

Coastal Management City of Encinitas

Infrastructure Task Force
June 26, 2023



Todd Mierau
Coastal Zone Program Administrator
City of Encinitas
tmierau@encinitasca.gov



Current/Recent Projects



- **USACE 50-year Storm Damage Reduction Project**
- **SCOUP- Sand Compatibility Opportunistic Use Program**
- **Cardiff State Beach Living Shoreline Project**
- **Beacon's Beach Bluff Restoration Program**
- **Beach Counter Program**
- **Beach Habitat Studies**
- **CoastSnap Beach Monitoring Program**

USACE 50-Year Storm Damage Reduction Project



Legend

- Fill Reaches
- +15 ft MLLW
- Fill Crest
- Fill Toe
- MHTL
- Private APN
- Public APN
- Staging Areas
- State Park Boundaries

DISCLAIMER:

This map should not be used for Engineering, Survey, or Site-Specific Analysis.

Every reasonable effort has been made to assure the accuracy of the data provided; nevertheless, some information may not be accurate. The City of Encinitas assumes no liability or responsibility

Map Coordinates: Stateplane NAD83 Feet, CA Zone 6

Parcel lines are not survey accurate, and some parcels can be positionally off up to +/- 40 feet

Photo flight dates: July 2009. 4 inch pixel resolution. Digital true color.

Orthophoto and Topo positional accuracy meet the precision adequate to support National Map Accuracy Standards



Encinitas Reach
Map

Project Purpose

- **Reduce coastal storm damages** to property and infrastructure along the study area shoreline and the bluff top, prior to the need for emergency action.
- **Improve public safety** in the study area by reducing the threat of life-threatening bluff failures caused by wave action against the bluff toe.
- **Reduce coastal erosion and shoreline narrowing** to improve recreational opportunities for shoreline users within the study area.



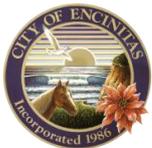
SCOUP or Sand Compatibility and Opportunistic Use Program



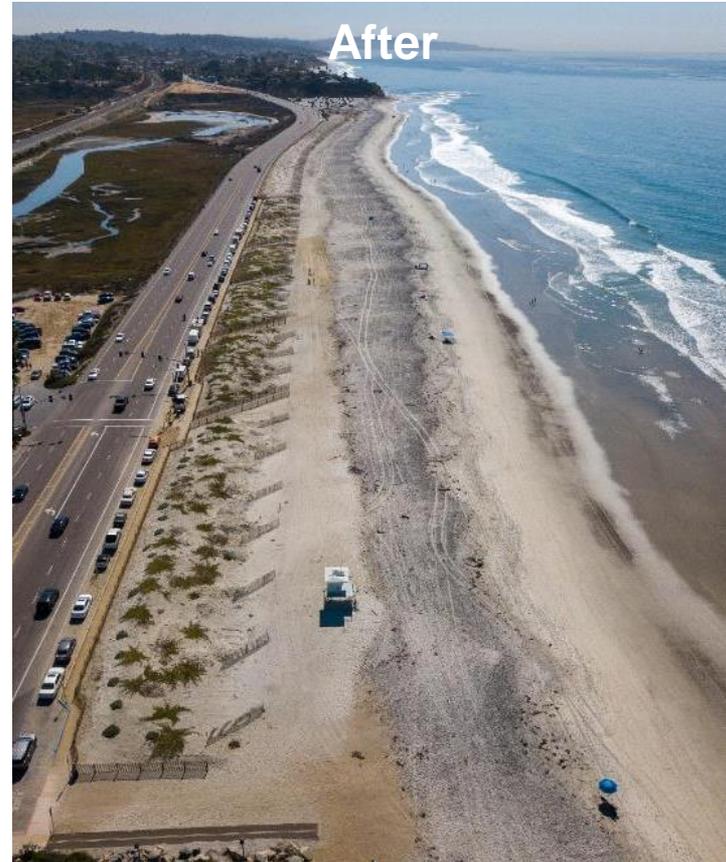
Figure 1-2. Proposed I-5 Former Highway Berm Excavation Footprint



