

*Climate
Change is
Now*

Integrating Sea Level Rise and Coastal Threats into Planning for Beach Parks in Maui County

Maui County Water Authority, Social Services, and
Parks Committee
October 7, 2024

Project Team

Department of Parks and Recreation

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Planning Department
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Office of Recovery
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With assistance from

UH Sea Grant Program

Tara Owens, Coastal Processes and Hazards Specialist
Wes Crile, Coastal Dune Restoration Specialist



The Story

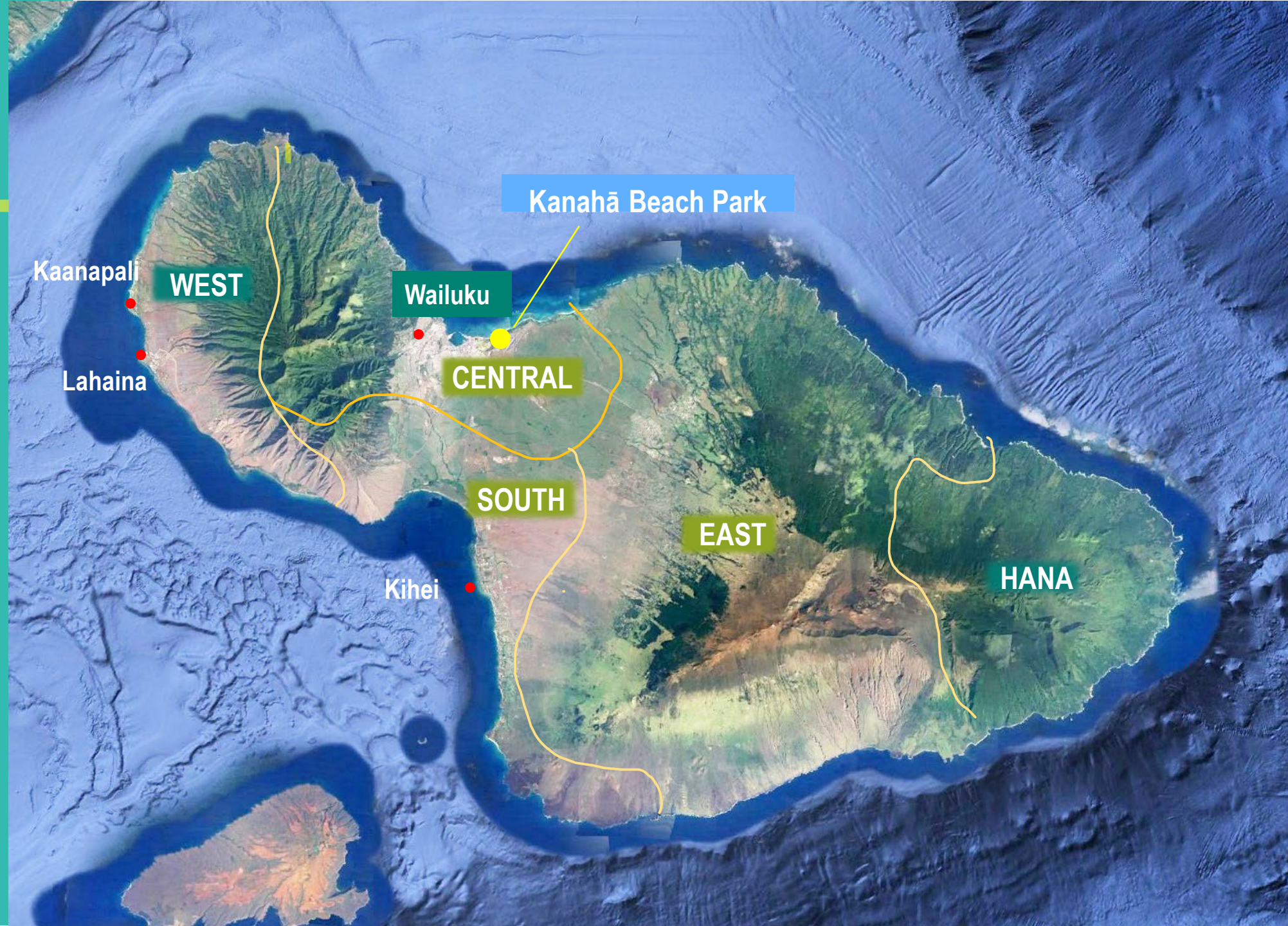


Problem Identification

*Setting
Coastal Issues*



Districts





64

**BEACH
PARKS**

1

**GOLF
COURSE**

LAND & FACILITIES

- ~ 160 parks & facilities
- 22 community centers
- 10 gymnasiums
- 22 playgrounds

