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E.O. 13921 and Aquaculture Opportunity Areas

Aquaculture Aspects E.O. 13921

Many of the Executive Order actions allow federal agencies to build on our existing efforts to foster sustainable marine and freshwater aquaculture.

Implementation and responsibility for implementation is across the federal agencies involved with aquaculture including USACE, USDA/APHIS, and EPA

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E.O. Section 7: Aquaculture Opportunity Areas

- The Secretary of Commerce, in consultation with other appropriate Federal officials, appropriate Regional Fishery Management Councils, and in coordination with appropriate State and tribal governments, shall:
  - Within 1 year of date of E.O., identify at least two geographic areas containing locations suitable for commercial aquaculture.
  - Within 2 years of identifying each geographic area, complete a PEIS for each to assess the impact of siting aquaculture facilities there.
  - Each of following 4 years, identify two more geographic areas and complete PEIS within 2 years.
- Recently, southern California and the Gulf of Mexico were selected as the first regions to host AOAs based on the already available spatial analysis data and current industry interest in developing sustainable aquaculture operations.

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Key Takeaways

- The selection of the Gulf and southern California **does not** mean the entire regions are opportunity areas. Rather, NOAA will solicit data and input from stakeholders to investigate potential AOAs in the two regions.
- The federal and state permitting and authorization requirements are the same within AOAs as anywhere else.
  - Aquaculture operations proposed within an AOA would be required to comply with all applicable federal and state laws and regulations (e.g., Clean Water Act, Rivers and Harbors Act, Endangered Species Act [ESA], essential fish habitat under the Magnuson-Stevens Act, Marine Mammal Protection Act).
- The identification of AOAs would not prohibit other legal activities from occurring within AOAs. Information received throughout the process of identifying areas and completing a PEIS for each AOA will help maximize compatibility of AOAs with other ocean uses.

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How Will We Identify AOAs?

We will use a combination of:

- NCCOS siting analysis results & mapping tools
- Stakeholder input (Councils, Commissions, public)
- Interagency coordination
- Request for Information will publish in Federal Register
- NOAA will update and collaborate with Councils throughout the process

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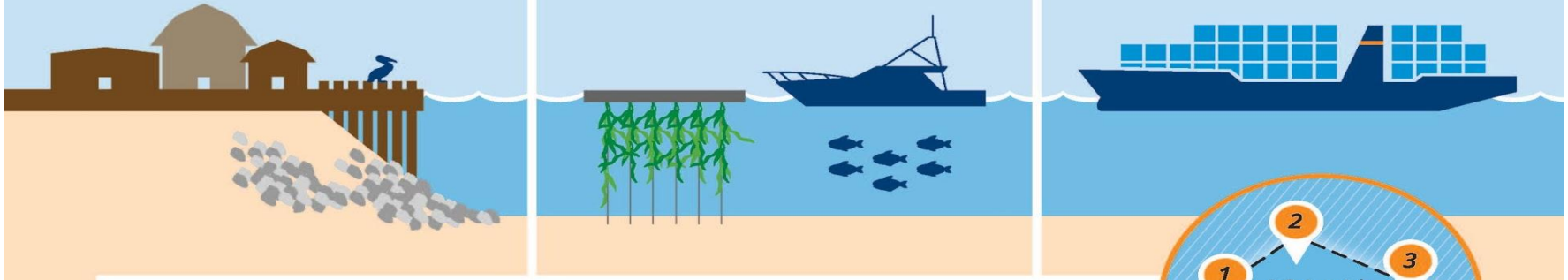
What is an Aquaculture Opportunity Area?

Aquaculture Opportunity Areas show high potential for commercial aquaculture. A science and community-based approach to identifying these areas helps minimize interference with other enterprises, account for current fishing patterns, and protect the ecosystem.

AOAs will expand economic opportunities in coastal and rural areas, and increase our nation's seafood security.

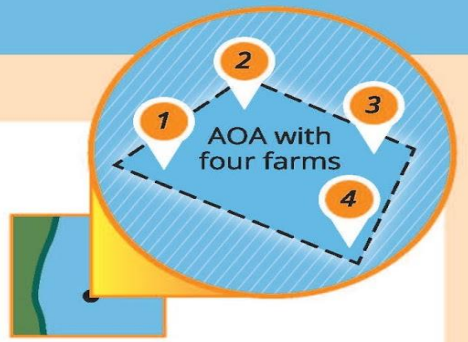
AOAs use the best available science to find appropriate spaces for sustainable aquaculture.

AOAs minimize interactions with other users, such as shipping, fishing, and the military.



Assessment and Use of AOAs

Stakeholder input is essential in the design and location of AOAs and NOAA expects these areas will be shaped through a public process that allows constituents to share their community and stewardship goals, as well as critical insights.



AOA size, exact location, and farm types will be determined through spatial analysis and public input to expand sustainable domestic seafood production while minimizing potential user conflicts. Farms will still need to go through the permitting process and environmental reviews.

AOA Year 1 Steps

now

May 2021

What:
Early public/stakeholder outreach (e.g., to Councils and Commissions) to introduce AOA concept and describe siting analysis.
Request for Information (RFI) to publish in Federal Register which will request input on AOAs in Gulf and Southern California. RFI will also request input on areas where NOAA may want to consider AOA development over the next 4 years.
Continued outreach to Councils, Commissions, stakeholders, federal/state agencies, etc.
NCCOS publishes "Aquaculture Opportunity Atlas" highlighting potential areas to be considered as AOAs during the PEIS process (PEIS will be developed over next 2 years).

