Hawai‘i Coastal Zone Management Program
DRAFT 309 Assessment and Strategy

2026 to 2030

Hawai‘i CZM Program
Coastal Zone Management
Office of Planning & Sustainable Development

Table of Contents

Acronym List

ASCE	American Society of Civil Engineers
BOEM	Bureau of Energy Management
CMP	Coastal Management Program
CZMA	Coastal Zone Management Act
DAR	Department of Land and Natural Resources, Division of Aquatic Resources
DBEDT	Department of Business, Economic Development and Tourism
DLNR	Department of Land and Natural Resources
DOBOR	Department of Land and Natural Resources, Division of Boating and Ocean Recreation
DOD	Hawai‘i Department of Defense
DOFAW	Department of Land and Natural Resources, Division of Forestry and Wildlife
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
HAR	Hawai‘i Administrative Rules
HCRS	Hawai‘i Coral Reef Strategy
HICZMP	Hawai‘i Coastal Zone Management Program
HDOA	Hawai‘i Department of Agriculture
HDOT	Hawai‘i Department of Transportation
HI-EMA	Hawai‘i Emergency Management Agency
HI-MDAP	Hawai‘i Marine Debris Action Plan
HRS	Hawai‘i Revised Statutes
HTA	Hawai‘i Tourism Authority
ICAP	Center for Island Climate Adaptation and Policy
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NELHA	Natural Energy Laboratory of Hawai‘i Authority
NERRS	National Estuarine Research Reserve System
NFIP	National Flood Insurance Program
NPS	Non-Point Source
OPSD	Office of Planning and Sustainable Development
ORMP	Ocean Resources Management Plan
SAMP	Special Area Management Plan
SBCC	State Building Code Council
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHMP	State Multi-Hazard Mitigation Plan
SLR	Sea Level Rise
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Introduction

The Hawai‘i Coastal Zone Management Program (HICZMP) is a federally approved program that provides a comprehensive approach to coastal resource management, which balances coastal resources use, economic development, and conservation. Established under Section 309 of the Coastal Zone Management Act of 1972, as amended, the Coastal Zone Enhancement Program encourages improvements to state programs through one or more of nine enhancement areas:

- Wetlands
- Coastal hazards
- Public Access
- Marine Debris
- Aquaculture
- Cumulative and Secondary Impacts
- Special Area Management Plans
- Ocean and Great Lakes Resources
- Energy and Government Facility Siting

Every five years, HICZMP conducts a self-assessment to determine priority needs and opportunities for improvement within the nine enhancement areas; and to assess the effectiveness of existing management efforts to address identified problems.

2026 to 2030 Assessment & Strategy Cycle

For the current cycle, HICZMP **is utilizing a two-phase assessment** to target high-priority enhancement areas for the Program. An approved Assessment and Strategy is required to be eligible for the two types of Section 309 funding: Weighted Formula, and Competitive Projects of Special Merit.

- **Phase I**: A high-level analysis of all 9 enhancement areas
- **Phase II**: An in-depth analysis of 2 to 3 enhancement areas, including a strategy for each area to address high priority needs and identify methods to achieve goals.

Stakeholders provided feedback on priority enhancement areas, critical issues related to those priority areas, and opportunities for the HICZMP to strengthen and enhance priority areas. Public agencies and associated entities were provided opportunities for input via an online survey, interviews, and the OPSD newsletter. The online survey and interviews were conducted in conjunction with the Hawai‘i Ocean Resources Management Plan (ORMP) mid-way public outreach review “Refresh” of the 2020 ORMP.

NOAA review of the HICZMP draft 309 Assessment and Strategy and the opportunity for public comment will occur concurrently during a 30-day period from April 2025 – May 2025.

Summary of Recent Section 309 Achievements

HIZCMP initiated several projects supportive of the three focus areas of the Ocean Resources Management Plan: (I) Development and Coastal Hazards; (II) Land-Based Pollution; and (III) Marine Ecosystems. All projects are part of the Ocean Resources and Coastal Hazards enhancement areas.

Ocean Resources Management Plan (ORMP) Implementation Projects

The FY 2026-2030 Strategy for the Ocean Resources enhancement area continues to prioritize marine and coastal resources management given the economic, environmental, and cultural significance to the State. Continuing initiatives build upon achievements from the FY 2021-2025 Strategy, including:

High-Resolution Coral Reef Maps (Year 1, 2021): HICZMP supported the efforts of Arizona State University, the Hawai‘i Department of Land and Natural Resources (DLNR), and NOAA to develop high-resolution maps of coral reef health around the Main Hawaiian Islands using aerial imagery. These high-resolution maps depict live coral, algal cover, and potential coral bleaching for the islands of Maui, Moloka‘i, and Lana‘i. The maps were developed using laser-guided visible-to-shortwave imaging spectrometer data. This project supports the State’s Holomua Marine Initiative, Focus Area III: Marine Ecosystems, and effective management of nearshore waters for healthy reefs, fish, and communities.

Kōkua Community-Based Monitoring Program (Year 1, 2021): With the support of Project of Special Merit funds, a contract was executed with the University of Hawai‘i -Social Science Research Institute (UH-SSRI) to create the Kōkua Community-Based Monitoring Program (“Program”). This Program is a collaboration with community entities to fill data gaps in statewide monitoring of key nearshore resources. Phase 1 finalized the Kōkua Monitoring Framework, Monitoring agreement components, and training materials. In Year 4 (2024), Phase II commenced with the Piloting Phase of the Program. This project supports the State’s Holomua Initiative and Focus Area III: Marine Ecosystems.

Guide to Coastal Hazard Adaptation Strategies Suitable for Hawai‘i’s Coastline (Year 3, 2023):
HICZMP completed the Guide to Coastal Hazard Adaptation Strategies Suitable for Hawai‘i’s Coastline, which outlines regulatory framework and considerations for implementation. The completed final product includes a central StoryMap linking an Excel Matrix of all considered coastal adaptation strategies, as well as over 40 PDF Strategy Info Cards that highlight individual adaptation strategies. Planners, engineers, developers, and coastal property owners can use the guide to inform coastal management decisions. This project is supportive of Focus Area I: Coastal Hazards.

Low Impact Development Practitioner Guide for Hawai‘i’s (Year 3, 2023):
The Statewide Low Impact Development (LID) guidance was updated with the purpose of advancing the implementation of LID design features in new development and redevelopment projects throughout Hawai‘i. This initiative addresses the issue of polluted stormwater runoff within the State's watersheds by promoting the adoption of LID practices. The guidance aims to integrate these features into both new and existing developments to mitigate the environmental impact of stormwater runoff and enhance the sustainability of Hawai‘i’s coastal ecosystems. This project supports Focus Area II: Land-Based Pollution

Coastal Hazards Implementation Projects

The FY 2026-2030 Strategy for the Coastal Hazards enhancement area supports coastal hazard adaptation and response, and builds upon achievements from the FY 2021-2025 Strategy, including:

High-Resolution Probabilistic Tsunami Design Zone (TDZ) maps (Year 1, 2021-Year 3, 2023):
A carryover from the FY 2016-2020 and FY 2021-2025 Strategies, the High-Resolution Probabilistic Tsunami Design Zone (TDZ) Mapping Project focused on developing 10-meter, 2,500-year probabilistic TDZ maps for Hawai‘i. In Year 1 (2021), Phase I of the modeling and mapping began for Maui Island. In Year 3 (2023), the finalized TDZ maps, data products, and a project report were completed. The TDZ

maps will be used to codify tsunami design standards in the State Building Code, mitigate tsunami risk in coastal zone developments, and address a strategic priority in the 2018 State Hazard Mitigation Plan.

Regional Shoreline Management Initiative: Scoping Study (Phase 1) (Year 3, 2023):
The Regional Shoreline Management Scoping Study was the initial step in identifying an appropriate geographic scale to most effectively manage the shoreline area. This scale was to be determined by a variety of environmental, cultural and geophysical factors, rather than administrative (ie. parcel) boundaries. The study's final deliverables included a report on proposed methodology, case studies applying the proposed methodology, and a discussion on governance options, and a StoryMap that includes an interactive map with different spatial layers used for the regional delineation methodology.

Regional Shoreline Management Initiative: Agency Consultations (Phase 2) (Year 3, 2023):
HICZMP conducted a series of Agency Consultations with twelve different County, State, and Federal agencies with regulatory and/or management responsibilities of coastal resources. HICZMP presented the outcomes of the Regional Shoreline Management Scoping Study, and gathered feedback, potential use cases, concerns, etc. from the agencies. The regional delineation methodology proposed in the scoping study was revised to integrate agency feedback collected during the consultations.

Analysis of Relocation Strategies in Hawai‘i (Year 3, 2023- Year 4, 2024):
In Year 3 (2023), HICZMP worked with a project consultant to analyze existing laws, policies, and funding mechanisms to provide recommendations for implementing managed retreat as part of the State's overall climate adaptation strategy. These strategies were applied to two hypothetical case studies, each demonstrating different types of structures and ownership schemes commonly found in Hawai‘i. Moving into Year 4 (2024), the consultant submitted three key assessments: Funding and Financing, Legal, and Policy, and conducted stakeholder focus groups with legal, real estate, cultural, and Traditional Ecological Knowledge (TEK) representatives. These efforts culminated in a final project report, providing a comprehensive view of various strategies to facilitate voluntary relocation.

Integrating Coastal Zone Management in Hawaiian Homelands Project (Year 4, 2024):
This collaborative project between the Department of Hawaiian Home Lands (DHHL) and HICZMP is exploring feasible management frameworks to guide and/or regulate existing and new development along Hawaiian Home Lands' shoreline area. The consultant is currently assessing existing practices and laws, regulations and jurisdictions and has identified case study sites that exemplify the various challenges DHHL is experiencing with coastal hazards and development.

Phase I Assessment

Wetlands

Section 309 Enhancement Objective: Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

Note: For the purposes of the Wetlands Assessment, wetlands are "those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." [33 CFR 328.3(b)].

Resource Characterization

1. The tables below provide information on the status and trends of coastal wetlands. In 2024, the state's wetlands totaled 120, 836 acres.

Coastal Wetlands Status and Trends

Change in Wetlands	from 1996-2024
Percent net change in total wetlands (% gained or lost)*	0.40%
Percent net change in freshwater (palustrine wetlands) (% gained or lost)*	-0.20%
Percent net change in saltwater (estuarine) wetlands (% gained or lost)*	28.69%

** Hawaiian Islands data is only available for 1992, 2001, 2005, and 2010/11. 2018/19 data will not be released until 2025 at the earliest.*

How Wetlands Are Changing

Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2024 (Sq. Miles)
Development	0.05
Agriculture	0.14
Barren Land	0.28
Water	0.18

** Hawaiian Islands data is only available for 1992, 2001, 2005, and 2010/11. 2018/19 data will not be released until 2025 at the earliest.*

The tables above were completed using NOAA high-resolution CCAP data for each county and aggregated into a statewide summary using desktop GIS.

The following is a brief qualitative narrative describing wetlands status and trends of Hawai‘i's coastal wetlands, as well as recommended actions on how to minimize loss of and damage to wetlands. These resources were released after the last assessment and can be used to augment national data sets.

1. Strategic Plan for Hawai‘i Wetlands (Pacific Birds, 2024) prioritization of wetland sites and conservation actions to improve habitats for waterbirds and people, based on current and future conditions. This plan builds on the 2006he Pacific Birds Strategic Plan for Hawaiian

Wetlands. https://pacificbirds.org/wp-content/uploads/2024/02/PB-Hawaii-Plan-FINAL-2.27.24-reduced.pdf

2. Statewide Comprehensive Outdoor Recreation Plan (SCORP) (DLNR, 2021) is aimed at implementing the goals, objectives, and policies of the Hawai'i State Plan, State Recreational Functional Plan, and County General Plans by representing a balanced program of acquiring, developing, conserving, using, and managing Hawai'i's recreational resources. Includes the State Wetlands Resource Plans https://dlnr.hawaii.gov/dsp/files/2022/04/2022-02-04-SCORP-FINAL-COMPILED.pdf

3. Hawai`i Sea Level Rise Vulnerability and Adaptation Report 2022 Update (Hawai'i State Climate Commission, 2022) focuses on addressing threats posed by coastal hazards and changing coastal conditions to the economic well-being, public health, natural resources, and environment of Hawai'i. https://climate.hawaii.gov/wp-content/uploads/2023/04/Sea-Level-Rise-Adaptation-and-Vulnerability-2022-Update_Final2-1.pdf

4. Ocean Resources Management Plan: Coastal Zone Management Mauka to Makai (HICZMP, 2020) provides a focused effort to improve State policies for ocean resources by addressing management gaps in Hawai'i. https://files.hawaii.gov/dbedt/op/czm/ormp/ormp_update_reports/2020_ormp_final.pdf

5. Identifying Frameworks for Land-Based Pollution Management in the Hawaiian Islands (HICZMP, 2021) outlines the frameworks that govern the management of land-based pollution in Hawai'i, including federal, State, and county laws, initiatives, agencies, and outreach strategies. https://files.hawaii.gov/dbedt/op/czm/resource/Final-Identifying%20Frameworks%20for%20Land-Based%20Pollution%20Management%20in%20HI.pdf

6. Low Impact Development Practitioner's Guide for Hawai'i (HICZMP, 2023) provides guidance on how to plan for and implement Low Impact Development (LID) practices for new development and redevelopment in Hawai'i. LID consists of nature-based solutions aiming to preserve or enhance the natural hydrology of a place and is intended to protect Hawai'i's water resources and the environment. https://files.hawaii.gov/dbedt/op/czm/ormp/ormp_implementation/2023LIDPractitionersGuide.pdf

Management Characterization

1. The table below identifies significant changes in wetland management at the state level.

Significant Changes in Wetland Management

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	Y

2. Management categories with significant changes are identified below.

Federal Level Significant Change Affecting State Level:
Supreme Court Ruling: Sackett v. EPA
Sackett v. EPA, decided on May 25, 2023, is a Supreme Court Case ruling that limits the EPA's authority to regulate waterways. The EPA informed the Sacketts that their property contained wetlands, which were subject to regulation, and they would be fined for developing a house on their property. In response, the Sacketts sued the EPA, claiming their property was not subject to EPA regulation. The Supreme Court ruled that the Clean Water Act only protects wetlands that are continuously connected to bodies of water, narrowing the definition of a wetland.

This was not a 309- or CZM-driven change. A potential outcome of this ruling is significantly reduced federal protections for wetlands, with many wetlands no longer regulated under the Clean Water Act. The Sackett ruling could lead to increased development in wetland areas and impacts to water quality. To fill this gap, states and counties may enact their own wetland protections laws.

In Hawai‘i, the Sackett ruling may impact protections of State-defined wetlands that are no longer defined as navigable waters of the U.S. The Hawai‘i Department of Health (HIDOH) relied on federal regulation through the Clean Water Act to protect wetlands. With a narrowed definition, the State may need to implement additional mechanisms for State-level protections. While the State definition of wetlands has not changed, HIDOH is working on an updated strategy for wetlands to fill this gap.

State Level Significant Change:
Maui County Ordinance No.5421(Bill No. 91, CD1 (2022))
The purpose of this Ordinance is to conserve and protect sensitive ecosystems and the natural environment, mitigate coastal hazards, and establis a policy for wetlands restoration and protection in Titles 2, 18, and 19 of the Maui County Code. This ordinance amends Title 2 to require the Conservation Planning committee to review wetlands for possible acquisition, amends Title 18 to allow for wetlands restoration and protection in the subdivision processes, and amends Title 19 to update the Comprehensive Zoning Ordinance to establish the Wetlands Overlay District.

This was not a 309- or CZM-driven change. To administer this ordinance, the county planning department, with support from the University of Hawai‘i Sea Grant Program, worked with a contractor to develop a wetlands overlay map to identify existing and future wetland areas in the county. The likely outcome of this ordinance and map resource is a better understanding of the county's wetland resources to help guide property owners, land managers, and county planners with land use decisions.

Maui Environmentally Sensitive Areas (ESA) Atlas
The ESA Atlas is tied directly to the Maui County SMA permit application, with ESA categories based on requirements in the SMA application. The current application does not provide direction or spatial data for the applicant and/or planner to answer the questions in a substantive way.
https://uhm.maps.arcgis.com/apps/instant/lookup/index.html?appid=23a158f207e84dfdb3187fd7c28f01f4

Hawaiian Estuaries Viewer (In Development)
The Hawaiian Estuaries Viewer is an informational resource being developed by the HICZMP and the Department of Land and Natural Resources, Division of Aquatic Resources (DAR). The purpose of this resource is to identify and provide information on the locations and types of estuaries found throughout the Main Hawaiian Islands, along with imagery, where available. The intended audience for this resource is planners, water regulators, resource managers, developers, and the public.

This is a CZM-driven change. The Marine and Coastal Zone Advocacy Council convened a permitted interaction group (PIG) focused on elevating the importance of the ‘muliwai’, or estuaries, of Hawai‘i to reflect their importance as fish nurseries. Through this PIG, CZM staff learned of DAR efforts to locate and categorize estuaries throughout the State, which led to the development of this multi-agency project. This resource is intended to inform decision making for county shoreline planners and CWRM water regulators and to increase public awareness of both the locations and importance of estuaries.

Updates to HRS 11-56 Appendices
The Department of Health (DOH) is in the process of updating HRS 11-56 appendices, including one appendix focused on wetlands. The timeline for the wetland appendix is outside this 309 Assessment and Strategy 5-year timeframe.

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   HIGH PRIORITY

2. A summary of the reasoning for this level of priority is provided below.

   According to the Statewide Comprehensive Outdoor Recreation Plan (SCORP): Hawai‘i’s wetlands are valued between $4,443 and $5,206 per hectare, or approximately $10,979-$12,864 per acre. Coastal wetlands have been vulnerable, with their area declining by close to one-third by the 1980s.

   Stakeholder feedback has emphasized the need to invest in Hawai‘i’s wetland and estuary resources. The Marine and Coastal Zone Advocacy Council (MACZAC), a public advisory body that provides input to the HICZMP, created a Permitted Interaction Group (PIG) to raise awareness of estuaries as important fish nurseries. This effort led to the development of a statewide estuaries viewer and a partnership between Hawai'i Fishermen's Alliance for Conservation and Tradition, Inc. (HFACT) and Department of Aquatic Resources (DAR) to focus on estuary health within DAR’s Holomua Plan, which focuses on community collaboration to sustainably manage marine resources.

   In addition to acting as fish nurseries, wetlands provide a rich habitat for native and endemic birds, which include a number of threatened and endangered species, including the Hawaiian coot, or 'alae ke'oke'o, the Hawaiian gallinule, or ‘alae ‘ula, the Hawaiian stilt, or ae'o, the Hawaiian duck, or kōloa maoli, and the Hawaiian goose, or nēnē, which is the official State bird of Hawai‘i.

   A member of the O‘ahu Resource Conservation & Development Council (ORCDC), also provided input during the 309 discussion, noting that wetlands should be prioritized because of their importance in contributing to sustainable food systems through providing local farmers with land

appropriate for lo'i kalo, the traditional Hawaiian irrigation systems used for growing taro plants, which are processed to make poi, a historically abundant native Hawaiian food staple.

In stakeholder engagement discussions with the Hawai’i Department of Health (DOH), DOH emphasized the need to prioritize wetland protections due to their function as green stormwater infrastructure, and as a natural filter to decrease pollutant loads of waters entering the nearshore environment. DOH is in the process of developing a wetlands strategy to protect wetlands no longer covered by the Clean Water Act following the Sackett ruling.

Coastal Hazards

Section 309 Enhancement Objective: Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.

Resource Characterization:

1. The table below indicates the general level of risk for each of the coastal hazards.

General Level of Hazard Risk in the Coastal Zone

Type of Hazard	General Level of Risk[1] (H, M, L)
Flooding (riverine, stormwater)	H
Coastal storms (including storm surge)	H
Geological hazards (e.g., tsunamis, earthquakes)	H
Shoreline erosion	H
Sea level rise	H
Great Lakes level change	N/A
Land subsidence	M
Saltwater intrusion	H
Other (please specify)	N/A

2. A summary of the results of additional data or reports on the level of risk and vulnerability to coastal hazards within the state since the last assessment is provided below.

State Hazard Mitigation Plan (2023)

In 2023, the Hawai‘i Emergency Management Agency (HI-EMA) released the most recent version of the State Hazard Mitigation Plan (SHMP). The Plan identifies “Climate Change and Sea Level Rise” and “Flood”, which includes chronic coastal flooding and erosion, as two of the fifteen highlighted hazards. The entire Hawaiian archipelago, including the main Hawaiian Islands and Northwestern Hawaiian Islands, have been experiencing sea level rise and flooding challenges. The local relative rates of sea level rise vary among the islands due to varying rates of subsidence and possibly, in part, due to oceanic variability. For example, the sea level rise on the Island of Hawai‘i (younger island with higher subsidence rate) is almost twice the rate on the Island of Kaua‘i (older, relatively stable island). The latest peer-reviewed science on Hawai‘i sea level rise projections finds that 3.9 feet of sea level rise will occur by 2100 in an “intermediate” scenario.

The 2023 SHMP includes a summary table highlighting key impacts of various hazards. The “Climate Change and Sea Level Rise” Hazard, which is evaluated as the 3.2ft SLR-XA, is projected to displace

[1] Risk is defined as “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

19,830 people, impact 54 state buildings ($57.5M) and 38.8 miles of state roads. The “Chronic Coastal Flood” Hazard, which is evaluated as the 1.1ft SLR-XA, is projected to displace 4,160 people, impact 8 state buildings ($31.9M) and 15 miles of state roads. See 2023 SHMP, Table 4.17-2 for full summary table.

Act 178, SLH 2021 Annual Reports (2021-2023)

In 2021, the Hawai‘i State Legislature passed Act 178 to begin the long-term planning needed to effectively address climate change impacts. The purpose of this Act is to:

1. Require the Office of Planning and Sustainable Development (OPSD), in coordination with state agencies with operational responsibilities over state facilities, to:
   a. Identify existing and planned facilities that are vulnerable to sea level rise, flooding impacts, and natural hazards;
   b. Assess options to mitigate the impacts of sea level rise to those facilities; and
   c. Submit annual reports to the Governor, Legislature, and the Hawai‘i Climate Change Mitigation and Adaptation Commission regarding vulnerability and mitigation assessments for state facilities and progress toward implementing sea level rise adaptation in future plans, programs, and capital improvement needs and decisions.
2. Update and reaffirm the role of the OPSD to coordinate climate change adaptation and sea level rise adaptation among all state agencies to improve the interagency coordination of these activities; and
   a. Amend the Hawai‘i State Planning Act to include sustainable development, climate change adaptation, and sea level rise adaption as objectives for facility systems.

To identify the existing facilities vulnerable to sea level rise, HICZMP compiled an inventory of state managed facilities (i.e. buildings) and conducted an exposure assessment of facilities located within five different projection scenarios. The number of vulnerable state facilities increased across all major islands as SLR scenario increased. In the 3.2ft SLR-XA, there are 61 state facilities exposed to SLR – 48 of which are located on O‘ahu. In the 6ft NOAA scenario, 208 state facilities are exposed to SLR – 182 of which are located on O‘ahu. For further breakdown of exposed state facilities per island, see the 2023 Act 178, SLH 2021 Annual Report, Table 2.

HDOT Hawai‘i Highways Climate Adaptation Exposure Assessment (2021)

The Hawai‘i Department of Transportation (HDOT)’s Highway Division conducted a comprehensive assessment that described the exposure of assets, namely roads, bridges, culverts and tunnels, to seven climate-related hazards and lava flow. Five of the assessed hazards relate to the coast and included passive flooding, annual high wave flooding, coastal erosion, storm surge and tsunami. This Climate Adaptation Exposure Assessment was complemented by the release of the *HDOT: Hawai‘i Highways Climate Adaptation Action Plan: Strategies for a More Resilient Future (2021)*, which identifies strategies through which key procedures and agency capabilities can be improved to be better prepared for climate change and incorporate resilience into everyday practices.

The Climate Adaptation Exposure Assessment summarizes the vulnerable HDOT Highways assets under each hazard type. Passive flooding threatens 9.38 miles of road and 92 bridges, coastal erosion threatens 23.74 miles of roads and 22 bridges, annual high wave flooding threatens 23.93 miles of roads and 50 bridges, and storm surge threatens 74.14 miles of roads and 120 bridges.

Refer to the HDOT Hawai‘i Highways Climate Adaptation Exposure Assessment, Table E2-2 for further information.

