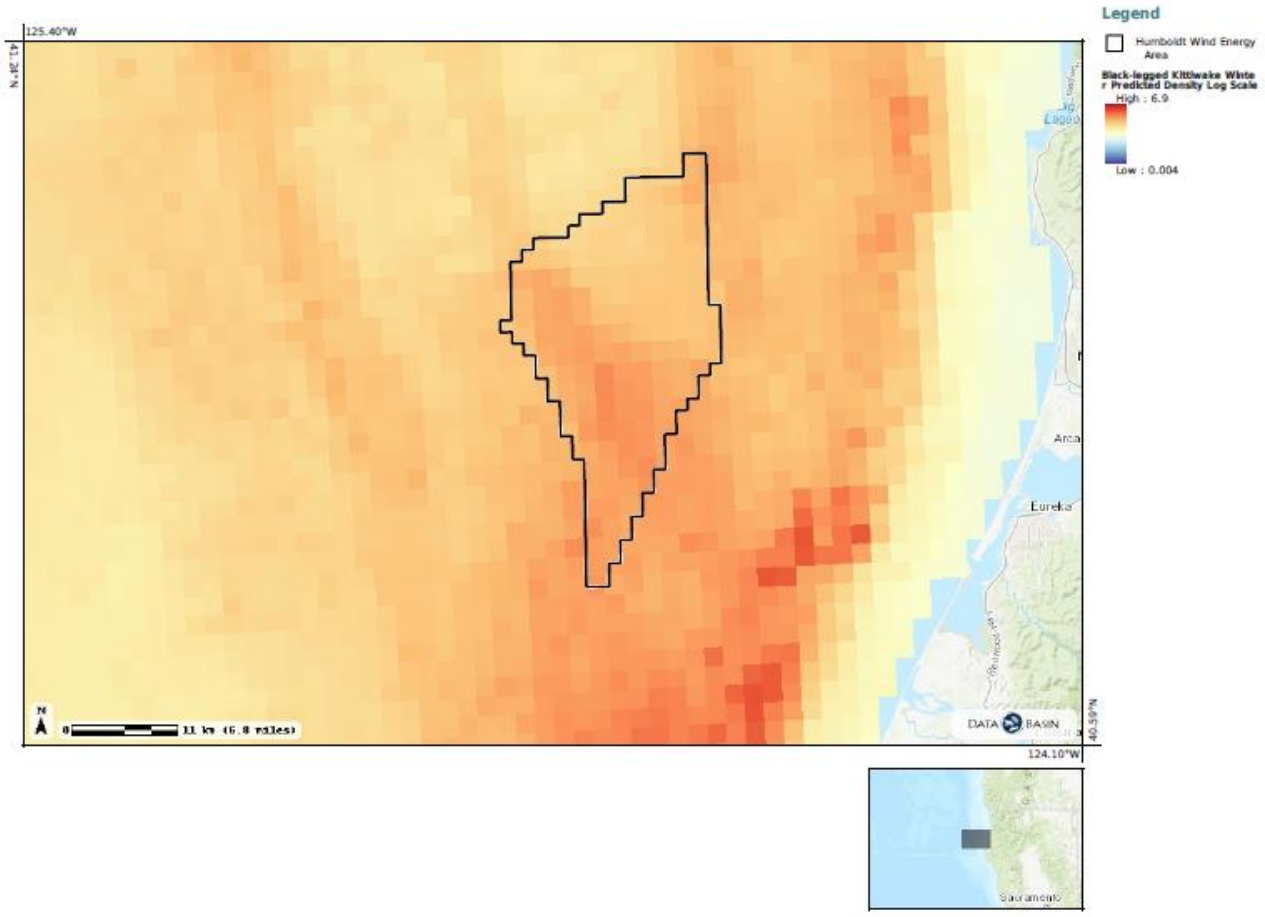
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5d.
Pink-footed Shearwater Density – Fall



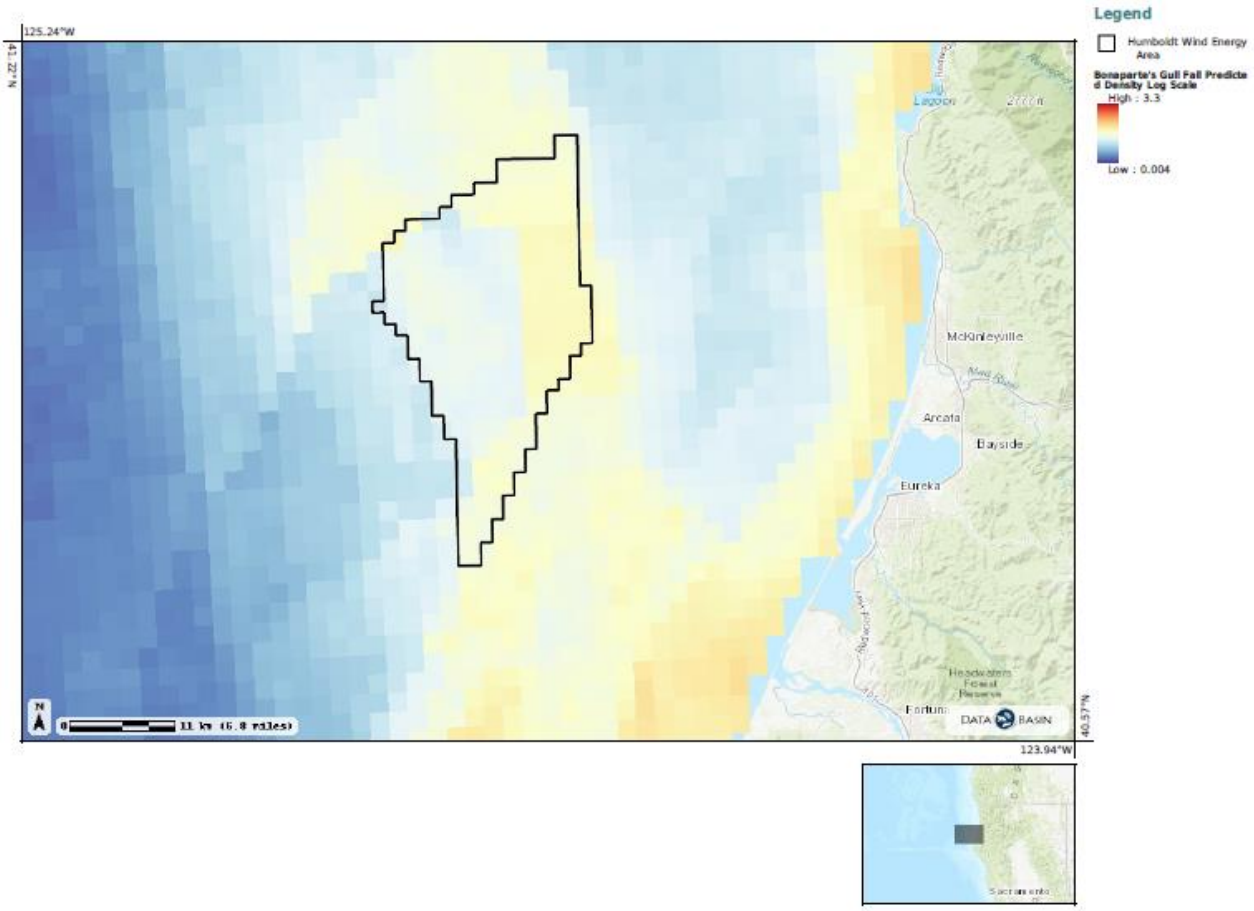
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5e.
Black-legged Kittiwake Density – Winter



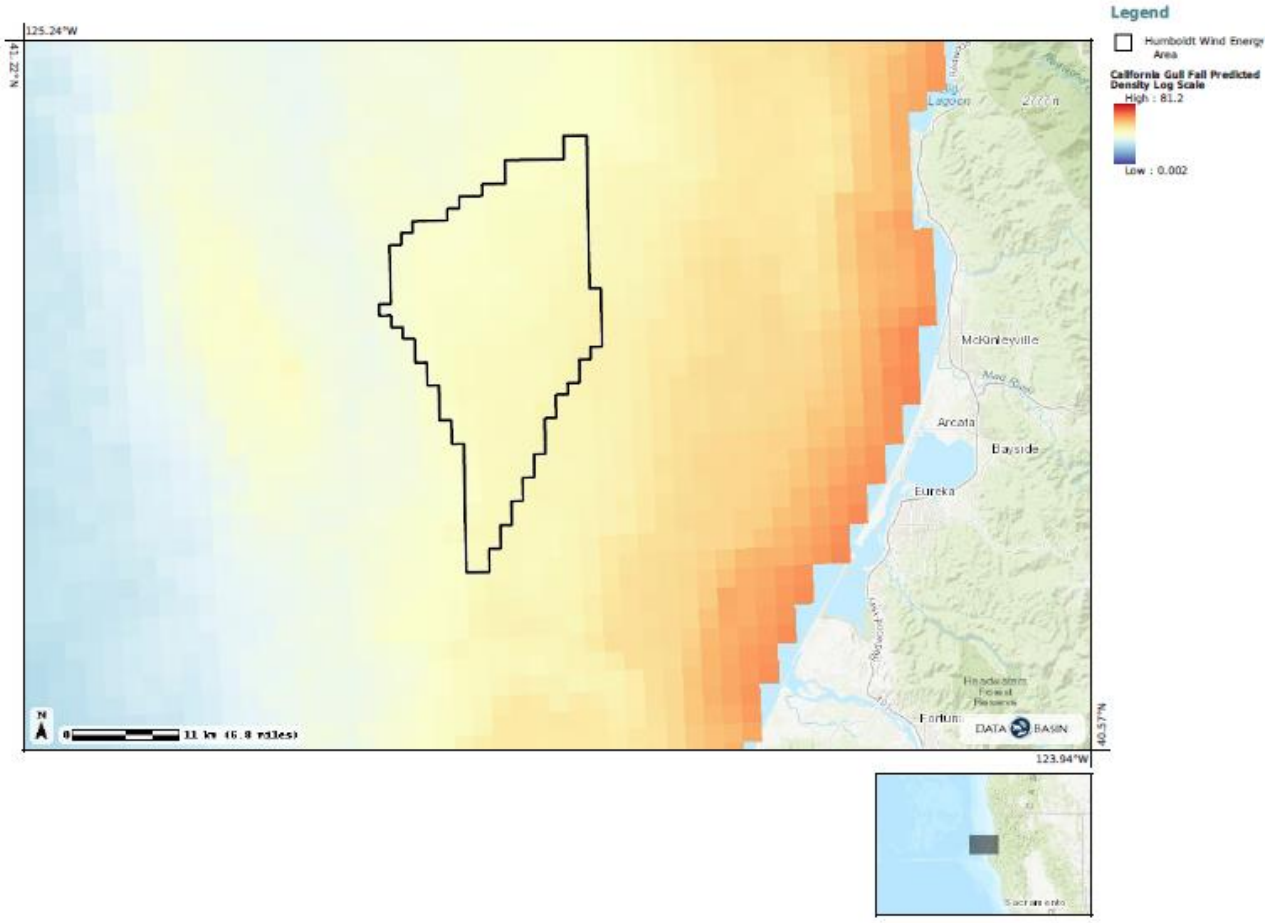
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5f.
Bonaparte Gull Density – Fall



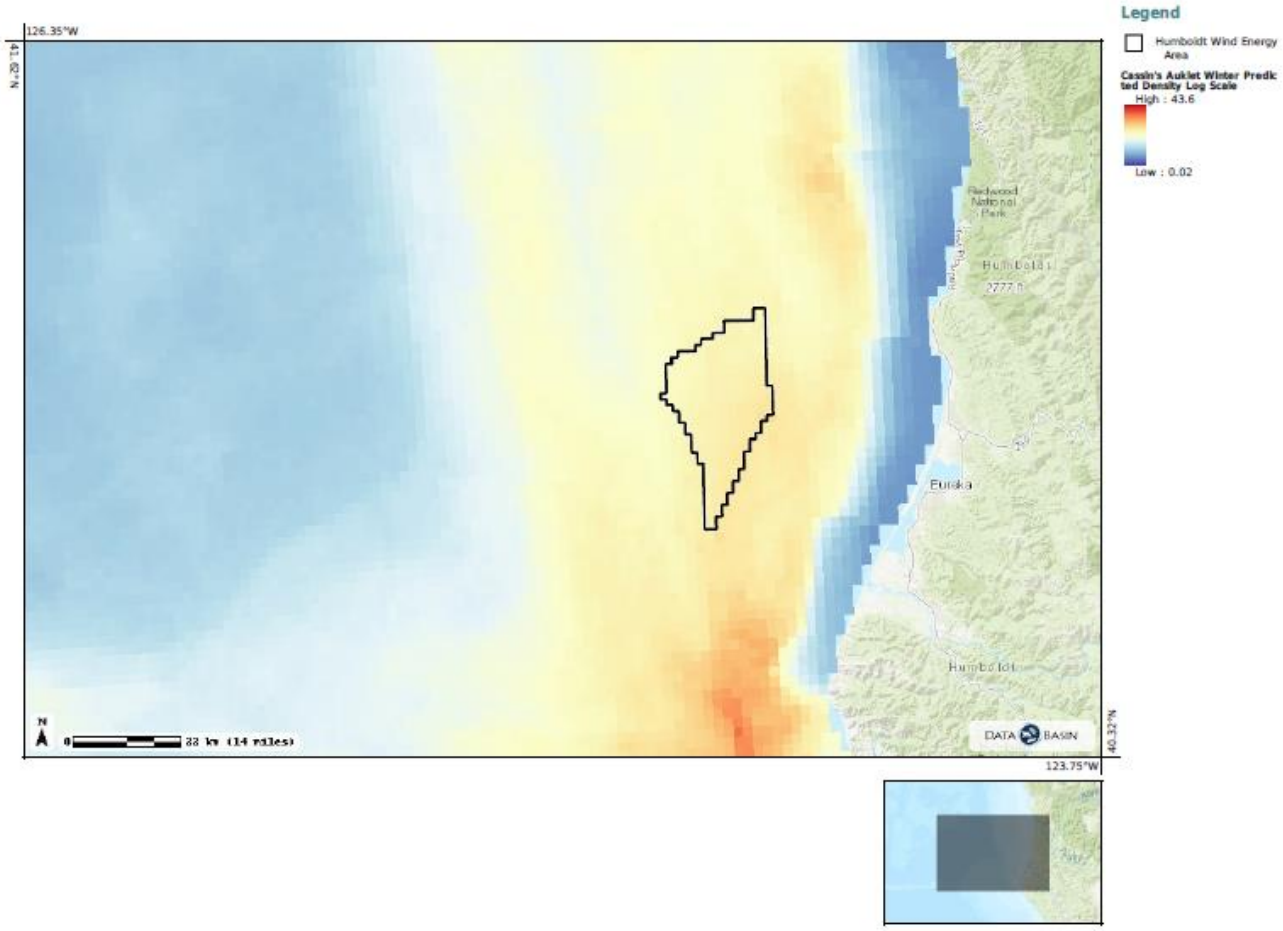
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5g.
California Gull Density – Fall



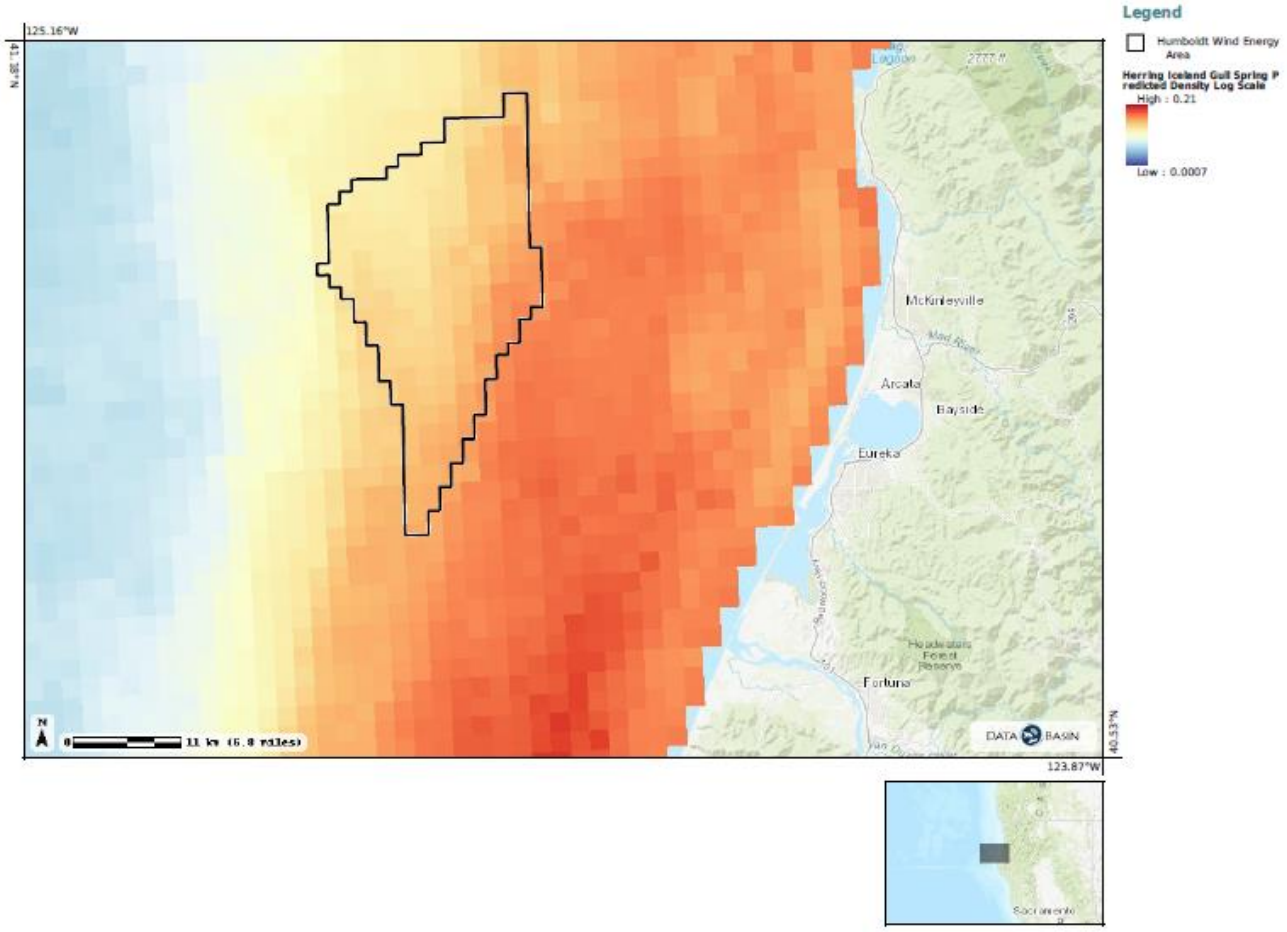
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5h.
Cassin Auklet Density– Winter



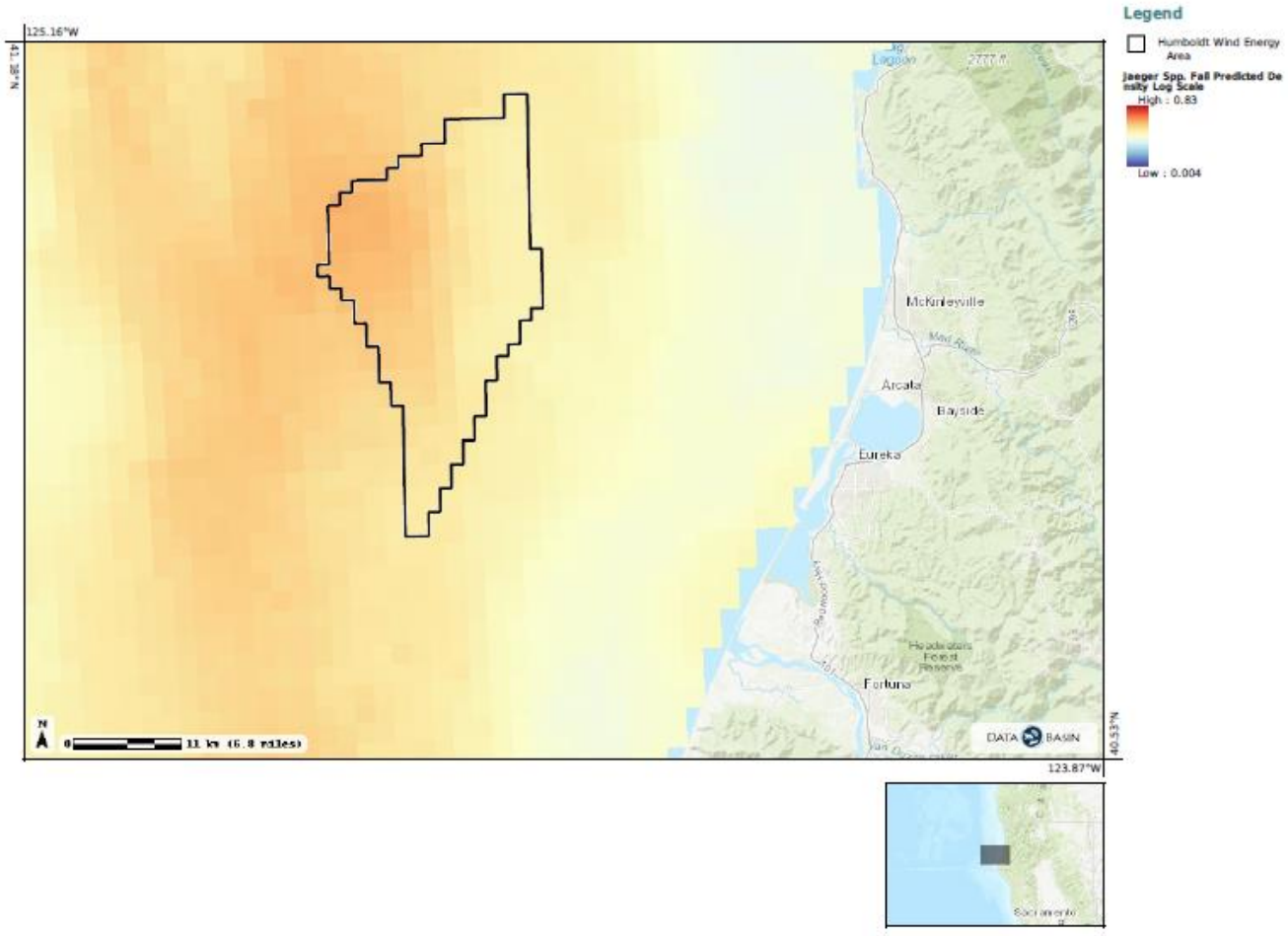
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5i.
Iceland Gull Density– Spring



