# Vallemar Bluffs Coastal Hazards Assessment

Presentation to the
Midcoast Community Council

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COMMITTEE FOR GREEN FOOTHILLS

ESA

# Summary

- Site Geology and Geometry
- Coastal Dynamics:
  Observation of moderate wave runup event
- Conceptual Model of Bluff Erosion with Sea Level Rise
- Setback Distance Results
- Recommendations

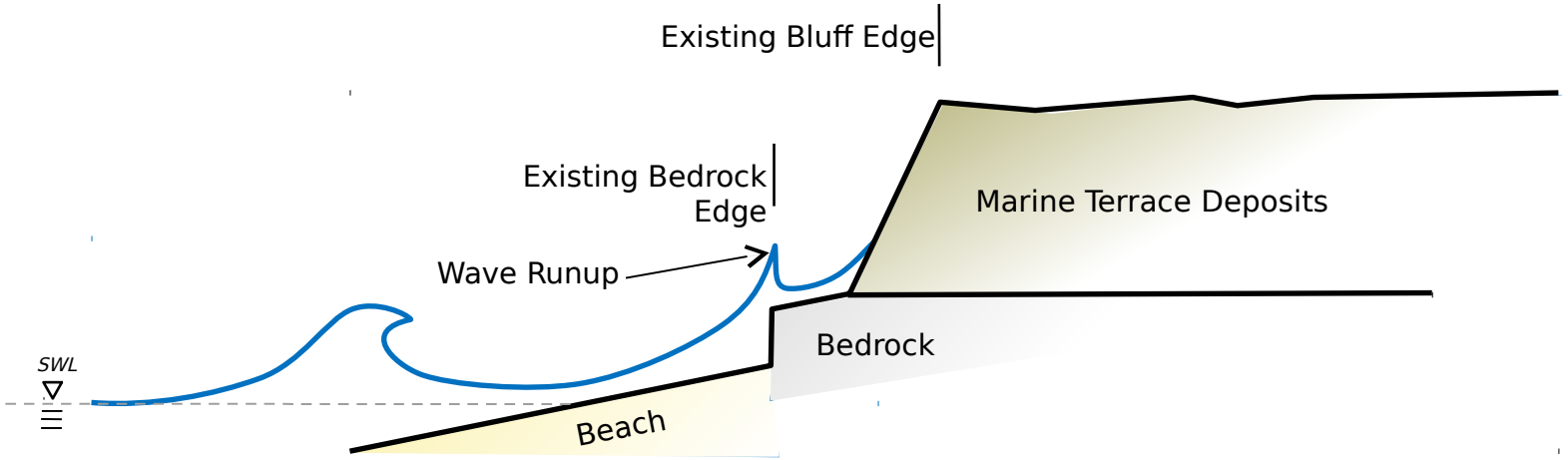
# Stratified Geology

# Measurements of Bluff

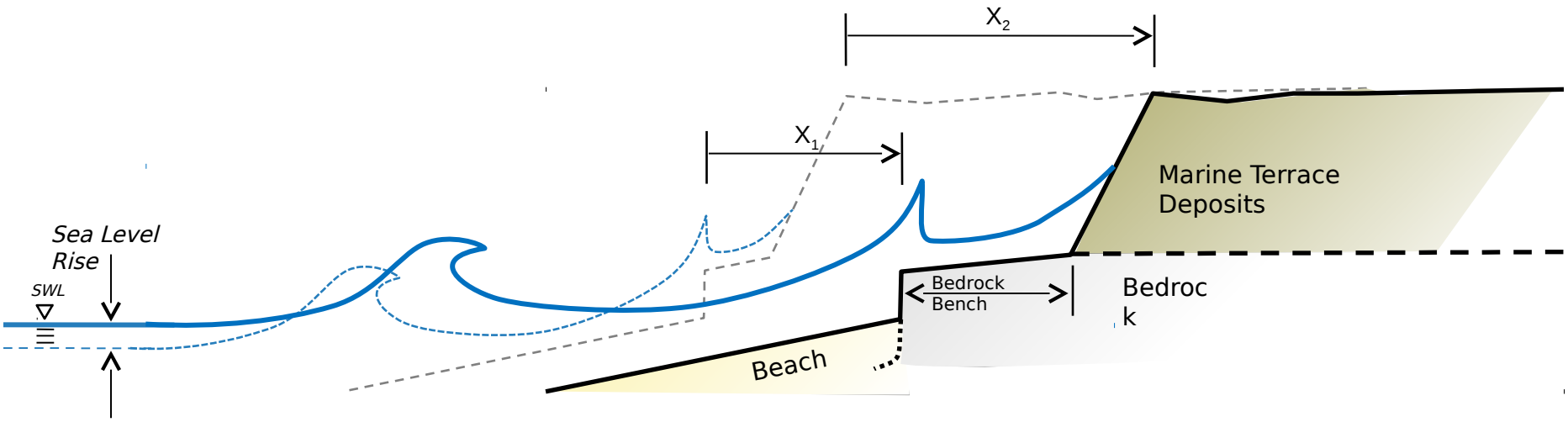
# Wave Runup Observation


Photo by Kathy Lockhart

