



Coastal Resilience Naval Base Ventura County

Regional Defense Partnership
Sept 11, 2025

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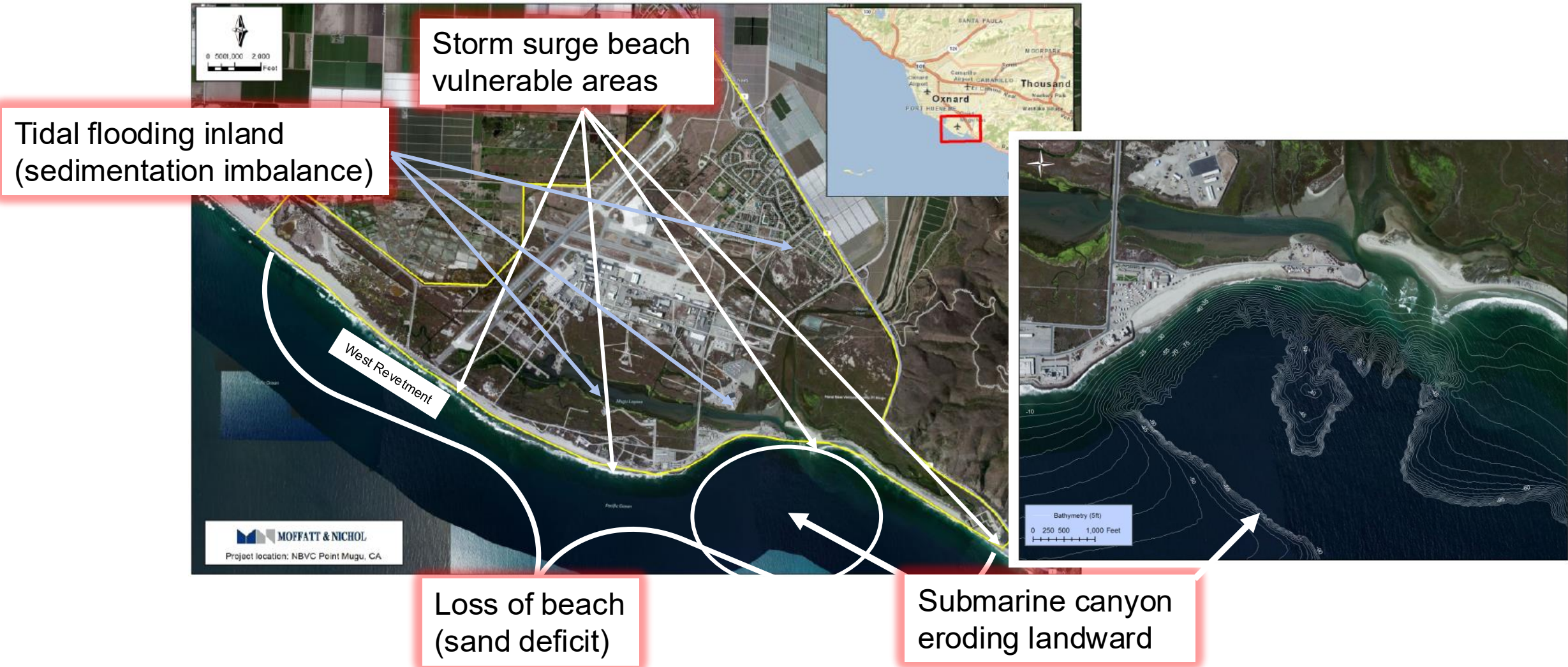
OUTLINE

- NBVC Extreme Weather Impacts
- Resilience Planning
- Resilience Projects
- Long Term needs





NBVC Extreme Weather Impacts: Coastal flooding/Storm & wave surge/Beach erosion



Extreme Weather Impacts: Coastal Flooding



Firing range flooded, unusable for weeks



Flooded airfield lights utility bldg- East bound lane gone



Beach Rd east bound lane undercut and collapsed



Extreme Weather Impacts: Storm & wave surge



Hurricane Marie, Sep 2014
(above and right)