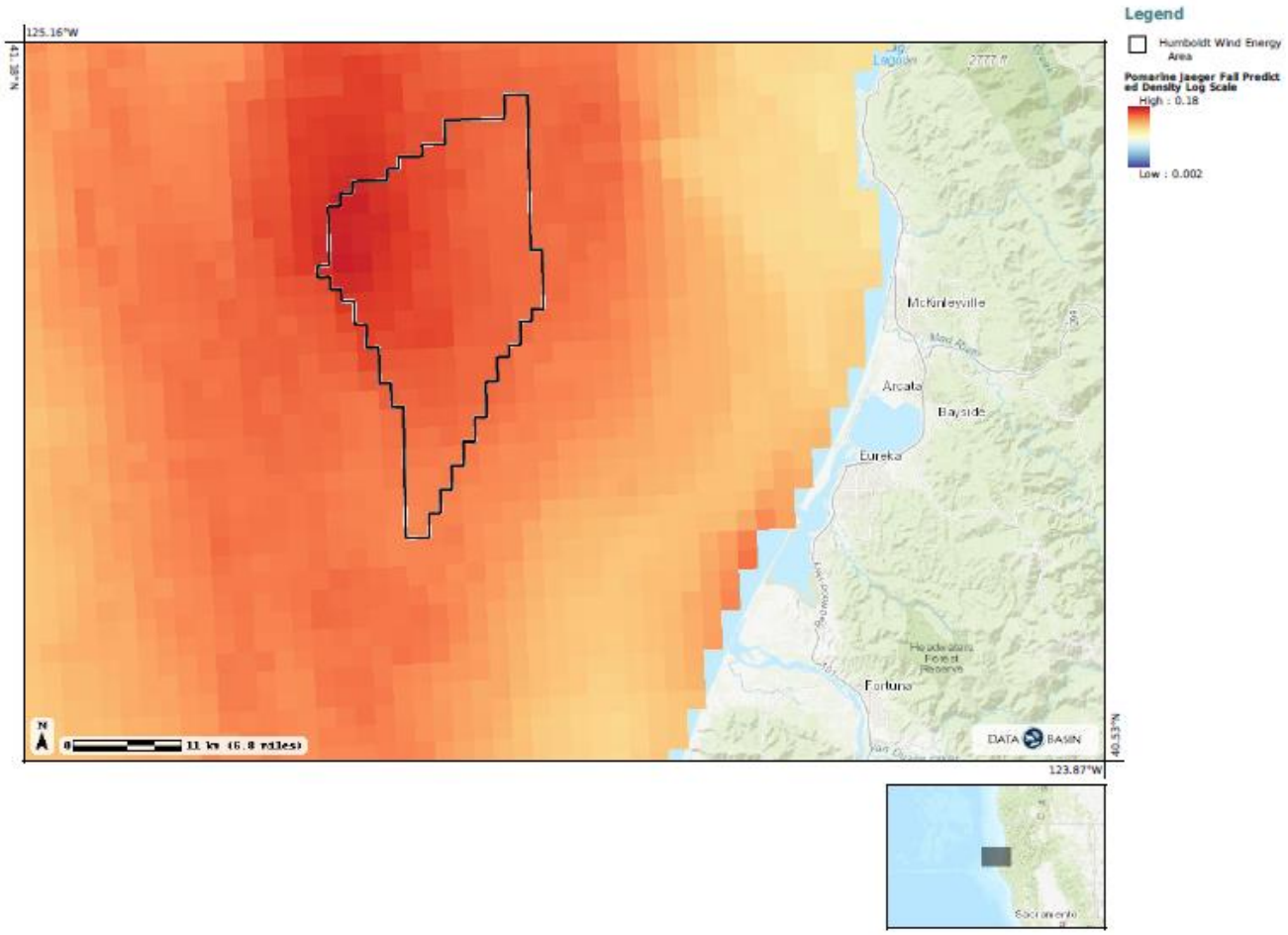
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5j.
Jaeger Density – Fall



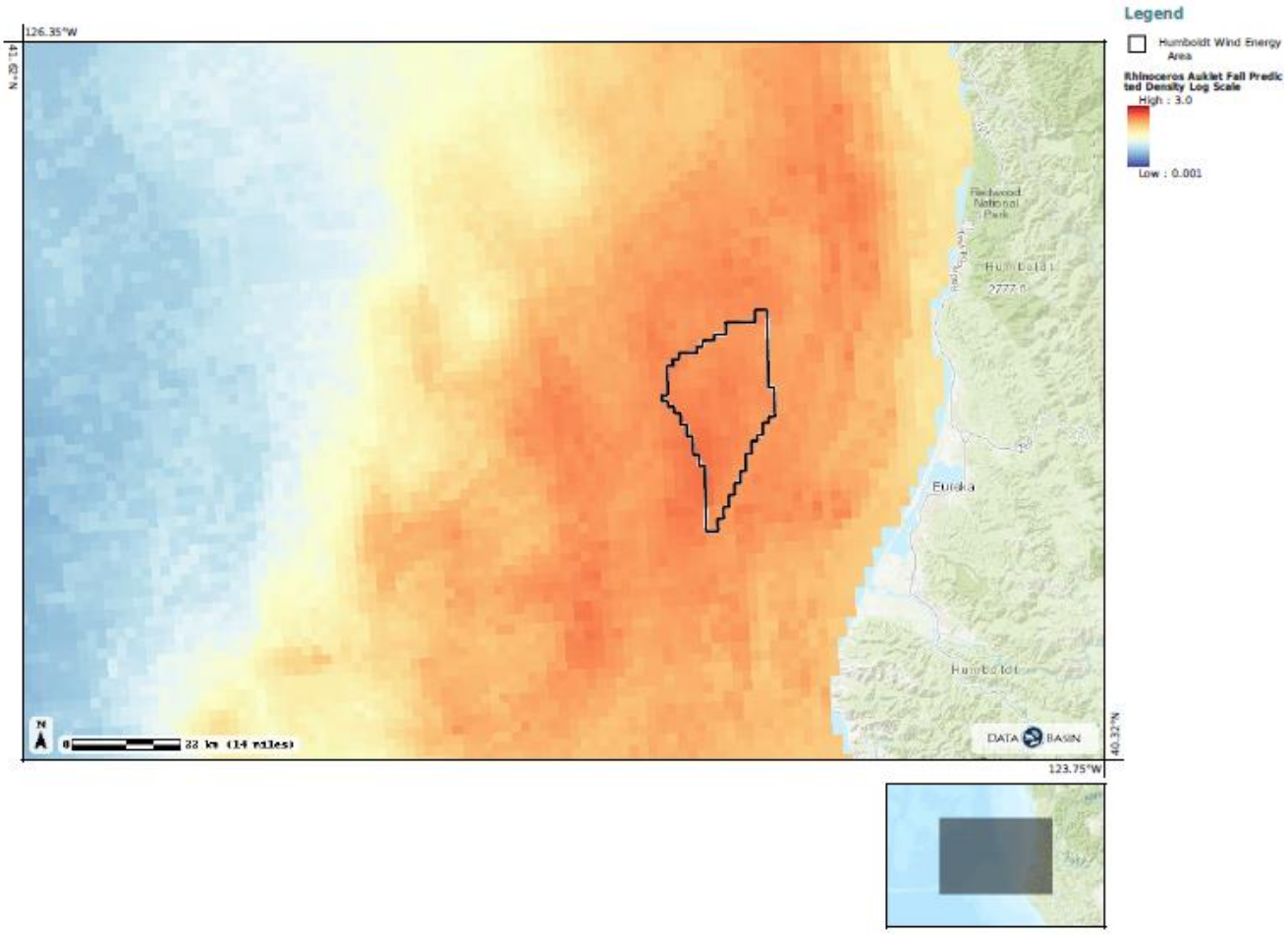
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5k.
Pomarine Jaeger Density– Fall



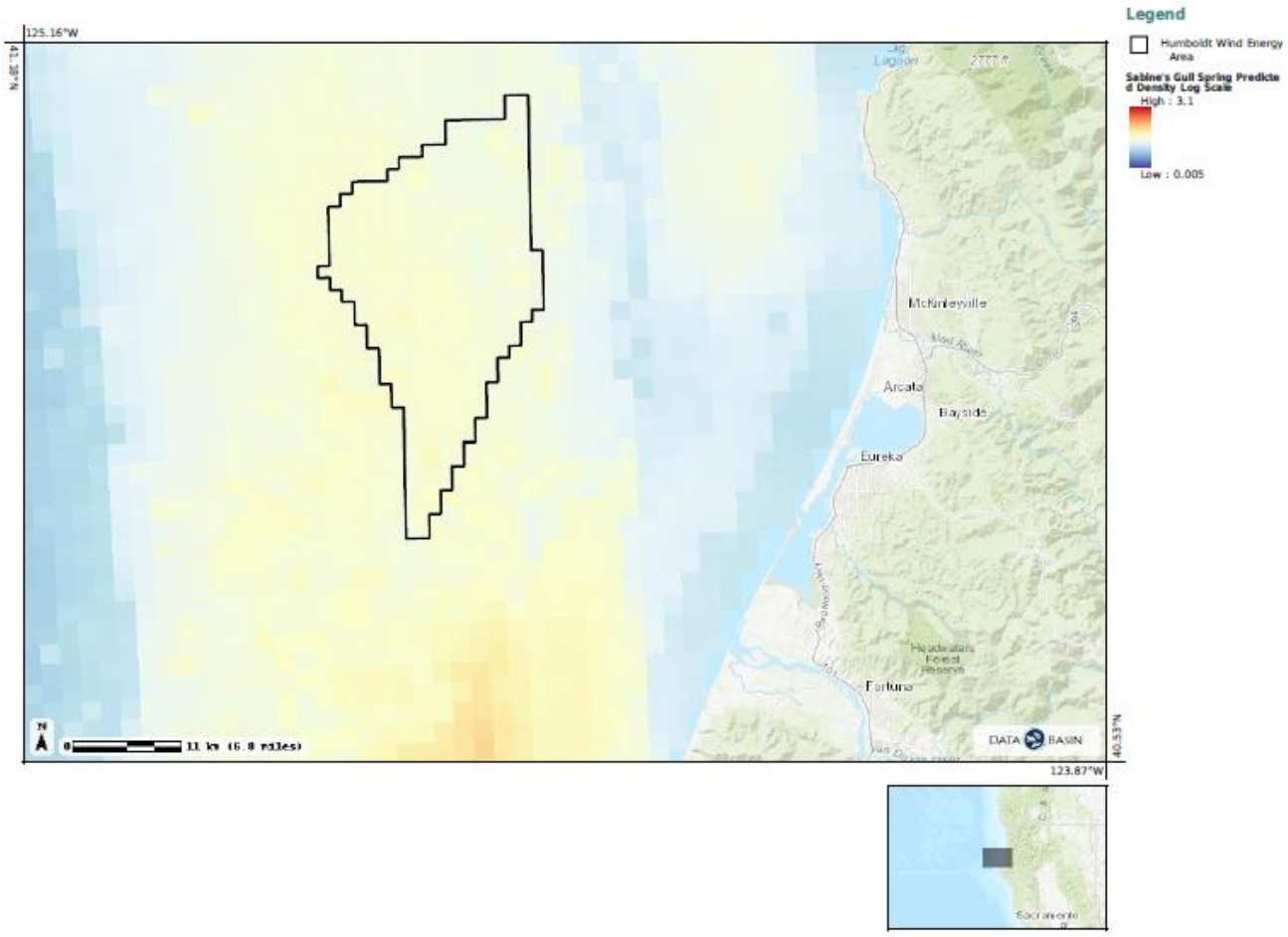
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5l.
Rhinoceros Auklet Density – Fall



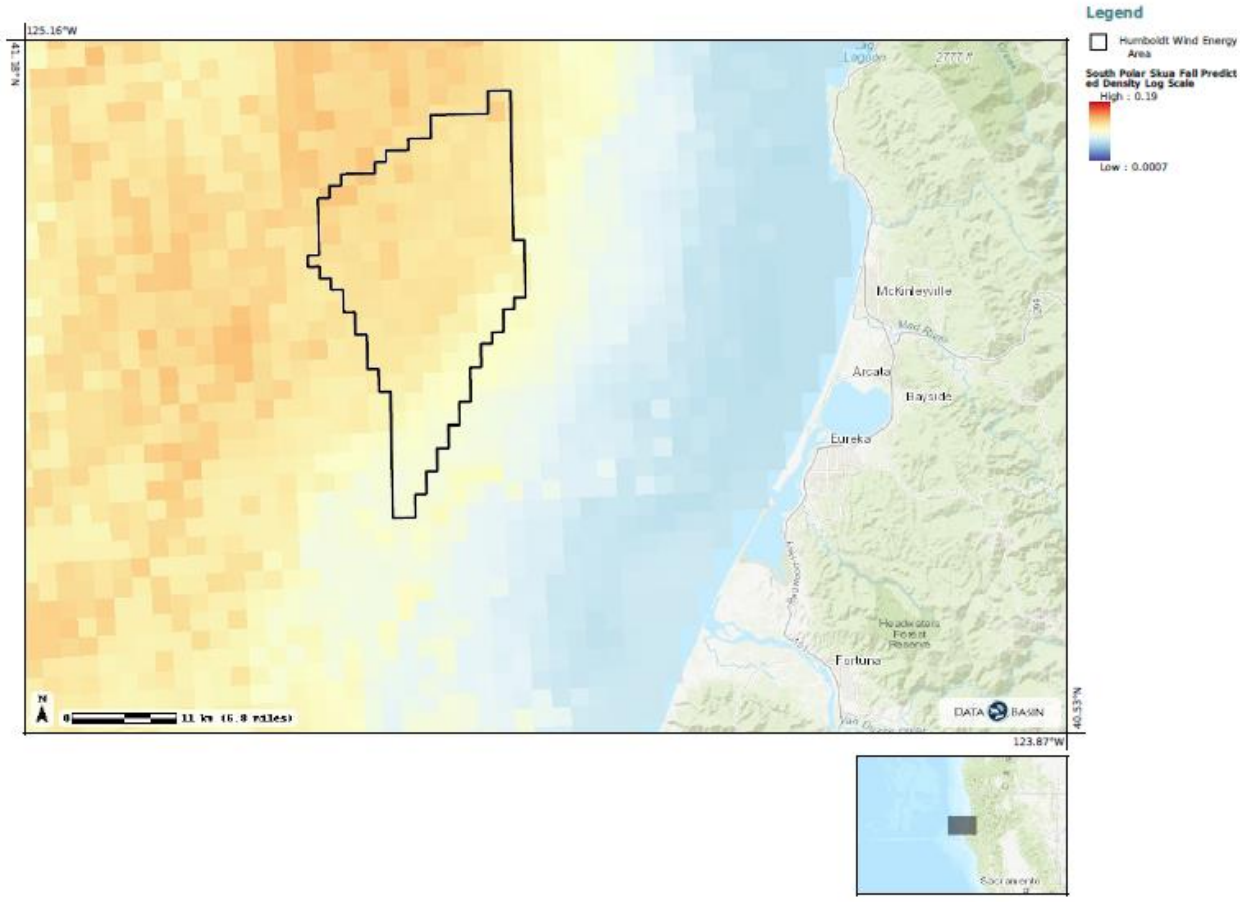
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5m.
Sabine Gull Density– Spring



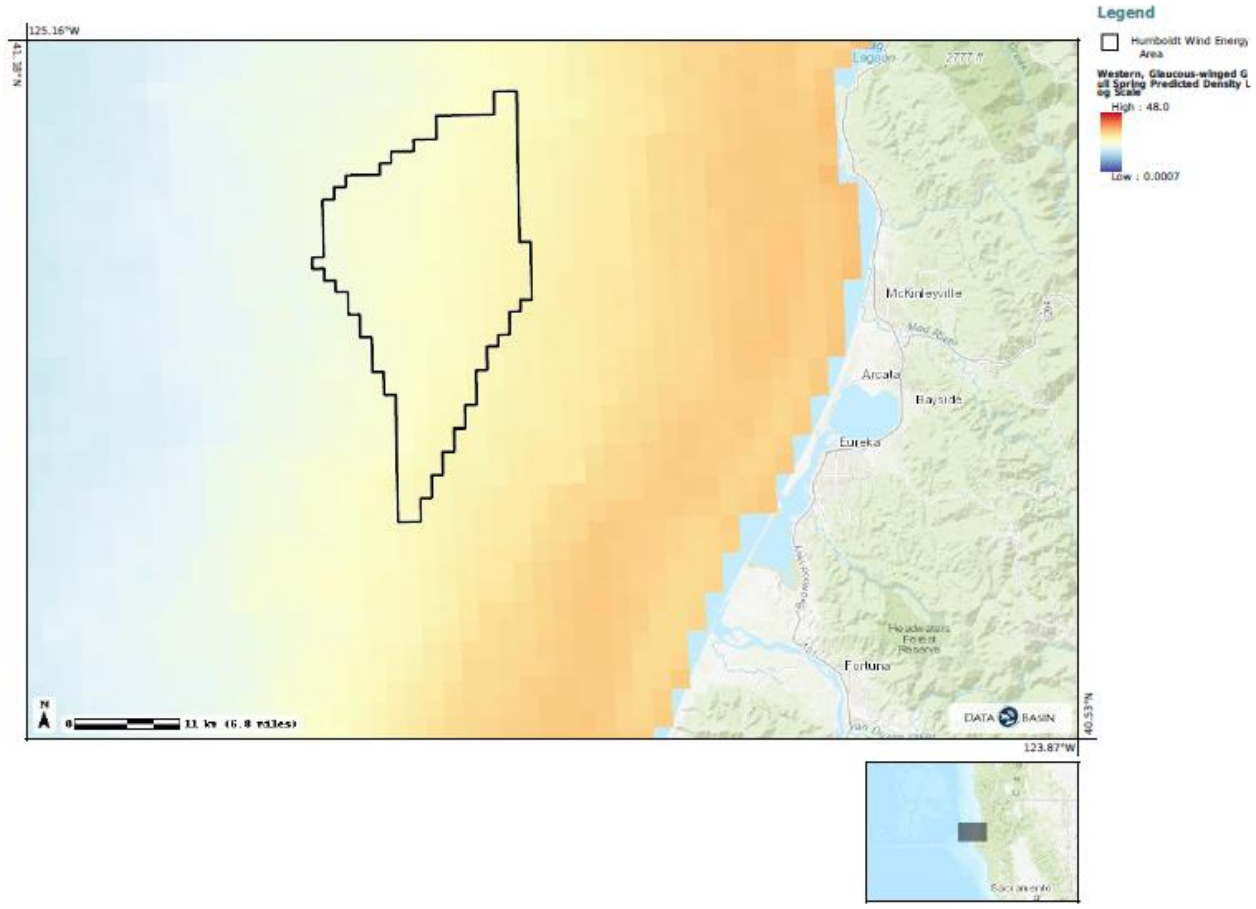
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5n.
South Polar Skua Density– Fall



CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5o.
Western Glaucous-winged Gull Density – Spring

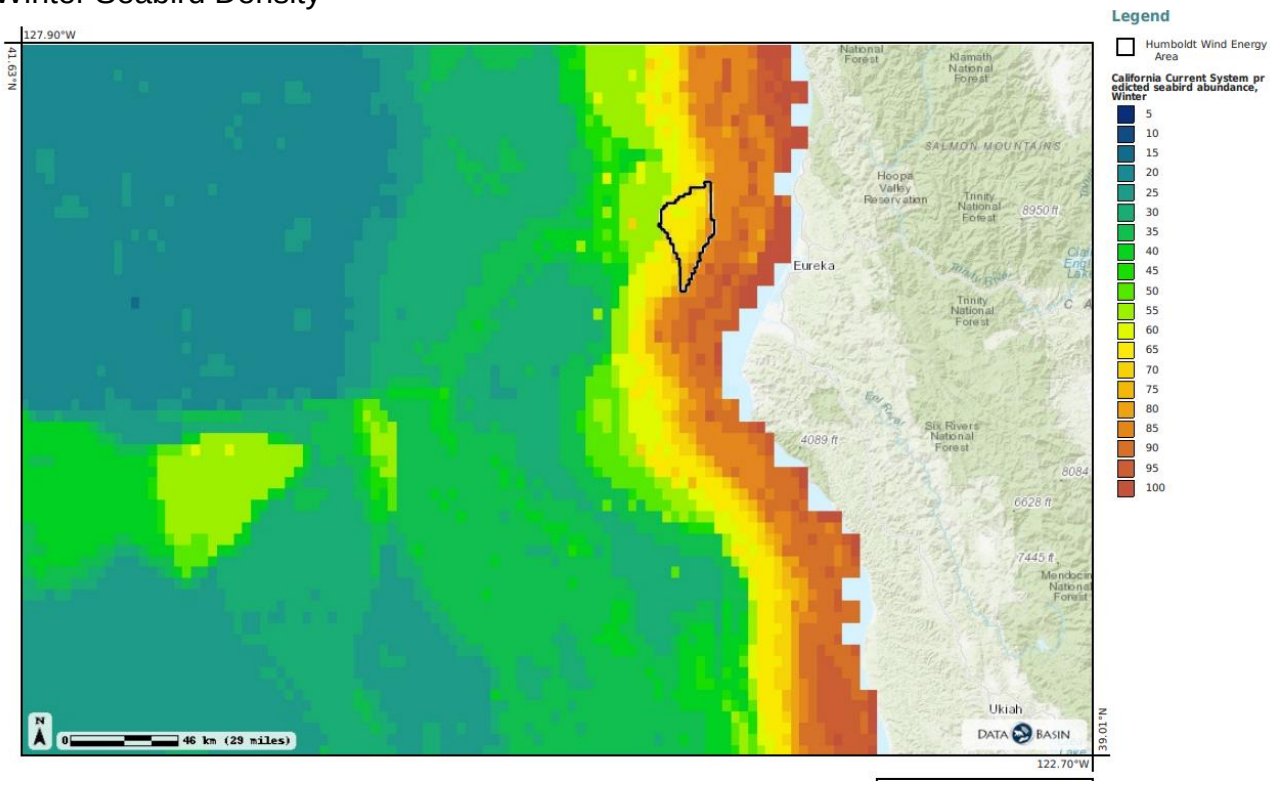


Source for Individual Species Maps: Leirness et al., 2021 via the California Offshore Wind Energy Gateway