Some of the coastal hazard related takeaways from the assessment include:

- While exposure of road segments to passive flooding is relatively small across all islands, culverts and bridges are considerably exposed to passive flooding.
- Actual exposure of assets to groundwater inundation may be underestimated given that increased groundwater levels may pose problems to pavement sublayers and bridge foundations much before these levels can be observed on the surface.
- Hazards, such as coastal erosion, are site-specific and therefore require field visits and studies to validate areas identified in the assessment.

Hawai‘i Sea Level Rise Vulnerability and Adaptation Report Update (2022)
Published by the Hawai‘i State Climate Change Mitigation and Adaptation Commission, this brief report provides a 5-year update to the 2017 Hawai‘i Sea Level Rise Vulnerability and Adaptation Report. The 2022 update assessed the State’s progress on achieving goals outlined in the 2017 Report. Additionally, the Report incorporated projections from more recent sea level rise science, such as the IPCC AR6 (2020) and the NOAA-led Sea Level Rise Technical Report (2022). The following excerpts highlight key findings specific to Hawai‘i:

> Long-term observational data from local tide gauge stations show that sea level is rising around Hawai`i. Models indicate that Hawai`i and other tropical Pacific sites will experience sea level rise that is 16% to 20% higher than the global average (Sweet. et al. 2022 NOAA Technical Report). The NOAA 2022 report provides a range of regionalized sea level rise scenarios based on differing GHG emissions pathways and associated global warming and ice sheet melt (all projections relative to sea level in the year 2000):
> - Sea level will rise around Hawai`i between 0.7 and 1.5 feet by 2050.
> - The Intermediate (mid-range) estimate is for a rise of 1.0 feet by 2050.
> - Sea level will rise between 1.3 and 8.0 feet by 2100.
> - The Intermediate (mid-range) estimate is for a rise of 3.9 feet by 2100.

University of Hawai`i Sea Level Center researches and others conducted a study reporting that rapid increases in tidal flooding are expected to begin locally by the mid-2030’s (Thompson, et al. 2021). This increase will be the result of a combination of ongoing sea level rise and natural cyclicity in tidal amplitudes, i.e., natural variations in the highest high tides. By the early 2040’s Honolulu is projected for 2-3 high tide flood days per month considering NOAA’s intermediate SLR scenario. However, such high tide events will be clustered over times of the year when tides are at their peak (i.e., during “king tides”), in which as many as 6-14 days per month can be expected. Researchers recommend that compound flood impacts during these more extreme periods of tidal flooding be considered in flood management planning instead of annual averages (Thompson, et al. 2021).”

CRC Sea Level Rise Viewer (hawaii.edu)
This map viewer, developed by the University of Hawai‘i’s Climate Resilience Collaborative (CRC) Lab provides GIS data layers depicting projected impacts of sea level rise. The viewer includes data on passive flooding, groundwater inundation, annual high wave-driven flooding and erosion hazard lines. The impacts can be adjusted at one-foot increments of projected sea level rise. The viewer is still under development and, currently, only provides data for selected areas.

Maui Island Shoreline Setback Viewer and Data Access
This Viewer depicts the shoreline setback lines for the Island of Maui as established by the Shoreline Rules. This Viewer is intended to provide situational awareness of the approximate location of setback lines for planning purposes, although it does not provide the exact location of shoreline setback lines due to positional variations among underlying base imagery sources.

O‘ahu Historical Shoreline Change Map
This Map depicts the annual shoreline change rate and may be used as a tool to determine lots susceptible to erosion. Areas experiencing erosion are identified by red transect lines; while areas experiencing accretion are identified by blue transect lines.

Kaua‘i Sea Level Rise Constraint District Viewer
This Viewer is an online atlas generated by data used in the creation of the Hawai‘i Sea Level Rise Vulnerability and Adaptation Report. The viewer provides visualizations depicting projections of future annual high wave run up and passive flooding hazards.

Management Characterization

1. The tables below identify significant state-level changes since the last assessment.

Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Elimination of development/redevelopment in high-hazard areas	Y	Y	Y
Management of development/redevelopment in other hazard areas	Y	Y	Y
Sea level rise or Great Lakes level change	Y	N	N

Significant Changes in Hazards Planning Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Hazard mitigation	Y	Y	Y
Sea level rise or Great Lakes level change	Y	Y	Y

Significant Changes in Hazards Mapping or Modeling Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Sea level rise or Great Lakes level change	Y	Y	Y
Other hazards	Y	N	Y

2. A summary of how “high-hazard areas” are defined in the State’s coastal zone is provided below.

   The State of Hawai‘i employs the Federal Emergency Management Agency (FEMA), National Flood Insurance Program (NFIP), definition of coastal high hazard area: *Special Flood Hazard Areas (SFHAs) along the coasts that have additional hazards due to wind and wave action. These areas are identified on Flood Insurance Rate Maps (FIRMs) as zones V, V1-V30 and VE.* (FEMA, 2020).

   Pursuant to Hawai‘i CZM Law, Chapter 205A, “Coastal hazards” are any tsunami, hurricane, wind, wave, storm surges, high tide, flooding, erosion, sea level rise, subsidence, or point and nonpoint source pollution. As amended by Act 16, SLH 2020, all new single-family residences situated on a parcel that is impacted by waves, storm surges, high tide, or shoreline erosion, regardless of their sizes, are required to obtain a special management area permit from the county authorities.

   County of Kaua‘i: "Coastal high hazard area" is the area subject to high velocity waters including, but not limited to, coastal and tidal inundation or tsunamis. The area is designated on a FIRM as Zone VE.
   https://ecode360.com/42679315#42679253

   City & County of Honolulu: “Coastal High Hazard Area” is a special flood hazard area subject to high velocity wave action from storms or seismic sources and designated on the flood insurance rate map as zone VE or V.
   § 21A-1.4 Definitions. (amlegal.com)

   County of Maui: "Coastal high hazard area" is defined as a special flood hazard area subject to high velocity wave action from storms or seismic sources and designated on a flood insurance rate map as zone VE or V.
   16.29.030 - Definitions. | Code of Ordinances | County of Maui, HI | Municode Library

   County of Hawai‘i: “Coastal high hazard (tsunami)” are areas designated on a FRIM as zones V and VE.
   Chapter 27 (hawaiicounty.gov)

3. A summary of significant changes to management categories since the last assessment is provided below.

   Significant policy changes affecting development/redevelopment in hazard areas:

   Act 16, Session Laws of Hawai‘i (SLH) 2020, effective September 15, 2020
   Updates Coastal Zone Management Law (HRS Ch. 205A) with the following substantive changes:
   - Special Management Area (SMA) Permits are now required for residential developments along the shoreline
   - Reducing the shoreline setback to less than 40 feet is no longer allowed
   - Prohibitions have been incorporated to protect beaches and coastal dunes by restricting and/or prohibiting construction of shoreline hardening structures at sites with beaches
   - New definitions or changes in definitions include the following:
   - Adds sea level rise and high tide to the definition of “coastal hazards”.

- Adds a definition of “beach” to enhance beach protection and use beach including dunes as natural buffer against coastal hazards;
- Adds protection and restoration of “coastal dunes” and “coral reefs” to coastal zone management objectives and policies; and
- Includes as “development” the construction or reconstruction of a single-family residence on a shoreline parcel, or a parcel that is impacted by waves, storm surges, high tide, or shoreline erosion and, therefore, requires an SMA permit.

County Ordinance Changes to Manage Development in Coastal Areas

County of Kaua‘i: has passed several new ordinances to manage development in coastal areas and require additional mitigation efforts in areas vulnerable to sea level rise.
Ordinance No 1085: Established Special Treatment Coastal Edge with additional performance required for development in particularly vulnerable areas along the coastline. Effective December 3, 2020.
Ordinance No 1088: Amends Shoreline Setback Rules (Article 8, Chapter 27) to incorporate science-based erosion rates established in the Kaua‘i Coastal Erosion Study (2018). Effective February 4, 2021.
Ordinance No 1134: Amends the Comprehensive Zoning Ordinance to include “Constraint Sea Level Rise Districts.” Key provisions include: New structures proposed within the Sea Level Rise District (roughly the 3.2 ft SLRXA) will need to be raised to accommodate for projected sea level impacts. Habitable structures must be 2 ft above the depth of projected passive flooding and/or high wave run-up and non-habitable structures must be 1 ft above the depth of projected passive flooding and/or high wave run-up. Effective October 14, 2022.

City & County of Honolulu: Amended their Shoreline Setback Ordinance 23-3 (Revised Ordinance of Honolulu Chapter 26) , effective July 1, 2024. Key provisions include: The new rules establish a 60 ft setback in the primary urban center (PUC). Areas outside of the PUC with a history of erosion use a formula-based equation using annual coastal erosion rates to determine their setback.

County of Maui: Amended their Shoreline Setback (Maui Planning Commission Rules Ch 203) and SMA Rules (Maui Planning Commission Rules Ch 202) effective August 25, 2024. Key provisions include: The new rules amend how the shoreline setback is established. In areas where it is mapped, the Erosion Hazard Line as identified on the Hawai‘i Sea Level Rise Viewer is the shoreline setback line. Expanded the list of categorical exemptions.

Act 231, Session Laws of Hawai‘i 2020

Updates the Mandatory Seller Disclosures in Real Estate Transactions Law by requiring that real estate transactions within the state of Hawai‘i must disclose any risk of sea level rise to the property. This includes properties within the State of Hawai‘i’s Sea Level Rise Exposure Area, which is up to, and includes the 3.2 ft scenario.

Significant Projects under the 2020 Ocean Resources Management Plan, Development & Coastal Hazards Focus Area:

State Facilities & Sea Level Rise (Act 178, Session Laws of Hawai‘i 2021)

The main tasks of this initiative are described in Question #2 of the “Resource Characterization” section of the Coastal Hazards Assessment. Additionally, since conducting the sea level rise exposure

assessment, HICZMP has procured services to develop a standardized methodology and process for assessing the vulnerability of state-managed facilities to sea level rise. The deliverables will include: a standardized form that can be used by agencies to assess the vulnerability of assets within their portfolios, a guidance document on how to complete the vulnerability assessment form, and recommendations on how to use the assessment results to rank vulnerability (high, medium, low). This project is in progress, with anticipated completion in September 2025.

Guide to Coastal Hazard Adaptation Strategies Suitable for Hawai‘i’s Coastlines
Hawai‘i coastal zone management law prohibits the use of seawalls and revetments on sites with beaches, which are considered a public trust resource, unless it is clearly in the interest of the public. The guide serves as an informational resource that identifies over 40 adaptation strategies to provide protection from coastal hazards such as erosion, storm flooding, wave impact forces and sea level rise flooding. Strategies are applicable for parcel and regional scale needs and range from gray (built structures) to green (nature-based) solutions. Each strategy includes information on advantages and disadvantages, relative cost for implementation and maintenance, ideal scale and site conditions, as well as potential permit requirements. The guide is visible on the ORMP website: Hawai'i Coastal Adaptation Strategies (arcgis.com) with links to an Adaptation Strategy Matrix and Info Cards, an interactive map of coastal adaptation projects implemented statewide, and links to agencies with responsibilities to issue permits and approvals relevant to various adaptation strategies. This project was completed in 2023.

Analysis of Managed Retreat Strategies in Hawai‘i
This in-depth analysis discusses a managed retreat framework for the State, including potential policy amendments that would facilitate opportunities for managed retreat in cases where development is threatened by coastal erosion. Following up on the 2019 Managed Retreat Feasibility Study, this analysis focuses on implementation challenges and opportunities for managed retreat in Hawai‘i, specifically through the lenses of law and policies and funding/financing options. Funding for this project came from the FY22 Project of Special Merit. The final report was completed in December 2024.

Regional Shoreline Management Initiative
In response to conversations with stakeholders, HICZMP is embarking on a long-term initiative to explore options to identify a geographic scale appropriate for comprehensive shoreline management, and strategies for integrating a regional planning approach into existing planning and decision-making.

- In 2023, HICZMP completed a Scoping Study (Phase 1) which included a literature review, potential methodology for delineating regions, and a 5-year roadmap for implementation.
- In 2024, HICZMP completed Agency Consultations (Phase 2), including group/1:1 with partners with planning and/or regulatory responsibilities over coastal resources. HICZMP presented the findings and recommendations from the Scoping Study and solicited feedback which will be integrated into a revised Methodology 2.0. Phase 2 will be completed in December 2024.

HICZMP is a subawardee on a NOAA CRRC grant (University of Hawai‘i Sea Grant, “‘Aina restoration through community governance to advance climate resilience in the Hawaiian Islands.") Under this award, HICZMP will pilot the regional shoreline management methodology in three moku. Tasks include compiling existing available data related to shoreline characteristics, holding community meetings to collect place-based knowledge, integrating western science & community-input/TEK to

create vetted regional delineation maps, and working with selected regions to assess vulnerabilities and identify adaptation strategies. This project is anticipated to run from October 2024 – October 2029.

Tsunami Design Zone Maps

Part of the statewide initiative to advancing tsunami resilience is to develop probabilistic Tsunami Design Zone (TDZ) mapping for the state using higher order modeling and mapping for better accuracy and higher resolution. The probabilistic mapping models the probability of a 2,500-year tsunami event. The maps would inform engineers and experts on how best to design essential facilities, critical infrastructure, and taller buildings within the TDZ to be able to withstand tsunami loads and impacts. The project outcome also proposes draft amendments for each county's building codes to adopt the probabilistic Tsunami Design Zone maps and model data developed along with styles of maps appropriate for use in their building codes and the ASCE Tsunami Design Geodatabase. This was a phased project with maps for O‘ahu completed in 2019, maps for Kaua‘i and Maui completed in 2023.

Integrating Coastal Zone Management on Hawaiian Home Lands

HICZMP is partnering with the Department of Hawaiian Home Lands (DHHL) to facilitate inter-agency coordination around coastal permitting, and identify potential strategy options for DHHL to guide coastal management decisions on their properties. Currently, Hawaiian Home Lands are not subject to Special Management Area (SMA) permitting, which is administered by the counties. However, DHHL does not have its own internal policies regarding coastal development. In anticipation of more frequent challenges caused by sea level rise and coastal erosion, DHHL is looking for potential strategies to manage coastal Hawaiian Home Lands. Funding for this project comes from the FY23 Project of Special Merit. This project is in progress, with anticipated completion in March 2025.

The following planning and mapping projects were not funded by Section 309 nor led by CZM. All are described in Question #2 of the "Resource Characterization" section of the Coastal Hazards Assessment:

- 2023 State Hazard Mitigation Plan
- University of Hawai‘i, Climate Resilience Collaborative Sea Level Rise Viewer

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   HIGH PRIORITY

2. A summary of the reasoning for this level of priority is provided below.

   Of the nine enhancement areas, the area of coastal hazards has been identified as the highest priority for both the HICZMP and stakeholders. Hawai‘i is extremely vulnerable to all types of chronic and episodic coastal hazards, including tropical storms, tsunamis, flooding, coastal erosion, high-wave run-up, etc. Impacts observed around the State include narrowing and loss of beaches and shoreline access, damage to private and public property, threats to public infrastructure, public

safety, loss of cultural and recreational resources, damage to ecosystems and habitats, etc., and are anticipated to increase in frequency and severity as sea level rise continues. As an island, the ripple effects of impacts in the coastal areas are often felt by a wide range of sectors.

While there have been substantial and meaningful efforts from HICZMP and other local entities to address coastal hazard mitigation, response and planning, there are still numerous challenges in statewide policies and enforceable mechanisms that need to be further developed. An example includes increasing and urgent needs of statewide strategies and policies with legal mechanisms to guide the regulatory parcel-by-parcel approaches in dealing with shoreline-related permits and approvals across state and county jurisdictions. Additionally, most of HICZMP‘s current initiatives are long-term, phased efforts and will require continued and consistent support and investment. It is therefore both timely and prudent for the HICZMP to conduct a Phase II Assessment to further explore specific problems, opportunities for improvement and priority needs to inform the development of a Section 309 Strategy for this enhancement area.

Public Access

Section 309 Enhancement Objective: Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

Resource Characterization

1. The table below provides data on public access availability within the coastal zone.

Public Access Status and Trends

Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, –, unknown)	Cite data source
Beach access sites	Unknown. Each county continues applying subdivision ordinances and special management area rules and shoreline setback rules to create, maintain and improve the beach access sites through project permit requirements	Unknown	A comprehensive statewide beach/shoreline access database does not exist for Hawai‘i.
Shoreline (other than beach) access sites	Unknown. All counties have ordinances related to public shoreline access and have the primary authority and duty to develop and maintain public access to and along the shorelines (HRS §§ 46-6.5, 115-5 & 115-7, 205A-2).	Unknown	A comprehensive statewide beach/shoreline access database does not exist for Hawai‘i.
Recreational boat (power or non-motorized) access sites	63 boating facilities, including Division of Boating and Ocean Recreation (DOBOR) Boating Facilities (43), county facilities (8), restricted facilities (3), and private facilities (9)	Total boating facilities including DOBOR, county, restricted, and private boating facilities. ↓ 3 DOBOR Boating Facilities ↑ 1 county facilities ↑ 1 restricted facility ↑ 1 private facility	State Department of Land and Natural Resources (DLNR), DOBOR: https://dlnr.hawaii.gov/dobor/dobo r-facilities/ 8/14/2024

Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, –, unknown)	Cite data source
Designated scenic vistas or overlook points	52 state parks with 26 state park hiking trails for scenic lookouts	↓2 parks with hiking trails for scenic lookouts	DLNR Division of State Parks: https://dlnr.hawaii.gov/dsp/parks/ DLNR Division of State Hiking Trails: https://dlnr.hawaii.gov/dsp/hiking/ Scenic Overlooks: https://www.onlyinyourstate.com/hawaii/breathtaking-scenic-overlooks-hi/ 8/14/2024
Fishing access points (i.e. piers, jetties)	Fishing, including charter fishing and shore fishing, is a deeply rooted part of local culture in Hawai‘i. Most shoreline areas in Hawai‘i are open to fishing, unless prohibited or restricted and regulated by areas and seasons, indicated by signs, e.g., Regulated Fishing Areas; Marine Life Conservation Districts.	Unknown – only accounted for select DOBOR facilities. 43 DOBOR recreation boating facilities.	DOBOR: https://dlnr.hawaii.gov/dobor/dobor-facilities/ 8/14/2024
Coastal trails/ boardwalks	**No. of Trails/ boardwalks** More than: (1)125 Na Ala Hele Trails & Access Roads in Kaua‘i, O‘ahu, Moloka‘i, Lana‘i, Maui and Hawai‘i*. *Does not include 1 closed trail on Kaua‘i, 2 closed trails on O‘ahu, and 1 closed trail on Maui. (2)26 Other State Park Hiking Trails. **Miles of Trails/boardwalks** More than: (1)466.8 miles of open Na Ala Hele Trails & Access Roads, and 8.75 miles of closed Na Ala Hele Trails and Roads; and (2)85.63 miles of Other State Park Hiking Trails on Kaua‘i, O‘ahu, Hawai‘i and Maui.	↑ 10 Na Ala Hele trails; 67.54 miles due to 5 reopened trails and roads, including 32 miles Mauna Kea Summit Road. ↓ 2 state park hiking trails; 3.2 miles.	Division of Forestry & Wildlife: https://hawaiitrails.hawaii.gov/trails/#/ Division of State Parks: https://dlnr.hawaii.gov/dsp/hiking/ 8/14/2024

Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, –, unknown)	Cite data source
Acres of parkland/open space	Total sites More than: (1)National Wildlife Refuges 17 sites; 2,707,594 acres (2)National Parks 8 parks; 390,925 acres (3)State Parks and Historic Sites 64 parks; 33,619 acres (4) State Forest Reserve Lands N/A sites; 670,295 acres (5) State Natural Area Reserves 23 areas; 127,578 acres (6) State Public Hunting Areas 122 areas; 939,100 acres (7) State Managed Sanctuaries, Refuges, and Preserves 50 sites; 30,200 acres (8) County Parks 859 parks; 11,309 acres	1. ↑ 7 sites*; ↑ 2,412,651 acres* *Not open or not accessible to the public 2. ↑ park; ↑ 21,764 acres 3. ↑ 1 park; ↑ 152 acres 4. ↑ 12,454 acres 5. ↑ 2 areas; ↑ 3,768 acres 6. – areas and acres 7. – Sites; ↓9,800 acres 8. ↑ 129 parks; ↑ 143 acres	(1)U.S. Fish & Wildlife Service https://www.fws.gov/program/national-wildlife-refuge-system 8/14/2024 (2)DBEDT, 2023 https://files.hawaii.gov/dbedt/economic/databook/db2023/section07.pdf (3) Ibid. (4)DBEDT 2023. https://files.hawaii.gov/dbedt/economic/databook/db2023/section20.pdf (5) Ibid. (6)DBEDT, 2023. https://files.hawaii.gov/dbedt/economic/databook/db2023/section07.pdf (7) Ibid. (8) Ibid.

Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, –, unknown)	Cite data source
Access sites that are Americans with Disabilities Act (ADA) compliant	Hawai‘i Outdoor Developed Areas Accessibility Guidelines, available from the State of Hawai‘i Department of Health’s website at https://health.hawaii.gov/dcab/files/2017/03/HODAAG-Guidelines-Final-Accessible-2.pdf take effect on January 2, 2017.	Unknown Many beaches on O‘ahu, Maui, Kaua‘i and Hawai‘i Island feature accessible parking, all-terrain wheelchair rentals, and beach mats for sand access. For example, Ala Moana Beach Park, Hanauma Bay Nature Preserve and Kailua Beach on O‘ahu offer all-terrain wheelchairs (typically with a two-hour limit) and beach access mats. So do Lydgate Beach Park and Poipu Beach on Kaua‘i. ADA-compliant ramp on Kama‘ole Beach Park III on Maui. Recent Keaukaha public park improvements with ADA access on Hawai‘i Island.	Some Hawai‘i Island and Maui beaches are accessible, with more information from their respective departments of parks and recreation.
Other (please specify)	N/A	N/A	N/A

2. A summary characterizing the demand for coastal public access and the process for periodically assessing demand is provided below.

   The entire State of Hawai‘i is in the coastal zone management area. Visiting the beach is the most popular activity of both Hawai‘i’s visitors and residents, necessitating continuous investments in beach access and beach facilities. Demand for coastal public access remains steady in Hawai‘i and increases as the State’s resident and visitor populations continue to grow. Hawai‘i’s resident population demands ongoing improvements to existing beach facilities, increased beach and trail access, walking and hiking facilities, and implementation of strategies to protect natural and wildlife resources and wilderness areas for both observation and subsistence uses.

   According to the “Population and Economic Projections for the State of Hawai‘i to 2050” from the State of Hawai‘i Department of Business, Economic Development and Tourism (DBEDT April 2024), Hawai‘i resident population is projected to increase from 1.45 million in 2020 to 1.56 million in 2050, reflecting an annual average growth rate of 0.24 percent. The resident population of Honolulu

County is projected to grow at an annual rate of 0.2 percent during the 2020 to 2050 period, Hawai‘i County and Kaua‘i County are projected to grow at 0.5 percent, and Maui County is projected to have 0.4 percent average annual growth, increasing the combined population share of the three neighbor island counties to 32.3 percent by 2050. It is noted that migration is the main driver of Hawai‘i future population growth, while the total fertility rate declined from 2.34 in 2008 to 1.77 in 2020, with an especially sharp decline in recent years.

The tourism industry continues playing an extremely significant role in Hawai‘i’s economy. The Hawai‘i Tourism Authority (HTA) reported in its 2017 Annual Visitor Research Report that Hawai‘i’s tourism industry achieved new records in total visit spending and visitor arrivals in 2017, making the sixth consecutive year of record growth in both categories. A total of 9,404,346 visitors came to the state, an increase of 5.3 percent from the previous record of 8,934,277 visitors in 2016. Hawai'i Visitor Statistics released for 2018 from HTA (January 31, 2019), a total 9,954,548 visitors came to Hawai‘i in 2018, an increase of 5.9 percent from 9,404,346 visitors in 2017. Unfortunately, the trend of the annual visitors to Hawai‘i was suddenly affected by COVID-19. After the three years of COVID-19, according to 2023 Annual Visitor Research Report, a total of 9,657,607 visitors arrived to the Hawaiian Islands in calendar year 2023, which was an increase of 4.6 percent from 9,233,983 visitors in 2022. Total arrivals declined 7.1 percent when compared to 10,386,673 visitors in 2019.

