HAWAIIAN HOME LANDS

HAWAIIAN HOMES COMMISSION · DEPARTMENT OF HAWAIIAN HOME LANDS

G-2

Approval of South Molokai Shoreline Erosion Management Plan (SM-SEMP)

December 19-20, 2022

Previous Steps – SM-SEMP

- Updated the Hawaiian Homes Commission (HHC) on the South Molokai Shoreline Erosion Management Plan (SM-SEMP) project at its January 2022 and March 2022 meetings.
- Held a second Focus Group meeting on Zoom on April 5, 2022 to vet preliminary draft recommendations
- Provided project update on Molokai at April 18, 2022 Community Meeting
- Revised preliminary draft recommendations to reflect input received during Focus Group Meeting #2
- Held in-person community open house on Molokai on November 14, 2022 to review findings and recommendations and explore opportunities for beneficiary participation in implementation.
- Bringing Final Draft of SM-SEMP to HHC at its regular meeting in December 2022.

Final Draft So. Moloka‘i Shoreline Erosion Management Plan

Objective and Presentation Topics

Objective: HHC Approval of the Final SM-SEMP

Presentation:

- SM-SEMP purpose
- Planning goal and principles
- Planning process
- Place-based Planning context
  - Location within the ahupua‘a
  - Physical characteristics
  - Human induced change
  - Littoral “beach” cells
  - Sea level rise and erosion issues and challenges
- Shoreline erosion management options
- SM-SEMP recommendations
  - Overall core strategies and actions
  - Site specific recommendations

Final Draft
South Moloka'i Shoreline Erosion Management Plan

SM-SEMP Purpose:

Provide a roadmap to enable DHHL to proactively plan for and manage shoreline erosion.

The plan does this by:

1. Investigating the underlying causes of shoreline erosion, and the likely future progression;
2. Identifying effective and sustainable shoreline erosion management strategies that maintain natural processes and consider community needs; and
3. Educating the community as to the causes of shoreline erosion and appropriate management responses.

Planning Goal:

Work with the beneficiary community to create a shoreline erosion management plan that is informed by Native Hawaiian knowledge and values, is respectful of the project area's unique communities, and leads to a healthier and more resilient shoreline for generations of homesteaders and the broader community.

Planning Principles:

- Traditional Ecological Knowledge
- Ahupuaʻa, Mauka to Makai, Approach
- Place Based (culture, nature, history)
- Littoral Beach Cell – not Parcel by Parcel
- Opportunities for Community Based Implementation

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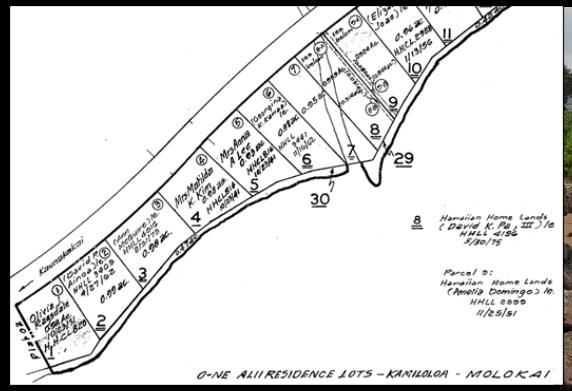
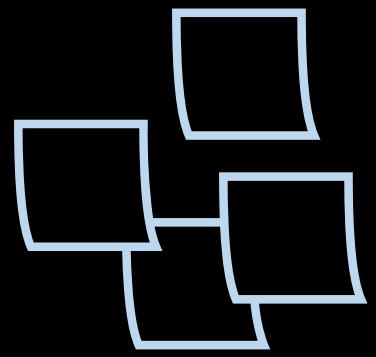
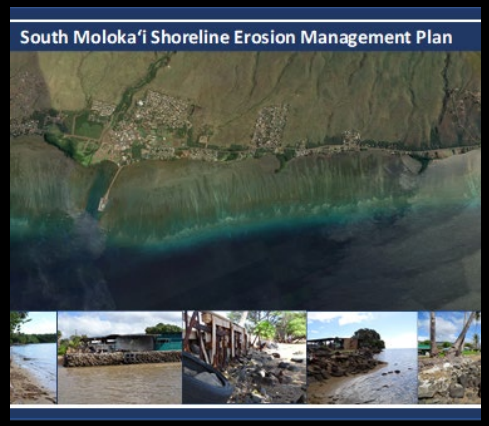
Planning Process:







PHASE 1 Desktop Research	PHASE 2 Field Surveys	PHASE 3 Stakeholder Outreach	PHASE 4 Stakeholder Vetting of Draft Recommendations	PHASE 5 Prepare the Draft and Final SM-SEMP
Document the project area's mo'olelo, history, terrestrial environment, physical coastal processes, and erosion hotspots within the context of the project area's ahupua'a.	Conduct field observations of shoreline conditions to gather valuable background data and photographs of past flooding, shore conditions, shore reference features, and shoreline change.	Work with Hawaiian Homestead beneficiaries, lineal descendants, government, and community stakeholders to identify shoreline erosion threats and appropriate management responses.	Prepare conceptual draft recommendations for vetting by a diverse group of Hawaiian Homesteaders and other stakeholders.	Prepare the Draft and Final SM-SEMP using information generated through the first four phases.

Place-based Planning Context

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Kalama'ula, Kaunakakai (Malama Park) Kapa'akea, Kamiloloa and One Ali'i Hawaiian Home Lands Along the Shoreline that Comprise the Project Area.

Kaunakakai

Malama Park

Kamehameha V Highway

Moloka'i Shores

Kamehameha V Highway

Hotel Moloka'i

Ali'i Fishpond

Kaloko'eli Fishpond

Kalama'ula

Kaunakakai Harbor & Wharf

Kapa'akea

Kamiloloa-One Ali'i

Project Area

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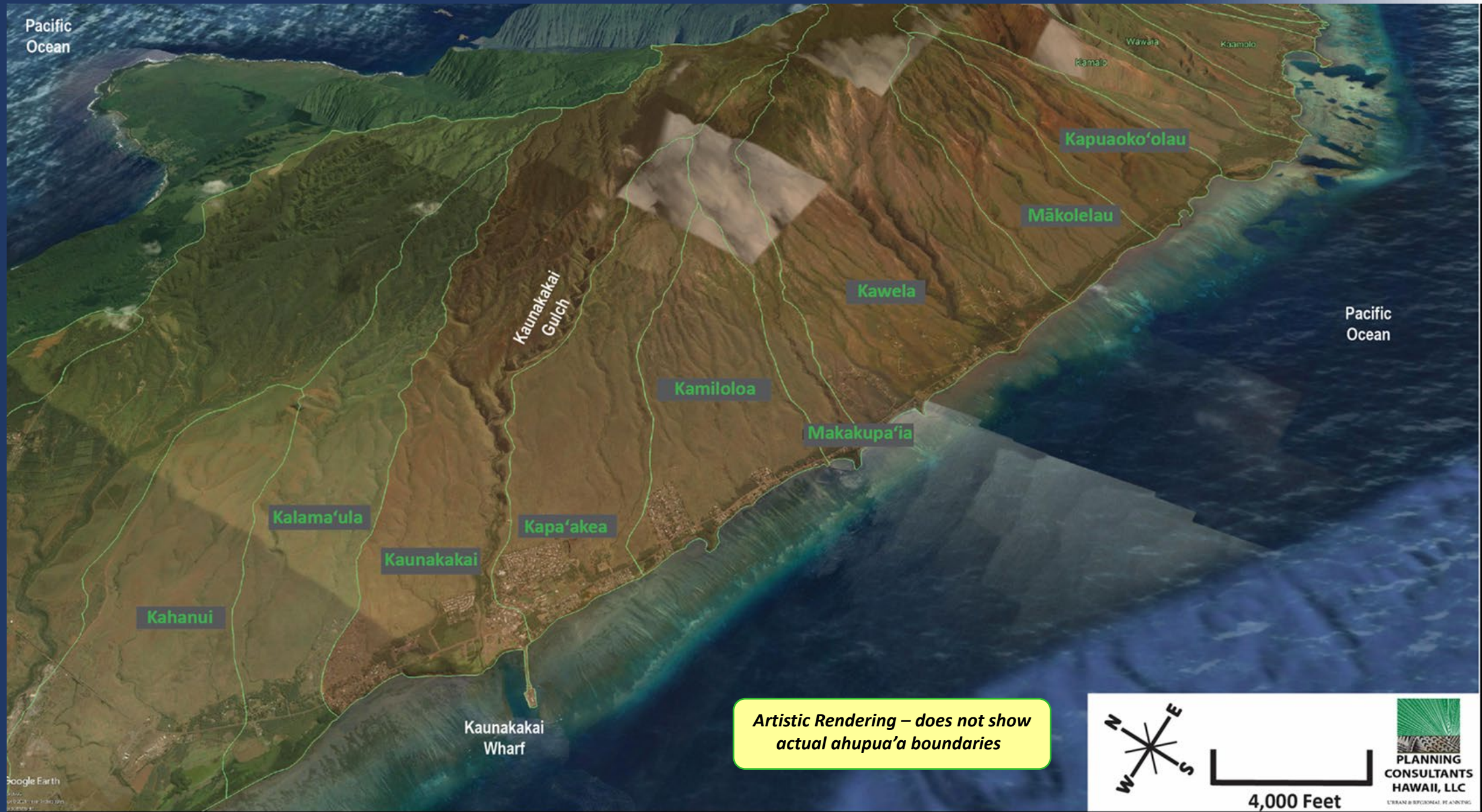
Relation of the Project Area to the Ahupua'a



