Nature-Based Coastal Project Feasibility Study

Community Meeting #2

Thursday, February 29th, 2024

Welcome & Introductions

- Mark Enmeier, Mayor ProTem
- Andy Hall, City Manager
- Leslea Meyerhoff, AICP, Coastal Administrator
- Chris Webb, Principal Coastal Scientist, Moffatt & Nichol
- Justin Peglow, Coastal Scientist, Moffatt & Nichol

Meeting Agenda

- Open House: 4pm - 4:30pm
- Welcome & Introductions: 4:30pm
- Presentation by the Team: 4:45pm
- Listening Session & Q&A : 5:45pm
- Adjourn: By 7pm

Nature Based Study Objectives

- Identify nature-based projects to retain sand & widen sandy beach
- Complement existing & planned beach sand replenishment projects
  - ✓ USACE 50-year beach sand replenishment project
  - ✓ SANDAG RBSP III
  - ✓ SCOUP Projects
  - ✓ South Orange County Collaborative Beach Sand Project?
- Design for co-benefits: widen beach, enhance recreation & natural resources
- Coordinate & collaborate with full range of stakeholders

Purpose of Community Meeting #2

- Share revised preliminary designs and some new concepts
- Some designs have been dropped from consideration
  - Public input: drop cobble delta concept
- Receive community input: revise and/or fine tune designs
- Present draft design report in Spring 2024 for public review

What we heard from the Community

- Protection of the sandy, walkable public beach is a top priority
- The sandy beach is essential to a quality of life in San Clemente
- San Clemente's beach is an important asset and amenity
- Beach supports long-term community vitality and character
- Community does not want experimental or unproven solutions

moffatt & nichol

San Clemente Nature-Based Coastal Resiliency Project Feasibility Study

Revised Alternative Conceptual Schematics for Draft Feasibility Report

M&N – Justin Peglow & Chris Webb

February 2024

Design Concept Criteria

Design Components Include:

1. Community Resilience Benefit
2. Recreational Preservation or Enhancement
3. Fish, Wildlife, and Ecological Protection / Benefit
4. Proof of Concept
5. Transferability / Scalability Beyond the Funded Project

