

# Maui Regional Sediment Management Plan

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Moffatt & Nichol

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# Maui Regional Sediment Management Plan

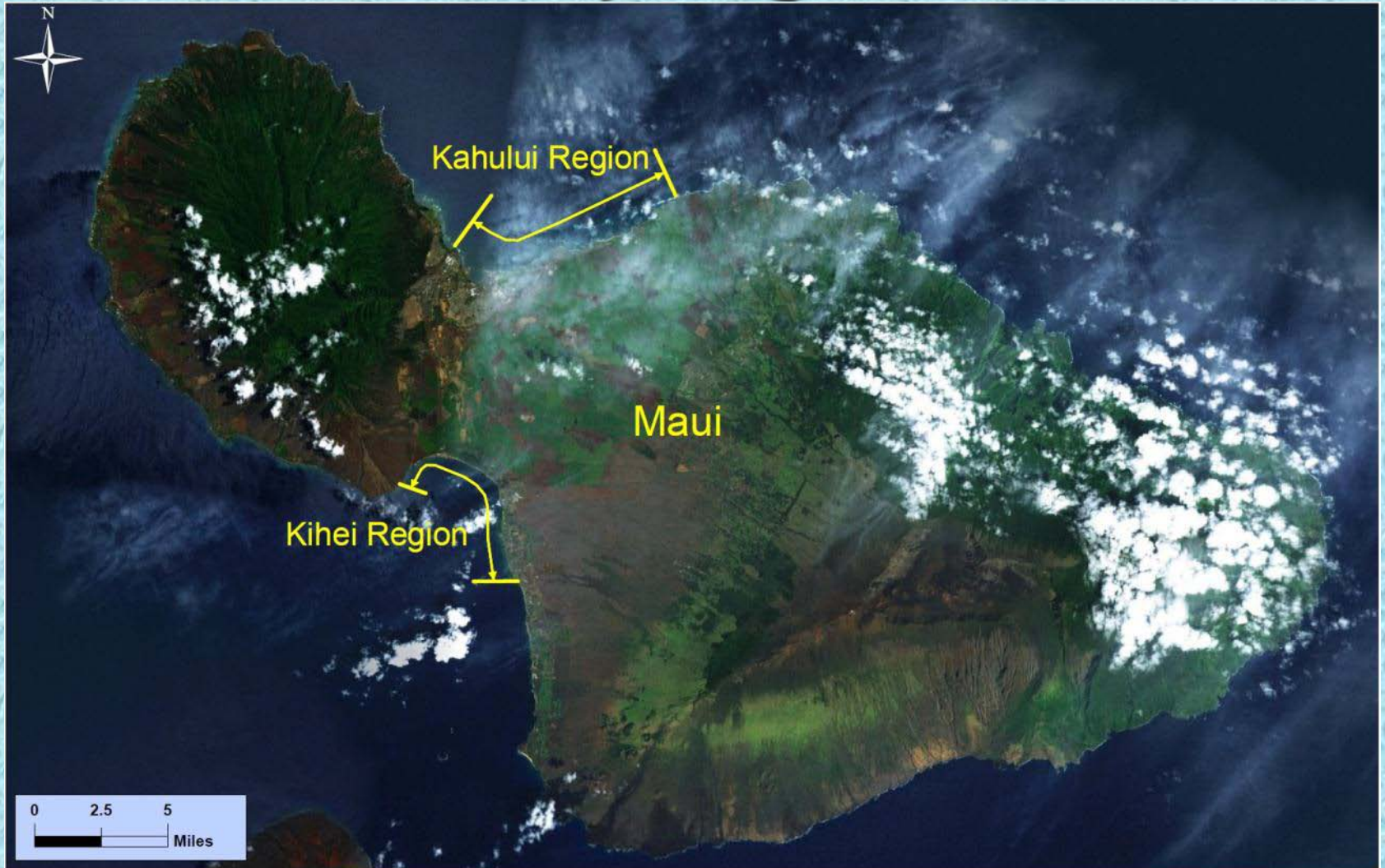
- Study Regions
- Results from Technical Studies
- Potential RSM Projects
- Regulatory and Coordination Issues
- Conclusions/RSM Plan Contents