Artistic Rendering – does not show actual ahupua'a boundaries

N E S W

4,000 Feet

PLANNING CONSULTANTS HAWAII, LLC

Human Induced Change
An Evolving Shoreline

Portion of the Southeastern coast of Moloka‘i with and without fishponds.
(Roberts, Lucile M., 4)

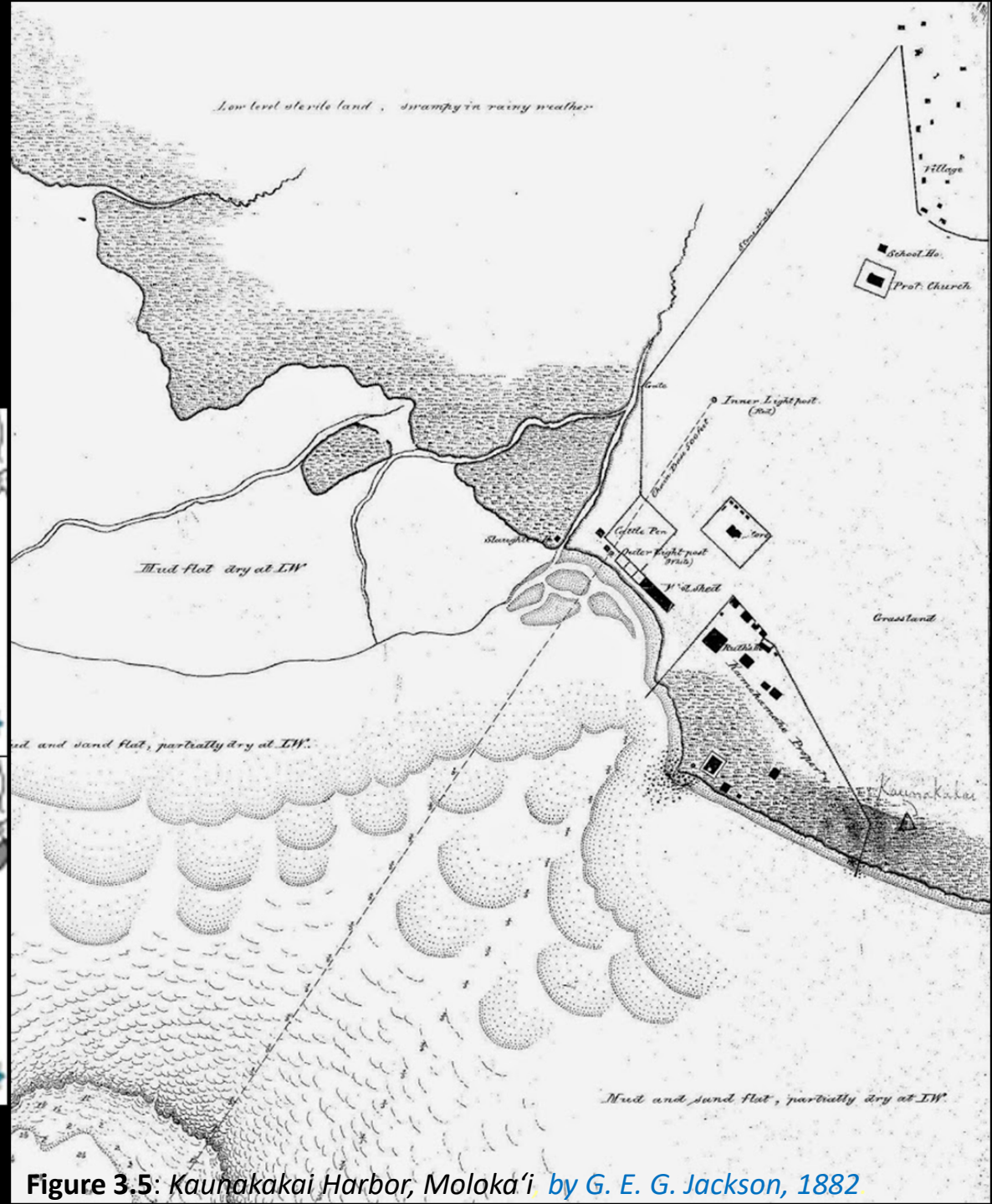
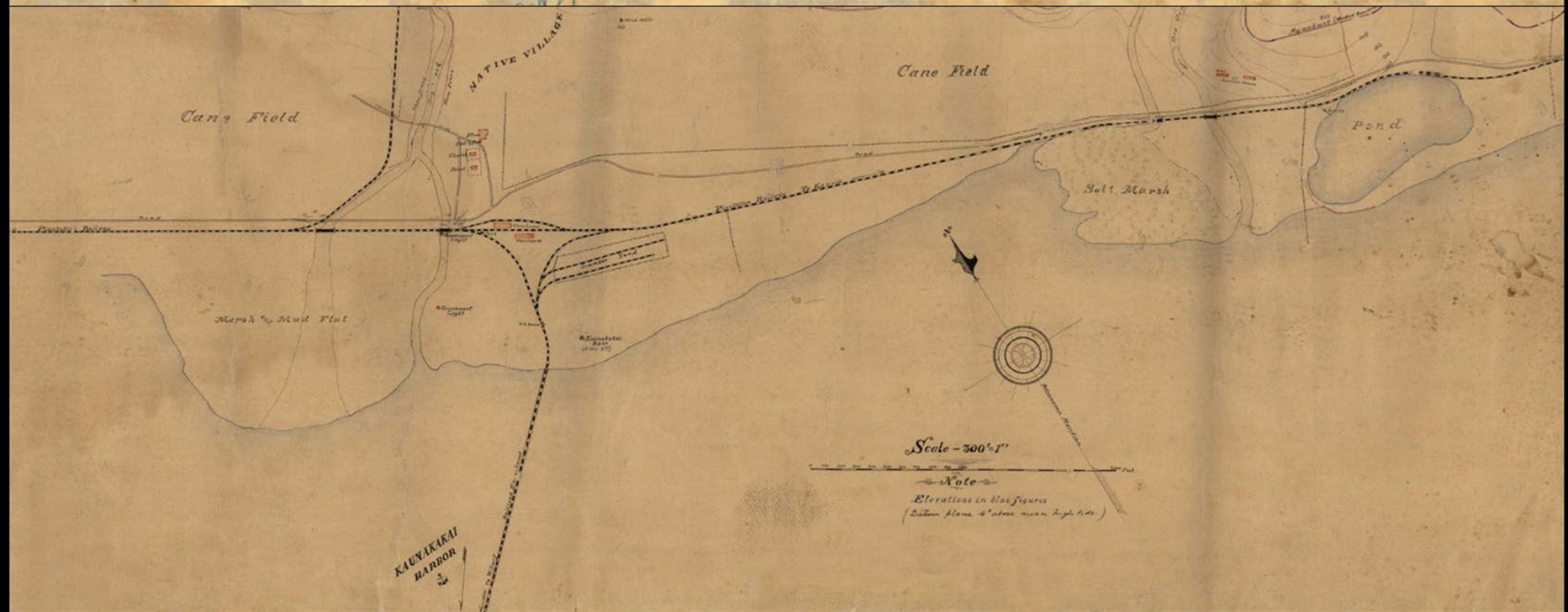


