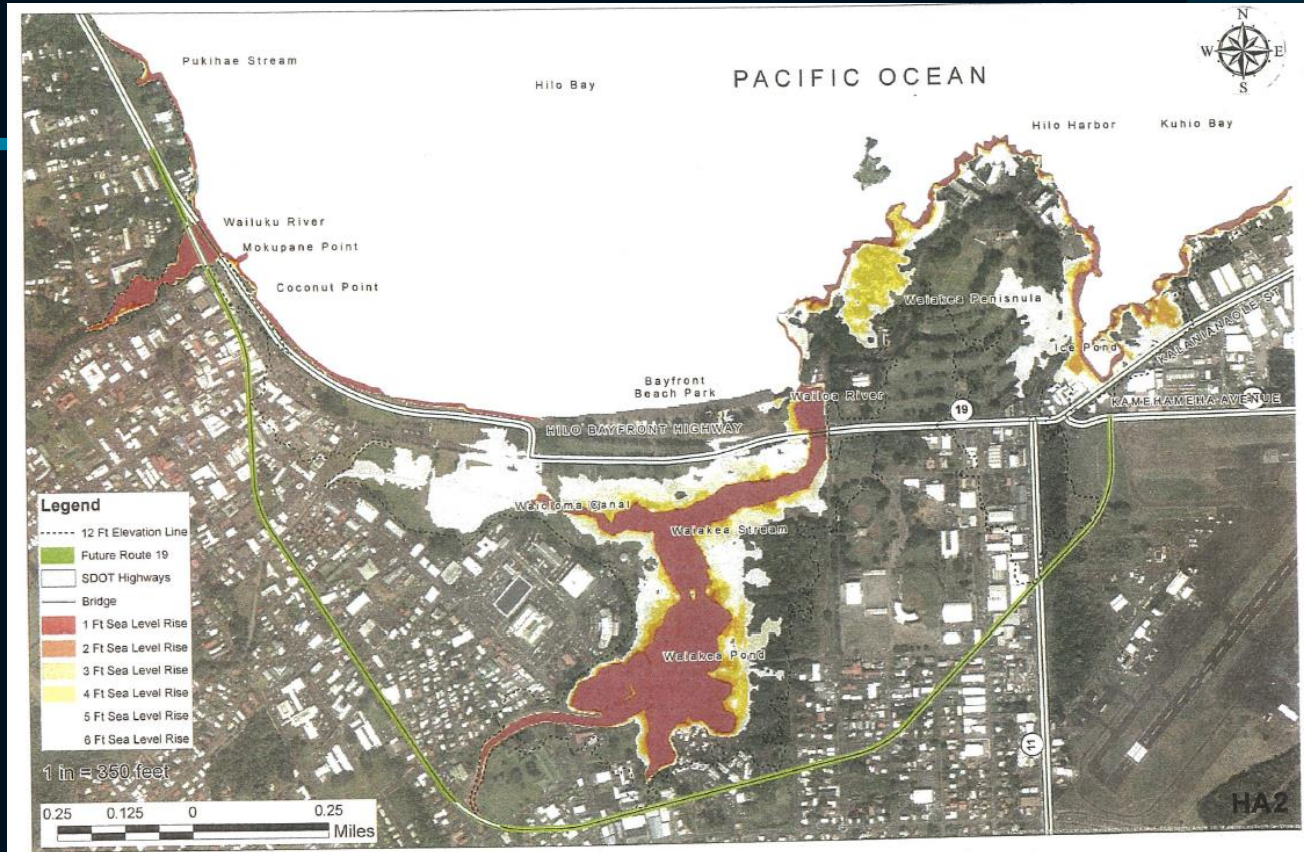




# Statewide Highway Shoreline Protection

Overview, methodology & future  
implementation

# Assumptions: Coastal Roads & SLR



- Hawaii will have to contend with the impacts of climate change on our coastal roads.
- The Hawaii Climate Change and Adaptation Commission forecasts 3.2 feet/1 m sea level rise by 2100.
- 10-15% of the state's highway system would be affected.

# Statewide Highway Shoreline Protection Study

Updates 2003 study with new methodology.

2019 Study finalized/released - June 2019.

Study identifies and prioritize state roads in need of immediate and short-term erosion control/shoreline remediation measures, as well as sites that should be monitored.

Oahu mobilization anticipated Summer 2019. Immediate mitigations complete within one calendar year.

# Methodology

---

- Sites are evaluated using Coastal Road Erosion Susceptibility Index (CRESI)
- CRESI uses 11 different variables (Beach Geomorphology, Coast Geomorphology, Erodeable Volume, Slope, Coast ground cover & structures, Road base/subgrade, Armoring, Relative sea level change rate, Shoreline accretion/erosion rate, Mean tidal change, and Significant wave height).
- Expected traffic impacts (of the use of the roadway being effected by coastal erosion) and surrounding land use of the site will be added to final calculations.