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# Study Regions

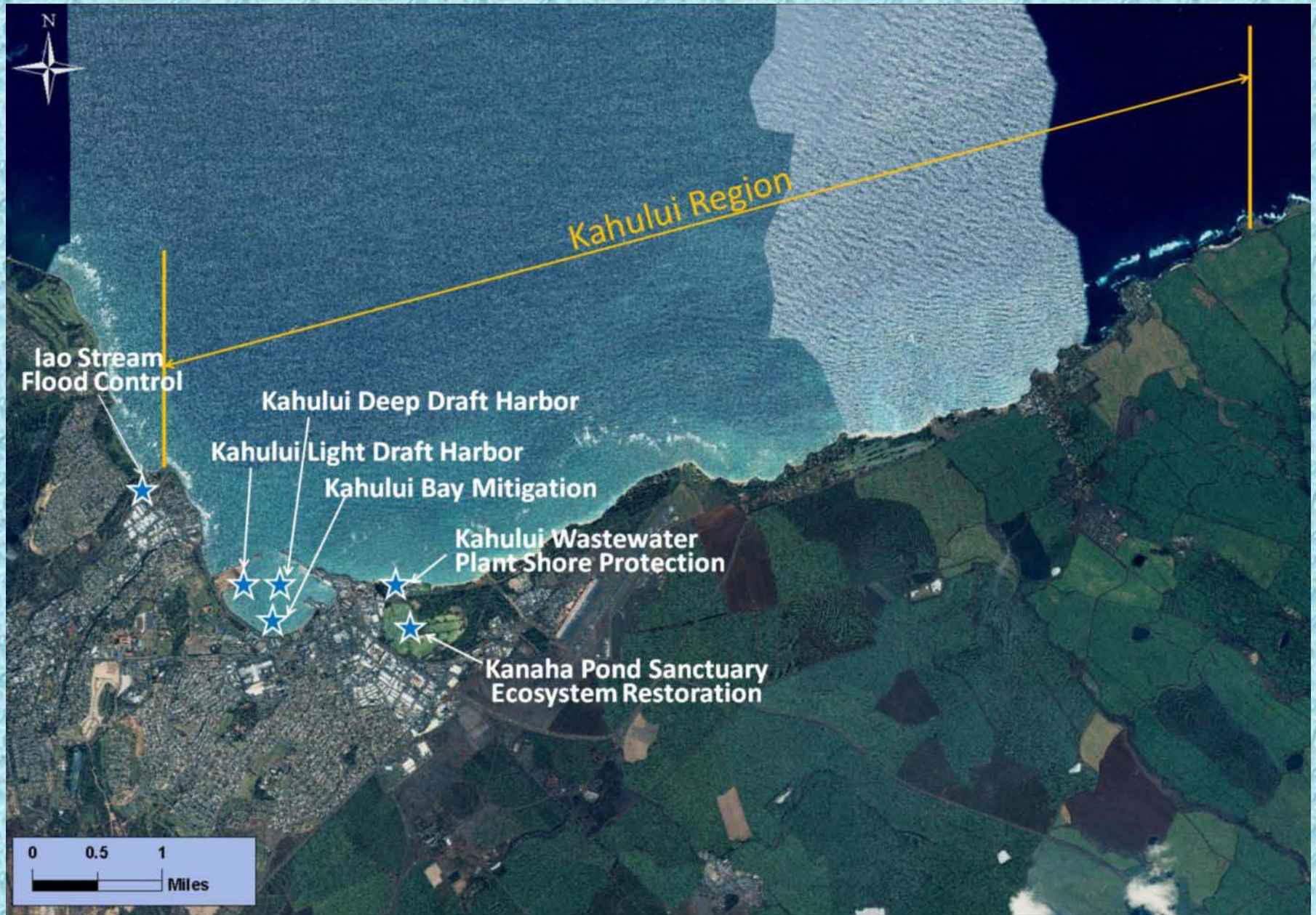


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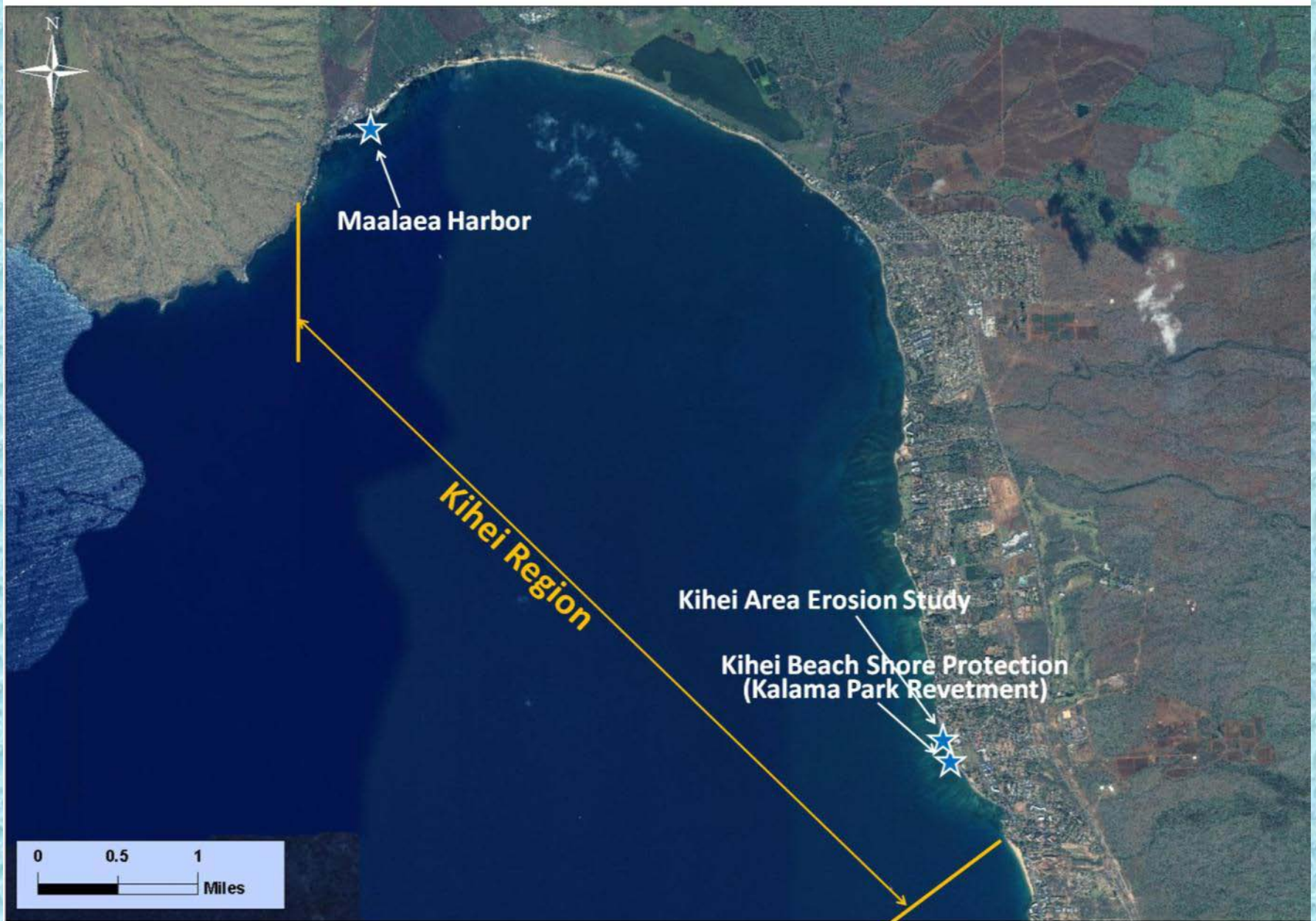
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# Existing Federal Projects – Kahului Region



# Existing Federal Projects – Kihei Region



# Technical Study Results

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# Sediment Budget – Kahului Region

- **Kanaha Beach-WWRF area and Baldwin Park beaches have historically high historic erosion rates**
  - However, since ~1976, Baldwin Park erosion rate relatively low.
- Kanaha Beach erosion rate has gotten worse

Kahului Region Littoral Cell	<b>Current Accretion (+) / Erosion (-) Rate, cubic yards per year</b>
Paukukalo	<b>0</b>
Kahului Harbor	<b>-800</b>
Kanaha Beach - Total	<b>-10,550</b>
Spreckelsville	<b>-2,400</b>
Baldwin Park	<b>-400</b>
Paia East	<b>-500</b>
Hookipa	<b>0</b>



Sources  
ct

# Sediment Budget – Kihei Region

- Currently, Kealia and Kalama cells have highest erosion rates.
- North Kihei accreted from 1997 to 2007 (but based on only two data points); previous to 1997, this cell had erosion rate of -2,400 cy per year.
- Since 1950s, erosion rates for West Maalaea, Maalaea Bay Beach cells have decreased (improved).

Kihei Region Littoral Cell	Current Accretion (+) / Erosion (-) Rate cubic yards per year
West Maalaea	+50
Maalaea Harbor	0
Maalaea Bay Beach	-800
Kealia	-2,800
North Kihei	+9,400
Kawililipoa Beach	+1,200
Kalama	-1,600



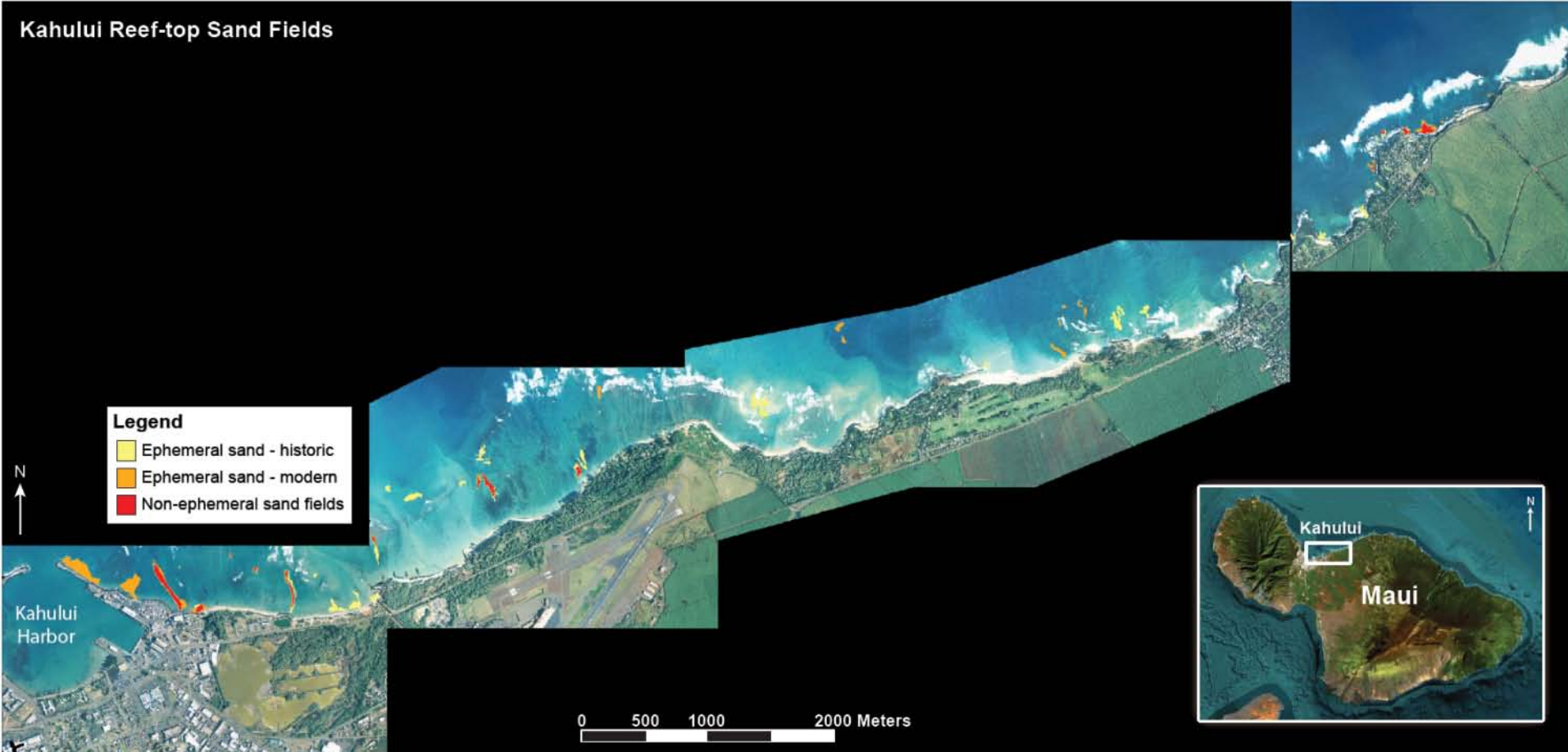
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# UH Sand Investigation Results

