



# Coastal Community Resilience Elements

Governance, Risk Knowledge, Land Use Management and  
Structural Design, and Coastal Resource Management

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## Operational framework for resilience



# Elements of Coastal Community Resilience



## Governance

- ♦ Process enabling government institutions, organizations, communities, and the public to accomplish a desired result
  - make decisions that direct their collective efforts.
  
- ♦ Good Governance is about:
  - achieving desired results
  
  - achieving them in the right way
    - in compliance with laws and policies and shaped by cultural norms and values of an institution, organization, or community.

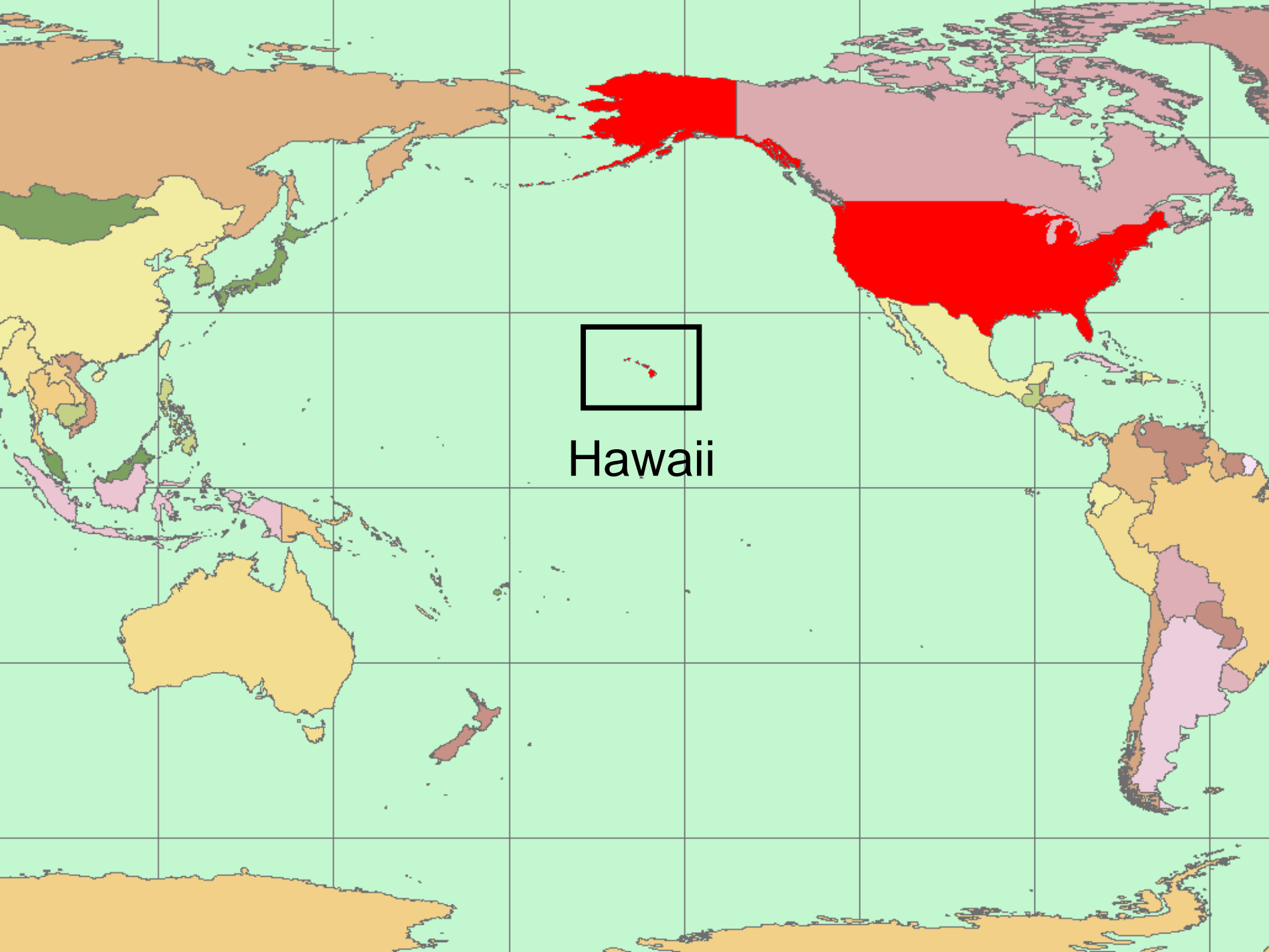


## Governance

- ♦ Framework for institutions at all levels and various scales, to address the needs within and surrounding a community.
- ♦ Participatory and encourages engagement of multiple stakeholders, both public and private
- ♦ Constantly promotes education
- ♦ Apply appropriate forms of law enforcement
- ♦ Supports multiple agency/institution collaboration