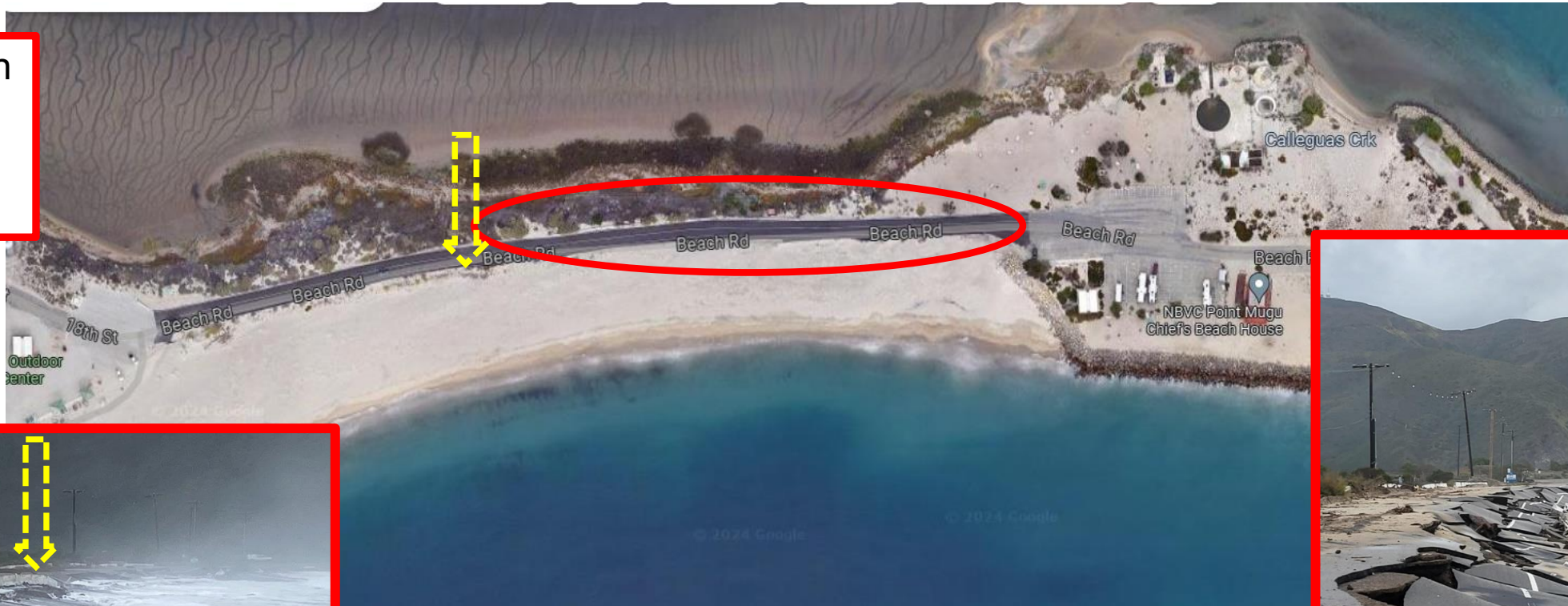
Atmospheric River, Feb 2024
(left)





Extreme Weather Impacts: Beach Erosion

Family Beach
Beach Road
Damage –
Feb 4 2024



Beach Road undercut, collapsed
Approx 3' of beach sand elevation loss
Approx 120' of beach width loss