Total visitor expenditures in 2023 measured in nominal dollar was $20.87 billion (+5.4%) compared to $19.80 billion in 2022.

Several relevant federal and state agency studies conducted since the last assessment reveal the continuing demand for outdoor recreation and need for additional recreational facilities. A review of these reports is provided below.

2022 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

The U.S. Fish & Wildlife Service National Survey of Fishing, Hunting, and Wildlife-Associated Recreation is conducted every five years and is considered one of the most important sources of information on fish and wildlife recreation in the United States. The 2022 National Survey is the fifteenth such report. However, given the mounting challenges with increasing costs and declining response rates of the Survey, the task force focused on high-level, national data only.

In contrast to the 2011 National Survey, the 2016 and 2022 National Surveys of Fishing, Hunting, and Wildlife-Associated Recreation did not collect data at the state level and there are no state-level survey reports. Results from the 2022 Survey should not be directly compared to results from any previous Surveys. As a result of lack survey data at the state level from the 2022 Survey Report, the following 2011 National Survey data for the State of Hawai‘i would be considered reference only.

The 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation found that 465,000 Hawai‘i residents and nonresidents 16 years old and older fished, hunted, or wildlife watched in Hawai‘i. Of the total number of participants, 157,000 fished; 23,000 hunted; and 358,000 participated in wildlife-watching activities, including observing, feeding, and photographing wildlife. In 2011, state residents and nonresidents spent $993 million on wildlife recreation in Hawai‘i. Of

that total, trip-related expenditures accounted for $752 million, while equipment expenditures totaled $212 million. The remaining $28 million was spent on licenses, contributions, land ownership and leasing, and other items.

Bridging the 50-State Survey of Fishing, Hunting, and Wildlife-Related Recreation with Previous National Survey of Fishing, Hunting, and Wildlife-Associated Recreation Trends, published in March 2020, by the Rockville Institute for State Fish and Wildlife Agencies did not provide updated data at the state level. According to 2016 50-State Survey of Fishing, Hunting, and Wildlife-Related Recreation conducted by the Rockville Institute for State Fish and Wildlife Agencies under the aegis of the Association of Fish and Wildlife Agencies, 1,125,000 Hawai‘i residents and nonresidents16 years and older participated wildlife-related recreations. Of the number of participants, 387,000 sportspersons, and 937,000 wildlife watching activities. Among 552,000 Hawai‘i residents 16 years and older participated wildlife-related recreations, 268,000 fished and/or hunted, 28,000 fished and hunted, and 235,000 fished only. The expenditures from 196,000 Hawai‘i resident participants in fishing were estimated at $409,215,000, and the expenditures from 223,000 resident participants in wildlife watching were estimated at $373,363,000.

Statewide Comprehensive Outdoor Recreation Plan 2021

The 137 islands and atolls of Hawai‘I have a total land area of 6,423 square miles and are spread out over 1,500 miles. The eight main islands of the Hawai‘i group (from largest to smallest) are Hawai‘i, Maui, O‘ahu, Kaua‘i, Moloka‘i, Lāna‘i, Ni‘ihau, and Kaho‘olawe. Hawai‘i’s unique geographical, social, cultural, and economic setting as well as its land tenure history have influenced outdoor recreation facility locations and development and continue to play a role in decision-making for the state’s outdoor recreation facilities.

To remain eligible for National Park Service Land & Water Conservation Fund grants, every State must prepare and regularly update (i.e., every 5 years) a statewide comprehensive outdoor recreation plan (SCORP). The State of Hawai‘i Department of Land and Natural Resources is delegated the responsibility for preparing and implementing the Hawai‘i SCORP, and completed Hawai‘i SCORP 2021 Update in conformance with a basic requirement to qualify for continuous receipt of federal grants for outdoor recreation projects under the Land and Water Conservation Fund (LWCF) Act, Public Law 88-758, as amended.

In FY2016 at the time of the last 2015 SCORP update, Hawai‘i’s apportionment of the LWCF fund was just over $1 million. In FY2021, Hawai‘i’s apportionment was $3 million which represents a substantial increase in funding because of the Great American Outdoors Act.

Hawai‘i’s recreational environment is divided into mauka (mountain or toward the mountains) and makai (seaward). Mauka recreation, often in forest settings, tends to include land and nature-based activities such as hiking, wilderness camping, picnicking, and hunting. Makai recreation along the shoreline and in the ocean includes surfing, swimming, snorkeling, diving, fishing, boating, beach activities, camping, and picnicking.

While issues identified in the 2015 SCORP still exist, such as the need for sports fields, discussion through the 2021 SCORP engagement process frequently focused on the reopening of recreation spaces and future regulations of the tourism industry.

Key findings from 2021 SCORP are as follows:

- Visiting a beach is the most frequent water-based activity, while hiking is the most frequent land-based activity.
- When asked to rate the quality, quantity, accessibility, and condition of land and water-based recreation facilities, respondents reported the most dissatisfaction with the quality of facilities.
- When asked about barriers and limitations to outdoor recreation, most respondents cited overcrowding (56%) and lack of time (43%), followed by lack of available facilities (39%) and/or access to recreation areas (39%). The quality or condition of facilities (34%) and safety concerns (33%) were also notable barriers to participating in outdoor recreation.
- Protecting natural and wildlife resources and wilderness areas was identified as a top priority for investment in outdoor recreation for the next five years by the public and recreation providers.
- Consistent with responses from the 2015 SCORP, operating and maintaining existing infrastructure and facilities was identified by the public and providers as a priority for investment.
- Enforcement was rated as the most serious challenge in managing and maintaining the quality of outdoor recreation facilities and resources by recreation providers.
- Outdoor recreation providers are challenged to deliver and maintain outdoor recreation facilities, manage use, and conduct enforcement due to uncertain and inadequate funding.
- Nation-wide trends that providers are seeing in Hawai‘i include the heavy use of E-bikes on trails and increased participation in outdoor recreation due to restrictions on indoor activities during the COVID-19 pandemic.

3. A summary of data or reports on the status or trends for coastal public access since the last assessment is provided below.

According to Statewide Comprehensive Outdoor Recreation Plan 2021, nearly 40 participants in the SCORP engagement process voiced concern regarding the Americans with Disability Act (ADA) and compliance, stating the need for more “walking paths that are ADA accessible” and that “pathways are not easily ADA accessible.”

Hawai‘i’s population is aging and by 2045, 23.82% of the state’s population is predicted to be 65 and above, which is a significant increase from the 19.07% of the population in 2020. As Hawai‘i’s population ages, the number of people identifying as having a disability is expected to grow, for example, nearly one-third of Hawai‘i’s over 65 population has a disability. When meeting with County Parks and Recreation administrators and staff in preparation for the SCORP 2021 update, the participants acknowledged the ongoing public concerns over ADA compliance, and more specifically, wheelchair compliance.

The last assessment reported that in response to House Concurrent Resolution No. 141, as adopted by the Twenty-Eighth Legislature of the State of Hawai‘i, Regular Session of 2015 that recognized the importance for providing access to Hawai‘i’s beaches for everyone, including persons with

disabilities, the State of Hawai‘i Department of Land and Natural Resources and the four counties submitted a report entitled “Improve Public Beach Access for Persons with Disabilities in Hawai‘i to the Legislature Session of 2017.”

According to the Hawai‘i Outdoor Developed Areas Accessibility Guidelines, available at https://health.hawaii.gov/dcab/files/2017/03/HODAAG-Guidelines-Final-Accessible-2.pdf, beach access route is defined as a continuous, unobstructed path that crosses the surface of the beach that allows pedestrians to participate in beach related activities. Beach access routes shall coincide with or be located in the same area as pedestrian access points to the beach.

Fortunately, handicap-accessible beaches in Hawai‘i are getting more and more attention. There are all-terrain wheelchairs at some county and State of Hawai‘i-maintained beaches. The Hawai‘i Vacation Guide at https://thehawaiivacationguide.com/hawaii-handicap-accessible/ provides Comprehensive Guide to Hawai‘i Handicap Accessible Trip Planning, with a list of Handicap Accessible Beaches in Hawai‘i as follows:

O‘ahu Handicap Accessible Beaches

- Ala Moana Beach Park (Honolulu)
- Fort DeRussy Beach (Waikiki Beach)
- Sans Souci Beach (Waikiki Beach)
- Hanauma Bay Nature Preserve Nature Preserve
- Kailua Beach Park (Kailua – Windward Coat)
- Kuaola Regional Park (Windward Coast)
- Pōka‘ī Beach Park (West O‘ahu)

Maui Handicap Accessible Beaches

- Charley Young Beach (South Maui)
- Kalepolepo Park (South Maui)
- Kamaole I (South Maui) – Beach Access Chair is available
- Kamaole III (South Maui) – Beach Access Chair, ADA pathways, ADA parking, ADA restrooms
- Polo Beach (South Maui) – ADA parking & ADA restrooms
- D.T. Fleming Beach (West Maui) – Wheelchair ramp leading to beach; Restrooms are ADA accessible
- Honokowai Beach Park (West Maui) – ADA accessible and ADA pathways
- Launiupoko Beach Park (West Maui) – ADA accessible
- Wahikuli Wayside Park (West Maui) – ADA accessible, ADA pathways, ADA parking
- Hana Beach Park (East Maui) – ADA accessible

Kaua‘i Handicap Accessible Beaches

- Lydgate Beach Park (East Kaua‘i)
- Poipu Beach Park (South Shore Kaua‘i)
- Salt Pond Beach Park (West Kaua‘i)

Big Island (Hawai‘i) Handicap Accessible Beaches

- Hapuna Beach State Park is handicap accessible with a paved ramp, but no beach mats.
- Isaac Kepo’okalani Hale Beach Park (Puna)
- Keokea Beach Park (North Kohala)
- Kahaluu Beach Park (North Kona)
- Coconut Island (Moku Ola) in Hilo Town
- Onekahakaha Beach Park (South Hilo)
- Reeds Bay Beach Park (South Hilo)
- Punaluu Black Sand Beach Park (Ka’u)
- Spencer Beach Park (South Kohala)
- Kohanaika Beach Park (North Kona)
- Hookena Beach Park (South Kona)

Management Characterization:

1. The table below identifies significant state-level changes in public access management.

Significant Changes in Public Access Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	N	N
Operation/maintenance of existing facilities	Y	N	N
Acquisition/enhancement programs	Y	N	N

Act 16, Session Laws of Hawai‘i (SLH) 2020, amended HRS Chapter 205A, to include the following: 1) prohibit construction of private shoreline hardening, and minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities; 2) no shoreline setback variance for private facilities or improvements to artificially fix the shoreline in areas with sand beaches or where artificially fixing the shoreline may interfere with existing recreational and waterline activities unless the granting of the variance is clearly demonstrated to be in the interest of the general public; 3) increase the minimum shoreline setback from 20 feet to 40 feet inland from the shoreline. These amendments benefit beach and coastal dune protection, and public access.

Kaua‘i county adopted (6/14/2019) Ordinance No. 1048 amending Section 6-14.1 allowing the funds collected from the certified real property tax revenue to fund the public access, open space, natural resources preservation fund. Currently the public access, open space, natural resources preservation fund may only be used for the acquisition of land or property entitlements for conservation purposes. The amendment expands the permissible uses of the fund to include paying for improvements to 1) lands or entitlements acquired by the fund; 2) newly-acquired public pedestrian accesses to coastal areas; and 3) existing public pedestrian accesses to coastal areas.

Maui county adopted (7/1/2019) Ordinance No. 4882 to establish a Special Management Area (SMA) revolving fund, which aims to draw revenue from application fees and fines for violations along Maui County's shorelines. The SMA revolving funds deposited shall be used for 1) enforcement personnel; 2) acquisition of land or easements to increase beach access in relation to the violation; and 3) master planning and implementation relating to coastal realignment.

2. A summary of management categories with significant changes is provided below.

   The Prohibition or restriction of shoreline hardening structures in front of beaches, and increasing shoreline setbacks from Act 16, SLH 2020 directly benefit public beach access. Prevention of the interference of shoreline hardening structures with the existing recreational and waterline activities will maintain and ensure crucial recreational opportunities accessible to the public.

   County of Kaua‘i Ordinance No. 1048 (2019) amending Section 6-14.1 would allow the public access, open space, natural resources preservation fund to pay improvements to existing and newly acquired public pedestrian accesses to coastal areas in the County of Kaua‘i.

   County of Maui Ordinance No. 4882 (2019) establishes a SMA Revolving Fund to acquire of land or easements to increase beach accesses in relation to SMA use violations. It is estimated that fines for SMA violations generated approximately $25,000 to $75,000 each year. Meanwhile, application fees for SMA assessments, permits and shoreline setbacks bring in about $60,000 to $70,000 annually.

   Act 16, SLH 2020 relating to CZM was driven by the CZM objectives and policies under HRS Chapter 205A to protect beaches and coastal dunes and provide recreational opportunities accessible to the public. The change from Kaua‘i Ordinance No. 1048 was partially driven by the Hawai‘i CZM objectives and policies defined in Hawai‘i Revised Statutes (HRS) Chapter 205A, including the provision of coastal recreational opportunities accessible to the public. Maui Ordinance No. 4882 was directly driven by the Hawai‘i CZM Law HRS Chapter 205A for the civil fines from violations of SMA uses, and compliance of the CZM objectives and policies.

   As the result of Ordinance No.1048, the County of Kaua‘i would likely add constant funding at the county level to maintain and improve public pedestrian access to coastal areas. County of Maui Ordinance No. 4882 (2019) would acquire of land or easements to increase beach accesses in relation to SMA use violations through the SMA Revolving Fund, which benefits improvements and maintenance of public beach access in the County of Maui.

3. The table below identifies currently available public access guides.

Publicly Available Access Guide

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	N	N	N
Web address (if applicable)	N/A	N/A	N/A

Public Access Guide	Printed	Online	Mobile App
Date of last update	N/A	N/A	N/A
Frequency of update	N/A	N/A	N/A

There is no statewide public access guide for Hawai‘i. However, individual agencies and organizations, have produced or are developing public access guides and/or websites including:

DLNR – Division of State Parks, Visitor’s Guide to Park Resources and Recreational Opportunities
https://dlnr.hawaii.gov/dsp/files/2019/04/2017-Parks-Brochure.pdf

DLNR – Division of Forestry and Wildlife, Na Ala Hele Hawai‘i Trail and Access System
https://hawaiitrails.hawaii.gov/trails/#/

County of Hawai‘i, Shoreline Public Access Ways
https://www.planning.hawaiicounty.gov/resources/shoreline-public-access

County of Maui, Shoreline Access Map Viewer
https://www.mauishorelineaccess.net/

Note: The Viewer provides an online atlas of public sites to access Maui’s beaches and shorelines. Shoreline access information is provided for all regions of Maui Island, Moloka‘i and Lana‘i.

County of Kaua‘i
http://www.kauai.com/beaches

City and County of Honolulu, Shoreline and Beach Access Points
http://cchnl.maps.arcgis.com/apps/OnePane/gpx/index.html?appid=0389a0d1ba8642af8f82832d0d25fdc0&webmap=bb2692cf44564637b072fcac2a1bf095

Note: The information in this map provides an approximate account of the public shoreline access points, which are either owned or leased by the City and County, the State or the US Government. The map does not include all possible points of entry to the coastline.

University of Hawai‘i Sea Grant College Program, Coastal Access in Hawai‘i Website
http://seagrant.soest.hawaii.edu/coastal-access-in-hawaii/

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   MEDIUM PRIORITY

2. An explanation of the reasoning for this level of priority is provided below.

   Providing coastal recreational opportunities accessible to the public is a fundamental objective of HICZMP under HRS Chapter 205A. HICZMP continues to collaborate with four counties to ensure that public access is protected through applicable legal provisions, shoreline access inventory updates, and coordination with government agencies and local communities.

For example, the County of Maui has recently launched a new website with a map viewer to provide an online atlas of more than 200 public access locations and their features. The viewer can be queried to find locations or features of interest, such as sites that are within 15 miles or nearer, or sites that have a sandy beach, or a site's amenities such as restrooms. For most sites, the viewer also features 360-degree photos of both the access point and the shoreline area, along with a depiction of the access path.

The public, tourists, and local communities could be interpreted as different public access users. Given increasing online social media platforms used by visitors, the Hawai‘i CZM Program has to take into account tradeoffs between resource protection and public access, between liability and access, and between web-posted information and indication of beach access.

Both the Phase I Assessment and stakeholder survey responses suggest that Public Access is a medium priority. All counties have ordinances related to public shoreline access and have the primary authority and duty to develop and maintain public access to and along the shorelines, pursuant to HRS §§ 46-6.5, HRS §§ 115-5 & 115-7, and HRS Chapter 205A. Each county continues applying subdivision ordinances and special management area rules and shoreline setback rules to create, maintain and improve the beach access sites through project permit requirements. Consequently, HICZMP ranked the Public Access enhancement area as a "Medium" priority and will not be conducting a Phase II Assessment or developing a strategy at this time.

Marine Debris

Section 309 Enhancement Objective: Reducing marine debris entering the nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

Resource Characterization

1. The table below characterizes the existing status and trends of marine debris in the state's coastal zone based on the best-available data.

Existing Status and Trends of Marine Debris in Coastal Zone

Source of Marine Debris	Significance of Source (H, M, L, unknown)	Type of Impact (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (↑, ↓, –, unknown)
Beach/shore litter	M	Aesthetic, resource damage, other	-
Land-based dumping	M	Aesthetic, resource damage, other	-
Storm drains and runoff	M	Aesthetic, resource damage, other	-
Land-based fishing (e.g., fishing line, gear)	H	Aesthetic, resource damage, user conflicts	-
Ocean/Great Lakes-based fishing (e.g., derelict fishing gear)	H	Aesthetic, resource damage	-
Derelict vessels	H	Resource damage, user conflicts, other	-
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	M	Resource damage, other	-
Hurricane/Storm	M	Aesthetic, resource damage	-
Tsunami	M	Aesthetic, resource damage, other	-
Other (please specify)			

2. A summary of state-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment is provided below.

The Marine Debris Program Fiscal Year 2021-2025 Strategic Plan

The Marine Debris Program (MDP) Strategic Plan (Fiscal Year 2021-2025) was developed through expert input from numerous stakeholders across the United States. Workshop participants involved in the development of this Strategic Plan included: national non-profit organizations, federal agencies, regional action planning partners, and other stakeholders who contributed to the plan and intend to participate in its implementation. Six goals were developed for the Strategic Plan which will guide marine debris reduction policies over this 5-year period. These overarching goals include Prevention; Removal; Research; Monitoring & Detection; Response; and Coordination. In this strategic plan, the Marine Debris Program seeks to support the ocean economy through projects that benefit commercial and recreational fisheries, small businesses, and coastal communities by

preventing marine debris from entering the marine environment and removing existing debris from shorelines and coastal areas. As a part of this initiative, the 2021 Accomplishment Report highlighted specific efforts within the Pacific Island Region.

2021 NOAA Marine Debris Report

There were 30 beach cleanups, and 4,600 feet of fishing line removed. Hawai‘i Marine Animal Response (HMAR) took a multi-pronged, community-based approach to removing debris, primarily derelict fishing gear, in coastal waters off of O‘ahu. Through the “BEAT DEBRIS’’ citizen science project, community volunteers joined in to remove and report debris collected while diving in order to gain a better understanding of accumulation patterns of underwater fishing debris. The HMAR team also implemented a fishing line recycling bin program throughout the island, conducted shoreline cleanups, and provided marine debris outreach and education to the community.

2021 Papahānaumokuākea Marine National Monument Marine Debris Removal Mission

There were 18 Operational Days; 295 Large Nets removed; approximately 5,300 lbs. of plastic debris removed; 118,400 pounds of derelict fish netting removed; 123,650 lbs. of debris removed from six islands in total Kamokuokamohoali’i (Maro Reef) nearly 43,000 lbs.; Kuaihelani (Midway Atoll) 24,500 lbs.; Manawai (Pearl and Hermes Atoll) 23,650 pounds; Hōlanikū (Kure Atoll) nearly 16,000 pounds; Kapou (Lisianski Island) nearly 11,500 pounds; Kamole (Laysan Island) more than 5,000 pounds.

Management Characterization

1. The table below identifies significant state-level changes in marine debris management.

Significant Changes in Marine Debris Management

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Marine debris statutes, regulations, policies, or case law interpreting these	Y	N	N
Marine debris removal programs	Y	N	N

2. A summary of management categories with significant changes is provided below.

Hawai‘i does not have a state-level marine debris removal program. Rather, agencies work to reduce the amount of marine debris based on their respective functional areas. For example, pursuant to HRS Section 46-12, the various counties shall be responsible for removing and clearing all seaweed, limu, and debris which are likely to create an unsanitary condition or to otherwise become a public nuisance from the shores and beaches situated within the respective counties; provided that to the extent any of the foregoing work is a private responsibility, the responsibility may be enforced by the county in lieu of the work being done at public expense. Removal actions are often coordinated with community groups who share common goals of beach clean-up and restoration priorities. Goals

and current actions aimed at reducing marine debris in Hawaiian waters, as listed in the HI-MDAP, are described below.

Abandoned and Derelict Vessels (ADVs)
Although Hawai'i does not have a formal abandoned and derelict vessel program that is permanently funded, the Department of Land and Natural Resources addresses abandoned vessels through a collection of laws. The Department actively identifies and removes abandoned and derelict vessels from harbors and immediately deals with vessels that become grounded on coral reefs or are grounded and in imminent danger of breaking apart.

In an ongoing effort by the Department of Land and Natural Resources – Division of Boating and Ocean Recreation (DLNR-DOBOR), one of its chief goals is to increase capacity to address abandoned and derelict vessels in State waters. Ongoing strategies on this include: 1) Preventing and identification of ADVs. DLNR-DOBOR is working on draft legislation to apply mandatory insurance to all ocean vessels required to register with the State or documented by the U.S. Coast Guard. 2) Effectively respond to ADVS. DLNR-DOBOR is seeking methods to make disposal options for ADVs publicly available. Interagency coordination for addressing ADVs have been strengthened, and an ADV inventory for difficult to access coastlines was developed. 3) Develop sustainable funding mechanisms and resources for vessel removal and disposal. Hawai'i does not currently have a dedicated funding source for dealing with ADVs, but it has established a boating special fund under Haw. Rev. Stat. § 248-8 that is funded through the assessment of fuel taxes on small boats. Although this fund was not intended to deal with abandoned or derelict vessels, it can be used by DLNR-DOBOR to cover the costs associated with the impoundment and disposal of these vessels. These costs are currently reimbursed to the fund through any proceeds obtained from the sale of abandoned and derelict vessels.

This was not a 309 or CZM-driven change.

The preventative measures and enforcement methods for ADVs have led to a reduction in the amount of abandoned and derelict vessels. Scientific inquiry will continue to gauge the effectiveness of DOBOR’s reduction in derelict vessels through monitoring activities.

Conducting Research to Better Understand Marine Debris and its Impact
The strategies aimed at research of marine debris enumerated in the HI-MDAP include: 1) research on physical and chemical traits, transport, quantity, impacts and accumulation rates. Actions intended to fulfill this strategy include identify research priorities through collaborative workshops, assessing research capacity, and explore funding opportunities for marine debris research. 2) Development and standardization of laboratory methods. 3) Assessment on the impacts of marine debris on the environment. 4) research on the economic impacts of marine debris. 5) Evaluating the effectiveness of mitigation, outreach, and removal efforts. 6) Support communication and collaboration, compiling of data, and data sharing of scientific findings.

This was not a 309 or CZM-driven change.

Scientific inquiry and research methodology will aide in the monitoring of marine debris and its movement throughout the pacific region, and research will help agencies gauge the effectiveness of marine debris removal activities.

Creation and enforcement of laws reducing local sources of Marine Debris.
State and County agencies have enacted or have proposed legislation to limit or ban the use of Styrofoam and one time use plastics for things such as food containers.

On December 14, 2019, the City and County of Honolulu (CCH) adopted Ordinance 19-30 that banned the use of single-use plastic goods in the use of food containers and drinking straws. The Integrated Solid Waste Management Plan, which aims to reduce per capita waste generation by 25 percent by 2030 and to reduce carbon emissions from the waste stream by substantially reducing or eliminating carbon-based single-use plastics and polystyrene by 2030. According to Ordinance 19-30, significant portion of marine debris -- estimated to be 80 percent—originates on land, primarily as escaped refuse and litter, much of it plastic, in urban runoff. These land-based plastics degrade into pieces and particles of all sizes, including microplastics, and are present in the world’s oceans at all trophic levels.