**Good Governance is sustained when all stakeholders can envision the path toward a desired future outcome**

***Strategic Vision***



Hawaii





COMMONWEALTH  
OF THE  
NORTHERN  
MARIANA  
ISLANDS



AMERICAN  
SAMOA



## Example of a good Governance practice

- ♦ The redevelopment of Hilo, Hawaii after devastating tsunamis was guided by a strategic vision to mitigate future tsunami hazards. After the 1960 tsunami hit, a Hilo Downtown Development Plan was developed calling for major changes in the recovery of the area.

*May 22, 1960, M9.5 Chile earthquake*



*Photo Credit: U.S. Navy*

***Waiakea area, Hilo, Hawai'i. Bent parking meters show direction of tsunami arrived from. In Hawaii, 61 deaths, \$26.5 million damage.***

- ♦ It took strong leadership from government, elected officials, and the community to implement the drastic changes the redevelopment plan identified.



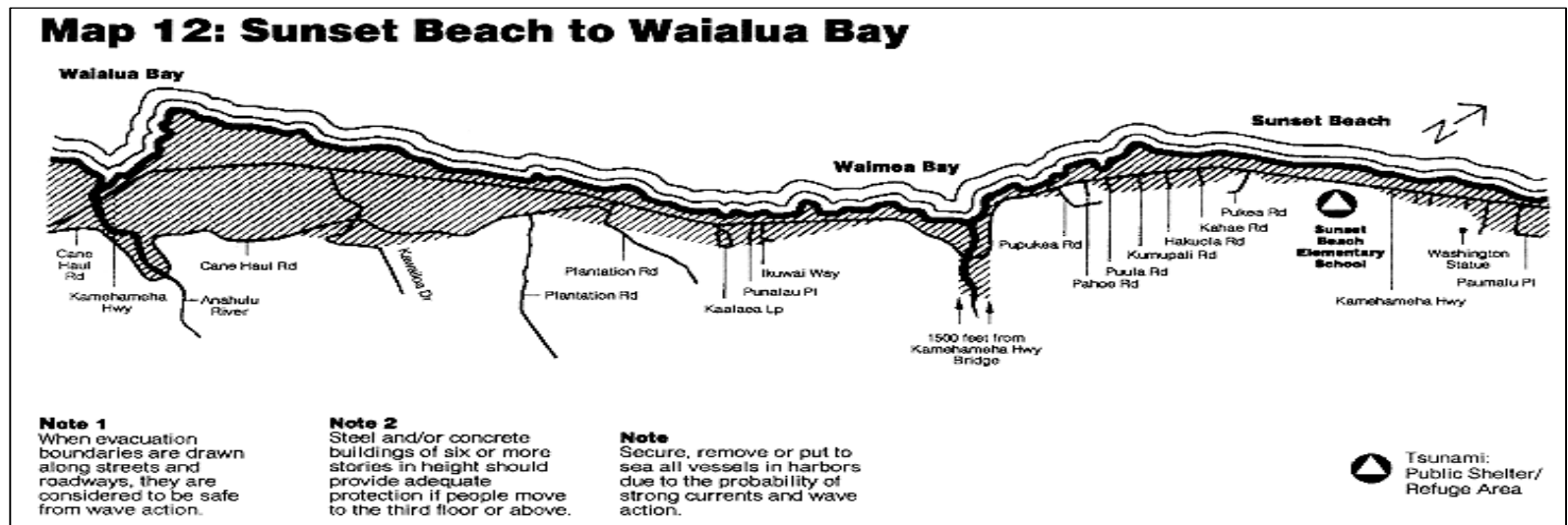
## Risk Knowledge



- ◆ Awareness of all potential hazards that threaten the community
- ◆ Awareness of susceptibility to experiencing the negative impacts of those hazards
- ◆ Understanding of the potential geographic extent of impact
- ◆ Understanding of the potential frequency of impact

