

*Climate  
Change is  
Now*

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# **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

Karla Peters, Director (former)  
David Yamashita, Planner VI (former)  
*Planning Department*  
Jennifer Maydan, Planner V (former)  
*Office of Recovery*  
Kaya Givensal, Intern (2019)

## Tetra Tech, Inc.

Kitty Courtney, Project Manager  
Mike Donoho, Coastal Planner  
Cindy Rolli, Hazard Mitigation Mgr.  
Megan Brotherton, Outreach Specialist  
Gustavo Orozco, GIS Analyst

*With assistance from*

## UH Sea Grant Program

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



# The Story



# Problem Identification

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*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

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*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

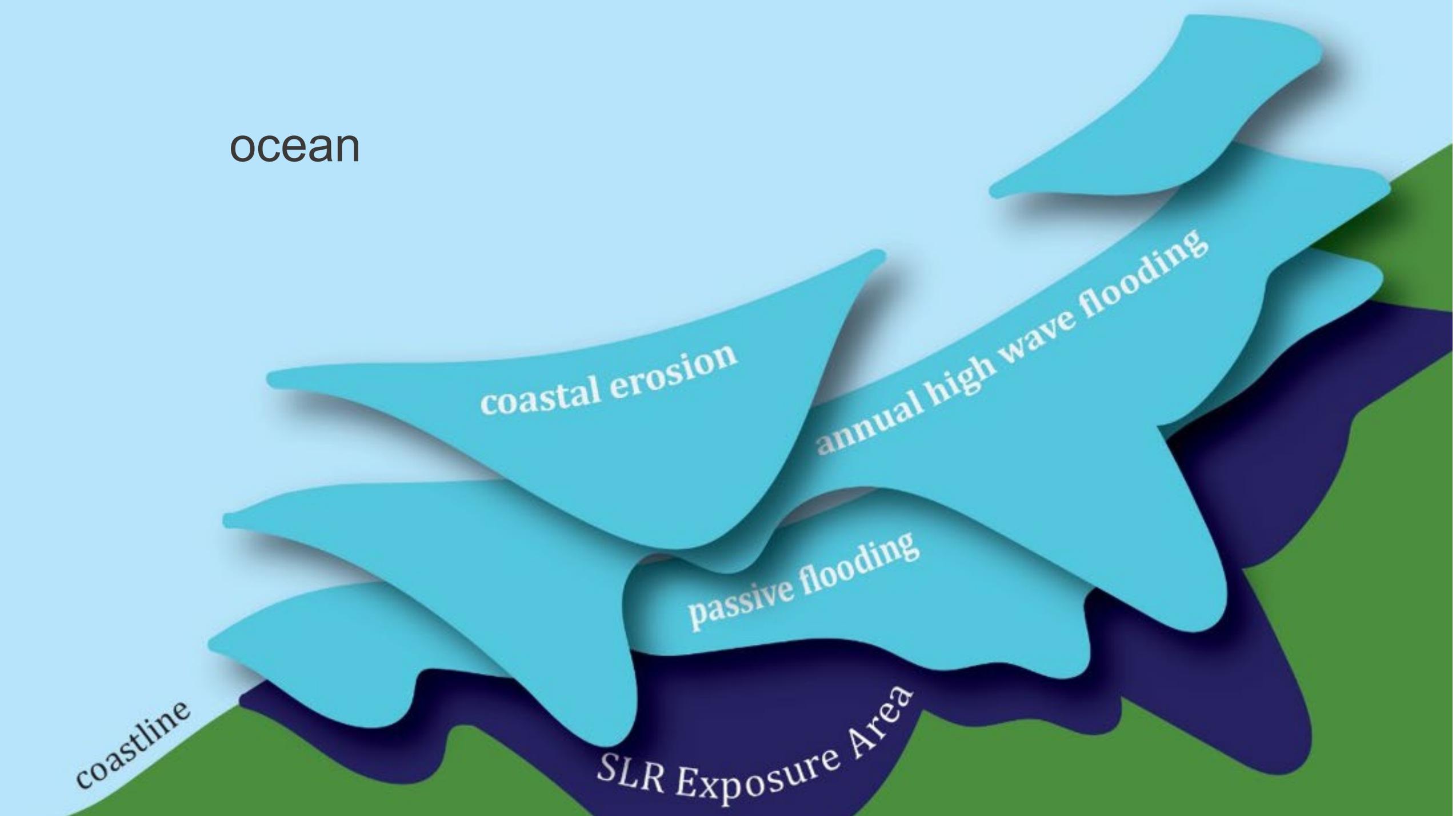
coastal erosion

annual high wave flooding

passive flooding

SLR Exposure Area

coastline



