Carpinteria Living Shoreline Dune & Shoreline Management Plan

PUBLIC MEETING NO. 1
SEPTEMBER 23, 2020

Today's Agenda

- Team Introductions
- Background
- Project Overview
- Living Shoreline Basics
- Timeline
- Q & A

Introductions

- **Erin Maker**, Environmental Program Manager, City of Carpinteria
- **Erika Leachman**, Principal Planner, Wood
- **Marie Laule**, Planner and Grant Program Manager, Wood
- **Chris Webb**, Coastal Engineering Project Manager, Moffatt & Nichol
- **Conor Ofsthun**, Asst. Project Manager and Coastal Analyst, Moffatt & Nichol
- **Dave Hubbard,** Dune Designer & Restoration Ecologist, Coastal Restoration Consultants
- **Matt James,** Dune Designer & Restoration Ecologist, Coastal Restoration Consultants

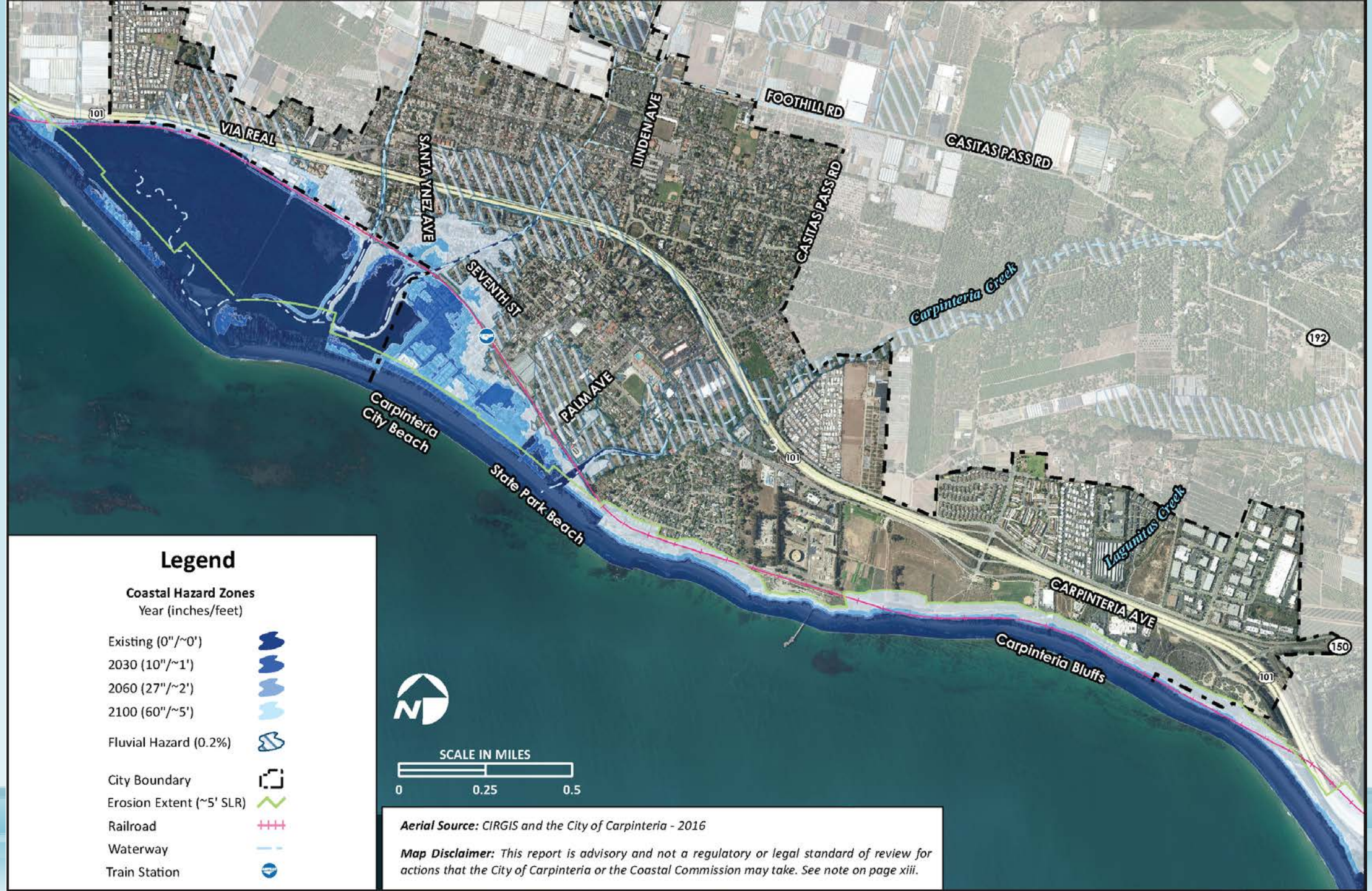
Sea Level Rise (SLR) in Carpinteria

- Projections range, however, the reasonable worst case in the City is **5 feet by 2100**
- Increases in coastal flooding at low-lying areas and coastal erosion at base of bluffs
- Damages could be devastating to:
  - Residents and local business owners;
  - Widespread economic impacts to the City;
  - Disruption of regional rail and transit services;
  - Loss of important coastal access and recreational resources.

Coastal erosion and damage during historically large El Nino of 1982-83.

Key SLR Vulnerabilities in Carpinteria

- Downtown commercial corridor
- Beach Neighborhood and shorefront properties
- Regional and local infrastructure, including roads, rail, parks, utility lines, and storm drains
- Unprotected low-lying coastline is where the most vulnerable and some of the most valuable assets are
  - 41 affordable housing units
  - 213 campsites within Carpinteria State Park
- Combination of fluvial and coastal flood hazards