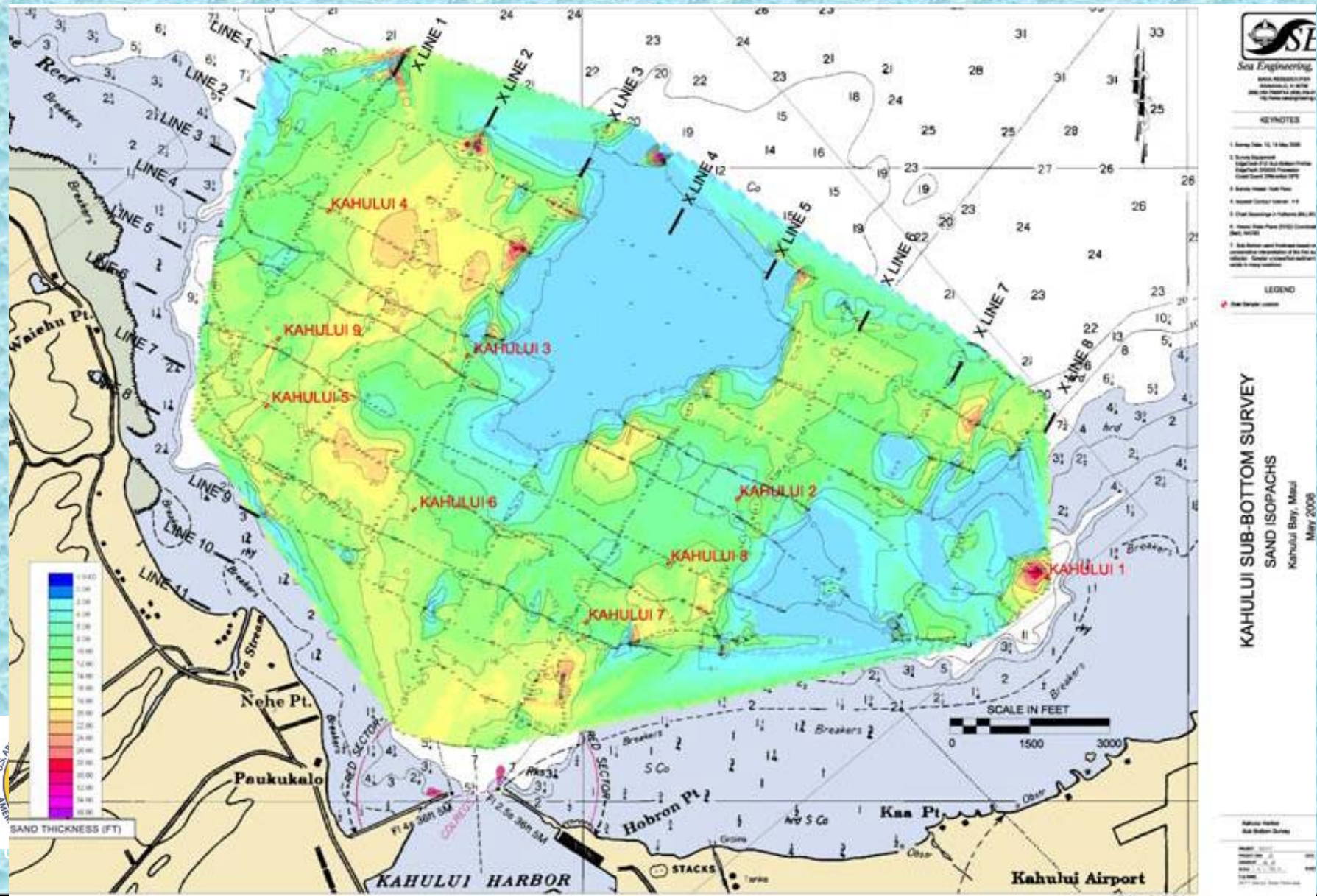
## Kahului Region Offshore Sand Sources: ~7.8 acre (not including additional area offshore of Kahului Harbor)



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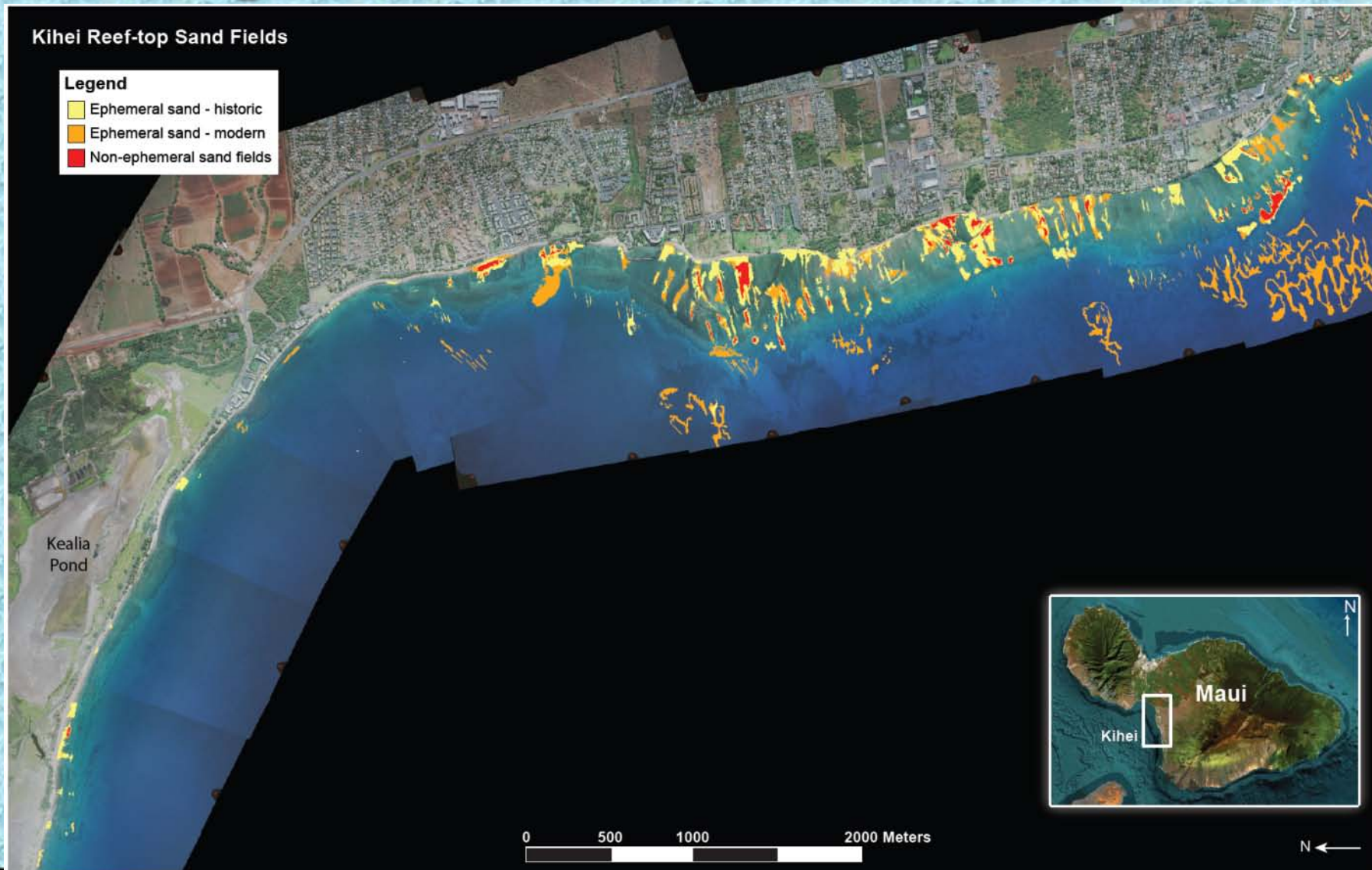


# Sea Engineering Sand Investigation Results – Kahului Harbor



# UH Sand Investigation Results

## Kihei Region Offshore Sand Sources: ~13.8 acres



# Regulatory and Coordination Issues

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# Regulatory and Coordination Issues

- **Bodies Regulating Beach Nourishment**

- Federal: USACE (Clean Water Act, River and Harbor Act), USFWS, NMFS
- State: DLNR (Coastal Zone Management Act, work offshore of certified shoreline), Dept of Health (Clean Water Act), Historic Preservation Office, Office of Hawaiian Affairs, Dept of Transportation - Highways Division, Harbors Division
- Local: County of Maui - Public Works, Planning Dept, Planning Commission

- **Inter-Agency Coordination is Critical to Efficient Permitting**



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# Regulatory and Coordination Issues

- 2005: DLNR and USACE issued a State Programmatic General Permit (SPGP)
  - Streamlined small scale beach nourishment (< 10,000 cy) in the State of Hawai'i
  - **State Dept of Health Section 401 Water Quality Certification component has lapsed**
- Consolidated permits within DLNR
  - Department of the Army, SPGP
  - State Dept of Health Section 401 Water Quality Certification
  - State CZM Federal Consistency Review
  - DLNR Conservation District Use Permit.