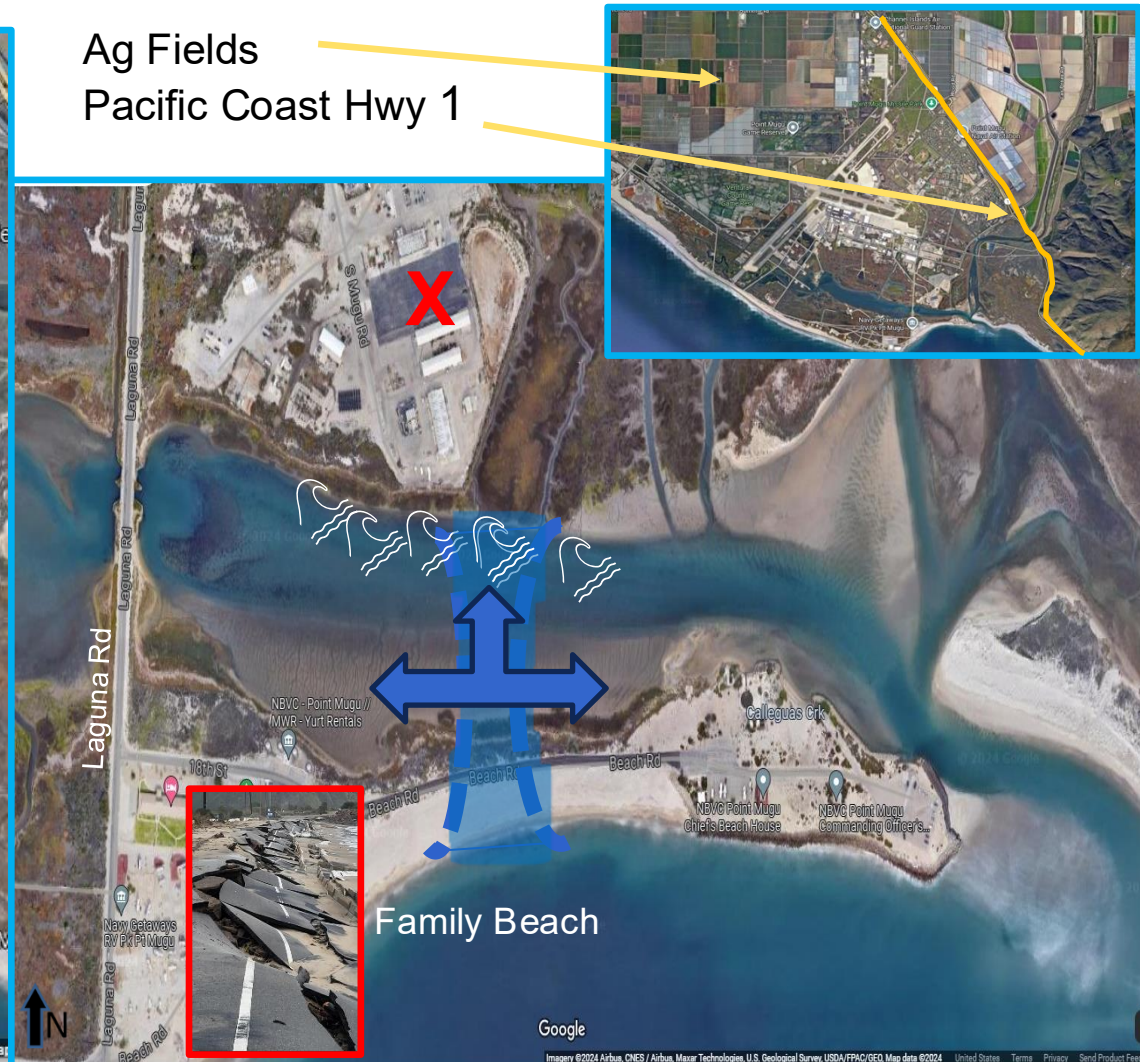
Extreme Weather Impacts: Accelerated by the Sand Deficit

- Biennial requirement: 2.5M cubic yards (cy)
- Funding deficits since 1980 have reduced the amount of sand by-passed by over 50%
- Sand is available at Channel Islands Harbor Sand Trap:
 - Since 2012, 3.3M cy available on average
 - Since 2012, only 1.75M cy dredged on average (53% of normal)
 - Overall sand deficit grew by 4.5M cy during the 2012 to 2022 period
- Cumulative sand deficit to Hueneme Beach/Point Mugu shoreline is 32M cy as of 2023
- Increase in sand bypassed 2022/23 to 2.24M cy