# Kanaha Beach Park

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*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

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*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

Last update: a few seconds ago

## 291.9

Acreage in SLRXA-3.2

Last update: a few seconds ago

## 250

Total Facilities

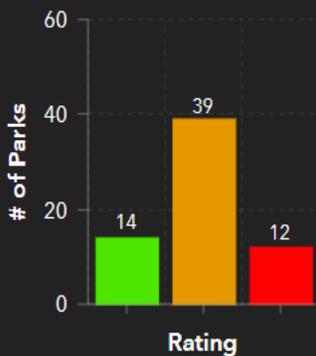
Last update: a few seconds ago

## 103

Facilities in SLRXA-2.0

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### Adaptation Potential



### Park List

"Duke" Maliu Regional Park

Charley Young Park

Charley Young Park Parking Lot

D.T. Fleming Park

HA Baldwin Park

Halawa Park

Last update: a few seconds ago

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

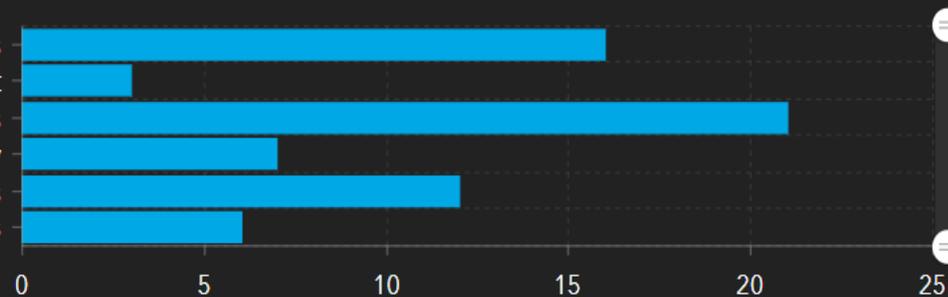
% of Park Area with 0

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

Last update: a few seconds ago

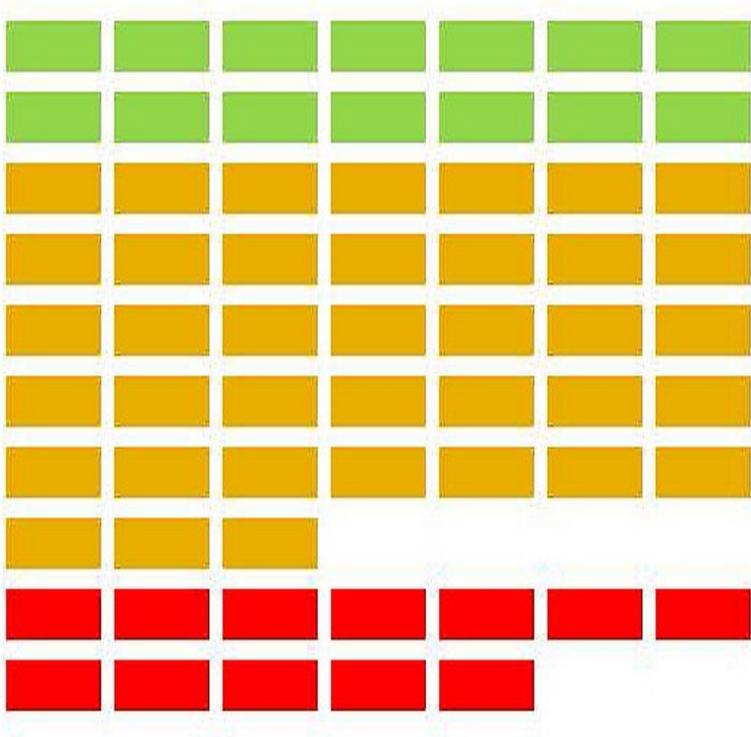
### Adaptation Strategies

- 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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# ADAPTATION POTENTIAL