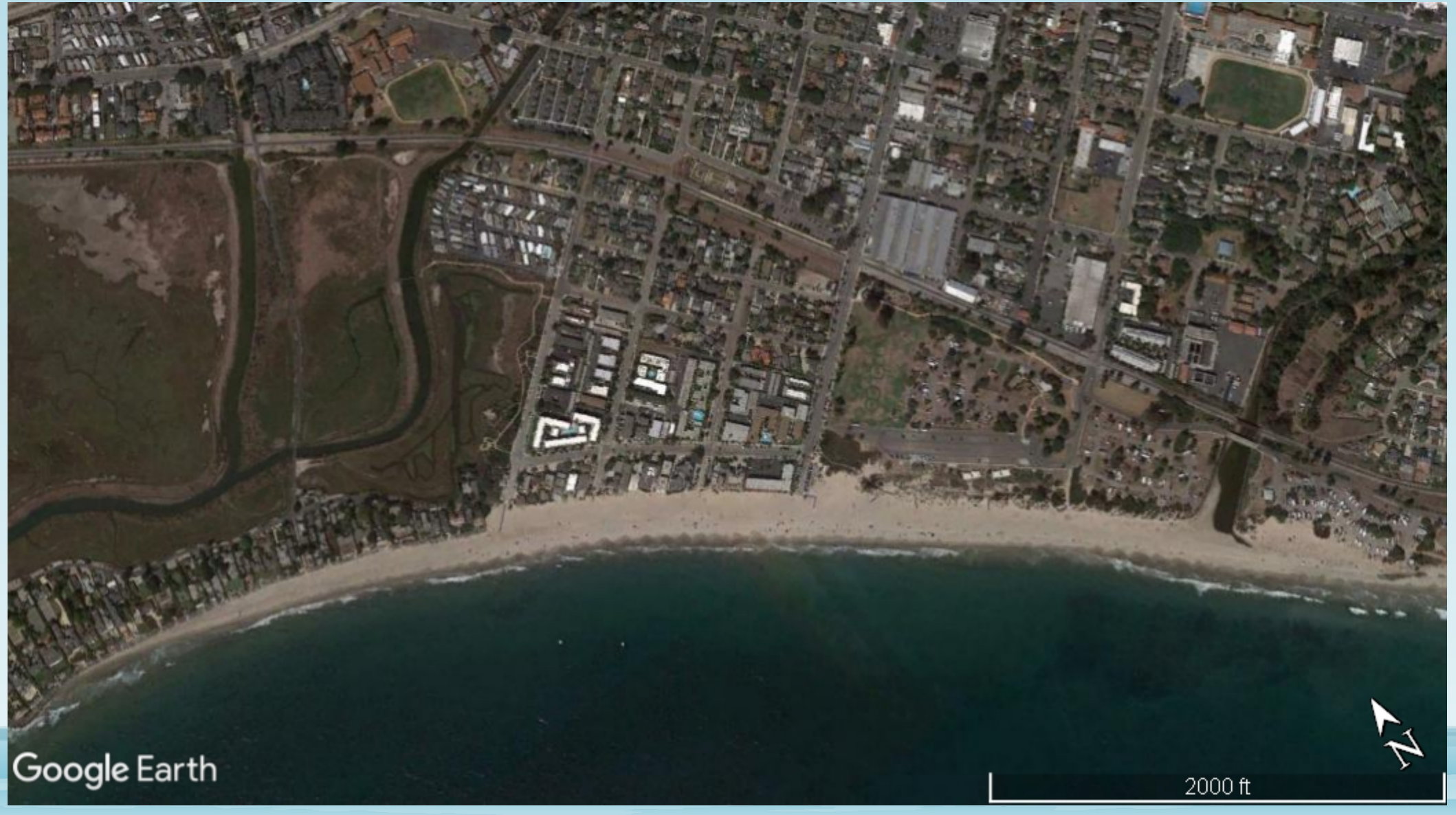

VIA REAL
SANTA YNEZ AVE
LINDEN AVE
FOOTHILL RD
CASITAS PASS RD
CASITAS PASS RD
SEVENTH ST
Carpinteria Creek
PALM AVE
Carpinteria City Beach
State Park Beach
Lagunitas Creek
CARPINTERIA AVE
Carpinteria Bluffs
101
192
150
Legend
Coastal Hazard Zones
Year (inches/feet)
Existing (0"/~0')
2030 (10"/~1')
2060 (27"/~2')
2100 (60"/~5')
Fluvial Hazard (0.2%)
City Boundary
Erosion Extent (~5' SLR)
Railroad
Waterway
Train Station
SCALE IN MILES
0
0.25
0.5
Aerial Source: CIRGIS and the City of Carpinteria - 2016
Map Disclaimer: This report is advisory and not a regulatory or legal standard of review for actions that the City of Carpinteria or the Coastal Commission may take. See note on page xiii.

Existing Shoreline Protection

Rock revetment upcoast on County property

Vegetated dunes downcoast on State Parks property

Existing Shoreline Protection



City Beach Shoreline

- Low-lying area currently unprotected majority of the year
- Blockage of natural sediment flow and movement of sediment upland is contributor to narrow beach width
- Winter storm berm program
- Recent major sediment disposal activities

Source: Coastal View News 2020

Planning for Shoreline Protection

- City Sea Level Rise Vulnerability Assessment and Adaptation Plan
- City General Plan/ Local Coastal Plan Update
- City Winter Storm Berm Program
- **City Dune and Shoreline Management Plan**
- County Flood Control Sediment Disposal Program*

Goals and Key Drivers of the Project

- Protect vulnerable areas and resources of the City
- Achieve important co-benefits to public health and recreation, the local economy, and natural ecosystems along Carpinteria coast
- Involve a variety of stakeholders to meet shared interests
- Identify possible funding sources for ongoing maintenance