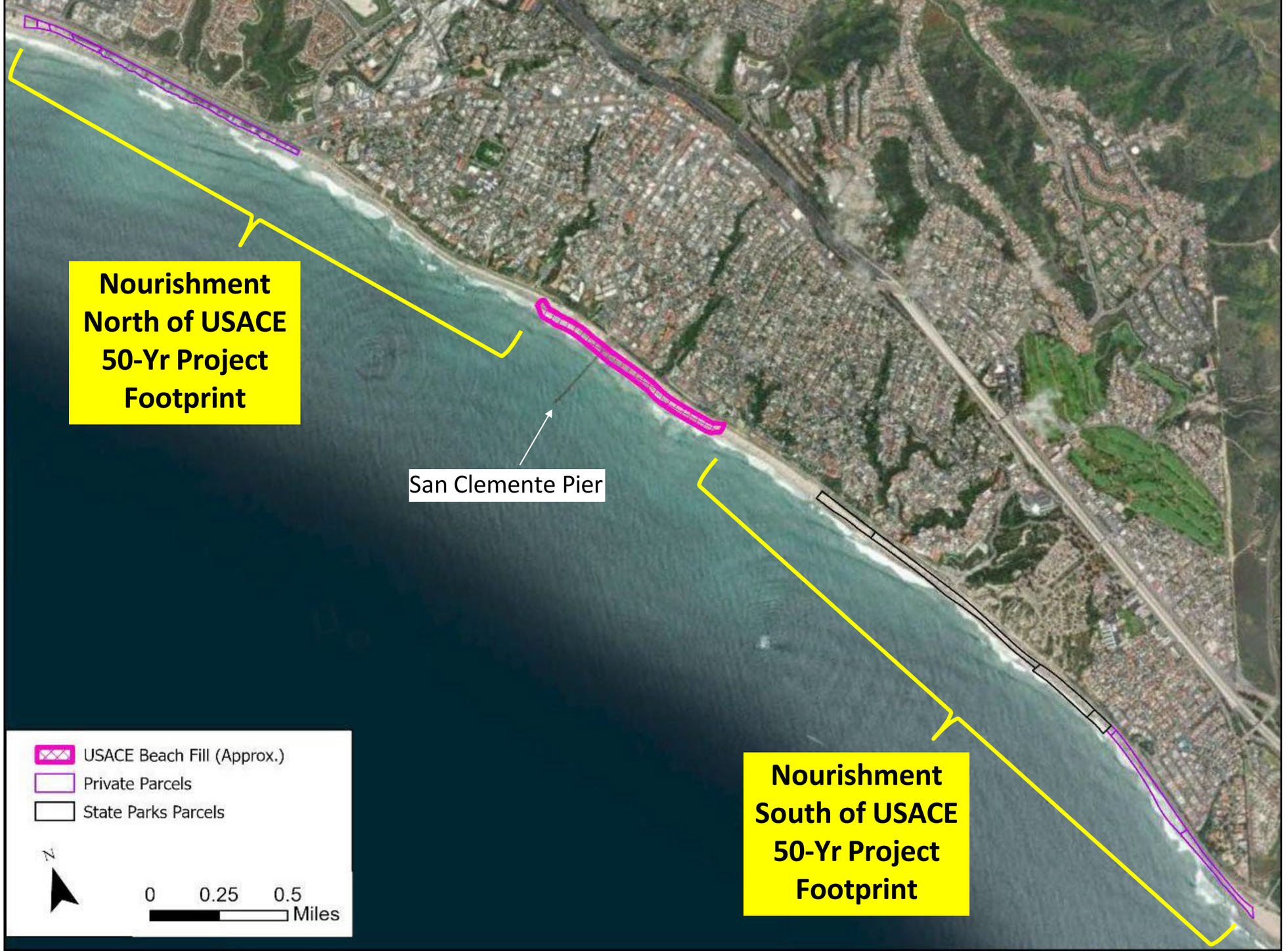
Phased Approach

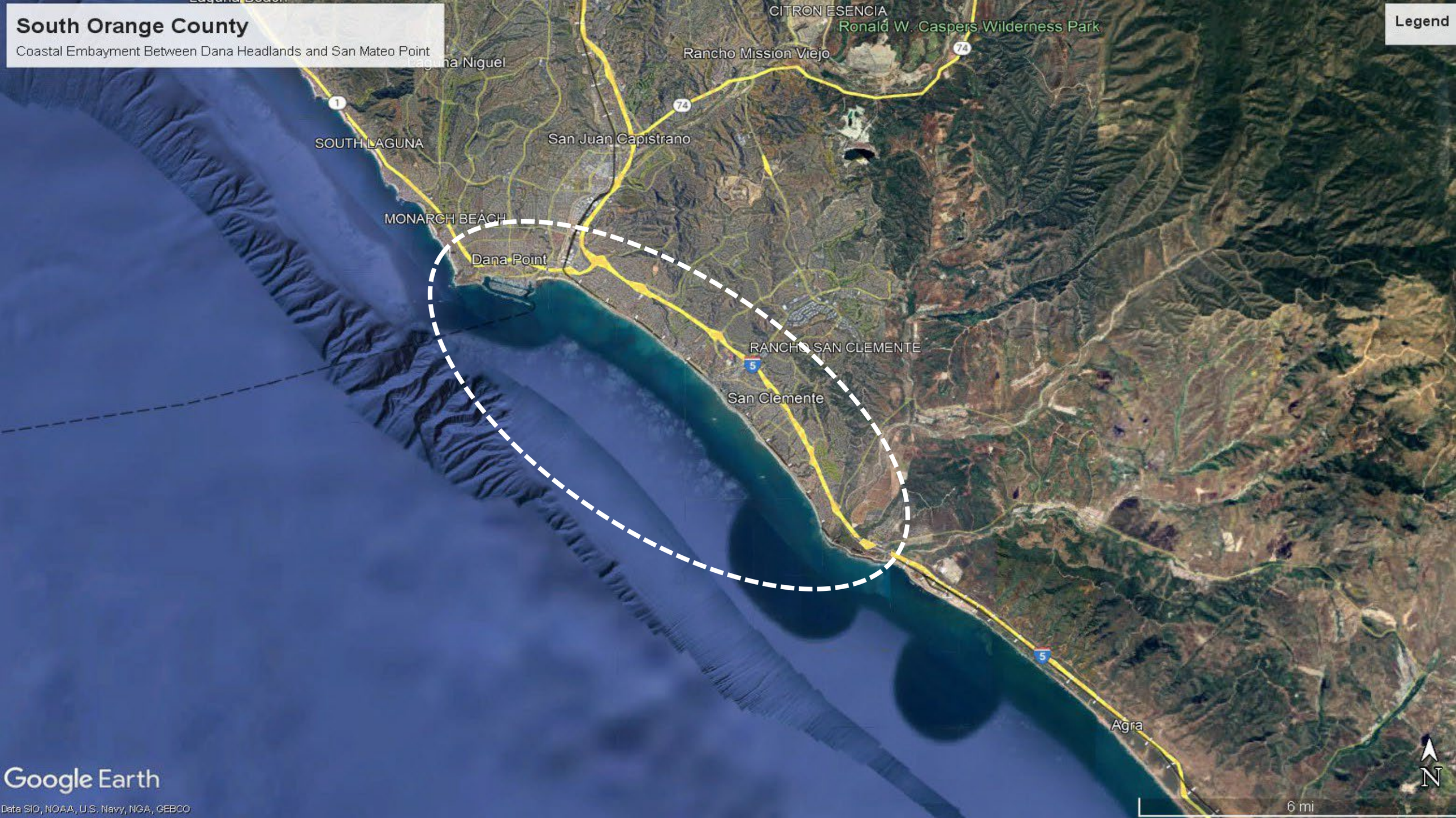
The Entire Effort Depends on Wide Beaches to Succeed

- Current Phase – Large-Scale Beach Sand Nourishment
- Phase 1 – Sand Retention with Beach Sand Nourishment
- Phase 2 – Living Shorelines with Beach Sand Nourishment After Wide Beaches Exist

Current Phase – Large-Scale Beach Sand Nourishment

- U.S. Army Corps of Engineers 50-Year Project.
- San Diego Association of Governments (SANDAG) RBSP III.
- Supplement With a Sand Compatibility and Opportunistic Use Program (SCOUP) for Smaller-Scale Nourishment Opportunities.
- Potential South Orange County Beach Sand Project?