**High – 14 parks**

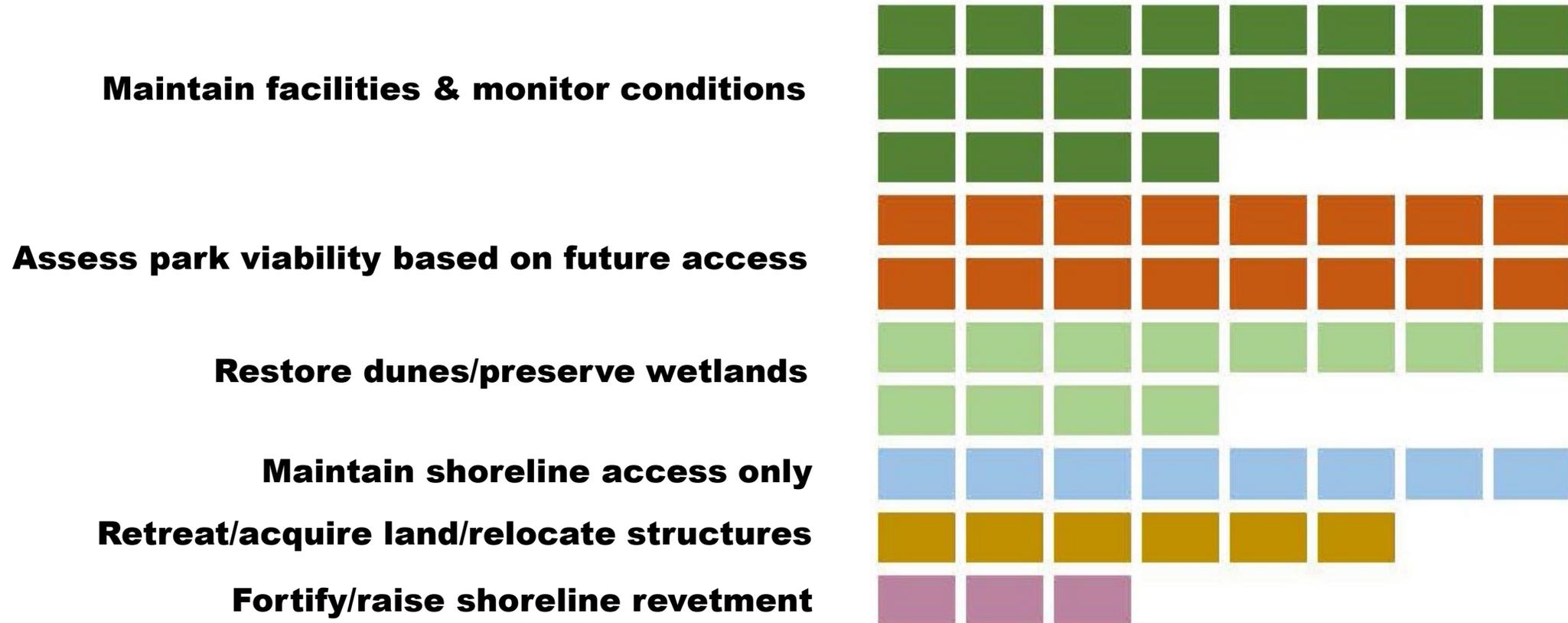
**Medium – 39 parks**

**Low – 12 parks**

# ADAPTATION POTENTIAL BY DISTRICT



# ADAPTATION STRATEGIES



# Policy & Plan Development

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*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