August 2020



Baldwin Beach Park

August 2024



Baldwin Beach Park

September 2024



Photo: Maui News by Heidi Sherman/Sept 2024



Puamana Park

Vulnerability Assessment

Methodology
Web-based Application
Results



OVERVIEW OF THE METHODOLOGY

VULNERABILITY ASSESSMENT



ADAPTATION POTENTIAL

HIGH

MEDIUM

LOW

ADAPTATION STRATEGIES

Assess park viability based on future access

Restore dunes and/or preserve wetlands

Retreat/acquire land and relocate structures

Fortify/raise shoreline revetment

Maintain shoreline access only

Maintain facilities/monitor conditions

ocean

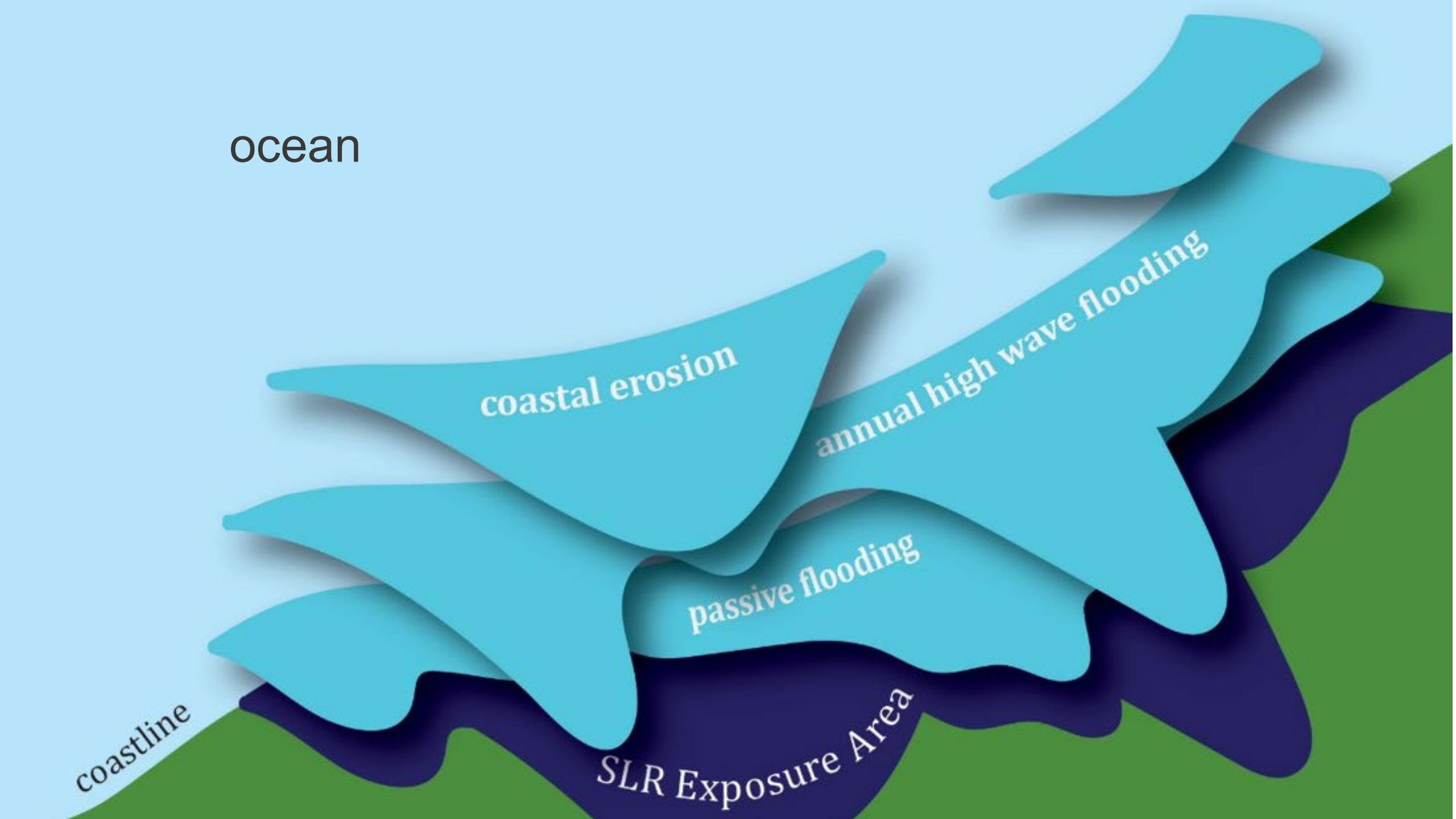
coastal erosion

annual high wave flooding

passive flooding

SLR Exposure Area

coastline



Kanaha Beach Park

*Applying the
methodology
to a park*



Regional Setting

Kanahā Beach Park



KANAHĀ BEACH PARK
County Parks and Recreation

WASTEWATER TREATMENT PLANT
County Environmental Management

AMALA PLACE
County Public Works

KAHULUI AIRPORT
State Airports

WILDLIFE SANCTUARY
State Land and Natural Resources

Sea Level Exposure Area – 3.2' (~2090)

Kanahā Beach Park



Percent of park area in SLRXA-3.2 (~2070) **61%**

Adaptation Potential **Low**

A measure of park area exposed to chronic coastal flooding and land loss with 3.2 feet of sea level rise. The Sea Level Rise Exposure Area (SLRXA) is based on projections of passive inundation, erosion, and annual high wave run-up with sea level rise. The higher the percent area exposed the lower the adaptation potential.