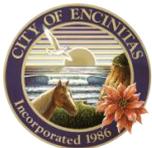
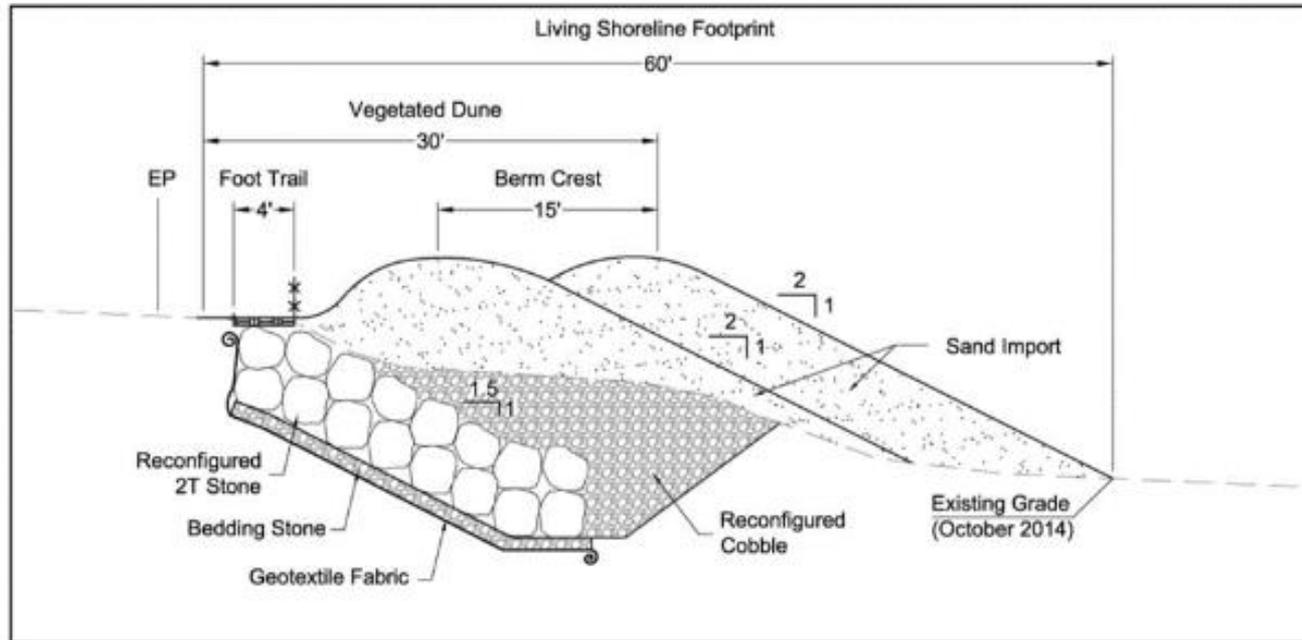
Use of sand compatible sediment on beaches



Cardiff State Beach Living Shoreline Project



Typical Dune Cross-section



Living Shoreline Project – Meeting Flood and Roadway Damage Prevention Objectives

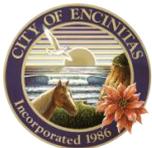
January



February

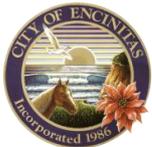


May
Condition



Living Shoreline Project – Reestablished Project

Current Condition



Public Beach Counter Program

The Sustainability Division in cooperation with the Parks and Recreation Department and Life Safety Division collects visitor data related to the City's Beaches.

- People counters are located at 11 locations throughout the City near main access points to City and State Beaches.