The CCH extended a grace period for food suppliers and restaurants to find alternative to single use plastics. In January 2021, CCH initiated the single use bans on single-use plastics and polystyrene. The alternatives are recycled products or reusable containers.

The County of Kaua‘i‘s enacted Ordinance 1079 which called for a ban on the purchase, distribution, or use of disposable plastics. This ordinance was passed in March 2020, but did not go into effect until this reporting period on January 1, 2022. County agencies and other authorized entities using County facilities are prohibited from purchasing and distributing disposable plastics, including bottled water, plastic beverage straws, stirrers, cutlery, food service ware, and plastic bags. This is expected to reduce land-based plastics waste that is carried by stormwater runoff and impacting the nearshore environment.

There were not 309 or CZM-driven changes.

The move to ban one-time use plastics and packaging is expected to reduce plastics released into the environment that contribute to marine debris, reduce the stress on municipal landfills, and may limit injuries and the deaths of marine life and birds from harmful marine debris.

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
LOW PRIORITY

2. An explanation of the reasoning for this level of priority is provided below.

NOAA Marine Debris Program is the lead agency for the coordination of multi-agency partners to provide support for marine debris related projects, activities, and actions in the Pacific Island

Region. The agency works with state, federal, and non-profits to coordinate activities within the State to reduce the amount of marine debris from both land-based and marine sources.

The CMP defers actions related to marine debris to those agencies with direct authority and resources to address this enhancement area and continues to partner through supporting roles and participation in MDAP planning and strategic activities. Marine debris is also addressed as a part of the State’s Ocean Resources Management Plan (ORMP).

Cumulative and Secondary Impacts

Section 309 Enhancement Objective: Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

Resource Characterization

1. The table below identifies the approximate change in population and housing units in the state's coastal counties between 2017 and 2021.

Trends in Coastal Population and Housing Units

	2017	2021	Percent Change (2017-2021)
Number of people	1,424,393	1,441,553	1.20%
Number of housing units	542,815	564,908	4.07%

2. The tables below provide information on land cover changes and development trends.

Distribution of Land Cover Types in Coastal Counties

Land Cover Type	Land Area Coverage in 2024 (Acres)	Gain/Loss Since 1996 (Acres)
Developed, High Intensity	Not available	8,038.4/-1,107.2
Developed, Low Intensity	Not available	7,456.0/-3,795.2
Developed, Open Space	73,292.8	3,641.6
Grassland	373,753.6	18,720.0
Scrub/Shrub	848,921.6	-5,228.8
Barren Land	697,632.0	1,606.4
Open Water	137,939.2	-992.0
Agriculture	574,905.6	-20,537.6
Forested	1,284,972.8	-4,326.4
Woody Wetland	113,081.6	12.8
Emergent Wetland	7,955.2	192.0

Development Status and Trends for Coastal Counties

	1996	2024	Percent Net Change
Percent land area developed	4.06%	4.31%	0.25%
Percent impervious surface area	2.59%	2.77%	0.17%

How Land Use Is Changing in Coastal Counties

Land Cover Type	Areas Lost to Development Between 1996-2024 (Acres)
Barren Land	2,937.6
Emergent Wetland	19.2
Woody Wetland	6.4
Open Water	19.2
Agriculture	1,721.6
Scrub/Shrub	2,547.2
Grassland	2,764.8
Forested	3,078.4

2. A summary characterizing how the coastal shoreline has changed in the past five years due to development is provided below.

   As a result of chronic and episodic erosion, over seventy percent (70%) of Hawai‘i’s shorelines are eroding (Regional Shoreline Management Scoping Study, 2023). Eighty-five percent (85%) of Maui shorelines are experiencing long-term erosion (Maui Island Shoreline Rule Update (2024) | Maui County, HI - Official Website). On the island of Kaua‘i, approximately seventy-three percent (73%) of sandy shorelines are currently retreating inland (Mapping Erosion Hazard Areas on the Island of Kaua‘i | U.S. Geological Survey (usgs.gov)) And, on the island of O‘ahu nearly twenty-five percent (25%) of O‘ahu beaches have narrowed or were completely eroded due to human-placed barriers like seawalls, rocks, sandbags and planting (Save Our Beaches (honolulu.gov)).

   To protect the shoreline and reduce coastal hazards risk, the City and County of Honolulu (C&C) increased shoreline setback requirements in 2024. C&C’s shoreline setback in the Primary Urban Center Development Plan area is now 60 feet mauka from the certified shoreline; for lots outside the Primary Urban Center Development Plan and with coastal erosion, the shoreline setback line is now 60 feet mauka from the certified shoreline, plus 70 times the annual erosion rate, up to a maximum setback of 130 feet; and for lots where no historical erosion data has been collected, where historical erosion data show average annual accretion, or where historical erosion data show an average annual coastal erosion rate of zero, the shoreline setback is now 60 feet mauka from the certified shoreline.

   Within the shoreline area in the State, structures are prohibited without a variance. A variance is required for all proposed structures, facilities, construction or any such activities which are prohibited within the shoreline setback area. According to the semi-annual reports submitted to HICZMP by all of the state’s counties, during the period of 2021 to 2024 (to June 30, 2024), seven (7) shoreline setback variances were granted in the state. The County of Kaua‘i granted two (2) setback variances, the County of Hawai‘i granted one (1) setback variance, the County of Maui granted two (2) setback variances, and the City and County of Honolulu granted two (2) setback variances. The previous four years, 2017-2020, saw eight (8) shoreline setback variances within the State.

In 2023, to explore alternative approaches to shoreline planning and management, the Office of Planning and Sustainable Development (OPSD) completed the Regional Shoreline Management Scoping Study. This Scoping Study was an exploratory step toward implementing a regional shoreline management approach for the State of Hawai‘i. It focused on developing a methodology for delineating shoreline regions and subregions via environmental characteristics and conditions to define these “regions” to rethink shoreline management across the State. A regional understanding of the shoreline and where conditions are similar, opens opportunities for more coordinated, large-scale and proactive interventions that are based on environmental conditions and how they interact with the natural and built environment, rather than management decisions based on property lines. This regional scale analysis will assist in a more comprehensive understanding of the cumulative impacts of development in and near the shoreline areas.

3. A summary of the results of state-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality, shoreline hardening, and habitat fragmentation, since the last assessment is provided below.

   The Hawai‘i State Department of Health (HIDOH) is obligated by the Clean Water Act (CWA) Sections §303(d) and §303(b) to report on the State’s water quality on a two-year cycle. This State of Hawai‘i Water Quality Monitoring and Assessment Report (Integrated Report “IR”) informs the public on the status of marine and inland water bodies. The 2024 IR incorporates data from November 1, 2021, to September 30, 2023; the 2022 IR incorporates data from November 1, 2019, to October 31, 2021. These IRs provide snapshots of State water body conditions during these timeframes.

   170 of 565 marine water bodies (30%) were assessed during the 2022 IR assessment period and 148 of 566 marine water bodies (26%) were assessed during the 2024 IR assessment period. Marine water bodies assessed were (for both review cycles) on Kaua‘i, O‘ahu, Lana‘i, Maui, and Hawai‘i Island. The main water quality standard parameters that were assessed in these reports are fecal indicator bacteria (enterococci), turbidity, chlorophyll *a*, nutrients (total nitrogen, nitrate+nitrate-nitrogen, ammonium-nitrogen, total phosphorus), and where applicable, total dissolved nitrogen, total dissolved phosphorus, total suspended solids, and orthophosphate.

   The 2022 IR assessment results show that of the 170 marine bodies assessed, 157 (92%) did not attain water quality standards for one or more parameters. The 2024 IR assessment results showed that of the 148 marine bodies assessed, 137 (93%) did not attain water quality standards for one or more parameters. Turbidity was the leading cause of impairment for marine waters and HIDOH believes this may be due to polluted runoff entering the nearshore waters.

   During the 2022 IR assessment period, twelve inland waters were assessed on Kaua‘i and O‘ahu. All inland water bodies did not meet at least one water quality standard parameter. During the 2024 assessment period, seven inland water bodies were assessed on O‘ahu and Kaua‘i. All inland water bodies did not meet at least one water quality standard parameter.

   Cesspools are a contributing factor of impaired water quality. There are over 88,000 cesspools in the State of Hawai‘i, and all are required by Act 125 Session Laws of Hawai‘i (2017) to be converted to

septic system, sewerage, or an alternative by 2050. Cesspool prioritization helps the State use its limited resources more efficiently; however, landowners and government agencies are currently unable to identify priority cesspools in areas where wastewater facilities will be expanded.

In 2021, the University of Hawai‘i established the Hawai‘i Cesspool Prioritization Tool (HCPT) to prioritize cesspools for connection or conversion. The HCPT is a map-based tool that displays the prioritization level for all State cesspools. The prioritization method places each geographic area into three prioritization categories: Priority 1, cesspools with the greatest impact/threat to human health and the environment and are directly adjacent to sensitive natural resources; Priority 2, pose the same threat but are close to sensitive natural resources; Priority 3, pose the same threat but are further away from sensitive natural resources. To assist in prioritization, fifteen risk factors were weighed according to their environmental and human health impact significance.

Due to time constraints and lack of available data, the island of Moloka‘i was not originally included in the HCPT. In 2024, the OPSD procured professional services to assist the State in identifying, developing, and processing missing Moloka‘i-based datasets, integrating new data into the HCPT prioritization schema, and customizing prioritization schema with stakeholder input.

During the 2024 Hawai‘i Legislature Session, Act 217 was signed into law. Act 217 will require UH Water Resources Research Center and the University of Hawai‘i Sea Grant College Program to develop an overlay with the Hawai’i Cesspool Prioritization Tool to identify specific priority areas in which the county sewer system or other centralized treatment system may most feasibly be expanded or constructed to reduce or eliminate cesspools by 2050.

A strategy to improving the State’s water quality is watershed management. Watershed-based planning is a strategy and a work plan for achieving water resource goals for a specific watershed. The watershed planning process uses a series of cooperative, iterative steps to characterize existing conditions, identify and prioritize problems, define management objectives, and develop and implement protection or remediation strategies within a defined watershed, mauka to makai. Through watershed management, cumulative impacts are better assessed via a comprehensive understanding of existing conditions of each defined watershed.

In 2022, the Kamohio Watershed on the island of Kaho’olawe was completed. This watershed’s goal and purpose is to reduce sediment load of the Non-Point Source (NPS) pollutant “Excessive Sedimentation”. In 2023, both the Pohakea Watershed Plan and the Ma’alaea Bay Watersheds Management Plan were completed. The Pohakea Watershed Plan is a community-based watershed plan to protect and restore water quality. The Ma’alaea Bay Watersheds Management Plan was created to bridge a gap between two existing watershed management plans: the Pohakea Watershed Plan to the west and the Southwest Maui Watershed Plan to the southeast.

Management Characterization

1. The table below identifies significant state-level changes in management of cumulative and secondary impacts of coastal growth and development since the last assessment.

Significant Changes in Management of Cumulative and Secondary Impacts of Development

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Guidance documents	Y	Y	Y
Management plans (including SAMPs)	See SAMP section	See SAMP section	See SAMP Section

2. A summary of management categories with significant changes is provided below.

Hawai‘i’s Nonpoint Source Management Plan 2021-2025

The HIDOH updated their implementation plan for polluted runoff control, *Hawai‘i’s Nonpoint Source Management Plan 2021-2025*. This updated nonpoint source (NPS) management plan guides the state’s NPS management efforts by establishing goals, objectives, strategies and milestones directed at preventing and reducing NPS pollution and improving water quality. The NPS management plan also advances the State’s efforts to obtain full approval of Hawai‘i’s Coastal Nonpoint Pollution Control Program (CNPCP). The NPS management program’s primary goal is to achieve and maintain water quality standards and designated uses of State waters by implementing a comprehensive NPS pollution control program that conducts watershed-based restoration and protection activities.

Cumulative Effects/Impacts Assessment Guidance Document in SMA Permitting

During NOAA’s Office of Coastal Management (OCM) Section 312 evaluation on the performance of its federally approved Coastal Zone Management Program, stakeholder and county partner feedback expressed difficulty in determining cumulative impacts in the SMA permitting process.

In 2022, the Hawai’i CZM Program produced SMA-oriented guidance seeking to narrow down the spatial and temporal scopes of cumulative effect/impact assessments: *Cumulative Effects/Impacts Assessment Guidance in Special Management Area Permitting.* Through research, the CZM Program noted that both NEPA and HEPA have faced difficulty in providing guidance as to how to conduct cumulative effect / impact assessments. The purpose of this document is to provide guidance for the counties to consider potential cumulative effects/impacts from a proposed action which may or may not be “development” as defined by HRS §205A-22. Through this guidance, OPSD recommends minimum spatial and temporal scales from which the counties may identify and/or apply their own temporal scales for specific SMA projects. For spatial assessment, the guidance recommends a geographic radius up to the SMA inland boundary from the shoreline as the minimum spatial scope to assess the incremental impacts of a proposed action on the SMA when added to other past, present, and reasonably foreseeable future actions. For temporal assessment, the guidance recommends a minimum of 5 years as practicable before the application of a proposed action serves as a basic temporal parameter to scope past actions within a SMA for the purpose of cumulative effects / impacts assessment in SMA permitting.

Hawai‘i’s Nonpoint Source Management Plan 2021-2025
In 2024, the NOAA/EPA awarded interim approval that all the outstanding conditions placed on the Hawai‘i CNPCP have been met. NOAA/EPA legal review is being initiated, and formal approval is anticipated to be achieved in 2025.

Low Impact Development Guidance
In 2023, the OPSD created a new low impact development (LID) guide, *Low Impact Development Practitioner’s Guide for* Hawai*‘i*, which provides updated informational guidance on how to plan for and implement LID practices for new development and redevelopment in Hawai‘i.

The LID guidance is meant to guide private and public sector development and redevelopment. This cumulative impact guidance is intended to assist local county governments in assessing these impacts.

Cumulative Impacts definition added to Revised Ordinances of Honolulu (ROH), Chapter 25 and to Maui Island Special Management Area Rules
In 2023, the City and County of Honolulu City Council approved amendments to ROH, Chapter 25 to include a cumulative impact definition. Pursuant to ROH, Chapter 25, Cumulative impacts are, *the impact on the environment that results from the incremental impact of an action or development when added to other past, present, and reasonably foreseeable future actions or developments. Cumulative impacts can result from individually minor but collectively significant actions and development taking place over a period of time.*

In 2024, the Maui County Planning Commission approved amendments to Title MC-12, Chapter 202, Special Management Area Rules for the Maui Planning Commission to include a cumulative impacts definition. Pursuant to §12-202-4 Cumulative impact means *the significant effect on the environment that results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

HICZMP/Special Management Area Training Sessions for County Planning Commissions
From 2021 to 2024, the HICZMP conducted six (6) trainings which included defining and assessing cumulative impacts to each *county’s* planning commission. Four (4) were conducted on the Island of Hawai‘i (Windward and Leeward Planning Commissions), two (2) to the Maui Planning Commission, one (1) to the Moloka‘i Planning Commission, and one (1) to the Kaua‘i County Planning Commission.

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   MEDIUM PRIORITY

2. An explanation of the reasoning for this level of priority is provided below

Cumulative and secondary impacts are an important factor that the HICZMP considers when conducting projects as well as reviewing SMA permit applications and Environmental Assessments (EA) and Environmental Impact Statements (EIS). Therefore, cumulative and secondary impacts are wholistically considered, and are part of, the review and implementation of the HICZMP when conducting its projects; review of permit application requests; and review of EA/EIS. Thus, the importance of cumulative and secondary impacts is an ongoing review that are incorporated throughout all enhancement areas within the HICZMP. Results from stakeholder outreach show this enhancement area to be of concern. While some stakeholders found this enhancement area to be a priority, it did not rise to as “high” a priority as expressed for other enhancement areas. The HICZMP believes that through support of its designated “high” priority enhancement areas, it can wholistically incorporate cumulative and secondary impacts.

Special Area Management Planning

Section 309 Enhancement Objective: Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a special area management plan (SAMP) as “a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making.”

Resource Characterization

1. The table below identifies geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP.

Geographic Area	**Opportunities for New or Updated Special Area Management Plans** Major conflicts/issues
O‘ahu North Shore: Sunset Point to Kapo‘o (Sharks Cove)	Act 226 Relating to Beach Management on the North Shore of O‘ahu
Pohakea Watershed Management Plan	Final Report completed in 2023 relating to watershed management in Central Maui

2. A summary of state-specific data or reports on the status and trends of SAMPs since the last assessment is provided below.

   The following can be considered Special Area Management Plans within the State of Hawai‘i: Natural Area Reserves; Marine Life Conservation Districts; National Estuarine Research Reserves; Wildlife Sanctuaries; Watershed Management Plans; and Beach Management Plans. Within the past 5 years, there have been substantial efforts to manage specific geographic areas via comprehensive planning for natural resources, reasonable coastal-dependent economic growth, and improved protection of life and property in hazardous areas.

   In 2024, Act 226 was signed into law relating to beach management on the North Shore of O‘ahu. The Hawai‘i State Legislature found that the north shore from Sunset Point to Kapo’o (Sharks Cove) faces an increasing risk of erosion and deterioration from a combination of high-energy waves, winter surf, summer swells, sea level rise , coastal erosion, shifting sand, inadequate building setbacks, deteriorating coral reefs, and intensive use by individuals accessing the shoreline. Additionally, it was found that this area of coastline is at severe risk from the lack of overall planning for beach protection, beach access, and shoreline uses. Therefore, Act 226 appropriates funds to the University of Hawai’i Sea Grant College Program to develop a comprehensive, actionable North

Shore Beach Management Plan covering from Sunset Point to Kapo’o (Sharks Cove). This plan will consider innovative means to address beach erosion and the erosion of private beachfront property, protection of recreational access, and preservation of natural beauty and vistas.

A watershed is an area of land in which all sources of water discharge into a common waterbody such as a lake, river, stream, wetland, estuary, bay, or ocean. In 2023, the Pohakea Watershed Plan (PWP) was completed with a goal to identify the various sources of pollution within the watershed and to provide best management practices that will prevent sediment-laden runoff and nutrients from entering the waterway. The PWP encompasses 5,268 acres and begins at the summit of Hanaula in the West Maui Mountains and extends southeast to the coast where its gulches and gullies drain into Maalaea Bay. The PWP is a community-based watershed plan to protect and restore water quality. The PWP enhances the comprehensive stewardship of Pohakea Watershed and its ability to address land-based sources of pollution entering into Maalaea Bay.

Management Characterization

1. The table below identifies significant state-level management changes that could help prepare and implement SAMPs in the coastal zone.

Significant Changes in Special Area Management Planning

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	Y	N	Y
SAMP plans	Y	N	Y

2. A summary of management categories with significant changes is provided below.

Kaua‘i County Sea Level Rise District

Kaua‘i County enacted a new law in 2022 to prepare for rising ocean levels by creating the Sea Level Rise District (S-SLR). The purpose of S-SLR is to: minimize the threat to public health and safety due to sea level that increases the impacts of annual high wave run up and passive flooding; promote resilient planning and design; minimize the need for rescue and relief efforts that are associated with sea level rise flooding and generally undertaken at the expense of the general public; and ensure that those who occupy areas that are projected to be impacted by sea level rise acknowledge and assume responsibility for their actions. The S-SLR is determined by the County of Kaua‘i Sea Level Rise Constraint District Viewer which is based on computer model projections of areas across the Hawaiian Islands where chronic coastal flooding and erosion are expected to occur as sea level rises.

Kipahulu (Maui) Community-Based Subsistence Fishing Area (CBSFA)

CBSFAs are legally designed areas where the community and state government work together to protect and support traditional and customary native Hawaiian fishing practices.

Effective March 2024, Hawai‘i Administrative Rules (HAR) Chapter 13-60.11 was amended to establish and delineate the boundaries of the Kipahulu CBSFA. In creating the Kipahulu CBSFA, the rule amendment outlines the purpose of this designation:

- Sustainably support the subsistence needs of the Kipahulu Moku community (Maui) through culturally rooted, community-based management;
- Ensure the sustainability of nearshore ocean resources through effective management practices, including the establishment of limits on the harvest of marine life;
- Recognize and protect customary and traditional native Hawaiian fishing practices exercised for subsistence, cultural, and religious purposes;
- Facilitate the substantive involvement of the community in resources management decisions for the area through dialogue with community residents and resource users;
- Establish the Opihi Rest Area to ensure stock health and to allow replenishment;
- Establish the Kukui Bay Sanctuary for the preservation and protection of critical nursery habitat for numerous marine species, including species traditionally relied upon for subsistence.

Miloli‘i (Hawai‘i Island) Community-Based Subsistence Fishing Area (CBSFA)

Effective August 2022, HAR Chapter 13-60.10 is amended to establish and delineate the boundaries of the Miloli‘i CBSFA. In creating the Miloli‘i CBSFA, the rule amended outlines the purpose of this designation:

- Sustainably support the consumptive needs of communities along the southwest coast of Hawai‘i Island through culturally rooted, community-based fisheries management;
- Ensure the sustainability of nearshore ocean resources through effective management practices, including the establishment of limits on the harvest of aquatic life;
- Recognize and protect customary and traditional native Hawaiian fishing practices exercised for subsistence, cultural, and religious purposes;
- Facilitate the substantive involvement of the community in fisheries resource management decisions for the area through dialogue with community residents and resource users;
- Establish the Puuhonua Papa, Puuhonua Honomalino, Puuhonua Kapua, and Puuhonua Manuka to reduce fishing pressure in these areas in order to replenish populations of important fish species while also allowing for sustainable harvest;
- Establish the Pakuikui Rest Area for the preservation and protection of this nursery habitat for pakuikui as an important food fish for community families; establish puakaia Milolii as an ocean classroom where the community can continue to impart intergenerational knowledge of traditional cultural ocean practices to future generations while maintaining crucial ocean entry points for the community; and
- Establish the Opelu Traditional Management Zone to ensure that local opelu fish stocks are maintained according to traditional practices.

These initiatives were driven by non-CZM efforts.

The ordinance amends construction design standards to incorporate sea level rise impacts, requiring the lowest floor of new construction to be two feet above the highest sea level rise flood level. Flood levels are determined by the Kaua‘i Sea Level Rise Constraint Viewer, which is generated by data used in the creation of the Hawai‘i Sea Level Rise Vulnerability and Adaptation Report. The Kaua‘i Sea Level Rise Constraint Viewer provides visualizations depicting projections of future annual high wave run up and passive flooding hazards due to rising sea levels.

Through the defined boundary, pursuant to HAR Chapter 13-60.11, the Kipahulu CBSFA will help ensure fishing stock populations now and into the future. The CBSFA designation formally recognizes local communities as valued partners in protecting natural resources and reaffirms and protects traditional and customary practices for subsistence and culture.

This CBSFA will sustainably support the consumptive needs of the communities along the designated southwest coastal area of Hawai‘i Island, while recognizing and protecting customary and traditional native Hawaiian fishing practices.

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   LOW PRIORITY

2. An explanation of the reasoning for this level of priority is provided below.

   There are government planning and management efforts and activities that are ongoing to address current and future identified SAMP areas. Currently, the HIZCMP is better positioned to provide secondary support to existing and future SAMP needs. Additionally, results from the stakeholder outreach support this as low prioritization.

Ocean and Great Lakes Resources

Section 309 Enhancement Objective: Planning for the use of ocean [and Great Lakes] resources. §309(a)(7)

Resource Characterization

1. The table below indicates the status of the ocean and Great Lakes economy as of 2021.

Status of Ocean and Great Lakes Economy for Coastal Counties (2021)

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	97,478	1,334	885	7,133	3,328	108	84,687
Establishments (# of Establishments)	4,868	152	43	26	108	8	4,531
Wages (Millions of Dollars)	$4,400	$67.8	$100.2	$709	$334.4	$10.8	$3,200
GDP (Millions of Dollars)	$9,200	$146.3	$177.4	$132	$575.6	$38.6	$8,100

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2021)

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	-8,423	470	417	2,466	-1,938	-24	-9,813
Establishments (# of Establishments)	1,109	-8	17	4	-1	1	1,096
Wages (Millions of Dollars)	$1,400	$43.5	$66.2	$365	$95	-$0.8	$900
GDP (Millions of Dollars)	$2,900	$91.5	$106.5	$91.5	$114.1	$19.3	$2,500

2. The table below identifies the number of uses within the ocean waters of the state. Energy uses (including pipelines and cables) are reported under the "Energy and Government Facility Siting" section of this document.