Extreme Weather Impacts: NBVC Point Mugu and Beyond



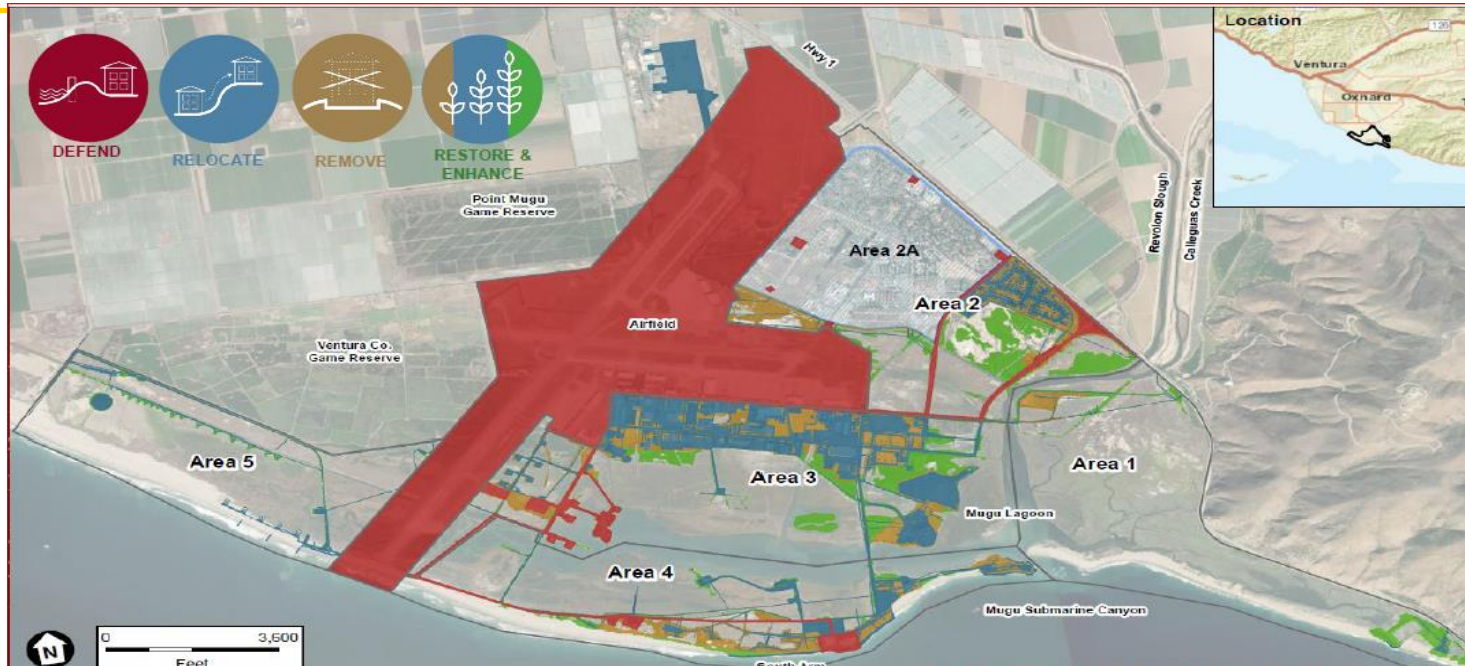


Resilience Planning





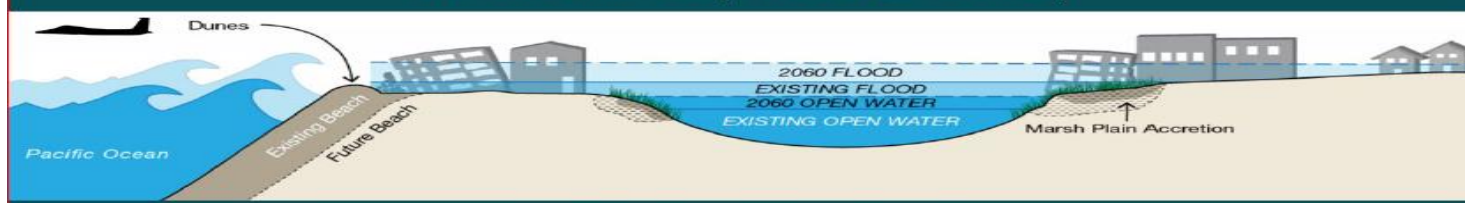
Future Point Mugu Resiliency Vision: Benefits to Infrastructure and Habitats