2022 Beach Counts	
Moonlight State Beach	1,297,810
D Street Beach	288,497
Sub-Total	1,586,307
Leucadia State Beach (Stonesteps)	232,771
Grandview Beach	343,019
Beacons Beach	382,545
Sub-Total	958,335
Total	2,544,642



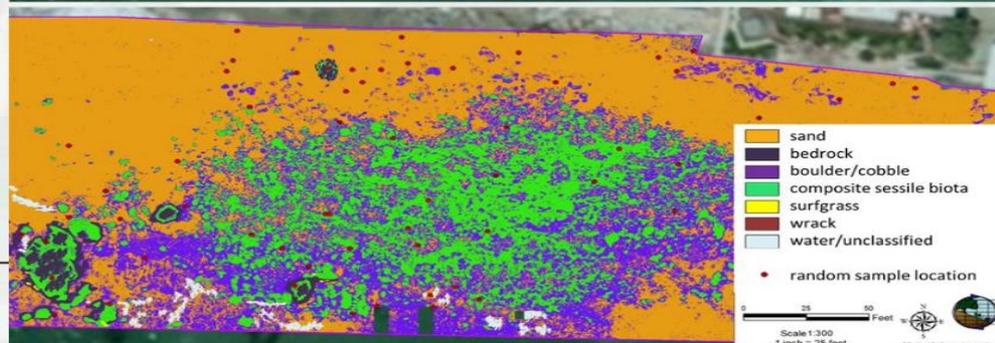
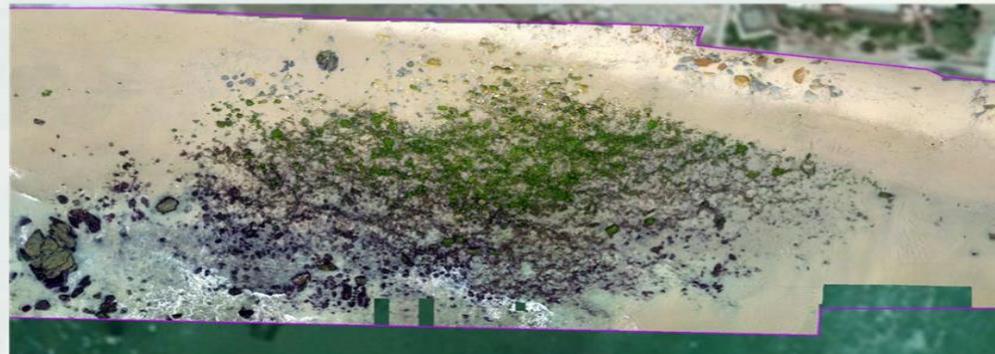
Beach Habitat Studies

Vary depending on project and project type.



ROCKY REEF MONITORING

- Supratidal, Intertidal, and Shallow Subtidal Habitat Mapping Method
 - Low Altitude Aerial Photography
- Spectral analyses to delineate habitats:
 - Artificial Substrate (Rip Rap, Seawall)
 - Sand
 - Bedrock/Boulder Reef
 - Cobble
 - Surfgrass
- Schedule and Frequency
 - Fall 2022 (w/ aerial)
 - Spring 2023 (no aerial)



ROCKY INTERTIDAL MONITORING

- Heavily sand influenced – highly variable
- Final sampling design based on condition during sampling
- Sampling only in Fall 2022
- No spring surveys due to high variability
- Obtain data from Scripps for comparison purposes