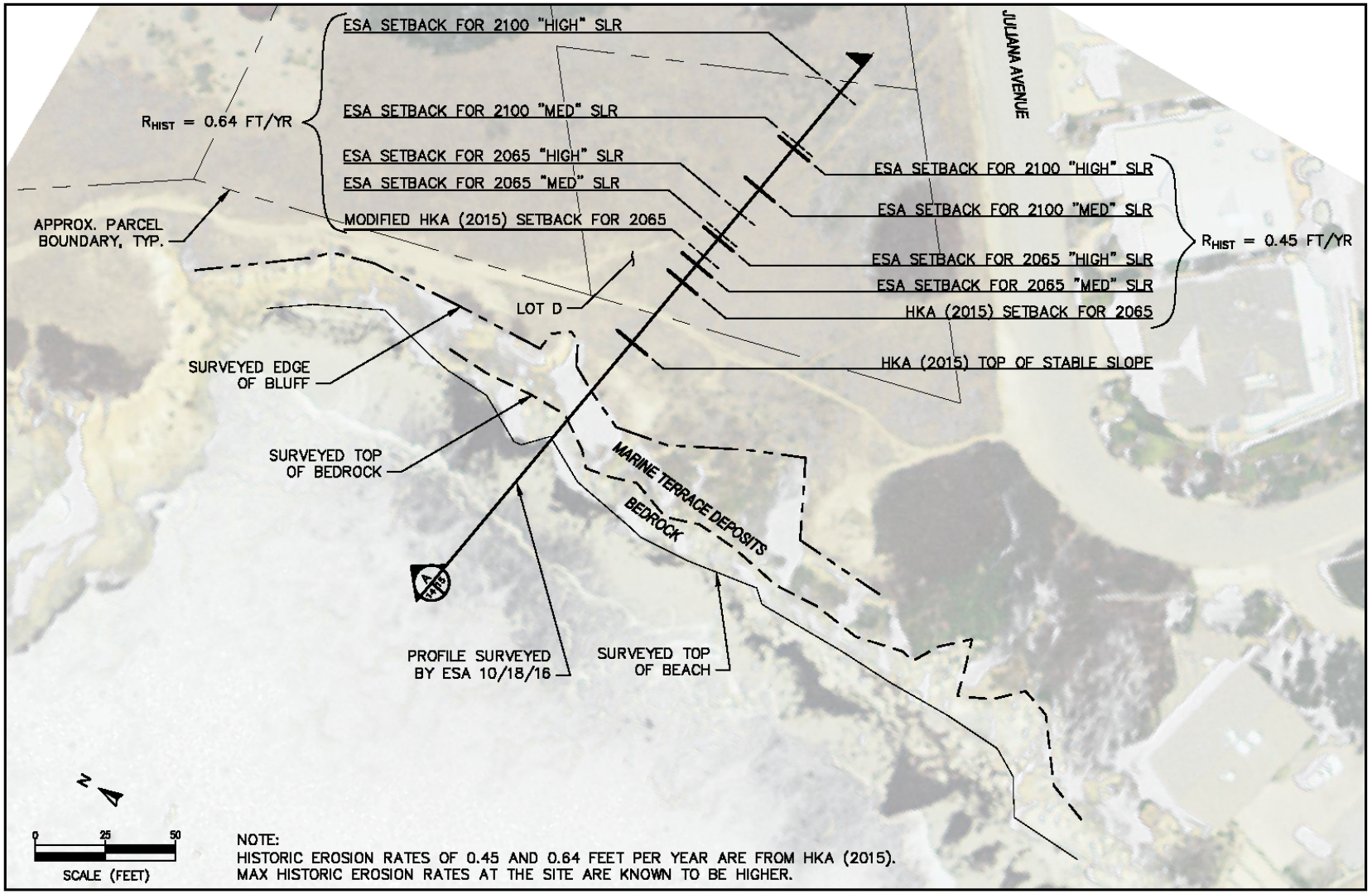
# Bluff Modeling:  Existing Conditions



# Bluff Modeling: Future Conditions with Sea Level Rise




- Bedrock toe moves landward
- Bedrock bench gets wider
- Bluff top retreats




SOURCE: Imagery from California Coastal Conservancy (2012); ESA Survey on 10/18/16; Parcel data from San Mateo County

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**Figure 14**

Estimated Setback Distances for Future Bluff Erosion
at 2065 and 2100 for Medium and High Sea Level Rise Scenarios