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Spatial Planning for Aquaculture Opportunity Areas in Federal Waters

Kenneth Riley, James Morris, and team members

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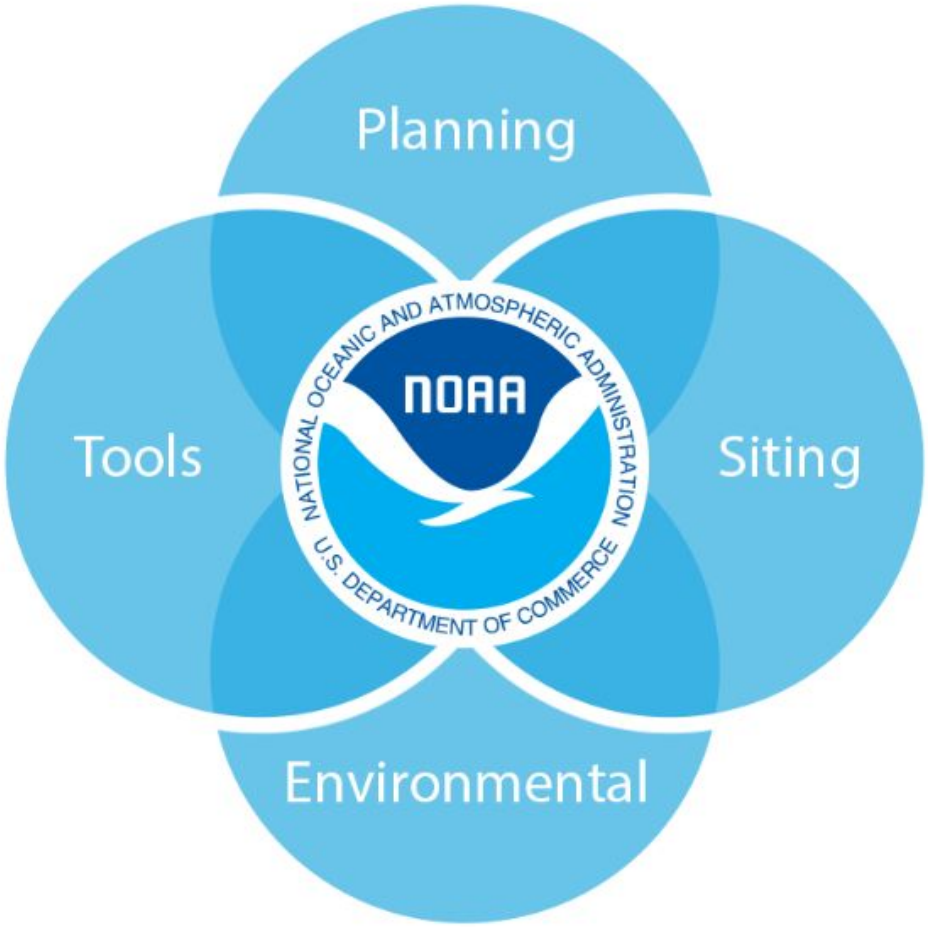
The NOS AquaPortfolio



Coastal Management Support

We have developed a blended research and services portfolio. Services inform science; science inform services.

Types of support

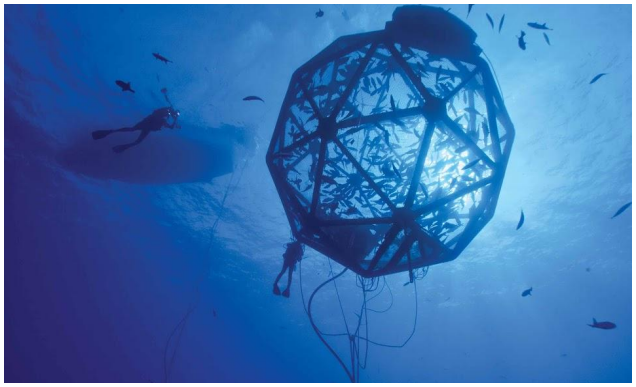
Marine spatial planning
Environmental modeling
Environmental science advice
Engineering review

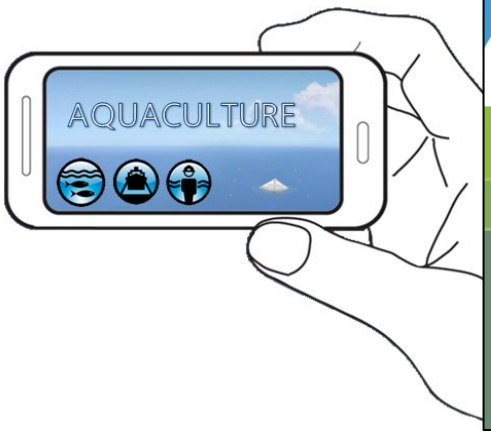
Customers - All federal and state agencies

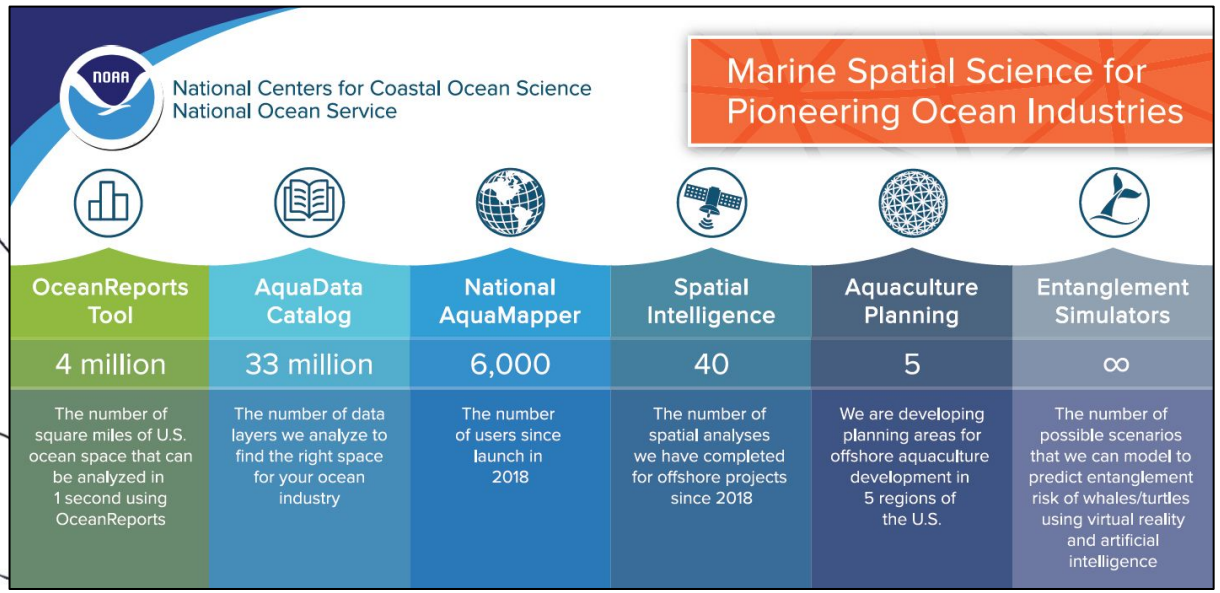
US Army Corps of Engineers®

Tools and Technology

- AquaData Catalog
- OceanReports
- National AquaMapper
- Gulf AquaMapper
- Marine Cadastre
- Wave exposure model
- Entanglement simulators
- Environmental models