Figure 3.5: *Kaunakakai Harbor, Moloka‘i by G. E. G. Jackson, 1882*

Hawaiian Government Survey, Molokai Middle & West Section, M.D. Monsarrat 1886.



Kaunakakai and Vicinity, American Sugar Co., Molokai Hawaiian Islands, May 1900.

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USGS, aerial imagery of Kaunakakai and adjacent coastline. February 27, 1950.

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Aerial Imagery, South Shore Moloka'i, 2021 (Google Earth Image 2021 Maxar Technologies, Data SOEST/UHM)

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Littoral "Beach" Cells

A - D

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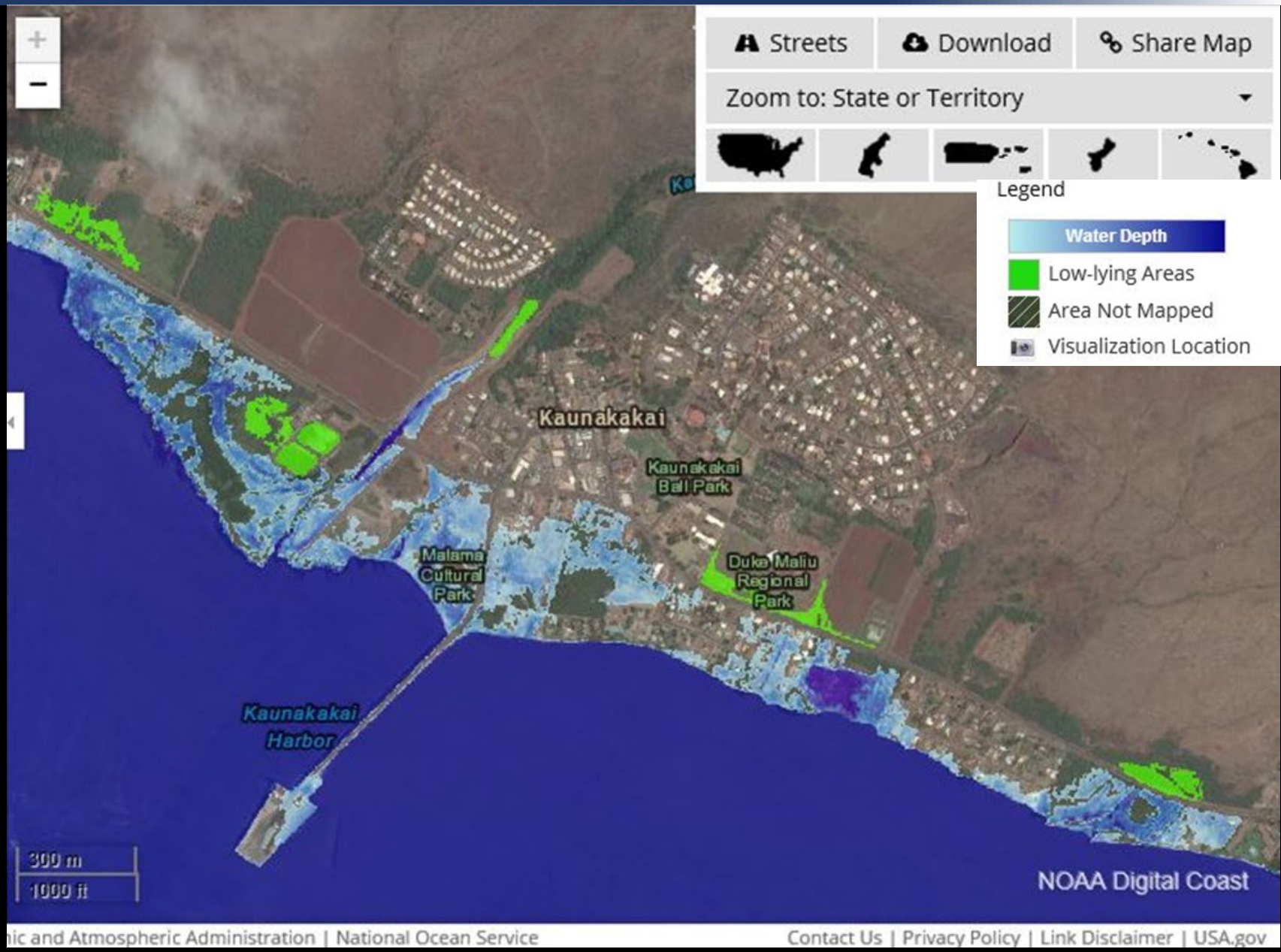
Sea Level Rise Issues and Challenges

- Coastal flooding and erosion
- Impact on community infrastructure such as Kamehameha V Highway and parks
- Loss of land and structures
- Damage to property
- Cesspool and septic system failure
- Impact on native flora and fauna
- Impact on cultural resources
- Access to and along the shoreline
- Diminished coastal water quality



Sea Level Rise and Coastal Flooding Impacts – Sea Level: + 3 ft MHHW

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Realign

Accommodate

Protect

Shoreline Erosion Management Options

1. Adaptive realignment

   Relocate, reorient, reposition, retreat, redevelop & rebuild

2. Hazard accommodation

   Elevate, reconfigure, waterproof, reinforce & strengthen

3. Protection from coastal hazards

   Nature-based restoration, rock sill & sedge, dry stack wall, rubble mound, groin, revetment & seawall

Adaptive Realignment

- ***Relocate*** or ***Rebuild*** on higher locations of a property
- ***Reorient*** dwellings and ***Reposition*** buildings to be perpendicular to the shore rather than parallel to it
- ***Reposition*** buildings to reduce exposure to coastal hazards
- ***Retreat*** to mauka lands
- ***Redevelop*** further inland and out of harm's way

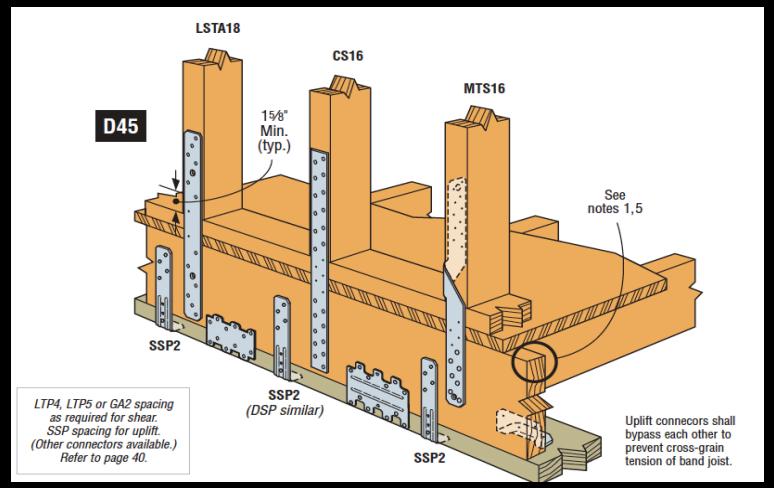
Hazard Accommodation

- ***Elevate*** the building allowing the building to be removed if threatened and use the first floor for parking and live upstairs.