Fall 2019

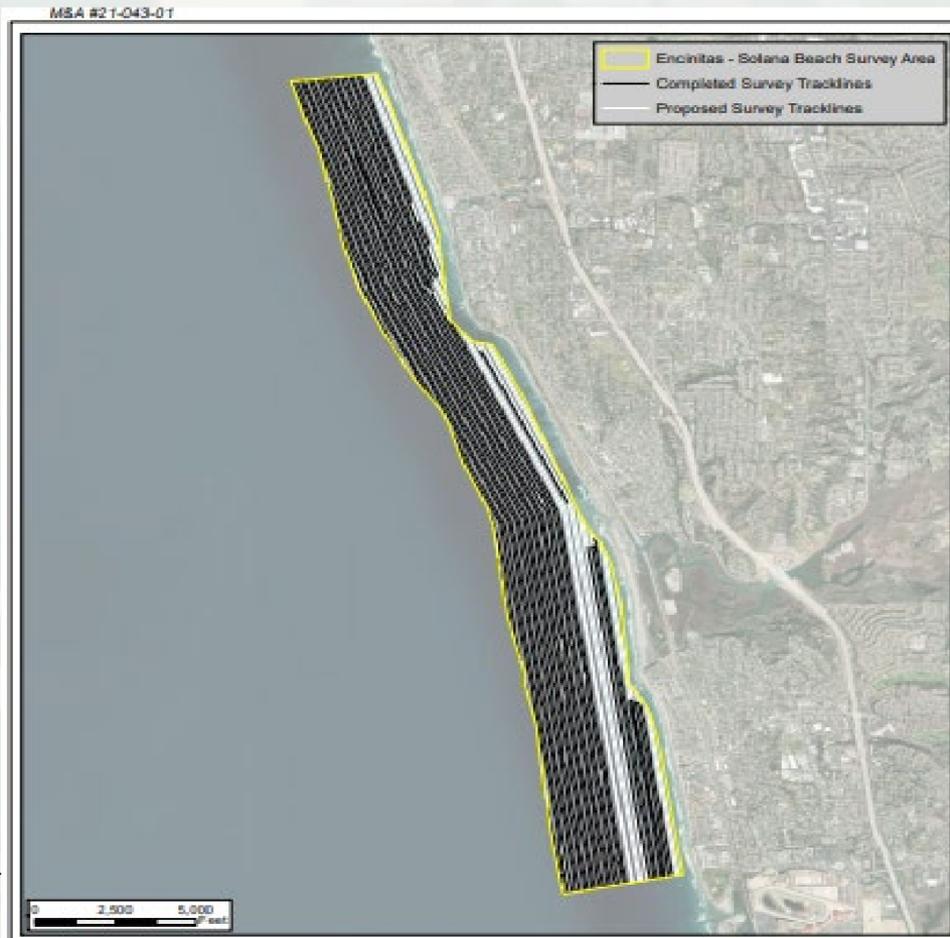


Winter 2016



SUBTIDAL ROCKY REEF HABITAT MONITORING

- Sidescan sonar will be used to conduct fine scale mapping within the subtidal environment.
- Survey tracklines within the AoPE and reference sites will be navigated until the entire survey footprint is covered.
- Mapping will be completed for high and low quality reef conditions supporting surfgrass, upright algae and invertebrate communities, versus bare rock and turf algal communities.



SURFGRASS MONITORING

- Based on surfgrass monitoring program for San Elijo Lagoon Restoration Project (SELRP)
- 10 m long transect at each station
- Sampling only in Fall 2022
- No spring surveys due to high variability