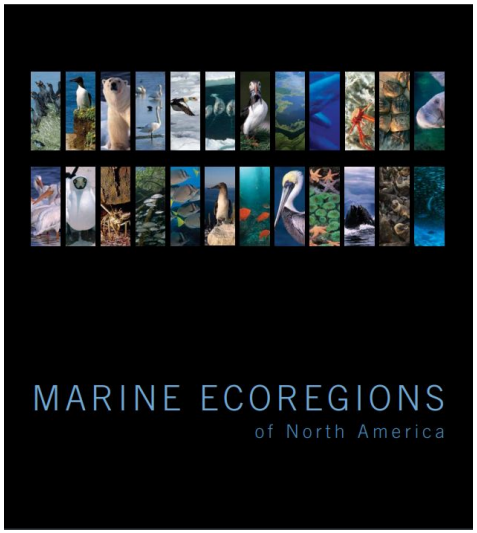


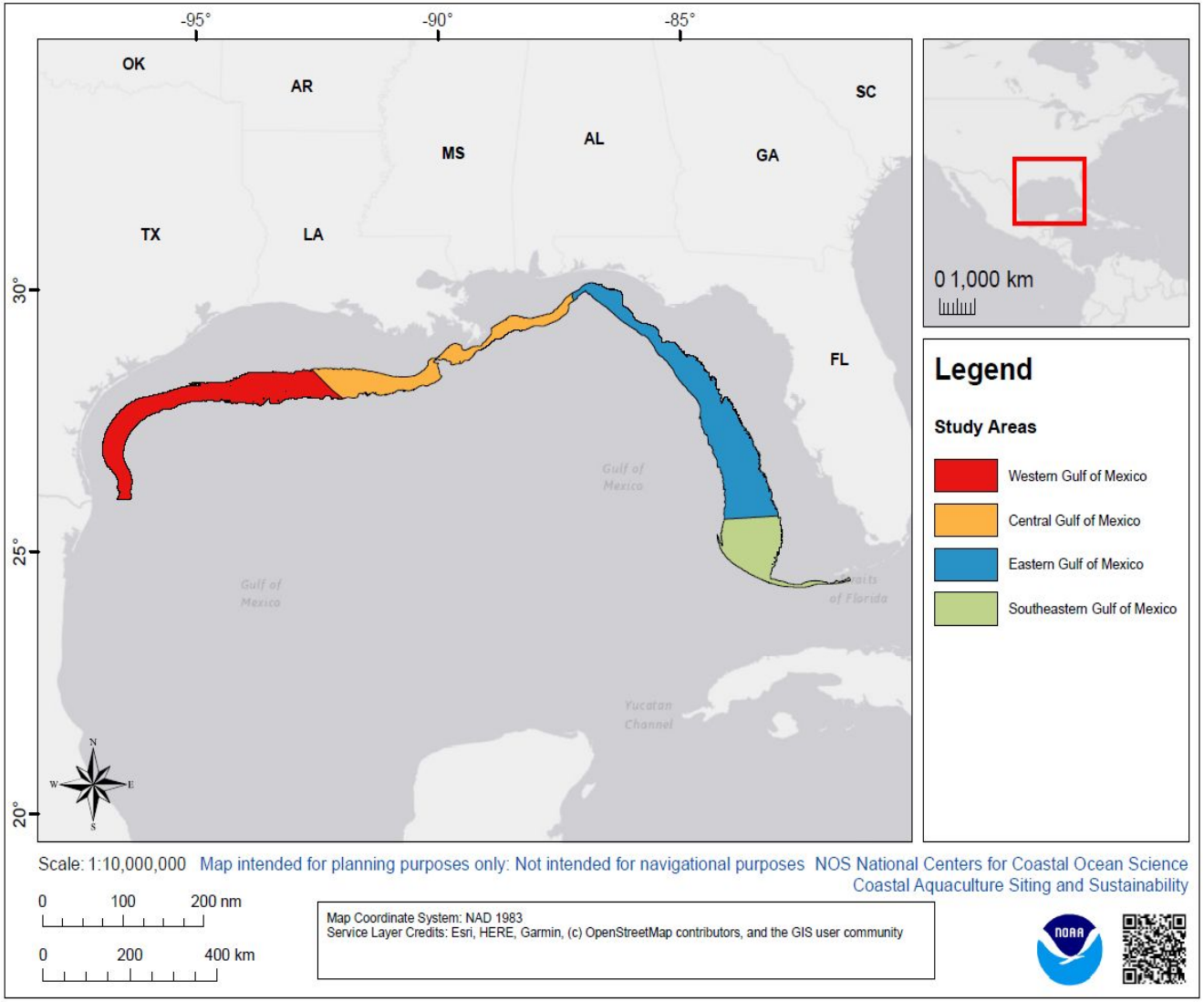




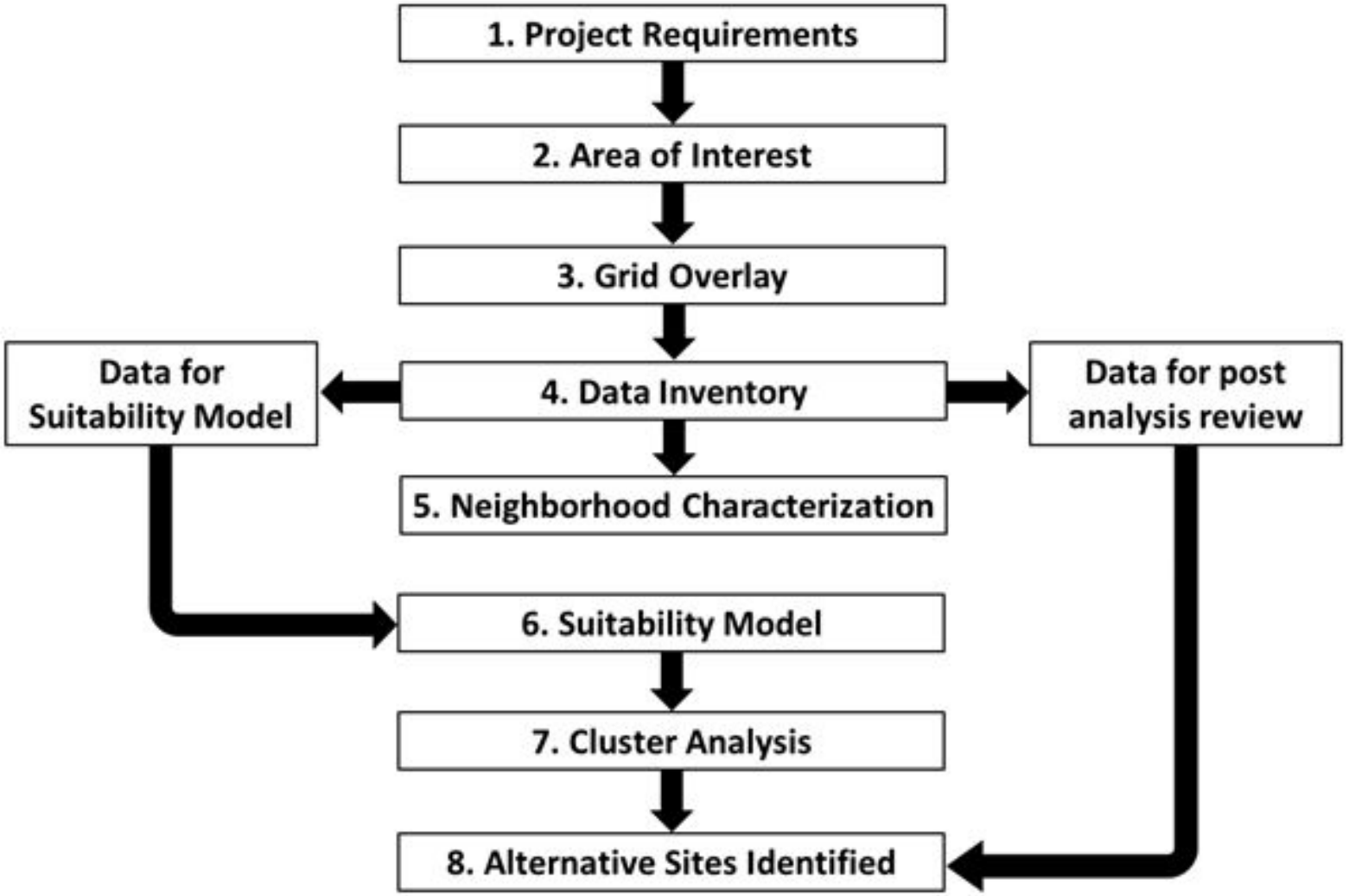
Starting Point for Gulf of Mexico Study Areas

- USA Federal Waters (EEZ)
- Depth = 50 - 150 m