- ***Reconfigure*** a dwelling so that the kitchen, major appliances, and utilities are on the mauka or inland side of a house

- ***Prohibit*** or ***Limit*** slab on grade construction in flood and sea level rise inundation zones

- ***Reinforce*** and ***Retrofit*** dwellings to ***strengthen*** the building with hurricane clips and continuous load path to minimize damage



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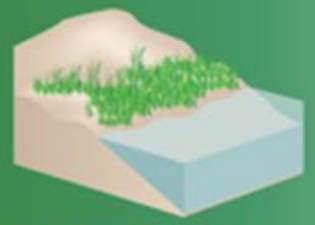
Protection from Coastal Hazards

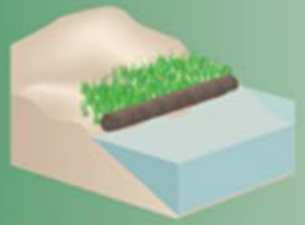
GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES

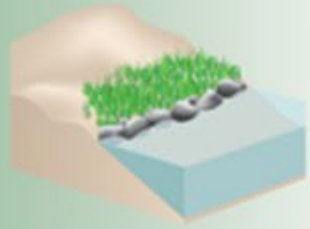
Living Shorelines



VEGETATION ONLY - Provides a buffer to upland areas and breaks small waves. Suitable only for low wave energy environments.

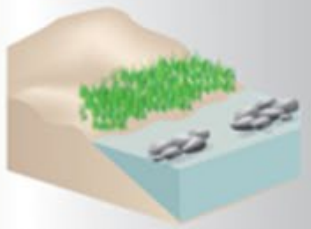


EDGING - Added structure holds the toe of existing or vegetated slope in place.

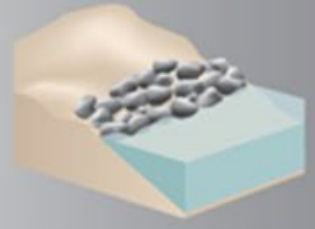


SILLS - Parallel to existing or vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.

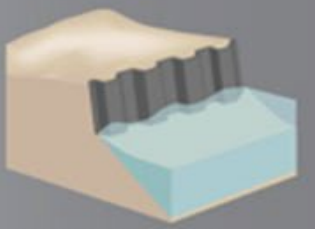
Coastal Structures



BREAKWATER - (vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.



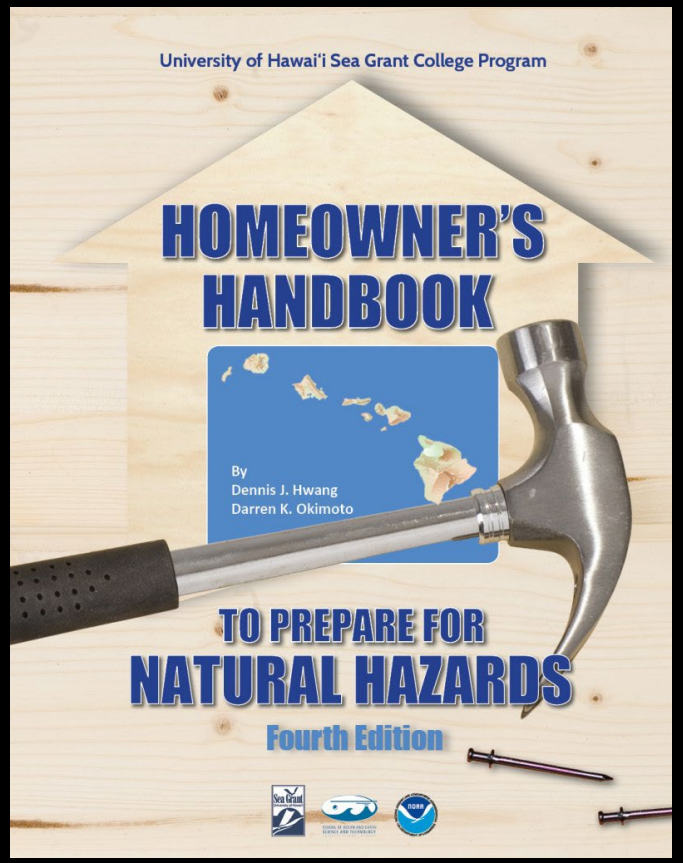
REVETMENT - Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with pre-existing hardened shoreline structures.



BULKHEAD - Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for areas highly vulnerable to storm surge and wave forces.

Additional Community Outreach

- *Lā Pilina Community Resilience Event on Nov. 12, 2022 at Mitchell Pauʻole Center, Kaunakakai*
- *SM-SEMP Community Open House on Nov. 14, 2022 at Kūlana ʻŌiwi Hālau, Kalamaula*
- *Distributed copies of "Homeowner's Handbook to Prepare for Natural Hazards" Fourth Ed., Hwang & Okimoto*
- *Shared info on Shoreline Erosion Strategies and Recommendations*
- *Provided sign-up sheet for beneficiaries interested in participating in implementation projects*



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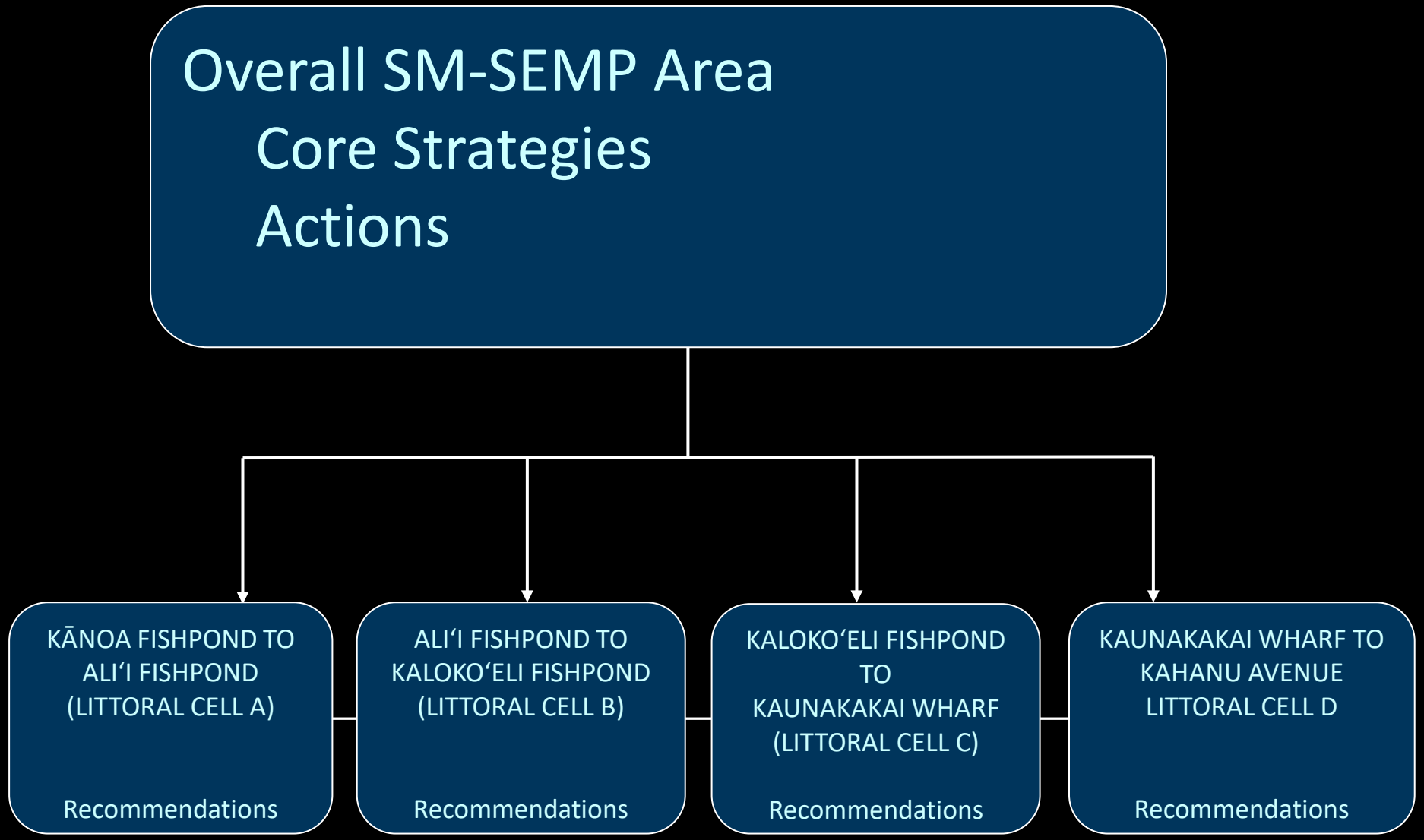