# Priority Level/Tier Rankings

## Tier 1 Immediate.

- Repairs recommended within 12 months.

## Tier 2 Short-term.

- Repairs recommended within 1-3 years.

## Tier 3 Long-term management.

- Monitor existing shoreline improvements and consider additional evaluation.

## Tier 4 Periodic monitoring.

- Site will remain on inventory with periodic monitoring.

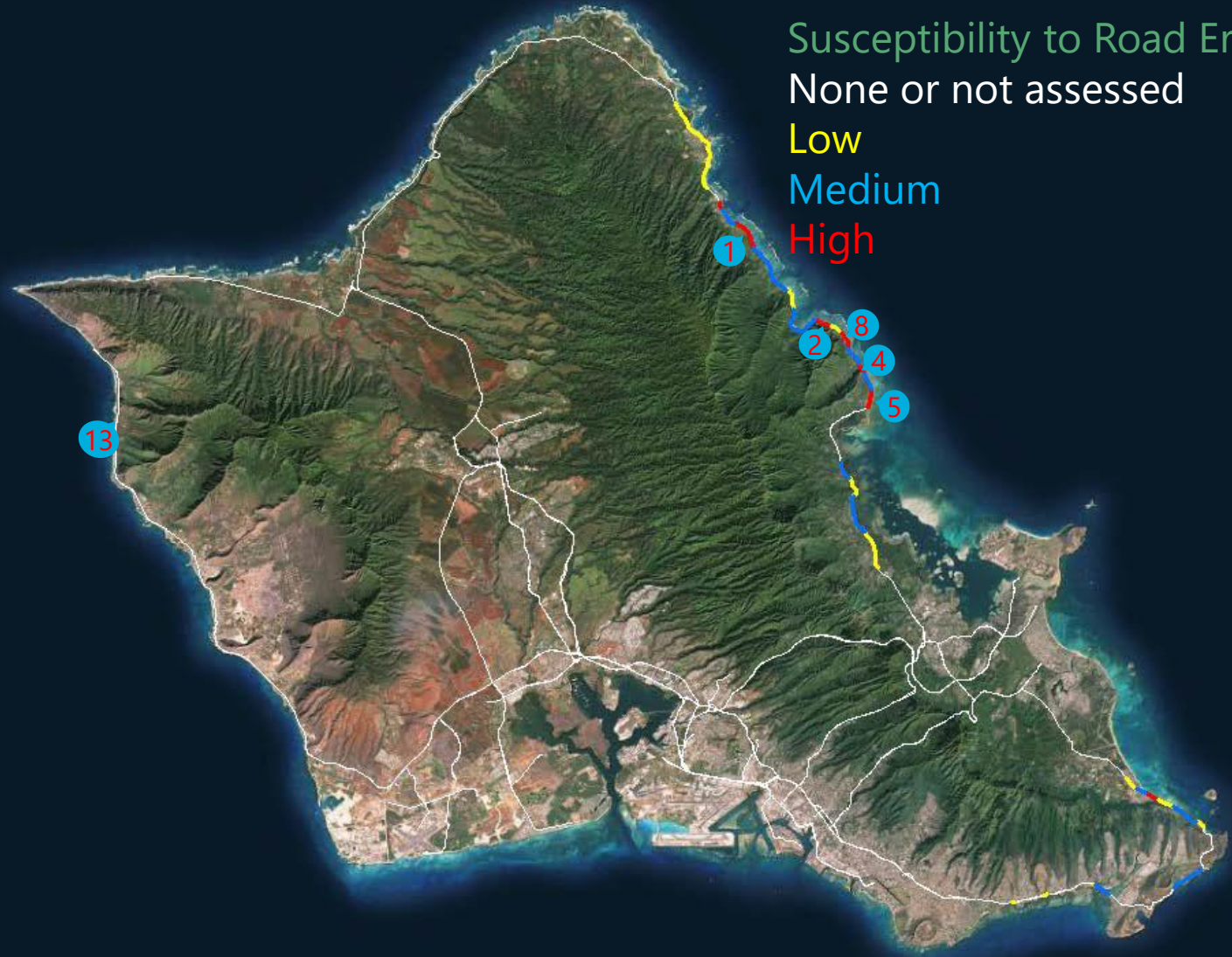
# Susceptibility to Road Erosion

None or not assessed

Low

Medium

High



Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



# Preliminary Ranking of Tier 1 Sites

1. Oahu #7 (Kamehameha Highway in Hauula at Pokiwai Road)
2. Oahu #6 (Kamehameha Highway in Kaaawa at Crouching Lion)
3. Maui #4
4. Oahu #4 (Kamehameha Highway in Kaaawa at Puakenikeni Road)
5. Oahu #3 (Kamehameha Highway in Kaaawa vicinity of Kalaeoio Beach Park)
6. Molokai #2
7. Molokai #3
8. Oahu #5 (Kamehameha Highway in Kaaawa vicinity of Makaua Village)
9. Kauai #2
10. Molokai #4
11. Molokai #7
12. Molokai #8
13. Oahu #12 (Farrington Highway in Makua at Keaau Stream Bridge)