- Eco-regions from Wilkerson et al. (2009)





Siting Analysis Workflow



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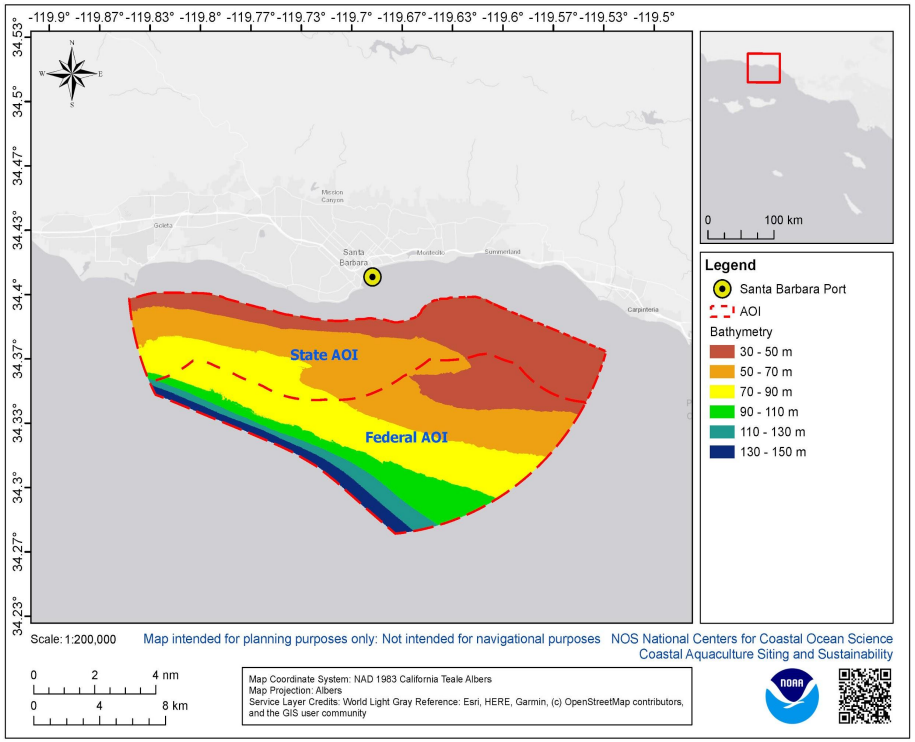
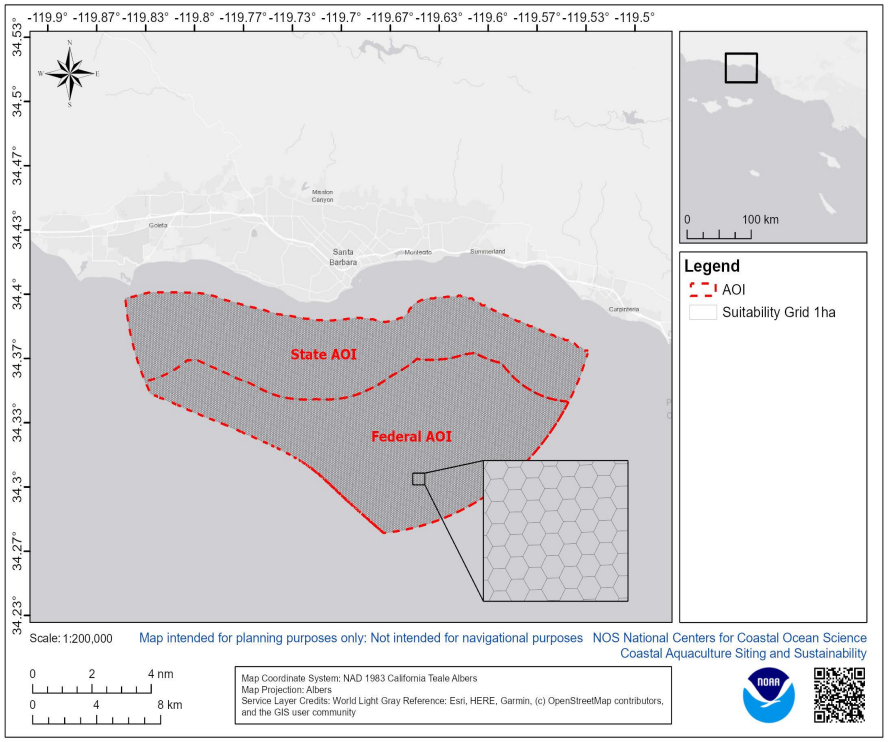
Example of a Study Area and Gridded Overlay