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# Regulatory and Coordination Issues

- **Local Coordination**

- Sprecklesville Beach Restoration Foundation has already completed beach nourishment projects
- County of Maui Wastewater Reclamation Division at WWRF

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# Conclusions



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# Maui RSM Plan Contents For Each Region

- Existing Federal Projects
- Coastal Processes
- Wave Climate
- UH Shoreline Erosion Maps
- Beach Profiles
- Shoreline Features (Maps and Descriptions)
- Beach Volume Graphs
- Beach Volume Change Rates
- Historical Events Chronology
- Ocean Sand Sources
- Potential RSM Projects

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# Summary

- Beach Nourishment may be Viable
- Potential RSM Projects Identified



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# MAUI REGIONAL SEDIMENT MANAGEMENT

## POTENTIAL RSM PROJECTS

### KIHEI



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# Potential RSM Projects

- **Kihei Region**
  - **Kihei Beach Hurricane and Storm Damage Reduction / Beach Nourishment**



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# Kihei Beach Potential RSM Project

- Area has high potential for hurricane and storm damage reduction benefits
- Beach nourishment of 358,000 cy over approximately 5 miles of shoreline.

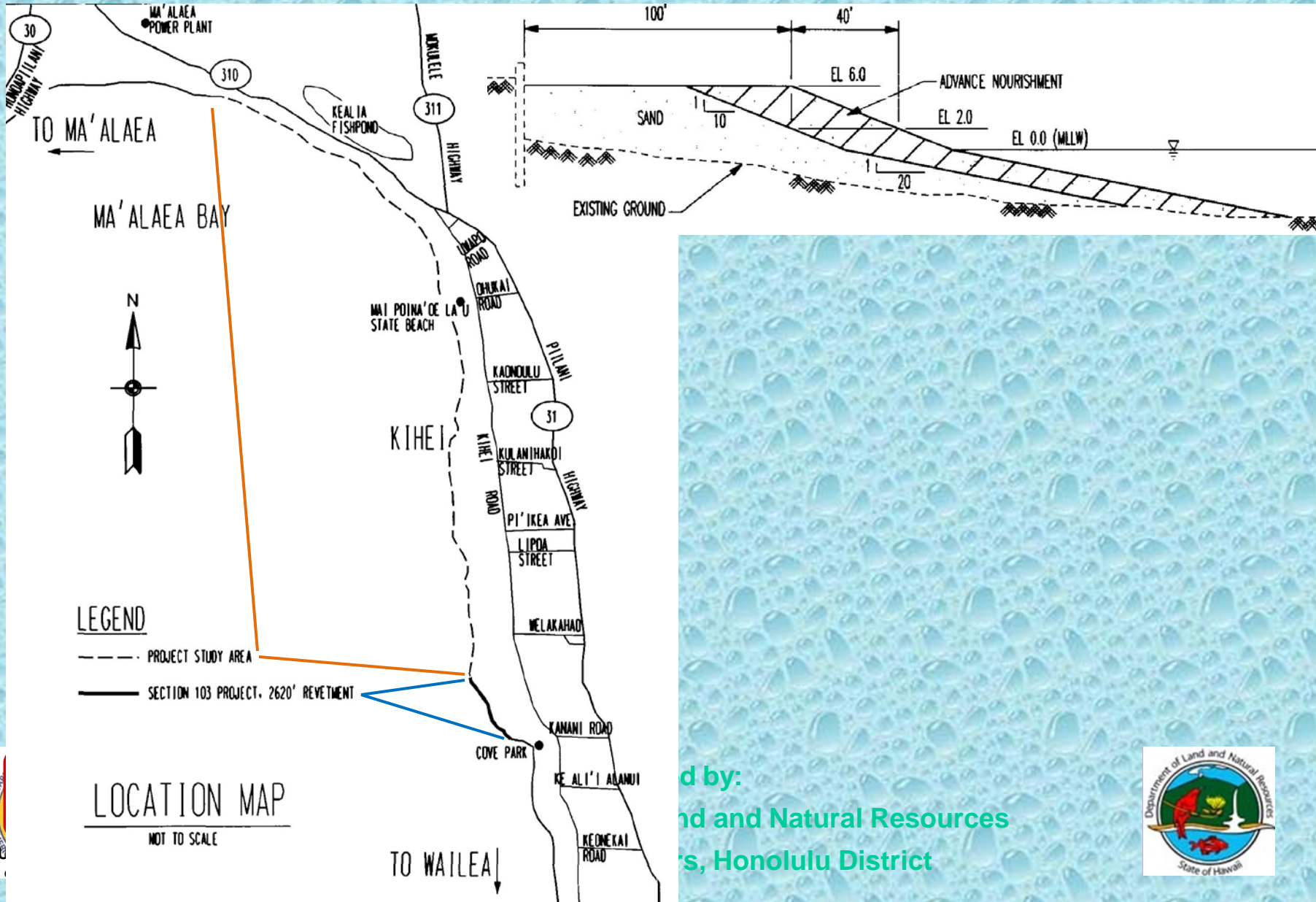


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# Kihei Beach Potential RSM Project



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# Potential RSM Projects - Summary

- **Kihei Beach Hurricane and Storm Damage Reduction / Beach Nourishment**
  - High potential for Federal benefits



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# FEDERAL PERSPECTIVE



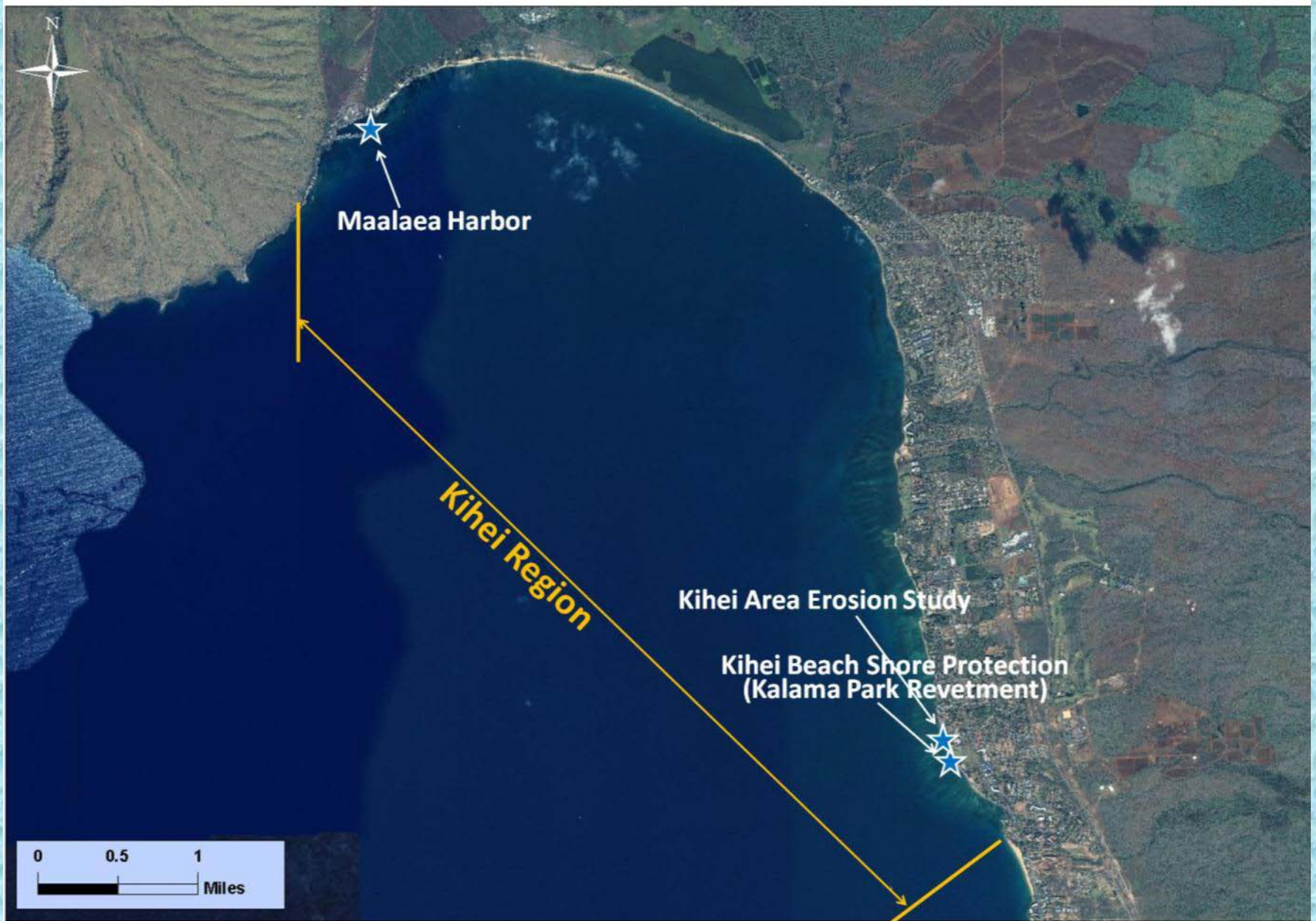
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# Existing Federal Projects – Kihei Region