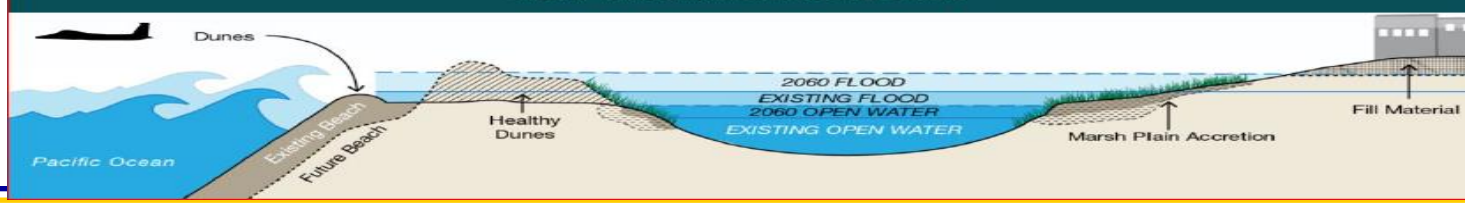
REDUCED EXPOSURE TO BUILT ASSETS:

- Benefits conferred from removed assets.
- Additional protective services and resilience from natural infrastructure and adapting 2A on fill.

POTENTIAL IMPACTS (WITHOUT ADAPTATION)



ADAPTATION VISION SCENARIO



RESTORED HABITAT AREAS:

- Over 500 acres added to over 1,000 acres of existing habitat area.
- Opportunities for restoring hydraulic connectivity.



Navy Collaboration

- **Assistant Secretary of the Navy for Energy, Installations and Environment – Ms. Deb Loomis**
 - Virtual Resilience works shops - online
 - Engineering With Nature – NBVC Point Mugu 2-day workshop
 - Installation Resilience funding
- **NBVC Dredging Program - USACE**
 - Off shore sand sources
 - Central Revetment repair
 - Lagoon Mound Project
- **NAVFAC HQ Support**
 - Installation Resilience Projects





DON - Resilience Planning

Funding:

Assistant Secretary of the Navy Office of Energy, Installations, and Environment

- OTA funds
- Sikes Act Funds
- Dredge funds

Future Partnerships?

- Caltrans
- SCE
- Oxnard Plain Farm Business



USC School
of Architecture





Extreme Weather Protection Projects

- ⚓ **Hybrid Sand Replenishment for Protection of Operational Facilities (Runway & Launch Pads)**
 - ⚓ Use native and off-shore sand to replenish key beaches along Point Mugu coastline. \$\$\$
 - ⚓ Continue to support Channel Islands sand bypass program at full 1.2 mcy/year. \$\$\$
- ⚓ **Eastern Lagoon Hybrid Beach Protection and Replenishment**
 - ⚓ Develop resistant dune line with broadened beach to ensure protection for eastern lagoon ecosystem. \$\$\$\$
- ⚓ **Beach Road/Family Beach Hybrid Replenishment & Reconstruction**
 - ⚓ Develop broadened beach and resilient road to withstand future storms. \$\$\$
 - ⚓ Central Revetment repair \$\$\$
- ⚓ **Lagoon Shoreline Protection**
 - ⚓ Install mounds along eroding lagoon shoreline to protect existing shore and potentially grow shoreline from sediment in mounds. \$\$
- ⚓ **Lagoon Augmentation**
 - ⚓ Develop and implement sediment augmentation projects in key areas of lagoon. \$\$
- ⚓ **Lagoon Monitoring**
 - ⚓ Establish sediment level/rate, tidal flow, and salinity monitoring stations in lagoon. \$

Symbol for rough order of magnitude project cost: \$ = < \$1M, \$\$ = \$1M to \$10M, \$\$\$ = \$10M to \$50M, \$\$\$\$ = \$50M to \$100M+

⚓ = Currently funded or budgeted.