Study Area with Bathymetric Profile



Gridded Overlay

(For Demonstration Only)

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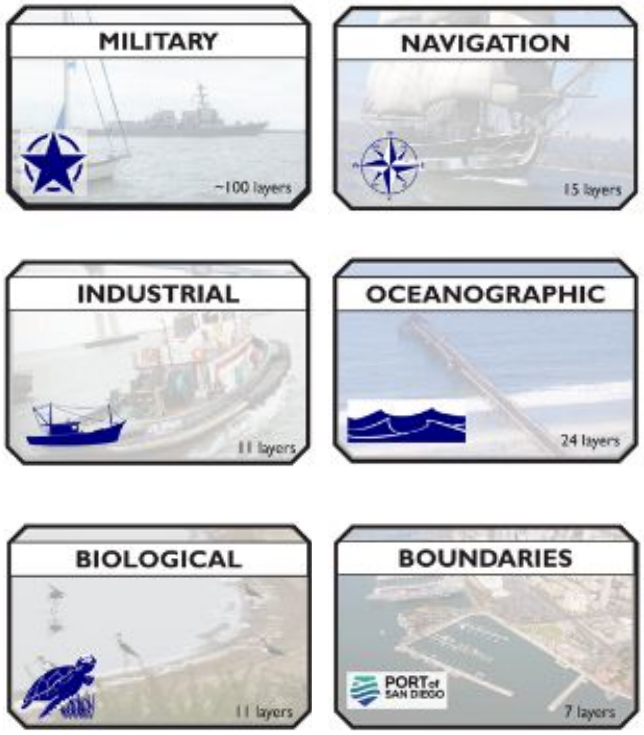
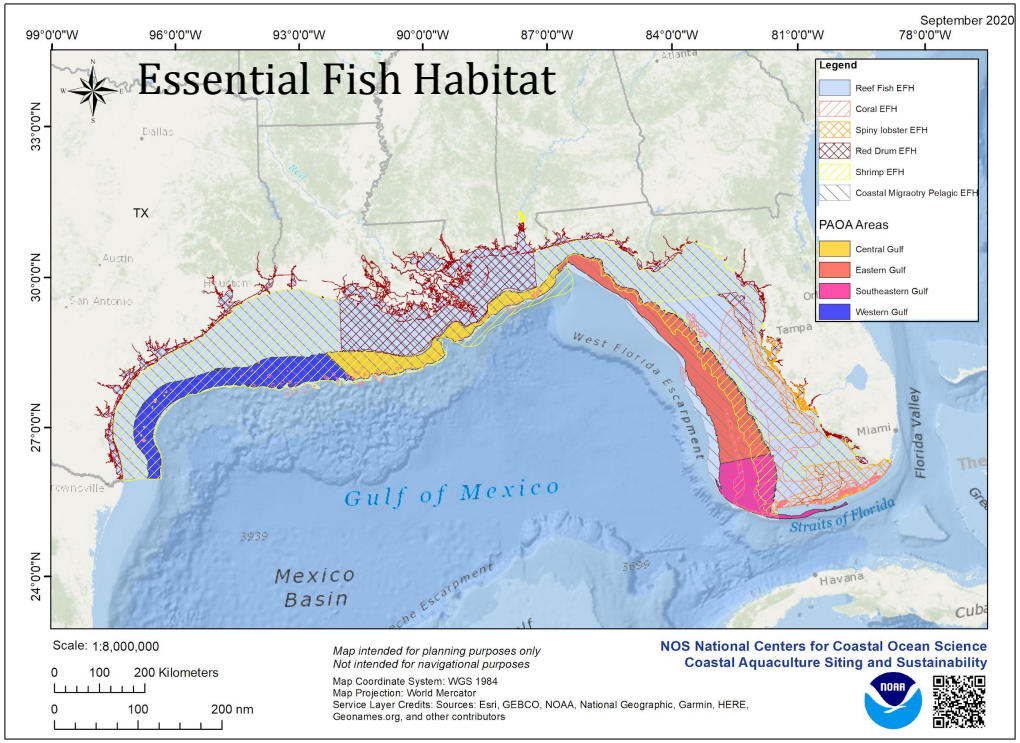
Data for Site Suitability Model



Data Categories



Data Example

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Site Suitability Model

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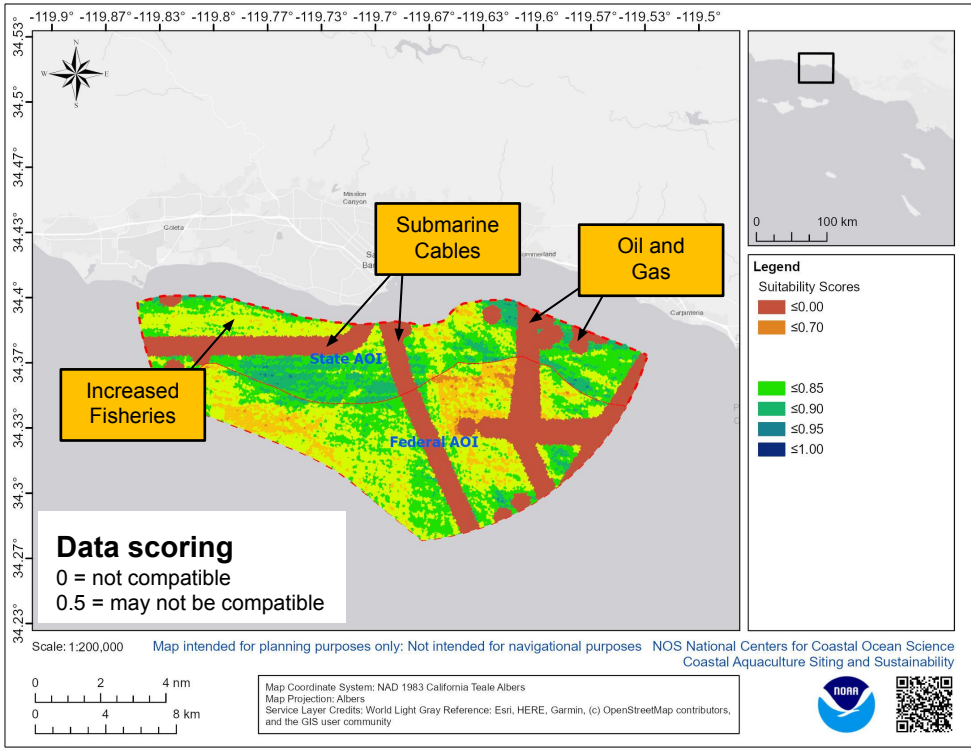
*We identify areas of **highest opportunity** for aquaculture. Areas that provide highest conservation and lowest conflict with other users.*