Nourishment North of USACE 50-Yr Project Footprint
San Clemente Pier
Nourishment South of USACE 50-Yr Project Footprint
USACE Beach Fill (Approx.)
Private Parcels
State Parks Parcels
N
0
0.25
0.5
Miles


South Orange County
Coastal Embayment Between Dana Headlands and San Mateo Point
Legend
CITRON ESENCIA
Ronald W. Caspers Wilderness Park
Rancho Mission Viejo
Laguna Niguel
74
1
SOUTH LAGUNA
San Juan Capistrano
MONARCH BEACH
Dana Point
RANCHO SAN CLEMENTE
5
San Clemente
Agra
N
6 mi
Google Earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

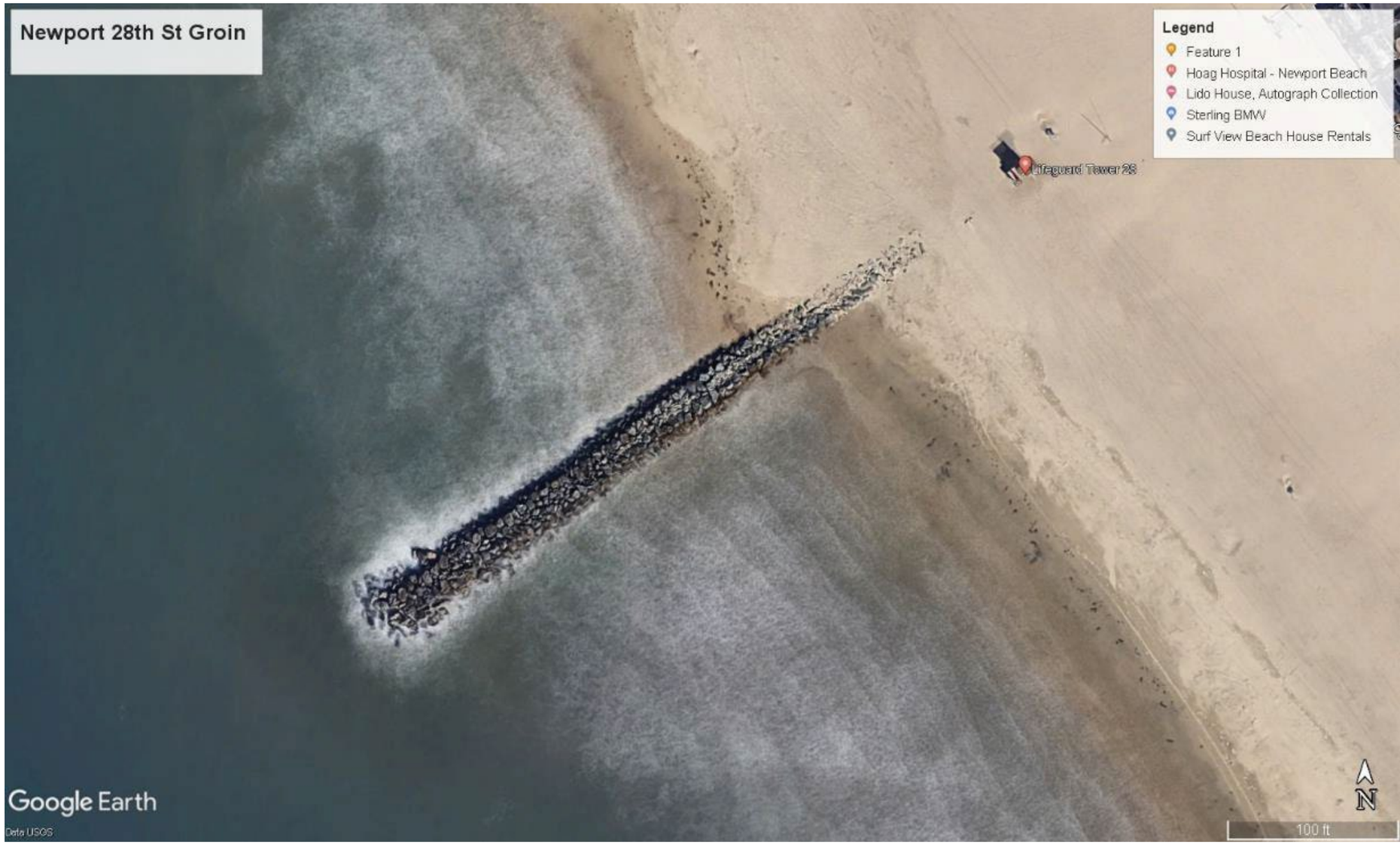
Sand Volume Needed = 7 Million CY

- Assumes 250-foot-wide beach is needed everywhere for 5.94 million square feet of beach over 4.5 miles of City beach.
- Assumes that 1.5 cy of sand is needed to create one square foot of new beach (per USACE 1984).
- Accounts for existing beach widths per City surveys in 2023.
- Existing Beach = 1.44 million square feet in area.
- Need to create 4.50 million square feet of new beach.
- 4,500,000 sf X 1.5 cubic yards/sf = 6,750,000 cubic yards of sand needed for nourishment.