Number of structures in SLRXA-2.0 (~2050) **4**

Adaptation Potential **Med**

A measure of the number of structures, parking lots and major upright structures, in the park such as pavilions and restrooms exposed in the SLRXA with 2.0 feet of sea level rise. The higher the number of structures exposed the lower the adaptation potential.



Park Access

Kanahā Beach Park



Miles of road in
SLRXA-3.2 within a 0.5
mile-park buffer

0.8

Adaptation Potential

Med

A measure of the miles of highway and roads exposed to chronic coastal flooding and land loss with 3.2 feet of sea level rise. The higher the number of miles of road exposed the lower the adaptation potential.

Beach Migration

Kanahā Beach Park





Difference in percent of area in SLRXA-3.2 and SLRXA-2.0

23%

Adaptation Potential

Med

A measure of the timing of exposure of the park to two sea level rise projections. The lower the difference in % area between the two projections the lower the adaptation potential rating as sea level rise impacts are projected to occur earlier (~2050).



VULNERABILITY ASSESSMENT



ADAPTATION POTENTIAL



ADAPTATION STRATEGIES

- Assess park viability based on future access
- Restore dunes and/or preserve wetlands**
- Retreat/acquire land and relocate structures
- Fortify/raise shoreline revetment
- Maintain shoreline access only
- Maintain facilities/monitor conditions