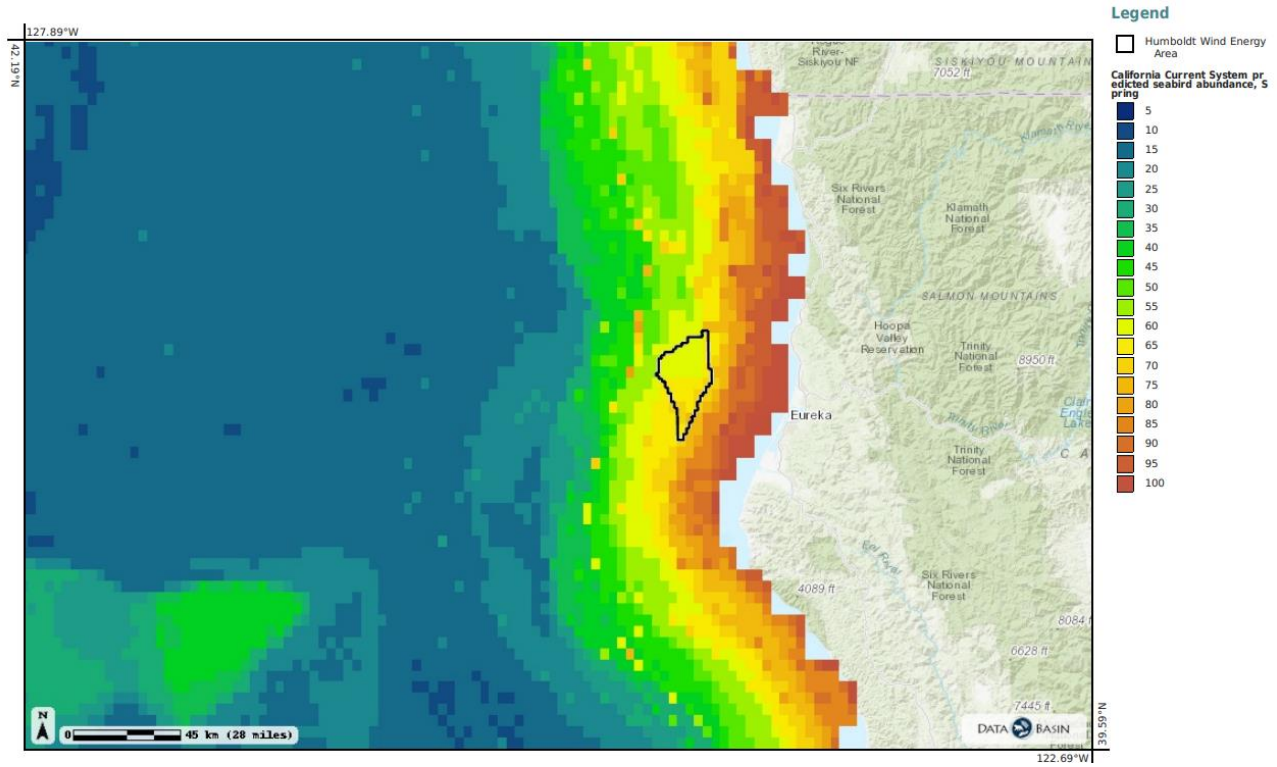
CD-0001-22 (BOEM) EXHIBITS

Exhibit 2-5p. Seasonal Seabird Density Maps, multiple species combined (2016)

Winter Seabird Density

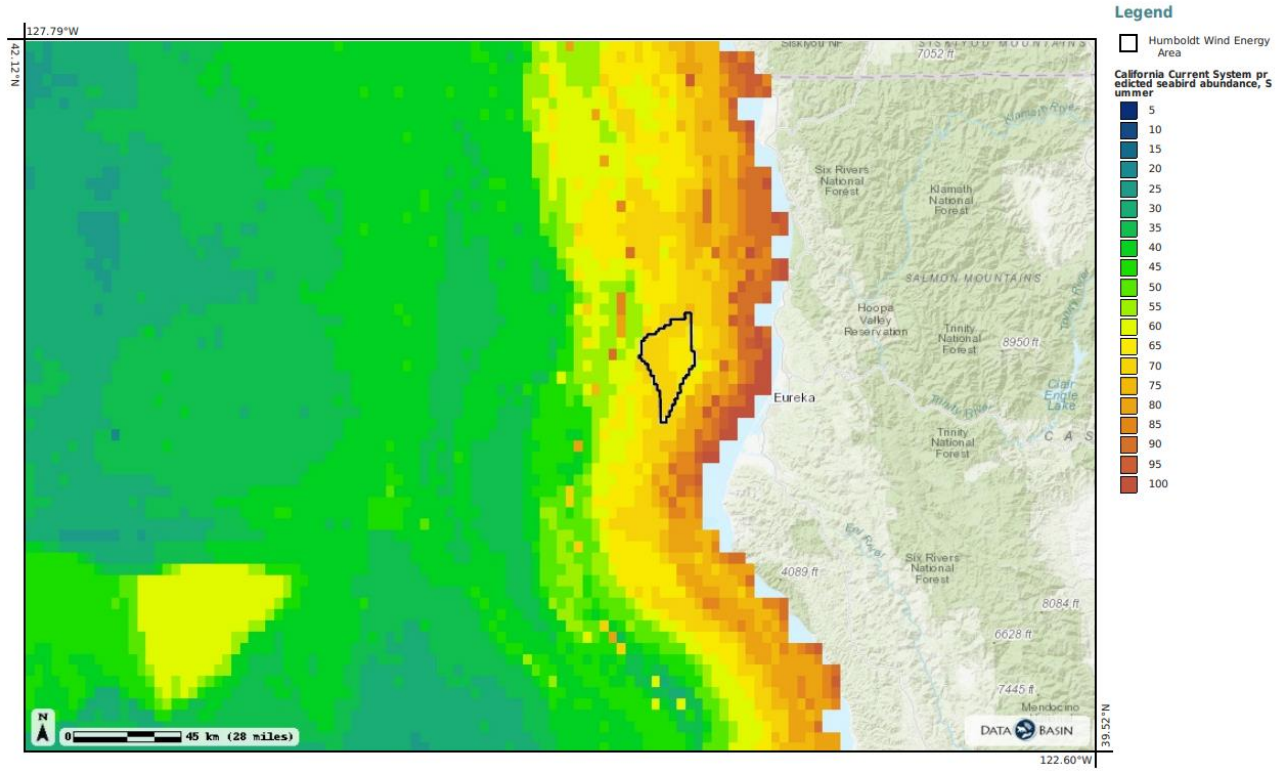


Spring Seabird Density

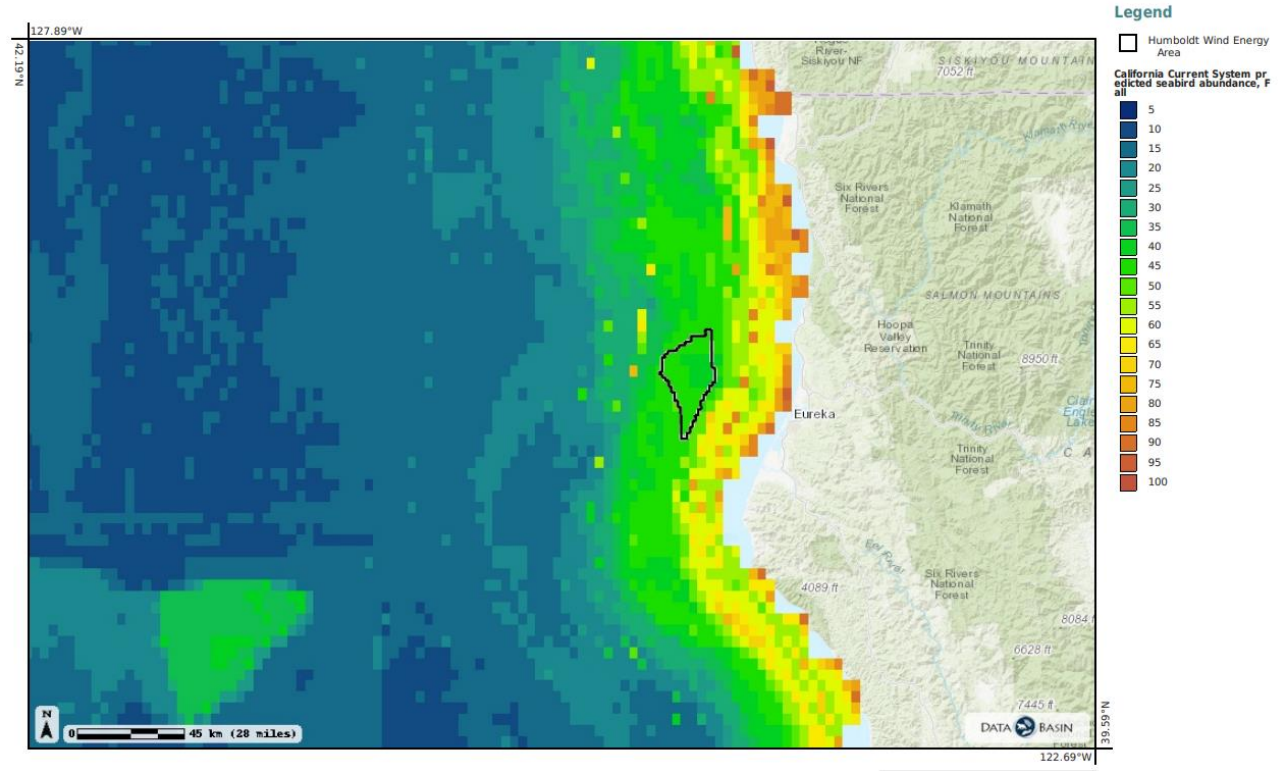


CD-0001-22 (BOEM) EXHIBITS

Summer Seabird Density



Fall Seabird Density



Source for Seabird Species Combined Maps: Dick, 2016 via the California Offshore Wind Energy Gateway

Exhibit 2-6

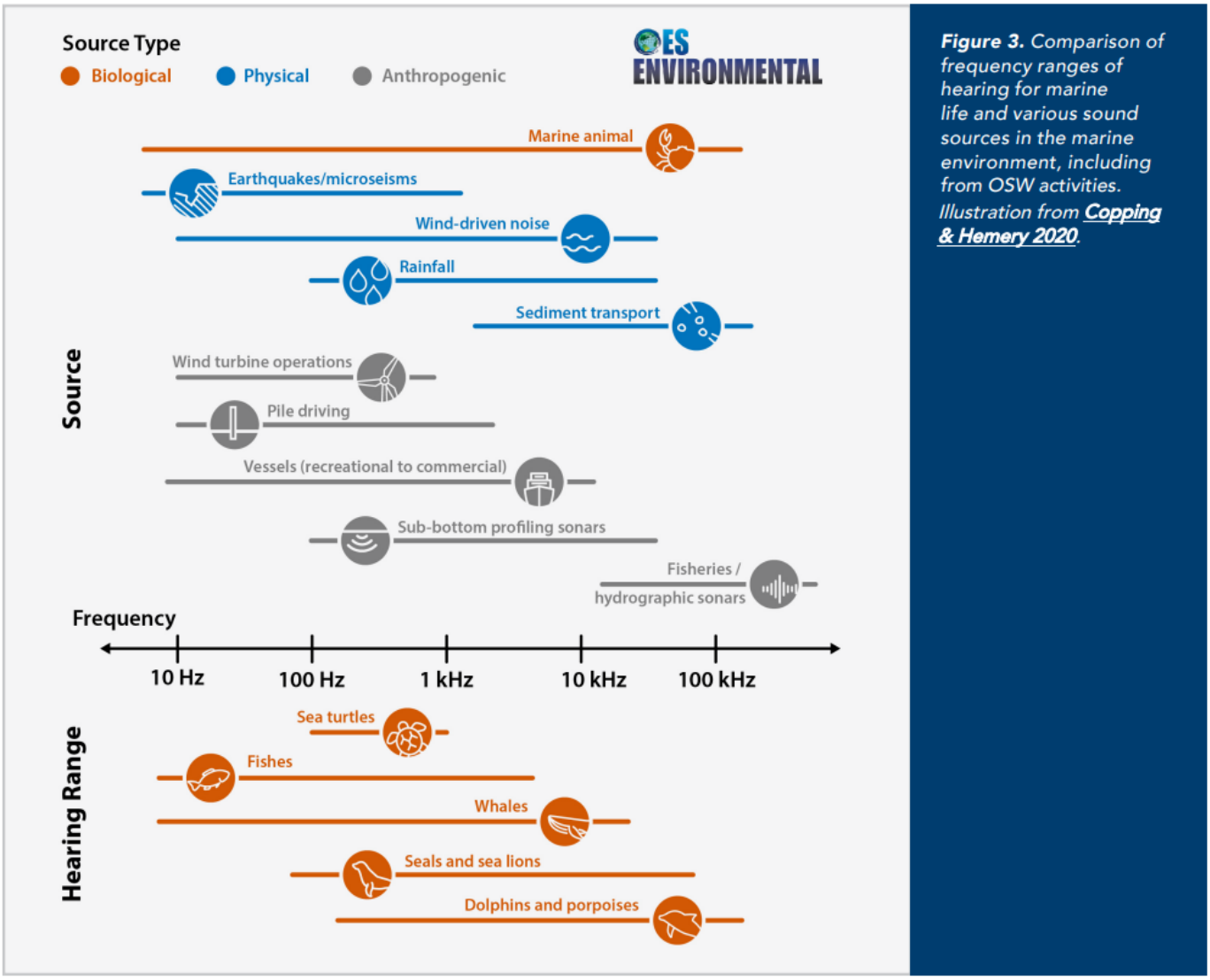


Figure 3. *Comparison of frequency ranges of hearing for marine life and various sound sources in the marine environment, including from OSW activities. Illustration from* ***Copping & Hemery 2020****.*

Source: ES Environmental

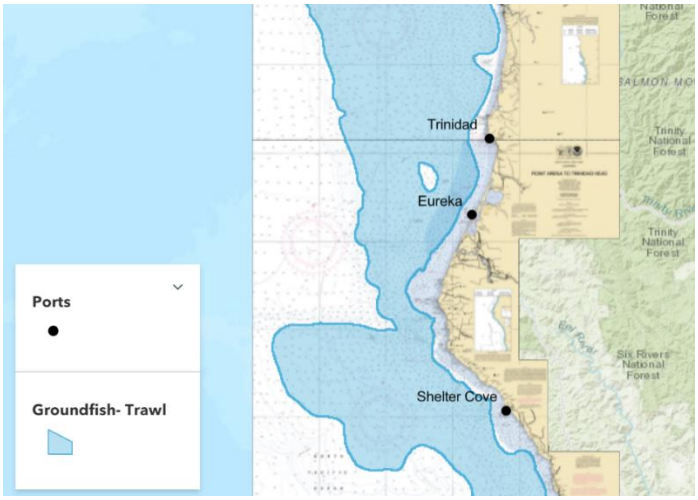
CD-0001-22 (BOEM)

