CAR.Committee

From: Tara Owens <taram@hawaii.edu>
Sent: Wednesday, July 01, 2020 12:35 PM
To: CAR.Committee
Cc: Michele McLean; Jordan Hart; Jeffrey Dack; James Buika; Diego Sanchez-Gomez
Subject: Re: Sea-Level Rise, Shoreline Erosion, and Managed Retreat (CAR-9)
Attachments: TaraOwens_CAR9_Response.pdf

Aloha Chair King and Members of the CAR committee:

Please find attached a response to your recent request following the CAR meeting on June 15, 2020.

Thank you,
Tara

~~~~~~

Tara M. Owens
Coastal Processes and Hazards Specialist
University of Hawaii Sea Grant College Program
Science and Technical Advisor to the County of Maui Planning Department
808-463-3868
taram@hawaii.edu

On Tue, Jun 23, 2020 at 3:42 PM CAR.Committee <CAR.Committee@mauicounty.us> wrote:

> Please see attached letter from Councilmember Kelly Takaya King.
>
> *Stacey Vinoray*
>
> *Committee Secretary*
>
> *Office of Council Services*
>
> *Maui County Council*
>
> *200 S High Street, 7th flr*
>
> *Wailuku, HI 96793*
>
> *Phone: 808-270-8006*
~~~~~~

University of Hawai‘i Sea Grant College Program
2525 Correa Road • HIG 238 • Honolulu, Hawai‘i 96822 • Phone: (808) 956-7031 • http://seagrant.soest.hawaii.edu
School of Ocean and Earth Science and Technology

July 1, 2020

Council Member Kelly T. King, Chair
Maui County Council Climate Action and Resilience Committee
CAR.committee@mauicounty.us

Dear Chair King:

SUBJECT: SEA-LEVEL RISE, SHORELINE EROSION, AND MANAGED RETREAT (CAR-9) – RESPONSE TO REQUEST FOR V-ZONE MAPPING INFORMATION

Thank you for the opportunity for continuing dialog on topics related to sea level rise, coastal erosion, and managed retreat at the Climate Action and Resilience Committee's June 15, 2020, meeting.

As follow up to the meeting, the Committee has requested a "detailed V-zone layer map of the islands of Maui County".

The V-zone is a floodplain management term associated with FEMA's National Flood Insurance Program (NFIP). The V-Zone is defined as "areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action". Maps of the current FEMA V-zone, and other flood zones, can be accessed via the State of Hawaii's Flood Hazard Assessment Tool (FHAT) at: http://gis.hawaiinfip.org/FHAT/. Questions about the NFIP, the associated flood zones and maps, and the program's applicability can be directed to the County of Maui Floodplain Manager, Diego Sanchez.

The FEMA NFIP program does not currently consider future conditions, such as increased flooding with sea level rise, in the mapping of the V-zone. However, in association with the preparation of the 2017 Hawaii Sea Level Rise Adaptation and Vulnerability Report, and the 2018 update of the State of Hawaii Hazard Mitigation Plan (HMP), a zone referred to as the 1%CFZ-3.2 was mapped to represent a future version of the V-zone with sea level rise. The 1%CFZ-3.2 is defined as "the area defined by modeling the 1% annual-chance-coastal flood event with 3.2 feet of sea level rise (1%CFZ-3.2) (Hawaii Emergency Management Agency, 2018)." A map of the 1%CFZ-3.2 from the HMP for the County of Maui at a county-wide scale

(Figure 4.2-9) is enclosed along with a table providing land area in Maui County within the 3.2SLR-XA and the 1%CFZ-3.2 (Table 4.2-1). The HMP can be accessed at: https://dod.hawaii.gov/hiema/files/2020/06/2018-State-HI-HMP-Update-100218.pdf

Detailed maps of the 1%CFZ-3.2, at a regional or site-specific scale, are not provided in the HMP. The State of Hawaii is considering incorporating this layer into the State of Hawaii Sea Level Rise Viewer for ease of access and usability. In the meantime, the spatial data (GIS data) for the 1%CFZ-3.2 has been provided to the County of Maui Planning Department (Long Range Division) and the Emergency Management Agency for use in plan updates, and it therefore may be possible for GIS staff to develop regional or site-specific maps upon request.