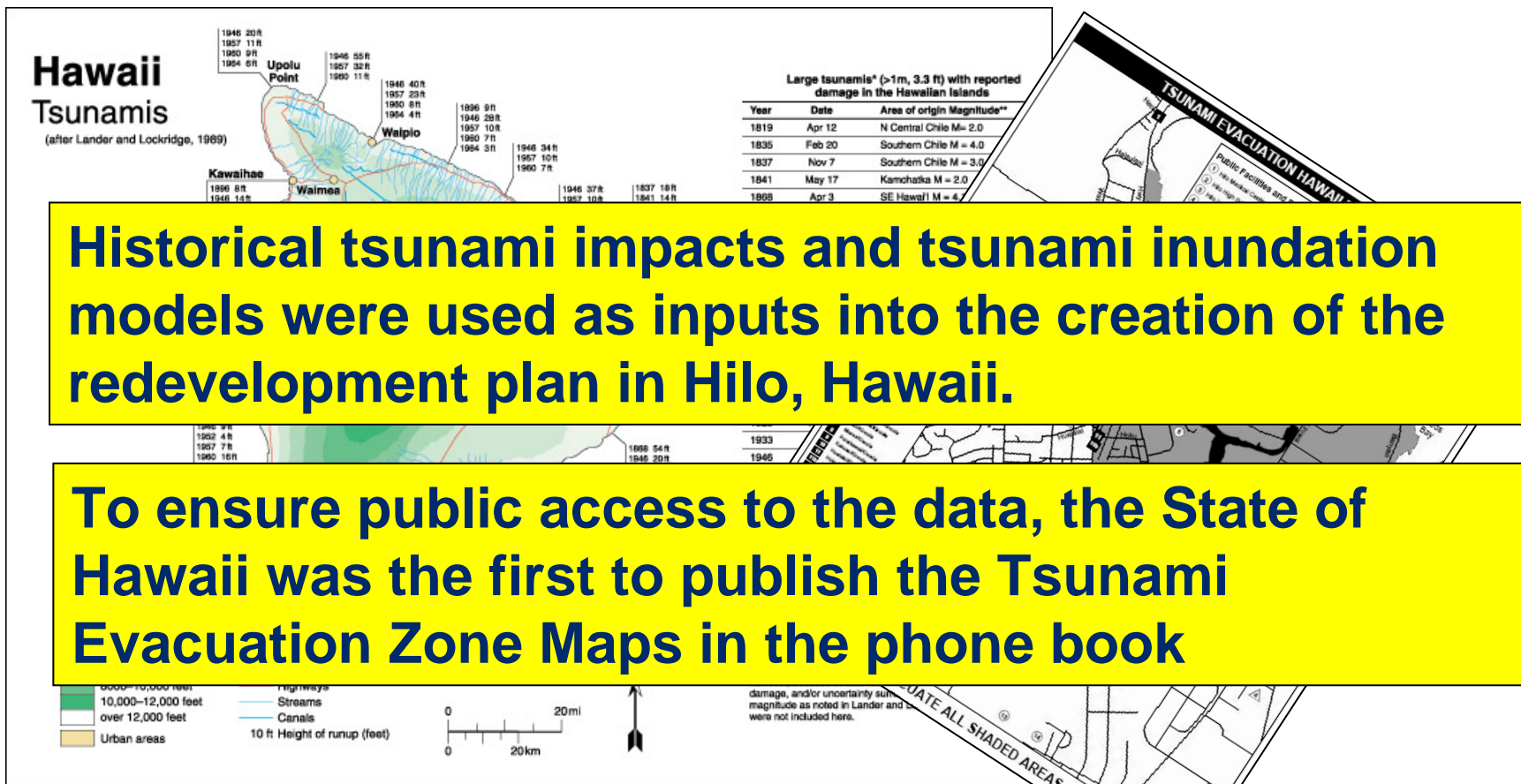
# Risk Knowledge

- ◆ Understand vulnerability of community to hazards:
  - local economy
  - terrestrial and marine natural resources
  - all or certain segments of the population
  - infrastructure
  - built environment
  - critical facilities
  - utilities
  
- ◆ Free and open access to risk information for the entire community.