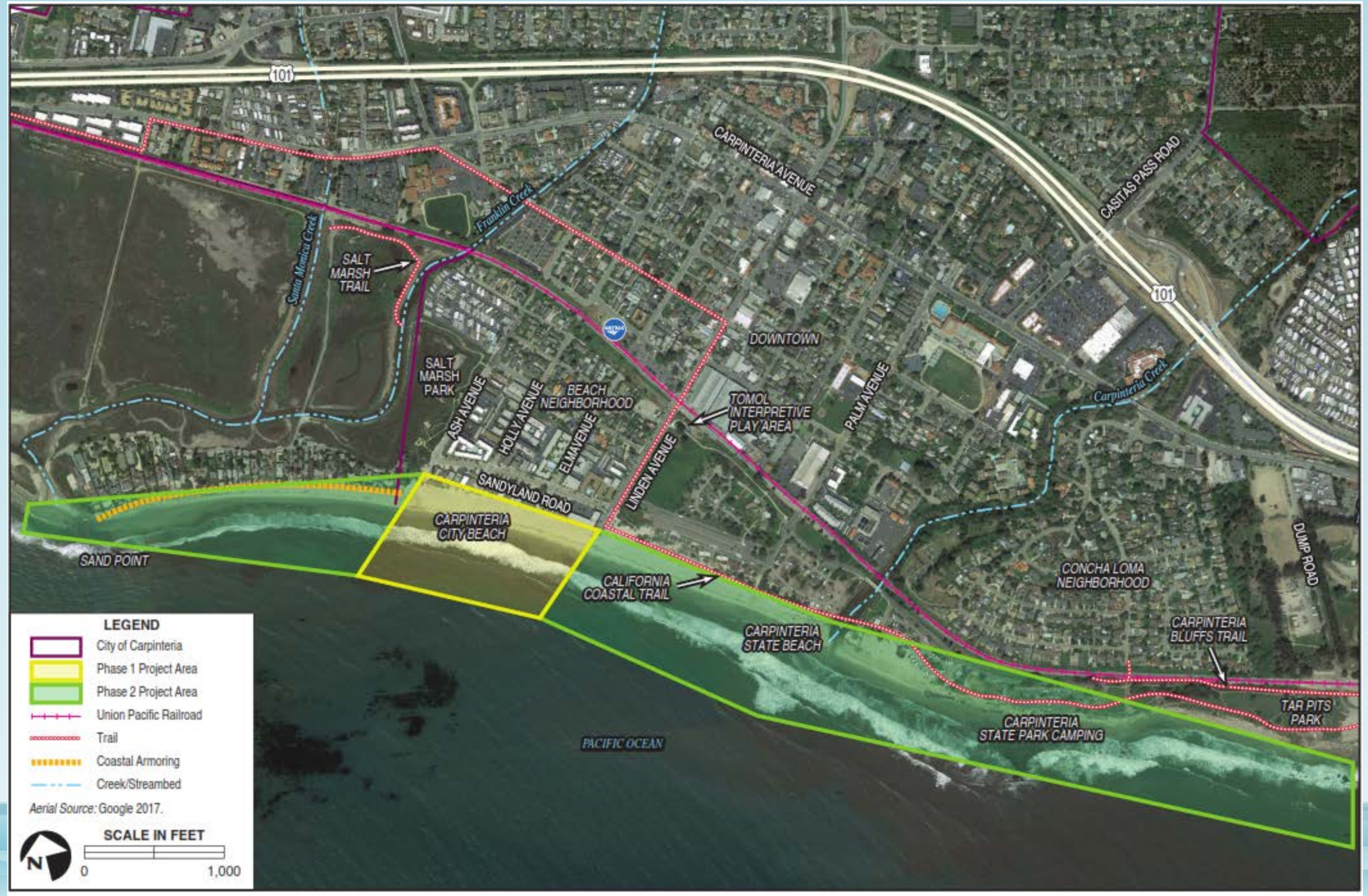
Dune and Shoreline Management Plan

- Analyze living shoreline alternatives to build resiliency to coastal hazards
- Investigate constraints and feasibility of different living shoreline designs
- Perform cost-benefit analysis of design and maintenance tradeoffs
- Develop a conceptual living shoreline design with a longer-term plan for regional management

Project Phases

Phase 1: Living shoreline for most vulnerable low-lying areas along City Beach frontage

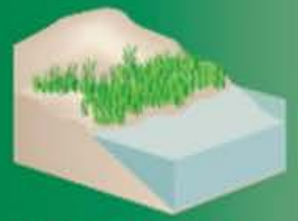
Phase 2: Long-term shoreline management for entire Carpinteria shoreline stretching from Carpinteria Marsh slough mouth to Tar Pits Park


101
CARPINTERIA AVENUE
CASITAS PASS ROAD
Franklin Creek
Santa Monica Creek
SALT MARSH TRAIL
DOWNTOWN
SALT MARSH PARK
ASH AVENUE