Web-based Application

*Tool for Public and
Department Staff*





COUNTY OF MAUI BEACH PARK VULNERABILITY STUDY



Adaptation and Mapping Tool

District Selector

Central

East

Molokai

South

West

All Districts



1,009

Total Park Acreage

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291.9

Acreage in SLRXA-3.2

Last update: a few seconds ago

250

Total Facilities

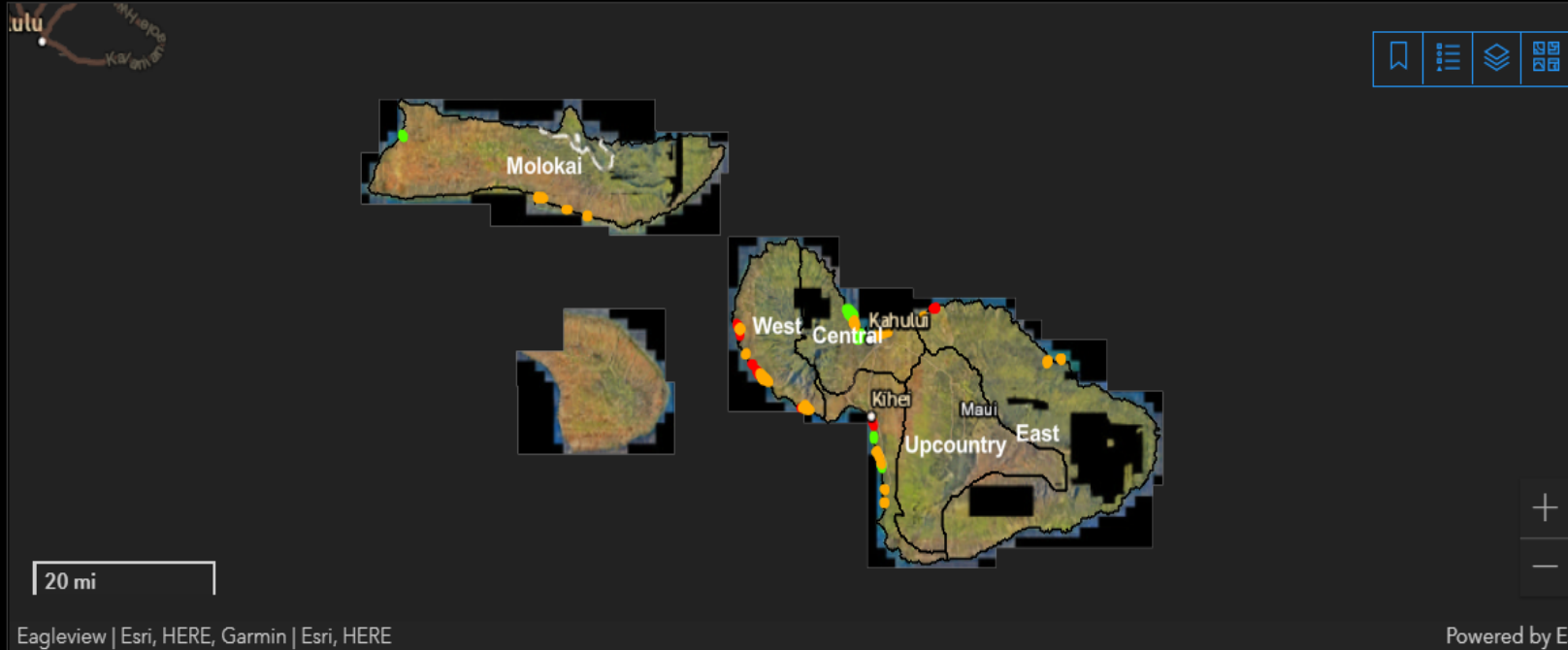
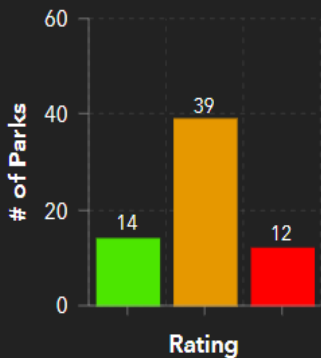
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103