*A **suitability model** is a **model** that weights locations relative to each other based on given criteria.*

Data	Score
Hard Bottom Habitat	0
Marine Protected Areas & Preserves	0.5
Habitat Area of Particular Concern	0.5
Deep sea corals	0
Oil and Gas Pipelines (500 m buffer)	0
Oil and Gas Wells (500 m buffer)	0
Shipwrecks (500 m buffer)	0
Submarine Cables (500 m buffer)	0
Unexploded Ordnance	0.5
Wastewater Discharge (500 m buffer)	0
Vessel Traffic (continuous data)	0 - 1
Commercial Fishing (continuous data)	0 - 1



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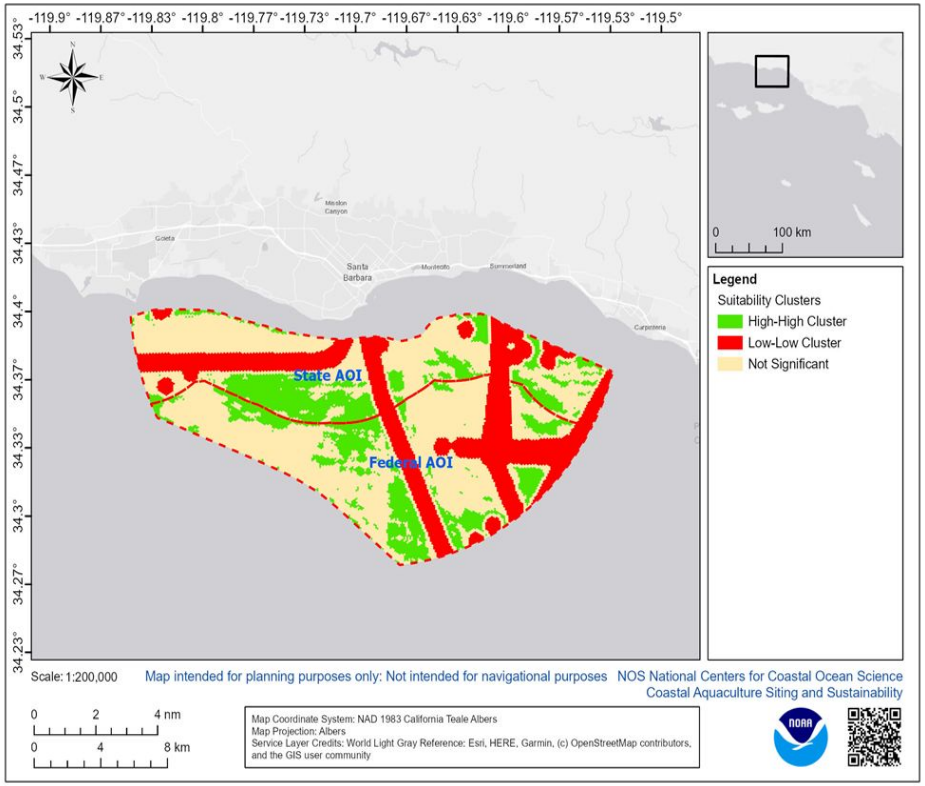
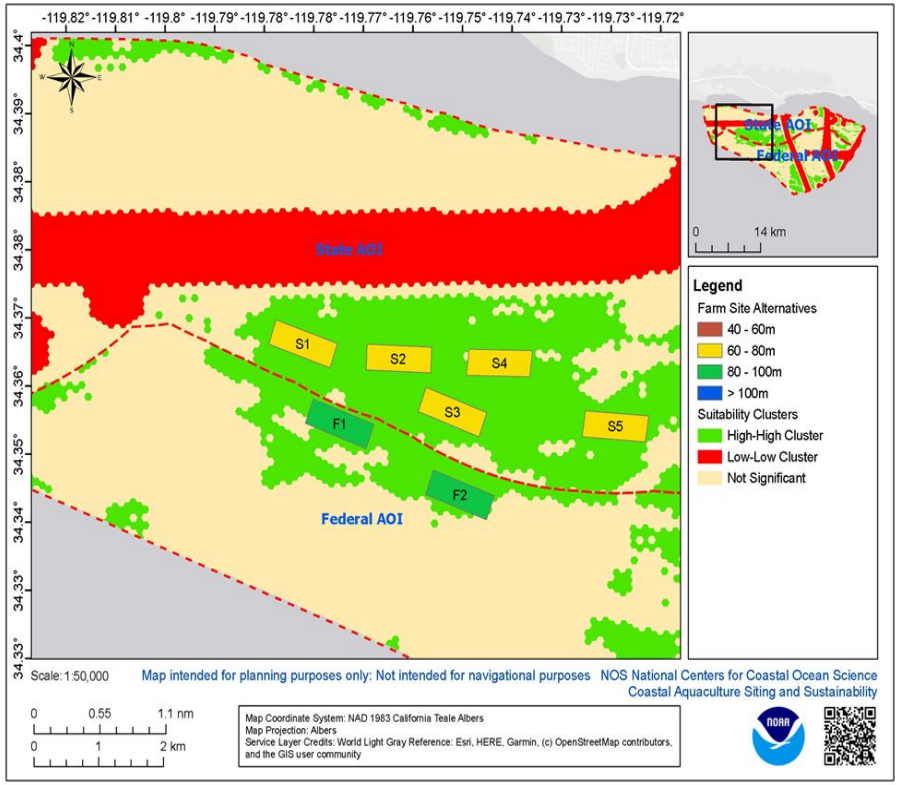
Spatial Statistics Identify Potential Sites