⚓ = Not funded.



Hybrid Sand Replenishment for Protection of Operational Facilities

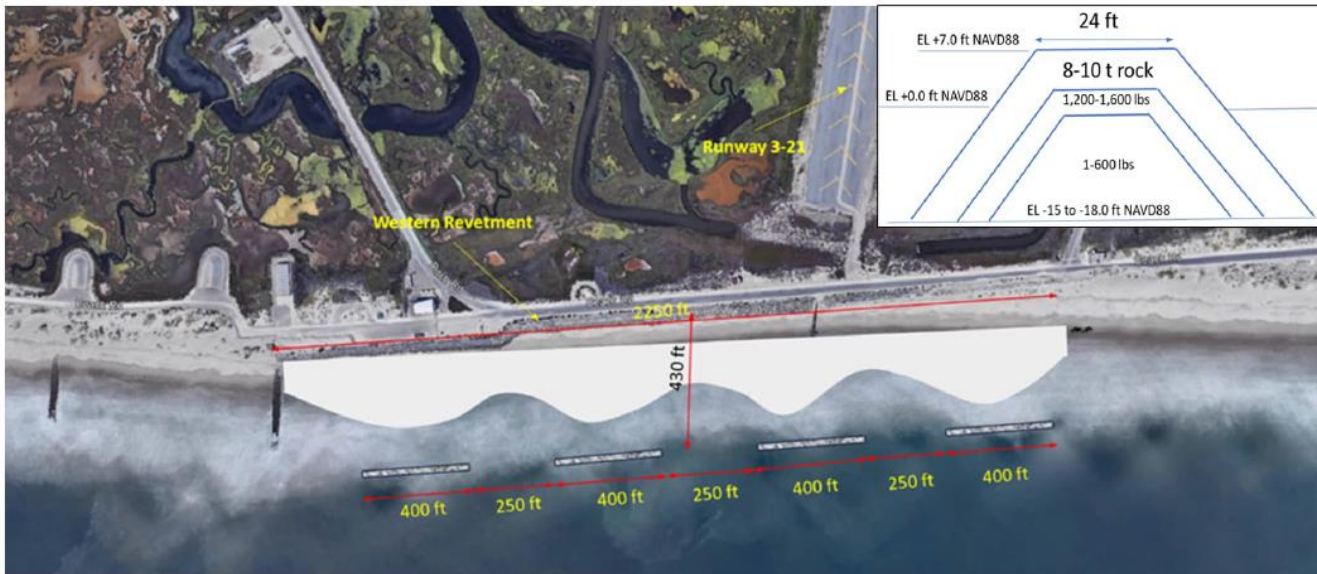


Figure 19.
Detached Breakwaters along Holiday Beach at
Runway 3-21 and Conceptual Breakwater
Cross-section