Surfgrass Monitoring Areas

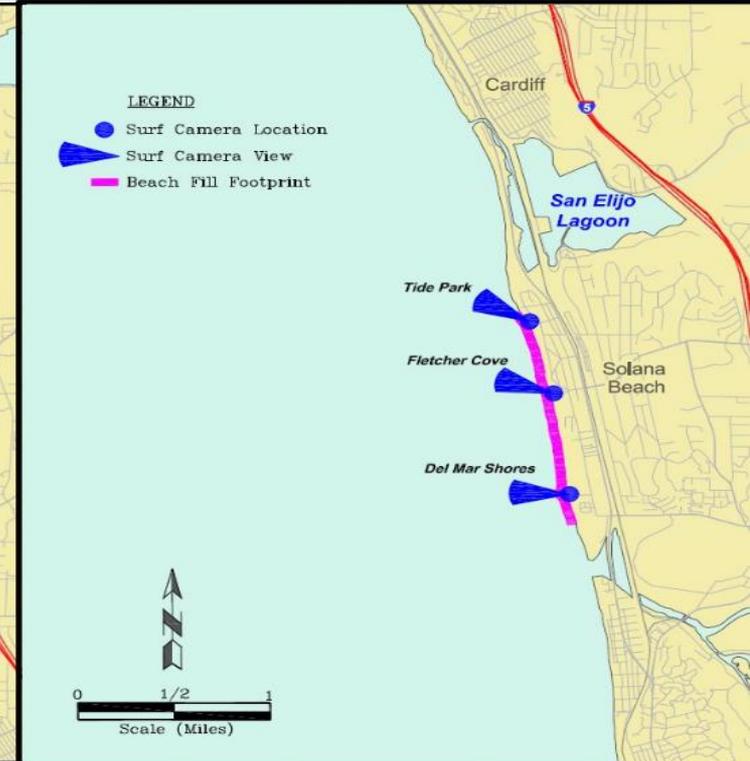
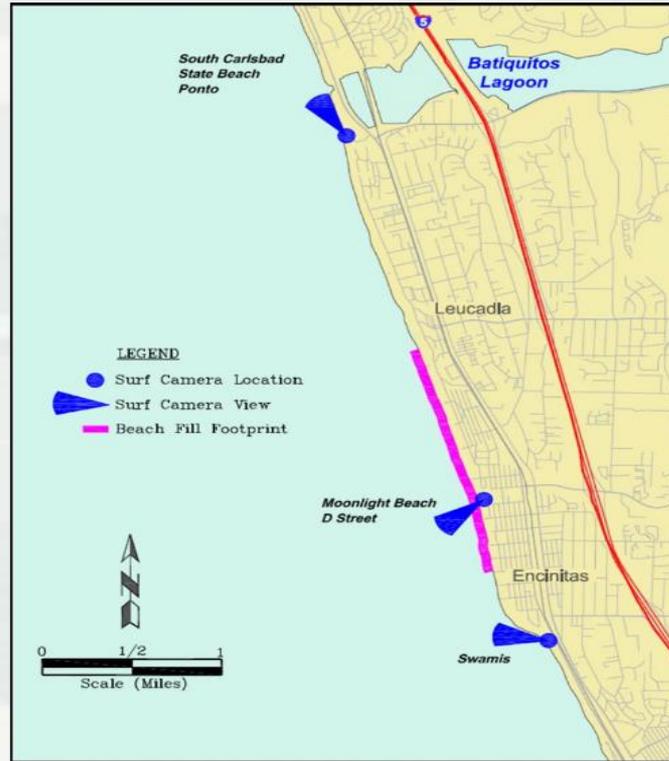
Monitoring Area	Area Type	Station ID	Number of Transects
Batiquitos	Reference	BAT	5
Encinitas	AoPE	ENC	10
Swami's/Cardiff	Reference	SWCR	5
Solana Beach	AoPE	SLBH	10

SURF SITE MONITORING

- **Pre-Project Baseline Conditions**

- **Six Sites**

- Ponto Beach
- Moonlight Beach (D-Street)
- Swamis
- Tide Park/Table Top Reef
- Fletcher Cove
- Del Mar Shores Terrace



- **Video-Based Observations**

- 3 Surfline Cameras
- 3 Solana Beach Maintained Cameras

CoastSnap Program



Figure 2. CoastSnap Smartphone Cradle at Grandview Beach Staircase

Become a Community Scientist!

Help the City of Encinitas record our changing coastline.



Our Dynamic Coastline

Our coastline is constantly changing. Sand is often scattered offshore by large waves and high tides, leaving our beaches narrow or eroded. The sand is usually returned by calmer waves and the beach builds out again.

Human-induced changes can also dramatically affect these coastal processes. These changes can result in severe erosion on our shoreline, requiring coastal management tactics to abate the damage.