Facilities in SLRXA-2.0

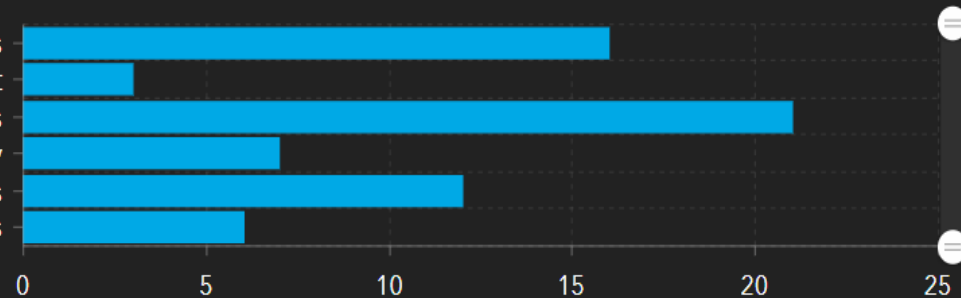
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Adaptation Potential



Adaptation Strategies

- Assess park viability based on future access
- Fortify/raise shoreline revetment
- Maintain facilities and monitor conditions
- Maintain shoreline access only
- Restore dunes and/or preserve wetlands
- Retreat/acquire land and relocate structures



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Park List

"Duke" Maliu Regional Park

Charley Young Park

Charley Young Park Parking Lot

D.T. Fleming Park

HA Baldwin Park

Halawa Park

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1 of 65

"Duke" Maliu Regional Park

District: Molokai

% Park Area in SLRXA-3.2: 23

Facilities in SLRXA-2.0: 0

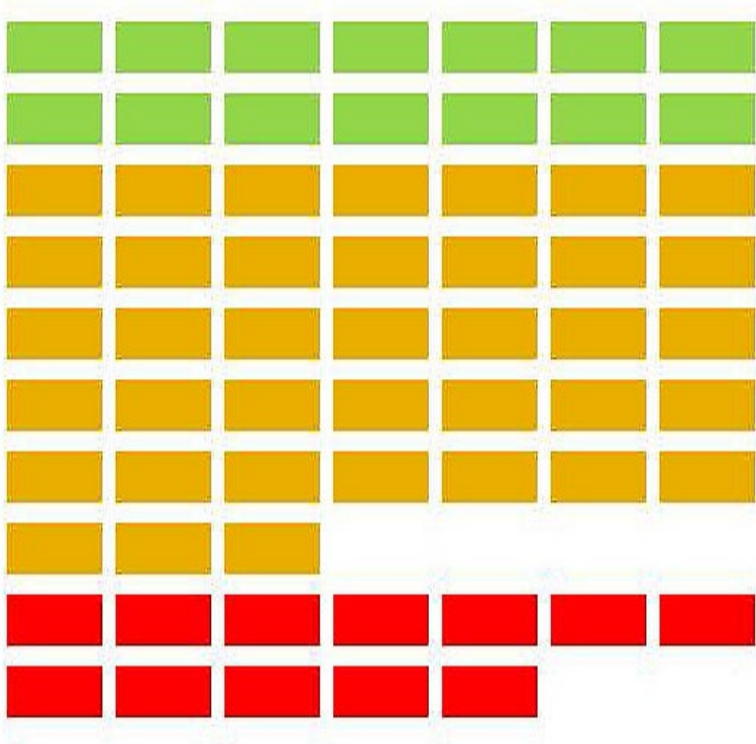
Total Roads in SLRXA-3.2 (mi): 0.6

% of Park Area with: 0

[Park Profile](#) [Click Link](#)

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ADAPTATION POTENTIAL



High – 14 parks

Medium – 39 parks

Low – 12 parks

ADAPTATION POTENTIAL BY DISTRICT



ADAPTATION STRATEGIES

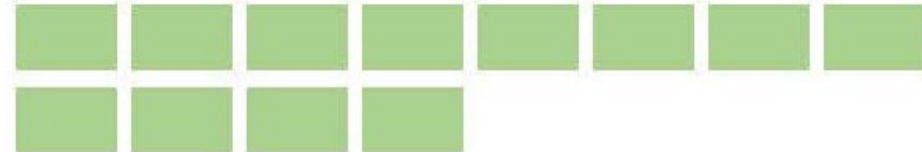
Maintain facilities & monitor conditions



Assess park viability based on future access



Restore dunes/preserve wetlands



Maintain shoreline access only



Retreat/acquire land/relocate structures



Fortify/raise shoreline revetment



Policy & Plan Development

Draft Policies

Regional Adaptation Planning

Rapid Response Action Plans

Key Takeaways



DRAFT POLICIES



Prioritize nature-based adaptation that restores coastal ecosystems and maintains ocean dependent uses.