Phase 1: Sand Retention with Nourishment

- Retention can be either:
  - Shore-perpendicular – Groins, speed bumps, headlands, peninsulas
  - Shore-parallel – Breakwaters, and/or
  - Hybrid (both) - Reefs
- Groins perform best if sand moves in one direction (south)
- Breakwaters work well if sand moves in both directions (south and north)
- Reefs work similar to breakwaters but create less beach

Example of a "Groin" (28th Street, Newport Beach)



Example of a Breakwater (Santa Monica)

Example of a Reef (Australia)

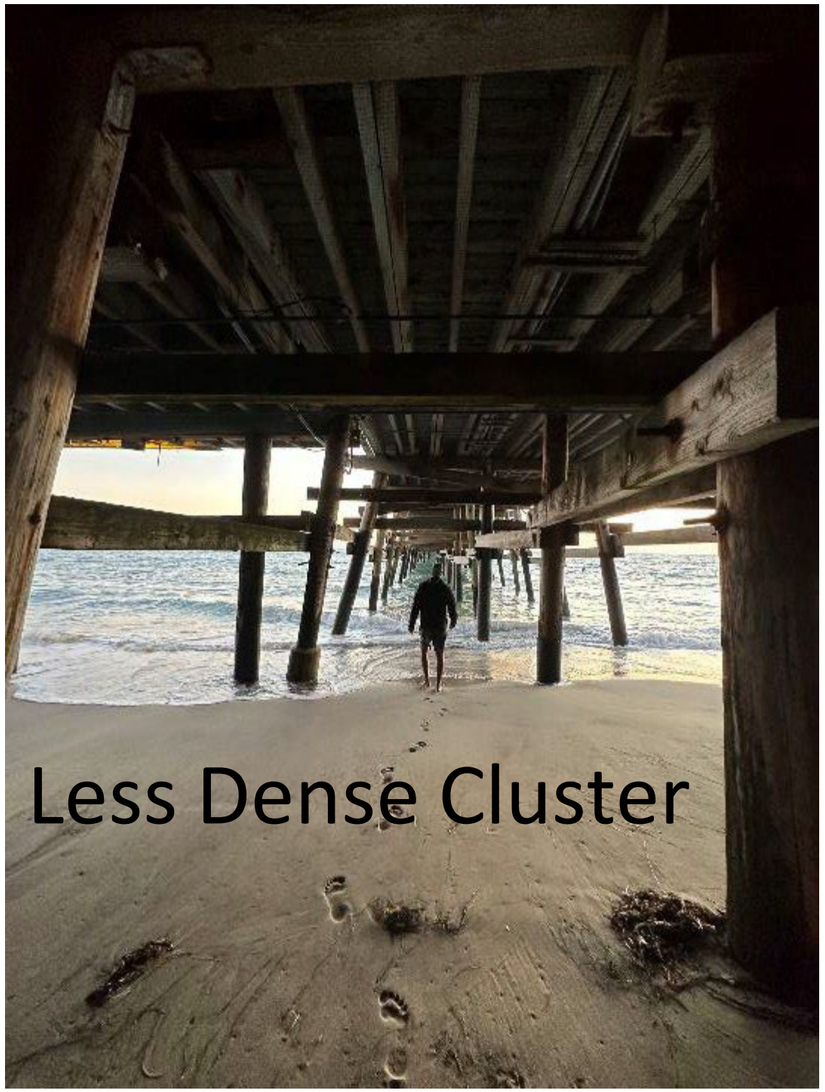
Source: International Coastal Management, Queensland, Australia

Example Reef With Tombolo (Australia)

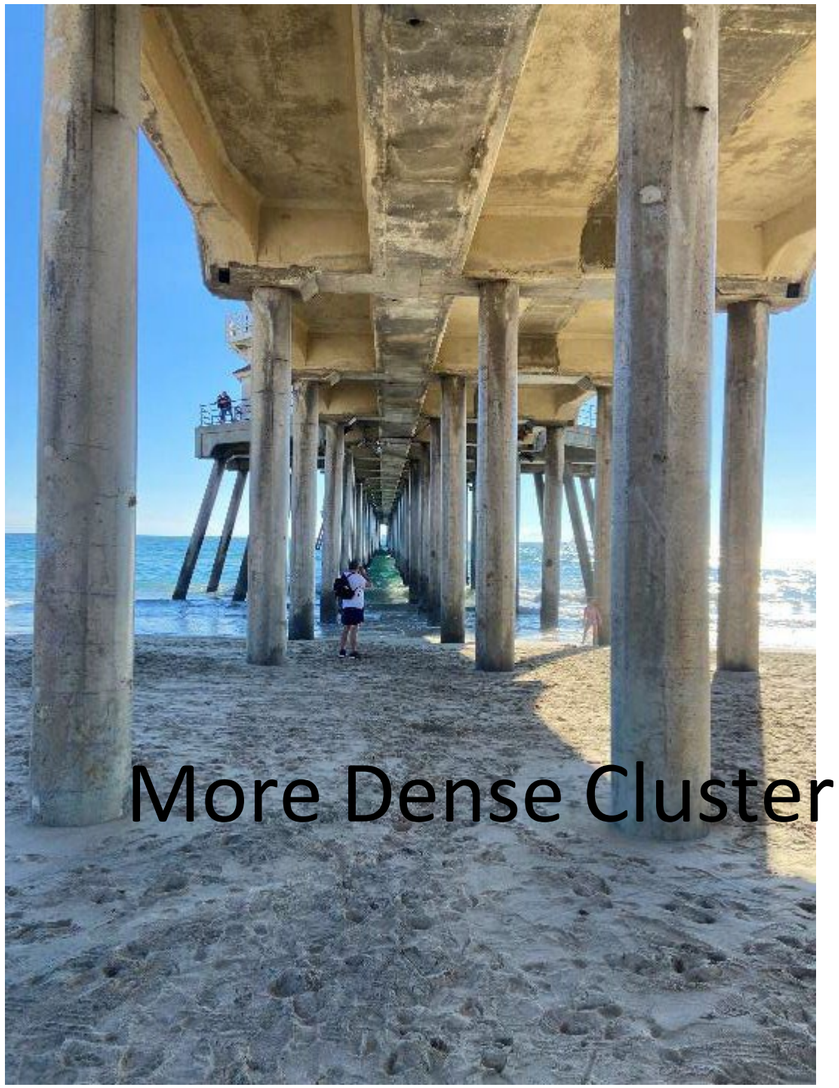
Source: International Coastal Management, Queensland, Australia