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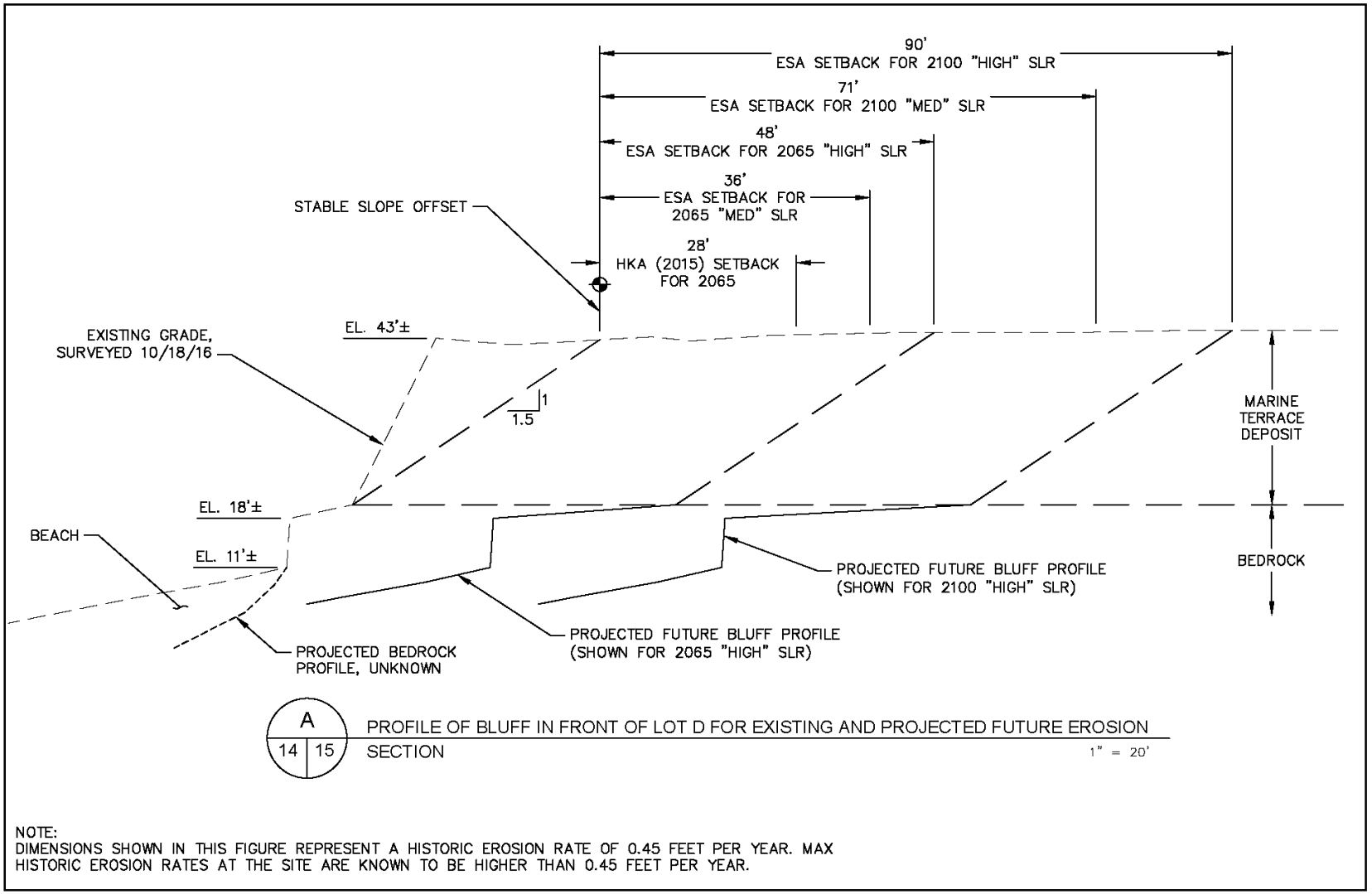


NOTE:
DIMENSIONS SHOWN IN THIS FIGURE REPRESENT A HISTORIC EROSION RATE OF 0.45 FEET PER YEAR. MAX HISTORIC EROSION RATES AT THE SITE ARE KNOWN TO BE HIGHER THAN 0.45 FEET PER YEAR.

SOURCE: ESA Survey 10/18/16



**Figure 15**

Projected Future Erosion on Bluff Profile
for Historic Erosion Rate of 0.45 Feet per Year

# Recommendations

- Recommend larger development setback
  - Bluff erosion projected to be 2 to 3 times more than HKA study, using same historic erosion rate
    - Sea level rise will increase erosion more than 25%
  - Historic erosion rate used by HKA is less than maximum that has occurred
    - HKA used 0.45 feet per year (fpy), but computed up to 0.64 fpy
    - Prior study has rates up to 0.75 fpy for same site
    - Erosion gullies have formed at site, one with un-engineered fill
  - Additional setback distance needed to address uncertainty
  - Additional setback needed for duration of development (greater than 50 years)
- Consider that future wave runup will exceed bluff top