DRAFT POLICIES



Limit construction of new facilities exposed to 3.2 feet of sea level rise.

DRAFT POLICIES



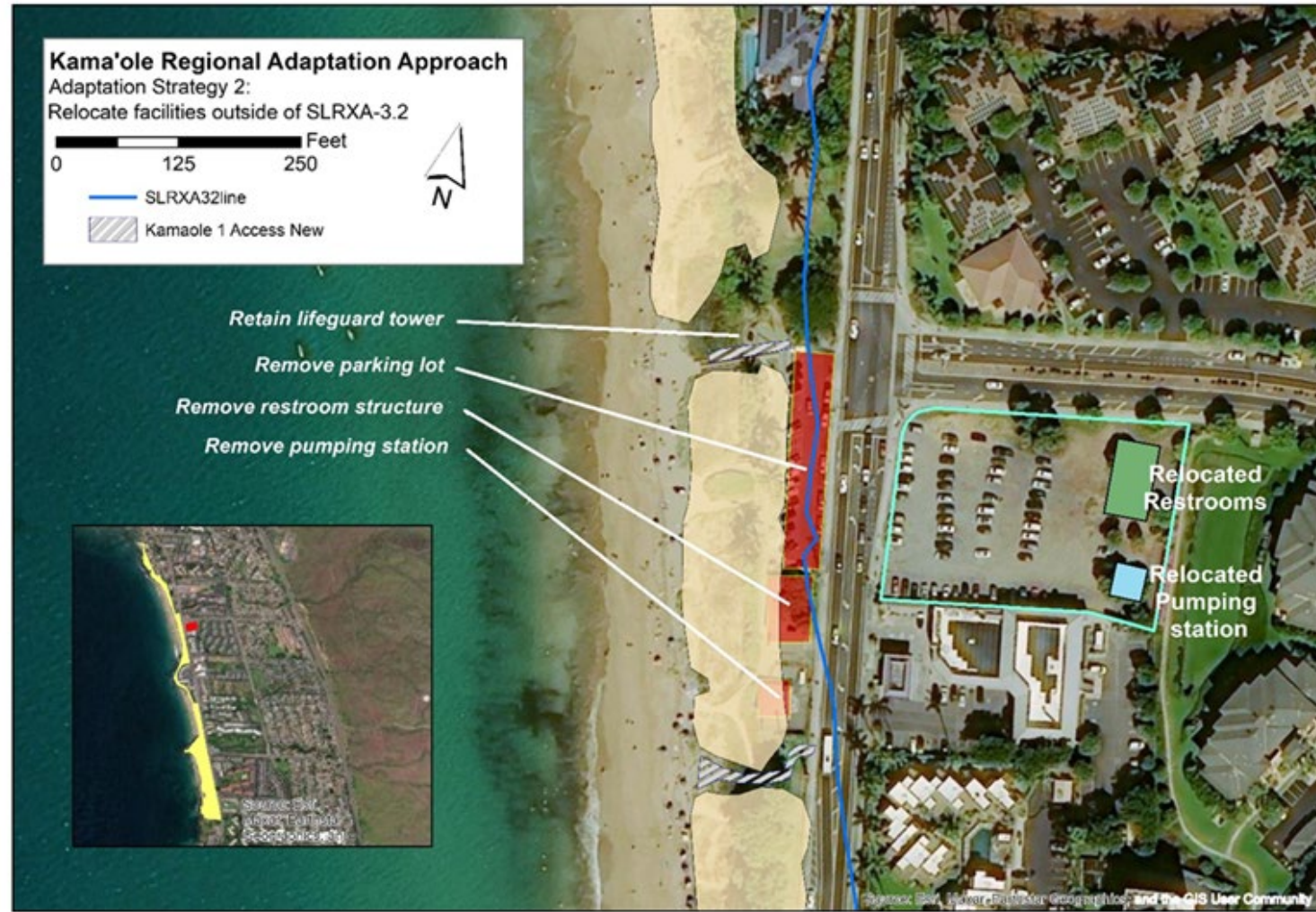
Protect public safety by removing park structures and features damaged or exposed by severe coastal flooding and storm events.