Example of A Pier Pile Cluster

San Clemente Pier



Huntington Beach Pier



Pros & Cons

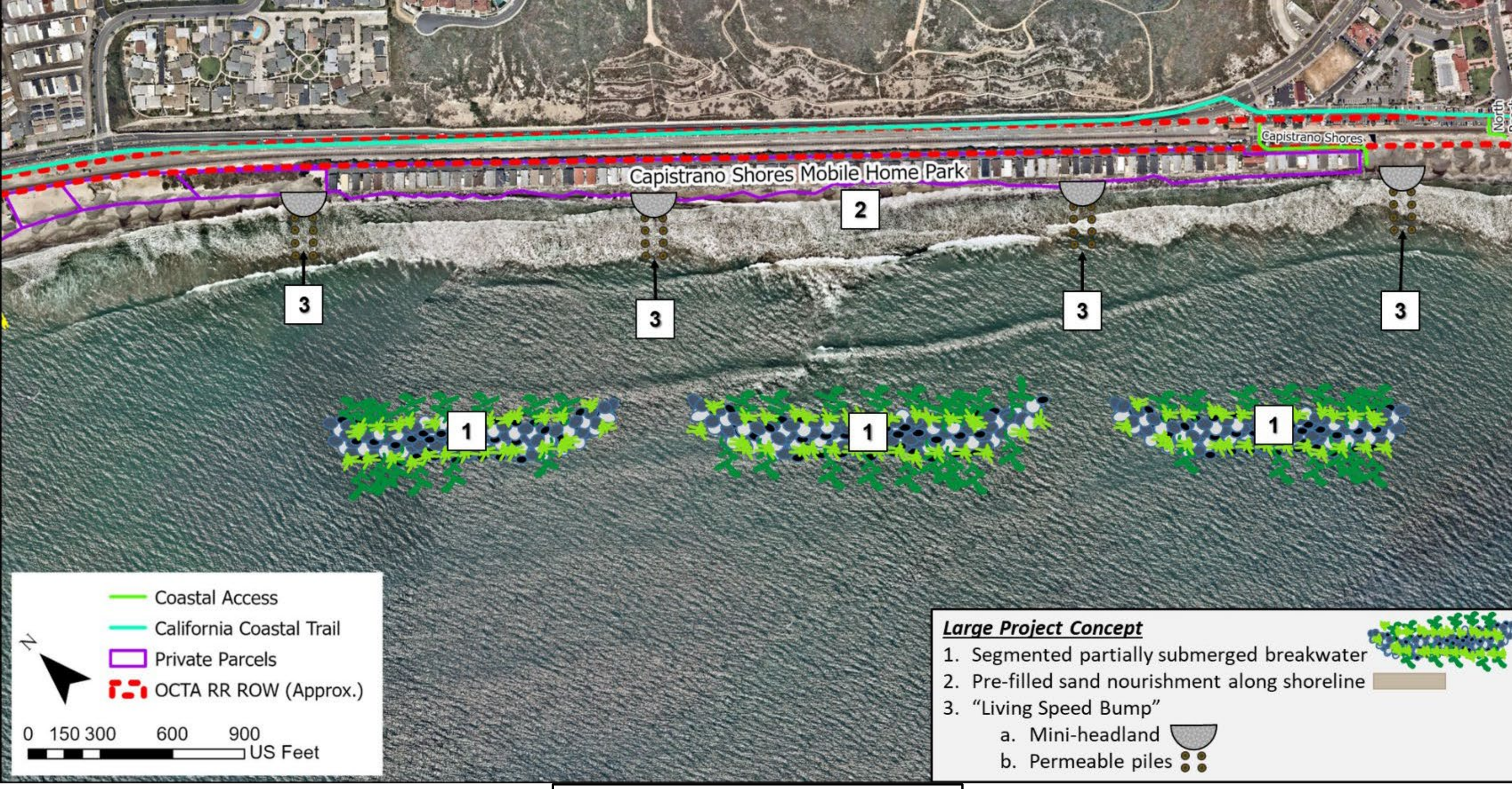
Sand Retention Feature	Orientation to Shore	Best for Sand Movement	Pros	Cons
Shore Perpendicular (headland, peninsula, groin)	Perpendicular, Attached to Shore	In One Direction, Either North or South	Less Expensive, Easier to Remove, Can Create Wide/Long Beach	Lower Probability of Success at San Clemente
Breakwater	Parallel, Offshore	In Both Directions	Higher Probability of Success, Works During SLR, Surf?	More Expensive, Harder to Remove
Reef	Parallel, Offshore	In Both Directions	High Probability of Success if Large, Surfable, Aesthetics	Expensive and Hardest to Remove, High Tide Limits, SLR Limits
Speed Bump	Both, Onshore	Either Way	Least Expensive, Easiest to Remove	Least Effective, Upper Beach Only
Pier Pile Cluster	Perpendicular, Attached to Shore	In Both Directions	Similar Lower Cost, Easy to Remove, Works in SLR	Less Effective than Breakwaters & Reefs