Final Draft So. Molokaʻi Shoreline Erosion Management Plan
Overall SM-SEMP Core Strategies and Action Highlights

CORE STRATEGIES	Action Highlights[1]
Restore natural shoreline function.	• Remove and replace invasive plants and trees with climate adapted, drought tolerant native grasses, shrubs, and trees such as ʻakiʻaki grass, pōhuehue, naupaka, and milo. • Develop a detailed vegetation management plan to guide shoreline and dune restoration within the SM-SEMP Area. • Remove man-made debris between the high and low water line including tires, appliances, vehicle parts, concrete and asphalt rubble, CMU blocks, pallets, steel and plastic drums, and other non-indigenous materials and dispose of it properly.
Educate beneficiaries on the causes and consequences of sea level rise and coastal erosion, including appropriate mitigation measures.	Provide beneficiaries living in flood prone areas with the following information: • "Answers to Questions about Substantially Improved / Substantially Damaged Buildings", FEMA publication 213, August 2018. • "Homeowners Handbook to Prepare for Natural Hazards" 4th Edition, by Dennis Hwang and Darren Okimoto, Sea Grant, University of Hawaiʻi. • Flood zone and sea level rise exposure maps.
Strengthen the regulation and management of shoreline resources.	• Recommend consistency with identified State of Hawaiʻi and Maui County regulations governing buildings and construction, the shoreline, and flood hazard areas. • Recommend consistency with Federal and State DLNR regulations regarding shoreline surveys, armoring, and coastal construction on submerged lands.

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Adapt structures and systems to better withstand coastal hazards.	• Require new dwellings to be elevated above flood hazard zones (base flood elevation, SLR inundation) by more than one foot in elevation (freeboard). • Encourage lessees to reconfigure dwellings by moving the kitchen mauka and elevating food preparation areas so that stove, refrigerator, and appliances are elevated or located at the highest, driest part of the property. • Convert cesspools to septic systems wherever feasible to reduce the risk of contaminated water and protect beneficiary health.
Prepare for the relocation, or retirement, of structures out of areas threatened by sea level rise and coastal erosion.	• Prepare a community-based plan for the relocation of vulnerable buildings, infrastructure, and public facilities away from area's threatened by sea level rise and/or coastal erosion. • Prepare and implement a planned obsolescence strategy for infrastructure at risk of damage from SLR, coastal erosion, and flooding including roads, drainages, wastewater treatment, and centralized utility systems and services.

[1] This table includes a sample of the SM-SEMP's highlighted actions. A complete list of the SM-SEMP's actions is in Chapter 6.

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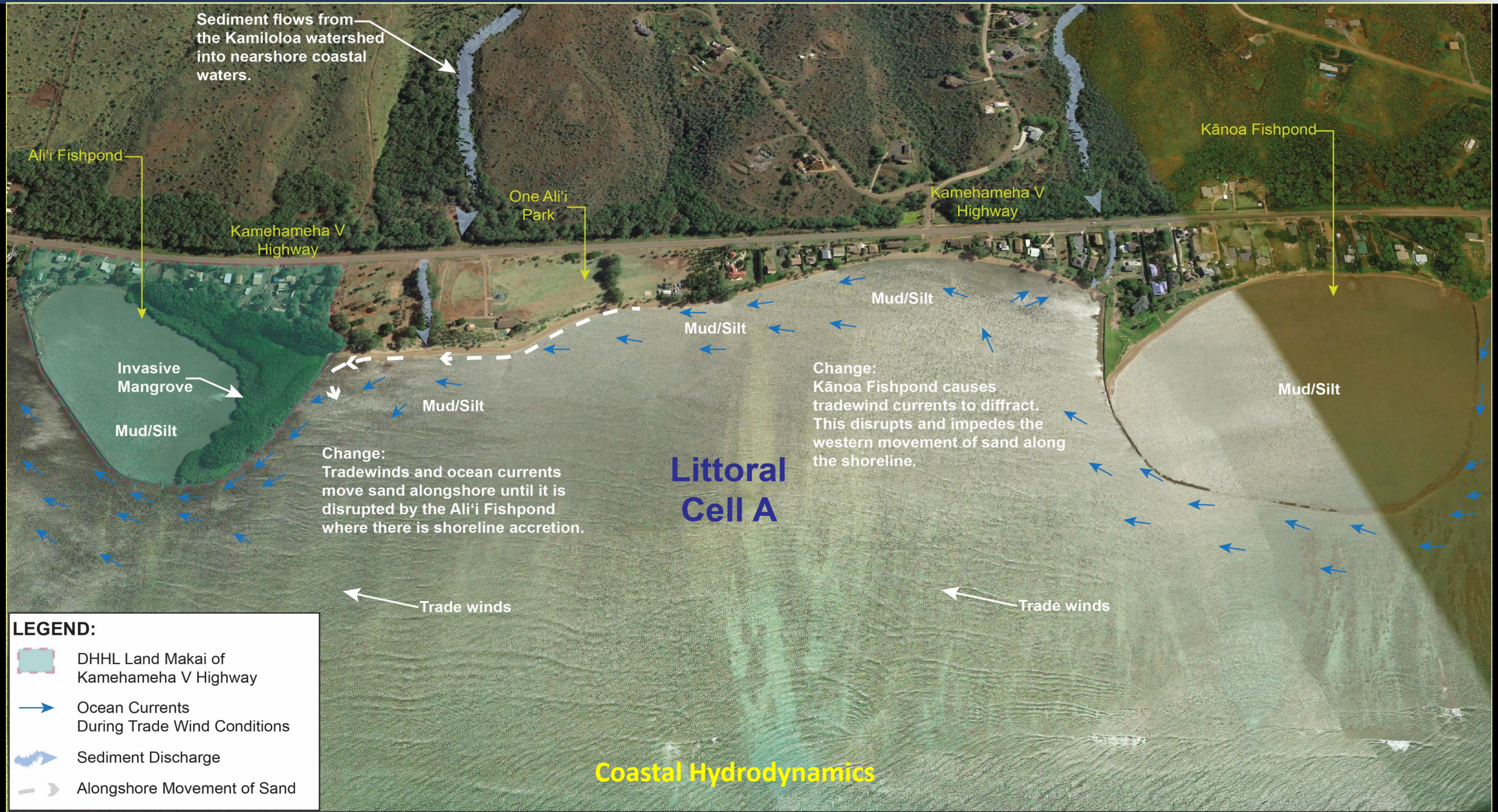