HOLLY AVENUE
BEACH NEIGHBORHOOD
ELM AVENUE
TOMOL INTERPRETIVE PLAY AREA
PALM AVENUE
LINDEN AVENUE
Carpinteria Creek
SANDYLAND ROAD
CARPINTERIA CITY BEACH
SAND POINT
CALIFORNIA COASTAL TRAIL
CONCHA LOMA NEIGHBORHOOD
DUMP ROAD
CARPINTERIA STATE BEACH
CARPINTERIA BLUFFS TRAIL
TAR PITS PARK
CARPINTERIA STATE PARK CAMPING
PACIFIC OCEAN
LEGEND
City of Carpinteria
Phase 1 Project Area
Phase 2 Project Area
Union Pacific Railroad
Trail
Coastal Armoring
Creek/Streambed
Aerial Source: Google 2017.
SCALE IN FEET
0
1,000
N

Shoreline Protection Techniques

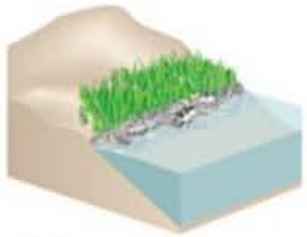
GREEN - SOFTER TECHNIQUES **GRAY - HARDER TECHNIQUES**

Living Shorelines *Coastal Structures*



VEGETATION ONLY - Provides a buffer to upland areas and breaks small waves. Suitable for low wave energy environments.