Cluster Analysis



Potential Sites Identified

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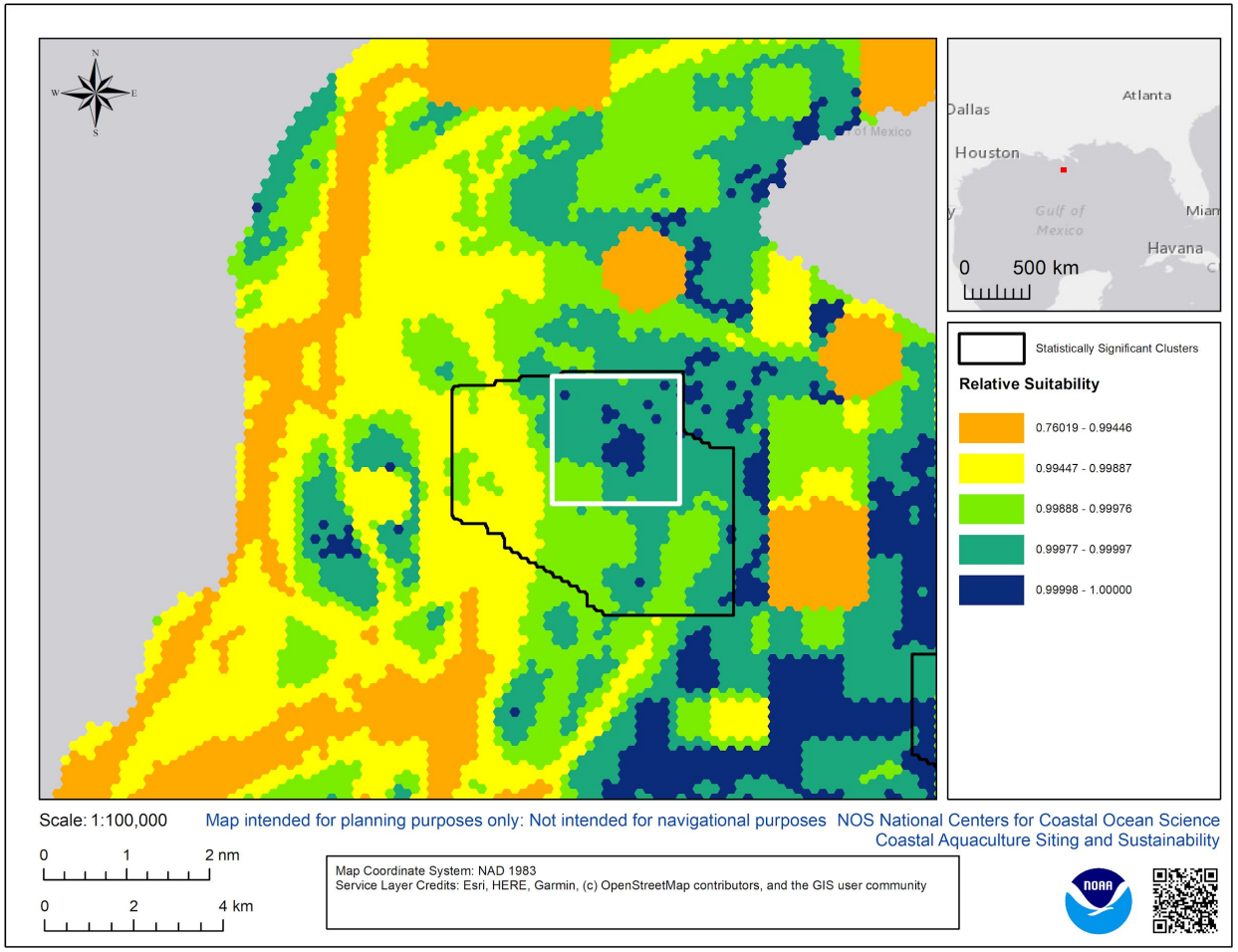
Precision Siting Analysis

Example of how the precision siting model seeks to optimally site a potential AOA

White box is a 2000 acre site



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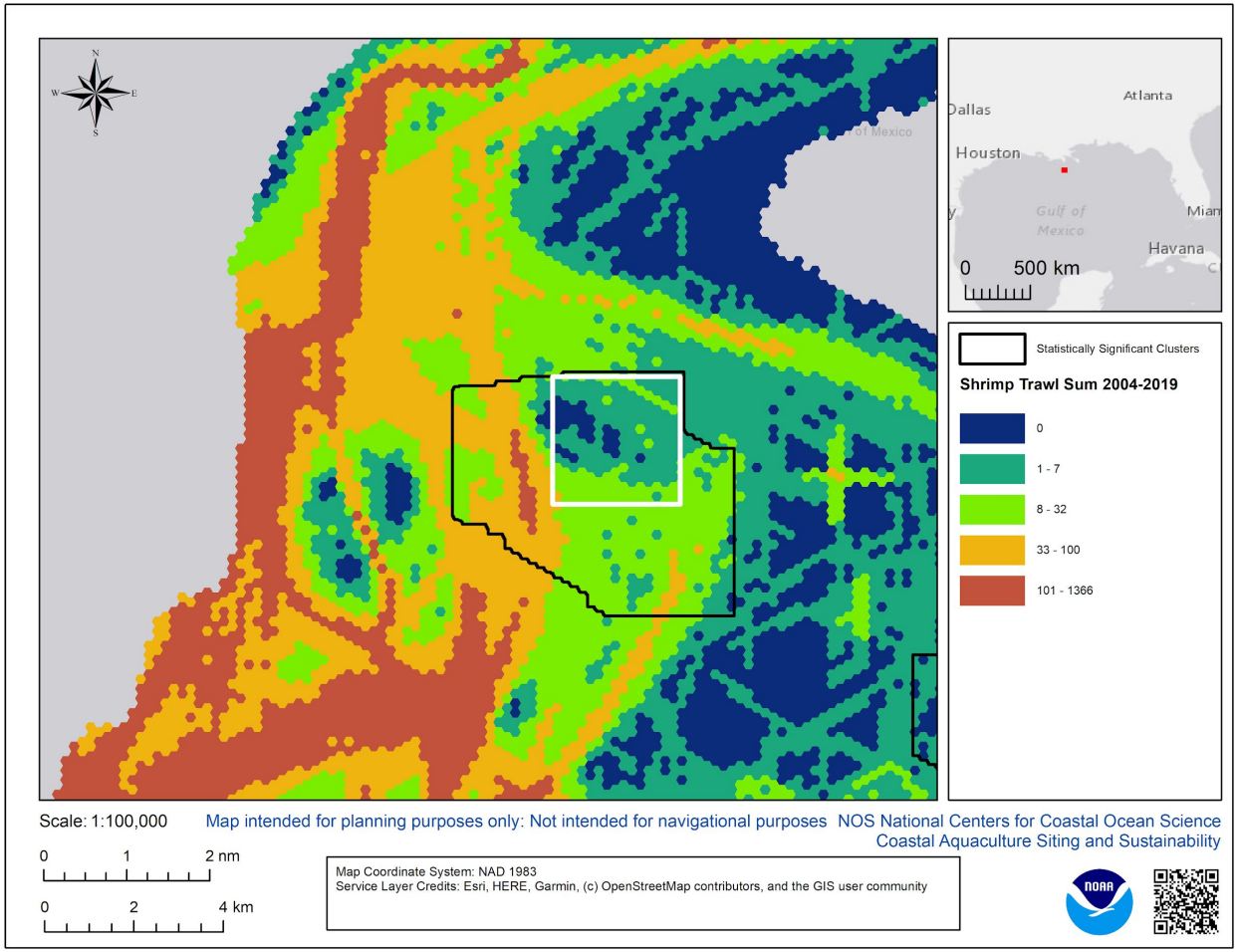
Precision Siting Analysis