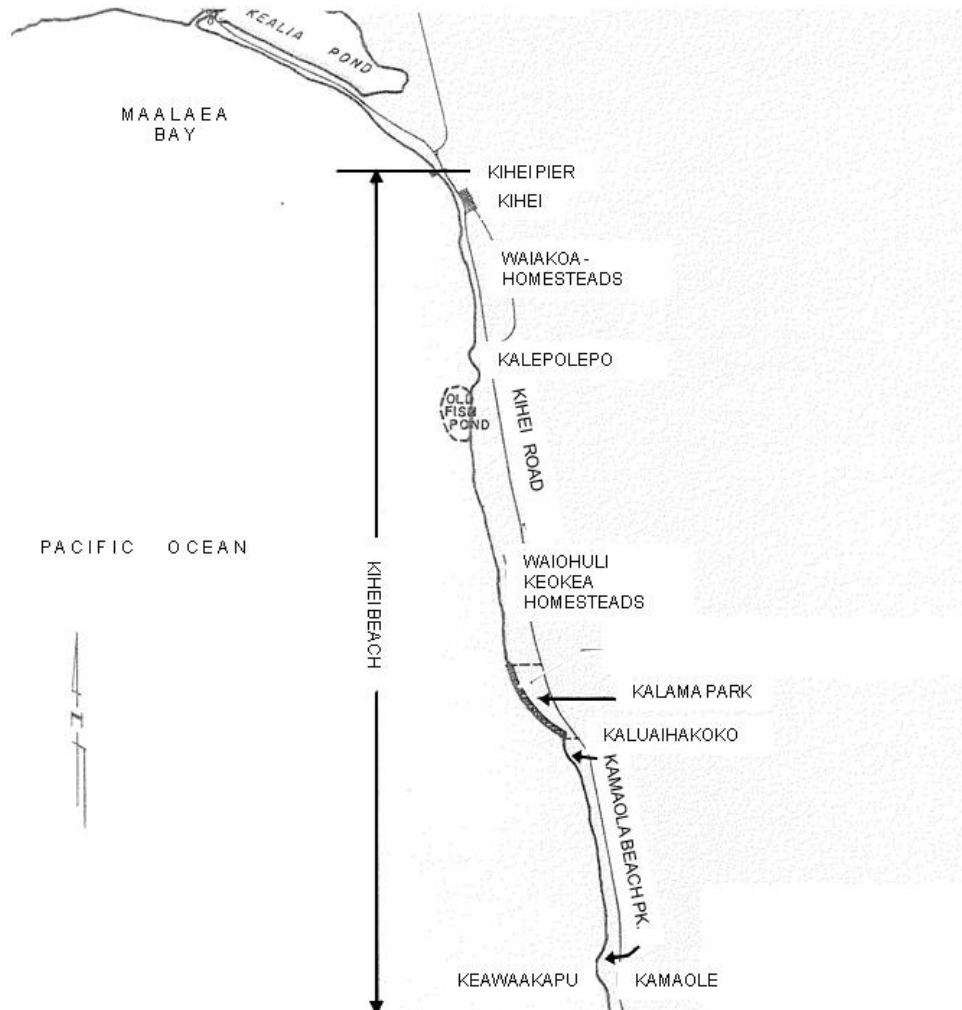


Kihei Area Erosion  
Maui, Hawaii  
PROJECT LOCATION  
U.S. ARMY ENGINEER DISTRICT  
HONOLULU

Kihei Area Erosion



Location Map





# Mā'alaea Small Boat Harbor, Maui, Hawai'i

U.S. ARMY CORPS OF ENGINEERS, Honolulu District, Technical Integration Branch

BUILDING STRONG®



# STATE PERSPECTIVE



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# DISCUSSION



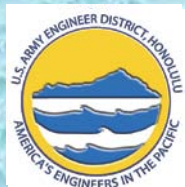
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# MAUI REGIONAL SEDIMENT MANAGEMENT

## POTENTIAL RSM PROJECTS KAHULUI



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# Potential RSM Projects

- **Kahului Region**
  - **Wailuku Kahului Wastewater Reclamation Facility (WWRF) Beach Nourishment**

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# WWRF Potential RSM Project

- **Two beach replenishment alternatives:**
  - 3,800 ft reach, 40 ft wide berm; ~105,000 cy initial amount; 21,000 cy per eight years maintenance.
  - 2,400 ft reach, 40 ft wide berm; ~65,000 cy initial amount ; 16,000 cy per eight years maintenance.
- **Coordinate efforts to maintain the beach**
  - Federal, State, and County of Maui
- **Potential activities based on funding**
  - Characterization of specific sediment source
  - Permitting work



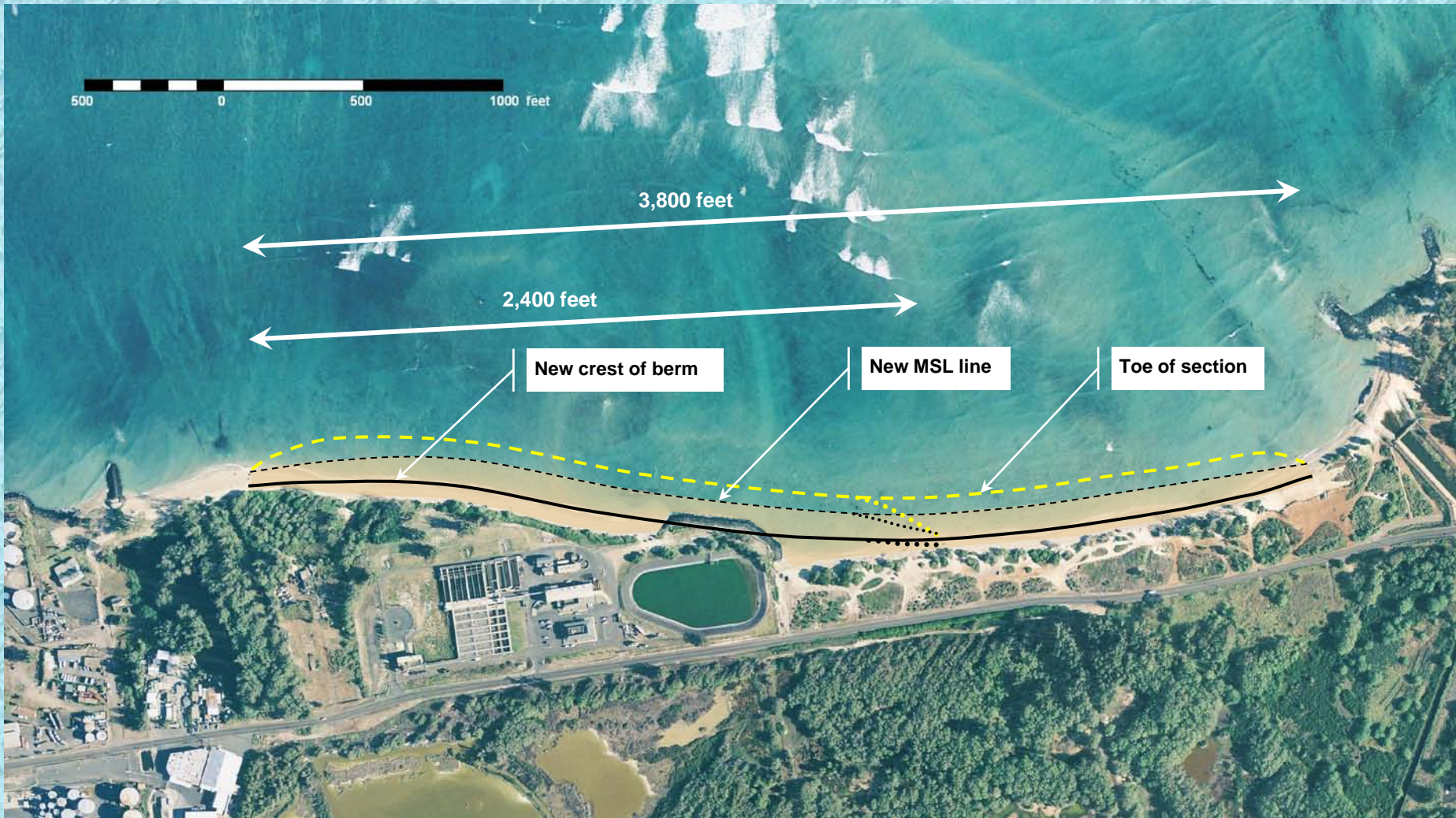
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# WWRF Potential RSM Project