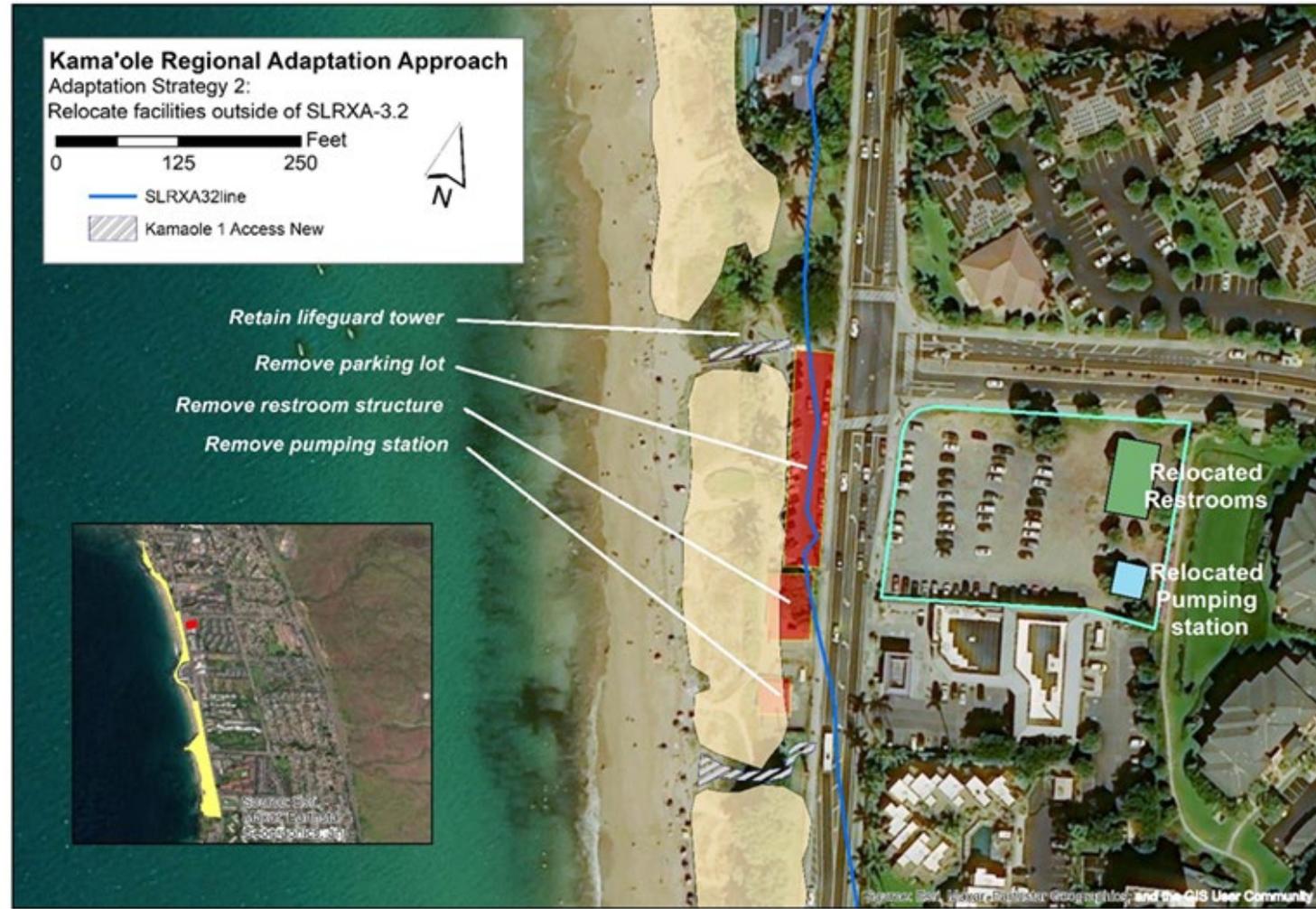
**Protect public safety by removing park structures and features damaged or exposed by severe coastal flooding and storm events.**