COMMERCIAL AND RECREATIONAL FISHING EXHIBITS

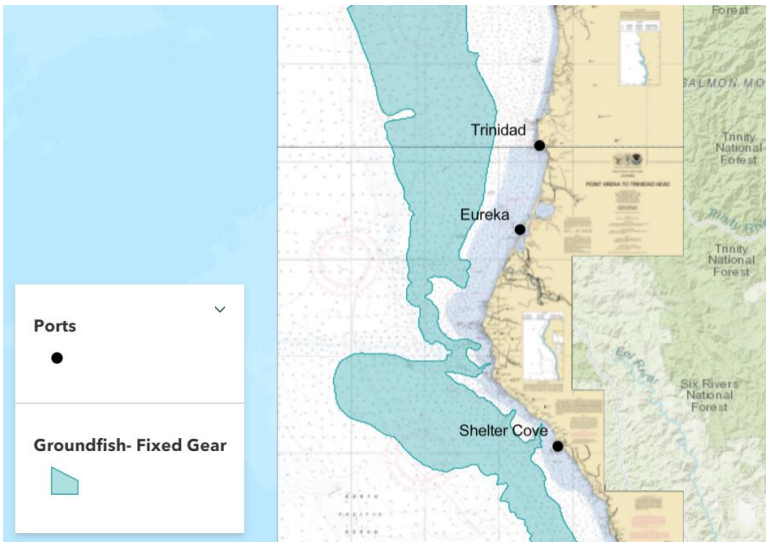
Exhibit 3-1

Salmon

Groundfish - Trawl

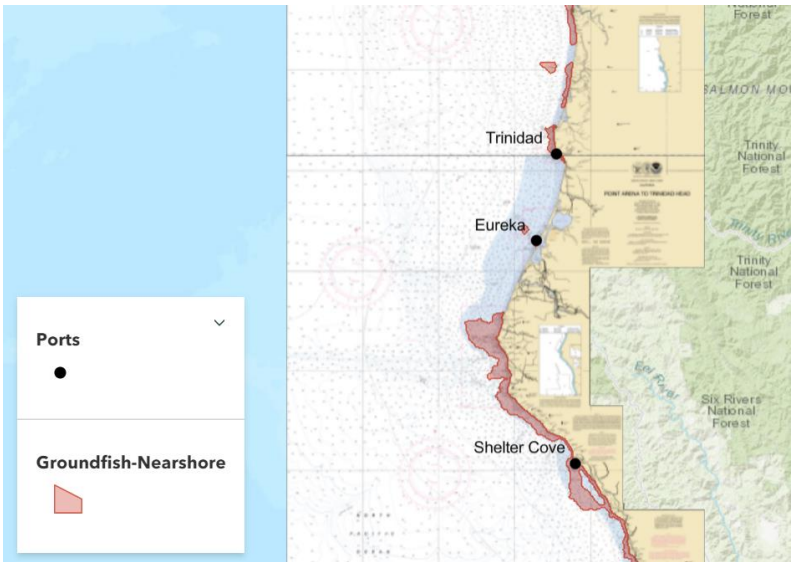


Groundfish Fixed Gear

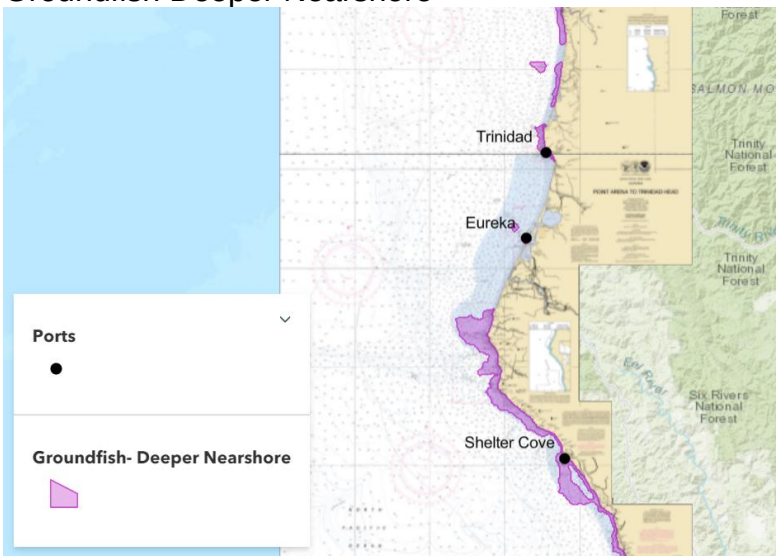


CD-0001-22 (BOEM) EXHIBITS

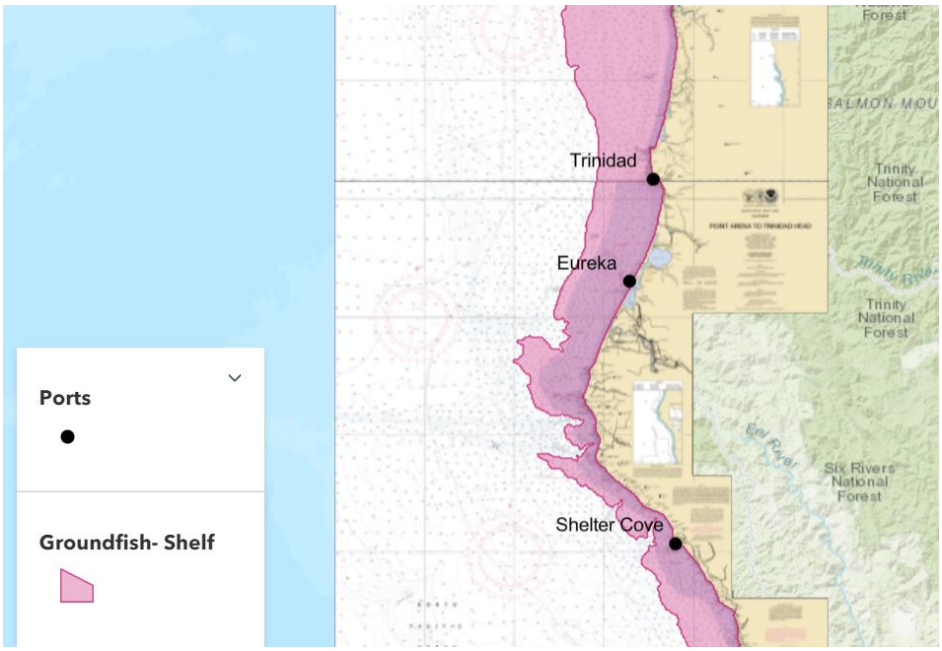
Groundfish Nearshore



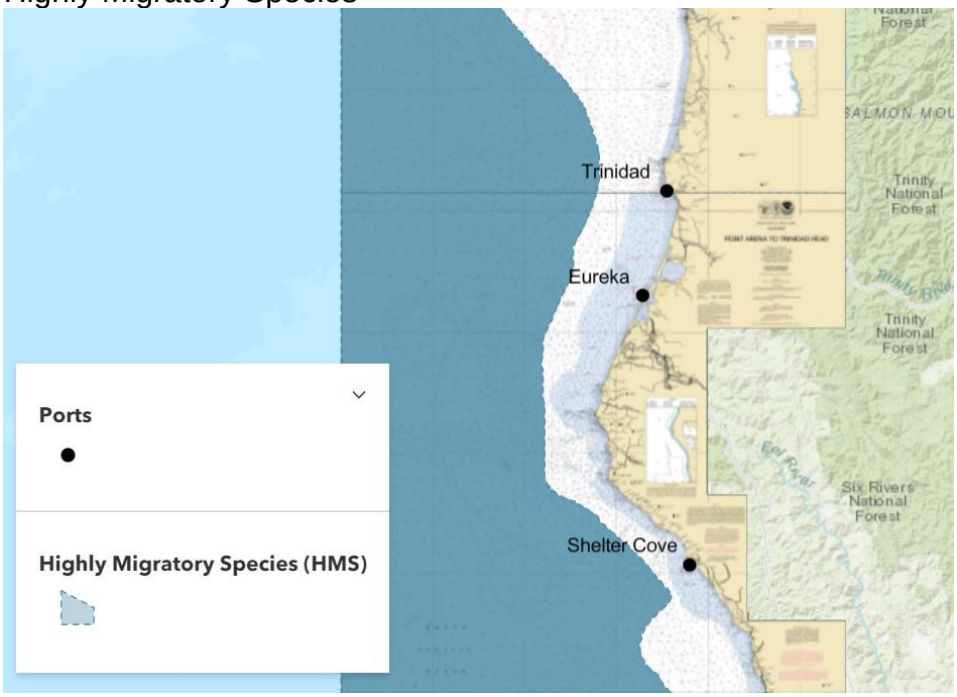
Groundfish Deeper Nearshore



Groundfish Shelf

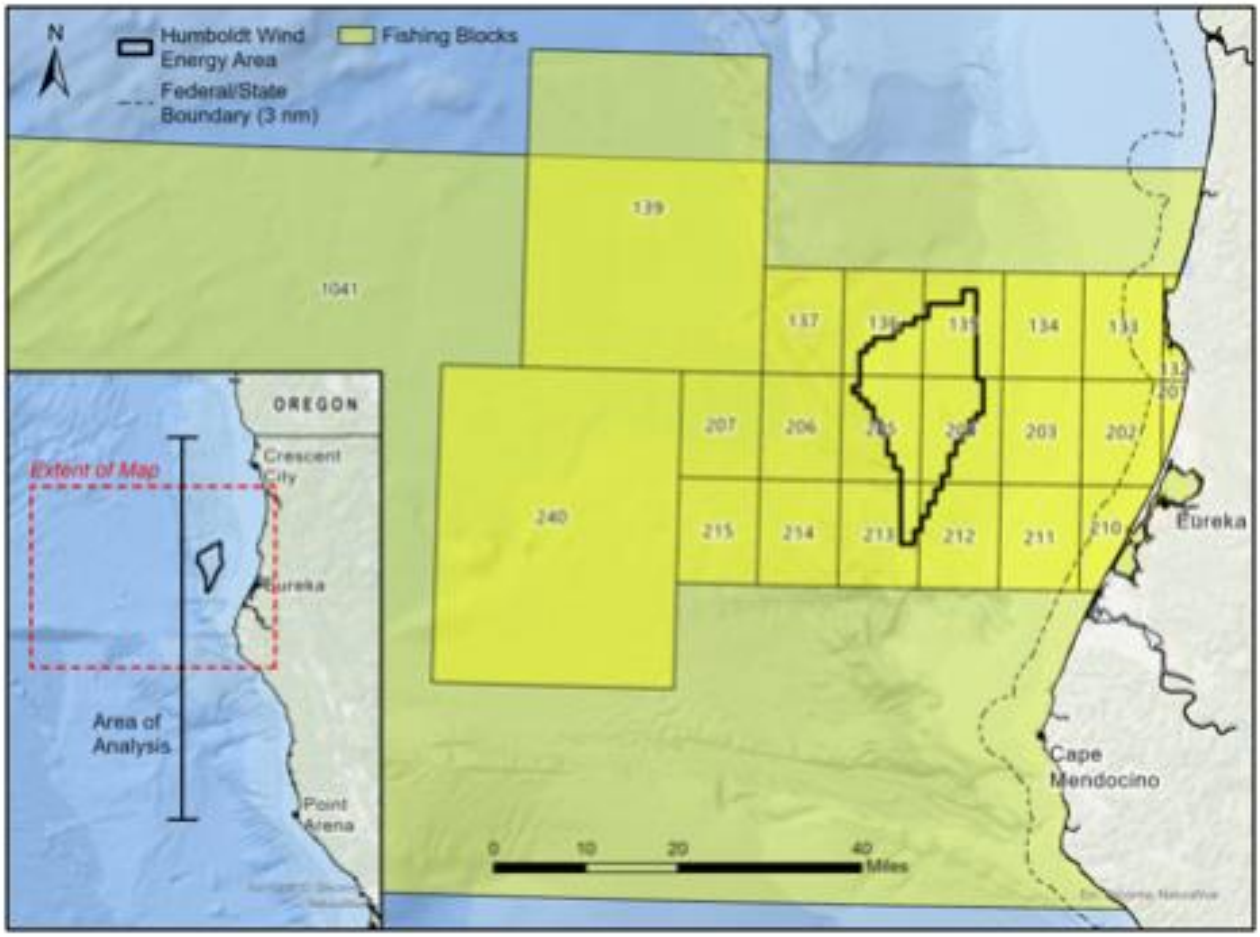


Highly Migratory Species



Source: North Coast Fishermen's Mapping Project. (2022)

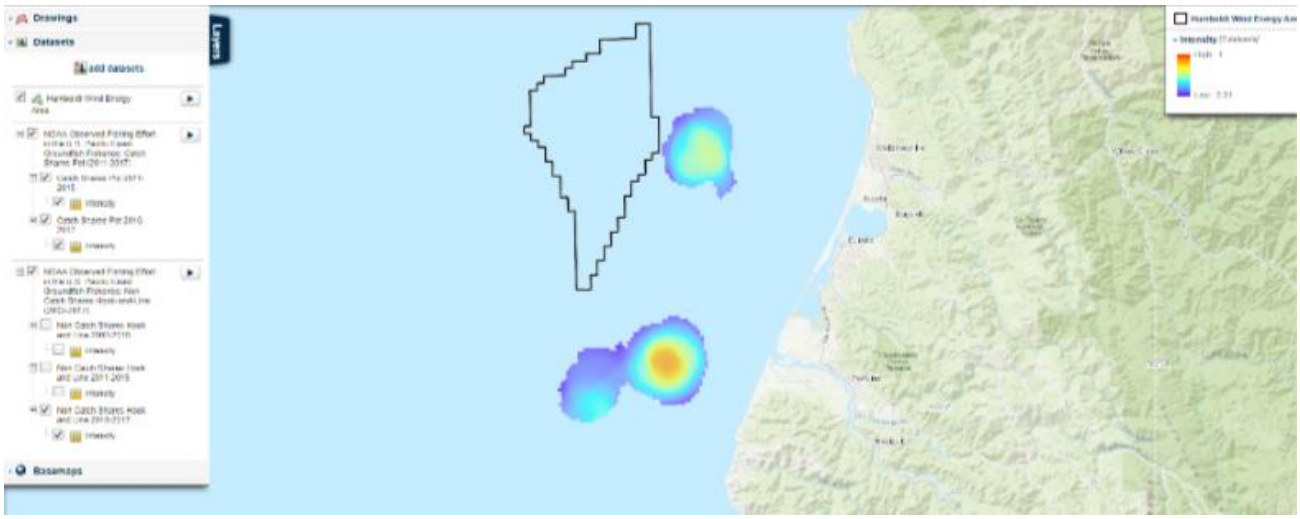
Exhibit 3-2



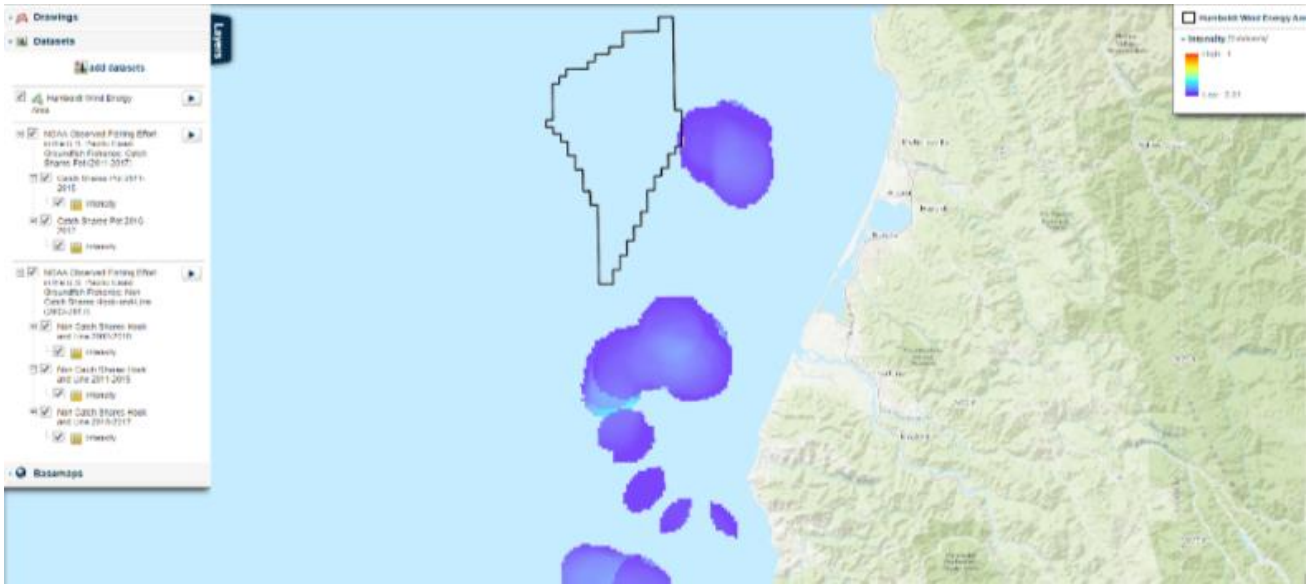
Greater WEA. Used, in part, to calculate values in Appendix C.
Source: CDFW Marine Region.

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-3



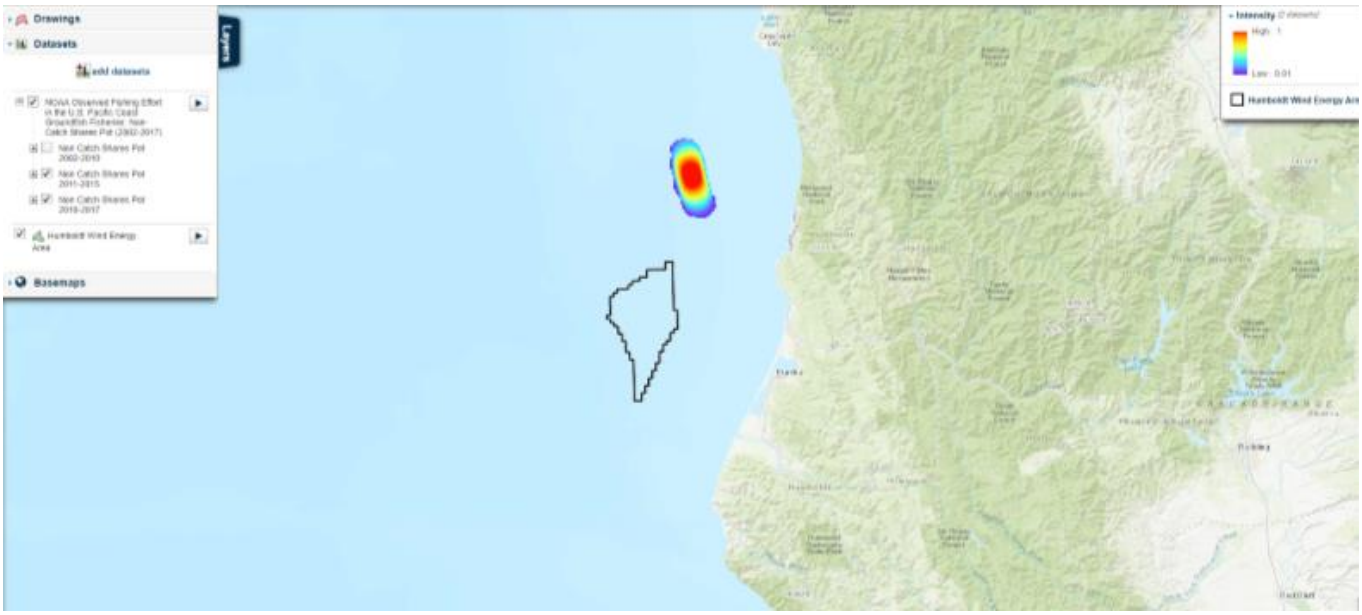
Top is NOAA observed fishing effort 2016 and 2017 for non-catch share hook and line.



Bottom is NOAA observed fishing effort from 2002-2017 non-catch share hook and line. There is a small overlap with the eastern portion of the WEA, but show low intensity. Source NFFSC via California Offshore Wind Energy Gateway.

CD-0001-22 (BOEM) EXHIBITS

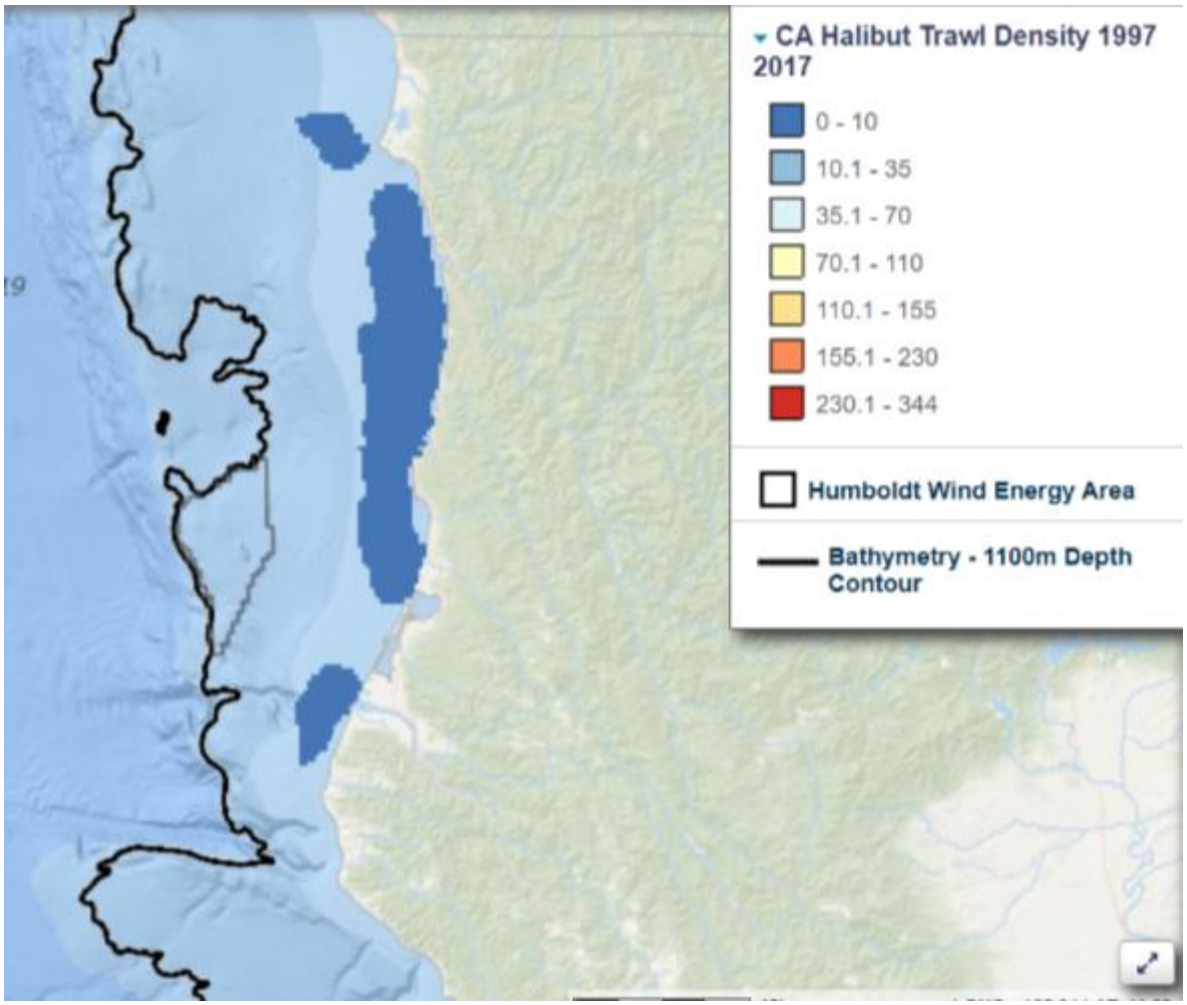
Exhibit 3-4



NOAA observed fishing effort 2011-2017, non-catch shares pot fishery.
Source NOAA via California Offshore Wind Energy Gateway.

CD-0001-22 (BOEM) EXHIBITS

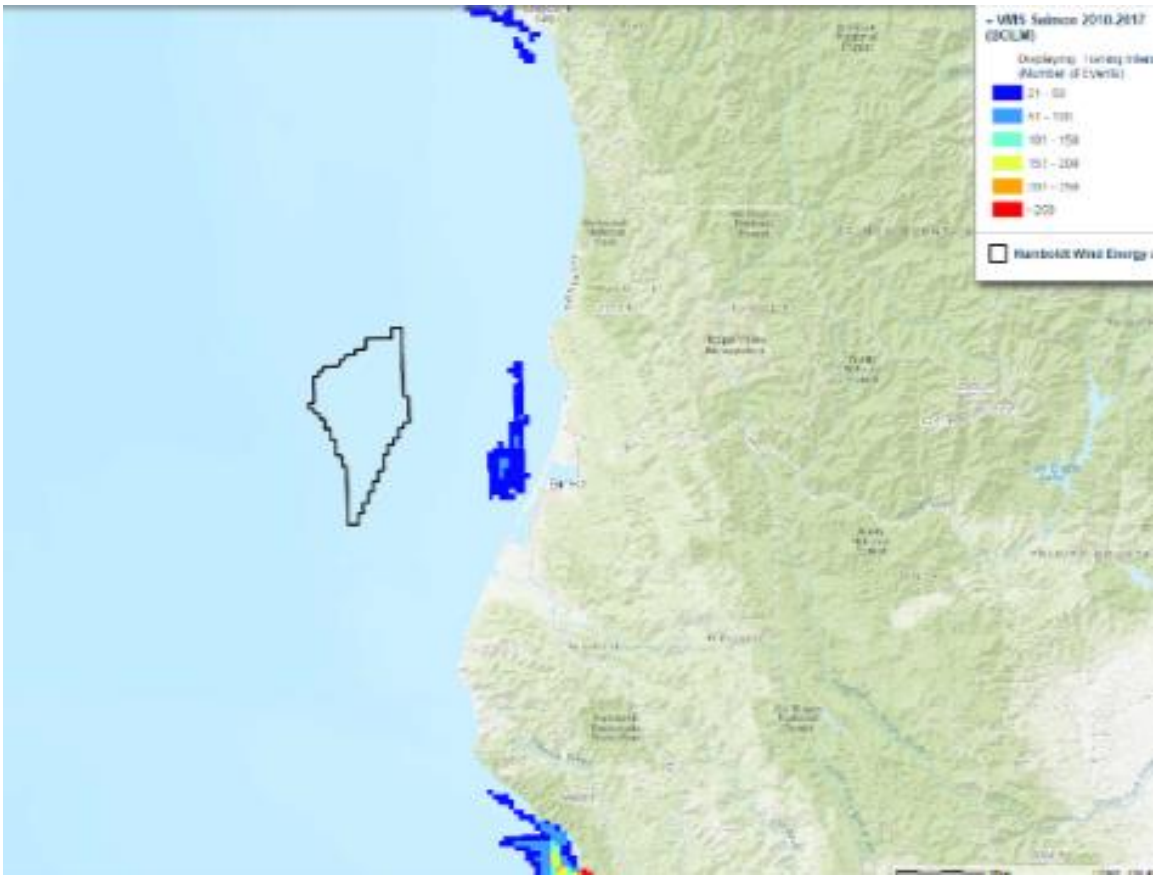
Exhibit 3-5



CA halibut trawl density data. Note: spatial data does not specifically exist for Pacific Halibut. However, the maximum species depth range of 450 meters is shoreward of the WEA boundary (which begins at 500 meters).
Source: CDFW marine logbook system via California Offshore Wind Energy Gateway.