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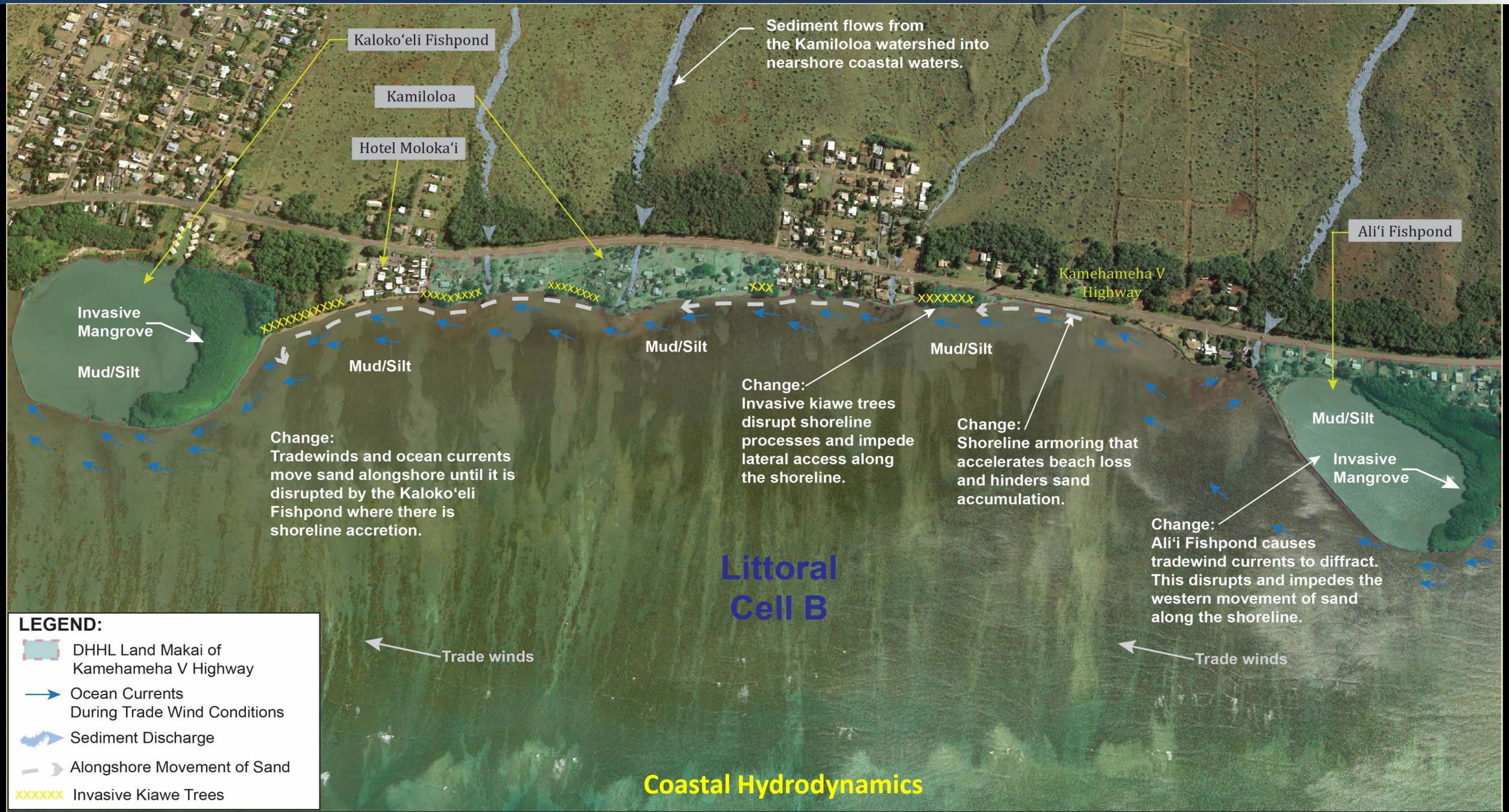

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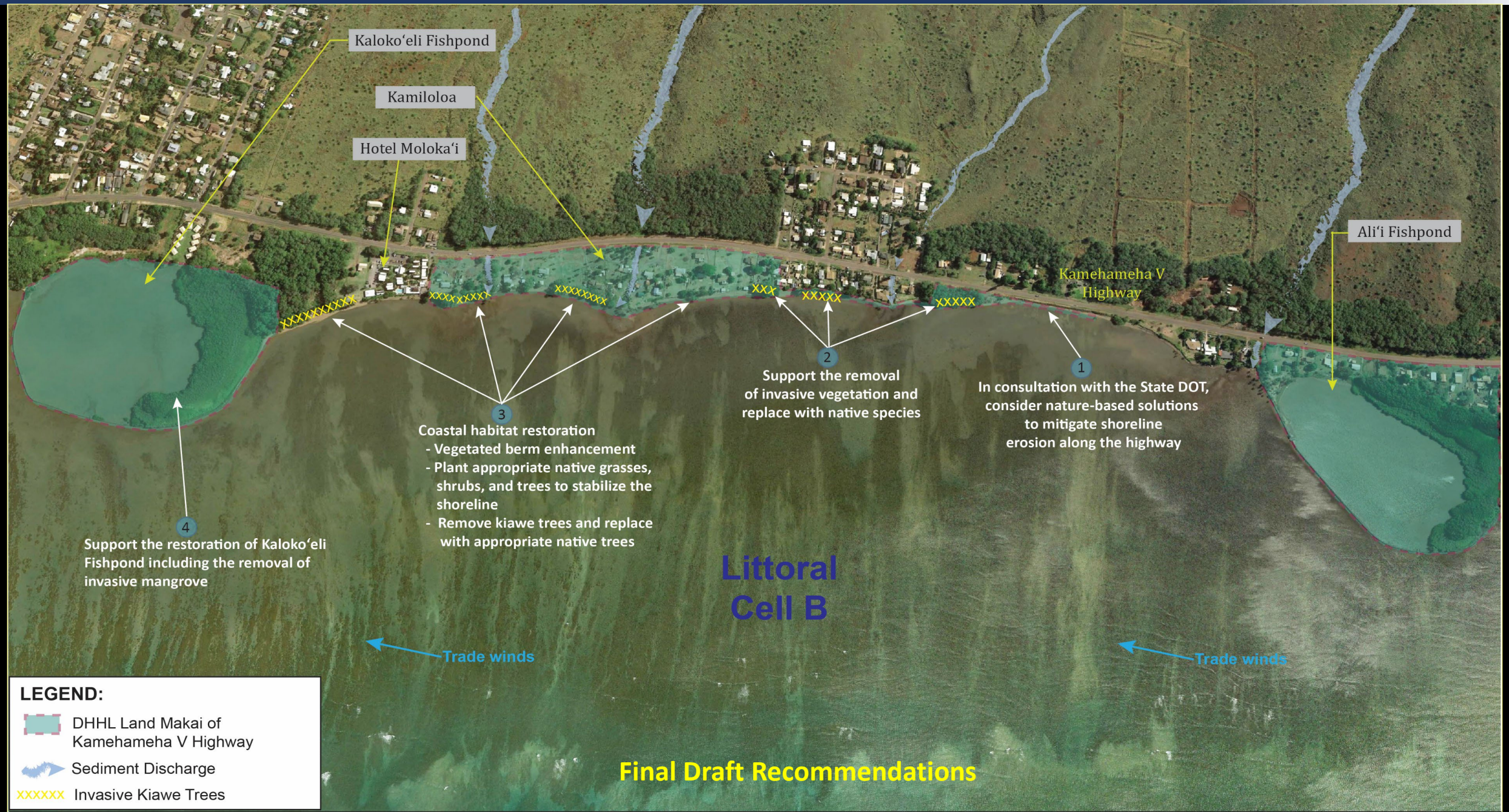