San Clemente Conditions

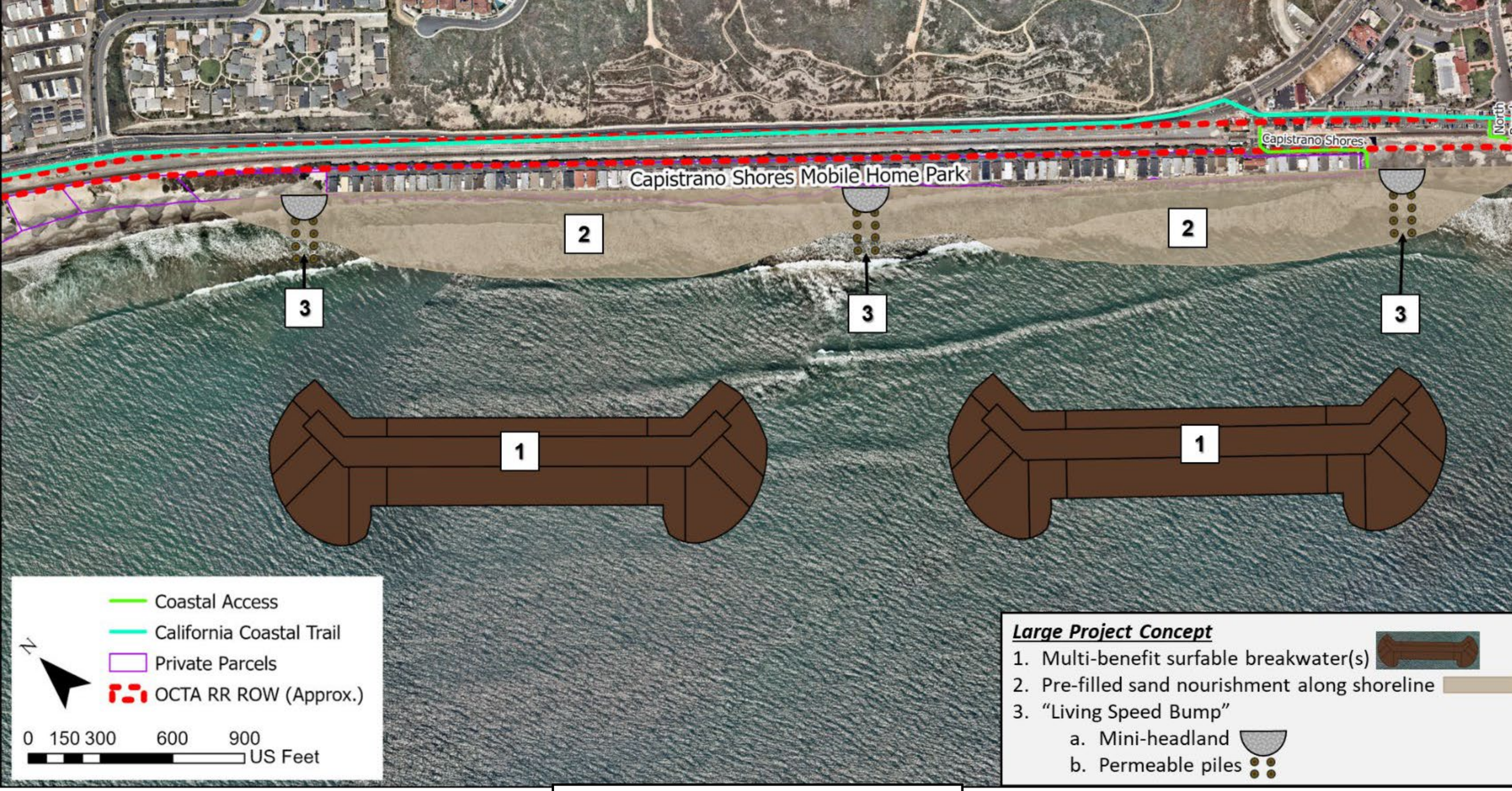
- Sand moves in both north and south directions depending on swell.
- Breakwaters would have the best effect and create the largest beaches.
- Reefs would also create beaches but smaller than those behind breakwaters.
- Groins would not work as well as breakwaters.
- Consider breakwaters with surfable edges (hybrid breakwater + reef).