CD-0001-22 (BOEM) EXHIBITS

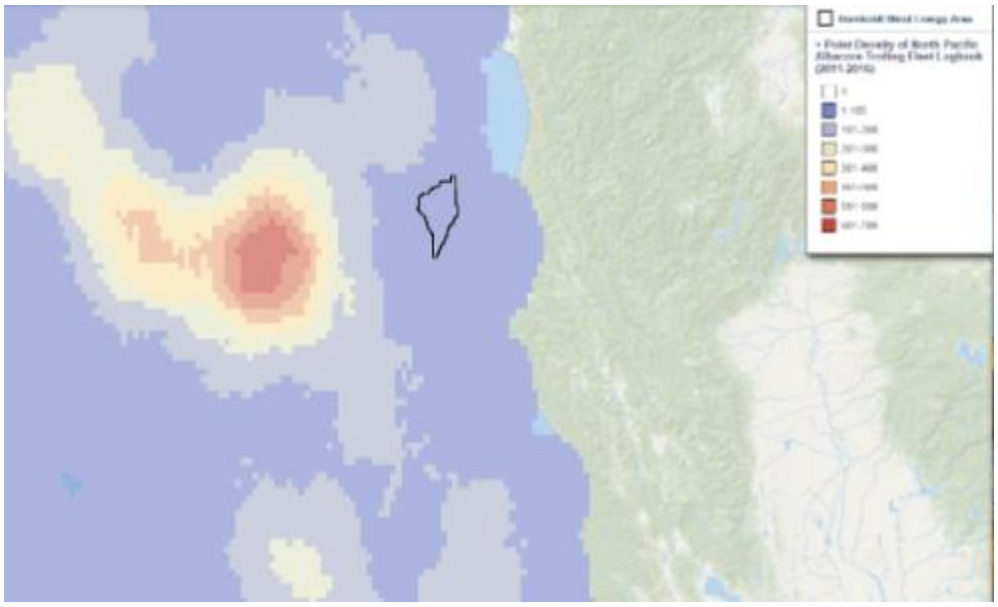
Exhibit 3-6



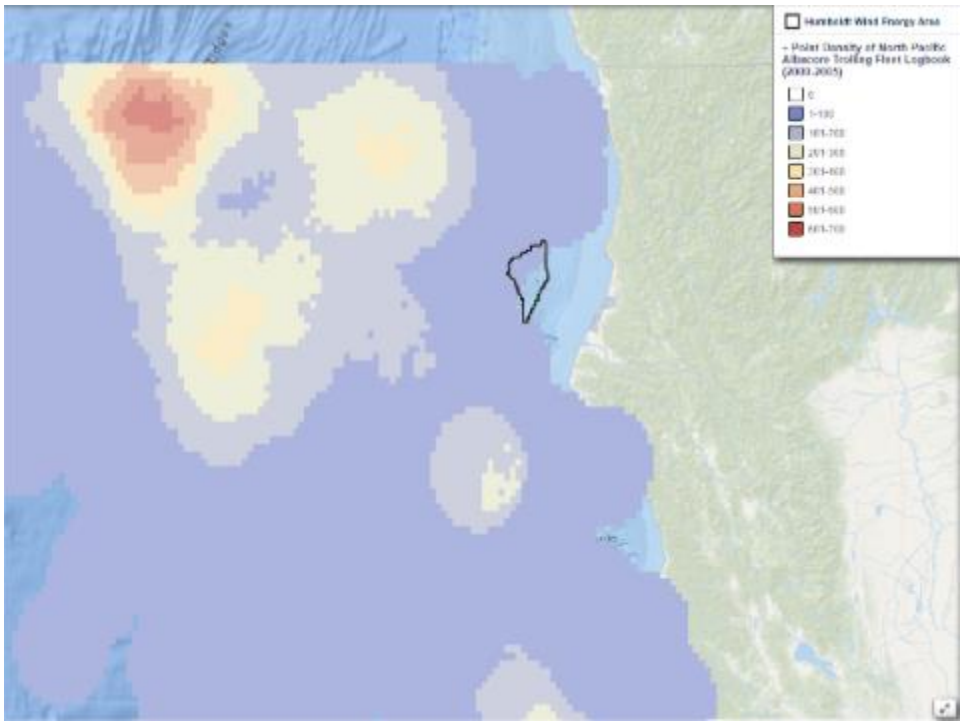
VMS data for salmon trolling (uploaded by CBI) 2010-2017. VMS is not required on salmon permitted vessels. Only those that also possess groundfish permits are reflected in this data.
Source: BOEM via California Offshore Wind Energy Gateway

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-7



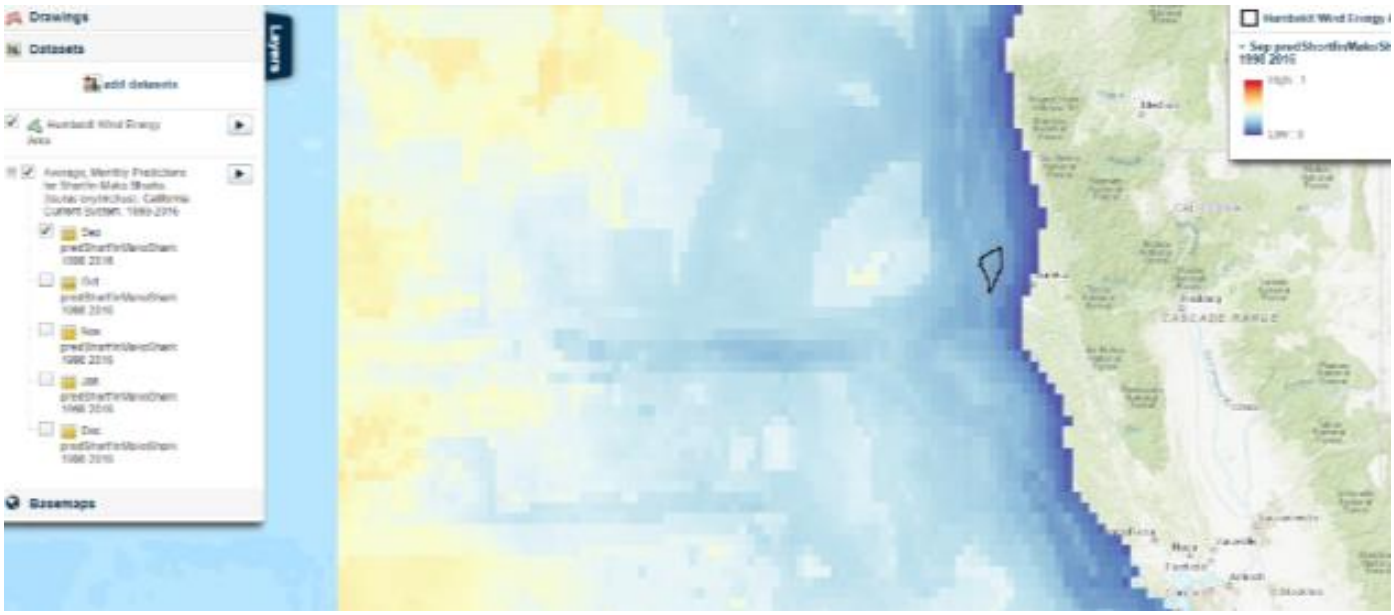
Top: North Pacific Albacore trolling point density 2011-2016.



Bottom: North Pacific Albacore trolling point density 2005-2016.
Source: NMFS via California Offshore Wind Energy Gateway.

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-8



Shortfin mako predicted monthly presence 1988-2016.
Source: Stephanie Brodie (processed by CBI via California Offshore Wind Energy Gateway).

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-9

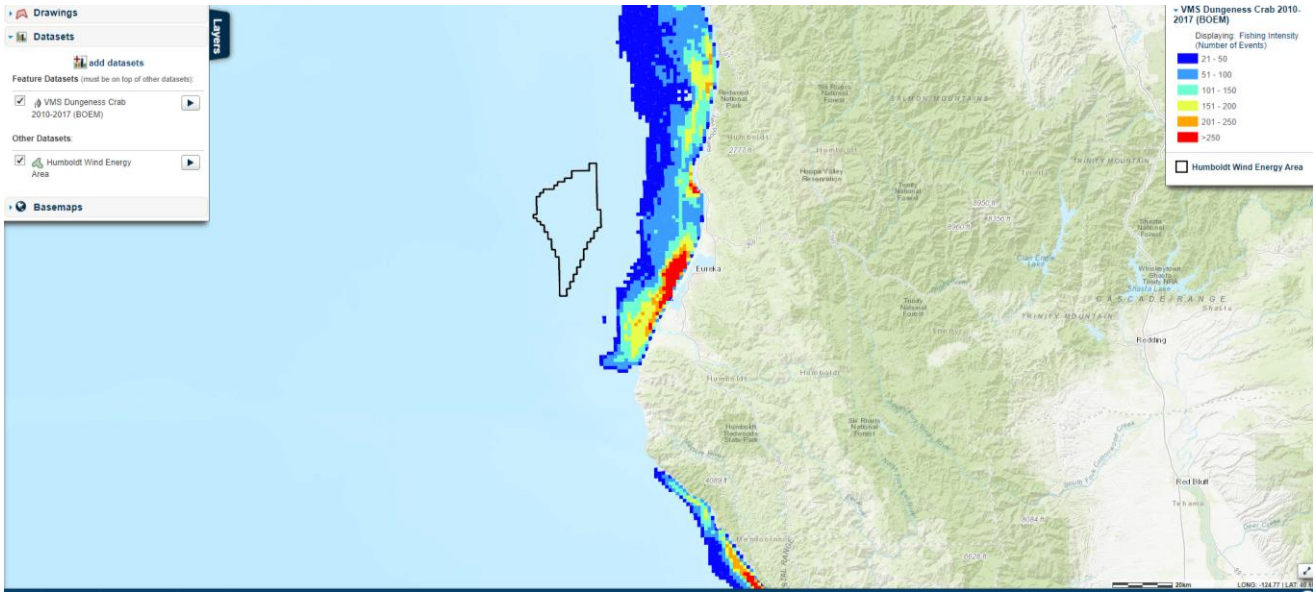
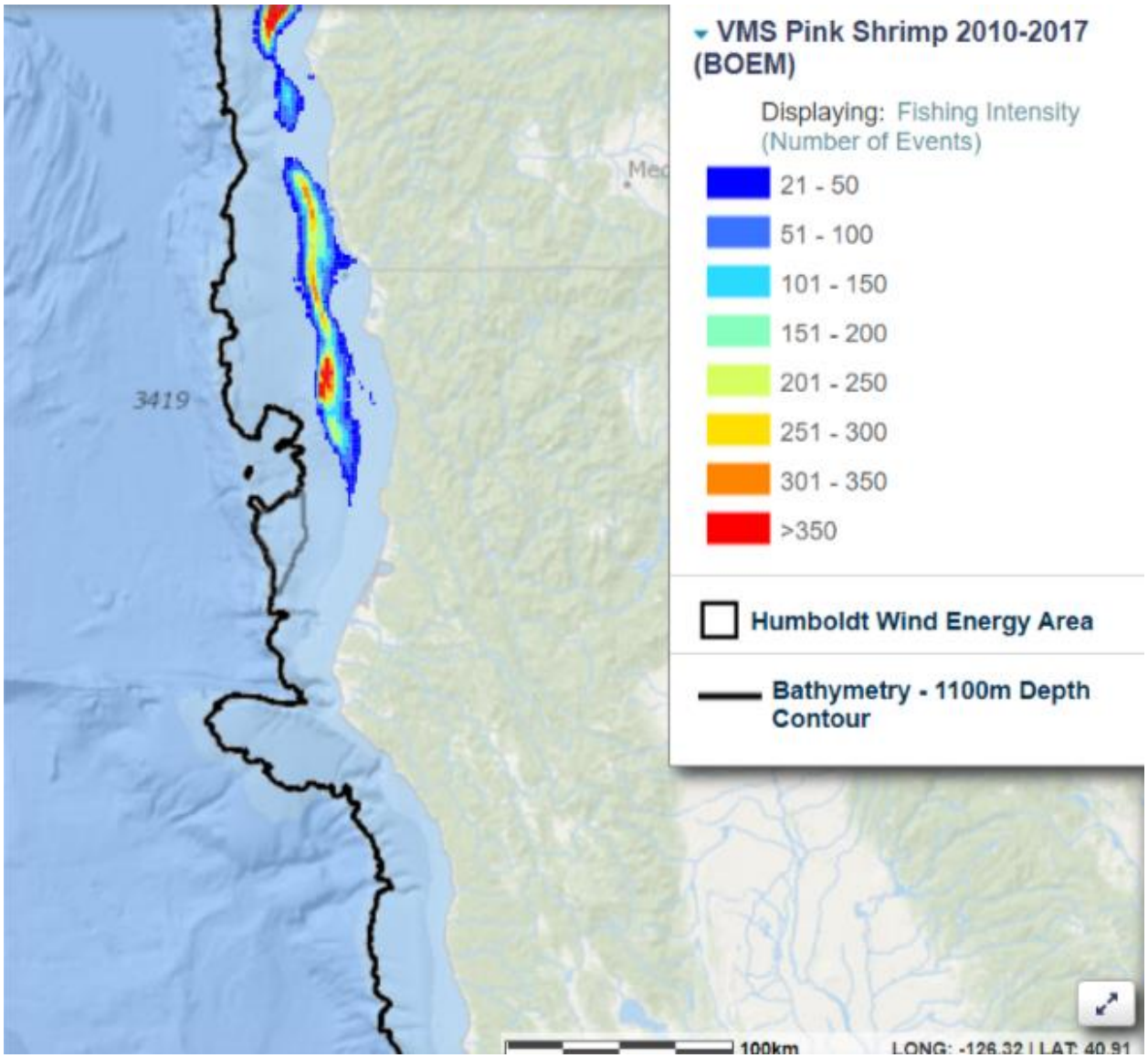


Figure: VMS 2010-2017 Dungeness crab data (density) Note: VMS is not required on Dungeness crab only vessels but is reflective of vessels that also have a groundfish permit.
Source: BOEM via California Offshore Wind Energy Gateway.

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-10



VMS density of pink shrimp fishing.
Source: BOEM (Frank Pendleton) via California Offshore Wind Energy Gateway.

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-11

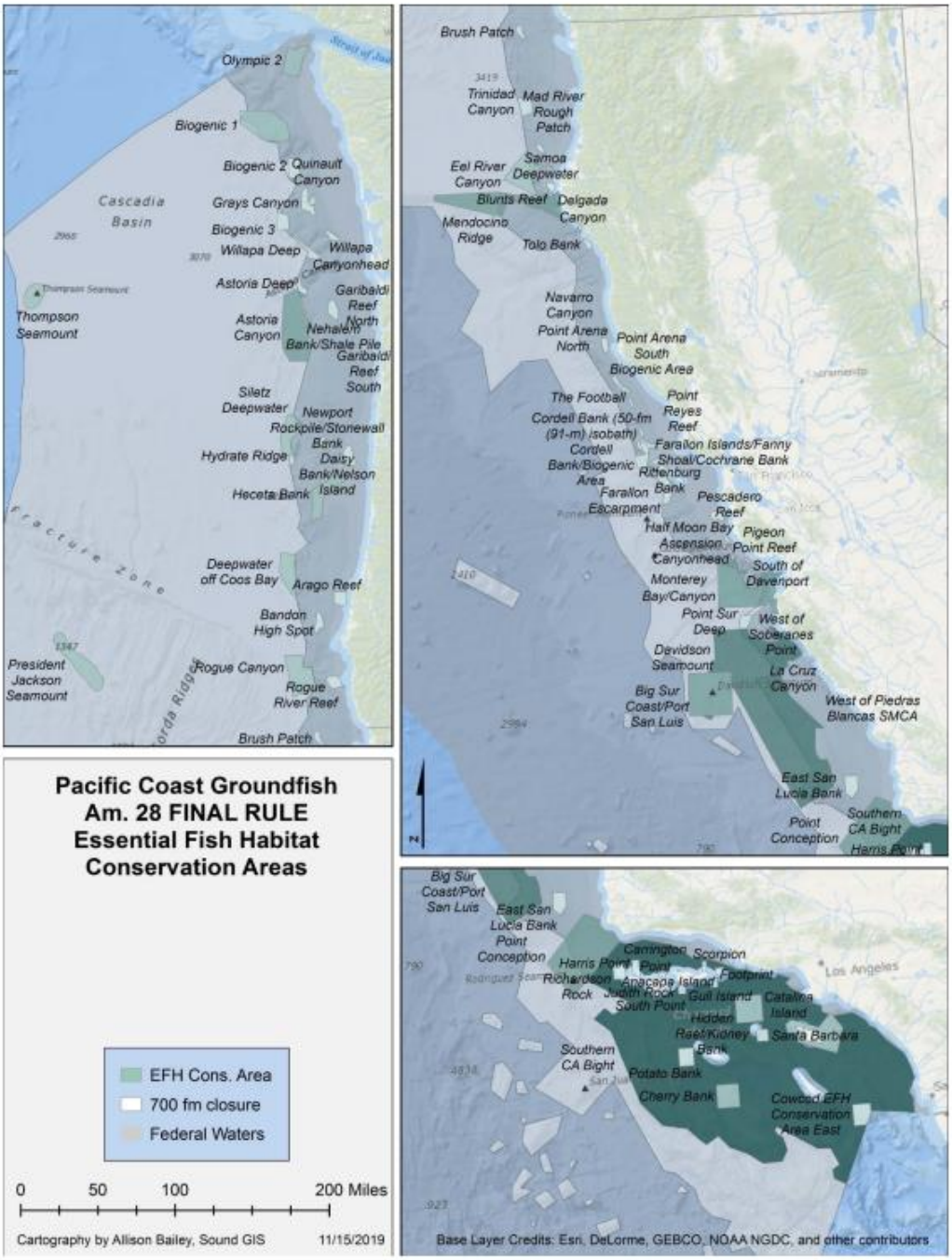
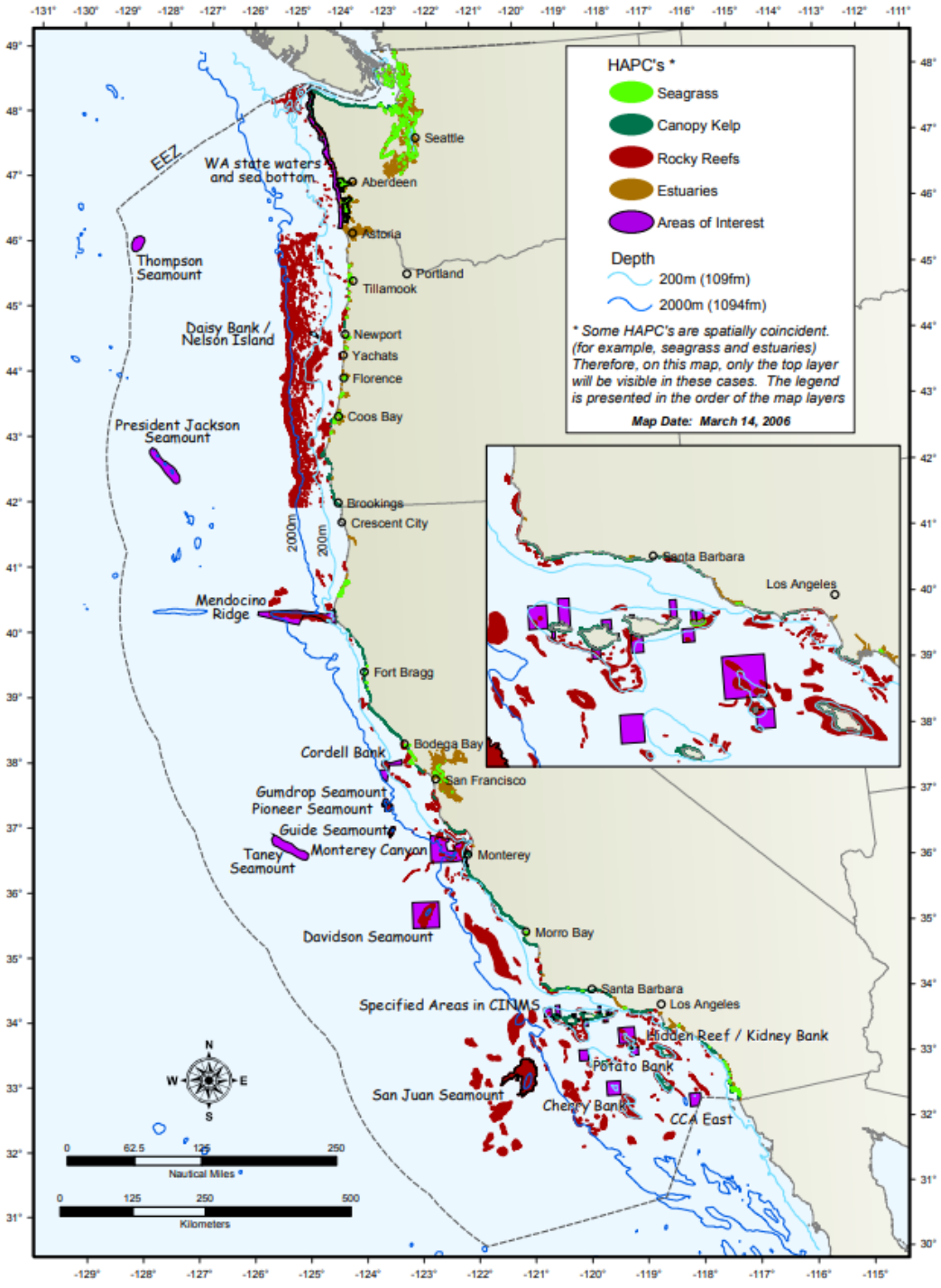


Figure 1. Areas with gear restrictions and Essential Fish Habitat Conservation Areas (EFHCAs) closed to certain types of fishing off the U.S. West Coast under the Pacific Coast Groundfish Fishery Management Plan, as amended through Amendment 28 (2020). Shades of green for EFHCAs (listed in Tables 2 through 6 below) vary by the size of the closure, with larger area closures appearing darker.

Essential Fish Habitat Conservation Areas.
Source: Pacific Fisheries Management Council.