Example of how the precision siting model seeks to minimize interactions with **commercial fishing**

White box is a 2000 acre site

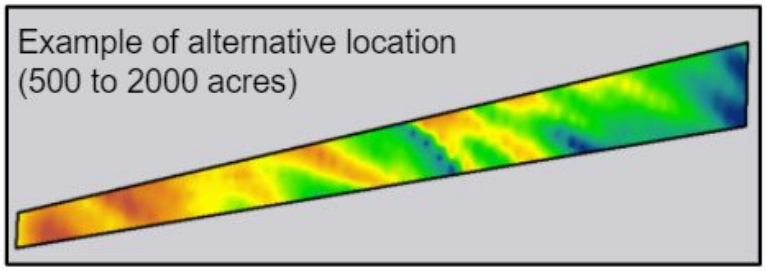


(For Demonstration Only)

Characterize alternative locations

Parameter	Location A	Location B	Location C
Area (Acres)	390	1630	2640
Mean Suitability Score	0.86	0.86	0.84
Mean Bathymetry	44	39	37
Mean Slope	0.30	0.43	0.71
Mean Sediment grain size	0.29	0.68	0.43
Wave Height hours	50	54	68
Temperature hours	3933	3924	3908
Mean VMS Traffic (2009-2019)	23	24	17
AIS 2017 Other vessel transits per 1 ha	1.66	2.31	1.90
AIS 2017 Tug/Tow vessel transits per 1 ha	0.24	0.21	0.33
AIS 2017 Tanker vessel transits per 1 ha	0	0	0
AIS 2017 Pleasure vessel transits per 1 ha	3.66	1.37	1.43
AIS 2017 Passenger vessel transits per 1 ha	1.03	5.50	3.66
AIS 2017 Cargo vessel transits per 1 ha	0	0	0
AIS 2017 Fishing vessel transits per 1 ha	0.43	1.21	2.38
Closest Port	Rye Harbor	Hampton Harbor	Newburyport
EPA Region	1	1	1
Coast Guard District	1	1	1
US Army Corps of Engineers District	New England	New England	New England
Unexploded Ordnance	Yes	No	No

EXAMPLE



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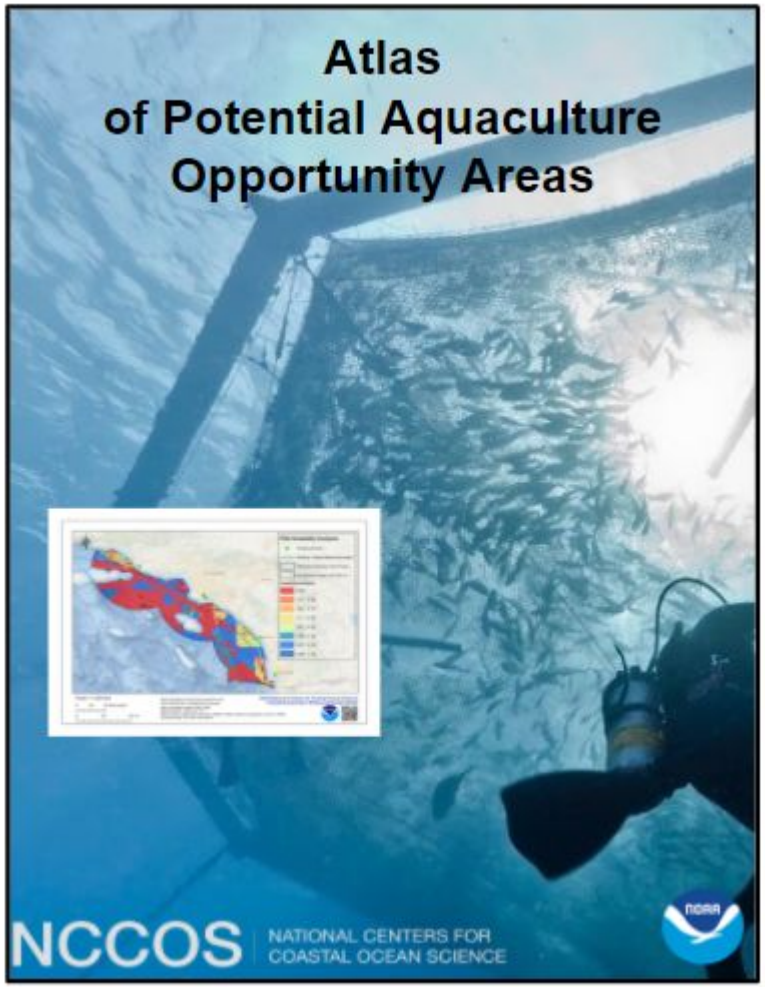
Develop Final Report and Atlas



Important steps:

- Model vetting with stakeholders
- DOD Mission Compatibility Assessment
- Precision siting analysis
- Characterization of alternatives
- Atlas review and revision
- Atlas publication

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Discussion

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