## Example of a good Risk Knowledge practice



Historical tsunami impacts and tsunami inundation models were used as inputs into the creation of the redevelopment plan in Hilo, Hawaii.

To ensure public access to the data, the State of Hawaii was the first to publish the Tsunami Evacuation Zone Maps in the phone book

## Land Use Management and Structural Design

- ◆ Planning activities communities can use to minimize potential impacts of tsunami and other coastal hazards.
- ◆ The term **land use management** refers to the active use of formal and informal mechanisms for the planning and location of the various land uses (agriculture, industry, housing, etc.) in a community.
- ◆ The term **structural design** refers to how the physical structures within a community are engineered and constructed.



## Land Use Management and Structural Design

- ♦ By steering particular land uses away from vulnerable areas and encouraging their development in less hazard prone locations, the risk to individuals and livelihoods is reduced.
- ♦ When particular types of development do occur in vulnerable areas, structural design can be an effective way to absorb the shock of coastal hazards.

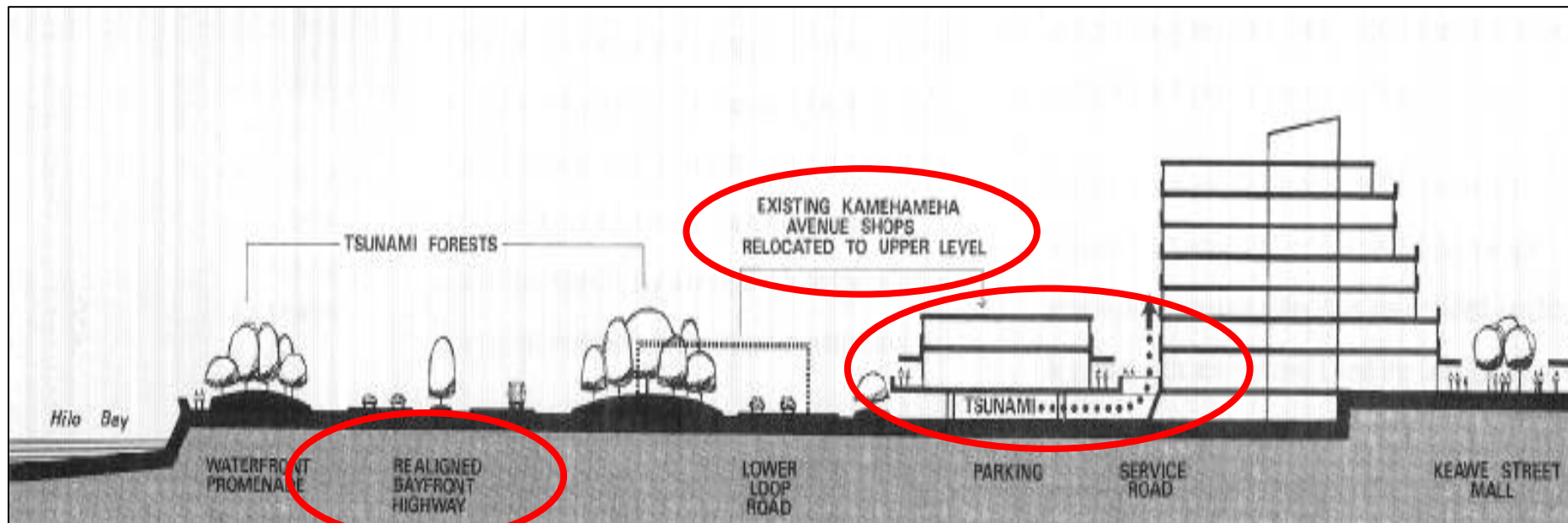






## Example of a good Land Use Management and Structural Design practice

- ◆ Hilo, Hawaii redevelopment plan.