CD-0001-22 (BOEM) EXHIBITS

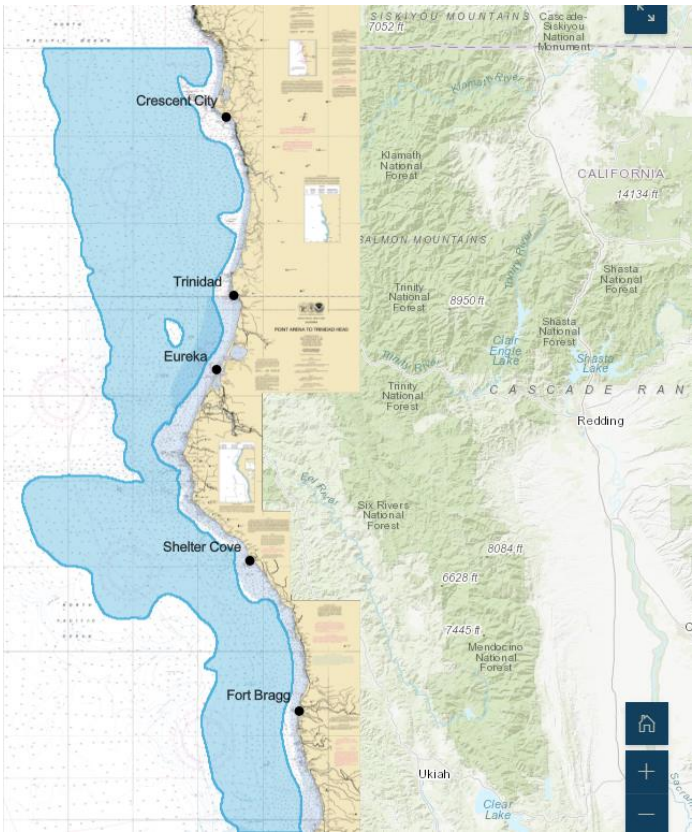
Exhibit 3-12



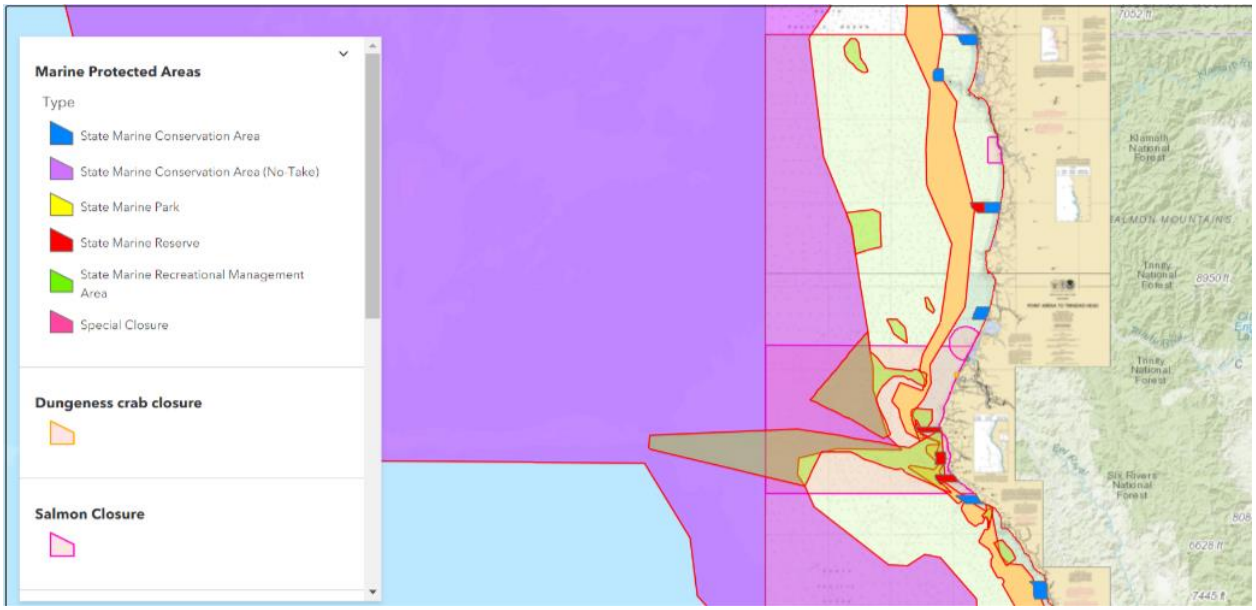
Pacific Coast Habitat Areas of Particular Concern.
Source: NOAA. [map-gfish-hapc.pdf (noaa.gov)]

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-13



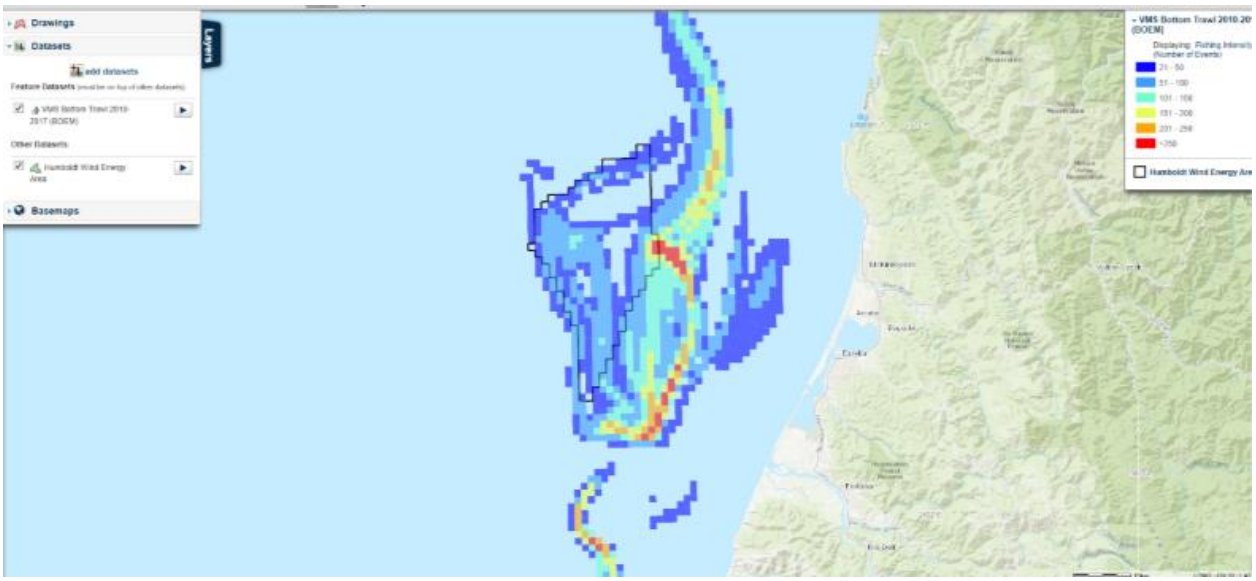
Top: Map of areas that have could be fished by trawl fisheries (appropriate species/conditions present).



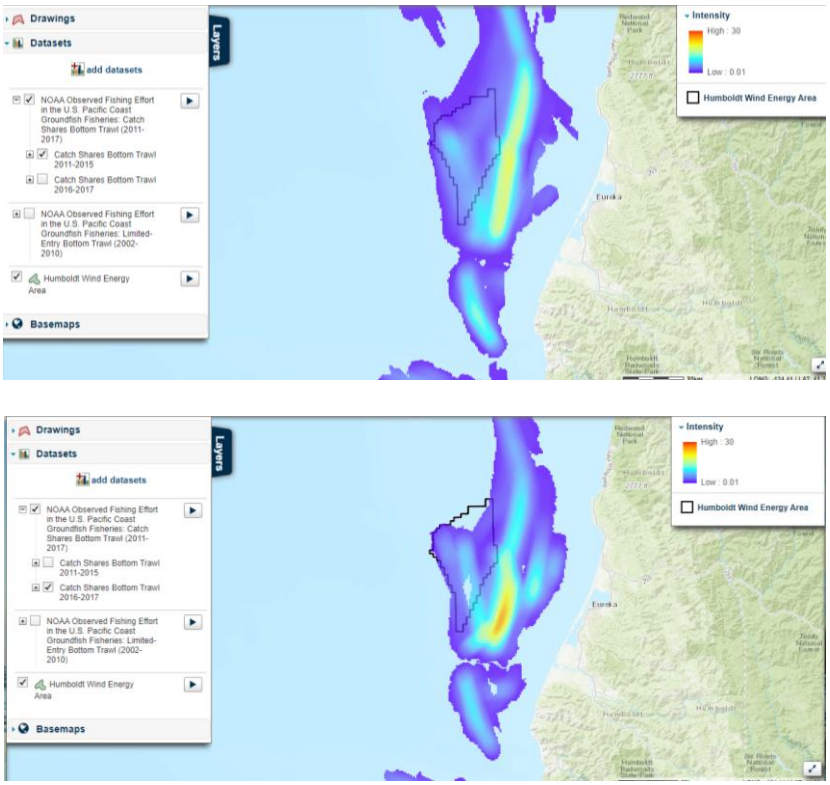
Bottom: Management Closures and Conservation Areas.
Source: [North Coast Fisheries Mapping Project (arcgis.com))]

CD-0001-22 (BOEM) EXHIBITS

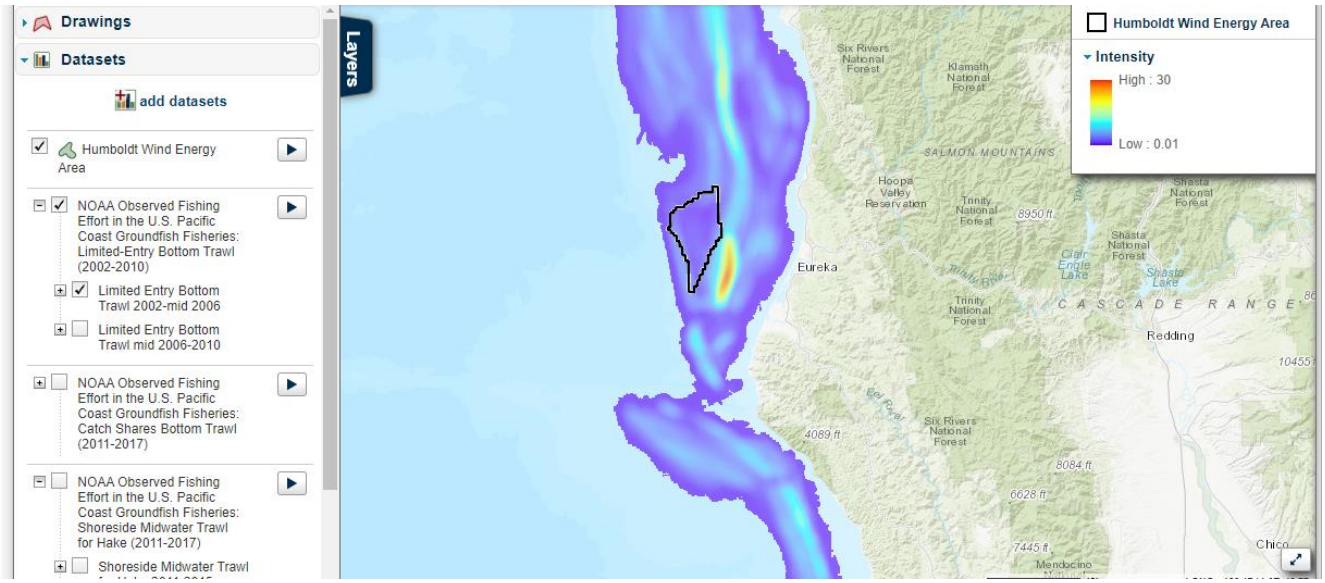
Exhibit 3-14

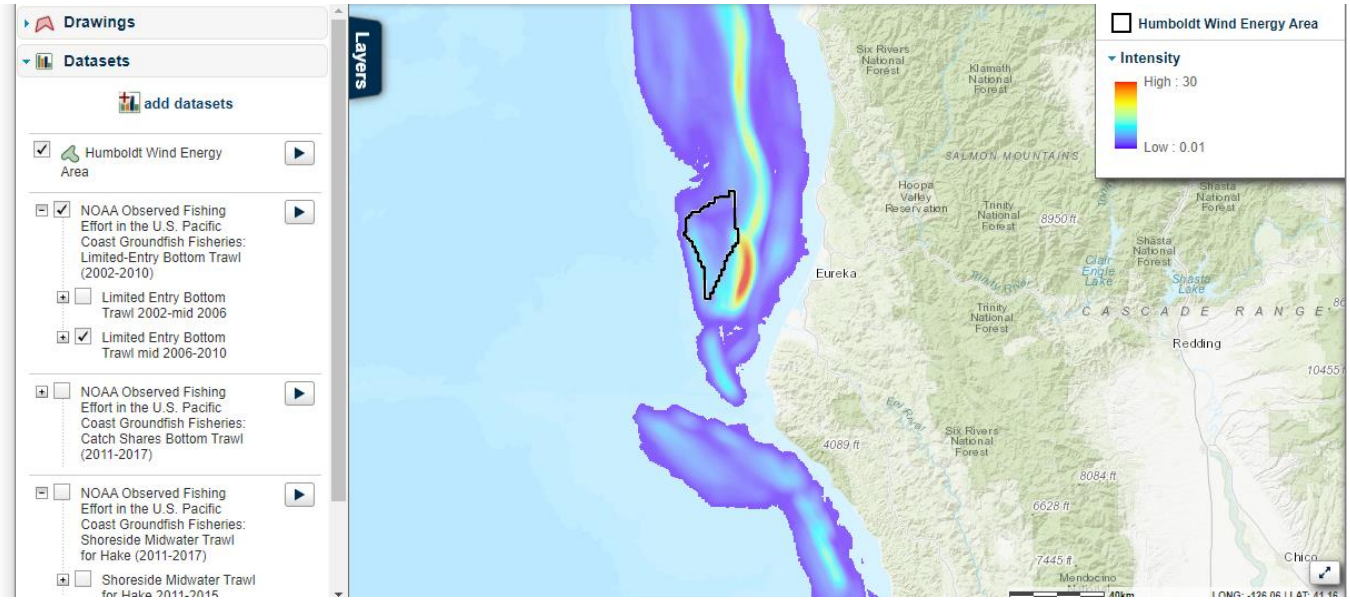


Vessel Monitoring System (VMS) bottom trawl data (2010-2017) displayed in units of fishing intensity.
Source: BOEM via California Offshore Wind Energy Gateway.



NOAA observed fishing effort in the Pacific Coast Groundfish Fisheries- Catch Shares Bottom Trawl. Top: 2011-2015, and Bottom: 2016-2017.
Source: Northwest Fisheries Science Center via California Offshore Wind Energy Gateway

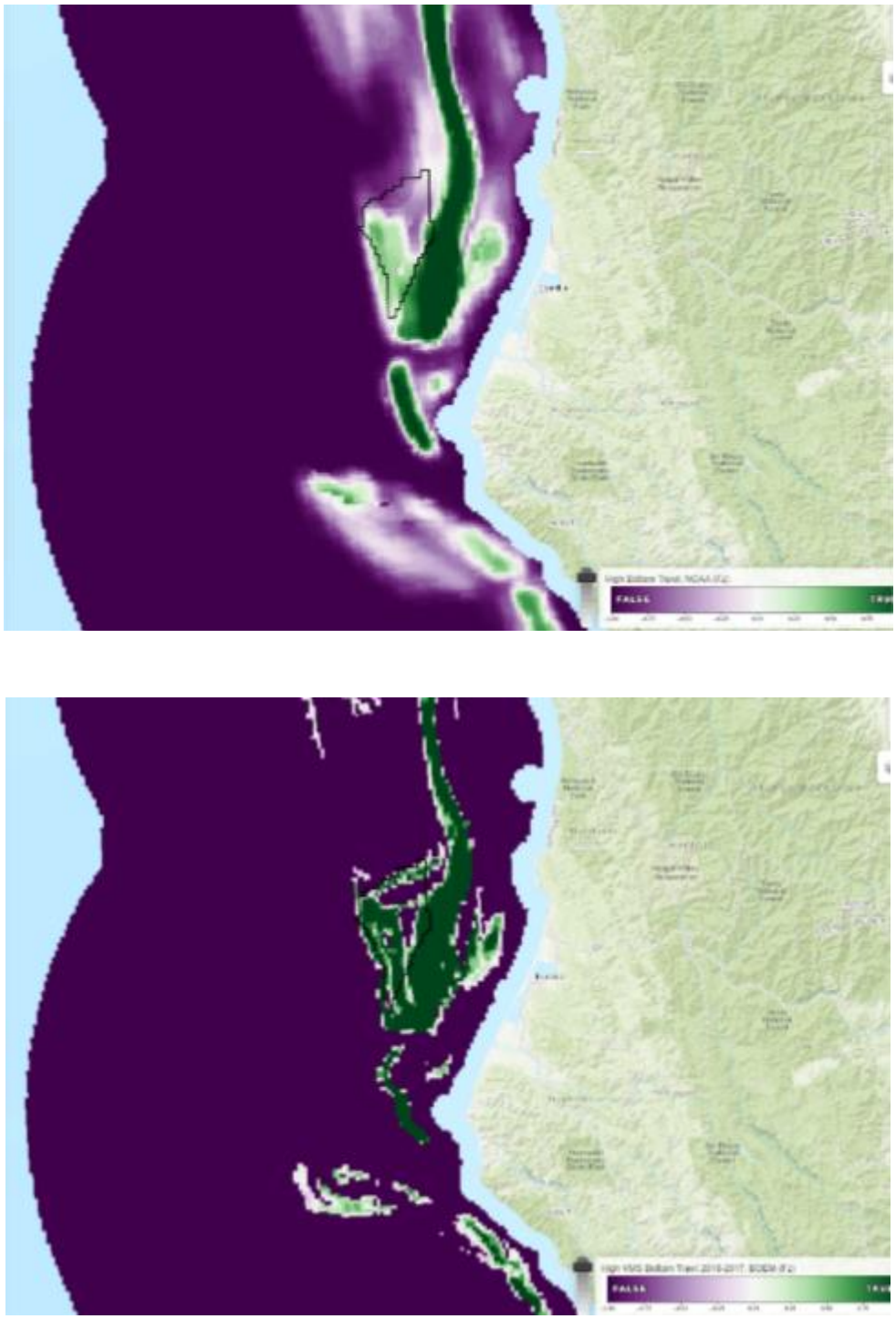




NOAA observed fishing effort in the Pacific Coast Groundfish Fisheries: Catch Shares Bottom Trawl. Top: 2002-mid 2006, and Bottom: mid 2006-2010.
Source: Northwest Fisheries Science Center via California Offshore Wind Energy Gateway

CD-0001-22 (BOEM) EXHIBITS

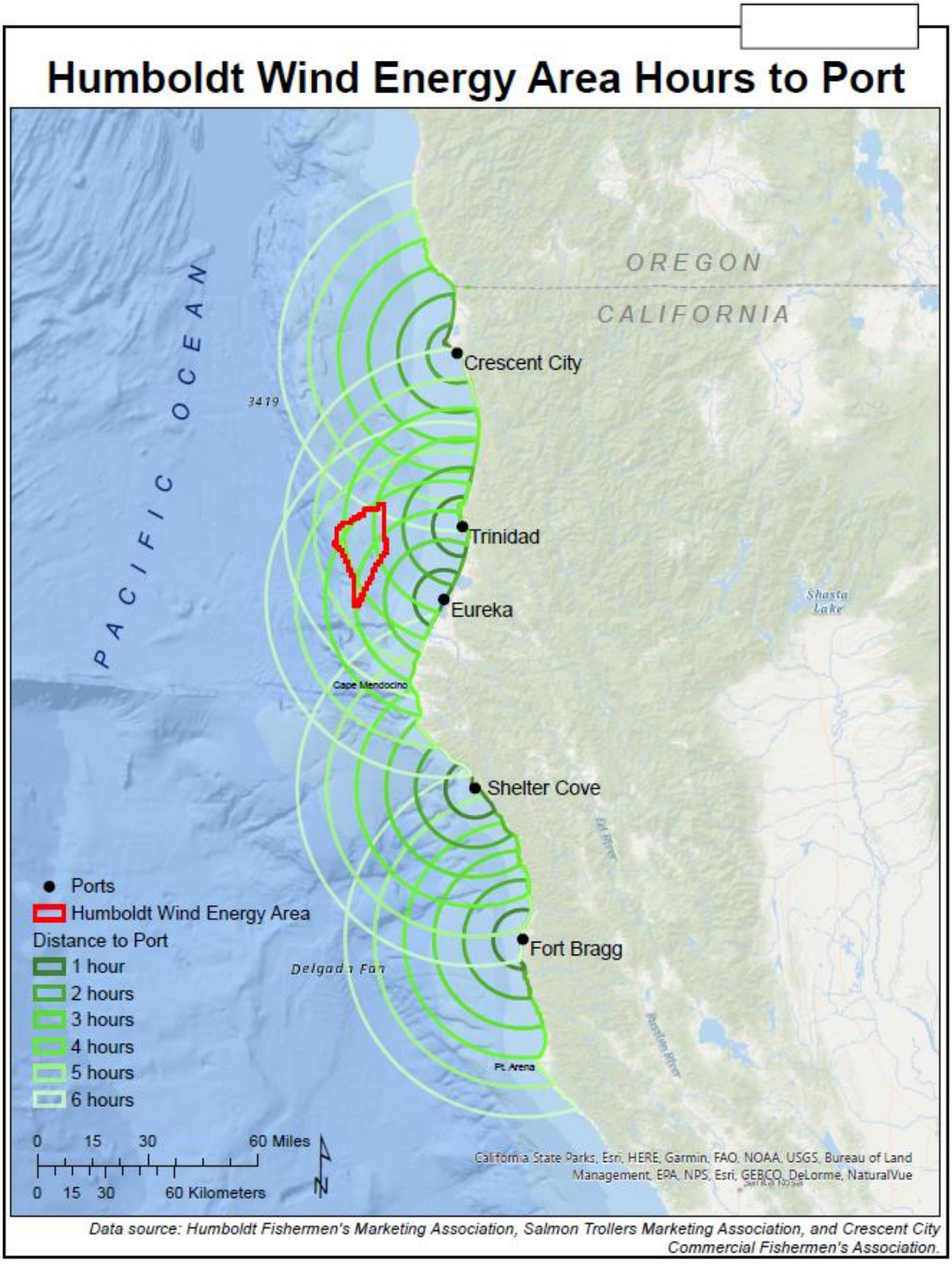
Exhibit 3-15



EEMS model for high ocean use (trawl activity). On the top is NOAA observation data from 2002-2017 and bottom is VMS (BOEM) data from 2010-2017, also seen in density above Model can be accessed here: [CA OSW Energy Modeling Platform (eemsonline.org)]