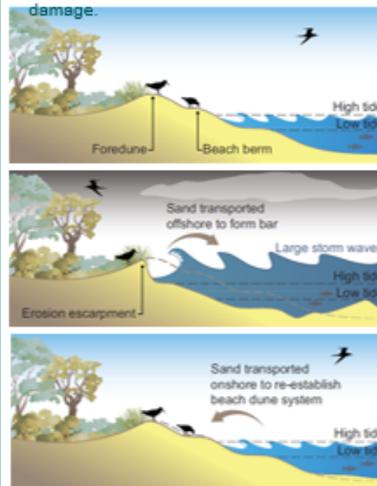


Photo Credit: UNSW Water Research Laboratory

Understanding our coastal processes through your snaps helps us better manage our shoreline.



Water Research Laboratory
School of Civil and Environmental Engineering

What is CoastSnap?

CoastSnap is a global community science network that uses your snaps to capture the changing coastlines. Your snaps help capture a valuable record of beach changes overtime, helping us better understand coastal processes, such as coastal erosion, bluffs, and recovery cycles.

How does it work?

Markers along the beach are used to analyze the images and precisely measure the shoreline location on any given day. These photos are then put together to create time-lapse videos that capture the shoreline's position and beach width as it evolves overtime.



Please try to replicate the above image as much as possible and avoid including visual obstructions (e.g. people, large objects)

How to get involved

- 1 Scan this barcode:
- 2 Place smartphone horizontally in the cradle and take a photo. Photo will auto upload.
- 3 Share by using the free CoastSnap App coastsnap.com and select **UPDATE SPOT**. Hashtag us on Instagram to **observe our changing coast**:



#CoastSnapD Street-North
Questions? Go to:

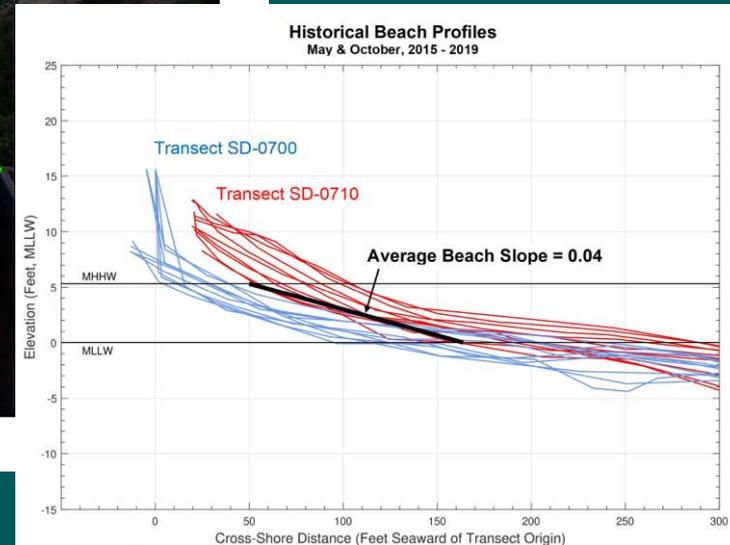
<https://www.encinitasca.gov/government/departments/development-services/sustainability>



June 6, 2022
 8:55 AM PDT
 Tide +0.72 ft, MLLW

Attachment A5. CoastSnap-Derived Shoreline

Beach Profile Survey Date	Beach Slope ^(1, 2)	
	SD-0700	SD-0710
May 2015	0.027	0.039
October 2015	0.032	0.029
May 2016	0.035	0.053
October 2016	0.049	0.041
May 2017	0.040	0.036
October 2017	0.048	0.029
May 2018	0.029	0.039
October 2018	0.059	0.030
May 2019	0.063	0.066
October 2019	0.031	0.029
Average	0.040	
Standard Deviation	0.012	



Finance Breakdown

Funding Source: Coastal Zone Management Fund (Fund 212) Five Year Cashflow



This fund was established following the election held November 3, 1998, increasing the hotel Transient-Occupancy Tax (TOT) from 8% to 10%. The additional 2% tax will be used for the beach sand replenishment and stabilization projects.