Figure 16.
Groin Field along Holiday Beach at
Runway 3-21



Eastern Lagoon Hybrid Beach Protection and Replenishment

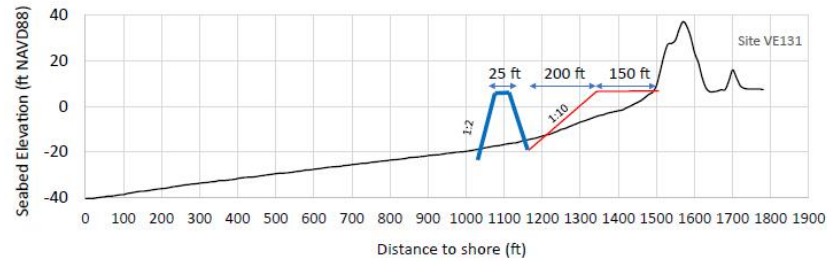
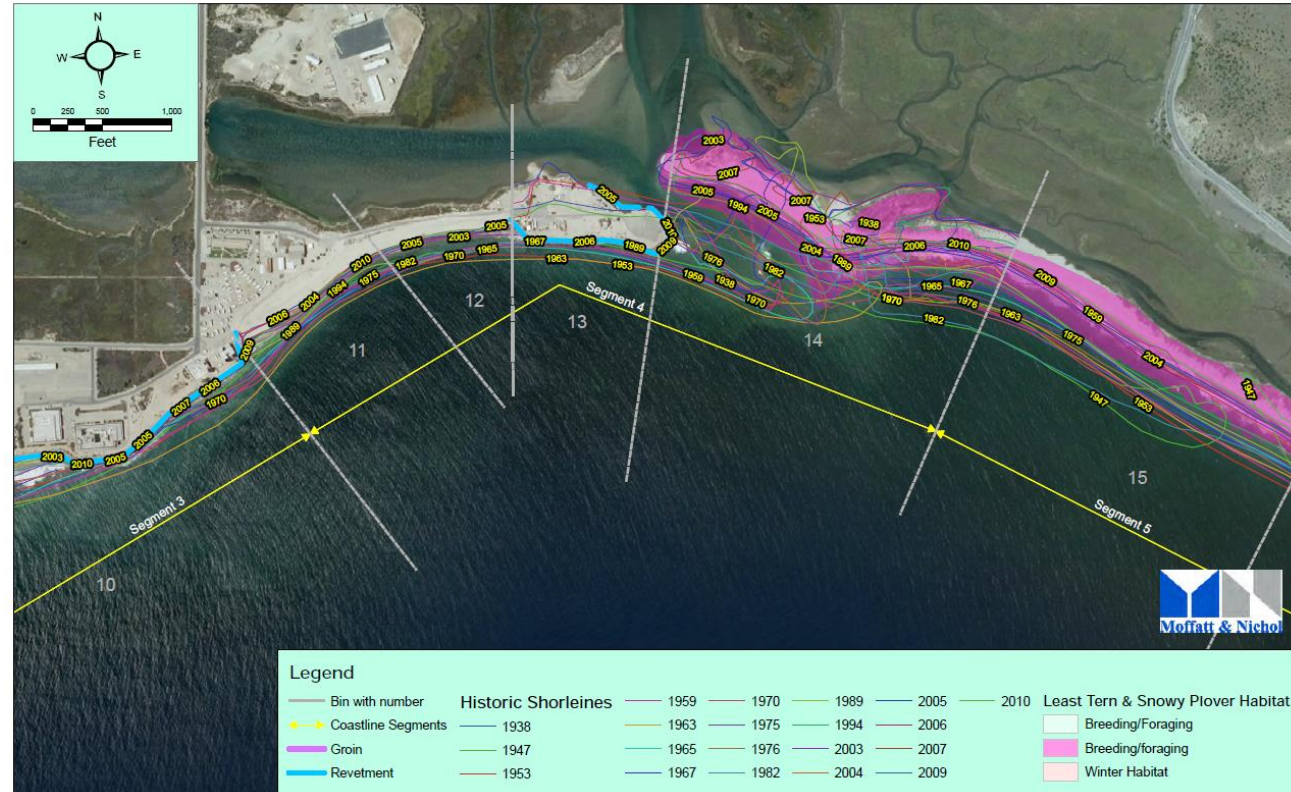


Figure 23.
Rifle Range Coastline and Detached Breakwater Field (top) and Beach Fill Cross-section (bottom)
Technical Memorandum
Sand Retention Alternatives
Naval Base Ventura County Point Mugu
California



