

CITY OF ENCINITAS, CA CARDIFF BEACH LIVING SHORELINE PROJECT

Abstract Submittal for February 6-8, 2019 FSBPA National Conference
on Beach Preservation Technology



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Background: The Cardiff Beach Living Shoreline Project proposes the construction of a living shoreline dunes system with a goal to help protect Coast Highway (HWY) 101 and provide a pedestrian trail/access with organized parking for a segment of the public beach and west side of South Coast Highway 101, extending from Restaurant Row to South Cardiff State Beach. The Project's goal is to reduce the vulnerability of HWY 101 adjacent to Cardiff State Beach using a nature-based shoreline protection system in combination with a buried revetment that will serve as the last line of defense. The Project will serve as a regional pilot program to assess the feasibility of utilizing dune systems for shoreline protection. Thus, a robust five-year monitoring program has been established, so that other coastal communities can learn from this important Project.



The city has partnered with the California Department of Parks & Recreation, California State Coastal Conservancy (SCC), U. S. Fish and Wildlife Service, and the San Elijo Lagoon Conservancy with grants from the SCC and the Ocean Protection Council to reduce the vulnerability of HWY 101 to flooding, create coastal dune habitat, create a pedestrian path along the dunes, and beneficially reuse sand from future San Elijo Lagoon annual dredging operations.

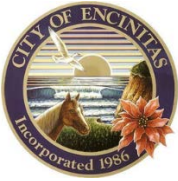
Project Objectives:

- Create approximately three acres of sand dunes that are heterogeneous in structure (i.e. incorporate cobble and sand) with a planted base of native and non-native plant species to stabilize the surface.
- Create sand dunes that will persist dynamically for approximately 50 years. Future maintenance may be required in the way of additional beach nourishment and active planting. Future maintenance work will be reviewed and permitted separately prior to commencement of the repair work.
- Beneficially reuse native beach quality sand from the San Elijo Lagoon to construct and maintain the beach and dune system.
- Protect South Coast Highway 101 from its current vulnerability to episodic flooding and undermining.
- Protect South Coast Highway 101 from more frequent and severe flooding and undermining from storms and sea-level rise over the next 50 years.

Project Description

The project is in San Diego County, along the western edge of Highway (HWY) 101 spanning approximately 2,900 linear feet of shoreline at South Cardiff State Beach. Though the proposed project is not a component of the larger San Elijo Lagoon Restoration Project (SELRP), the two projects are being closely coordinated due to its utility in providing a source of sand to the project. The SELRP is a large-scale wetland restoration project whose restoration commenced in 2017 with completion slated for 2019. Construction is estimated to yield just under one million CY of sand from the proposed dredging. The export material from the lagoon is proposed to be used for the construction of the proposed dune system, as well as beach nourishment at Cardiff State Beach with 300,000 CY of sand. Beach nourishment would directly benefit the proposed project by providing a wider beach, which would protect the proposed coastal dune system and provide





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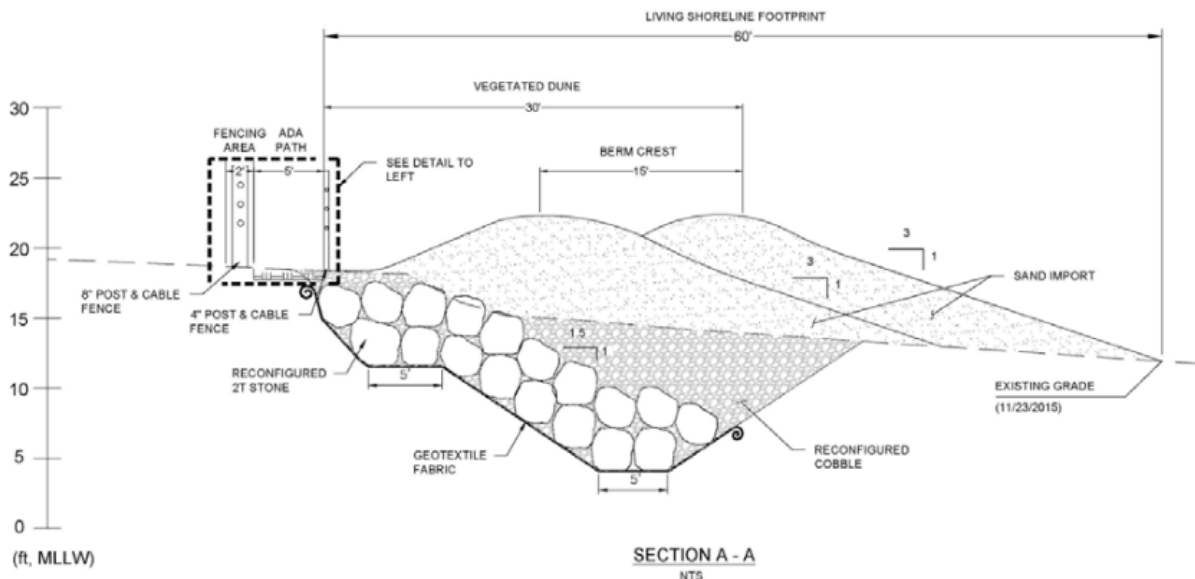
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more sand to the system.

Primary project elements include:

- **Sand Dune Restoration:** A sand dune would be constructed with approximately 29,000 cubic yards (CY) of imported sand. The sand dune would cover reconfigured riprap with a cobble core starting from the existing edge of pavement or parking along HWY 101. The dune would be seeded with native plants after construction. The dune is scheduled to be constructed in October 2018, after completion of a significant beach nourishment



project performed as part of the San Elijo Lagoon Restoration Project. The addition of native vegetation to the dune system will be completed after dune construction.

- **Buried Riprap:** The existing un-engineered rock riprap along the project site will be reconfigured into a more robust form, using approximately 10,000 CY of new 2-ton rock. The rock would provide a last line of defense for HWY 101 against extreme waves and high tides. The riprap would be buried by a minimum of 18 inches of imported sand to allow for plant establishment.
- **Pedestrian and Vehicle Access:** A decomposed granite footpath is proposed adjacent to and along the western side of HWY 101. The footpath will run parallel to the dune system and will improve public access along Cardiff State Beach. Six lateral public access points will also be constructed across the proposed dunes, allowing pedestrians to access the beach from HWY 101. The addition of permanent and temporary fence measures with dune access points to the beach is part of the pedestrian and vehicle access program. Vehicle parking realignment on the west side of HWY 101, and relocation of emergency access ramp to the beach and the addition of an Americans with Disabilities Act (ADA) Mobi-Mat system to allow for direct access to the beach establish a unified and effective access program to the newly restored area.

References:

- California State Department of Parks and Recreation, the City of Encinitas and the San Elijo Lagoon Conservancy. *Cardiff Living Shoreline Dunes Restoration Project Major Use Permit*. June 1, 2017.
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- Moffatt & Nichol. *Final Adaptive Management and Monitoring Plan Cardiff Beach Living Shoreline Project*. Prepared for: City of Encinitas. August 2018.
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