# 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

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*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

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*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)

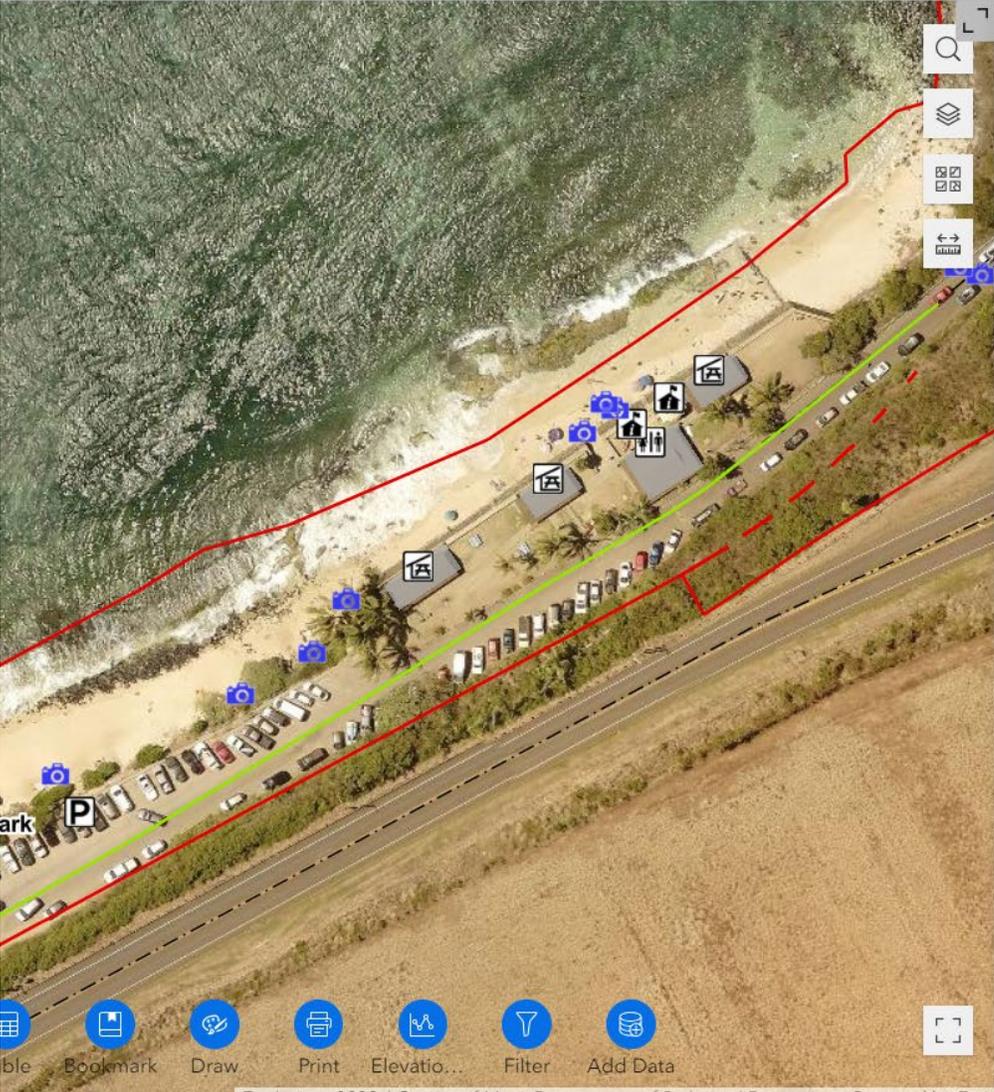
Find address or place

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

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# 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**

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



# Mahalo

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Q + A

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## WASSP Committee

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**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  
Department of Planning  
2200 Main St./Suite 640  
Wailuku, HI 96793  
Ph.808-270-7399  
[david.yamashita@mauicounty.gov](mailto:david.yamashita@mauicounty.gov)