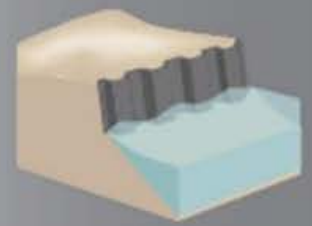
EDGING - Added structure holds the toe of existing or vegetated slope in place. Suitable for most areas except high wave energy environments.



SILLS - Parallel to vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.

BREAKWATER - (vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.

REVETMENT - Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with existing hardened shoreline structures.



BULKHEAD - Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for high energy settings and sites with existing hard shoreline structures.

Different Types of Shoreline Protection

Hard Structures

- Seawalls, revetments, groins
- Can alter natural shoreline processes
- Can increase erosion on adjacent properties
- Do not provide habitat

Top left: Revetment in Carpinteria. right: Revetment at Goleta Beach. Bottom left: Seawall in Summerland (Source: UCSB The Current 2017).

Different Types of Shoreline Protection

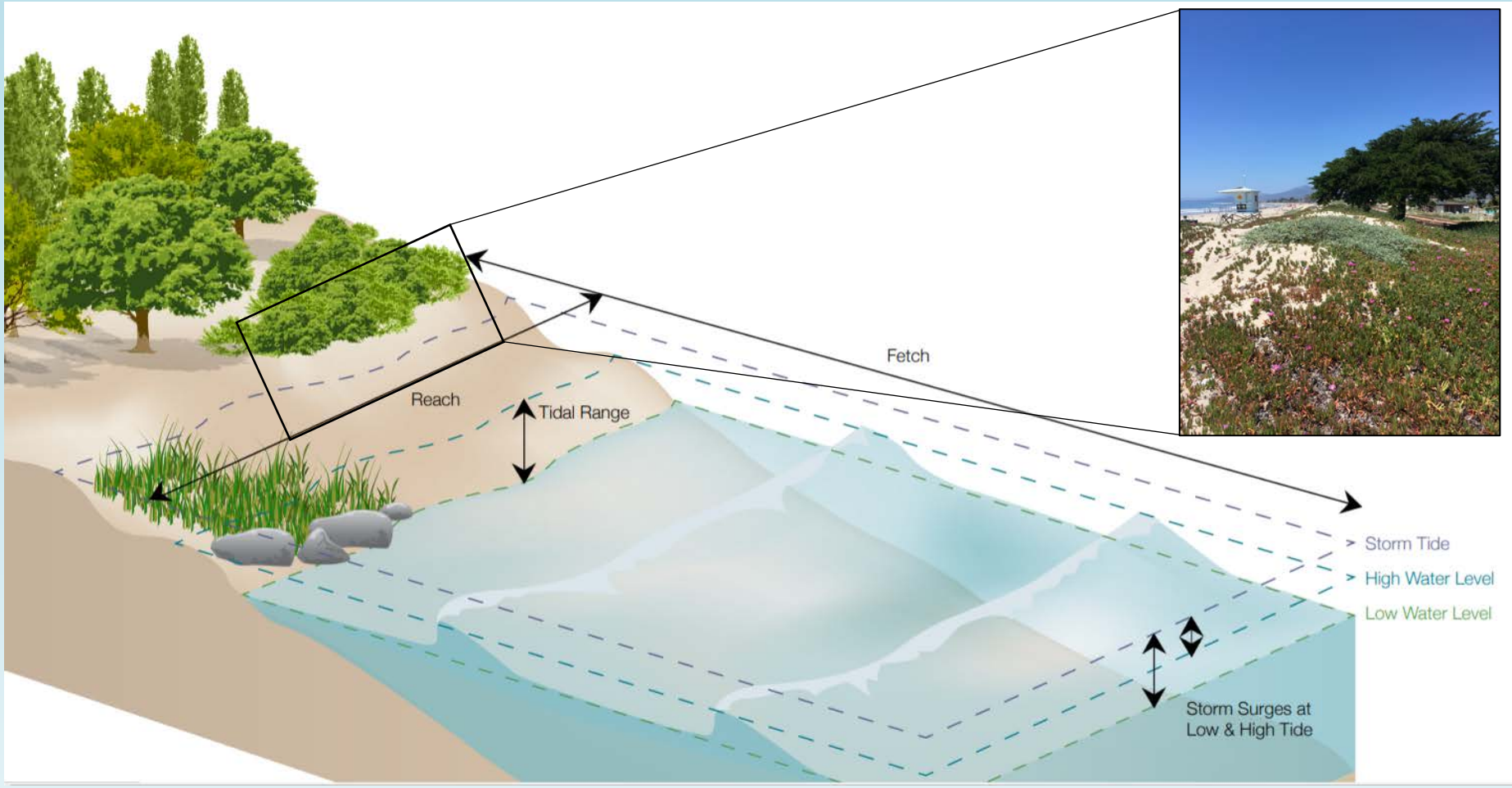
Soft/Natural Structures

- Living shorelines, dunes, berms, beach nourishment
- Can provide shoreline habitat
- Not always best-suited for high-energy environments
- More aesthetically pleasing than hard structures

Vegetated dunes and winter berm in Carpinteria

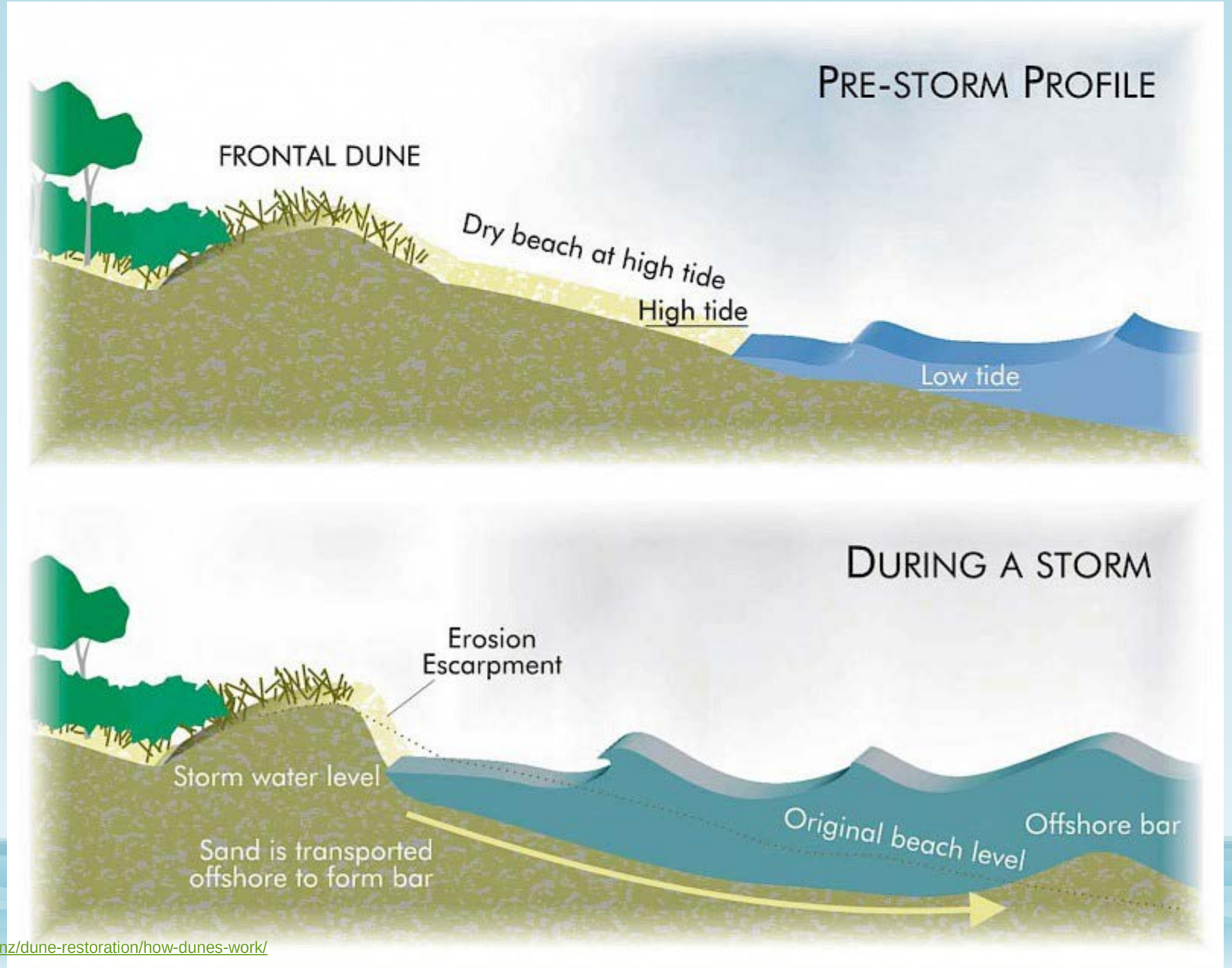
What is a Living Shoreline?