Uses within Ocean or Great Lakes Waters

Type of Use	Number of Sites
Federal sand and gravel leases *(Completed)*	N/A
Federal sand and gravel leases *(Active)*	N/A
Federal sand and gravel leases *(Expired)*	N/A
Federal sand and gravel leases *(Proposed)*	N/A
Beach Nourishment Projects	19
Ocean Disposal Sites	6
Principle Ports *(Number and Total Tonnage)*	6 ports; 34,176,419 total tonnage
Coastal Maintained Channels	18
Designated Anchorage Areas	26
Danger Zones and Restricted Areas	5
Other (please specify)	53

3. The table below characterizes how the threats to and use conflicts over ocean resources in the state’s coastal zone have changed since the last assessment.

Significant Changes to Ocean and Great Lakes Resources and Uses

Resource/Use **Change in the Threat to the Resource or Use Conflict**	**Since Last Assessment** (↑, ↓, –, unknown)
Benthic habitat (including coral reefs)	↑
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	↑
Sand/gravel	↑
Cultural/historic	↑
Other (please specify)	N/A
Transportation/navigation	-
Offshore development	-
Energy production	↑
Fishing (commercial and recreational)	-
Recreation/tourism	↑
Sand/gravel extraction	Unknown
Dredge disposal	-
Aquaculture	-
Other (please specify)	N/A

4. For those ocean resources and uses in the table above that had an increase in threat to the resource or increased use conflict in the state’s coastal zone since the last assessment, the table below characterizes the major contributors to that increase.

Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources

	Land-based development	Offshore development		Polluted runoff	Invasive species	Fishing (Commercial and Recreational)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean	Other (Specify)
Example: Living marine resources		*X*		*X*	*X*	*X*	*X*		*X*	*X*			
Benthic Habitat (including coral reefs)	x			x	x	x		x		x		x	
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	x			x	x	x		x	x	x	x	x	
Sand/gravel	x							x			x		Erosion, SLR
Cultural/historic	x						x	x					Erosion, SLR
Recreation/tourism	x			x				x					Increased pressures on natural resources
Energy Production		x											Hawai'i on BOEM 2028 lease schedule

5. A summary of state-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment is provided below.

Benthic Habitat

The most recent NOAA CORIS Coral Reef Condition: Status Report from 2018 characterizes corals and algae in the Main Hawaiian Islands as "impaired." The report notes decreasing coral cover at two monitoring sites (West Hawai'i and Maui), with back-to-back coral bleaching events in 2014 and 2015. Models show that consecutive coral bleaching events are expected to occur annually by 2055. The report also identifies land-based sources of pollution as a leading cause of coral reef degradation with primary sources being urban runoff, failing sewage systems, unpaved roads, farms, land clearing and development.

Living Marine Resources

At the State level, the Department of Land and Natural Resources, Division of Aquatic Resources (DLNR-DAR) is the lead agency for monitoring the health of living ocean resources such as fish, shellfish, coral, etc. The information collected by DLNR-DAR is provided to the Hawai'i Monitoring and Reporting Collaborative (HIMARC). HIMARC compiles raw underwater survey data from a variety of government and non-profit research partners, and uses statistical analyses and modeling to understand relationships, trends and projections. The August 2020 HIMARC publication, "Estimating indicators and reference points in support of effectively managing nearshore marine

resources in Hawai‘i”, includes maps to visualize the status of several indicators (total fish biomass, fish abundance, fish diversity, coral cover, etc.). Based on the maps, Total Fish Biomass and Herbivore Biomass are lowest around O‘ahu and highest around Kahoolawe and Niihau. Coral cover is lowest around Kaua‘i and O‘ahu, and highest in South Moloka‘i and West Hawai‘i Island.

Hawai‘i Cesspool Conversion Tool

The Hawai‘i Cesspool Prioritization Tool (HCPT) is a map-based tool that displays the prioritization level for each of Hawai‘i’s 83,000+ cesspools. Per Act 125 Session Laws of Hawai‘i (2017), all cesspool owners are required to upgrade, convert, or connect to sewer before 2050. While all cesspools degrade water quality, some have particularly acute and hazardous impacts on human and ecosystem health because of their geographic location. Based on the best available statewide data and expert input, cesspools across the islands have been classified in three categories of priority for their conversion. Each cesspool’s priority ranking represents the urgency of their replacement prior to 2050. Cesspools ranked in Priority Level 1 have the greatest potential to impact human health and the environment and are directly adjacent to sensitive natural resources like coral reefs or drinking water aquifers. (This tool is also discussed in the Cumulative and Secondary Impacts Enhancement Area).

Tourism/Recreation

According to the Hawai‘i Tourism Authority 2022 Annual Visitor Research Report, Hawai‘i’s visitor industry continued to recover from the global COVID-19 pandemic that severely impacted the state beginning in March 2020. A total of 9,233,983 visitors (+36.2%) came to the Hawaiian Islands in 2022. Total visitor expenditures in 2022 was $19.80 billion, which, when adjusted for inflation is a 37.1% increase from 2021 visitor spending. While a vital part of the State’s economy, tourism contributes to the degradation of the natural environment and there is a declining resident satisfaction with the balance between visitor benefits and drawbacks. The Hawai‘i Tourism Authority Resident Sentiment Survey, 2023, indicated that 52% of residents are in agreement that “tourism has brought more benefits than problems.” This is a decrease from previous years. Among residents who say that the benefits of tourism do not outweigh the problems, the top perceived problem created by tourism is “damage to the environment (75% of respondents)”.

Coastal and ocean resources are one of the primary draws for tourists visiting Hawai‘i. Hanauma Bay on O‘ahu has a visitor-entry limit of 1,400 visitors a day, or approximately 0.5 million visitors per year, making it one of the Top 3 destinations on O‘ahu. At Hā’ena State Park on Kaua‘i, “Ocean/water recreation” is the top park activity for both Hawai‘i-residents and visitors. Hā’ena State Park has a visitor-entry limit of 900 visitors per day; a significant drop from the roughly 1,000-2,000 daily visitors prior to the establishment of visitor limits.

Management Characterization

1. The table below identifies significant state-level changes in the management of ocean and Great Lakes resources since the last assessment.

Significant Changes to Management of Ocean and Great Lakes Resources

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	N	N
Regional comprehensive ocean/Great Lakes management plans	Y	N	N
State comprehensive ocean/Great Lakes management plans	Y	Y	Y
Single-sector management plans	Y	N	Y

2. A summary of management categories with significant changes is provided below.

Hawai‘i Ocean Resources Management Plan

The latest Hawai‘i Ocean Resources Management Plan (ORMP) was released in June 2020. The plan provides a framework for coordinated efforts between state, county, federal agencies and non-profit organizations to manage coastal and marine resources. The 2020 ORMP, which highlights three main focus areas: Coastal Hazards & Development, Land-based Pollution, and Marine Ecosystems, serves as the guiding plan for HICZMP's current initiatives. HICZMP is the lead agency responsible for coordinating overall implementation of the ORMP, which includes facilitating regular meetings with the ORMP Network (State, County and Federal agencies), as well as developing and managing projects to forward progress towards ORMP goals. Since its publication, HICZMP has completed several projects within each of the Focus Areas. Projects are led by HICZMP with feedback and review from relevant partners within the ORMP Network. Several ORMP projects have been supported through Project of Special Merit funding. HICZMP is currently conducting a mid-way assessment to evaluate goal progress and identify areas for improvement/increased support.

Watershed-Based/Moku-Scale Management

Across the state, there is a growing effort to support and implement comprehensive, moku/watershed-scale thinking in resource planning and management. Moku are a sub-island delineation used traditionally in Hawai‘i for biocultural stewardship and typically encompass both high elevation and coastal areas. In Hawai‘i, the coastal zone encompasses the entire state, emphasizing the importance of a comprehensive management approach that considers the impacts of upland activities on ocean resources. The 2020 ORMP is based on a mauka (mountain) to makai (ocean) approach. The Hawai‘i Department of Health (DOH), Clean Water Branch reviews and approves Watershed-based management plans. Watersheds with DOH-approved plans are eligible for Clean Water Act Section 319 project funds. HICZMP has been working closely with DOH to facilitate and encourage the development of more watershed-based plans (see the Special Area Management Plan Enhancement Area for detail on recent plans). Additionally, HICZMP is a collaborator on a NOAA CRRC grant to the University of Hawai‘i Sea Grant that envisions a reinvigorated moku system, applied in a contemporary context to build a resilient future for the

Hawaiian Islands. This requires investing in both the functionality of interconnected ecosystems and of governance systems that balance local place-based knowledge and stewardship with centralized decision-making.

The following are management plans that were not funded by 309 funds, nor were they led by HICZMP:

Holomua Marine Initiative

The Holomua Marine Initiative (formerly known as the Holomua: Marine 30x30), led by the Department of Land and Natural Resources, Division of Aquatic Resources (DLNR-DAR), is a comprehensive strategy focused on Hawai‘i’s nearshore waters. The Holomua Final Guidance was released in July 2024 and outlines the goal: to effectively manage nearshore marine resources by implementing a comprehensive management strategy and by developing and carrying out management frameworks that place an emphasis on community participation, cultural relevance, and improving processes and outcomes in all stages of management. The Hawai‘i ORMP’s focus area on Marine Ecosystems, is complementary to the Holomua Marine Initiative and is an opportunity for HICZMP and the ORMP Network to support and expand DLNR-DAR’s efforts.

Hawai‘i Coral Reef Strategy

The Hawai‘i Coral Reef Strategy 2030 (HCRS 2030) written by the State Department of Land Natural Resources, Division of Aquatic Resources (DLNR-DAR), is the guiding coral reef management document for the State as it encompasses programs such as Holomua Marine Initiative and Community-Based Subsistence Fishing Areas. HCRS 2030 was developed with support from the NOAA Coral Reef Conservation Program. Within HCRS 2030, DAR is currently drafting a Makai Restoration Action Plan which will address three main goals:

1. Build capacity to develop, test and apply restoration methods that enhance the resistance and recovery of coral reefs impacted by bleaching.
2. Develop and test restoration methods to enhance coastal protection.
3. Develop and test restoration methods to enhance fisheries habitat

3. The table below identifies state comprehensive ocean or Great Lakes management plan(s).

Comprehensive Ocean/Great Lakes Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	Y (Hawai‘i Ocean Resources Management Plan, 2020)	Y The Pacific Regional Ocean Partnership Action Plan 2014-2016 (May 29, 2014)
Under development (Y/N)	N	N
Web address (if available)	Planning.hawaii.gov/czm/ormp/	
Area covered by plan	State coastal zone	Hawai‘i, American Samoa, Guam, Commonwealth of the Northern Mariana Islands

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   HIGH PRIORITY

2. An explanation of the reasoning for this level of priority is provided below.

Ocean Resources remains a high priority for the HICZMP and is critical to the sustainability and resiliency of the State of Hawai‘i. The state’s economy, social and cultural practices, and rich, natural biodiversity depend on the health of ocean resources. Unfortunately, if unmanaged, this heavy reliance on ocean resources also creates situations of user conflicts, differing management priorities and environmental degradation. The impacts of the Covid-19 pandemic, particularly the significant reduction in tourism, highlights this close relationship between the tourism industry, the state’s economy, and ocean resources (loss of jobs, economic slowdown, increased observation of fish/marine species in areas with historically high visitor rates). HICZMP conducted outreach with agency partners (Fall 2024) to discuss priorities within this Enhancement Area. Participants expressed concern over impacts of land-based pollution on coastal resources, particularly with respect to cesspools on coastal properties and sediment runoff near coral reef ecosystems. Additionally, there is a strong interest in better understanding and managing estuarine and coastal wetland habitats which provide invaluable ecosystem services, including nursery habitat for many native and endemic fish species. Restorative and sustainable management of ocean resources is a critical priority to ensure that this foundational part of Hawai‘i’s social, cultural and economic identity can continue to thrive and support generations to come. With the compounding impacts of environmental stress, increased user pressure and cumulative impacts, it is paramount for HICZMP to continue addressing challenges within this Enhancement Area.

Energy and Government Facility Siting

Section 309 Enhancement Objective: **Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)**

Resource Characterization

1. The table below characterizes the status and trends of different types of energy facilities and activities in the state's coastal zone based on best-available data.

Status and Trends in Energy Facilities and Activities in the Coastal Zone

Type of Energy Facility/Activity	Exists in Coastal Zone (# or Y/N)	Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, –, unknown)	Proposed in Coastal Zone (# or Y/N)	Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, –, unknown)
Pipelines	Y	-	N	-
Electrical grid (transmission cables)	Y	↑	Y	↑
Ports	Y	-	N	-
Liquid natural gas (LNG)	N	-	N	-
Electric Power Facilities (Oil)	Y	-	N	-
Electric Power Facilities (Gas)	Y	-	N	-
Electric Power Facilities (Coal)	N	-	N	-
Electric Power Facilities (Nuclear)	N	-	N	-
Electric Power Facilities (Wave)	Y	↑	Y	↑
Electric Power Facilities (Tidal)	Y	↑	Y	↑
Electric Power Facilities (Current.ocean, lake, river)	N	-	N	-
Electric Power Facilities (Hydropower)	N	-	N	-
Electric Power Facilities (Ocean thermal energy conversion)	Y	-	N	-
Electric Power Facilities (Solar)	Y	-	Y	↑
Electric Power Facilities (Biomass)	Y	↑	Y	↑
Other (please specify)	Y	↑	Y	↑

2. A summary of the results of state-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment is provided below.

Renewable Energy Resources:
Pursuant to HRS Title 15 Transportation and Utilities § 269. Public Utilities Commission 269-92 Renewable portfolio standards. Each electric utility company that sells electricity for consumption in the State shall establish a renewable portfolio standard of: (1) Ten per cent of its net electricity sales by December 31, 2010; (2) Fifteen per cent of its net electricity sales by December 31, 2015; (3) Thirty per cent of its net electricity sales by December 31, 2020; (4) Forty per cent of its net electricity generation by December 31, 2030; (5) Seventy per cent of its net electricity generation by December 31, 2040; and (6) One hundred per cent of its net electricity generation by December 31, 2045

During this reporting period, the Hawai‘i State Energy Office has been actively assisting and monitoring renewable energy projects that have been deployed throughout the State. The overarching goals are to meet 45% renewable energy sources by 2030, 70% renewable energy sources by 2040, and 100% renewable energy production by 2045.

Based on the most current data available, according to the Hawaiian Electric Company (HECO) The breakdown by percentage of generation from renewable energy in 2023 was: O‘ahu - 29.6%; Maui County - 35.4%; Hawai‘i island - 52.1%

According to HECO, the breakdown of renewable energy production sources are as follows:

Gigawatt-hours of renewable energy produced in 2023
- Wind - 649
- Biomass (including waste-to-energy) - 328
- Solar Photovoltaic - 528
- Geothermal - 193
- Hydro-electricity - 27
- Biofuels – 83

According to the U.S. Energy Information Administration (EIA), as of 2023, renewable energy for the entire State accounts for 31% of the State's total energy generation came from renewables. Of this solar power provided about 19% of Hawai‘i's total electricity, the majority of which was from small-scale, customer-sited solar power generation. Unfortunately, Petroleum products accounts for about four-fifths of Hawai‘i's total energy consumption, the highest share for any state. However, according to the Hawai‘i State Energy Office’s (HSEO) data, the percentage of renewable energy generated in Hawai‘i has doubled since 2014. The renewable energy sources that are being advocated by HSEO include:

- Bioenergy – this includes Biomass, plant and animal matter which includes energy crops, wood, grasses, algae, vegetable oils, and agricultural and municipal wastes; and Biofuels are liquid fuels made from biomass.
- Geothermal - energy comes from heat inside the Earth and can be harnessed to produce electricity, as well as for heating and cooling purposes.

- Hydroelectric - flowing water from Hawai'i's streams, rivers, reservoirs, pipes, and irrigation ditches can be used to generate electricity.
- Hydrogen - produced from renewable sources, stored, and then used in vehicles or to produce electricity
- Ocean - thermal Energy (heat) or Marine Hydrokinetic Energy (motion – wave or tidal)
- Solar – photovoltaic (energy) and thermal (heating of water).
- Wind – both land based and offshore
- Renewable Natural Gas (biogas created energy from decomposition of organic matter)

3. A summary characterizing the existing status and trends for federal government facilities and activities of greater than local significance in the state's coastal zone since the last assessment is provided below.

   October 15, 2021 - The National Renewable Energy Laboratory published The Cost and Feasibility of Floating Offshore Wind Energy in the O'ahu Region. This study provides estimates of the Levelized Cost of Energy (LCOE) of offshore wind in the region surrounding O'ahu and investigates related topics relevant to planning for offshore wind.

   July 31, 2024 - The Hawai'i Floating Offshore Wind Regional Ports Assessment was completed. The study analyzed the current and planned infrastructure of Hawai'i ports to assess their ability to support the growing floating offshore wind industry's demand. It used spatial analysis, interviews, and available records to collect the necessary data regarding infrastructure readiness. The findings culminated in a report that outlines port requirements and deployment scenarios to support the industry and provides a basis of analysis with which the authors conducted a regional feasibility analysis of existing and planned port facilities and infrastructure.

Management Characterization

1. The table below identifies significant state-level changes that could facilitate or impede energy and government facility siting and activities since the last assessment.

Significant Changes in Energy and Government Facility Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpretations	Y	Y	Y
State comprehensive siting plans or procedures	N	N	Y

2. A summary of management categories with significant changes is provided below.

   Clean Energy policies enacted during this Section 309 cycle involving the coastal zone include:

SLH 2024

- **ACT 053 – Relating to Renewable Energy.** To achieve a 100 percent renewable energy portfolio standard by 2045, reduce greenhouse gas emissions to at least fifty per cent below 2005 levels by 2030, this measure authorizes the Board of Land and Natural Resources to lease, without public auction, certain public lands to public utilities and renewable energy producers.

SLH 2023

- **Act 066 – State Programs.** leverage $500,000,000 in private investment for $500,000,000 in matching funds from the United States Department of Energy that will drive the production, processing, delivery, storage, and end-use of clean hydrogen, including innovative uses in the industrial sector.

- **Act 226 – Transportation.** Establishes a zero-emissions transportation working group to assist in reaching the goal of the State to reduce greenhouse gas emissions and achieve zero emissions across all transportation modes within the State, including across all sectors of: (1) Ground Transportation; and (2) Sea and air interisland transportation. Another key goal is to use green energy sources to power these vehicles.

SLH 2022

- **Act 201 – Relating to Renewable Energy.** Authorizes the public utilities commission to contract with a qualified consultant to conduct a study on the accessibility of Hawai‘i's electric system and procedures for interconnection to the electric grid to privately renewable energy sources.

- **ACT 239 - Relating to Energy Efficiency.** The purpose of this Act is to: (1) Require state facilities, with the exception of smaller facilities, to implement cost-effective energy efficiency measures; (2) Direct the Hawai‘i state energy office to collect all state—owned facilities' utility bill and energy usage data and make this data publicly available; and (3) require, where feasible and cost-effective, the design of all new state building construction to maximize energy and water efficiency and energy generation potential and to use building materials that reduce the carbon footprint of the project.

SLH 2021

- **Act 092 (021) – Relating to Energy.** The study shall address: (1) The amount of aging photovoltaic and solar water heater panels in the State that will need to be disposed of or recycled; (2) Other types of clean energy materials expected to be discarded in the State in significant quantities, including glass, frames, wiring, inverters, and batteries; (3) The type and chemical composition of those clean energy materials; (4) Best practices for collection, disposal, recycling, or reuse of those clean energy materials; (5) Whether a fee should be charged for disposal or recycling of those clean energy materials; (6) Any other issues that the Hawai‘i natural energy institute and department of health consider appropriate for management, recycling, and disposal of those Clean energy materials.

SLH 2020

- **Act 061 (20) - Relating to Renewable Energy.** Provides tax incentives for individual or corporate taxpayers for a taxable year to encourage wider adoption of renewable energy development Statewide. These credits can be applied to solar energy systems or wind turbines.

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   MEDIUM PRIORITY

2. A brief explanation of the reasoning for this level of priority is provided below.

   On the federal level, offshore energy development and siting of offshore energy facilities falls under the authority of BOEM. Stakeholder engagement was restarted by BOEM during the summer of 2024 through a series of public scoping meetings for offshore wind development for O‘ahu.

   Medium Priority Focus: Moving towards a future with more sustainable clean energy is a priority for the State of Hawai‘i. It is the primary focus for the Hawai‘i State Energy Office, however, the negative environmental effects on the coastal region from carbon emissions from fossil fuels is a concern for the Hawai‘i CZM Program. Because renewable energy expansion and siting is not the chief focus for the CZM Program, it remains a medium priority as an enhancement strategy focus.

Aquaculture

Section 309 Enhancement Objective: Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

Resource Characterization

1. The table below characterizes the existing status and trends of aquaculture facilities in the state's coastal zone based on the best-available data.

Status and Trends of Aquaculture Facilities and Activities

Type of Facility/Activity	Number of Facilities	Approximate Economic Value	Change Since Last Assessment (↑, ↓, –, unknown)
Shellfish	Unknown	(D)	Unknown
Finfish	Unknown	(D)	Unknown
Algae	Unknown	45,429	↑
Ornamental	Unknown	3,888	↑
Other	Unknown	40,310	↑

2. A brief summary of the results of state-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment is provided below.

   The value of 2022 aquaculture sales totaled a record of $89.6 million, which is an increase of 12% from 2021 (Hawai‘i Aquaculture Annual Release, September 22, 2023, USDA). Algae continues to constitute high value and amounted to 50% of the total value of the industry. The Hawai‘i-Based Aquaculture Accelerator and Fund at the Hawai‘i Ocean Science and Technology Park in Kona, Hawai‘i has grown significantly. The Natural Energy Laboratory of Hawai‘i Authority has partnered with HATCH Blue Accelerator and gained 2 new tenants as well as launching its aquaculture accelerator 5.0 cohort (NELHA Annual Report 2022-2023).

Management Characterization

1. The table below identifies state-level changes that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

Significant Changes in Aquaculture Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	Y	N	N
Other aquaculture statutes, regulations, policies, or case law interpreting these	Y	N	Y

2. A summary of management categories with significant changes is provided below.

HI Rev Stat § 220-1 (2023). The Board of Land and Natural Resources (BLNR) shall adopt rules for review of applications, and issuance of permits for aquaculture farms, pursuant to chapter 183C. The rules shall specify permitted uses; provided that all uses endorsed by the Board of Agriculture pursuant to Chapter 219 shall be permitted uses; uses for which an environmental impact statement shall be necessary, pursuant to Chapter 343, as well as those actions of repair and maintenance which shall not be subject to the permit and environmental impact statement provisions, including but not limited to emergency repairs.

These were not 309 or CZM-driven changes. This law could streamline the expansion of aquaculture in Hawai‘i by making the regulatory process more efficient while safeguarding the environment through selective EIS requirements. This could enhance the State's food security and economic opportunities while ensuring environmental sustainability.

Enhancement Area Prioritization

1. Level of priority for the enhancement area for the coastal management program:
   LOW PRIORITY

2. A brief explanation of the reasoning for this level of priority is provided below

   The enhancement area is a low priority for the HICZMP because the Hawai‘i Department of Agriculture (HDOA), Aquaculture and Livestock Support Services Branch is the State’s lead agency to advance commercial aquaculture. The State’s aquaculture industry has continually grown from the last assessment and hit a record high of $89.6 million. During stakeholder engagement, the head of the Aquaculture Development Program (ADP) informed HICZMP that “Restorative Aquaculture” has been integrated into ADP planning, with several pilot projects in the works. The HICZMP continues to explore opportunities to partner and support the ADP through the ORMP as part of the “ocean economy” management priority which aims to support increased local food production through sustainable aquaculture standards.

Phase II Assessment

Wetlands

In-Depth Resource Characterization

Purpose: To determine key problems and opportunities to improve the CMP's ability to protect, restore, and enhance wetlands.

1. The table below identifies the three most significant existing or emerging physical stressors or threats to wetlands within the State's coastal zone.

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Sea Level Rise	Throughout coastal zone
Stressor 2	Development/fill	Throughout coastal zone
Stressor 3	Hydrological alteration/channelization	Throughout coastal zone

2. A brief explanation of these significant stressors or threats to wetlands within the State's coastal zone is provided below

A 2014 GIS assessment of wetland losses in Hawai‘i found that approximately 15% of the wetlands on the main Hawaiian Islands have been lost since pre-settlement times (van Rees & Reed, 2014), but that valuable coastal wetlands have been lost at a much higher rate. USFWS estimates that 22,475 acres of coastal wetlands existed circa 1780 and that coastal wetlands decreased by 31% to 15,474 acres in the 1980s (Dahl, 2011).