Phase 1: Sand Retention with Nourishment

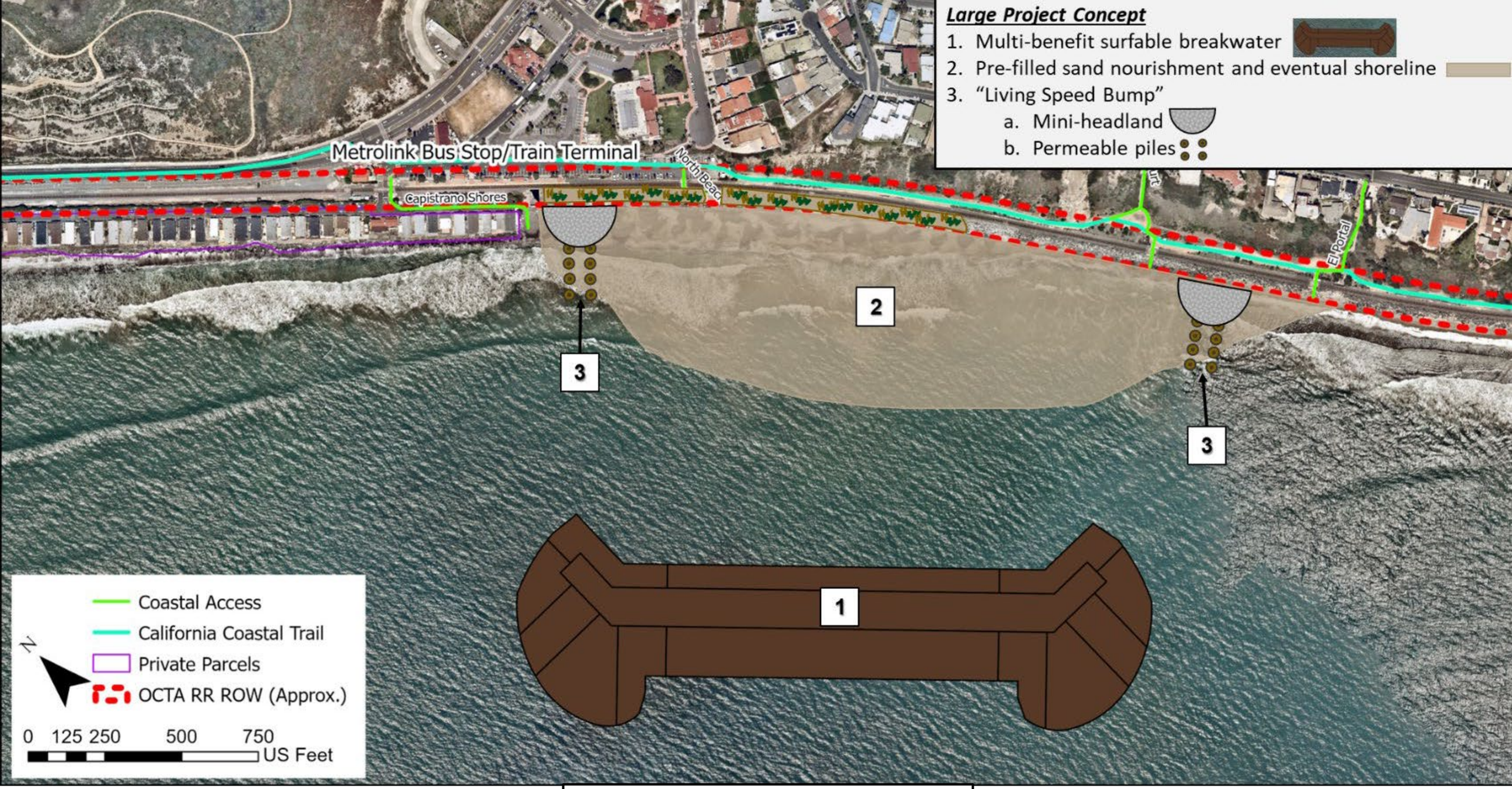
- Install Multi-Purpose Breakwaters to Retain Beach Sand.
- Target Locations for Breakwaters: Capistrano Shores, North Beach, and the South End of City Between State Beach and Cottons.
- Determine Priority of Breakwaters at Capistrano Shores, North Beach, and the South End.
- Likely Implement One as a Pilot for Monitoring, then Implement More if Monitoring Shows Positive Results.