CD-0001-22 (BOEM) EXHIBITS

Exhibit 3-16



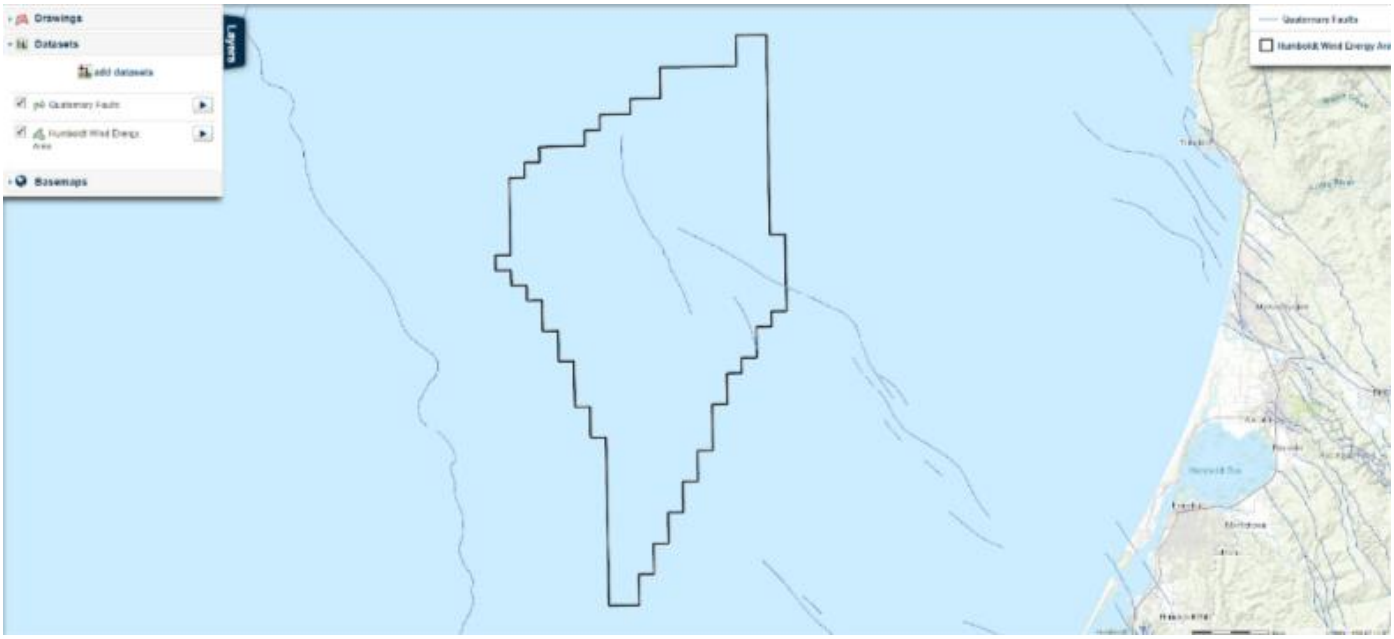
CD-0001-22 (BOEM)

COASTAL HAZARDS EXHIBITS

CD-0001-22 (BOEM) EXHIBITS

Exhibit 4-1

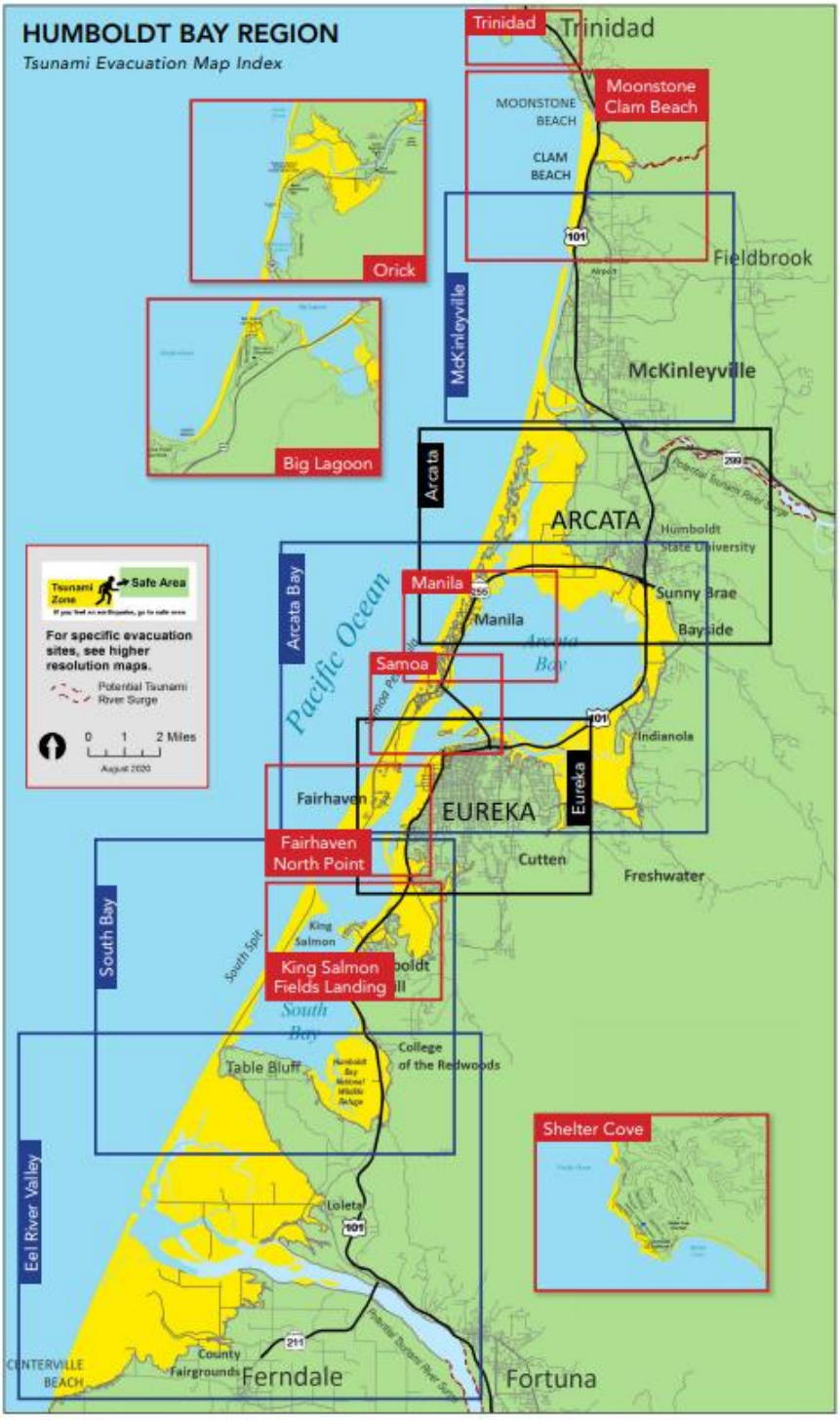
Map of Faults in and Around Humboldt WEA



Source: California Offshore Wind Energy Gateway

CD-0001-22 (BOEM) EXHIBITS

Exhibit 4-2



Source: Redwood Coast Tsunami Working Group

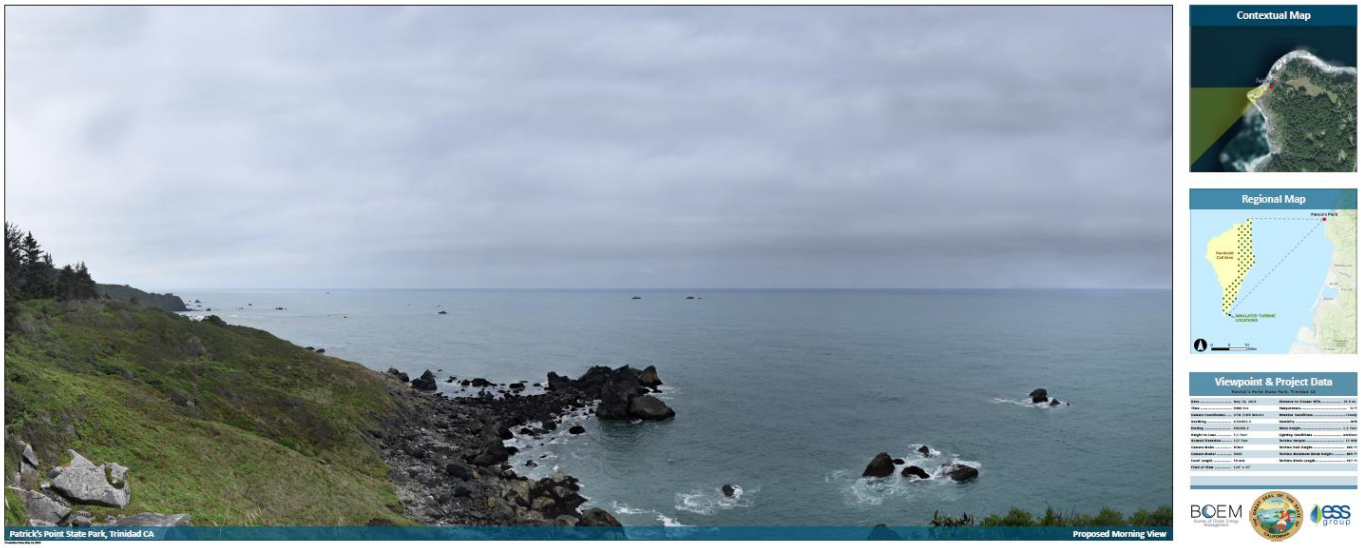
CD-0001-22 (BOEM)

SCENIC AND VISUAL RESOURCES EXHIBIT

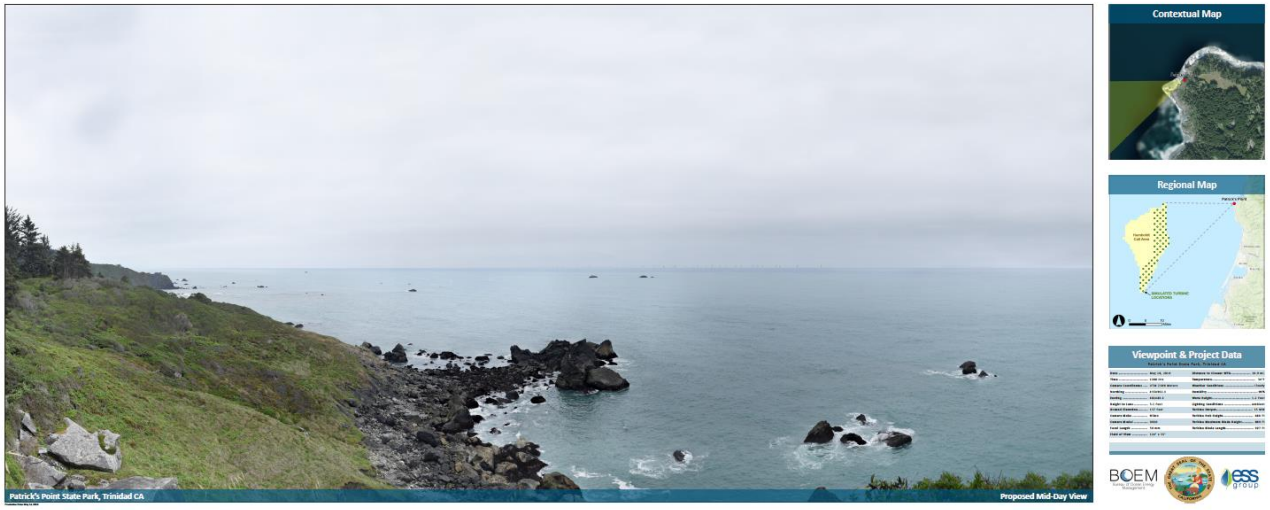
CD-0001-22 (BOEM) EXHIBITS

Exhibit 5-1

Proposed Morning View

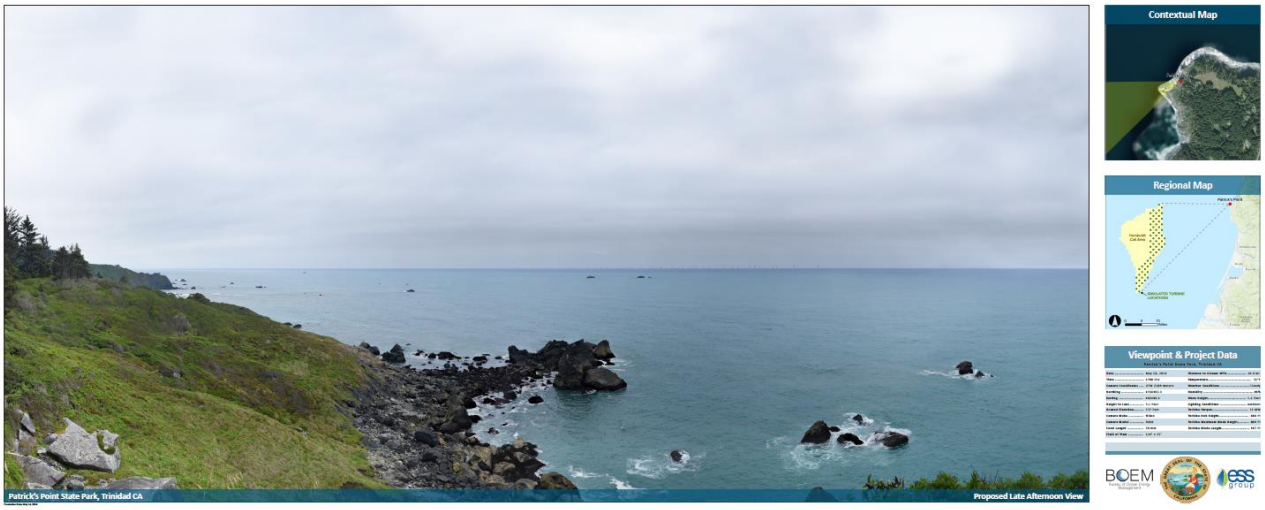


Proposed Midday View



CD-0001-22 (BOEM) EXHIBITS

Proposed Late Afternoon View



Proposed Nighttime View

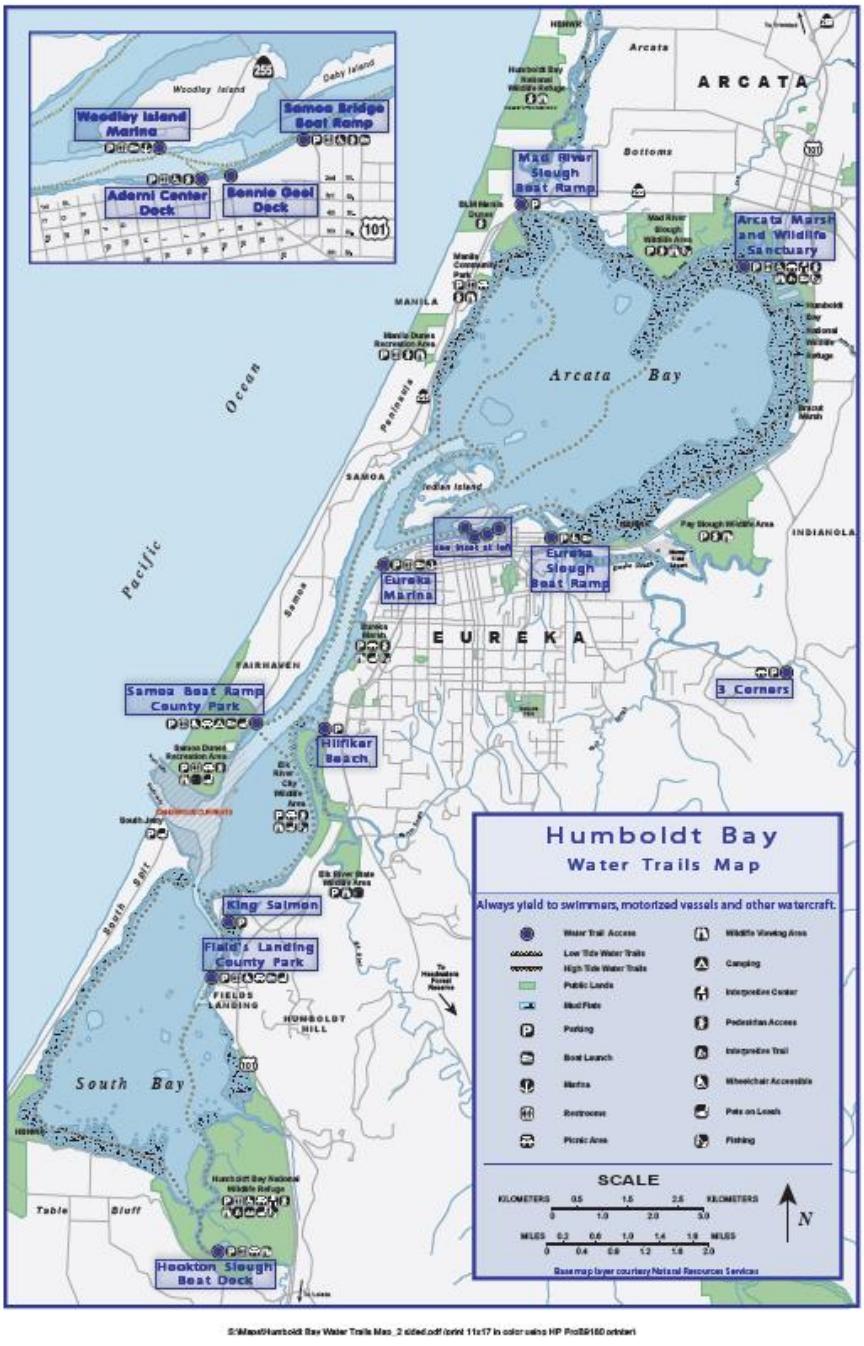
Source: BOEM, ESS Group, and State of California

CD-0001-22 (BOEM)

PUBLIC ACCESS AND RECREATION EXHIBITS

CD-0001-22 (BOEM) EXHIBITS

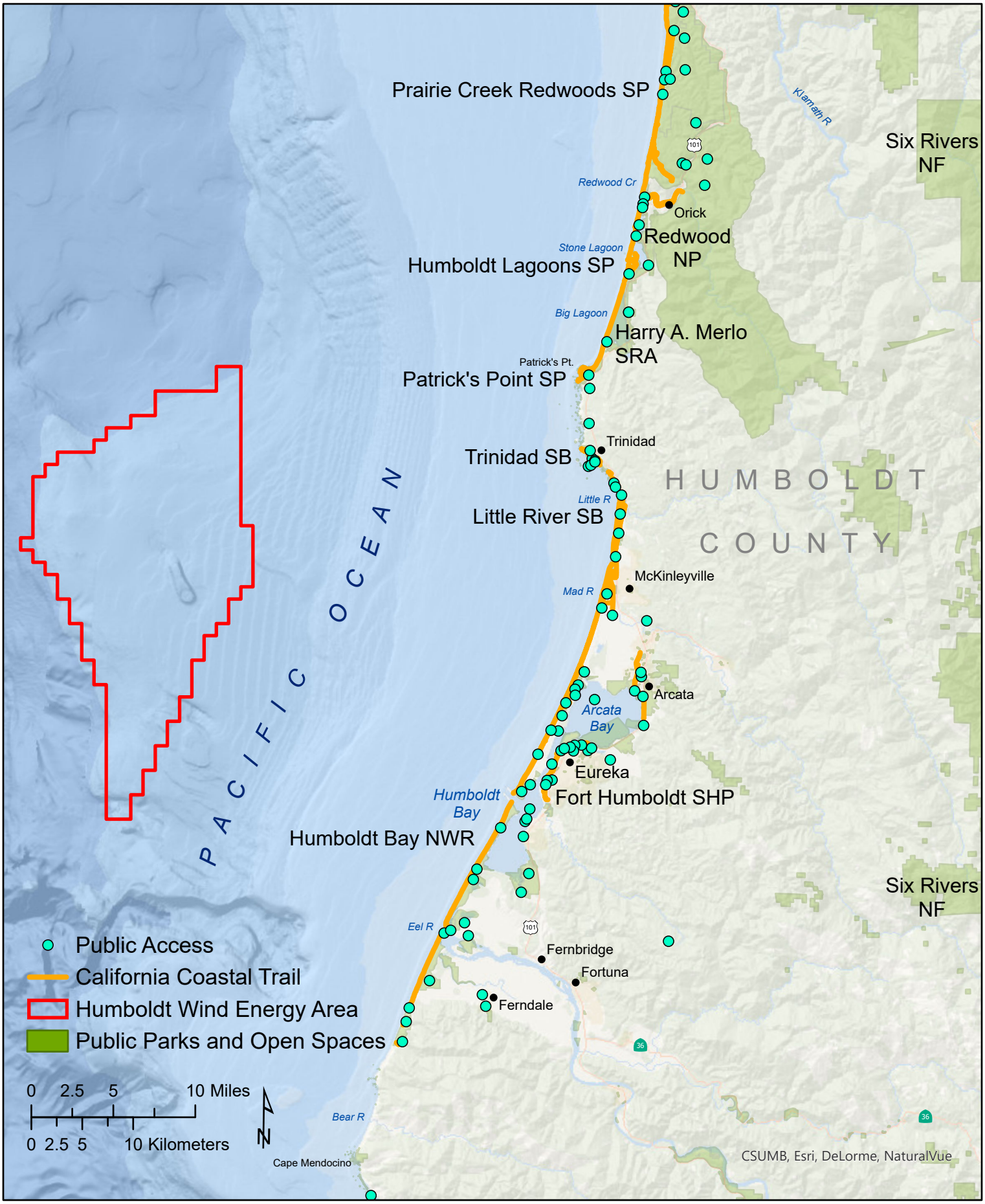
Exhibit 6-1



Humboldt Bay Water Trails

Exhibit 6-2

Humboldt Wind Energy Area Public Access

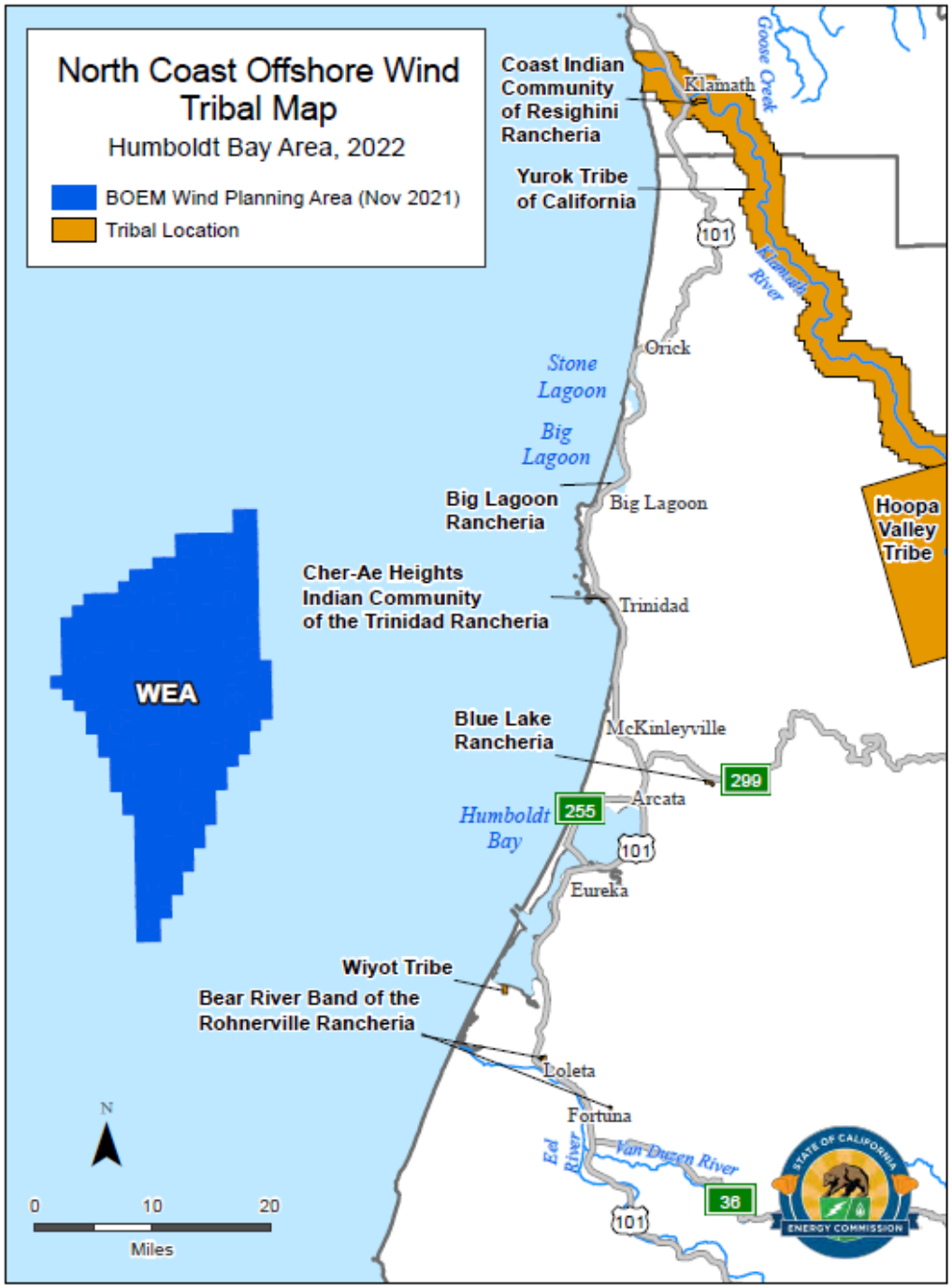


CD-0001-22 (BOEM)