## **Hilo Challenges: Relocation of Vital Infrastructure**

### **Airport in Inundation Zone**



### **Sewage Treatment Plant in Inundation Zone - relocated**





## **Mitigation through Tsunami Resistant Construction (Condo in tsunami inundation zone with wash-through lower floors)**









## Coastal Resource Management



- ◆ Coastal resources provide many valuable and sustainable services to communities including:
  - reliable source of food
  - economic development
  - transportation and access to other places
  - protection from coastal hazards
  - biodiversity conservation (a factor in ecological resilience and a source of benefits from nature-based tourism and new potential medicines)
  - a pleasant lifestyle.
  
- ◆ CRM protects these services

# Coastal Resource Management

- ◆ CRM refers to formal/informal rules, practices, technologies, economies and interactions between humans and the **natural resources** that define how resources are utilized
  - hopefully sustainable
- ◆ A participatory process: planning, implementing, and monitoring sustainable uses
- ◆ If managed and protected, coastal resources can continue providing these services
- ◆ If not managed, then many normal events such as storms or fishing can create significant negative, expensive or tragic consequences on coastal communities.

animals, plants, rocks, water, etc. located both landward and seaward of the coast

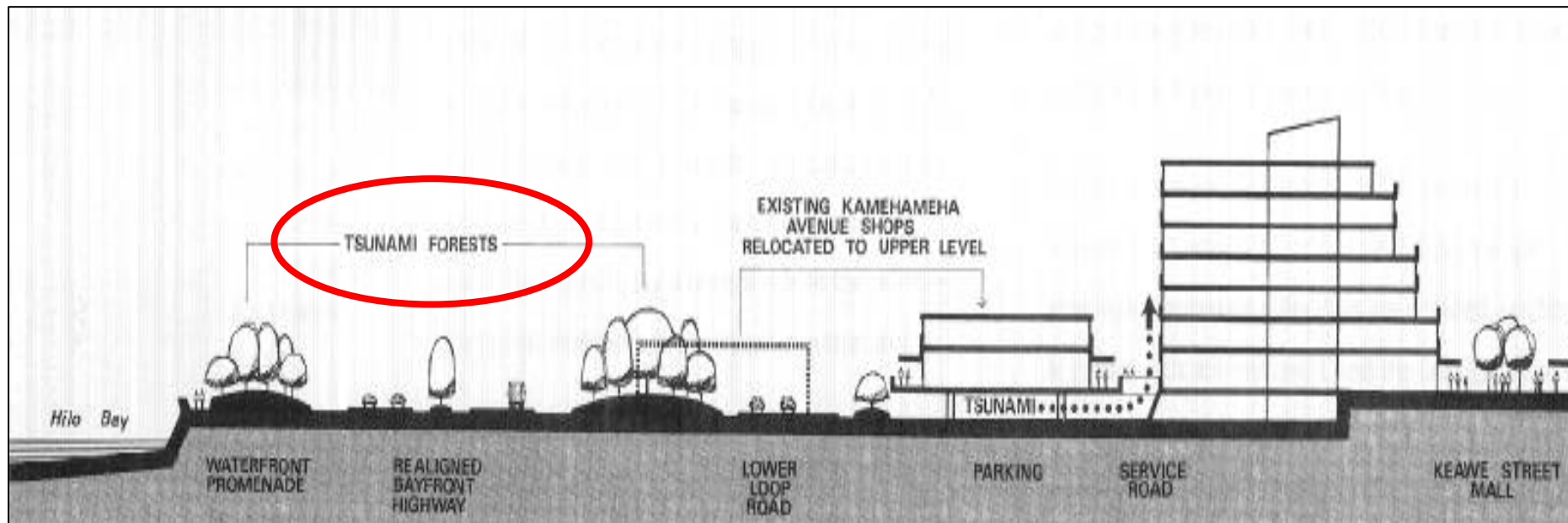






## Example of a good Coastal Resources Management practice

- ◆ Hilo, Hawaii redevelopment plan.