I hope this helps to fulfill the committee's request. Please feel free to reach out with questions to taram@hawaii.edu.

Sincerely,

Tara M. Owens
Coastal Processes and Hazards Specialist
University of Hawaii Sea Grant College Program
Science and Technical Advisor to the County of Maui Planning Department

cc: Planning Director Michele McLean
Deputy Planning Director Jordan Hart
Supervising Planner Jeffrey Dack
Coastal Planner Jim Buika
Floodplain Manager Diego Sanchez

The 1% annual chance coastal flood zone (referred to as the 1%CFZ) will expand with sea level rise meaning that more land area will be exposed to damaging wave impacts from a 100-year flood event. The 1%CFZ with 3.2 feet of sea level rise (1%CFZ-3.2) was utilized to assess mid- to late century sea level rise on coastal event-based flooding. It is important to note that the event-based flood hazard discussed in Section 4.7 assesses the entire Special Flood Hazard Area (V- and A-zones). Sea level rise effects on event-based flooding only includes the coastal flood zones. The 1%CFZ-3.2 areas are shown in Figure 4.2-6 through Figure 4.2-9.

Table 4.2-1 shows the estimated square miles of potential land loss/impact due to 3.2 feet of sea level rise for each county. The State's total potential lost area due to chronic coastal flooding with seal level rise will amount to an estimated 0.5% of the State's total land area; however, it comprises of some of the most developed and valued land. When examining the 1% annual chance coastal flood event with 3.2 feet of sea level rise, 1.7% of the State's land will be impacted. The City and County of Honolulu, with its expansive coastal plains, will have the most land unusable due to sea level rise, followed by the Counties of Kaua'i and Maui.

Summary of Key Terms

SLR-XA – *The SLR-XA represents the area exposed to chronic coastal flooding and land loss based on modeling of passive flooding, annual high wave flooding and coastal erosion (refer to Section 4.0 for further details).*

Chronic Coastal Flood – *The SLR-XA with 1.1 feet of sea level rise (SLR-XA-1.1) approximates current or near-term exposure to chronic coastal flooding discussed in Section 4.2.*

SLR-XA-3.2 – *The SLR-XA with 3.2 feet of sea level rise was used to assess mid- to late century exposure to chronic coastal flooding.*

Event-Based Flood – *The 1% annual chance flood as depicted on the FEMA Flood Insurance Rate Maps, also known as the Special Flood Hazard Area (inclusive of V-zones, or wave velocity zones with waves 3 feet or greater, and A-zones or flooded areas not subject to waves greater than 3 feet), was assessed in Section 4.7.*