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# Potential RSM Projects - Summary

- **Wailuku Kahului Wastewater Reclamation Facility (WWRF) Beach Nourishment**
  - Opportunity for coordinated effort with County of Maui Wastewater Reclamation Division



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# FEDERAL PERSPECTIVE

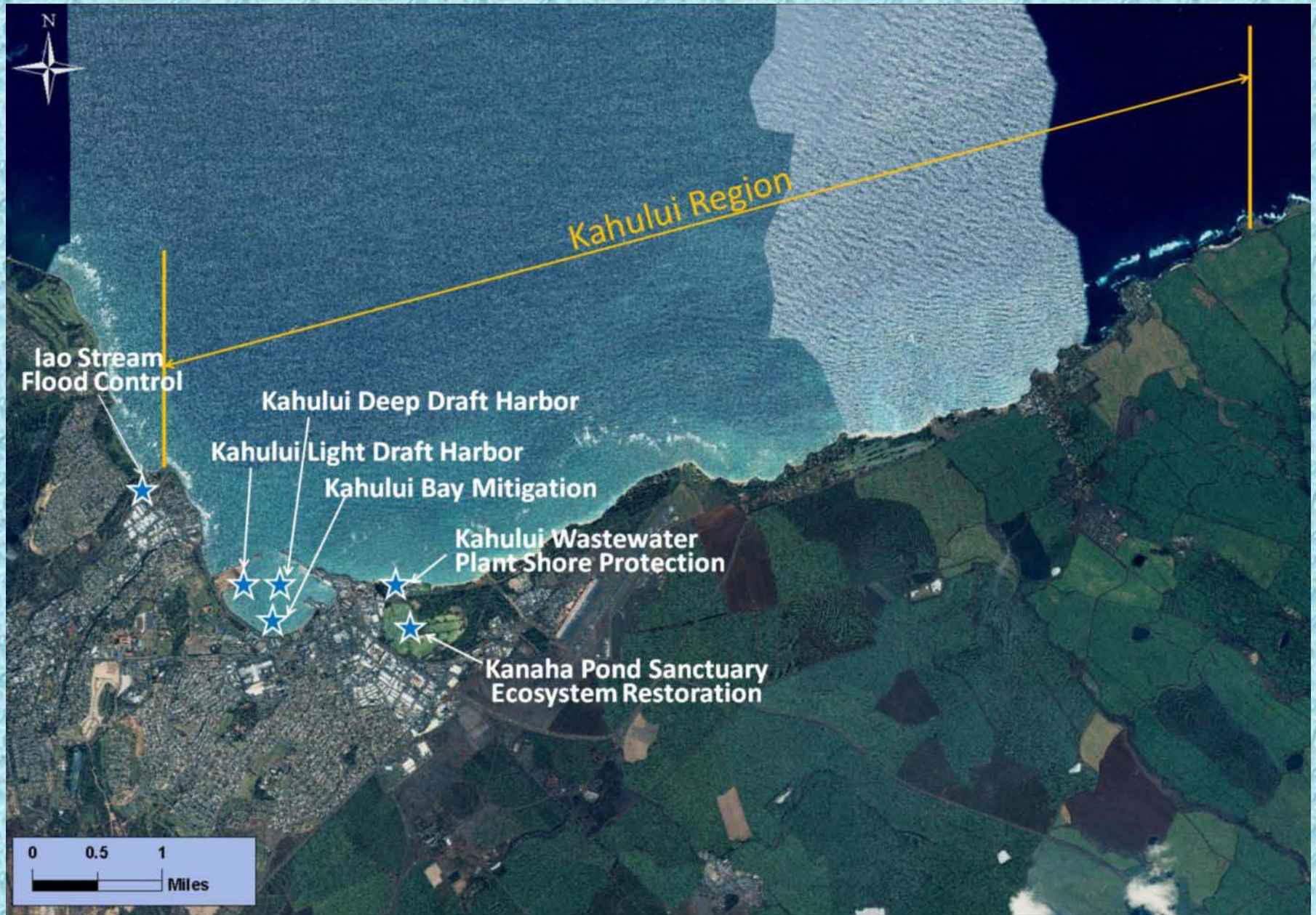


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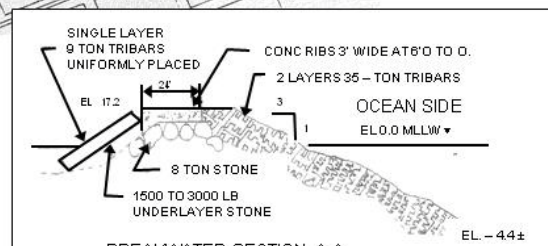
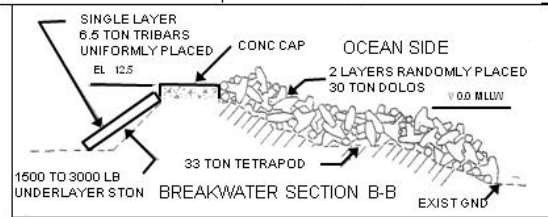
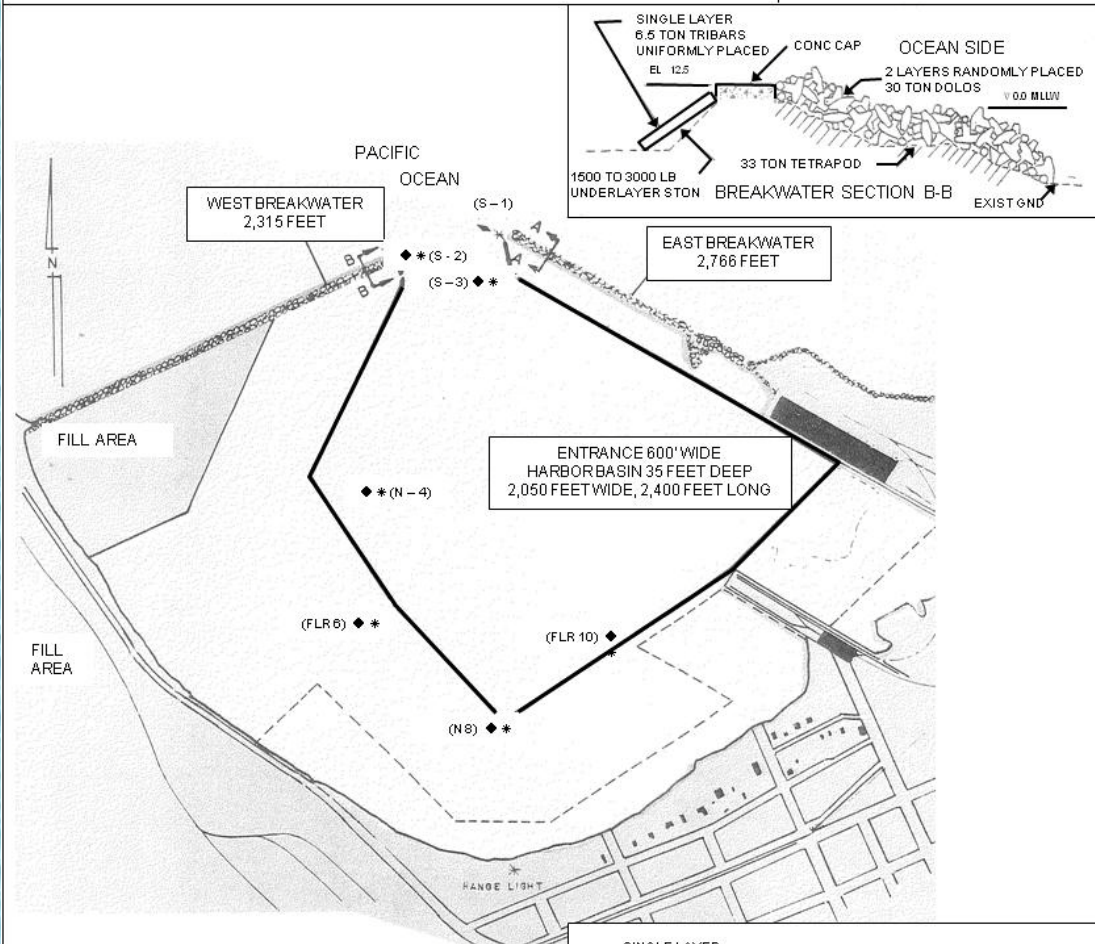
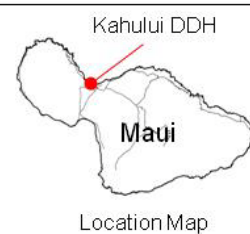
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# Existing Federal Projects – Kahului Region