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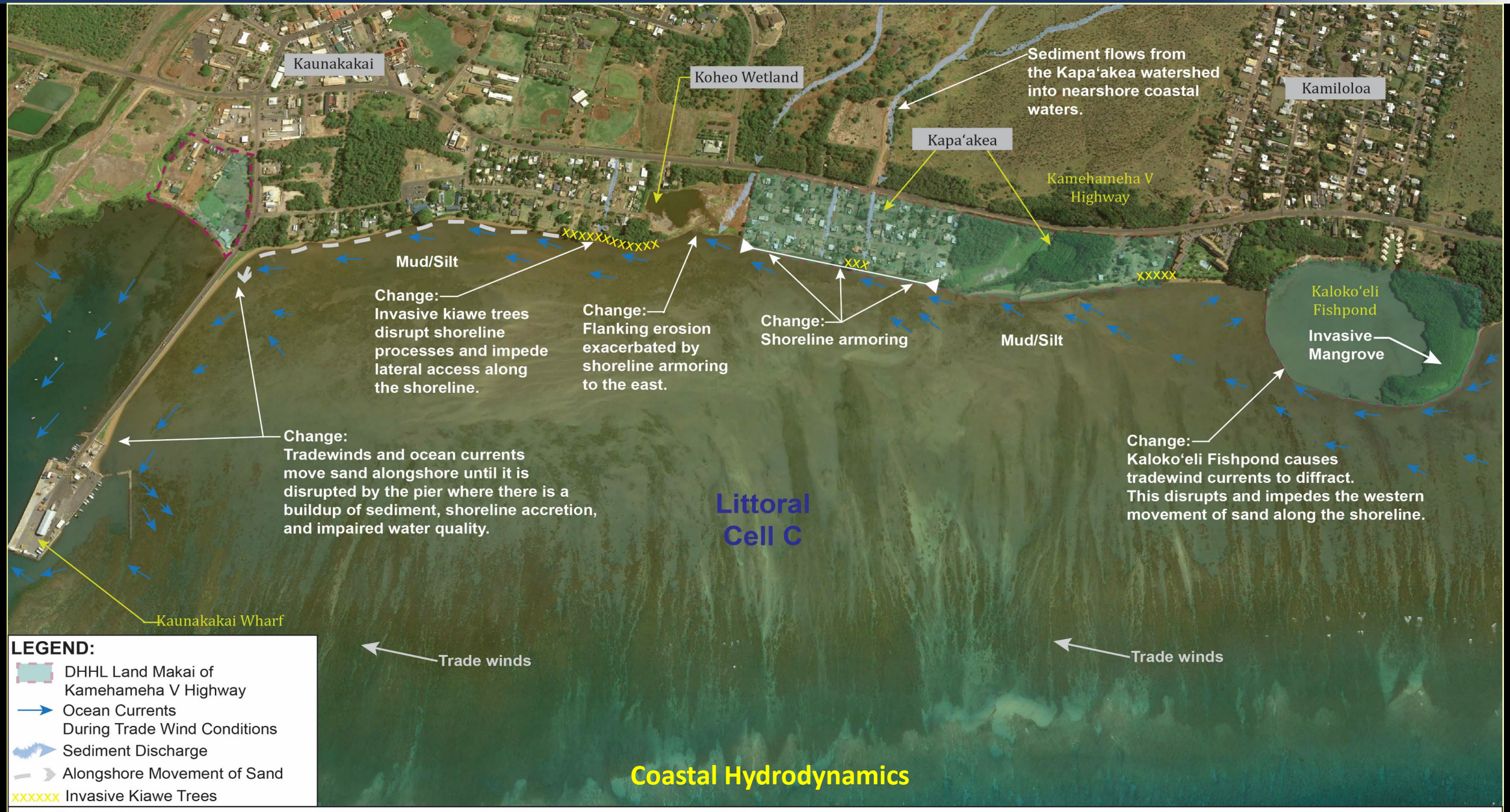

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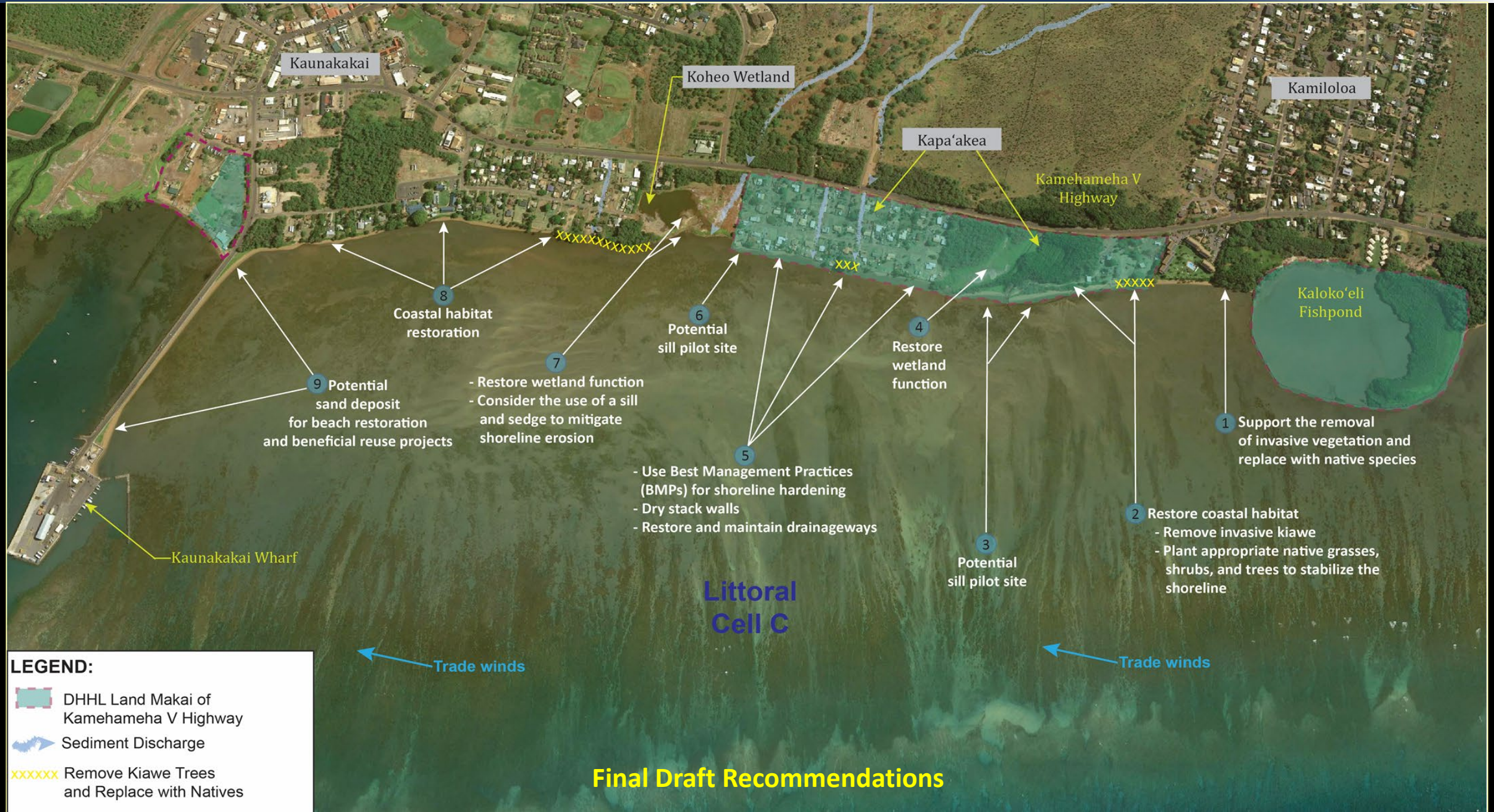