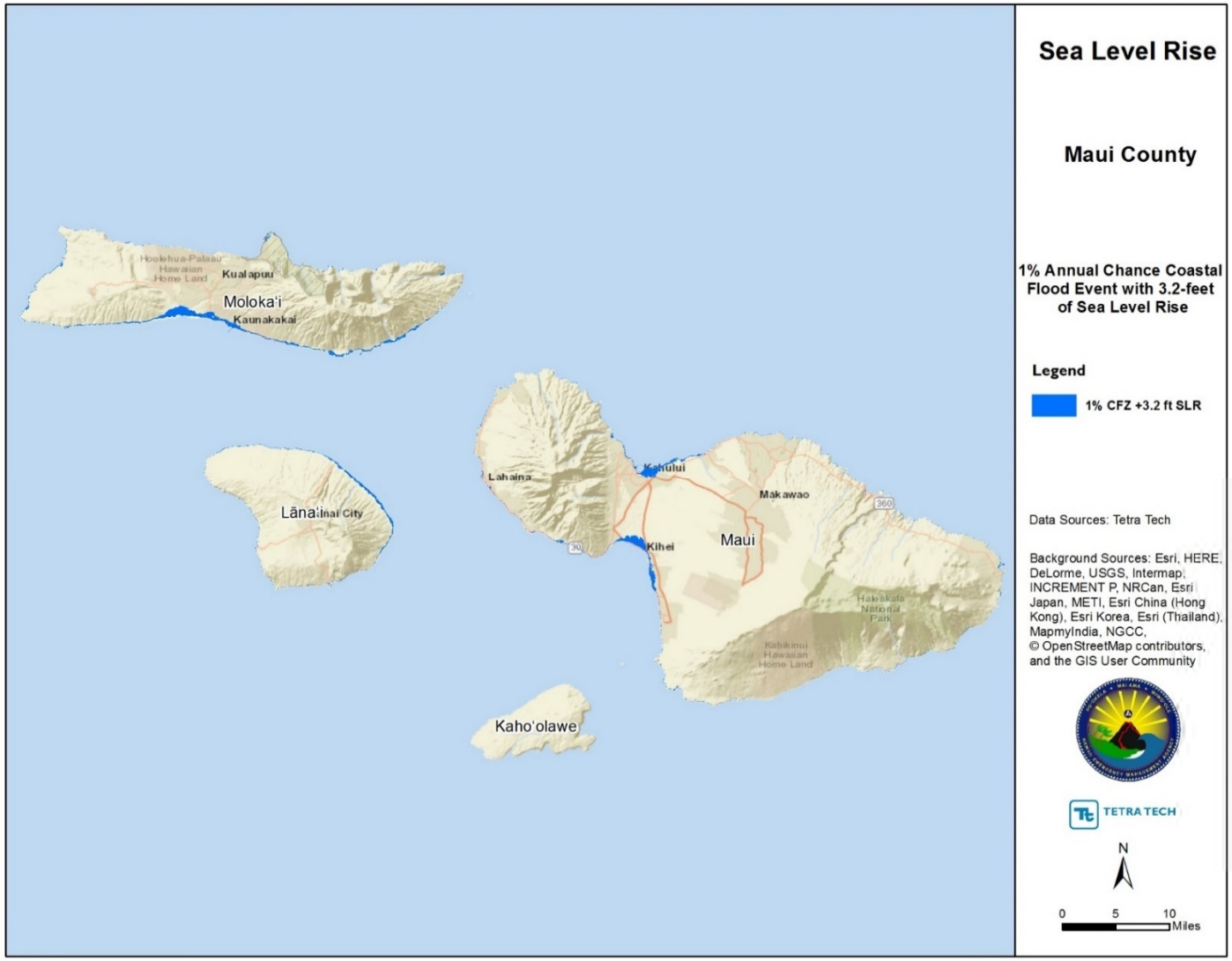
1%CFZ-3.2 *–The 1% annual chance coastal flood zone with 3.2 feet of sea level rise was used to assess mid- to late century event-based coastal flooding.*

Table 4.2-1. Sea Level Rise Hazard Areas by County

County	Area				
	Total Area (square miles)	SLR-XA-3.2 (square miles)	SLR-XA-3.2 as % of Total Area	1%CFZ-3.2 (square miles)	1%CFZ-3.2 Area as % of Total Area
County of Kaua'i	630.3	8.8	1.4%	32.8	5.3%
City and County of Honolulu	600.2	13.0	2.2%	41.2	6.9%
County of Maui	1,174.6	7.8	0.7%	15.7	1.3%
County of Hawai'i	4,027.8	4.3	0.1%	19.4	0.5%
Total	**6,432.9**	**33.9**	**0.5%**	**109**	**1.7%**

Source: Hawai'i Climate Change Mitigation and Adaptation Commission 2017; Tetra Tech Inc. and Sobis Inc. 2017
Note: Total area for each County calculated using coastline spatial layer downloaded from State of Hawai'i GIS Program Geospatial Data Portal
GIS Geographic Information System
SLR-XA-3.2 Sea Level Rise Exposure Area with 3.2 feet of sea level rise.
1%CFZ-3.2 1% Annual Chance Coastal Flood with 3.2 feet of sea level rise.

Figure 4.2-9. 1% Annual Chance Coastal Flood Event with 3.2-feet of Sea Level Rise (1%CFZ-3.2) for the County of Maui



Note: Kaho'olawe was not modeled