Sea Level Rise & Flooding

Act 286, SLH 2012, codified as HRS Chapter 226, Section 109, established the Hawai‘i Climate Change Adaptation Priority Guidelines. Among other goals, the guidelines encourage preservation of natural infrastructure systems, including streams, floodplains, and wetlands in order to lessen the effects of climate change (HICZMP, 2021). The State's Sea Level Rise and Vulnerability Report notes that under a 3.2-foot SLR scenario, wetland resources such as coastal fishponds and estuaries are at risk of being degraded or lost due to rising seas and changes in salinity (DLNR, OCCL, and Tetra Tech, Inc., 2017). Studies examining the effects of SLR on low-lying coastal wetlands in the Main Hawaiian Islands indicate that increased water levels, erosion, salinity, and flooding associated with SLR threaten habitats of endangered waterbirds, sea turtles, Hawaiian monk seals, and migratory shorebirds (DLNR, 2015). Wetland resource managers also noted that coastal wetlands will change and disappear as sea levels rise and storms intensify. It was also noted that as some wetlands are lost through ocean intrusion, new wetlands will appear in other areas (DLNR, 2022).

Several areas in the urban core of Honolulu, including parts of Kaka‘ako, Waikīkī, and Ala Moana, were constructed largely on filled wetlands. The entirety of the Kaka‘ako area is located within the National Flood Insurance Program's Zone AE (Special Flood Hazard Area subject to inundation by the 1% annual chance flood) and it is projected that King tide conditions will soon pose challenges for both commuters and businesses in the area (Hawai‘i National Flood Insurance Program, 2019; PacIOOS, 2019). By supporting the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, it is possible to avoid, minimize, or mitigate the impacts of climate change (DLNR, 2022).

Development and Fill

Many streams and wetlands that have been important in maintaining the natural hydrology of our islands have been paved over or diverted, resulting in disruptive impacts to local climate, nearshore environments, and the ability of our groundwater supplies to recharge undisrupted. The fragmentation of the watershed due to land development has significantly impacted these critical water resources (HICZMP, 2023a). Impervious surfaces accumulate pollutants from upstream areas, leaked from vehicles, or deposited from the atmosphere. During storm events, these pollutants are quickly washed off and rapidly delivered to downstream waters. Water quality impacts are numerous, and pollutants include sediments (suspended solids), nutrients (nitrogen and phosphorus), and pathogens (bacteria and viruses) (HICZMP, 2023a). Hawai‘i’s relatively small urban areas have had disproportionate impacts on ecosystem health, with many of the State’s urban areas constructed in and around vulnerable watersheds, floodplains, wetlands, and estuaries (HICZMP, 2020a). Additionally, most of the State’s roadway infrastructure has been constructed as coastal roadways in flat, eroded shoreline areas. Roadway construction in these areas has led to the loss and disruption of coastal habitat, including beaches and wetlands, exposing infrastructure to coastal hazards (HICZMP, 2020a).

Hydrological Alteration and Channelization

Development brings with it the loss of permeable surfaces, decreased water reabsorption, and increased stormwater runoff, leading to increased flooding (HICZMP, 2023a). As a result, natural drainage systems are often altered and channelized to collect runoff and transport it away from properties. In developed areas, pollutants flow over impervious surfaces, into storm drains, and downstream to streams, wetlands, lagoons, or nearshore bays on the way to the ocean (HICZMP, 2021; CZM, 2023). Wetlands are defined and entirely dependent upon surface and near surface hydrologic conditions, which support wetland vegetation and hydric soils. Wetlands are sensitive to increased pollutant loads from runoff as well as to water level changes caused by altered water inputs. Because of this, stormwater should be managed within the watersheds to the wetlands in a way that preserves or restores natural drainage flow (HICZMP, 2023a). Much of the filtering capacity of wetlands and estuaries has been lost due to land use changes but could be improved with conversion of gray to green infrastructure in developed areas (HICZMP, 2020a). A prime example of hydrological alteration is the modification of Waikīkī’s wetlands, which began in the mid-15th Century and ended with the construction of the Ala Wai canal, a two-mile drainage system built in the 1920s. The construction of the Ala Wai canal enabled the dense development of O‘ahu’s southern shore within a natural floodplain (HICZMP, 2020a).

3. The table below identifies emerging issues of concern that lack sufficient information to evaluate the level of the potential threat.

Emerging Issue	Information Needed
Increased development pressures	Mapping wetland locations (existing and potential)
Changes in federal definition of protected waters	Potential need for State policy changes to maintain protection for wetlands not covered in new federal definition

In-Depth Management Characterization

Purpose: To determine the effectiveness of management efforts to address identified problems related to the wetlands enhancement objective.

1. The table below identifies significant state-level changes since the last assessment.

Significant Changes in Wetland Management

Management Category	Employed By State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Wetland assessment methodologies	N	N	N
Wetland mapping and GIS	Y	Y	Y
Watershed or special area management plans addressing wetlands	Y	Y	Y
Wetland technical assistance, education, and outreach	Y	N	N
Other (please specify)			

2. For management categories with significant changes since the last assessment, a brief description is provided below to;
    a. Describe significant changes since the last assessment;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

Wetlands Mapping and GIS:

Maui Environmentally Sensitive Areas (ESA) Atlas

a. Maui County developed updated wetlands maps and a viewer, with this data tied directly to the Maui County SMA permit application. For additional details, see the Phase I Wetlands Assessment.
b. This is not a 309- or CZM-driven change
c. The likely outcome of this ordinance and map resource is a better understanding of the county's wetland resources to help guide property owners, land managers, and county planners with land use decisions.

Hawaiian Estuaries Viewer (In Development)

a. The Hawaiian Estuaries Viewer is an informational resource being developed by HICZMP and DAR. For additional details, see the Phase I Wetlands Assessment.
b. This is a CZM-driven change.
c. The likely outcome of this resource is to inform decision making for county shoreline planners and CWRM water regulators and to increase public awareness of both the locations and importance of estuaries.

Watershed or special area management plans addressing wetlands

Pōhākea Watershed-Based Management Plan (HICZMP, 2023b)

a. Through a partnership between the Maui Nui Marine Resource Council, Maui County, Central Maui Soil and Water Conservation District, DOH, the HICZMP, DLNR, and various other federal and nonprofit partners, the Pōhākea Watershed Plan was developed in 2023 to address pollutant causing impairments.
b. This is a CZM-driven change.
c. This plan provides strategies for watershed coordinators, stakeholders, resource managers, policy makers, and community members to combat water pollution, and creates opportunities to secure funding for ongoing and future projects.

3. A summary of studies that have been that illustrate the effectiveness of the state's or territory's management efforts in protecting, restoring, and enhancing coastal wetlands since the last assessment are provided below.

Evaluations to determine the effectiveness of the State's efforts to protect, restore, and enhance coastal wetlands have not been completed. However, there have been reports documenting the amount of progress and effort that has been dedicated towards wetlands management.

DAR 2024 Accomplishments - Estuarine & Wetland Restoration

Example projects include:

- Collaborated with He‘eia NERR to acquire funding to study the carbon sequestration potential of native plants
- With He‘eia partners, secured $5M in NFWF funding for the He‘eia Community Coastal Restoration Program which will restore 24 acres of wetlands and 20 acres of constructed wetland, and protect and enhance 88 acres of traditional fishpond serving as flood detention basin
- With He‘eia partners, completed bi-annual stream and estuary surveys to monitor changes over time resulting from restoration efforts
- Removed and restored 4 acres of invasive mangrove and other invasive trees along the shoreline within the pearl Harbor National Wildlife Refuge
- Cleared and restored 11 acres of shoreline and pond habitat for the West Loch Pearl Harbor USFWS Coastal Wetland Grant project

2025 Ocean Resources Management Plan (ORMP) Assessment & Refresh

- Since 2020, HICZMP has initiated 4 projects within the Land-Based Pollution and Ocean Resources Focus Areas. 2 projects have been completed, 2 are in progress.
- Examples projects include: Development of the Hawaiian Estuaries Viewer, adding Moloka‘i to the Hawai‘i Cesspool Prioritization Tool, and establishing a framework for the Kokua Community-Based Monitoring Program.

Identification of Priorities

1. A summary of the top three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively respond to significant wetlands stressors are provided below.

Management Priority 1: Identify and map wetland locations across the state

Description: In order to protect, restore and enhance coastal wetlands, there needs to be a better understanding of the current status of wetland resources. Identifying existing and potential future wetland locations will enable better management decisions. Wetlands provide important ecosystem services, as well as support traditional Hawaiian practices.

Management Priority 2: Study the effects of sea level rise on wetlands

Description: There is an ongoing need for data and study to learn how sea level rise and other environmental factors will affect wetlands around the state. Understanding these connections can facilitate protection of future wetland locations.

Management Priority 3: Stakeholder coordination for wetland management

Description: Wetlands (and their components) fall under the jurisdiction of various Federal and State agencies. Additionally, they are often stewarded by non-governmental and community organizations. Coordination and communication amongst all stakeholders is critical to effective wetlands management.

2. Priority needs and information gaps the CMP has to help it address the management priorities identified above.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Additional research to better understand the impacts of wetlands restoration to nearshore water quality, species diversity, and marine ecosystem health.
Mapping/GIS	Y	Updated, accurate maps of both the location and extent of wetlands
Data and information management	Y	Discussions with communities on data sovereignty and how to appropriately share wetland-related information
Training/capacity building	Y	Guidance for planners and permit reviewers on how to use available wetland maps/information when making decisions
Decision-support tools	Y	A tool with wetlands locations and extents to allow State and county employees with permitting and regulatory functions to incorporate this information into decision-making
Communication and outreach	Y	Communication, outreach, and discussions with stakeholders and community groups about the value and benefits of preserving and restoring wetland ecosystems
Other (specify)		

Enhancement Area Strategy Development

1. Will the CMP develop one or more strategies for this enhancement area?
   YES

2. Explanation why strategy will or will not be developed for this enhancement area.

Today, wetlands are regarded as an indispensable aspect of climate resiliency, due to their natural ability to control flooding, filter pollutants, and buffer the aquifer from groundwater salination

(HICZMP, 2020a). Wetlands absorb excess nutrients, sediment, and other pollutants before they reach rivers, lakes, and oceans, protecting habitat in the nearshore marine environment (DLNR, 2022). Wetlands collect surface runoff physically and chemically and slow pulses of freshwater and sediment during times of heavy rain. The water quality functions of wetlands help protect sensitive coral reef habitat from pollutants, fluctuations in salinity, and sediment loads, and help to keep Hawai‘i’s waters clear and inviting for beach recreation (DLNR, 2022). Hawai‘i’s wetlands also offer a cultural, bio-cultural, and agro-ecological environment where kalo (taro) has been historically grown in irrigated wetland field systems called lo‘i, which provide ecological functions such as flood control (DLNR, 2022). Estuaries in Hawai‘i are locally important because they provide juvenile nursery habitat for fish that inhabit marine environments as adults. As many as 30 marine fish species occupy these stream-mouth estuaries opportunistically as juveniles before moving to nearshore marine and coral reef habitat (USFWS, 2010).

Wetlands are the final line of defense to capture sediment, nutrients, and pollutants, and absorb flood events and coastal surges (NOAA, 2014, Hovis et al., 2021). A relatively small wetland might hold millions of gallons of flood water and slow its release (Foster et al., 2011). It is therefore critically important to stem losses of this habitat (NOAA, 2014), not only for wildlife or cultural values, but also for the ecosystem services (Pacific Birds, 2024) and flood and storm protections that they provide to coastal properties by filtering, absorbing, and storing floodwater (NOAA, 2024a).

Wetlands protection and restoration is emerging as a top priority for HICZMP and its network partners. There is an identified need to develop updated wetlands maps for the State that can be used in permitting and water regulation activities to minimize the impacts of development. HICZMP sees an opportunity to develop a strategy that will bring together stakeholders to develop a methodology for mapping wetlands throughout the State. This effort will also provide updated data on wetlands locations and facilitate interagency coordination to develop and implement planning and regulatory guidance to avoid negatively impacting these important ecosystems.

By supporting wetlands mapping efforts, this strategy will encourage county planners to incorporate reliable wetlands data into permitting decisions and will allow them to raise concerns and provide recommendations about siting at the project scale, particularly in relation to runoff control options and appropriate setbacks from riparian areas and wetlands (HICZMP, 2021). This strategy will also help ensure that new on-site disposal systems (OSDS) are situated away from open waterbodies, wetlands, and floodplains (HICZMP, 2010). DOH has expressed a need for updated wetlands maps for their NPDES pollutant discharge permitting program, and CWRM has shown interest in incorporating these maps into decisions around water allocation.

The development of a Wetlands strategy would reflect the expressed needs of CZM Network partners, as well as align with NOAA’s identification of wetlands as a priority enhancement area (2026-2030 309 Guidance). The development of updated wetland maps and establishment of guidance for using these maps would constitute a program change achievable within the five-year funding cycle. HICZMP is elevating Wetlands to high priority in our upcoming 5-year 309 Strategy in response to recent stakeholder input identifying wetlands protection and restoration as a priority issue for the State, and in consideration of the flood reduction and water quality enhancing benefits provided by coastal wetlands.

Coastal Hazards

In-Depth Resource Characterization

Purpose: To determine key problems and opportunities to improve the CMP's ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1. The table below identifies the three most significant coastal hazards within the coastal zone.

	Type of Hazard	**Geographic Scope** (throughout coastal zone or specific areas most threatened)
Hazard 1	Shoreline erosion	Throughout coastal zone
Hazard 2	Sea Level Rise	Throughout coastal zone
Hazard 3	Flooding	Throughout coastal zone

2. A summary of the three identified significant coastal hazards is provided below.

The impacts of shoreline erosion, sea level rise and high wave flooding are evident across the State and threatening public safety, natural ecosystems, critical infrastructure and public access. The 2023 State Hazard Mitigation Plan has identified Sea Level Rise' as a high- ranking hazard with high probability and a high-risk factor. Stakeholder input from the HICZMP Network has identified coastal hazards and development as a priority challenge for the State.

Shoreline Erosion

It is estimated that in the past century, a quarter of beaches on O'ahu, Maui and Kaua'i have been lost. Approximately 70% of beaches on those islands are experiencing long-term erosion (National Assessment of Shoreline Change: Historical Shoreline Changes in the Hawaiian Islands). This coastal erosion threatens private and public infrastructure built near the coastline. Progressively worsening combinations of chronic and seasonal erosion led to the collapse of two homes (Feb 2022 and Sep 2024) on the North Shore of O'ahu, posing serious threats to nearshore ecosystems, public safety and public access. The impacts of coastal erosion on the state highway system are also significant. For example, Kamehameha Highway on O'ahu is the only road access for communities along the Windward side; however, it is imminently threatened by erosion, as well as high waves (Partial collapse of highway in Hauula: Hawai'i News Now). During high wave events, the road experiences overtopping. Similar situations of critical roads being threatened by coastal erosion can be found across the State. Coastal erosion also impacts Native Hawaiian communities and cultural resources, for example, burial grounds, Hawaiian Home Lands, fishponds and other places of cultural significance (Iwi kūpuna found at West Maui Beach Park: Maui Now News).

Sea Level Rise & Flooding

The 2022 NOAA Technical Report on Global and Regional Sea Level Rise Scenarios for the US projected that global mean sea level rise is expected to accelearte over the next several decades. The report included Hawai'i-specific projections including:

- Hawai'i and other tropical Pacific sites are expected to experience sea level rise that is 16% to 20% higher than the global average.
- There is a 92% chance of exceeding 0.4 (1.3 ft) of sea level rise for Honolulu in 2100 in all greehouse gas emissions scenarios and at all warming levels (greater than 1.5˚ C or 2.7˚ F global mean surface air temperature by 2100).

- There is an 82% chance of exceeding 0.6 (2.0 ft) of sea level rise for Honolulu in 2100 in an Intermediate to High greehouse gas emissions scenarios leading to 3.0˚ C or 5.4˚ F.

Hawai'i is particularly vulnerable to sea level rise and flooding due to relatively dense development in close proximity to the shoreline, as well as a shallow grade in coastal areas. With this elevation feature, small increments of sea level rise can cause extensive lateral impacts. The 2017 Hawai'i Sea Level Rise Vulnerability and Adaptation Report estimates that on O'ahu, 3.2 ft of sea level rise will lead to chornic flooding of 9,400 acres of land and 3,880 structures, displace over 13,000 residents, cause $12.9 billion in losses of private land and structures (2016 dollars), and flood 17.7 miles of major roads. At 3.2 ft of sea level rise, roughly 550 Hawaiian cultural sites will be exposed to chronic flooding.

A 2020 report, Sea-Level Rise Induced Multi-Mechanism Flooding and Contribution to Urban Infrastructure Failure, looks at three different mechanisms of sea level rise induced flooding: direct marine flooding, storm-drain backflow, and groundwater inundation. Each mechanism of flooding has been observed and documented in Honolulu (the study area) during periods of extreme tides. Modeling for Honolulu projects that the frequency of flooding events with a combination of the three mechanisms will increase. In the moderate SLR scenario, over 850 gravity-flow drainage outlets (out of 6,770) are likely to fail, and 629 cesspools (out of 691) are likely to be non-functional at filtering effluent.

3. Emerging issues of concern, which lack sufficient information to evaluate the level of the potential threat.

Emerging Issue	Information Needed
Groundwater Inundation	Additional mapping covering a larger geographic scale

In-Depth Management Characterization

Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

1. The table below identifies significant changes since the last assessment.

Significant Changes in Coastal Hazards Statutes, Regulations, and Policies

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Shorefront setbacks/no build areas	Y	Y	Y
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	Y	N
Hard shoreline protection structure restrictions	Y	Y	Y
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	N	N
Repair/replacement of shore protection structure restrictions	Y	Y	Y

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Inlet management	N	N	N
Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y	Y	Y
Repetitive flood loss policies (e.g., relocation, buyouts)	N	N	N
Freeboard requirements	N	N	Y
Real estate sales disclosure requirements	Y	N	Y
Restrictions on publicly funded infrastructure	N	N	N
Infrastructure protection (e.g., considering hazards in siting and design)	N	N	Y
Other (please specify)			

Significant Changes to Coastal Hazard Management Planning Programs or Initiatives

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Hazard mitigation plans	Y	N	Y
Sea level rise/Great Lake level change or adaptation plans	Y	Y	Y
Statewide requirement for local post-disaster recovery planning	N	N	N
Sediment management plans	Y	N	N
Beach nourishment plans	N	N	N
Special Area Management Plans (that address hazards issues)	N	N	N
Managed retreat plans	N	N	Y
Other (please specify)			

Significant Changes to Coastal Hazard Research, Mapping, and Education Programs or Initiatives

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
General hazards mapping or modeling	Y	Y	Y
Sea level rise mapping or modeling	Y	Y	Y
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	Y	Y	Y
Hazards education and outreach	Y	N	N
Other (please specify)			

2. A summary of studies that have been done that illustrate the effectiveness of the state's management efforts in addressing coastal hazards since the last assessment provide below.

   Evaluations to determine the effectiveness of the state's management efforts in addressing coastal hazards have not been completed. However, there have been reports documenting the amount of progress and effort that has been dedicated towards addressing coastal hazards.

   2023 State Hazards Mitigation Plan (SHMP) – summary of mitigation efforts since the 2018 SHMP:
   - 17 actions (14% of total actions) were completed
   - 63 actions (51% of total actions) were initiated but were not completed
   - 6 actions (5% of total actions) were determined to be ongoing activities and/or capabilities integrated into standard operations
   - 24 actions (19% of total actions) were not initiated or had no reported progress
   - 13 actions (10% of total actions) were discontinued for many reasons, including changes in priorities or the action is no longer under the state's authority
   - 68 actions were reviewed and revised for inclusion in the 2023 SHMP Update mitigation strategy

   2025 Ocean Resources Management Plan (ORMP) Assessment & Refresh
   - Since 2020, HICZMP has initiated 20 projects within the Coastal Hazards & Development Focus Area. 16 projects have been completed, 4 are in progress.
   - Examples projects include: Probabilistic Tsunami Design Zone Mapping, Regional Shoreline Management Initiative, Mapping Coastal Hazards & Social Vulnerability, etc.
   - Key policy changes at both the State and County levels have strengthened management efforts.
     - Act 16, SLH 2020 – prohibition of private shoreline hardening on sandy beaches
     - Act 231, SLH 2023 – real estate disclosure
     - County Ordinances to strengthen SMA and Setback rules
       See Phase 1 Assessment for details on key policy changes

Identification of Priorities

1. A summary of the top two management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks.

   Management Priority 1: Coastal Adaptation Strategies

Description: Coastal hazards impacting Hawai'i will increase in severity and frequency, thereby increasing risk to public safety, natural ecosystems, critical infrastructure, public access and cultural resources. To build resilience, the State of Hawai'i must begin proactive planning measures that are driven by community input and best available science.

Management Priority 2: Interagency Coordination for Shoreline Decisions & Planning

Description: Hawai'i's shoreline represents the jurisdictional boundary between State and County. As a dynamic boundary that is constantly moving, coordination between state and counties around shoreline regulation and enforcement is critical to effective coastal management.

2. Priority needs and information gaps the CMP has for addressing the management priorities identified above.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	• Cost benefit analysis on various adaptation strategies • Additional studies of coastal processes in data-poor areas
Mapping/GIS/modeling	Y	• Application of regional shoreline delineation to hot spot areas across the State • Expanded mapping of geographic areas projected to be impacted by groundwater inundation • Mapping of public and private utility infrastructure within coastal areas
Data and information management	Y	• Centralized clearinghouse for all data, maps, tools, resources, etc. related to coastal hazards in Hawai'i • Dedicated funding for regular data collection and maintenance
Training/Capacity building	Y	• Guidance for integrating climate change adaptation into existing planning and regulatory frameworks • Guidance on how to implement adaptation pathway planning
Decision-support tools	Y	• Informal or formal procedures for interagency communication and coordination around shoreline decisions (ex. cesspool conversion siting) • Framework for multi-agency coordination in developing and implementing adaptation pathway plans
Communication and outreach	Y	• Public outreach to increase understanding of adaptation options • Public involvement in developing community-driven adaptation plans
Other (specify)		

Enhancement Area Strategy Development

1. Will the CMP develop one or more strategies for this enhancement area?
   YES

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

Adaptation to coastal hazards continues to emerge as a top priority for the CZM Network and the State of Hawai‘i. In particular, there is an identified need to facilitate proactive adaptation planning at a regional scale (ie. larger than a single parcel) that takes into consideration a more comprehensive set of factors (ex. environmental, geophysical, climate projections, resource uses, culture and TEK). Additionally, there is a strong desire to move towards implementation and demonstration of adaptation strategies. HICZMP sees an opportunity to develop a strategy that will facilitate more interagency coordination for adaptation planning and implementation and support proactive, community-driven adaptation planning. This could include bringing together relevant stakeholders to discuss, and potentially formalize, coordination protocols, developing guidance and tools to support interested communities and agencies on how to conduct adaptation pathway planning. The establishment of this governance framework would constitute a program change achievable within the five-year funding cycle. The development of a Coastal Hazards strategy would reflect the expressed needs of CZM Network partners, as well as fulfill NOAA’s recommendation to “continue advancing adaptation and resilience strategies and policies related to coastal hazards to protect and improve coastal infrastructure” (NOAA 312 Evaluation Findings, December 2024).

Ocean and Great Lakes Resources

In-Depth Resource Characterization

Purpose: To determine key problems and opportunities to enhance the ability of state CMP to better address ocean and Great Lakes resources.

1. The table below identifies the three most significant existing or emerging stressors or threats to ocean and Great Lakes resources within the State's coastal zone.

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Watershed (Ridge to Reef) Degradation	Throughout coastal zone
Stressor 2	Declining Water Quality due to Land-Based Pollution	Throughout coastal zone
Stressor 3	Impacts of Anthropogenic Activities on Marine Ecosystem Health	Throughout coastal zone

2. A summary of the most significant stressors or threats to ocean and Great Lakes resources within the coastal zone is provided below.