Final Draft Recommendations

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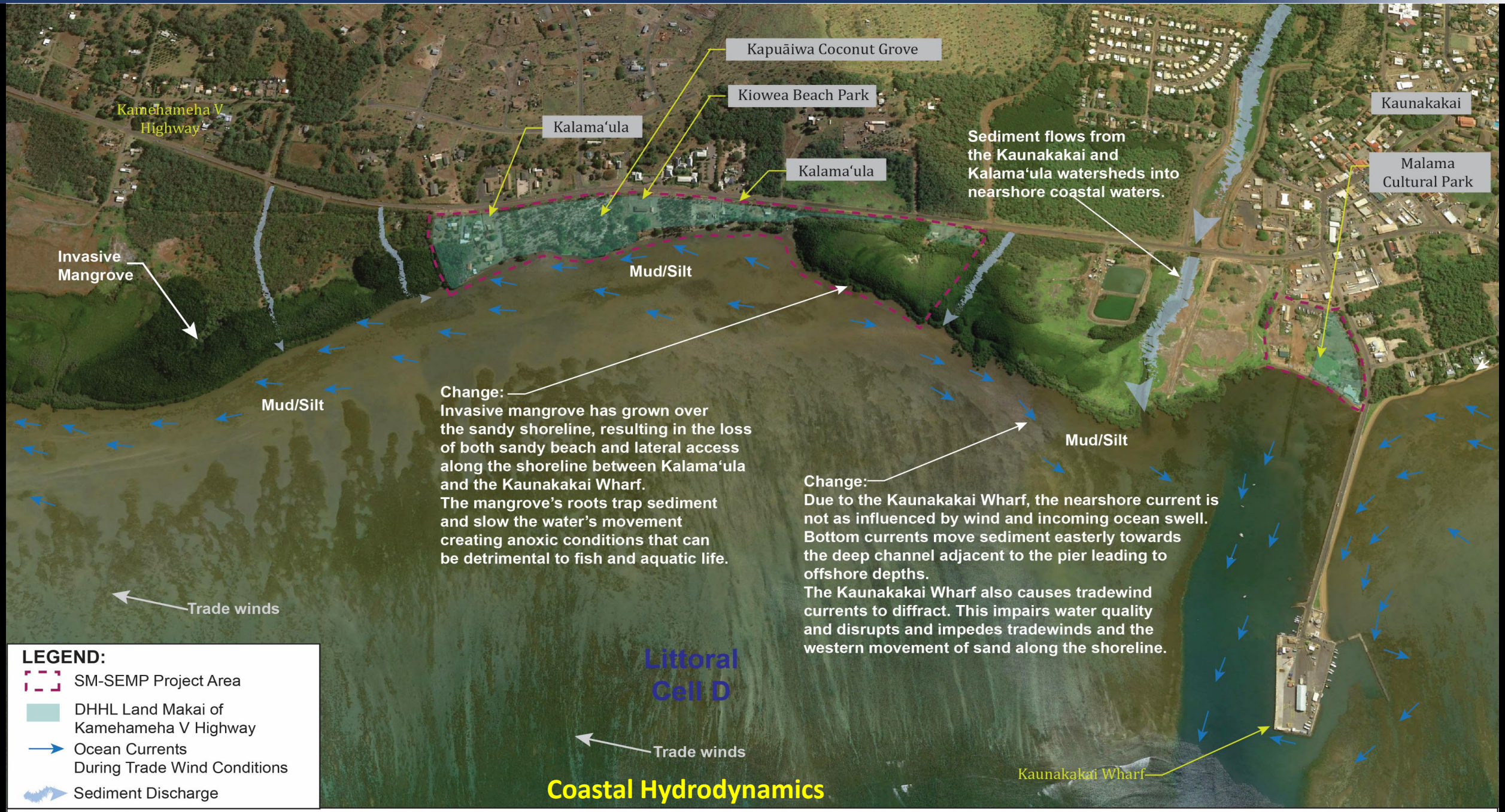

Coastal Hydrodynamics

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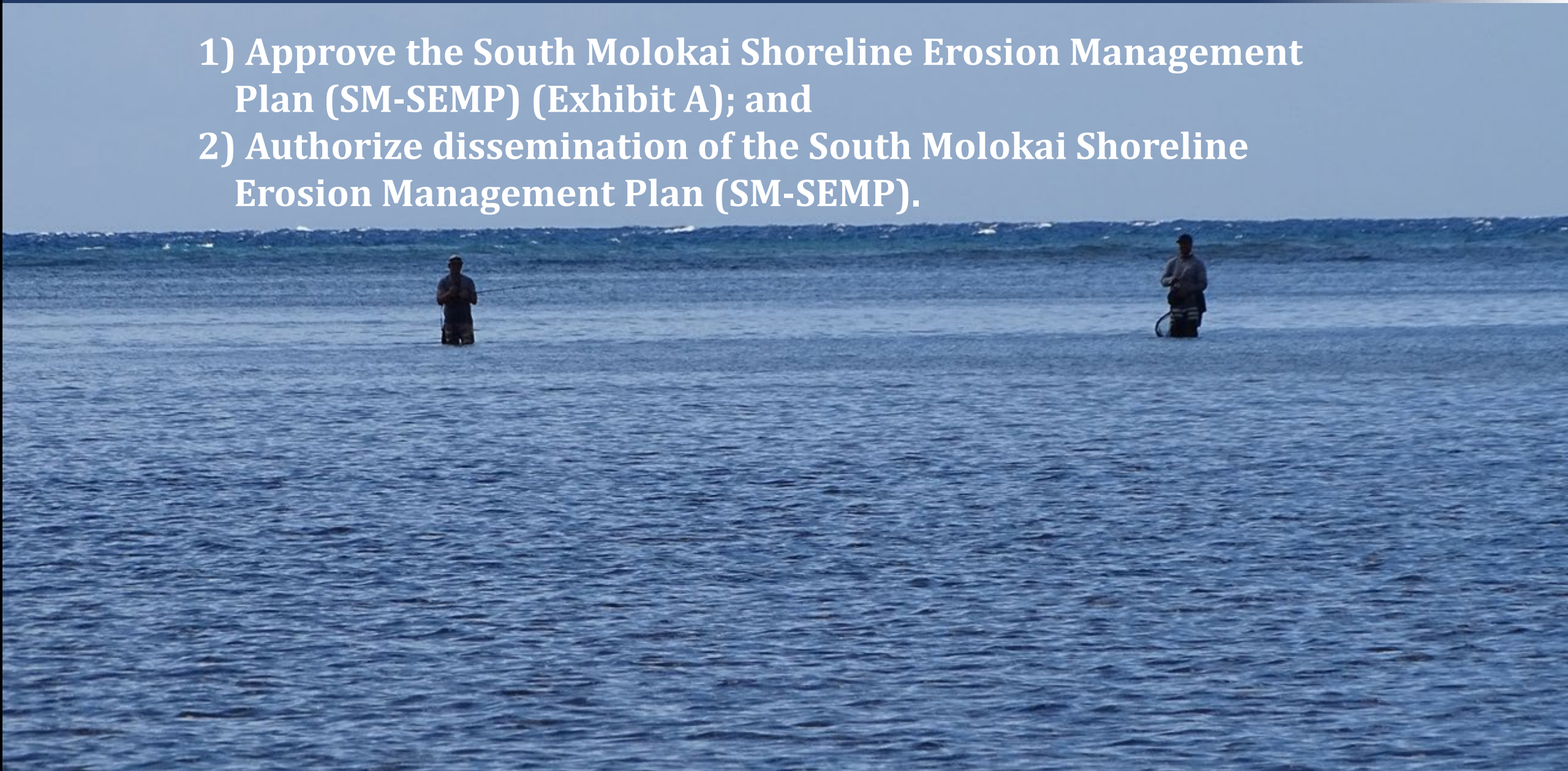
Final Draft Recommendations

RECOMMENDED ACTION

1) Approve the South Molokai Shoreline Erosion Management Plan (SM-SEMP) (Exhibit A); and
2) Authorize dissemination of the South Molokai Shoreline Erosion Management Plan (SM-SEMP).



NEXT STEPS

- Finalize Plan
- Distribute Plan
- Procure consultant for "Developing Community Resilience for Molokai Coastal Homesteads" project (2023-2025)
- Send newsletter update to South Molokai beneficiary community in 1st quarter 2023.
- Conduct additional site visits and meet with coastal homestead community stakeholders to coordinate implementation of nature-based solutions for shoreline erosion
- Meet internally to discuss longer-term strategies to address chronic shoreline erosion