- Stabilized coastal edge made of natural materials
- Dune system that protects shoreline and landward infrastructure against coastal hazards and sea level rise
- Adaptation strategy to shoreline management with dune restoration



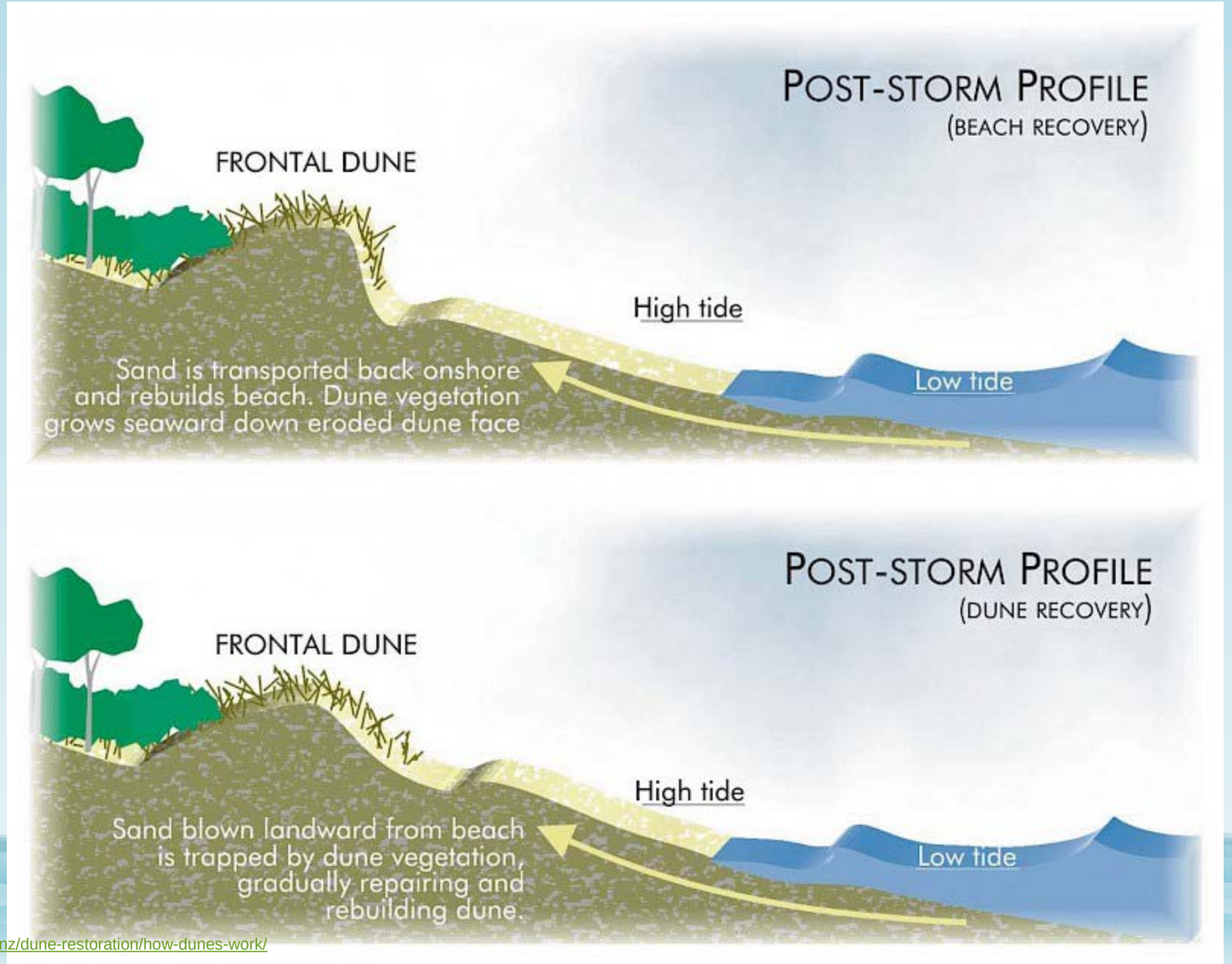
Source: https://coast.noaa.gov/data/digitalcoast/pdf/living-shoreline.pdf