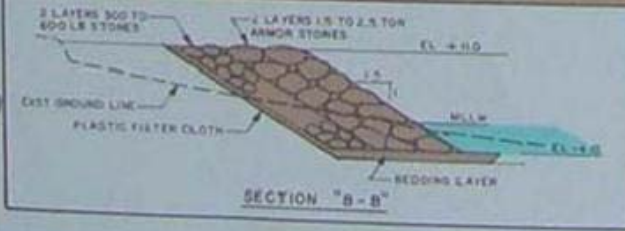
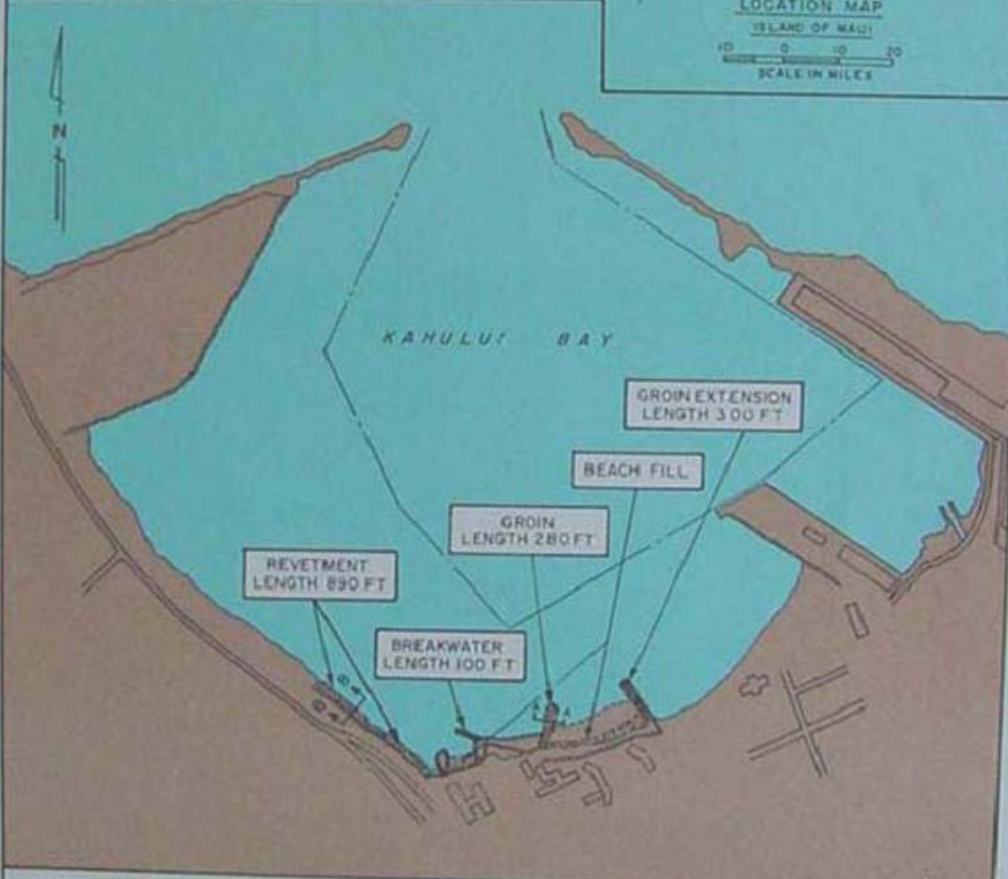
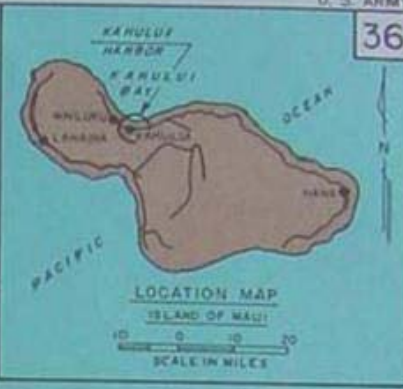
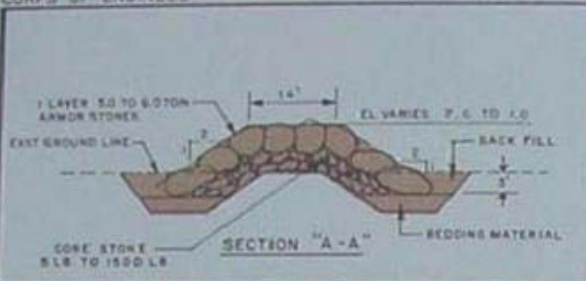


Kahului Deep Draft Harbor  
Maui, Hawaii  
LOCATION MAP  
U.S. ARMY ENGINEER DISTRICT  
HONOLULU



Location Map - Not to Scale

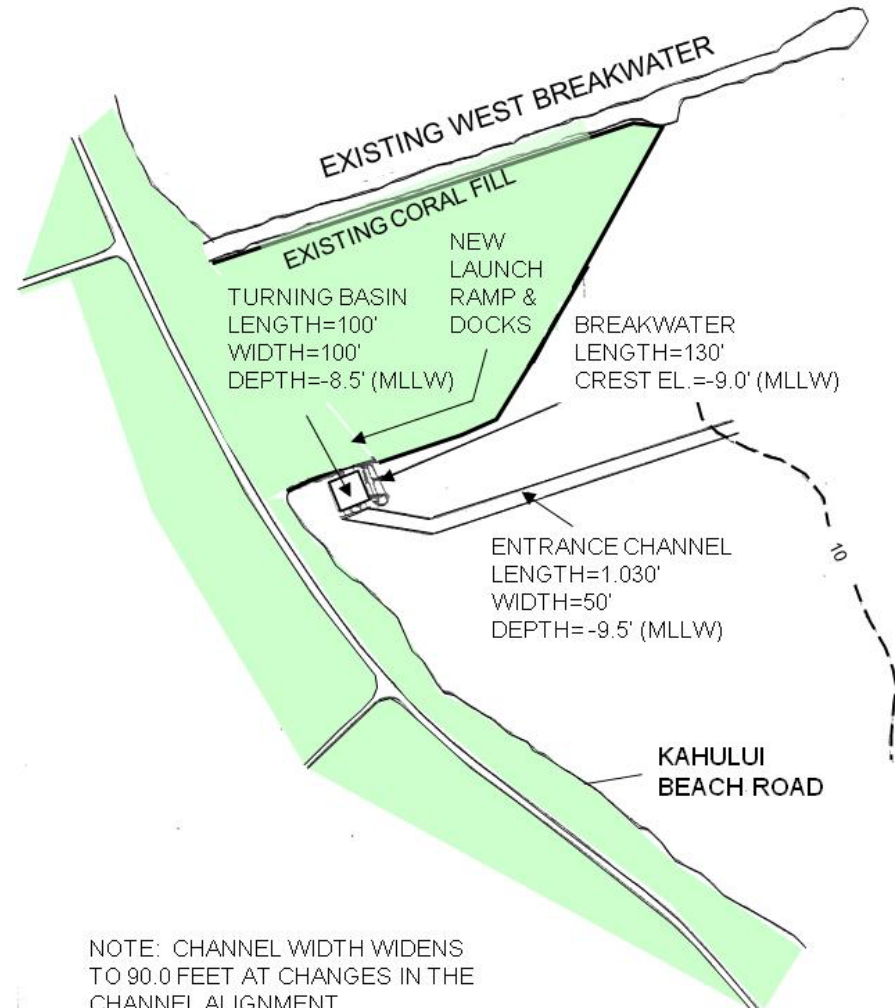




PREVENTION AND MITIGATION OF SHORE DAMAGES (SECTION III)  
 KAHULUI BAY, MAUI, HAWAII  
 REVISED 30 SEPT 1974  
 0 100 200 300  
 SCALE IN FEET  
 U. S. ARMY  
 ENGINEER DIVISION, PACIFIC OCEAN  
 CORPS OF ENGINEERS



Kahului Small Boat Harbor  
Maui, Hawaii  
LOCATION MAP  
U.S. ARMY ENGINEER DISTRICT  
HONOLULU