DRAFT POLICIES



Retain undeveloped park land outside hazard areas for future parks.

REGIONAL ADAPTATION STRATEGIES – DRAFT



Kama'ole

Ho'okipa

Kanaha

RAPID RESPONSE ACTION PLANS – DRAFT



Plan Components (4 pages/plan)

1. Triggers for Implementation
2. Project Context
3. Vulnerability Concerns: Previous Events, Flood Zone, Multi-hazard Threats
4. Adaptation Strategy
5. Proposed Scope and Sequence of Activities
6. Permit Pathway
7. Project Partners, Affected Groups, and Key Contacts
8. Park Cost Estimates
 - Demo/removal
 - 1 restroom: \$100K
 - 1 tree/stump: \$5K
 - Benches/picnic tables: \$50K
 - Provision of temporary facilities for access: \$250K

Implementation

*Dune Restoration
Kama'ole CIP*



Project Area/Restoration Zones

Baldwin Park Littoral Cell
(beach cell)

Rinzai Mission Zone

- 1. PYCC/Lower Paia Park
- 2. Secret Beach
- 3. Rinzai Mission Zone
- 4. Baldwin Beach Park
- 5. Ironwood Forest
- 6. Dune Blowouts
- 7. Wawau Point/Baby Beach



Monitoring & Evaluation

Park Survey App



123Survey Tool

Maui Beach Parks Adaptation Strategy Recon

Adaptation Strategy Recon

Survey Date/Time*

8/9/2024 09:59 AM

Collector*

Kitty Courtney

Name of Beach Park*

Location (Be sure to open the map and verify your location)