   Hawai‘i's ocean resources are facing increasing pressures from land-based pollution and human activities that impact marine ecosystem health and watershed integrity. Watershed degradation contributes to excess sedimentation, nutrient loading, and poor water quality, which negatively affect coral reefs, fishponds, and estuarine habitats. A Mauka to Makai (Ridge to Reef) approach, rooted in the traditional Hawaiian ahupua‘a system, is essential to address these challenges by improving coordination among agencies, NGOs, and community stakeholders working on watershed and marine conservation. This strategy aligns efforts across governmental agencies, research institutions, and local organizations, to enhance marine ecosystem resilience by reducing land-based pollution impacts.

   Watershed (Ridge to Reef) Degradation
   Healthy watersheds are the foundation for coastal and marine health, but deforestation, invasive species, wildfires, and urban development have led to increased sediment runoff, reduced water retention, and altered hydrological processes. This degradation contributes to coral reef decline, fishpond sedimentation, and estuarine habitat loss, impacting biodiversity and ecosystem services. Excess sedimentation and nutrient loading are primary consequences of watershed degradation. Research in Maunalua Bay (Wolanski et al., 2009) has documented how urbanization has accelerated sediment runoff, leading to persistent water quality degradation and coral reef decline. The Hawai‘i CZM Watershed Guidance (2009) further emphasizes the need for integrated watershed management to reduce erosion and improve sediment control.

   Stormwater runoff and stream modifications have also worsened watershed degradation. Impervious surfaces in urbanized areas prevent natural infiltration, causing increased surface runoff, erosion, and flash flooding. Many streams have been channelized or modified to manage stormwater, disrupting sediment transport and reducing aquatic habitat connectivity. Restoration projects, such as those led by Mālama Maunalua, emphasize the importance of stream restoration and green infrastructure in reducing sedimentation and runoff impacts.

Wildfires further threaten watershed health, contributing to erosion, sedimentation, and degraded water quality in nearshore ecosystems. The 2023 Lahaina fire demonstrated how wildfire events can have far-reaching environmental consequences, not only destroying vegetation but also increasing soil erosion and runoff into coastal waters. The loss of ground cover in burned areas leaves watersheds vulnerable, allowing ash, sediment, and debris to flow into streams and nearshore ecosystems during rain events. This runoff degrades coral reefs, estuaries, and fishponds by increasing turbidity and introducing pollutants. The 2024 DOH Water Quality Report highlights wildfire-induced erosion as a significant source of sediment loading, negatively impacting marine habitats.

Improving the health of nearshore marine ecosystems requires a comprehensive Ridge to Reef approach that recognizes the upstream drivers of coastal degradation. Native forest restoration, erosion control, and sustainable land management are essential tools to reduce sedimentation, improve water quality, and enhance the resilience of coral reefs, estuaries, and other coastal habitats. By integrating forest conservation, stormwater management, wildfire prevention, and land-use planning, this strategy aims to address the root causes of watershed degradation and protect the marine ecosystems that support biodiversity, cultural practices, and coastal livelihoods.

Declining Water Quality due to Land-Based Pollution

Land-based pollution remains one of the primary stressors to Hawai‘i’s coastal and marine environments. Pollutants from cesspools, stormwater runoff, agricultural activities, and urban development enter nearshore waters, leading to declining water quality, harmful algal blooms, and habitat degradation. These pollutants disrupt marine ecosystems by increasing nutrient loads, reducing oxygen levels, and altering water chemistry.

The Hawai‘i Department of Health (DOH) Wastewater Branch has identified approximately 83,000 cesspools, discharging an estimated 50 million gallons of untreated sewage daily into the ground and coastal waters. Leaking wastewater contributes to high nitrogen levels, fueling algal blooms that outcompete coral reefs and disrupt nearshore fisheries. The 2024 DOH Water Quality Report identifies hotspots for chronic fecal contamination, particularly in areas where cesspools are concentrated near coastal zones. While efforts such as the Cesspool Grant Program (2024) aim to accelerate cesspool conversion, financial and logistical challenges remain.

Stormwater runoff and nonpoint source pollution stormwater runoff is a major contributor to Brown Water Events (BWEs) and coastal pollution, particularly after heavy rainfall. Impervious surfaces, such as roads and parking lots, increase runoff volumes, carrying sediments, bacteria, heavy metals, and pesticides into streams and nearshore environments. The 2023 Surfrider Blue Water Task Force Report found that many recreational beaches exceed state water quality standards for enterococcus bacteria, indicating persistent fecal contamination. The CZM Nonpoint Pollution Guide and 2021 CZM Land-Based Pollution Report recommend green infrastructure solutions, such as rain gardens, bioswales, and permeable pavement, to reduce stormwater impacts and improve natural infiltration.

Agricultural and coastal development further exacerbate nutrient pollution, leading to algal blooms and low-oxygen conditions in nearshore waters. Runoff from fertilizers, pesticides, and livestock waste degrades estuaries and fishponds, while coastal construction and dredging disturb marine sediments, increasing turbidity and stressing coral reef ecosystems. Sustainable land-use planning,

improved wastewater management, and stormwater retention strategies are essential for mitigating these impacts.

Addressing land-based pollution requires a combination of policy updates, improved permitting processes, and increased investment in wastewater infrastructure. Implementing watershed-based strategies that integrate nonpoint pollution control, cesspool phase-out programs, and stormwater management solutions will be essential to improving water quality and ensuring the long-term health of Hawai‘i’s coastal and marine ecosystems.

Impacts of Anthropogenic Activities on Marine Ecosystem Health

Human activities continue to put stress on Hawai‘i’s marine ecosystems, leading to habitat loss, resource depletion, and decreased resilience to environmental changes. Coastal development, overuse of marine resources, and shoreline modifications are major contributors to declining ecosystem health.

Shoreline hardening, such as seawalls and revetments, alters sediment transport, leading to increased erosion and beach loss. Dredging and nearshore construction disturb sediment, increasing turbidity and degrading coral reef and estuarine ecosystems. The 2024 Holomua Marine Initiative Report highlights the need for sustainable coastal management strategies to prevent further habitat destruction.

Marine debris, particularly plastics and abandoned fishing gear, has become an increasing threat to Hawai‘i’s marine ecosystems. Due to ocean currents, Hawai‘i accumulates significant debris from both local and distant sources, which can entangle marine life, be ingested by fish and seabirds, and contribute to habitat degradation. Microplastics are also a growing concern, as they infiltrate food webs and affect marine biodiversity.

Invasive marine species introduced through ballast water, hull fouling, and aquarium releases further stress native ecosystems. Invasive algae and non-native fish species outcompete native species, disrupt food webs, and alter coral reef dynamics. Invasive algae, for example, smother coral reefs and reduce biodiversity, making reef ecosystems less resilient to other environmental stressors.

While smaller local and subsistence fishing communities play a vital role in cultural and food security, intensive commercial fishing operations and non-sustainable harvest practices can contribute to ecosystem imbalances. Supporting community-based resource management efforts can help promote sustainable practices while ensuring the long-term viability of fish stocks.

Unregulated boating, anchoring, and tourism also contribute to reef degradation. Improper anchoring damages coral, and high volumes of divers and snorkelers can physically harm fragile marine habitats if not properly managed. Conservation efforts, such as the Makai Watch Program Makai Watch Program, play a critical role in promoting sustainable marine resource management and education.

Addressing these stressors requires stronger marine resource management, improved coastal development guidelines, and the integration of watershed-based conservation efforts. By prioritizing sustainable land-use planning, expanding ecosystem restoration initiatives, and

strengthening community-led resource management, Hawai'i can better protect its marine ecosystems and coastal resources for future generations.

3. The table below identifies emerging issues of concern that lack sufficient information to evaluate the level of the potential threat.

Emerging Issue	Information Needed
Alternative Conversion Options for Cesspools	There is a lack of viable, well-documented alternatives for cesspool conversion in areas where traditional sewer connections are unavailable or septic systems remain unsuitable due to shoreline proximity and groundwater contamination risks. More research is needed on cost-effective, environmentally sustainable technologies. Further evaluation is needed on long-term maintenance costs, performance in different environmental conditions, and financial assistance options for homeowners and businesses seeking conversion solutions.
Sea Level Rise (SLR) Impacts on Coral Reefs and Coastal Habitat Migration	Rising sea levels pose challenges for coral reef conservation, affecting reef submersion, wave energy dynamics, and sedimentation. More research is needed to assess SLR's impact on reef growth, recruitment, and resilience, as well as to determine which coral species or depth zones should be prioritized for restoration. Additionally, as dunes, wetlands, and estuaries migrate inland, proactive planning is needed to identify future habitat locations and ensure they continue providing coastal protection and ecosystem services. Integrating SLR projections into land-use planning, permitting, and conservation strategies will be essential for long-term adaptation.

In-Depth Management Characterization

Purpose: To determine the effectiveness of management efforts to address identified problems related to the ocean and Great Lakes resources enhancement objective.

1. The table below identifies significant state-level changes since the last assessment.

Significant Changes in Management of Ocean and Great Lakes Resources

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Ocean and Great Lakes research, assessment, monitoring	Y	Y	Y
Ocean and Great Lakes GIS mapping/database	Y	Y	Y
Ocean and Great Lakes technical assistance, education, and outreach	Y	Y	Y
Other (please specify)			

2. A summary of management categories with significant changes since the last assessment is provided below.

High Resolution Coral Maps

In 2020, the Hawai'i CZM Program supported the efforts of Arizona State University, the Hawai'i Dept. of Land & Natural Resources, and NOAA to develop high-resolution maps of coral reef health around the Main Hawaiian Islands using imagery from an aircraft. These maps depict live coral, algal, and sand cover, and likely detect areas of coral bleaching to inform marine resource managers and decision-makers of coral reef management strategies. This was a 309 driven change.

Low-Impact Development Guidance

In 2023, the Hawai'i CZM Program developed the *Low Impact Development Practitioner's Guide* to provide informational guidance on how to plan for and implement Low Impact Development (LID) practices for new development and redevelopment in Hawai'i. LID consists of nature-based solutions aiming to preserve or enhance the natural hydrology of a place that existed prior to development. LID is intended to protect the quality, health, and supply of Hawai'i's water resources and the environment. The LID Guide is intended to be used by the general public, developers, engineers, planners, and architects, State and county government staff, elected officials, businesses, conservation professionals and natural resource managers, and educators. This was a 309 driven change.

Kokua Community-Based Monitoring Program

In 2022, Kōkua Community-Based Monitoring (CBM) Program was developed by Hawai'i's Coastal Zone Management (CZM) Program and the Division of Aquatic Resources (DAR) with Project of Special Merit Funding to strengthen nearshore resource management by integrating community monitoring and traditional knowledge. Aligned with the 2020 Ocean Resources Management Plan and DAR's Holomua Marine Initiative, the program established a framework for community-based monitoring, focusing on species prioritized by local communities but not regularly monitored by the state. Now in Phase 2, CZM continues to support the program's expansion by providing technical guidance, coordinating monitoring efforts, and helping refine the framework to improve data integration into place-based marine management. This was a 309-driven change.

3. A summary of studies illustrating the effectiveness of the State's management efforts in planning for the use of ocean and Great Lakes resources since the last assessment is provided below.

While formal evaluations measuring the effectiveness of the state's ocean resource management efforts have not been completed, recent reports highlight significant progress and ongoing initiatives. These efforts demonstrate the state's continued commitment to planning and managing ocean resources and coastal hazards, even as effectiveness assessments remain an area for future development.

Division of Aquatic Resources (DAR) Accomplishments

The following highlights examples of DAR's recent efforts and progress in key management areas that support the sustainable use and protection of Hawai'i's ocean resources:

- **Fisheries Management-** applied adaptive management in the West Hawai'i Aquarium Fishery and advanced updates to Fishery Management Area rules to better protect critical species and habitats.
- **Permitting and Environmental Review-** Created a new application and permit template for Special Activity Permits to streamline permitting while safeguarding sensitive information and improving permit review efficiency.

- **Place-Based Planning** (Holomua Marine Initiative)**-** continued statewide Holomua efforts, advancing community partnerships and developing place-based plans focused on ecosystem health and sustainable resource use.
- **Ecosystem Monitoring and Management-** further efforts to monitor and restore critical habitats, including estuaries, wetlands, and anchialine pools, to improve ecosystem resilience and support native species recovery.
- **Aquatic Invasive Species (AIS)-** expanded AIS monitoring and rapid response efforts, including managing invasive algae and mitigating vessel biofouling risks to protect marine ecosystems.
- **Water Quality-** created a Water Quality Action Plan to investigate water quality in relation to reef and fish health.

2025 Ocean Resources Management Plan (ORMP) Assessment & Refresh Since 2020, HICZMP has initiated several projects within the Marine Ecosystems Focus Area, many of which are ongoing. These efforts reflect continued investment in cross-agency coordination, community engagement, and science-based planning to support the protection of Hawai‘i’s ocean resources:

- **Kōkua Community-Based Monitoring – Phase I (2022–2023):** Developed a community-based monitoring framework in collaboration with DLNR-DAR to support place-based marine management aligned with the Holomua Marine Initiative. The framework outlined roles, protocols, and a pilot program to prepare communities for long-term monitoring participation.
- **Kōkua Community-Based Monitoring – Phase II (2024–ongoing):** Focuses on implementing and refining monitoring protocols for limu, coral, and water quality. This phase emphasizes community training and participation, supporting the integration of local monitoring efforts into co-management strategies.
- **Estuary Viewer (2024–ongoing):** A GIS-based tool developed by HICZMP and DLNR-DAR to map all estuaries across the state. The project supports statewide estuarine monitoring, planning, and restoration efforts by improving data accessibility and coordination.

4. A summary of the top three management priorities where there is the greatest opportunity for the CMP to improve its ability to effectively plan for the use of ocean and Great Lakes resources.

Management Priority 1: Watershed-Based Planning (Mauka to Makai)

Description: Strengthening watershed-based planning will improve coordination between agencies, NGOs, and communities to reduce sedimentation, nutrient loading, and pollution transport from upland areas to coastal waters. Expanding GIS-based watershed prioritization, interagency partnerships, and traditional ecological knowledge (TEK) integration will enhance decision-making and improve nearshore water quality, coral reef health, and marine habitat resilience.

Management Priority 2: Reduction of Land-Based Pollution

Description: Reducing nonpoint source pollution from cesspools, stormwater runoff, and agricultural activities is critical to protecting Hawai‘i’s ocean resources. HICZMP can enhance watershed management strategies, update policies to support pollution control measures, and expand monitoring efforts to track pollutant pathways and long-term impacts

Management Priority 3: Nature-Based Solutions for Coastal and Marine Resource Protection

Description: Incorporating coral reefs, wetlands, and fishponds into coastal resilience planning

presents an opportunity to use nature-based solutions for erosion control, wave attenuation, and habitat restoration. HICZMP can support policy integration, planning tools, and regulatory improvements to ensure these ecosystems are recognized as natural infrastructure for marine resource protection. Expanding scientific research and GIS-based modeling will help guide future restoration and conservation efforts.

5. The table below identifies priority needs and information gaps to help address the management priorities identified above.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Further research is needed on state wetlands, estuaries, and fishpond locations, as well as their role in watershed health, water quality, and marine ecosystem resilience. Incorporating knowledge from kūpuna, TEK, and technical studies will improve understanding of the interconnectedness of these ecosystems and their impact on coral reef and fisheries health. Additionally, more research is needed on how coral restoration enhances coastal protection by reducing wave attenuation and mitigating flooding as a natural barrier.
Mapping/GIS	Y	Updated GIS-based watershed prioritization and mapping of estuaries, fishponds, wetlands, and priority coastal habitats are needed to improve planning for pollution mitigation and marine conservation planning. Additionally, GIS mapping of current watershed management projects and marine ecosystem projects (as they relate to coastal water quality and protection) will enhance coordination and decision-making efforts.
Data and information management	Y	More data is needed on upper watershed activities and their connection to lower watershed organizations and in-water restoration efforts. Improving data-sharing mechanisms will help watershed and marine projects align efforts, identify gaps, and support one another more effectively.
Training/Capacity building	Y	Training and guidance will help watershed partnerships create DOH approvable watershed plan, which in turn allows for increased capacity-building opportunities. Strengthening this process would result in more watershed partnerships having DOH-approved plans, encouraging further collaboration and funding opportunities.
Decision-support tools	Y	Developing guidance for watershed partnerships to create DOH-approved watershed plans will help streamline processes, increase technical knowledge, and improve access to funding opportunities.
Communication and outreach	Y	Expanding public awareness, stakeholder engagement, and collaboration on watershed health, land-based pollution, and marine resource protection is necessary. Outreach efforts should emphasize community-based resource management, cesspool conversion, and nature-based solutions.
Other (specify)		

Enhancement Area Strategy Development

1. Will the CMP develop one or more strategies for this enhancement area?
   YES

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

   A strategy will be developed for this enhancement area to address the pressing need for improved watershed-based planning, reduction of land-based pollution, and expansion of nature-based solutions for coastal protection. Recent outreach and coordination with DOFAW, DOH, and existing watershed partnerships have reinforced the need for CZM engagement and capacity-building in this

space. This strategy will support interagency coordination, GIS updates, and decision-support tools, aligning with the 2020 Ocean Resources Management Plan (ORMP) goals of ecosystem-based management and Makua to Makai connectivity.

Strategy: Wetlands

I. Issue Area(s)

A. The proposed strategy or implementation activities will *primarily* support the following high-priority enhancement area(s) *(check no more than two):*

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☐ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☑ Wetlands
- ☐ Marine Debris
- ☐ Public Access

B. The proposed strategy or implementation activities will also support the following enhancement areas *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☑ Coastal Hazards
- ☑ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☐ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

☐ New or revised local coastal programs and implementing ordinances;

☐ New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

☑ New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

A. Strategy Goal*:* Create a statewide map of wetlands that can be used to inform permitting decisions to ensure that wetlands protections are considered.

This strategy will enhance coordination between State and county agencies, promote integrated planning efforts, and support collaboration in working to protect and manage wetlands, areas which are integral to improving both groundwater and nearshore coastal water quality, protecting coastal properties from storm surge and other coastal hazards, and provide critical habitat to native and endangered wildlife. By fostering partnerships and mapping efforts that address wetlands protection and restoration efforts, this approach will help improve the services these ecosystems provide such as flood mitigation, habitat support, and coastal protection. Additionally, this strategy recognizes the economic, social, and cultural value of

healthy wetlands to Hawai‘i’s communities, and ensures that development is safely sited away from areas with historic and projected coastal and stormwater inundation.

B. Description

The proposed strategy will focus on developing updated wetlands maps for Kaua‘i County, the City and County of Honolulu, and Hawai‘i County, and integrating these maps, along with recently developed wetlands maps for Maui County, into a Statewide Wetlands Viewer to support planning and permitting decisions to protect these important ecosystems in order to mitigate water quality concerns and coastal hazards in Hawai‘i. This initiative will enhance coordination between State and local government agencies to better align with existing and future coastal management priorities.

Key elements of this strategy include:

- **Stakeholder Coordination & Wetlands Mapping** – Engaging with Federal, State, and local governmental agencies to develop a wetland delineation and mapping methodology and incorporate this methodology to update Statewide wetlands maps.
- **Statewide Wetlands Viewer & Guidance** – Incorporating updated wetlands maps into a Statewide Wetlands Viewer and developing guidance to ensure users are able to use the tool effectively.
- **Memorandums of Agreement (MOAs) or Other Mechanisms**– Developing MOAs, or other mechanisms identified by State and county partners, to formally integrate consideration of wetlands maps in permit review process.
- **Outreach & Training** – Facilitating outreach activities to increase awareness of and encourage effective use of the Wetlands Viewer in the permitting process.

By incorporating consideration of wetlands into permitting decisions, this strategy will strengthen planning frameworks, foster interagency collaboration, and promote ecosystem-based management, leading to an enhanced capacity to address wetlands health, support marine resources, and improve coastal resilience over the long term.

This initiative is likely to result in a Program Change during the FY 2026-2030 cycle by leading to new or revised guidelines, procedures, and policy documents which are formally adopted and accepted by agencies such as the county planning departments.

III. Needs and Gaps Addressed

Wetlands protections were weakened by the *Sackett v. EPA* Supreme Court Ruling (2023) which determined that isolated wetlands not connected to other bodies of water are not considered waters of the U.S. and therefore are not protected by the Clean Water Act. These wetlands continue to be protected under Hawai‘i State law, but data is needed to determine where existing wetlands are located. DOH has expressed a need for updated wetlands maps to help identify wetland locations to support administering the National Pollutant Discharge Elimination System (NPDES) permit program to regulate pollutant discharge. County planning departments have also expressed a need to be able to identify whether proposed development and redevelopment projects will impact wetlands. Developing updated wetlands maps and a Statewide Wetlands Viewer will lead to improved consideration of impacts to wetlands in permitting decisions for both

development and pollutant discharge. Wetland ecosystems continue to decline in both quantity and quality due to infill, land-based pollution, sediment runoff, and urbanization, leading to increased impacts from flooding and other coastal hazards and decreased resilience of coastal properties. While county planners and State agency staff already consider wetlands in permitting processes, the lack of reliable, accessible data limits the effectiveness of these efforts.

This strategy addresses key needs by:

- Working with stakeholders to develop a methodology to map Hawai‘i’s wetlands in order to maximize effective management of this resource.
- Developing statewide wetlands maps and a viewer to support permitting decisions that incorporate wetlands protections.
- Integrating the use of wetlands maps/data in permit review processes, through MOAs or other mechanisms for formalization.
- Providing guidance and training to potential users of the Statewide Wetlands Viewer to ensure effective use of this tool.

IV. Benefits to Coastal Management

Hawai‘i’s wetlands have been estimated to be valued between $10,979 and $12,864 per acre (Ostergaard-Klem & Oleson, 2012). The successful implementation of this strategy will lead to more effective wetlands management, ensuring that actions are informed by best available data. By updating wetlands map layers and creating a Statewide Wetlands Viewer, this strategy will strengthen policies and decision-making processes that support the long-term health of Hawai‘i’s coastal and marine environments, and will increase resilience of coastal properties. Additionally, this strategy will advance water quality improvements by promoting pollution control measures and will enhance natural water filtration through preservation of wetland ecosystems, thereby reducing runoff impacts.

Increased coordination of wetlands management using the latest data will help strengthen marine ecosystem health while at the same time decreasing the impacts of flooding and other coastal hazards on coastal properties. These efforts will provide critical habitat for a variety of endangered species. The strategy will also support essential ecosystem services, including flood mitigation and habitat restoration, both crucial for Hawai‘i’s environmental and economic well-being. By providing updated wetlands mapping products and training, this strategy will allow State and county agencies responsible for making permitting decisions to incorporate wetlands data into decision-making processes, leading to increased protection and preservation of this valuable resource.

V. Likelihood of Success

This strategy and program change is likely to be achieved in the five-year assessment cycle due to strong existing partnerships, alignment with regulatory priorities, and increasing public interest in wetlands health. Collaboration with agencies such as DOH, DLNR DAR, DLNR DOFAW, CWRM, OPSD GIS, UH Sea Grant, county planning departments, USFWS, and USACE provides a strong foundation for effective coordination and implementation. Additionally, this strategy builds upon and aligns with existing State initiatives, including the Ocean Resources Management Plan (ORMP)

and Clean Water Act requirements, reinforcing the connection between this strategy and broader coastal management priorities.

VI. Strategy Work Plan

Strategy Goal: Develop informational resources in the form of a Statewide wetland map and associated guidance to improve the integration of wetland protection into permit review and regulatory decisions

Total Years: 5 years
Total Budget: $213,000

Year: 1
Description of activities: Background research to determine who will use the wetland viewer and how it will be used. Development of methodology for identifying and mapping wetlands, integration with existing Maui County wetlands maps.
Major Milestone(s): Completed roadmap for initiative; methodology developed for identifying and mapping wetlands.
Budget: $77,000

Year: 2
Description of activities: Map wetlands in Kaua‘i County and the City and County of Honolulu.
Major Milestone(s): Completed wetland maps for Kaua‘i County and the City and County of Honolulu.
Budget: $84,000

Year: 3
Description of activities: Map wetlands in Hawai‘i County, possibly to include anchialine ponds; develop wetland viewer - combine map layers, beta test, develop associated guidance on how to use.
Major Milestone(s): Completed wetland maps; completed statewide wetland viewer
Budget: $52,000

Year: 4
Description of activities: Outreach to county planning offices, commissions, etc. will be conducted to increase awareness of the wetland viewer. MOAs, or other formalization mechanism, will be developed between State and counties.
Major Milestone(s): Formal integration of wetlands layer into permit review process.
Budget: $0 - Activities will be completed in-house by Hawai‘i Coastal Zone Management staff.