Beach Road/Family Beach Hybrid Replenishment & Reconstruction



FIGURE 6-6. RECREATION BEACH NOURISHMENT PLAN VIEW

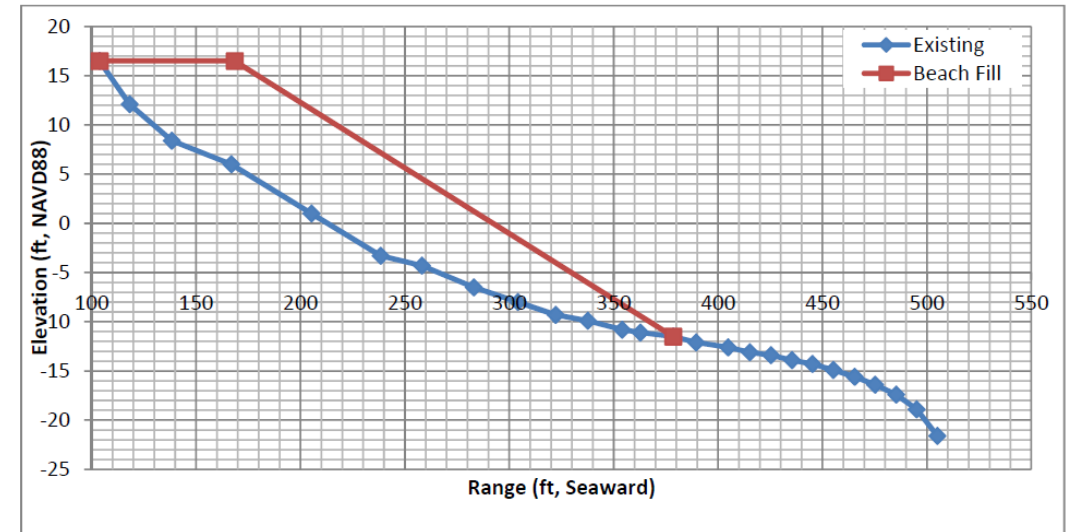
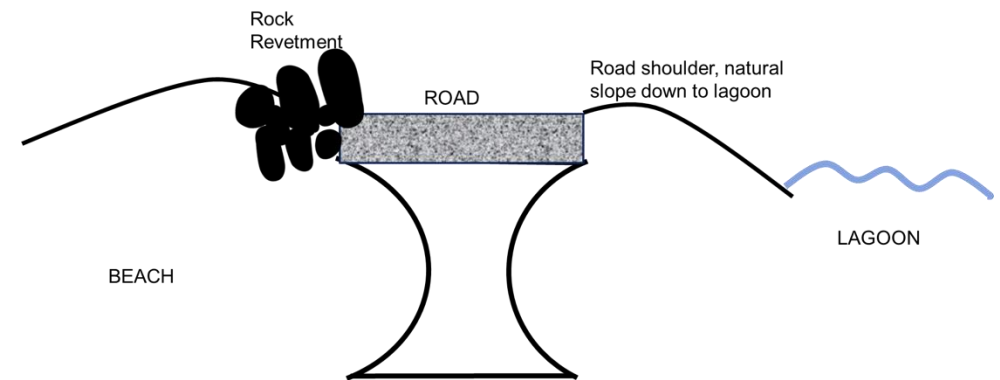


FIGURE 6-7. RECREATION BEACH FILL SECTION



Seawall & road beach backstop hybrid

Shoreline Protection: Lagoon Mounds



Sediment mounds placed in rows near eroding shorelines will slow water velocity (slow down erosion) and provide sediment sources to build shoreline





Lagoon Sediment Augmentation and Monitoring



Thin layer sediment augmentation in various areas of the lagoon based on lagoon monitoring data for sedimentation/erosion rates, tidal flow velocities, etc. to inform placement and frequency.





Point Mugu's Resilient Future

- ❧ Vulnerable areas subject to storm surges are continually identified and managed with funding that covers both regular maintenance and extreme storm damages
- ❧ Sand is managed throughout the year to maintain beach width which protects infrastructure and operational areas
- ❧ Lagoon monitoring provides area specific data on tide range, salinity, and current flow to inform maintenance, repairs, or designs for erosion control structures
- ❧ Sediment augmentation in lagoon keeps up with ocean encroachment which minimizes flooding events
- ❧ Regular maintenance and replenishment activities covered under programmatic permits



Questions?



It's all about
the sand!