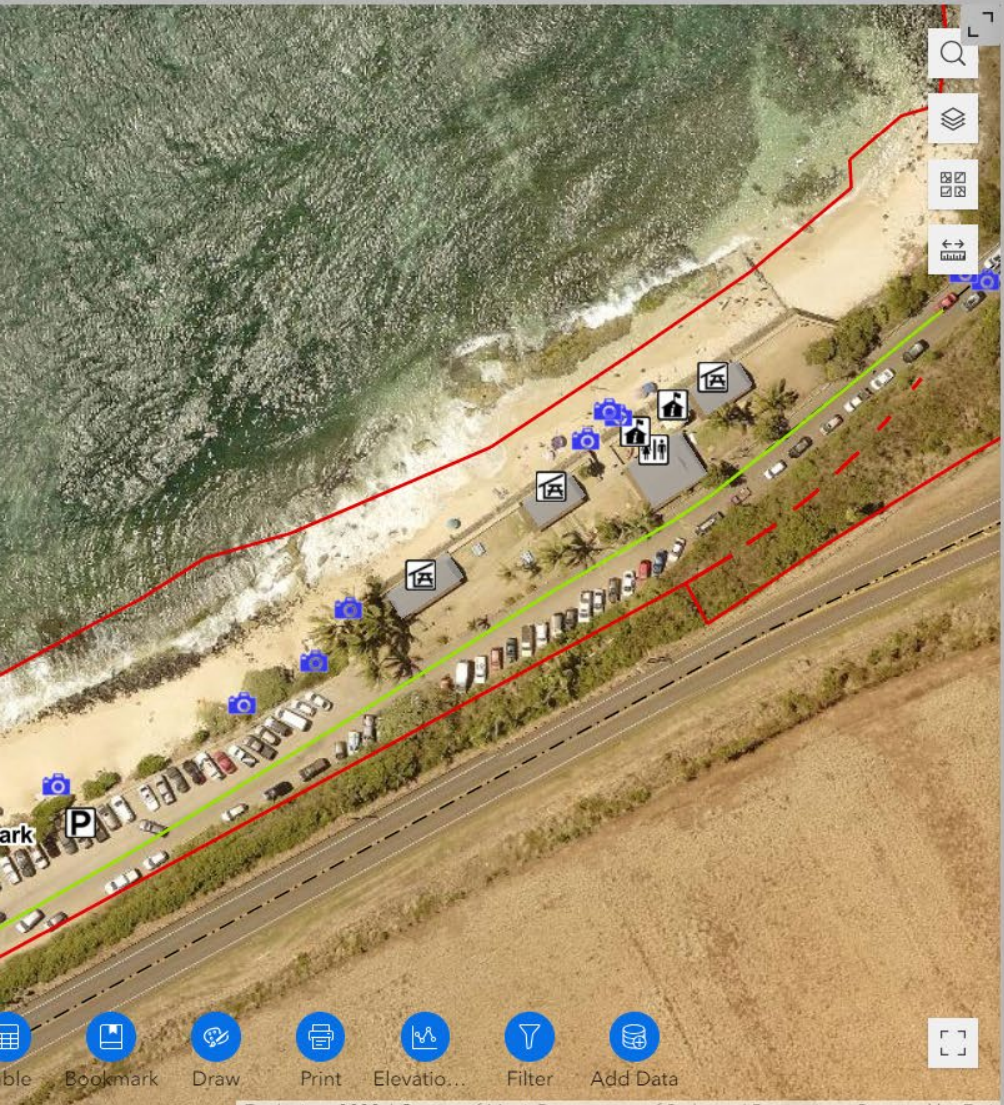
Find address or place

Lat: 21.290950 Lon: -157.725691

Maui Beach Park Adaptation Strategies

< 31 of 40 >

(Hookipa) Adaptation Strategy Recon



Collector	Kitty Courtney
Survey ID	Hookipa-230614_1326
Name of Beach Park	Hookipa
Latitude	20.934015
Longitude	-156.356356
General Notes	
Photo Notes	Perched beach, facing west
Survey Date/Time	June 14, 2023

Last edited by kitty.courtney_EMI on 6/15/2023, 8:23 AM.

Insights & Priorities



Not Just A Parks Problem

PARKS

Beach
Park

PUBLIC WORKS

Major
Collector
Road

WATER/PUBLIC WORKS

Underground
Utilities

MECO

Electrical
Poles &
Lines



Time to Plan & Budget Is Now



08.14.2012

Engage the Community



5 YEAR PRIORITIES



Prepare adaptation plans and strategies for high-risk beach parks

- Baldwin
- Hoaloha

5 YEAR PRIORITIES

Integrate adaptation strategies into capital improvement project (CIP) planning

- Making decisions on investing in park infrastructure based on SLR vulnerability



5 YEAR PRIORITIES



Identify structures that could be affected by high waves & coastal erosion

- Developed 12 park preparedness plans

5 YEAR PRIORITIES



Prepare and apply cultural protocols for inadvertent discoveries.

5 YEAR PRIORITIES

State
Highways

*County
DEM*

**County
Parks**

County
Public
Works

COUNTY RESILIENCY OFFICE

Coordinate with county and state agencies on adaptation planning

- DEM/DPR proposal to FEMA to move park facilities and sewage transfer station

Link to App

<https://www.mauicounty.gov/BPVASTudy>



Mahalo



Q + A



WASSP Committee

From: David Yamashita <David.Yamashita@co.maui.hi.us>
Sent: Thursday, October 3, 2024 2:37 PM
To: WASSP Committee
Cc: Kitty.courtney@tetrattech.com
Subject: WSSP Committee presentation
Attachments: WASSP Comm 2024 - V4B.pdf

You don't often get email from david.yamashita@co.maui.hi.us. [Learn why this is important](#)

Thanks Carla! I will be on Oahu tomorrow.

David M. Yamashita, Planner V
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