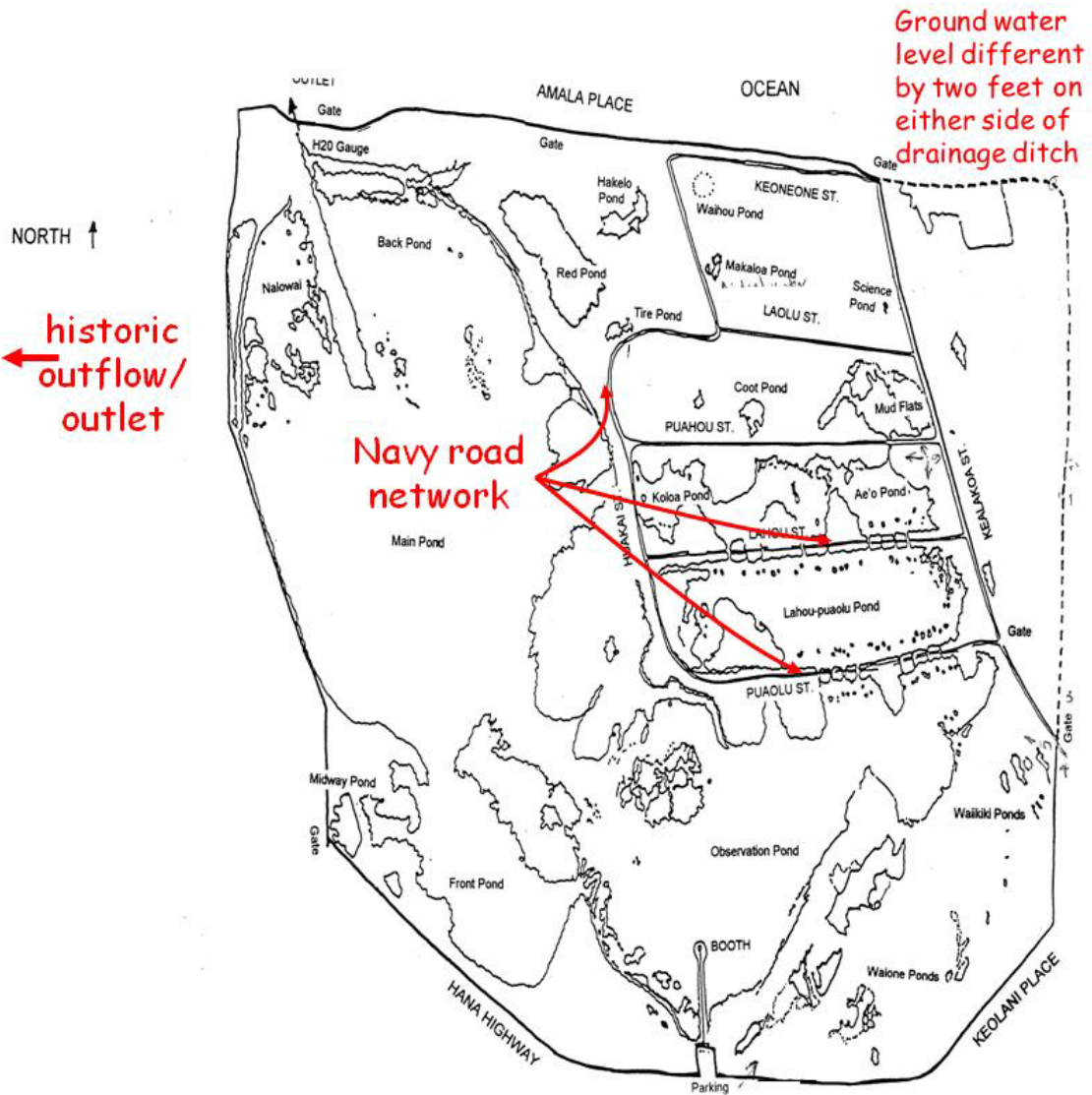
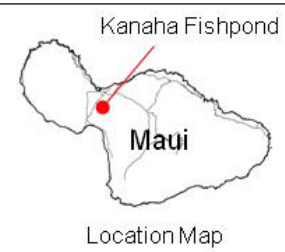
NOTE: CHANNEL WIDTH WIDENS TO 90.0 FEET AT CHANGES IN THE CHANNEL ALIGNMENT



Kanaha Pond Wildlife Sanctuary, Maui, Hawaii

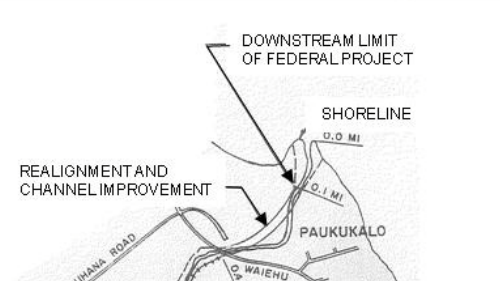
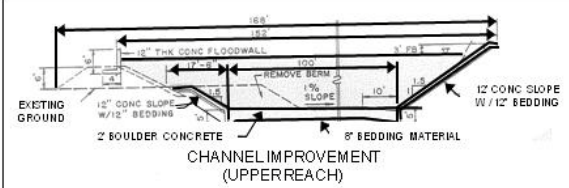
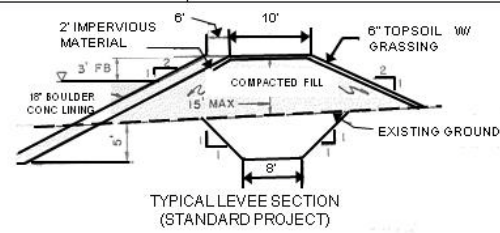
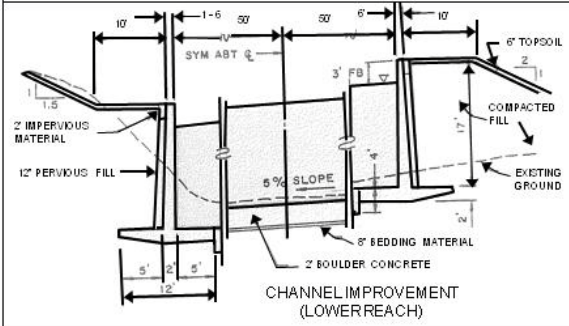
STUDY LOCATION

U.S. ARMY ENGINEER DISTRICT  
HONOLULU

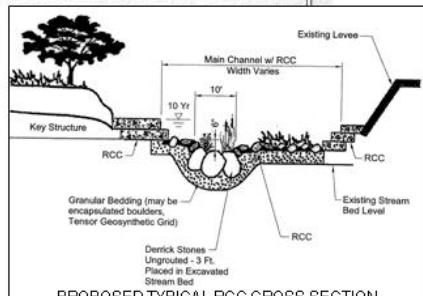
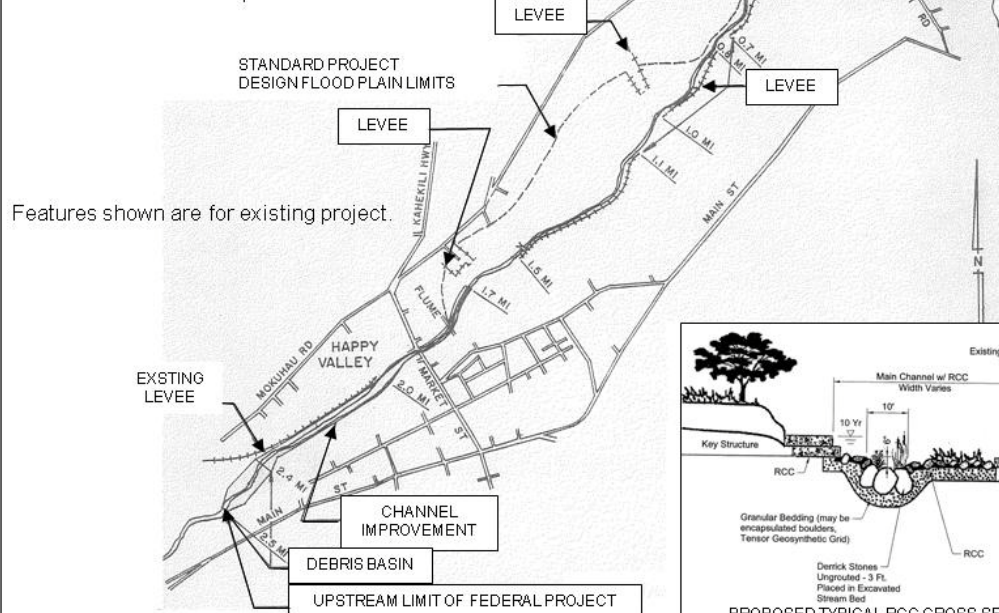




Iao Stream  
Maui, Hawaii  
PROJECT LOCATION  
U.S. ARMY ENGINEER DISTRICT  
HONOLULU



Location Map - Not to Scale



# STATE PERSPECTIVE



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# DISCUSSION



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