# Route 83 (Hauula/Pokiwai Road)

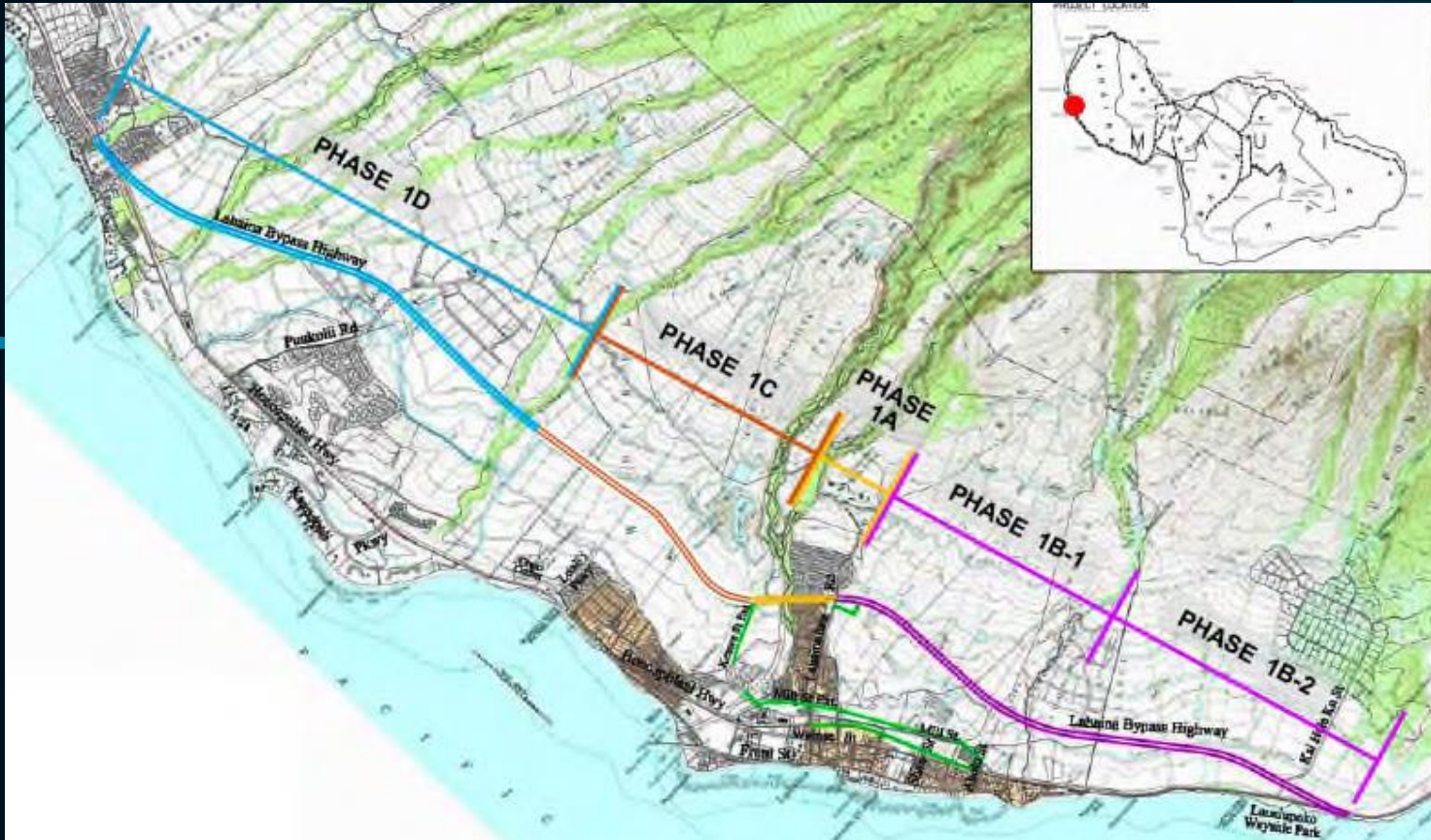
Before (KITV Photo)



After (HDOT Photo)







# Realignment cost example

Costs to date for completed phases of the Honoapiilani Highway Realignment (Lahaina Bypass)

- Phase 1A - \$50.4 M
- Phase 1B-1 - \$25.2 M
- Phase 1B-2 - \$38.7 M

Total estimate including design, construction and R/W: \$400 M



# Mahalo

Ed Sniffen

Website

<http://hidot.hawaii.gov/presentations>

Email

[DOTPAO@hawaii.gov](mailto:DOTPAO@hawaii.gov)