Capistrano Shores Reach: Option A



Capistrano Shores Reach: Option B



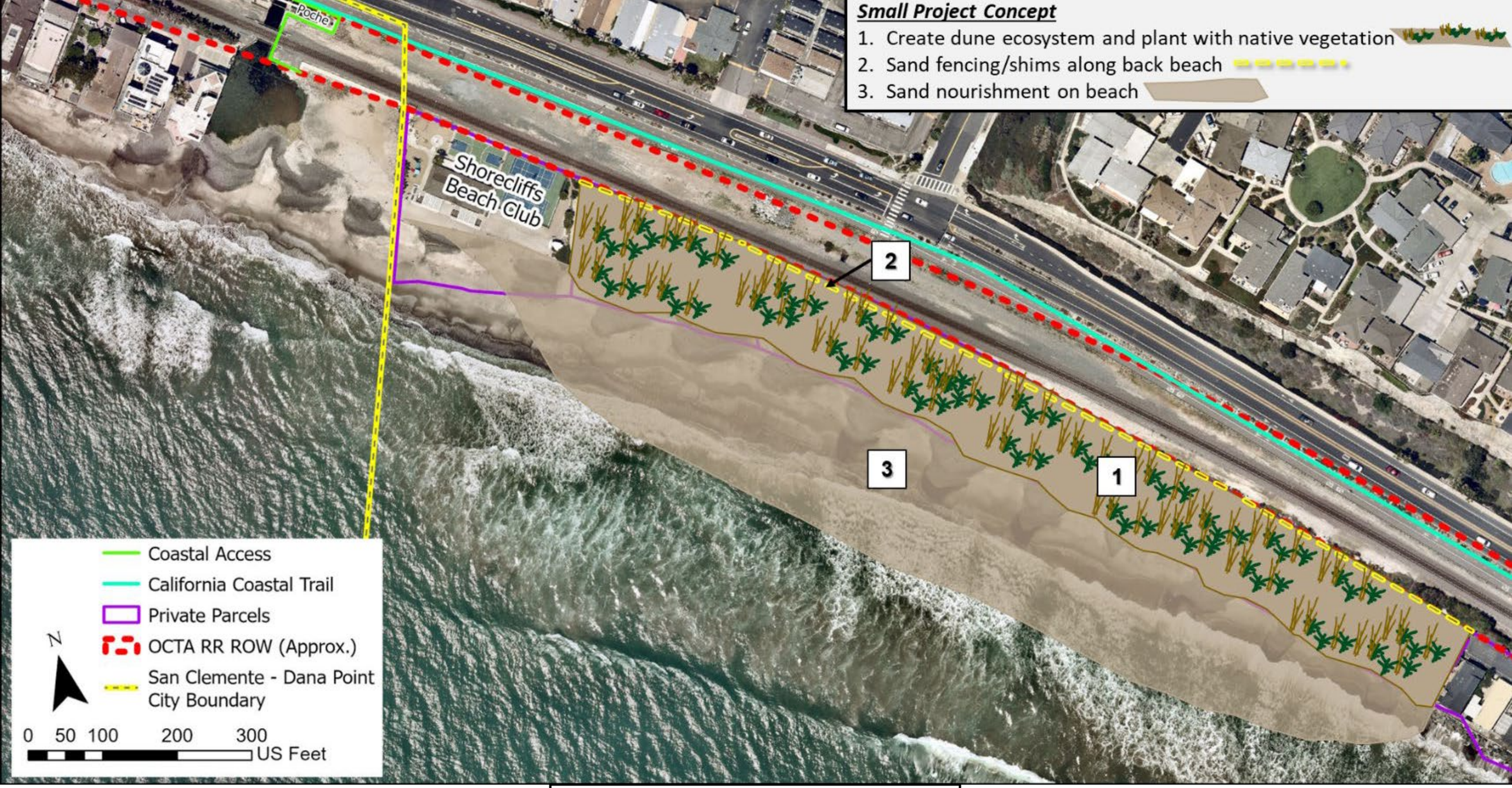
North Beach Reach

Linda Lane & Pier Bowl

Cyprus Shore Reach

Phase 2: Living Shorelines with Nourishment After Wide Beaches Established

- Longer Term Strategy to Maintain sand supply reserves in the City
- Consider Living Shorelines (Dune Habitat) as Beaches Widen
- Design to maintain access and beach use
- Locate at landward edge of Beach after it is widened
- No Conflict With Recreational Use (beach is wide)
- Target Locations: Shore Cliffs, North Beach, Pier Bowl, and State Beach



Shorecliffs Reach

North Beach Reach

Linda Lane & Pier Bowl Sub-Reach

Boca Del Canon Reach

Small-to-Medium Project Concept

1. Portions of existing vegetation along back-beach converted to living shoreline/dune systems
    a. Explore various restoration options (e.g., active, passive, hybrid, etc.)

State Beaches Reach

Phases and Timing

PHASES	TIMING
Phase 0 - Large-Scale Beach Sand Nourishment	3 to 7 years – Depends on Funding and Rate of Progress
Phase 1 – Sand Retention with Beach Sand Nourishment	7 to 12 years – Depends on Funding, Progress, Monitoring Results, and Public Support
Phase 2 – Living Shorelines with Beach Sand Nourishment After Wide Beaches Established	7 to 15 years - Depends on Success of Nourishment and Rate of Beach Widening; Can be Concurrent with Sand Retention Projects

Public Input

The City & Team would like to hear from you!

- Have you had a chance to review exhibits in the room?
- What do you think of the draft design concepts?
- What are your favorites?
- Did we miss any concepts?
- Community feedback is important to this process.

Listening Session

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Q & A

Upcoming Project Study Deliverables

- Draft Design Concept Report = Publish in Spring 2024
- Draft Nature Based Feasibility Study = Publish Late 2024 / Early 2025
- Final Nature Based Feasibility Study = Publish at end of 2025
- Submit Final Study to Coastal Commission by 12/31/25

Join the Project Mailing List

LCP@San-Clemente.org

All deliverables available on City Webpage

https://www.san-clemente.org/LCP

Thank you for your time!