TRIBAL AND CULTURAL RESOURCES EXHIBITS

CD-0001-22 (BOEM) EXHIBITS

Exhibit 7-1



CD-0001-22 (BOEM) EXHIBITS

Exhibit 7-2

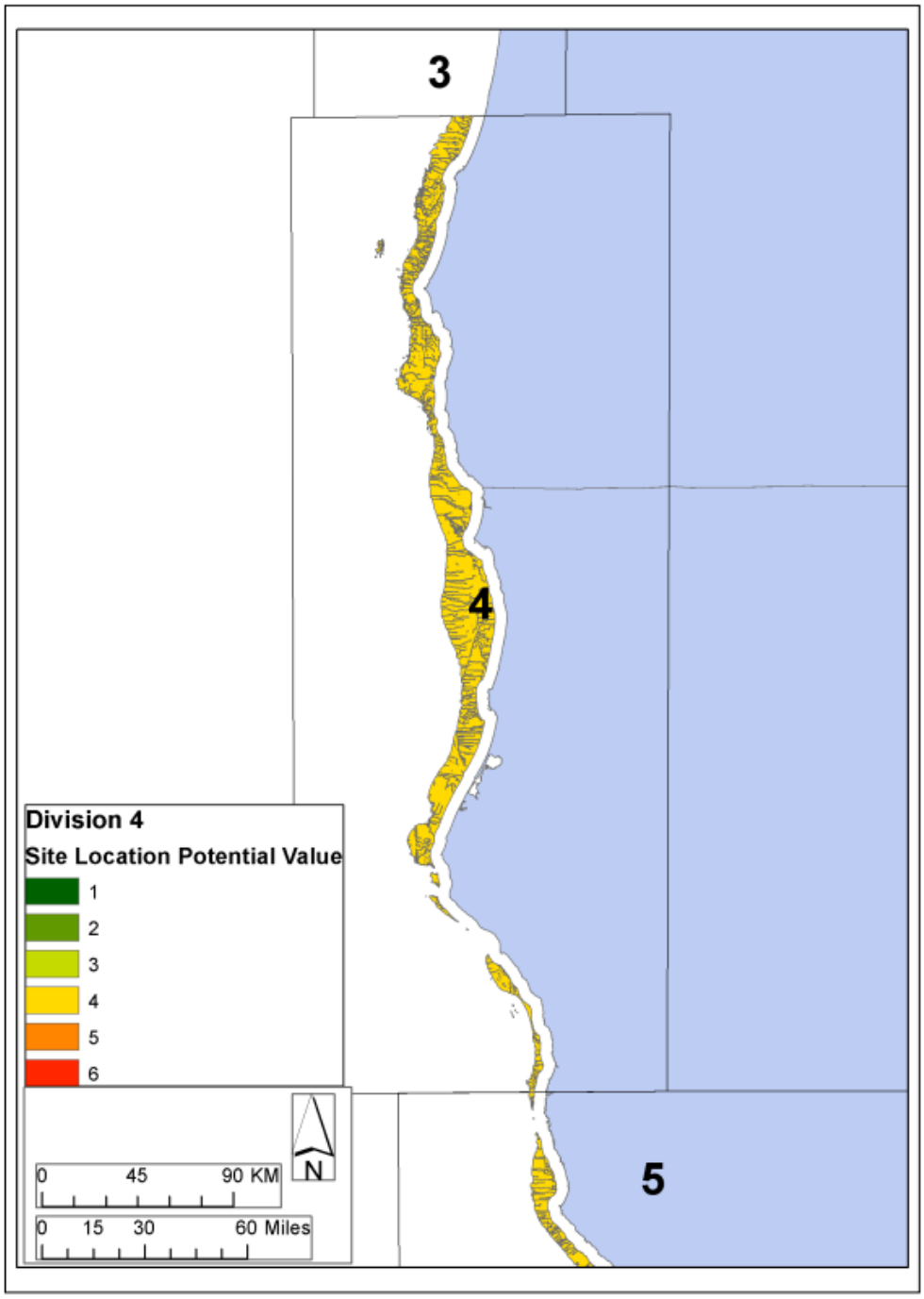


Figure 24. Overview of the total site location potential value distribution across the POCS paleolandscape within Subdivision 4.

71

Predicted potential for submerged cultural resource locations. Areas with higher ratings have higher potential for discovery of submerged cultural resource sites.

Citation: ICF International, Davis Geoarchaeological Research, and Southeastern Archaeological Research. 2013.

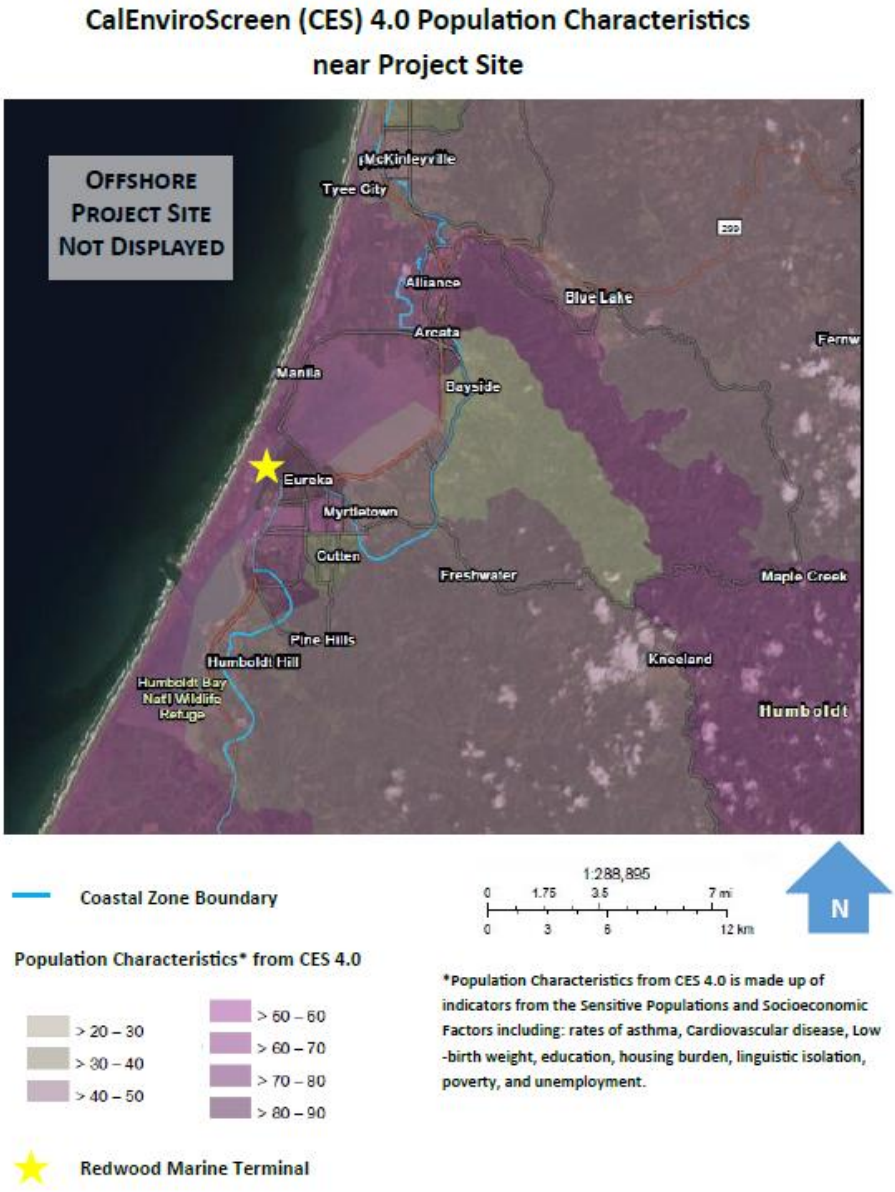
CD-0001-22 (BOEM)

ENVIRONMENTAL JUSTICE EXHIBITS

CD-0001-22 (BOEM) EXHIBITS

Exhibit 8-1

Population Characteristics near WEA

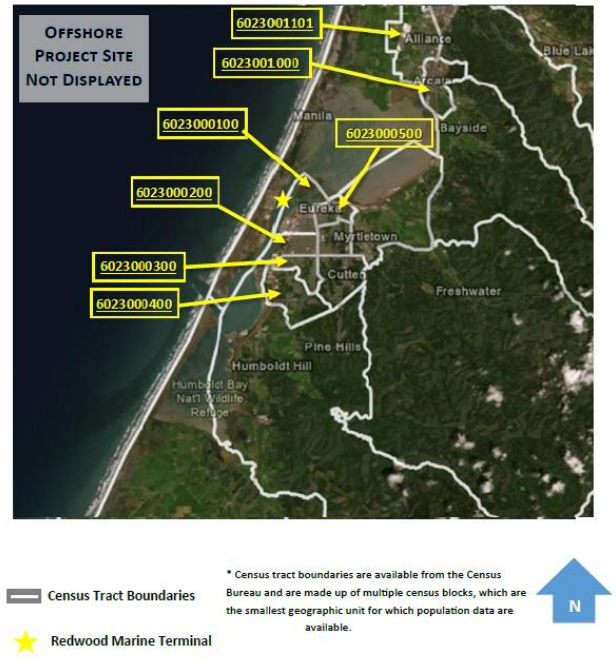


CD-0001-22 (BOEM) EXHIBITS

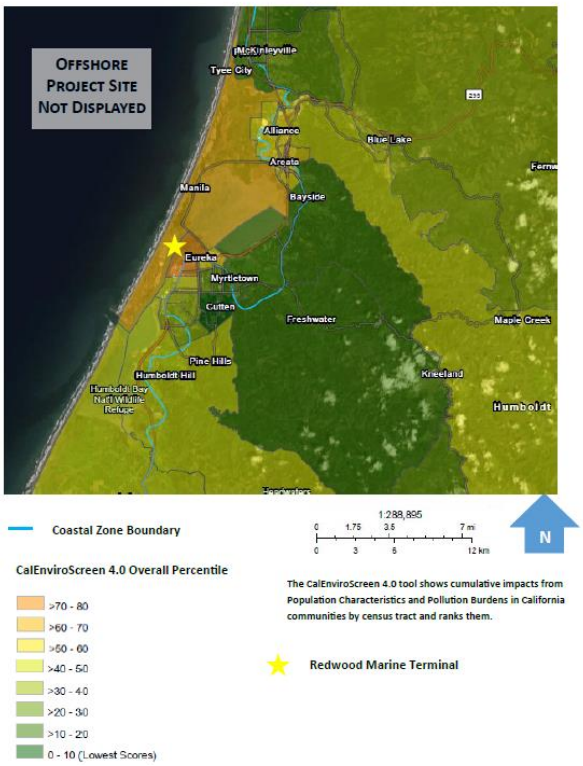
Exhibit 8-2

Location of Analyzed Census Tracts and CalEnviroScreen 4.0 near WEA

Census Tracts with Communities of Concern



CalEnviroScreen 4.0 near Project Site

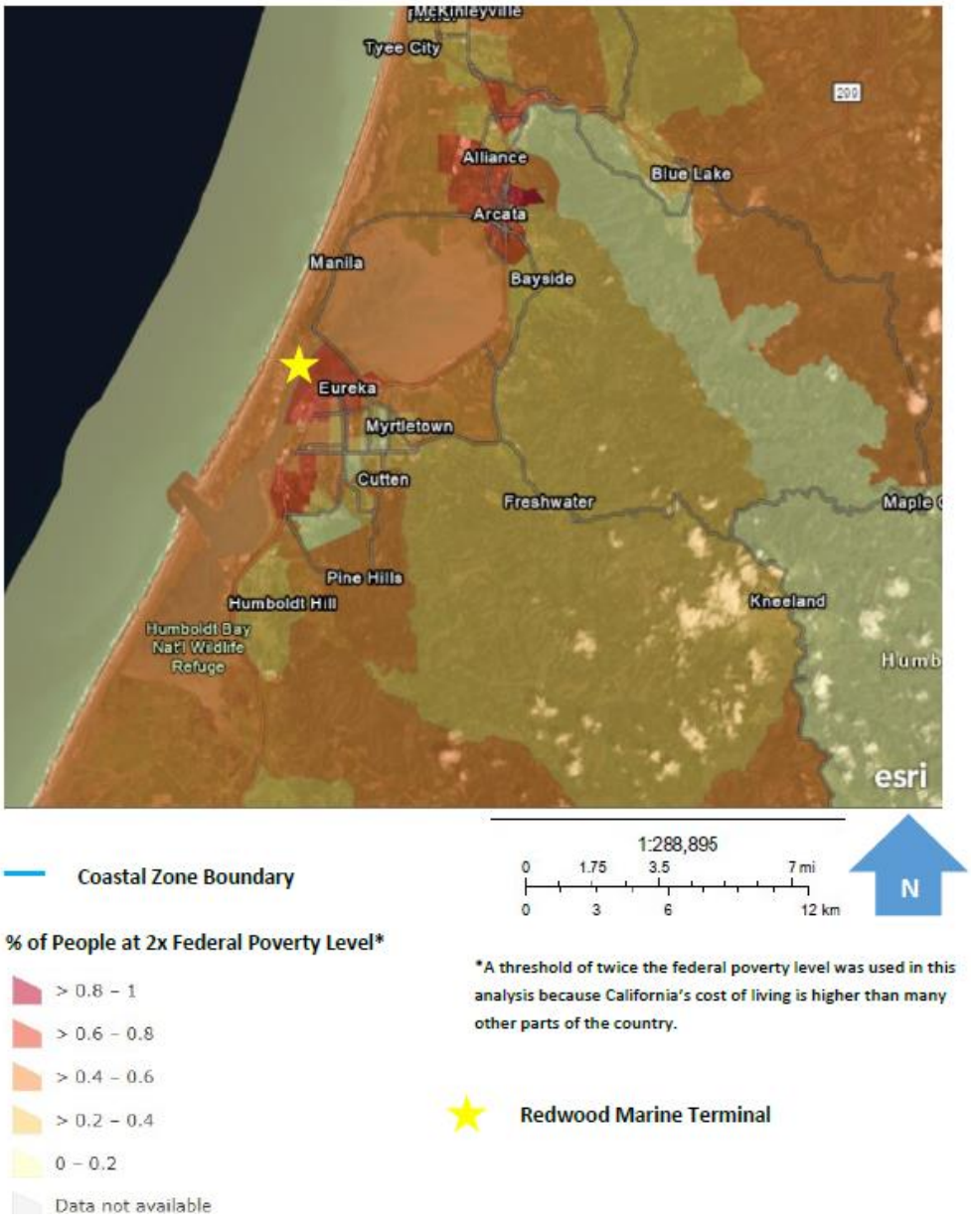


CD-0001-22 (BOEM) EXHIBITS

Exhibit 8-3

Households with Incomes Below Twice the Federal Poverty Level

EJ Screen (EPA) Twice the Federal Poverty Level near Project Site



CD-0001-22 (BOEM) EXHIBITS

Exhibit 8-4

AB 1550 Low Income Communities near Project Area

*AB 1550 Low-income are identified as households with median incomes at or below 80% the statewide median income or with median household incomes at or below the threshold designated as low-income by HCD's State Income Limits.

CD-0001-22 (BOEM) EXHIBITS

Exhibit 8-5

Humboldt Bay Harbor, Recreation, and Conservation District Conceptual Master Plan for Redwood Marine Terminal

Figure 1. HBHRCD Conceptual Master Plan

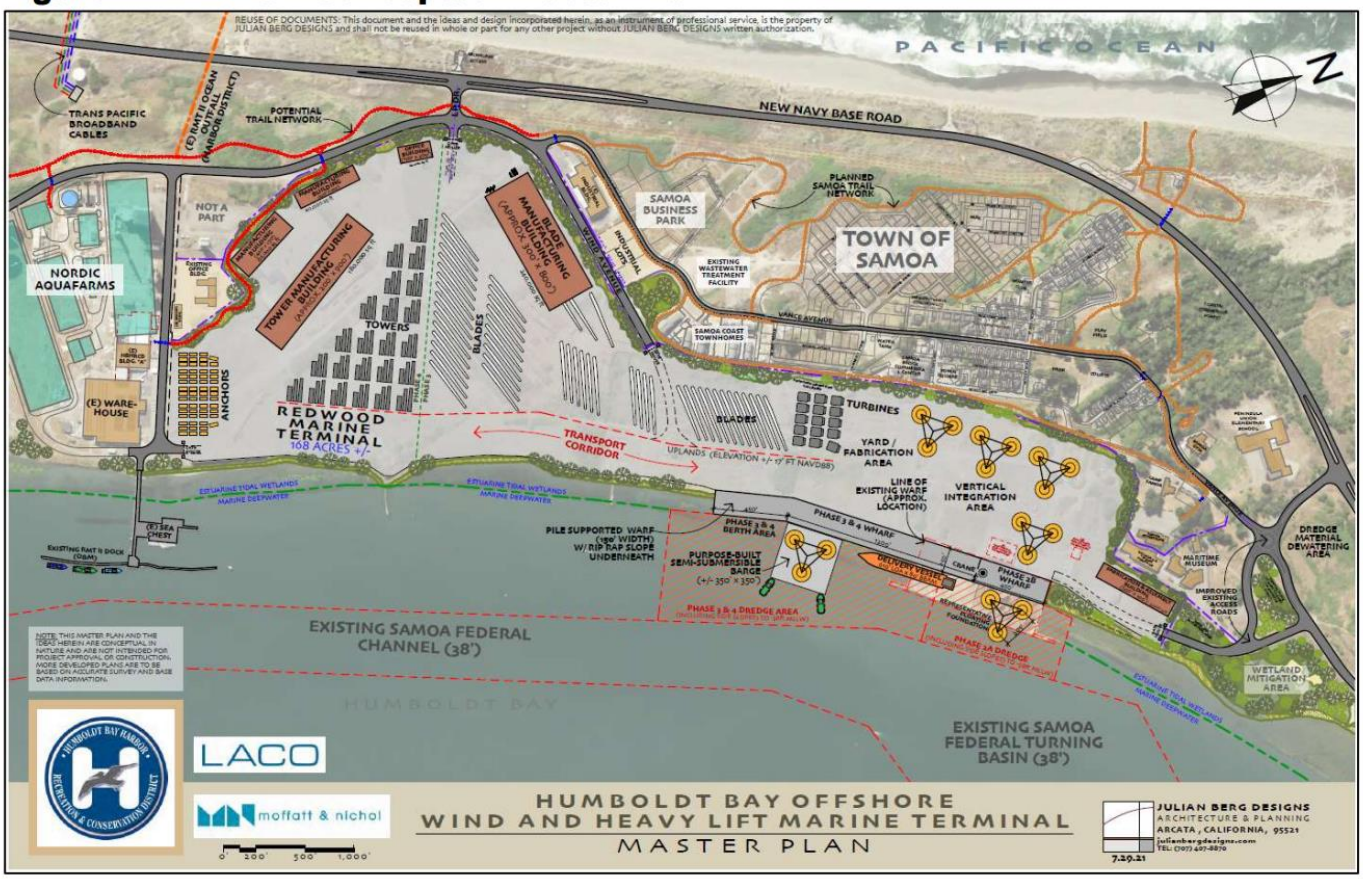


Figure source: Humboldt Bay Harbor, Recreation, and Conservation District, 2021. Request for Qualifications: Redwood Marine Multipurpose Terminal Replacement Project – Design and Permitting.
Available at:
http://humboldtbay.org/sites/humboldtbay2.org/files/7591.21%20HBHRCD%20Multipurpose%20Terminal%20Replacement%20RFQ%2020211118_WithAttachments_0.pdf