Coastal Dune Processes



Source: https://www.coastalrestorationtrust.org.nz/dune-restoration/how-dunes-work/

Coastal Dune Processes



Source: https://www.coastalrestorationtrust.org.nz/dune-restoration/how-dunes-work/

Example Project

BEFORE

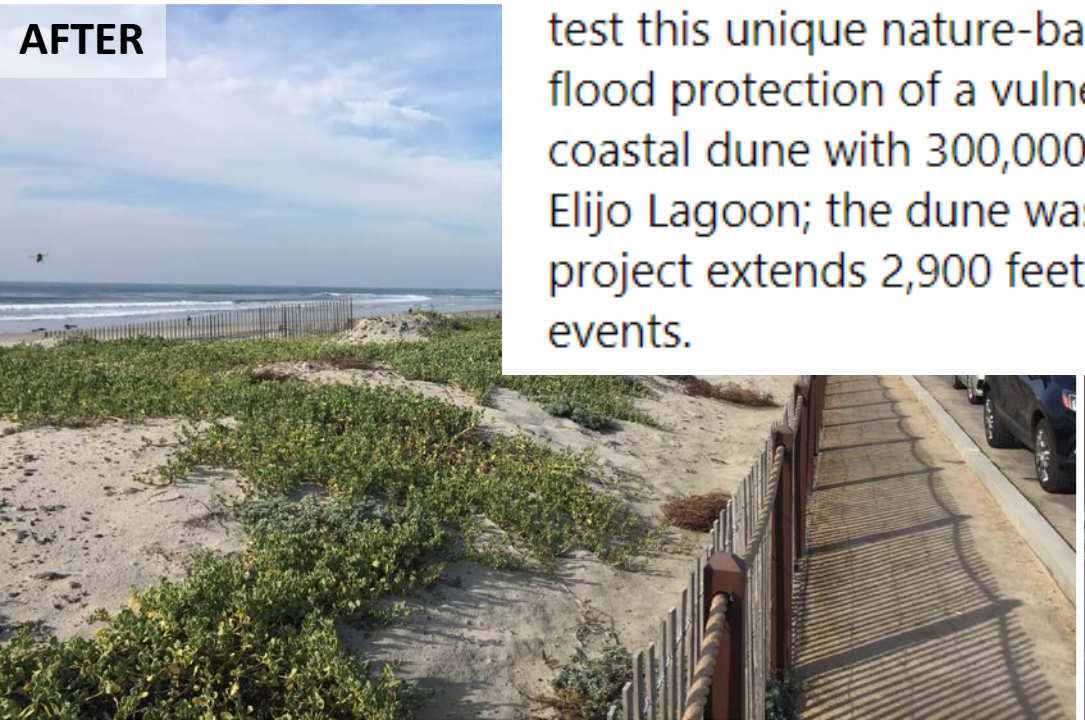
AFTER

Cardiff Beach Living Shoreline

Example Project

Cardiff Beach Living Shoreline

BEFORE



AFTER

American Shore and Beach Preservation Association

May 25 ·

Congratulation to The Cardiff State Beach, a 2020 **#BestRestoredBeach**.

The **#LivingShoreline** Project is the first Southern California project to test this unique nature-based solution to provide beach erosion and flood protection of a vulnerable coastal asset. The project created a coastal dune with 300,000 cubic yards of sand dredged from the San Elijo Lagoon; the dune was then planted with native vegetation. The project extends 2,900 feet and protects Highway 101 from storm events.

Another Example Project – Surfers Point

- Surfer's Point Managed Shoreline Retreat Project, Ventura

- The vegetated site survived the high energy impact and prevented erosion during strong El Niño storms during the 2015-2016 winter season

- Exemplifies a different approach to dune restoration and solving issues relevant to Carpinteria

Photo from 2014 shows Surfers Point with native plants and boardwalk

Opportunities in Carpinteria

2020 – State Park

1929 - Aerial

Opportunities in Carpinteria

Project Timeline

Questions?

Thank You!

Questions, comments, concerns:

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