Year: 5
Description of activities: Outreach and training will be conducted with State and county partners on how to use the viewer to support decision making in permit review**.**
Major Milestone(s): Public/consultant awareness when conducting activities, such as building a home or developing a property, to avoid developing areas designated as wetlands.

Budget: $0 - Activities will be completed in-house by Hawai‘i Coastal Zone Management staff.

VII. Fiscal and Technical Needs

A. Fiscal Needs:

It is anticipated that Section 309 funding will be sufficient to support the implementation of this strategy within the Wetlands enhancement area.

B. Technical Needs:

The State possesses the technical knowledge and skills to carry out the proposed strategy. If needed, the State will contract with subject matter experts to provide specialty services.

VIII. Projects of Special Merit (Optional)

To further enhance the impact of this strategy, the Hawai‘i Coastal Zone Management Program may pursue additional projects to strengthen partner agency outreach, communication, and long-term accessibility of the resources developed under this plan. These efforts may include:

- **Mapping Future Wetlands** – Developing maps of future wetlands to build on the efforts of this strategy, ensuring that proposed development projects take into consideration not just existing wetlands, but also the areas where wetlands will likely be found in the coming decades.

This effort will help ensure that the tools, resources, and strategies developed through this initiative continue to guide wetlands management well beyond the initial five-year timeframe.

Strategy: Coastal Hazards

IX. Issue Area(s)

C. The proposed strategy or implementation activities will *primarily* support the following high-priority enhancement area(s) *(check no more than two):*

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☑ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

D. The proposed strategy or implementation activities will also support the following enhancement areas *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☐ Coastal Hazards
- ☑ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

X. Strategy Description

C. The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☑ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

☐ New or revised local coastal programs and implementing ordinances;

☐ New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

☑ New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

D. ***Strategy Goal:*** To improve the State’s ability to manage and adapt existing development that is vulnerable to chronic and episodic coastal hazards.

Increase the State’s ability to implement comprehensive, community-driven, regional-scale adaptation planning by (a) developing an interagency governance framework to plan, implement and encourage regional scale adaptation efforts in response to coastal hazards, and (b) developing an online portal that can serve as a one-stop shop for resources, tools, guidance, etc. related to regional scale adaptation planning.

E. Description

The HICZMP will build upon work completed in the FY2021-2025 309 Strategy to identify the appropriate geographic scale for shoreline management, and facilitate regional-scale adaptation planning. This FY2026-2030 Coastal Hazards strategy will focus on increasing State and County government capacity to develop and implement regional scale adaptation plans that address coastal hazards. This will be achieved by implementing the following activities:

1. **Interagency Governance Framework**
   The HICZMP will develop an interagency framework to plan, implement and encourage regional scale adaptation efforts in response to coastal hazards. The framework will address how to support self-identifying communities in conducting adaptation planning. The HICZMP will create a multi-agency working group with representatives from relevant agencies with management and/or planning responsibilities in the coastal area (County Planning Depts, DLNR OCCL, DLNR Land Division, HDOT Highways, UH Sea Grant, etc.). This working group will be tasked with considering various governance options that would facilitate coordination across various agencies and jurisdictions for the purpose of implementing regional adaptation plans. Some of the questions that the working group may consider include:
   - Who is the accepting agency/approver of a proposed regional shoreline adaptation plan?
   - What elements should be included in a regional shoreline adaptation plan?
   - How will regional shoreline adaptation plans be integrated into existing State/County plans?
   - What are the incentives for completing a regional shoreline adaptation plan?
   - How will interested communities be supported through this process?
   - How will coordination amongst agencies be conducted?

   HICZMP will contract trained facilitation specialists to guide the working group through discussions and the framework development process. The final outcome will be a range of options for new procedures, guidelines and/or policies related to interagency coordination for regional shoreline adaptation planning. The proposed framework could include the use of MOAs/MOUs, revised authorities, etc. to formalize the roles of agencies within the governance framework.

2. **Online Adaptation Planning Portal**
   The HICZMP will develop an online, public-facing portal to serve as a one-stop shop for resources, tools, guidance, etc. relevant to developing regional shoreline adaptation plans. The Adaptation Planning Portal will have links to national data (ex. NOAA Sea Level Rise Calculator); however, the focus will be on Hawai'i-specific resources. Resources will include guidance (ex. Methodology for determining shoreline regions, Menu of Coastal Adaptation Options, Guidance on developing adaptation pathways, etc.), tools (ex. Coastal Atlas Viewer, Sea Leve Rise Viewer, etc.) and other resources (ex. Completed vulnerability/adaptation-related reports and plans from State/County agencies, Information on permit requirements, etc.). While some of these resources already exist, this strategy includes the development of new resources/tools/guidance, as well as development of the Portal itself.

   The development of this Portal will provide information to communities interested in conducting adaptation planning, as well as facilitate an improved overall understanding of the

State’s coastal processes, challenges and adaptation options. The availability of these resources in one location will enable more informed coastal management decisions.

XI. Needs and Gaps Addressed

Through the FY2021-2025 309 Strategy, the HICZMP and network partners recognized the need to identify an appropriate geographic scale for shoreline management based on coastal processes, rather than the current parcel-by-parcel approach. HICZMP completed a scoping study and agency consultations to develop a proposed methodology for defining appropriate shoreline regions and subregions for the purpose of management and coastal adaptation planning. While the technical delineation methodology was addressed, there remain questions on implementation. As these regions span State and County agency jurisdictions, there is a need for interagency coordination in planning and implementing regional shoreline adaptation plans. The timeline for this 309 Assessment and Strategy aligns with the NOAA CRRC award to University of Hawai‘i, Sea Grant, under which HICZMP is a subawardee and will be conducting regional shoreline planning pilot studies. The alignment of timelines will provide an ideal opportunity to pilot the proposed framework and coordination mechanisms.

The coastal zone is a nuanced area that experiences change due to seasons, geophysical processes, land uses, etc. A better understanding of the coastal area is an important piece of understanding what adaptation options are appropriate for an area based on their coastal conditions. Currently, coastal data exists; however, it is often disparate, incomplete, or not easily accessible by the general public. HICZMP conducted agency consultations with over 12 different Federal, State and County agencies about the needs and barriers to implementing adaptation planning, and one of the most commonly shared responses, was the need for more easily accessible data, especially in GIS and spatially enabled formats. To address this, the HICZMP is proposing the development of an online portal that will streamline the availability and accessibility of data to the general public. An increased understanding of the variety of factors that impact coastal conditions, will empower local communities to better understand how their challenges and solutions fit into the bigger picture.

XII. Benefits to Coastal Management

The proposed strategy will improve cross-agency coordination in coastal management decisions, thereby facilitating more efficient and comprehensive processes related to reviewing permit applications, preparing regional-scale coastal adaptation plans and supporting communities interested in taking proactive action to prepare for coastal hazards. The increased availability of data will increase capacity for State and County agencies with coastal management responsibilities to be able to incorporate and implement the best-available science into decision-making. This strategy can help lead to policy updates, rule changes and updated procedures.

Additionally, there are economic benefits of the proposed strategy. NOAA estimates that $1 spent on disaster preparedness in coastal counties returns $14 in avoided damage. Investing in proactive adaptation planning and creating a framework for cross-agency collaboration will ensure that coastal development does not endanger public safety or environmental quality. Coastal property owners will have a clearer understanding of what short, medium and long-term adaptation options are available to them. Access to healthy beaches is a key component for Hawai‘i’s

economy and is valued by residents and visitors. This proposed strategy would ensure that these important beach resources are protected and can continue to support the State's economy.

XIII. Likelihood of Success

There is a high likelihood of success for the HICZMP to accomplish work within this strategy. The HICZMP has a strong network of partners including State, County and Federal agencies, as well as academic researchers. These partners have been involved in the Section 309 FY21-25 Coastal Hazards strategy that laid the foundation for the tasks outlined in this FY26-30 strategy, and continue to support HICZMP efforts to facilitate regional-scale shoreline adaptation.

The greatest known impediment at this time is the political process involved, if the Working Group decides to pursue rule changes, amendments or code and policy updates as the best way to formalize the governance framework. Those decisions would depend on State and/or County leaders and is outside the control of the HICZMP. However, the HICZMP will work with partners and outreach to decision-makers throughout the strategy to help increase the likelihood of achieving these program changes.

XIV. Strategy Work Plan

Strategy Goal: Increase the State's ability to implement comprehensive, community-driven, regional-scale adaptation planning by (a) developing an interagency governance framework to plan, implement and encourage regional scale adaptation efforts in response to coastal hazards, and (b) developing an online portal that can serve as a one-stop shop for resources, tools, guidance, etc. related to regional scale adaptation planning.

Total Years: 5 years
Total Budget: $326,000

Year: 1
Description of activities: Form a working group with representatives from relevant agencies. Participants might include: DLNR (OCCL, Land Div, SHPD), HDOT, DOH, UH Sea Grant, County Planning Depts. Begin facilitated meetings to develop an interagency governance framework to support regional-scale shoreline adaptation efforts.
Major Milestone(s): Working Group will be established, as well as agree upon the group's goals, timeline and deliverables.
Budget: $77,000 for facilitation services

Year: 2
Description of activities: Continue facilitated discussions with the working group.
Major Milestone(s): Complete a proposed governance framework to pilot
Budget: $70,000 for facilitation services

Year: 3
Description of activities: Monitor the piloting of the governance framework. Develop tools that would facilitate coastal adaptation planning & coordination.
Major Milestone(s): Creation of at least one statewide coastal adaptation guidance product, such as a Coastal Atlas, Menu of Funding/Financing Strategies, etc.

Budget: $52,000 for the development of one coastal adaptation tool/guidance

Year: 4
Description of activities: Continue monitoring the piloting of the governance framework. Develop an online portal that will serve as a hub for resources on how to conduct regional shoreline planning.
Major Milestone(s): The development and launching of an Adaptation Planning Portal
Budget: $77,000 for web design and building of the online portal

Year: 5
Description of activities: Assess and evaluate the implementation of the governance framework and make any adjustments based on lessons learned. Work with working group to formalize the framework and adaptation planning process.
Major Milestone(s): Formalization of framework (mechanism TBD but could be MOAs/MOUs, legislative changes, integration in County/State plans, etc.)
Budget: $50,000 for professional services to assist with facilitating working group discussions, as well as legal services to assist with formalization mechanisms.

XV. Fiscal and Technical Needs

A. Fiscal Needs:

HICZMP has already received funding through a NOAA CRRC subaward, as well as non-competitive IRA funding to conduct regional shoreline adaptation planning pilot projects. While those activities are not part of this 309 strategy, they will provide necessary opportunities to test out the strategy’s proposed governance framework. Should additional funds be necessary, HICZMP will seek partnerships with agencies within the CZM Network, such as DLNR.

B. Technical Needs:

To meet the goals of this strategy, HICZMP will require technical assistance with mapping and hosting the portal and/or other large map viewers. A portion of the funds budgeted for this strategy will be used to procure private engineering, scientific and research capabilities, as necessary. Additionally, HICZMP anticipates reaching out to PacIOOS to discuss opportunities to collaborate on hosting and/or developing the portal and any other large datasets related to this strategy.

XVI. Projects of Special Merit (Optional)

HICZMP anticipates pursuing Projects of Special Merit opportunities to procure additional technical services needed to strengthen the development of guidance products and tools to be featured on the Adaptation Planning Portal. HICZMP also sees opportunities to use Project of Special Merit to support outreach efforts throughout the strategy period. Additional intermittent outreach will improve likelihood of success, and enable the HICZMP to build a coalition of early champions that would support implementation.

Strategy: Ocean Resources

XVII. Issue Area(s)

E. The proposed strategy or implementation activities will *primarily* support the following high-priority enhancement area(s) *(check no more than two):*

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☐ Coastal Hazards
- ☑ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

F. The proposed strategy or implementation activities will also support the following enhancement areas *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☑ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☑ Wetlands
- ☐ Marine Debris
- ☐ Public Access

XVIII. Strategy Description

F. The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☐ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

☐ New or revised local coastal programs and implementing ordinances;

☐ New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

☑ New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

G. ***Strategy Goal:*** Facilitate and support a comprehensive, watershed-based approach (Mauka to Makai) to support marine ecosystem health, coastal resilience, and water quality improvements.

This strategy will enhance coordination between watershed organizations, promote integrated planning efforts, and support collaboration among governmental agencies and NGOs working to protect and manage key ecosystems, including estuaries, fishponds, and coral reefs. By fostering partnerships and mapping efforts that address watershed restoration, water quality issues, land-based pollution, and marine habitat management, this approach will help improve the services these ecosystems provide such as flood mitigation, habitat support, and coastal protection.

Additionally, this strategy recognizes the economic, social, and cultural value of healthy watersheds and marine environments to Hawai‘i’s communities.

H. Description

The proposed strategy will focus on strengthening watershed-based planning, partnerships, and policy development to address land-based pollution, water quality concerns, and marine ecosystem health in Hawai‘i. By taking a Mauka to Makai approach, the strategy integrates land and ocean resource management to promote holistic ecosystem stewardship**.** This initiative will enhance coordination among government agencies, NGOs, community groups, and research institutions to align existing and future watershed management actions.

Key elements of this strategy include:

- **Stakeholder Coordination & Watershed Mapping** – Engaging with watershed organizations, governmental agencies, and NGOs to map ongoing watershed restoration, nearshore marine projects, and water quality monitoring efforts.
- **Guidance Development & GIS Prioritization** – Updating the HICZMP Hawai‘i Watershed Guidance (2009) to reflect current regulations, scientific advancements, and traditional ecological knowledge (TEK). Additionally, developing an interactive GIS-based prioritization tool to support data-driven decision-making.
- **Lower Watershed & Coastal Resilience Planning** – Identifying effective strategies for land-based pollution reduction, marine habitat conservation, and sediment control**,** with a focus on areas where interventions have the highest impact on coastal and marine ecosystems.
- **Watershed Management Plan Collaboration** – Working with partners to develop a DOH-approved watershed management plan that aligns with statewide conservation goals and regulatory requirements**.**
- **Community Engagement & Knowledge Sharing** – Facilitating workshops and outreach activities to encourage local stewardship, information-sharing, and technical support for watershed-based decision-making.

By strengthening planning frameworks, fostering interagency collaboration, and promoting ecosystem-based management, this strategy will enhance Hawai‘i’s capacity to address watershed health, protect marine resources, and improve coastal resilience over the long term.

This strategy is intended to lead to new or revised guidelines, procedures, and policy documents which are formally adopted and accepted by state organizations.

XIX. Needs and Gaps Addressed

Hawai‘i’s watersheds continue to face challenges due to land-based pollution, aging wastewater systems, sediment runoff, and urbanization**.** These issues contribute to declining marine water quality, affecting coral reefs, fish populations, and coastal resilience. While many organizations and agencies are engaged in watershed work, a lack of coordination, data accessibility, and unified guidance limits the effectiveness of these efforts.

This strategy addresses key needs by:

- Improving coordination among agencies, NGOs, and communities to align priorities and maximize efficiency in watershed-based decision-making.
- Updating watershed guidance and mapping efforts to reflect the latest scientific research, policy developments, and traditional ecological knowledge.
- Focusing on lower watershed areas where sediment and nutrient runoff have the greatest direct impact on marine ecosystems.
- Strengthening outreach and education efforts to enhance community participation and awareness of watershed management's role in protecting marine resources.

Benefits to Coastal Management

The successful implementation of this strategy will lead to more effective watershed planning and integration, ensuring that management actions are informed by the latest data, stakeholder collaboration, and ecosystem-based approaches. By improving coordination between agencies, NGOs, and community groups, this strategy will strengthen policies and decision-making processes that support the long-term health of Hawai‘i's coastal and marine environments. Additionally, this strategy will advance water quality improvements by promoting coordinated pollution control measures, supporting cesspool conversion alternatives, and implementing stormwater management strategies, including the transition from gray to green infrastructure to enhance natural water filtration and reduce runoff impacts.

As watershed planning and marine ecosystem management become more integrated, this approach will help strengthen marine ecosystem health and watershed health through nature-based solutions such as coral reef, estuary, Hawaiian fishpond restoration. These efforts protect shorelines from erosion and storm surge, provide critical habitat for marine species, and support healthy ecosystems that are essential to Hawai‘i's ocean tourism economy. The strategy will also support essential ecosystem services, including flood mitigation, habitat restoration, and sustainable fishery management, which are vital to Hawai‘i's environmental and economic well-being. By fostering collaboration and capacity-building, this strategy will empower local stakeholders by providing technical guidance, hosting workshops, and engaging the broader community in decision-making processes. Ensuring that watershed planning resources remain accessible and actively used will help sustain long-term conservation efforts and allow coastal management.

XX. Likelihood of Success

This strategy is well-positioned for success due to strong existing partnerships, alignment with regulatory priorities, and increasing public interest in watershed and marine ecosystem health. Collaboration with agencies such as DOH, DLNR DAR, USACE, and partnerships with NGOs and research institutions, provides a strong foundation for effective coordination and implementation. As part of the strategy development process, HICZMP has met with representatives from State agencies and community-led watershed restoration groups to begin forming relationships. Additionally, this strategy builds upon and aligns existing state initiatives, including the Ocean Resources Management Plan (ORMP) and Clean Water Act requirements, reinforcing the connection between this strategy and broader coastal management priorities.

XXI. Strategy Work Plan

Strategy Goal: Establish a comprehensive, watershed-based approach (Mauka to Makai) to support statewide marine ecosystem health, coastal resilience, and water quality improvements.

Total Years: 5 years
Total Budget: $231,000

Year: 1
Description of activities: Engage with watershed partnerships, local NGOs, and state & federal agencies to assess existing watershed work and ongoing restoration efforts. Develop a GIS-based map of watershed and nearshore marine ecosystem projects that relate to water quality and coastal protection.
Major Milestone(s): Completion of stakeholder engagement. GIS-based watershed and nearshore ecosystem projects completed.
Budget: $0- Activities will be completed in-house by HICZMP staff.

Year: 2
Description of activities: The HICZMP's Hawai‘i watershed guidance will be refreshed and redistributed, incorporating updated research, policy changes, and insights gathered through watershed engagement efforts conducted in Year 1. HICZMP's GIS watershed prioritization maps will be updated to reflect the most recent data and integrate stakeholder input collected from Year 1.
Major Milestone(s): Revised watershed guidance published; GIS prioritization map completed.
Budget: $0- Activities will be completed in-house by HICZMP staff. There are opportunities to leverage USACE Silver Jackets support for activities related to GIS watershed prioritization mapping.

Year: 3
Description of activities: Identify and compile a list of the most effective watershed-based strategies for strengthening coastal resilience, mitigation land-based pollution, and improving marine ecosystem health.
Major Milestone(s): Curated set of lower watershed mitigation strategies developed to guide decision-making and support a range of approaches for strengthening marine ecosystem health and watershed health.
Budget: $50,000

Year: 4
Description of activities: Collaborate with watershed partners and DOH to develop a DOH-approved watershed management plan for a priority watershed.
Major Milestone(s): Draft watershed management plan completed.
Budget: $77,000

Year: 5
Description of activities: Facilitate workshops in priority watersheds to strengthen collaboration between watershed organizations, marine restoration groups, and local community members. These workshops will connect both land-based and in-water

restoration efforts, bridging NGOs and government agencies involved in watershed and marine ecosystem management. The goal is to ensure alignment, foster knowledge sharing, and identify collaborative opportunities that fill existing gaps in watershed and marine restoration initiatives. HICZMP will work with partner agencies to support projects that advance watershed improvement, including cesspool conversion alternatives, coral and estuary restoration, fishpond revitalization, sediment reduction, and gray-to-green infrastructure transitions.
Major Milestone(s): Workshops conducted in at least one watershed per island; Supported partner agency projects initiated with clear, actionable strategies.
Budget: $104,000

XXII. Fiscal and Technical Needs

A. Fiscal Needs:

Section 309 funding should be sufficient to support the implementation of this strategy within the Ocean Resources enhancement area. If accepted, technical assistance from Silver Jackets will supplement Year 2 of the Work Plan by providing GIS modeling expertise and analytical support.

B. Technical Needs:

The State possesses the technical knowledge and skills to carry out the proposed strategy. Contracts with subject matter experts will be utilized as necessary to provide specialty services.

XXIII. Projects of Special Merit (Optional)

HICZMP may pursue projects to enhance the impact of this strategy, communication, public outreach, and long-term accessibility of the resources developed under this plan, including:

- **2030 Ocean Resources Management Plan (ORMP) Update** – Utilizing findings from this strategy to inform and guide the 2030 ORMP update, ensuring that watershed-based approaches remain central to coastal and marine resource management.
- **Public Outreach and Communication Initiatives** – Strengthening engagement through press releases, community meetings, and digital platforms to ensure that watershed guidance documents, DOH-approved watershed plans, and GIS tools remain actively circulated and accessible as living resources.
- **Knowledge Sharing and Implementation Support** – Encouraging other organizations, agencies, and communities to adopt and implement the strategies developed under this plan by providing technical assistance and facilitating cross-agency learning opportunities.
- **Watershed Coordinator Position-** Supporting the placement of a watershed coordinator in a priority watershed with strong local leadership and established community partners. This role would help sustain momentum, strengthen local capacity, and enhance communication between agencies, community partners, and watershed initiatives.

These efforts help ensure that tools, resources, and strategies developed in this initiative continue to guide watershed and marine ecosystem management beyond the initial five-year timeframe.

5-Year Budget Summary by Strategy

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Coastal Hazards	309	$77,000	$70,000	$52,000	$77,000	$50,000	$326,000
Wetlands	309	$77,000	$84,000	$52,000	$0	$0	$213,000
Ocean Resources	309	$0	$0	$50,000	$77,000	$104,000	$231,000
Total Funding		$154,000	$154,000	$154,000	$154,000	$154,000	$770,000

Summary of Stakeholder and Public Comment

Stakeholder Comment

HICZMP received input for the Section 309 Enhancement Program Assessment from its network of representatives from government agencies, non-government agencies and the public:

- Department of Agriculture: Aquaculture Program
- Department of Land and Natural Resources: Office of Conservation and Coastal Lands, Climate Change Mitigation and Adaptation Commission
- Department of Health: Clean Water Branch and Surface Water Protection Branch
- Department of Business, Economic Development, and Tourism: Hawai‘i State Energy Office
- Department of Transportation: Highways-Engineering Division
- Federal Agencies: NOAA, USACE, and NMFS
- Marine and Coastal Zone Advocacy Council (MACZAC)
- O‘ahu Resource Conservation & Development Council
- University of Hawai‘i, Manoa: Climate Resilience Collaborative, Institute of Sustainability and Resilience, Sea Grant, PacIOOS
- County Planning Departments: Hawai‘i, Maui, City and County of Honolulu, and Kaua‘i

Through surveys and/or interviews, stakeholders provided feedback on perceived high priority enhancement areas**;** the critical problems related to those priority areas; and the greatest opportunities for the HICZMP to strengthen and enhance the areas. Stakeholder feedback ensured that the priorities and needs proposed in the assessment and strategy reflect multiple perspectives.

Coastal Hazards, Ocean Resources, Wetlands, and Cumulative and Secondary Impacts were the most discussed higher-priority enhancement areas. The strongest feedback on priority areas was coastal hazards, which described the need for better public education of risks; partnerships; long-term planning/master planning/long-term vision for shoreline management; planning to pilot projects to demonstrate planning concepts; and ownership question of the coastal interface.

For Ocean Resources, Wetlands, and Cumulative and Secondary Impacts, water resources statewide were of great concern by several agencies. Some agencies referenced the Supreme Court ruling opinion of Sackett v. Environmental Protection Act (EPA), which narrowed the interpretation of “waters of the United States” in the Clean Water Act. Additionally, water quality and marine pollution were expressed as concerns as they relate to the three enhancement areas.

MACZAC is the public advisory body of the HICZMP comprised of twelve public advisory members from each of the Hawaiian Islands. Members possess diverse backgrounds in business, environmental native Hawaiian Practices, terrestrial and marine commerce, recreation, research, and tourism. Two members will be provided with a draft 309 Assessment and Strategy concurrently with the stakeholder/NOAA review period. Feedback from MACZAC will be incorporated into the final 309 Assessment & Strategy.

Public Comment

The draft Assessment and Strategy document will be posted online, and the public will be provided the opportunity to review the document and submit comments online from April – May 2025. Major themes from the public comments received will be added to this portion of the Assessment & Strategy Report.

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