	Proposed FY 23-24	Proposed FY 24-25	Proposed FY 25-26	Proposed FY 26-27	Proposed FY 27-28
1 Fund	694,000	922,094	1,220,673	1,540,520	1,882,449
Revenues	990,000	1,025,000	1,061,330	1,099,044	1,138,198
Transient Occupancy Taxes - Hotel 2%	700,000	721,000	742,630	764,909	787,856
Transient Occupancy Taxes - ST Vacation Rental 2%	280,000	294,000	308,700	324,135	340,342
Investment Earnings	10,000	10,000	10,000	10,000	10,000
New Revenues	0	0	0	0	0
2 Revenues Total	990,000	1,025,000	1,061,330	1,099,044	1,138,198
Operating Expenditures	413,806	428,321	443,383	459,015	475,240
Personnel	181,295	189,453	197,979	206,888	216,198
Material & Supplies	7,200	7,380	7,565	7,754	7,947
Contracts & Services	189,070	193,797	198,642	203,608	208,698
Internal Cost Allocation	36,241	37,691	39,198	40,766	42,397
New Programs	0	0	0	0	0
3 Operating Expenditures Total	413,806	428,321	443,383	459,015	475,240
4 Transfer In	0	0	0	0	0
5 Transfer Out to General Fund (101)	0	0	0	0	0
6 Current Year Net (2-3+4-5)	576,194	596,679	617,947	640,029	662,958
7 Fund Balance (1+6)	1,270,194	1,518,773	1,838,620	2,180,549	2,545,407
8 Capital Improvement Projects/Work Projects	348,100	298,100	298,100	298,100	298,100
9 Ending Fund Balance	922,094	1,220,673	1,540,520	1,882,449	2,247,307
10a Contingency Reserves	0	0	0	0	0
10d Future Project Reserves	922,094	1,220,673	1,540,520	1,882,449	2,247,307
	Proposed FY 23-24	Proposed FY 24-25	Proposed FY 25-26	Proposed FY 26-27	Proposed FY 26-28
Sand Compatibility Opportunistic Use (SCOUP) Program (WB08C)	100,000	100,000	100,000	100,000	100,000
Coastal Storm Damage (WB16C)	150,000	150,000	150,000	150,000	150,000
Beach Habitat Study (WB16A)	40,000	40,000	40,000	40,000	40,000
Dune Restoration Project (CP16A)	50,000				
Beacon's Coastal Bluff Restoration Project (CP22C)	8,100	8,100	8,100	8,100	8,100
TOTAL	348,100	298,100	298,100	298,100	298,100

Future/Unfunded Projects

USACE 50-Year Storm Damage Reduction Project:

- **\$50 million for each nourishment cycle (9 more for life of permit to year 2074).**
 - \$25 Million Federal match.
 - City match is \$25 Million unless subsidized by grants.

SANDAG Regional Beach Sand Project (RBSP III):

- **Total unknown. Estimated to be \$300k to \$1.5 Million for Encinitas.**
 - Based on each City's frontage and sand quantity being received.

Future/Unfunded Projects (continued)

Cardiff State Beach Living Shoreline Project:

- **Received \$5 million dollar grant to construct and monitor project for five years.**
 - General Maintenance costs are shared between California State Parks and the City.
 - Costs for repairs are about **\$50k to \$100k per year** depending on storm events.

Lagoon Dredging:

- San Elijo Lagoon Dredging **\$50k per dredging event** at the inlet only.
 - Happens annually.
- Batiquitos Lagoon Dredging depends on volume. Typically, about **\$500k to \$1.2M.**
 - Happens every three to five years.

Future/Unfunded Projects (continued)

SCOUP-Sand compatibility and Opportunistic Use Program:

- **We typically have funds for one two projects per year (\$100,000/year)**
 - Need to set up program where the costs are shared by the City and or private developer and/or paid for through private development as a condition requirement on projects having 20,000 cubic yards or more.
 - Cost savings would be \$200k or more.

Questions?



Todd Mierau
Coastal Zone Program Administrator
City of Encinitas
tmierau@encinitasca.gov
(760) 633-2693