## School in Inundation Zone turned into Public Park





## Former Business Area turned into Public Park



## Added new sustainable coastal resource based recreational/economic opportunities



### *Canoe paddling and Surfing*

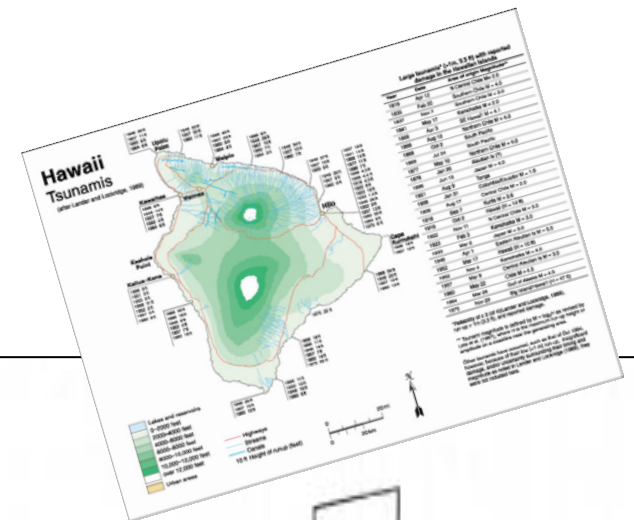




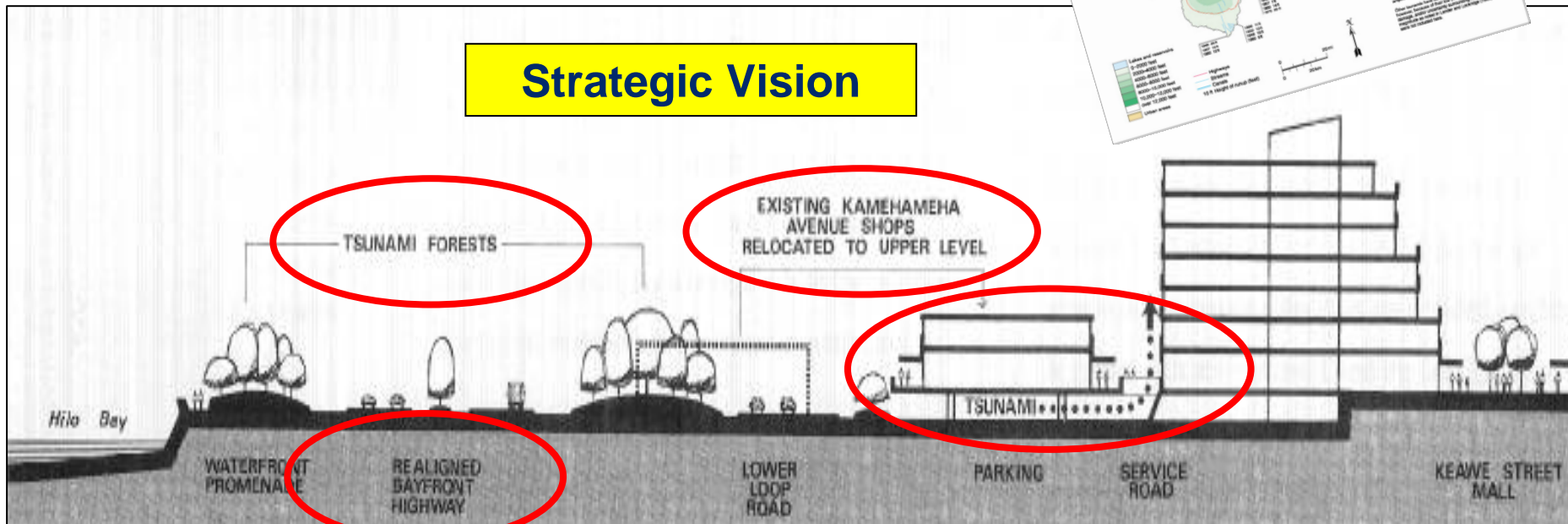


## Hilo, Hawaii redevelopment plan

- ♦ Created addressing all of the elements
  - Governance
  - Risk Knowledge
  - Land Use Management and Structural Design
  - Coastal Resource Management



### Strategic Vision





# **Mahalo!**

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